ASSISTIVE TECHNOLOGY PROCUREMENT STUDY

Technical Report

World Health Organization
Western Pacific Region

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Contents

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Abbreviations

APL	Assistive Products List
AT	assistive technology
CLASP	Consolidated Logistics for Assistive Products Supply and Provision
CRPD	Convention on the Rights of Persons with Disabilities
DPO	disabled persons organization
EML	Essential Medicines List
FBO	faith-based organization
GATE	Global Cooperation on Assistive Technology
LMIC	low- and middle-income countries
NCD	noncommunicable disease
NGO	nongovernmental organization
OADCPH	Organisation Africaine pour le Développement des Centres pour Personnes Handicapées
OECS	Organisation of Eastern Caribbean States
PAC	Product Advisory Council
PDF	Pacific Disability Forum
PFRPD	Pacific Framework for the Rights of Persons with Disabilities
PICs	Pacific island countries and areas
PIF	Pacific Islands Forum
PPS	Pharmaceutical Procurement Service (within OECS)
SDGs	Sustainable Development Goals
UHC	universal health coverage
UNICEF	United Nations Children's Fund
VII	Vaccine Independence Initiative
WHO	World Health Organization

A wheelchair user in Papua New Guinea.
Picture courtesy of Motivation Australia.

A woman learning to walk with prosthesis in Tonga.
Picture courtesy of Motivation Australia.

Executive summary

This *Assistive Technology Procurement Study* explores the challenges and strategies to strengthening the procurement of appropriate assistive technology (AT), with the goal of increasing access for people in Pacific island countries and areas (PICs). A mix of procurement options were also discussed with Pacific stakeholders to help inform recommendations for strengthening AT procurement in the Pacific. The findings and recommendations in this report aim to stimulate further dialogue with, and inform the actions and investments of, a mix of existing and future actors that play a role in AT provision, including, but not limited to, national governments, services providers, advocacy organizations, the private sector, development partners and donors.

AT is any item, piece of equipment or product that helps children and adults carry out tasks they might not otherwise be able to do well or at all. The World Health Organization (WHO) organizes AT into six domains of functioning, namely, cognition, communication, hearing, mobility, self-care and vision. AT is an essential mediator of human rights *(1,2)*, encourages participation and inclusion for people with disabilities *(3–7)*, and together with rehabilitation, is an essential component of health care for those with chronic health conditions, temporary injuries and diseases *(8)*. Timely and effective provision of rehabilitation and AT has the potential to dramatically improve health outcomes for individuals, and at the same time reduce health-care costs.

The *Convention on the Rights of Persons with Disabilities* (CRPD) has been signed and ratified in 15 PICs. The CRPD reaffirms that those with all types of disabilities must enjoy all human rights and fundamental freedoms and clarifies where adaptations need to be made for people with disabilities to effectively exercise their rights. This includes access to inclusive health, education and vocational services, and provision of opportunities and interventions, such as rehabilitation and access to AT.

In the Pacific, the CRPD is the foundation for the 2016–2025 *Pacific Framework for the Rights of Persons with Disabilities* (PFRPD), which is endorsed by the Pacific Islands Forum (PIF). Access to AT is a priority under the PFRPD and is also linked to *The Pacific Roadmap for Sustainable Development*. The Pacific Disability Forum (PDF) estimates there are 1.708 million people with disabilities in PICs *(9)*. Additionally, population health in PICs is characterized by a very high and growing prevalence of noncommunicable diseases (NCDs) *(10,11)*. An older population is expected to increase to over 2.2 million by 2050, with 88% of the increase located in Melanesian countries *(12)*. Between 2006 and 2016, PICs saw a more than 50% rise in strokes, 35% increase in cardiovascular disease, 16% increase in respiratory disease and more than 13% rise in diabetes *(8)*. PICs have some of the highest rates of diabetes in the world, with the Marshall Islands, Tuvalu and Niue being the top three globally *(13)*. This health and demographic profile of the Pacific indicates that the need for AT is significant and increasing.

In 2018, ministers of health from countries in the Western Pacific endorsed the *Western Pacific Regional Framework on Rehabilitation (8)*, which identifies rehabilitation as an essential health strategy for optimizing and maintaining the health and well-being of all people who experience illness, injury or impairment, recognizing changing population health trends and the current status of services. The Framework calls for renewed emphasis on rehabilitation and AT to address unmet needs from both the health and disability sectors, through greater investments, regional collaboration, and improved data and information.

Globally, WHO estimates that 1 billion people need AT, and this figure will rise to more than 2 billion by 2050 as the global population ages and the prevalence of NCDs increases *(14)*. There is now greater awareness of and advocacy for equitable access to both rehabilitation and AT than ever before. Initiatives such as the WHO Global Cooperation on Assistive Technology (GATE)[1], the 2018 World Health Assembly resolution on AT (WHA71.8) and ATscale[2] demonstrate an increased global focus and commitment to this issue. Disability

[1] For details, see GATE webpage: https://www.who.int/disabilities/technology/gate/en/
[2] ATscale is a multinational government and civil society partnership formed in 2018 to increase access to AT globally. For more information, see ATscale website: https://atscale2030.org

is specifically referenced in various Sustainable Development Goals (SDGs), including those that relate to education, growth, employment, inequality, accessibility and data. SDG 3 emphasizes universal health coverage (UHC) inclusive of rehabilitation and AT for all those in need, as the underpinning framework for achieving this goal. The World Health Assembly AT resolution notes: "…the inclusion of AT, in line with countries' national priority and context, into health systems is essential for realizing progress towards the targets in the SDGs relating to UHC".

Therefore, after multiple reports from PICs of AT procurement-related challenges, a number of technical meetings led by PDF and supported by key regional stakeholders, and in the context of current regional and global policy initiatives which have created interest and momentum in the sector, this study has been commissioned by the WHO Regional Office for the Western Pacific and funded by the Australian Government.

The AT study used mixed methods, including document review, key informant interviews and focus group discussions with relevant stakeholders. Interviews with a cross section of sector stakeholders were conducted in two countries from Melanesia (Fiji, Solomon Islands), Polynesia (Tonga, Tuvalu) and Micronesia (the Marshall Islands, Palau). Country selection aimed to give voice to the comparative experiences of smaller and larger countries in the Pacific region.

The procurement framework outlines five main stages – plan, source, manage logistics, use products and evaluate – which are subdivided into 15 steps (Fig. 1).

Fig. 1. Procurement framework

This model views procurement from the perspective of the organizations and individuals in PICs who would like to acquire AT. Only by feeding back learning into the planning stage is the process a cycle.

At present, the availability, accessibility, affordability and quality of AT in the region is known to be limited. Some key issues for PICs in delivering AT services include limited rehabilitation and AT capacity, human resources constraints, lack of required facilities, competing priorities for health financing, procurement challenges, and donations of poor-quality and inappropriate devices.

2. Conclusions

- **Awareness of and information about AT**
  The study highlighted low levels of awareness of and information about AT among all stakeholders, and a corresponding lack of informed demand for appropriate AT and associated services. PIC stakeholders want to be better informed to be able to advocate for and make effective decisions.

- **Better representation in decision-making by those who use and could benefit from AT**
  There is a clear need for mechanisms to more effectively engage all service users in decisions about their individual needs, as well as in the implementation of recommendations for strengthening AT nationally and regionally. These mechanisms should recognize the diversity of AT users.

- **A collaborative approach**
  A collaborative approach to the development of regional blueprint product and service specifications, guidelines, standards and other information resources is likely to be more efficient than a purely national approach. At the same time, it is recognized that each PIC will need to both inform the development of such resources and contextualize these for their own country, implementing them within the context of national frameworks and priorities.

- **Procurement models and approaches**
  While there are distinct advantages in a regional approach to procurement, a "pooled procurement" model for supply of AT is unlikely to succeed. Instead, recommendations should prioritize establishment of a supply chain hub that allows PICs and nongovernment buyers to purchase at their own discretion, according to their own procurement cycle, annual plan and procurement regulations.

- **Access to services and affordability**
  Coordinating access to service provision and affordability of AT are two key areas that national governments could explore to increase equity of access. For AT to be more equitably available and affordable for everyone who needs it, increased support for service providers and some degree of subsidization of AT products by national governments may be necessary at some level.

- **The AT value chain**
  AT procurement cannot be viewed in isolation, but rather as a critical and interdependent step within an overall AT value chain (Box 1) which is inclusive of manufacture, supply, service delivery and end use. Efforts to increase access to AT in the region will require coordination across and among all stakeholders and participants of the AT value chain, ideally characterized by good communication, effective feedback loops among all stakeholders, and in particular, end users, as well as agreed guidelines and standards.

- **Governance**
  Recognizing the role and functions of each stakeholder within the AT value chain, cooperation and good governance mechanisms will help facilitate more effective economic, social and commercial outcomes. Separation between the organizations performing the "social mission" of better AT provision and commercial supply chain activities should be maintained to mitigate conflicts of interest and other risks to the entire system.

- **Opportunity and risk**

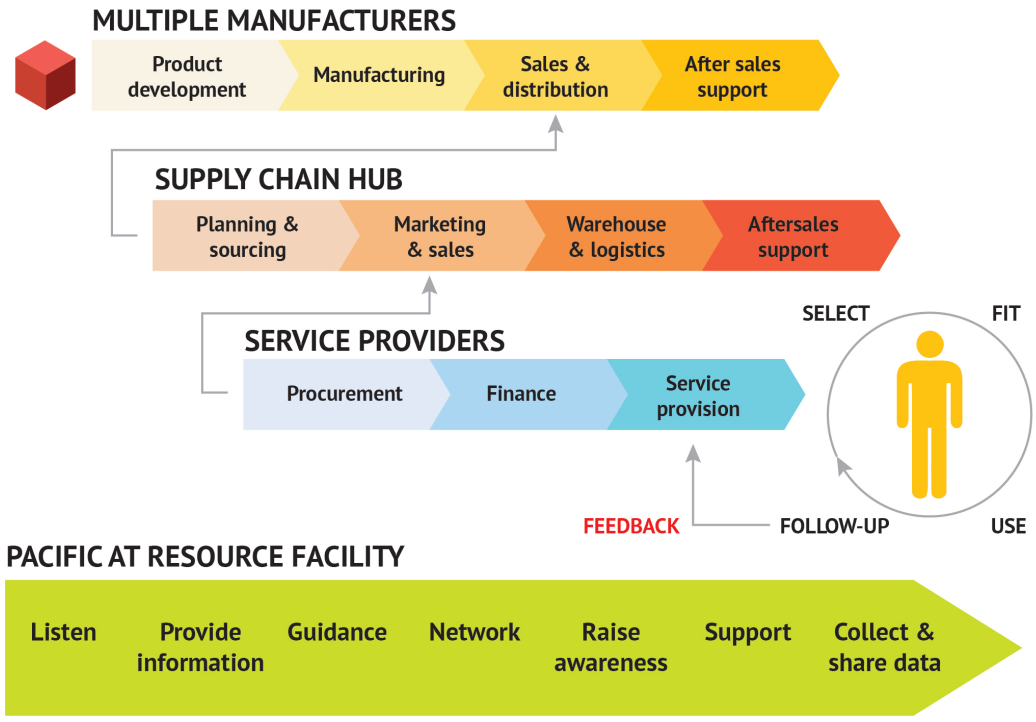
  The positive impacts of timely and appropriate access to AT for individuals, communities and nations are demonstrable. In contrast, not acting now to systematically increase access to AT raises the risk of further excluding and leaving people behind, continuing to negatively impact outcomes for people and countries meeting their national, regional and international commitments, including with respect to disability, health and disability rights frameworks.

Box 1. The assistive technology (AT) value chain

The AT value chain

An industry value chain recognizes the benefit of each stakeholder taking an active interest in the success of the whole process of supply, and being invested in the quality of the overall outcome. Each stakeholder's contributions create value for every stakeholder in the value chain.

An AT value chain encompasses the entire process of product development, manufacturing, and supplying and providing AT to end users. In the context of the Pacific, increasing cooperation among all stakeholders along an AT value chain has the potential to reduce current procurement challenges and improve outcomes for all. (See section 6.6 for further explanation of the AT value chain)

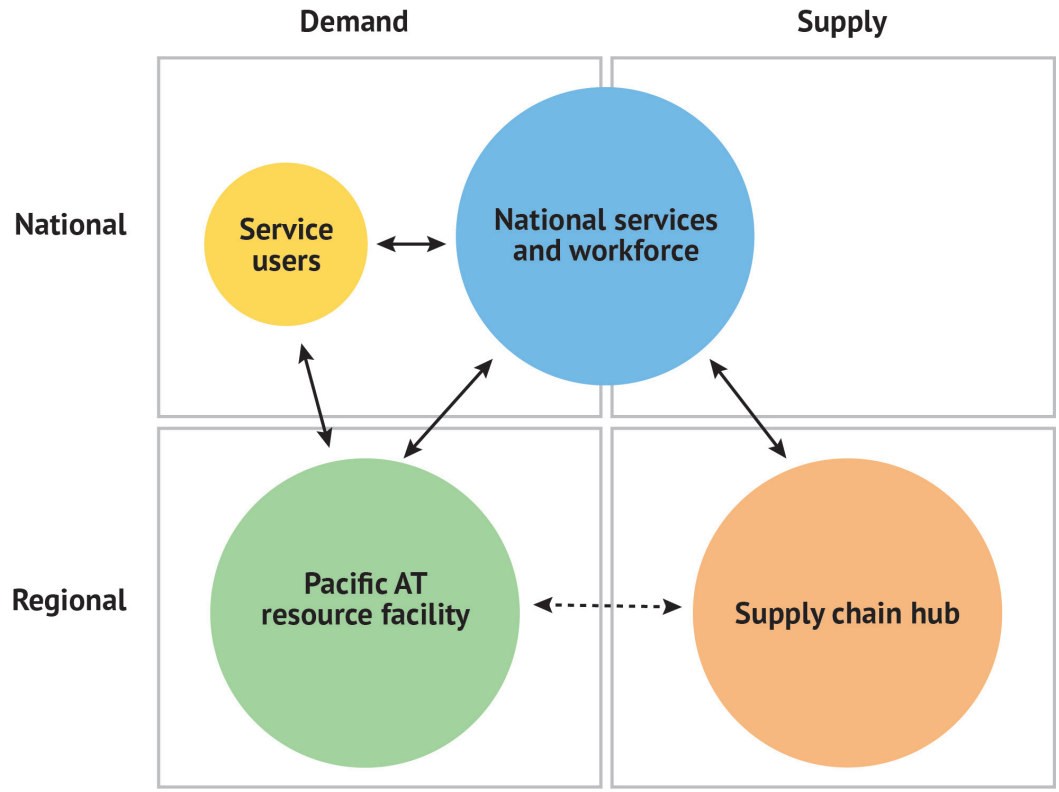


3. Recommendations

The three overarching study recommendations listed below represent three interacting and interdependent areas of activities (Fig. 2). Each area requires resources and technical assistance to be established over a period of time. (Section 8 of the report provides a detailed explanation of each recommendation)

1. **Establish a Pacific AT resource facility** to provide Pacific AT stakeholders across the AT value chain with impartial information, resources and guidance on AT products, services, training and policy.
2. **Establish an AT supply chain hub** to offer and supply a prioritized range of quality AT products as cost-effectively as possible.
3. **Strengthen national AT services** and workforce within health systems to ensure AT users in PICs benefit from improvements in regional AT procurement.

Fig. 2. Interactions of the three study recommendations positioned according to supply–demand and national–regional scope



Pacific stakeholders recommended that the Pacific AT resource facility sit within a regional entity with the relevant mandate to provide technical advice and support to national stakeholders, and require an opportunity for further consultation to determine which regional entity and financial and human resources are needed to establish and perform the functions of this facility.

4. Next steps

This study was conceived as a first step in comprehensively addressing a recognized issue of limited access to AT in the Pacific, with a focus on procurement as a key barrier. The three interrelated recommendations arising from the in-country consultations with a broad range of stakeholders, regional forums and meetings with senior health personnel and decision-makers offer a framework for a way forward. The first recommendation, the proposed Pacific AT resource facility, has the potential to play a pivotal role in supporting the AT value chain in the Pacific, and in particular consensus development of Pacific blueprint resources that can guide and inform implementation of the second and third recommendations. It is therefore logical for the Pacific AT resource facility to be the initial focus for implementation.

To continue the positive momentum and capitalize on increased awareness and engagement, a proposed immediate next step is to convene a technical meeting of key regional stakeholders, development partners and donors. This meeting would seek to do the following:

- Confirm the study findings and recommendations.
- Discuss establishment and management mechanisms of the proposed Pacific AT resource facility.
- Identify potential finance mechanisms to progress recommendations.
- Identify priority actions that could be immediately initiated, such as develop a Pacific Assistive Product Priority List and product specifications as a precursor to improving the supply chain, and explore the potential for private–public partnerships for AT service delivery.

Further, it is recommended this study report (inclusive of a plain English version) be made available to all stakeholders who participated in the consultations, and further disseminated and promoted as an important contribution to the understanding of AT in the Pacific region.

Introduction

Assistive technology (AT) is any item, piece of equipment or product that helps a child or adult carry out tasks they might not otherwise be able to do well or at all. Common examples include walking aids, wheelchairs, prosthetic legs, hearing aids, glasses, low-vision aids, white canes, shower chairs, toilet chairs and continence products such as catheters.

AT is an essential mediator of human rights *(1,2),* improves participation and inclusion for people with disabilities *(3–7)*, and together with rehabilitation is an essential component of health care for people with chronic health conditions, temporary injuries and diseases. Timely and effective provision of rehabilitation and AT has the potential to dramatically improve health outcomes for individuals, and at the same time reduce health-care costs. However rehabilitation and AT are often neglected in health services planning *(16)*.

Globally, the World Health Organization (WHO) estimates that 1 billion people need AT, and this figure will rise to more than 2 billion by 2050 as the global population ages and the prevalence of noncommunicable diseases (NCDs) increases *(14)*. Unmet need for AT varies considerably among impairment types and contexts, and in some places, it is estimated that up to 90% of people cannot access needed AT *(17)*. A rapid scale-up of rehabilitation services and AT provision is fundamental to ensuring nobody is left behind in inclusive development. This has been well recognized in the Pacific.

In the Pacific region, a well-organized community of disability service providers, disabled persons organizations (DPOs) and actors, as well as an emphasis on disability-inclusive development and growing global policy emphasis on AT, have together created momentum in exploring strategies to strengthen access to AT. With a history of successful regional collaboration to maximize the collective potential of Pacific island countries and areas (PICs), key stakeholders have focused in particular on what can be done at a regional level to support PICs in better supporting the rehabilitation and AT needs of their citizens.

AT systems typically comprise a mix of professionals, service delivery models, supply chains, policies, financing and consumer awareness, often divided along professional disciplines and diagnostic lines *(18,19)*. Ensuring the right products are available where they are needed is a key ingredient in strengthening access to AT. With multiple reports from PICs of AT procurement-related challenges, this is an area where regional collaboration could offer solutions. However, while many PICs have established procurement pathways for some product types, there has to date been no comprehensive analysis of current AT procurement that could inform potential regional action. There is also little evidence regarding the comparative effectiveness of alternative AT procurement approaches.

Therefore, after a number of technical meetings led by the Pacific Disability Forum (PDF), supported by key regional stakeholders, development partners and donors, this study has been commissioned by the WHO Regional Office for the Western Pacific to explore challenges and options for AT procurement in PICs.

This report presents findings from a literature review, investigation of four existing procurement models, a scan of PIC procurement regulations and consultations with 122 informants. The report draws conclusions, makes recommendations and proposes some initial next steps.

1. Background

1.1 AT in the Pacific region

PDF estimates there are 1.708 million people with disabilities in the Pacific *(9)*. Additionally, population health in PICs is characterized by a very high and growing prevalence of noncommunicable diseases (NCDs) *(10,11)*. Between 2006 and 2016, the Pacific saw a more than 50% rise in strokes, 35% rise in cardiovascular disease, 16% rise in respiratory disease and more than 13% rise in diabetes *(8)*. Rates of injuries and musculoskeletal conditions are also high and increasing in the region *(20,21)*. At the same time, the Pacific is experiencing a trend towards an ageing population, as one in four people are predicted to be over the age of 60 by 2050 *(8)*. This health and demographic profile requires renewed emphasis on health and social services, and specifically recognition that the need and demand for AT in the Pacific is significant and increasing (Table 1).

Table 1. Overview of population, diabetes and median age

Country	Population[a]	Estimated number of people with disability	Diabetes prevalence, age 18–99[b] + rank	Median age in years	Projected median age in years, 2050[c]
Cook Islands	17 000	2550	11.1% estimate (13)	–	–
Fiji	899 000	134 850	13.9% (10)	27.1	39.4 (+12.3)
French Polynesia	300 000[c]	45 000	22.4% (6)	–	–
Kiribati	114 000	17 100	19.9% (7)	23.5	39 (+15.5)
Marshall Islands	53 000	7950	31.4% (1)	20.6[d]	32 (+11.4)
Micronesia, Federated States of	105 000	15 750	10.1% (15)	21	37 (+16)
Nauru	11 000	1650	22.9% (5)	–	–
New Caledonia	300 000	45 000	24.2% estimate (4)	–	–
Niue	2000	300	24.5% estimate (3)	–	–
Palau	22 000	3300	17.3 (8)	33.5[e]	40 (+6.5)
Papua New Guinea	8 085 000	1 212 750	15.3% (9)	20.9	29 (+8.1)
Samoa	195 000	29 250	7% (16)	21	39 (+18)
Solomon Islands	599 000	89 850	13.2% (11)	19.7	28 (+8.3)
Tonga	107 000	16 050	12.5% (12)	21.3	34 (+12.7)
Tuvalu	11 000	1650	27.7% (2)	23.7[f]	36 (+12.3)
Vanuatu	270 000	40 500	10.4% (14)	21.7	29 (+7.3)

Notes:
a. Data sourced from WHO (*22*) unless indicated
b. International Diabetes Federation (*23*)
c. UNFPA (*12*)
d. Data from the Marshall Islands Government (*24*)
e. Data from the Palau Government (*25*)
f. Data from the Tuvalu Government (*26*)

The *Convention on the Rights of Persons with Disabilities* (CRPD) has been signed and ratified in 15 PICs. The CRPD reaffirms that all persons with all types of disabilities must enjoy all human rights and fundamental freedoms, and clarifies where adaptations are required for persons with disabilities to effectively exercise their rights. This includes access to inclusive health, education, vocational services and opportunities, including interventions such as rehabilitation and access to AT.

In the Pacific, the CRPD is the foundation for the 2017–2022 *Pacific Framework for the Rights of Persons with Disabilities* (PFRPD). Access to AT is a priority under the PFRPD and is also linked to *The Pacific Roadmap for Sustainable Development*.

The *Western Pacific Regional Framework on Rehabilitation*, launched in 2019 following broad consultation in the Pacific, identifies rehabilitation as an essential health strategy for optimizing and maintaining the health and well-being of all people who experience illness, injury or impairment, recognizing changing population health trends and the current status of services. The Framework calls for renewed emphasis on rehabilitation and AT to address unmet needs from the health and disability sectors, through greater investments, regional collaboration, and improved data and information.

At present, the availability, accessibility, affordability and quality of AT in the region is known to be limited. Some key issues for PICs in delivering AT services include limited rehabilitation and AT capacity; human resources constraints; lack of required facilities; competing priorities for health financing; procurement challenges; donations of poor quality; and inappropriate devices.

There are successful examples in some countries based on the work of governments, nongovernmental organizations (NGOs), development partners and an emerging private sector. These are, however, all limited in the range of AT available, geographical reach and population coverage. Many government physiotherapy personnel strive to provide basic AT, such as walking aids and wheelchairs. A number of ophthalmology departments in the region support provision of prescription glasses when they are able, and private opticians are available in a few locations. There are examples of hearing aids being provided, and five health services in the region offer prosthetics and orthotics services integrated with wheelchair provision.

Also of note is the development in Papua New Guinea of guidelines for the provision of AT, which address the training, personnel and products required to provide priority AT for people with mobility, hearing or vision impairment. In 2015 and 2016, Motivation Australia facilitated consultations to inform these guidelines, with more than 250 people from more than 50 organizations and/or departments across the four regions of Papua New Guinea. Stakeholders, particularly people who use or require AT, contributed their personal experience and knowledge about what is needed and how it should be provided. These guidelines were endorsed by the Papua New Guinea National Department of Health in March 2019 and are currently being operationalized.

1.2 Major global AT initiatives and opportunities

Globally, there is greater awareness and advocacy than ever before for equitable access to both rehabilitation and AT. There is also growing understanding that rehabilitation is a set of interventions designed to maximize the functioning of all people in the population, including people with disabilities. It is part of the continuum of health care and an important service to be made available within all levels of the health system (tertiary, secondary, primary and community). AT provision is regarded as one rehabilitation intervention among many that assists people to perform daily self-care activities, be mobile, and communicate and participate in economic and social opportunities, such as school and work. Depending on the individual, AT provision is best complemented by other rehabilitation interventions that help build muscle strength, cognitive ability and communications skills or modify a person's home, school or work environment to enable them to reach their optimal function. For this reason, while this study focused on strategies to strengthen AT procurement, recommendations and findings often link both rehabilitation and AT services together. Initiatives such as the WHO Global Cooperation on Assistive Technology (GATE), the 2018 World Health Assembly resolution on AT (WHA71.8) and ATscale demonstrate an increased global focus and commitment to this issue.

The Sustainable Development Goals (SDGs) are a driving force behind the global development agenda, aiming to address the environmental, economic and social dimensions of sustainable development. It is well recognized that to ensure no one is left behind in the SDGs, effective disability inclusion is required. Disability is specifically referenced in various SDGs, including those that relate to education, growth and employment, inequality, accessibility and data.

Furthermore, SDG 3, "ensure healthy lives and promote well-being for all at all ages", is specifically relevant to this study. This goal emphasizes universal health coverage (UHC), inclusive of rehabilitation and AT for all those in need, as the underpinning framework for achieving this goal. The World Health Assembly resolution on AT notes: "… the inclusion of AT, in line with countries' national priority and context, into health systems is essential for realizing progress towards the targets in the SDGs relating to universal health coverage".

The increased profile of the sector at the global level is having an effect on national policies, including in the Pacific region, although resource constraints continue to impact on the ability of many low- and middle-income countries (LMICs) to respond. Global initiatives are also creating a rapid growth of knowledge, lessons, resources and potential funding that PICs can draw on to strengthen their rehabilitation and AT provision.

2. AT study method

2.1 Design

The AT study used mixed methods, including a document review, key informant interviews, focus group discussions and iterative revision of the main interpretations of findings with relevant stakeholders. Key informant interviews involved a purposively sampled cross section of sector stakeholders in relevant countries, and across the Pacific region. The study included the development of a framework to guide key informant interviews and aimed to situate this work within existing theoretical and practice frameworks for AT provision.

Developing the framework and design comprised a comprehensive review of available scholarly and operational literature; consultations with an advisory group and Western Pacific Region stakeholders to refine the overall research direction; development and refinement of a question guide based on existing frameworks for AT service provision; and a procurement framework developed for the study.

2.2 Context

Field-based key informant interviews were conducted in two countries from Melanesia (Fiji, Solomon Islands), Polynesia (Tonga, Tuvalu) and Micronesia (the Marshall Islands, Palau). Country selection was specific, aiming to give voice to the comparative experiences of smaller and larger countries in the Pacific region. Consultations carried out during regional forums and via teleconference increased the number of countries represented in the study.

2.3 Study participants

Selection criteria for informants were developed during preliminary consultations on the study design and refined during preparation for in-country visits. During field work, stakeholders were invited to propose other experts relevant to the study objectives. Where possible, these were contacted directly by the study team or through in-country contacts and invited to participate.

Figs. 3, 4, 5 and 6 summarize 122 informants' gender, sector, their self-reported AT experience and location. These data do not include those consulted at regional forums in a group context.

Fig. 3. Gender of informants with and without disability

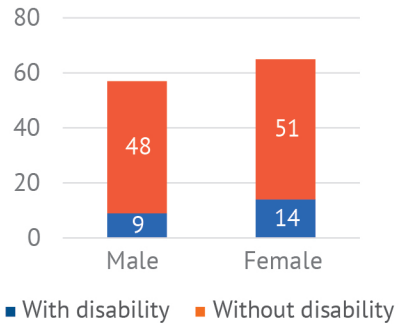


Fig. 4. Sector positions of informants

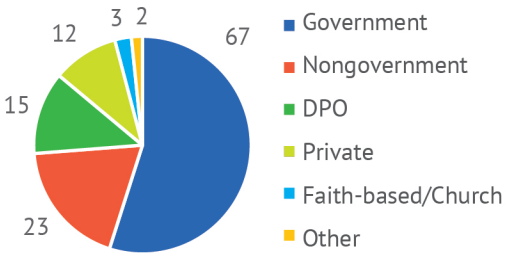


Fig. 5. Informants' area of expertise by AT domain

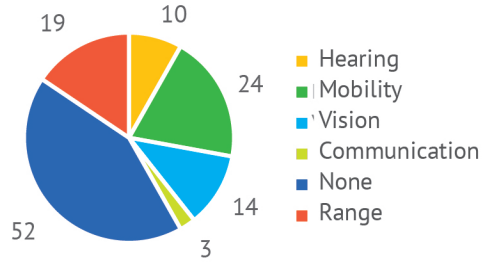


Fig. 6. Location of informants

Australia – 2

Cook Islands – 3

Fiji – 1

Kiribati – 1

New Zealand – 1

Palau – 17

Papua New Guinea – 3

Republic of the Marshall Islands – 21

Solomon Islands – 31

Tonga – 14

Tuvalu –11

Vanuatu – 1

Other – 1

* These data do not include those consulted at regional forums in a group context.

2.4 Data collection and analysis

Semi-structured interviews were conducted either in person (108 people) or by teleconference (14 people). Interviews were guided by a framework constructed to explore the AT context in each location, utilizing the WHO GATE framework. This comprised five dimensions: people, products, provision, personnel and policy, as well as the six domains of AT: cognition, communication, hearing, mobility, self-care and vision, followed by exploration of the main components of successful systems for procurement (see section 2.5). Additionally, 10 people shared their personal stories of accessing and using AT with the study team.

Interview transcripts were prepared by recording field notes and, where participants agreed, using audio recordings to generate complete transcripts. The data were analysed by examining transcripts according to the predetermined framework and identifying new themes for enquiry. Interpretations were developed by synthesizing findings across themes, contrasting alternate explanations and contextual factors between countries and informant groups, and by noting new and unexpected ideas. All transcripts were reviewed by at least two of the study team. Interpretations were discussed and either mutually resolved or included in results as alternate interpretations.

Country-level expert testimony was complemented by additional regional and global informants from international NGOs, multilateral technical agencies, global AT expertise and guidance by an advisory group consisting of stakeholders from the region. Additionally, the study and preliminary findings were shared and discussed through presentations at three regional forums[3] during the study period.

[3] Pacific Community-based Rehabilitation Forum, Nadi, November 2018; PDF Conference, Nadi, February 2019; Motivation Australia and PDF Pacific Rehabilitation and Mobility Conference, Nadi, April 2019.

2.5 Procurement framework

The procurement framework used for this study was developed following a review of literature and current practice guidelines for procuring health equipment. Fig. 7 outlines five main stages – plan, source, manage logistics, use products, evaluate – which are subdivided into 15 steps. This model views procurement from the perspective of the organizations and individuals in PICs who would like to acquire AT. From this perspective, the process of acquiring goods involves procurement, supply and logistics processes *(27)* as well as service provision steps (steps 10–15) and evaluation. This holistic perspective highlights the importance of evaluating how products perform for users. Only by feeding back learning into the planning stage (step 1) is the process a cycle.

Fig. 7. Procurement framework

3. Study findings: document review

3.1 Examples of existing procurement models, procurement regulations and review of literature

A review of literature gave insights into the effectiveness and challenges of procuring health products, including medicines and consumable supplies and medical equipment. In comparison, there are very few documented accounts of systematic procurement approaches for AT. Therefore, the study relied on exploring four existing procurement models. A scan of the procurement regulations of eight PICs[4] was also conducted to explore how these regulations could impact a regional procurement mechanism.

[4] Fiji, the Marshall Islands, Palau, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu

3.1.1 Existing procurement model examples

The characteristics of direct, indirect and pooled procurement methods commonly employed for a range of products and services are summarized in Tables 2 and 3.

Table 2. Methods of procurement

Method	Description		Characteristics
Direct	Individual purchasers manage the process directly with the supplier. For example, AT users or their families purchase from suppliers while service providers purchase directly from suppliers.		Individual research. Individual manages all aspects of the procurement. Individual purchasing.
Indirect	A third party or intermediate organization manages and conducts procurement from suppliers, often including payment. Then the purchaser obtains products and services from the intermediary. Not uncommon in LMICs, where NGOs and faith-based organizations (FBOs) may procure AT from suppliers on behalf of national partners or end users. Another model is small pharmacies purchasing from wholesalers.		Some or all aspects of procurement conducted by an intermediate organization. Some intermediaries charge for service. Individual purchasing.
Pooled	A group of purchasers work together, with increasing levels of cooperation and collaboration on some or all procurement activities.	(1) Informed and coordinated buying	Exchange of information among purchasers. Joint market research. Individual purchasing.
		(2) Group contracting	Joint market research and decisions. Joint negotiation of prices. Individual purchasing.
		(3) Central contracting and purchasing	Representative organization. Centralized buying by a representative third-party organization or secretariat. Consensus on contents. Pre-commitment to purchase through a pooled procurement mechanism.

Sources: Adapted from Ghoneim et al. *(28)* and Arifaj-Blumi *(29)*.

Table 3. Overview of procurement models reviewed

Name	Type of goods	Procurement model	Geographical coverage
VII	Vaccines	Pooled (central contracting and purchasing)	13 PICs
OADCPH	Mobility AT	Indirect	30 African countries
CLASP	Mobility AT	Indirect	Global
OECS/ PPS	Pharmaceuticals, medical supplies, allied health equity, etc.	Pooled	11 Eastern Caribbean countries

CLASP = Consolidated Logistics for Assistive Products Supply and Provision; OADCPH = Organisation Africaine pour le Développement des Centres pour Personnes Handicapées; OECS/PPS = Organisation of Eastern Caribbean States / Pharmaceutical Procurement Service; PICs = Pacific island countries and areas; VII = Vaccine Independence Initiative.

The Vaccine Independence Initiative (VII) offers a Pacific example of successful regional collaboration using the pooled procurement method for vaccines. This example is useful for comparison when considering AT procurement. VII is a group procurement mechanism established by the United Nations Children's Fund (UNICEF) in 1997. After 22 years of uninterrupted operation supplying 13 participating PICs with vaccines, it is considered the most successful procurement initiative to date in the Pacific region.

VII has many of the characteristics of pooled procurement listed in Table 2, including central contracting through UNICEF as the representative third-party organization. VII aims to address procurement challenges and meet the need for effective vaccine distribution, while increasing national government ownership of vaccines procurement. VII uses a revolving fund as a line of credit for each participating government.

VII has successfully overcome challenges that have hampered the success of other Pacific region pooled procurement initiatives. Findings from study consultations suggest this might be due to the structure and support offered to the initiative by UNICEF. As a trusted partner in the region, UNICEF provides finance and supply chain expertise, ensures the quality of vaccines and the cold chain during transportation is maintained, and achieves large economies of scale by procuring vaccines globally directly from manufacturers. The Pacific benefits from these significant global economies of scale, by accessing cheaper prices despite the comparatively small volume required. UNICEF is not aligned to any individual national and/or commercial interests and has high levels of governance and transparency.

Organisation Africaine pour le Développement des Centres pour Personnes Handicapées (OADCPH) runs a collaborative procurement initiative based in Togo, operated on a not-for-profit basis. OADCPH uses a pre-qualification process with suppliers to pre-stock essential mobility devices and prosthetic and orthotic components. The programme arose to address the critically weak supply of components and products that constrain development of the sector in many parts of Africa. OADCPH identifies key challenges, such as distrust among key stakeholders during implementation, slow uptake and accessing initial capital. According to OADCPH representatives, a critical success factor was initial loans of stock and agreements with suppliers for gradual payment of the initial purchasing costs.

Consolidated Logistics for Assistive Products Supply and Provision (CLASP) is a project funded by the United States Agency for International Development offering a supply chain programme implemented by UCP Wheels for Humanity. Using a similar approach to OADCPH, CLASP focuses on wheelchairs and walking aids and already supplies the Pacific. CLASP addresses the challenge of accessing the required range of mobility devices to meet population needs by purchasing from a range of suppliers and using a third-party logistics provider in China to pre-stock and consolidate orders. CLASP enables access to smaller-volume orders[5] of a range of different wheelchairs for service providers, procuring directly or with the assistance of donors and/or development partners.

[5] Minimum order quantity for CLASP is 20 wheelchairs.

In response to early concerns by stakeholders about the appropriateness of some products in the CLASP catalogue, CLASP initiated a Product Advisory Council (PAC). Comprised of technical experts, clinical experts and wheelchair users from Argentina, Ethiopia, India, South Africa and United Republic of Tanzania, PAC has established transparent criteria that all CLASP-supplied products must meet. These criteria include product specifications and key metrics such as quality, performance, functionality and product safety.

The Pharmaceutical Procurement Service (PPS) is the official institution within the Organisation of Eastern Caribbean States (OECS) that procures medicines and allied health equipment on behalf of Member States. PPS is based on a centralized tendering and pooled procurement model, with a revolving fund financial mechanism. Payment is centralized and carried out by the Eastern Caribbean Central Bank supported by a common currency, the East Caribbean dollar. In 2007, there were 700 products in their portfolio (70% pharmaceuticals), representing an estimated 80% of Member States' public sector needs. Between 1997 and 2006, the value of annual purchases increased by more than 100%. The average cost savings for 25 selected items over a five-year period (1998–2002) is reported to be 37% *(30)*. According to the PPS website, the product portfolio now has approximately 840 items.

3.1.2 Pacific island country procurement regulations

Six of the eight countries whose procurement regulations were reviewed follow World Bank procurement guidelines, and two follow the United States federal procurement guidelines. All are prescriptive, providing detailed instructions to buyers and minimizing application of alternative approaches. Most are structured around the need for a minimum of three quotes with financial thresholds governing the degree of oversight required in each procurement activity.

The prescriptive nature of national procurement regulations indicates that attempting to establish a traditional standing offer arrangement, where PICs make a pre-commitment to purchase a certain quantity of AT each year (pooled procurement model), would be challenging. Other challenges would be the variety of contract forms and bidding documents, length of time taken to procure, and payment terms. Overall, procurement regulations of those countries investigated would have the least impact on a more open model, such as a supply chain hub following an online market place model, open to all buyers, irrespective of their approach to procurement.

3.1.3 Key benefits and critical success factors identified in the literature

Literature review findings highlighted the centrality of consumers to services and purchasing considerations *(5,31,32)*, and a need to emphasize procurement as part of a system of services beyond the selection and provision of a product *(16,33–35)*. Strengthening procurement models were frequently described as either solving or having the potential to solve breakdowns in supply, with the potential to deliver the following benefits:

- Cost savings through efficiencies and economies of scale *(29,36)*.
- Harmonization of the products in use and better quality control *(36)*.
- Strengthening market power through shared purchasing, addressing the low purchasing power of individual countries associated with lack of funds *(28,37)*.
- Added capacity and systems that simplify time-consuming and complex procurement requirements for both the purchaser *(28)* and suppliers *(38)*.
- Improved access to information about issues, such as suppliers, product choices, quality and standards *(28,30)*.

It should also be noted that while cost savings are often implicated in decisions about procurement models, total expenditure could increase, especially where current arrangements include poor-quality, low-cost products. Further, the total allocated budget for supply will probably need to grow as demand is recognized, services strengthened and more options for AT become available *(36)*. Strengthened procurement is concerned with delivering optimal value, and minimizing the costs of meeting demand and obligations in the most efficient ways, rather than reducing the total spending on supply.

Reasons for failure or poor performance in procurement strategies cited in reviewed literature (related to a range of procurement models) include the following:

- Challenges in negotiating and coordinating among purchasing countries, including a lack of legally binding agreements *(29,38)*.
- Limited capacity to manage complex procurement combined with poorly defined operating procedures and methods *(38)*.
- Limited resources and slow payment of invoices *(38)*.
- Uncertain order quantities arising from delayed procedures and ordering, leading to challenges with budget forecasts.
- Excessive intervention should be avoided where pre-existing supply mechanisms are in place and providing AT in markets with reasonable and sustainable cost, as it has the potential to supress innovation and diversity in product availability *(39)*.

4. Study findings: what people said

The following two tables provide a summary of responses received during the consultations, along with illustrative stories and quotes.

4.1 People, personnel, provision, products and policy

	Summary of responses to consultations	Illustrative stories and quotes
People	AT users were identified as children and adults with disabilities, older people, and people with NCDs and/or other health conditions. People face barriers in accessing AT, including distance from services, lack of availability, cost, lack of awareness about AT, limited familiarity with different AT options, referral, inappropriate products, lack of reliable information and few services. Most disadvantaged groups were identified as children, older people, those furthest from services and those with least resources. Representation and voice: People who need AT are not systematically consulted in planning, implementation or evaluation of AT initiatives, whether delivered by in-country service providers and/or visiting teams.	Lupe is a 57-year-old government contractor in Tuvalu who has difficulty hearing. During an appointment with a visiting audiologist team, she learnt she needed a hearing aid. The team provided her with an Internet address to buy one online, but as she had no prescription and the costs were too expensive for her, she was not able to obtain the AT she required. *"We seem to be very disadvantaged around this part of the world from this new technology, things that improve our lives."*

	Summary of responses to consultations	Illustrative stories and quotes
Personnel (workforce)	Many personnel play a role in overall AT provision, including public, private and nongovernmental; health, rehabilitation and education; procurement, logistics, management, administration and finance. Personnel directly involved in AT service delivery include the following: • Physiotherapists and community-based rehabilitation officers who play the primary role in provision of wheelchairs and walking aids. • Nurses who support visiting teams providing AT; eye health nurses in a few locations providing vision AT; and nurses in a few locations providing continence products. • A growing number of prosthetists and orthotists. • Teachers in some cases are involved, although this was identified most often as a gap. Visiting teams from overseas support some elements of AT provision, with reports varying in the degree of success and outcomes for AT users. Qualifications: There are no established guidelines for minimum training required for personnel to provide AT. Workforce constraints: There is a chronic shortage of trained personnel available to support AT provision.	Tessi from Palau lost her sight when she was pregnant with her second child. She received vision AT in the form of a white cane and screen-reading software during a trip to Fiji through her role with the Palau Disabled Persons Organisation (DPO). Due to the short length of her stay in Fiji, she received limited training on the use of this AT. Tessi feels that not enough training and a lack of local technical support with the screen-reading software has meant that she has not been able to make full use of these devices. "*... more help on how to use the cane through mobility training would really help in order for me to train others*".
Provision (services)	AT services are provided through the following: • Ministries of health, primarily through rehabilitation departments, with some provision of AT through eye health and ear, nose and throat (ENT) services. • Special education providers in a few countries. • NGOs and DPOs. • Private sector opticians[6] providing glasses only. In the absence of services, individuals procure AT without service support, often with poor outcomes, including through private pharmacies[7], accessing AT while travelling overseas or requesting assistance from families and friends abroad. There was evidence of emerging public–private partnerships collaborating on aspects of AT service delivery.	Florinda was working as an allied health assistant on an outer island in the Marshall Islands when she stepped on a fish bone. As a result of uncontrolled diabetes and rapid onset of infection, by the time she was brought to hospital on Majuro, her only option was amputation. The local rehabilitation team provided Florinda with a prosthetic limb using available (low-tech) materials. "*I tried to wear that one, but it did not feel alright. It was big, and it was really painful when I put my weight on the leg.*"

[6] Private opticians identified in the Marshall Islands (one), Papua New Guinea (one), Fiji (several).
[7] In some countries, private pharmacies offer a limited range of devices such as reading glasses, walking aids and occasionally orthopaedic-style wheelchairs.

	Summary of responses to consultations	Illustrative stories and quotes
Provision (services) *continued*	AT service provision challenges, in particular within the health system, are identified below: • Lack of personnel and heavy workloads. • Personnel across the health system not having relevant knowledge and skills to fulfil a role in AT. • Limited referral between those responsible for population health screening, health interventions, and rehabilitation and AT health interventions. • Insufficient technical personnel for products requiring assembly, modification and/or repair. • Inadequate facilities and/or space, including clinical space, storage, tools and equipment. • No agreed priority AT list to guide service planning. • Low profile and priority for rehabilitation and AT among health and other national priorities. Guidelines: With the exception of the Papua New Guinea guidelines for provision of AT, which offer recommendations for service delivery of priority devices for hearing, vision and mobility, no country as yet has minimum standards and/or protocols for AT provision. Emergency preparedness: No consistent planning for AT provision during an emergency was identified.	Florinda was unable to wear it. Sometime later she was seen by a visiting team who provided her with a new leg using different prosthetic technology, which she says is very good. The leg has made it easier for Florinda at work; however, the lack of trained personnel and spare parts available locally are likely to affect the ongoing success of this AT solution for Florinda.
Products	Product availability is summarized below. • **Mobility AT**: Wheelchairs and walking aids are the most consistently available group of products. Regular donations by Latter-day Saints Charities play a major role in this level of availability. Only five countries in the region have prosthetic services. • **Hearing AT**: There are examples of hearing aid provision reliant upon visiting teams, which have limitations due to a lack of follow-up. Fiji stood out as the one country with a more sustainable solution. • **Glasses**: Access to prescription glasses is limited. A few examples of private, government and NGO provision exist, with one example of a limited public–private partnership. Donated second-hand prescription glasses were reported without exception as 'rubbish'. Poor-quality, ready-made reading glasses can be purchased through shops in most countries.	Cristelle attends high school in the Marshall Islands. She has successfully used a number of vision AT devices during her life, including a white cane, computer software, smartphone and Braille. However, the white cane she received at age 9 is now too short, her phone and computer are broken, and her family cannot afford the required software. For Cristelle, her family and supporters, finding out where and how to purchase AT to re-establish these important supports has been as challenging as securing funding.

	Summary of responses to consultations	Illustrative stories and quotes
Products *continued*	• **Low-vision AT**: There is no consistent supply of low-vision devices, reportedly due to a lack of knowledge about what is needed as well as insufficient funding. • **AT for those who are blind**: White canes, Braille equipment and information technology tend to be accessed through informal channels by individuals with support of DPOs and/or others, always with assistance from external donors and/or supporters. Coverage is limited to those with the resources and opportunity. • **Communication, self-care and cognition AT**: Access to these domains of AT is extremely limited, with Fiji having the most access through a few services. **Product priority list and specifications**: With the exception of the Papua New Guinea guidelines for provision of AT, which lists priority devices for hearing, vision and mobility. No country as yet has a priority list of AT. No product specifications or standards were reported. Second-hand donated products are largely reported as unsatisfactory. **Inconsistency in stock availability**: Where AT is provided, frequent "stock-outs" were reported, including by government, nongovernmental and private providers.	Despite her previous experience with AT and access to a special education teacher trained in Braille, orientation and mobility, these procurement challenges have impacted her ability to study. "*Sometimes I get frustrated. Actually often. I mean, right now, this school here is kind of hard. My grades are getting low.*" Mataiti from Cook Islands lost his mobility and ability to speak after fish poisoning. After rehabilitation in New Zealand and a lot of hard work, Mataiti regained the ability to walk; however, he still struggles with speech. Mataiti has been unable to access support in finding communication AT. He is frequently frustrated by the free text-to-speech app for his phone. "*It is slow. I use Facebook or email. This talking, it's slow. Hard. There must be better apps.*"
Policy and finance	**A lack of data** makes it impossible to quantify AT need and/or unmet need. **No AT-specific policies**: With the exception of the Papua New Guinea guidelines for provision of AT, no AT guidelines and/or policies were identified. However, national disability policies in most countries identify access to AT as a priority, and some countries include rehabilitation and AT in health plans or strategies. AT is financed through government, AT users and/or their families and donors. **Cost is a prohibitive factor for many**: It was generally reported that the cost of reading glasses (3–8 Australian dollars) would be affordable; however, products that are more expensive would be unaffordable for many. **Limited budgeting for AT**: Few countries reported budgeting for AT consistently within annual health budgets. Some rehabilitation and other departments within health services procure limited quantities of AT, utilizing their "supplies" budget.	Ofa lost his vision following a schoolyard accident when he was age 11. Ofa left his home in Tonga to continue his schooling at the Fiji School for the Blind, where he learnt how to become independent by using vision AT, including Braille, computer software, and a white cane. "*After that I felt I was blind but not limited. So, to me, when you're talking about assistive products… you're talking about accessibility, because for us people with disability, that is the way we can access things. Like for example, screen-reading software. Without that, I can't check my email and access the world. And a white cane, that is very useful. With it, we can have confidence for walking. But actually, we can't afford to buy.*"

4.2 Procurement stages in practice in the region

	Summary of responses to consultations	Illustrative stories and quotes
Stage 1: Plan	**Awareness and demand**: Planning is negatively impacted by low awareness of what products may be useful, who needs them, where to get them and how to provide them. **Annual budget and planning cycles**: AT procurement is not well integrated into annual budget and planning cycles, and generally appears to have a low priority. **Priority lists**: Most countries maintain an essential medicines list (informed by the WHO Essential Medicines List) to guide pharmaceutical procurement. There are no AT priority lists. **Data**: Limited or no data available to inform AT procurement. **Consultation**: • Existing and potential AT users are not consulted in decisions about which products are prioritized, procured or provided. • In-country personnel are often not involved in procurement decisions by visiting teams and/or donors. • There are cooperative and consultative relationships between procurement and service delivery personnel.	*"We are discussing in this company [private pharmacy] to bring [in] walking sticks, supports, everything. [Then] they will see and be aware of these products and buy them."* *"I think at the moment we don't have any data on what's used or needed."* *"A lot of kids are bedridden. They could use adaptive chairs but getting the right type, I wouldn't know where to start with that."* *"We want a standard. Rather than just getting anything coming in, we know what is required, what's appropriate. If we only get what's really required, there's no wastage and there's enough to go around."*
Stage 2: Source	**Established procedures** are in place for requesting, receiving and evaluating quotes. **Knowledge, information and expertise**: • Procurement and service delivery personnel reported low confidence in their knowledge to source appropriate AT. • Vendors are frequently selected based on price as the primary factor, reportedly due to a lack of other measures, such as product features, quality and minimum standards. **No product minimum standards or agreed specifications**: Frequently identified as a barrier in requesting and evaluating quotes and evaluating offers of donated equipment. **Identifying suppliers**: Identifying reliable, consistent suppliers was reported as a significant challenge, as was the need to deal with multiple suppliers to access a range of AT. Sourcing online is a common approach, but it was reported as problematic and often unsuccessful.	*"We can use the [annual supplies] budget for glasses and low-vision products. So, we would need to communicate with stores what we need, and that's where the training comes in. These are what we need, these are the specs, these are the suppliers – we don't know that, that's what we need."* *"Some glasses, after six months the glass lens fades and they cannot see anything. Sometimes the frames break, due to poor quality."*

	Summary of responses to consultations	Illustrative stories and quotes
Stage 3: Manage logistics	**Ordering and tracking**: Established logistics systems are in place in most countries for medicines and medical supplies, including ordering and tracking orders ahead of arrival. These systems can be, and in some places are, used to support AT procurement. **Shipping**: All countries experience lengthy procurement time frames, with some of this due to the time involved in shipping. **Customs clearance and taxes**: Tax exemption is available in most countries for AT imported by government, NGOs and/or donors. Commercial suppliers pay duty. **Storage and distribution**: Many countries face challenges with storage and domestic freight, in particular for larger items such as wheelchairs.	*"Donations from [overseas] of used hearing aids, they used us as a dumping ground, they were not functioning well."* *"Ordering overseas, it can be months and months before they arrive."*
Stage 4: Use products	**Stock control**: No strong examples of formal stock control systems for AT were identified, although a number of countries have introduced computerized stock control systems for medicines that could be applied to AT. **Service delivery**: As noted in section 5.3, effective use of products is challenged by a lack of workforce. A number of people noted that their number one barrier (more significant than procurement challenges) is lack of training and/or personnel. **Data on use of AT**: There are few examples of data systems in place to track service delivery (clients receiving devices and information about these clients), with a few notable exceptions.[8]	*"We have an audiology room but it is not sound treated. We are doing our very best to do what we can under terrible conditions."* *"The container [we use for storage], donated in 2010, is now rotten. So, we need a storage room or space. [We are] talking about this now. Storage is a problem."* *"[We need] an evaluation to see how good devices are. [With] more research to assess the devices we can request better quality."*
Stage 5: Evaluate	**Product trials and evaluation**: There is no systematic evaluation of products, resulting in a limited pool of knowledge regarding what works for people in the context in which they live.	

5. Study findings: overall themes

5.1 Awareness and demand

The study highlighted low levels of awareness of AT among service users, personnel and policy-makers. This extended to a lack of awareness of what AT is, the types of AT that could be available, where to source AT and what is required to provide it. While most people were familiar with mobility AT, people were less familiar with AT in other domains, in particular AT for self-care, communication and cognition.

[8] Marshall Islands Early Detection and Intervention Hearing programme has a cloud-based system set up by its collaborating overseas partner; six countries in the region operate a nationally contextualized version of Motivation Australia's "Mobility Device Service Data Base" to track mobility device service provision.

Poor awareness was recognized by many informants as limiting the demand for AT. Limited demand means there are few commercial incentives to drive the supply of AT. One procurement manager noted: "People are not aware. Rights are not realized, so I would say [we need] rights and awareness locally for consumers to say [they] need attention."

5.2 AT users

5.2.1 Participation and representation in AT decision-making

A lack of representation from those who need and use AT in the planning, service delivery and evaluation of AT initiatives in the region was a common theme. As noted by one AT user: "Honestly, people with disability don't have any choice, they get what they are given." This is contrary to the rights of any person to be central in the decision-making process about the services they receive. It also puts at risk the effectiveness of AT planning, by missing the opportunity to understand the requirements and effectiveness of AT solutions from the perspective of those most affected.

The noted lack of AT user representation is compounded by the diversity of those who need AT. While the Pacific has a strong and organized DPO network led by PDF as the peak body, it is not only people who identify as having a disability who need AT. People with health conditions, injuries or older people are less organized as consumer groups and therefore less likely to have their needs represented.

5.2.2 Who is left behind?

Consultations highlighted that children, older people, those who live farthest from services and those with fewer resources are all less likely to access AT than others.

Children were reported as not accessing the rehabilitation and AT services they require early enough, with many children with disabilities left outside of mainstream health and education systems. Provision of AT to support children with disabilities in education was consistently lacking, even where there are inclusive education policies and programmes in place. One respondent noted: "…we want to be inclusive, but the reality is many mainstream schools are sending students back to special schools….teachers are reluctant to know more about different organizations in place for getting AT and other things to assist students with disabilities."

There is an absence of systematic screening in schools for vision and hearing. This points to a high likelihood of an unrecognized need for glasses, hearing aids and support. The absence of AT puts these children at risk of significant long-term impact on their overall development, learning and future prospects.

Older people often require more AT as ageing progresses. The older population is growing in the region, with an expected increase from 376 000 in 2000 to over 2.2 million by 2050 *(12)*. There is currently a low level of awareness of AT that can assist older people in sustaining a level of independence and ability to continue to contribute to their families and communities, an important aspect of Pacific culture. There is also limited availability of services with which to quantify the multiple AT needs of older people holistically across more than one AT domain. While there is some availability of mobility devices, other AT often needed as people age, such as AT for self-care, hearing, vision and cognition, is limited.

Additionally, it was noted that older people are less likely to be offered AT unless they have another reason to access the health system. One rehabilitation professional said, "Most frail aged don't have a reason for admittance [to hospital], just a weakness, but they need a wheelchair or crutches. They don't get access. Because they don't know about the service, and they cannot come into town". The AT needs of many older people are not identified until after an acute hospital admission (such as for a stroke) or until they access services for secondary complications of diabetes (such as diabetic foot wounds or eyesight issues).

People who live farthest from services are particularly disadvantaged, with existing AT supply centred around tertiary health facilities and urban centres where there may be a private sector supply, or in some instances, secondary-level health facilities. One respondent shared that "it is harder for people in the province, because there are not enough staff. Harder if they are far from the hospital. They cannot get to the community-based rehabilitation worker and the worker cannot get to them. They are scattered. There is no budget for fuel."

A low level of awareness, information and understanding of AT across the health sector means that established referral pathways from community to specialist services have minimal effectiveness for AT referrals. Basic AT can be provided by primary health personnel; however, this is not widespread. This emphasizes the current reliance on centrally based services requiring individuals from remote or outer island locations to travel for access. Even where services are free of charge, the cost of travel and associated disruption to family life were identified as barriers to access.

People who cannot independently afford AT are at a disadvantage, given the limited AT available through government- or donor-funded systems. Where basic AT is available, it is often unaffordable. Those with limited incomes are also less likely to have the resources to identify an appropriate AT solution, let alone procure it. One respondent noted, "Some wealthy families can afford and purchase [it] themselves. One family took their child to New Zealand for a cochlear implant, for example. Some can buy from overseas, but for many, it is not possible."

Overall, cost is considered to be a prohibitive barrier for the majority of people, further reducing demand. In many PICs, health services are provided free of charge or with minimal co-payments from service users. For AT to be more readily available, the cost of provision (inclusive of procurement, service delivery and maintenance costs) would need to be made more affordable.

There is also greater focus in the Pacific on reaching out to marginalized members of the disability community whose voices are still missing in development efforts, including those focused on access to rehabilitation and AT. PDF and national DPOs, for example, are working to reach and include women with disabilities, young people with disabilities, people with psychosocial disabilities, people with intellectual disabilities, indigenous persons with disabilities, and people with deafness and blindness in an effort to better understand their situation and more collaboratively represent the diverse priorities of the disability community. Engaging with these potential users is important in informing AT solutions moving forward and is likely to help diversify the AT products and services available in the Pacific.

Gender was not specifically identified as either a barrier or enabler by respondents; however, it should be noted that there is a body of evidence that suggests that gender does play a role in access and the experience of access to essential services in the Pacific. Gender and its impact on access to, and use of, AT should be considered in solutions moving forward.

5.2.3 AT and NCDs

NCDs such as stroke, chronic respiratory diseases and diabetes are resulting in a high demand for health, rehabilitation and AT services across the region. This demand will continue to grow unless there is a dramatic improvement in the rate of NCDs. Respondents consistently identified people with NCDs as a significant group of AT users, in particular, of mobility devices. However, this group may also need low-vision aids (due to diabetic retinopathy), self-care AT (due to limited mobility or incontinence) and communication AT (stroke-related speech impairment), as well as other AT related to ageing (hearing, vision and cognition).

Gaps in the current supply of AT result in poor outcomes for those with NCDs and their families. They also carry a cost to the health system. A number of service providers highlighted increased costs associated with a lack of readily available AT due to delays in discharge and development of secondary complications. "I'm an orthopaedic surgeon, so a lot of my work depends on people having assistive devices. Easiest is mobility aids post-operative. I can't keep [the patient] that long in the hospital. Assistive products will assist me to send them home. But if I can't give a crutch [for example] post-operative, they stay long. If we put a value on admission days, we would save a lot of money – 40 crutches save [converted] 720 Australian dollars a day."

5.2.4 People frequently have multiple AT needs

The majority of AT users are likely to need more than one AT device, often spanning a range of different AT domains and throughout their life *(40)*. For example, a child with cerebral palsy may require a wheelchair and supportive seat, a communication board and a hearing aid, many of which may need to be adapted or replaced as the child grows. A person who has had a stroke may need a walking aid, raised toilet seat and (unrelated to the stroke) reading glasses. An appropriate combination of AT is key for successful AT outcomes that result in overall improved function, participation and inclusion *(41).*

However, due to weaknesses in supply across the majority of AT domains, even where people have accessed AT, they are unlikely to have all the AT they need at the time they would benefit from them.

5.3 National rehabilitation and AT services and workforce

Effective AT provision requires service delivery by trained personnel with knowledge, skills and facilities to be able to work with AT users to meet their AT needs. While the focus of this study was on procurement, it was important to also consider the existing and potential capacity of the region's rehabilitation and AT services.

Many respondents raised lack of service capacity as a concern and highlighted that actions to strengthen access to AT must be holistic, considering people, procurement, personnel, provision and policy. It was also noted that rehabilitation and AT are often not a health priority, resulting in fewer resources being allocated. One respondent said, "I think that the focus is more on preventative primary health care, and curative for inpatients, but what happens after a patient goes home? Rehabilitation is needed and going home is not the end." There is, however, evidence that this is changing, with a growing awareness and support for both rehabilitation and AT.

Regardless of this positive momentum, health services in the region face very real constraints. Even where there are staff in place with the right skills and training, the volume of work and scarce resources limit provision of comprehensive services. One service manager noted: "The coverage for pickup and screening for kids with refractive errors is not good. There was a programme, but not anymore. Staff involved were then tied up with other things. Doing school screening annually requires [human resources] they don't have."

Referral networks were identified by a number of respondents as being weak among different levels of the health system (for example, from community to tertiary) or among departments (for example, from medical to rehabilitation to eye health). Similar limitations existed in referral networks among health and other sector stakeholders, such as education and social sector service providers that may also provide AT and support services.

5.3.1 Visiting medical teams and AT service providers

Visiting medical teams were not explored in great depth during the study; however, there may be value in analysing this further, for the purpose of assessing whether the expertise of visiting teams could be better harnessed and rehabilitation and AT outcomes enhanced. It is clear however that they can be an important adjunct to national health systems in many countries in the region, and were recognized by informants as both part of the solution and part of the problem in relation to access to AT. For example, some AT, most notably hearing aids, are provided as donations through visiting missions, utilizing expatriate expertise, local coordination and products selected by the mission. Difficult to refuse due to the lack of alternative local options, informants recognized a number of disadvantages with this model, including challenges with consistency of service, follow-up, data control, choice of technology, a lack of training for national personnel and sustainability risks. Informants felt that more could be done by donors to ensure that their donations were well coordinated with national service systems, were appropriate for users and the Pacific environment, and contributed to the building of increased national capacity.

5.3.2 *Emerging private sector partnerships for service delivery*

A number of emerging private sector partnerships to meet AT service needs were identified. These could be further explored as promising strategies for the strengthening of national service delivery, along with appropriate measures to ensure minimum standards of care are met.

In the Marshall Islands, the nation's only private optician has been employed by the Ministry of Health to carry out vision screening on selected outer islands. The optician then provided prescription glasses to those identified with refractive error. The glasses were purchased by the Government from her at a reduced rate and provided to recipients free of charge.

In another example, the Rehabilitation Division in Solomon Islands has discussed stocking basic AT (for example, walking aids) with private pharmacists. They could then refer clients with the financial means to purchase devices from the pharmacy. One of the rehabilitation staff said, "Those calling up are the ones who are desperate, who really need the equipment. So, if we don't have stock, it is a problem. So, we started to see if the chemist can stock, so then they can buy it." If such a system were established, rehabilitation personnel would provide their clients with a prescription for the correct walking aid, be available to adjust and fit the walking aid for the client, and provide training in its use.

In Fiji, a different private sector model has been trialled by Brien Holden Vision Institute, which supported a local private optical technician by giving him exclusive access to comparatively better-quality glasses (lenses and frames) at a subsidized cost. The bulk of savings are passed on to the customer, and the optical technician makes an agreed, modest profit to sustain the business. The business is able to offer a better-quality product than ready-made glasses available in the pharmacies and cheaper prescription glasses than those available from opticians. Many of the customers using the optical technician's service have their eyes tested free of charge at the Pacific Eye Institute and are referred to him to fulfil the glasses prescription.

5.3.3 *Emergency preparation and response*

No examples of AT being considered in emergency preparedness and responses were reported, although some respondents agreed this was an area that should be considered. "When the cyclone hit, no one was prepared. The only preparation we did was nail boards on windows and stock up water. We went back to our clients to talk to them about what happened before or after. If I recall, no one mentioned assistive products."

"There is really nothing done on that. At the moment the Ministry is working on a mechanism for disaster response that incorporates rehabilitation and called for rehab officers to be part of that. They will look at the needs of rehabilitation and people with disabilities after disasters, but nothing is in place."

5.4 AT procurement

Consultations explored overall procurement capacity and challenges. Some challenges are common to all procurement, such as limited purchasing power, long lead times and difficulties in communicating with suppliers.

Challenges that particularly affect the success of AT procurement highlighted by the study include:
- no priority list of products and product specifications
- difficulty accessing product and supplier information
- complexity and time associated with having to deal with multiple suppliers to access a range of AT
- evaluating products
- managing logistics.

There was considerable interest in, and goodwill towards, improving the situation and much that can be learnt from procurement experience in the region and the sector. Existing procurement systems and regulatory frameworks were also investigated.

5.4.1 Priority products and specifications

Most countries maintain an essential medicines list which is informed by the WHO Essential Medicines List (EML). National essential medicines lists are maintained by a tasked committee of experts and used to guide government pharmaceutical procurement. There were also instances noted where the national list influences stock carried by private pharmacies.

The WHO EML has been in existence since 1977. In more recent times, three further lists have been established to guide WHO Member States in health-related procurement. This includes the WHO Assistive Products List (APL), developed through a global consultation process and consisting of 50 AT product variants. WHO encourages countries and regions to utilize the WHO APL as a blueprint that can be contextualized for local application.

There was awareness of the WHO APL among most Pacific stakeholders with direct involvement in rehabilitation and AT. However, as yet, no country has used this tool to develop a national priority list of AT. A number of respondents noted that the lack of a priority list makes planning for AT more difficult, and in particular, hampers the advocacy for inclusion of AT during annual budgeting cycles. A Pacific-specific assistive products list would go some way in addressing this planning and budgeting issue.

Detailed product specifications and use guidelines were also commonly requested by AT users, personnel involved in service delivery, procurement and management, and some private sector providers. The lack of product specifications, compounded by a lack of AT knowledge, was seen as a key procurement barrier, limiting the ability of stakeholders to be specific in quote requests, and to evaluate products offered by suppliers based on factors other than cost. A number of respondents suggested that minimum standards would provide a measure by which donations of AT could be assessed and in some instances refused. One service manager said, “We want a standard. Rather than just getting anything coming in, we know what is required, what’s appropriate, we only get what’s really required, there’s no wastage and there’s enough to go around.” One procurement manager stated, “In the supply chain we are the end of the line, so [we need] good information about the product and [need] to know the reason why we are buying the product. Knowing the use, the urgency, and what happens if it is not there, we have understanding whenever we look at any item and can execute procurement more effectively.”

5.4.2 Access to information about products and suppliers

Informants reported a low level of confidence in procurement of AT, likely due to limited exposure to different AT in the region for all stakeholders and lack of training for personnel in AT. Procurement personnel emphasized that they rely on service providers to provide information regarding what products are required; however, service providers are often unsure themselves which products to procure. Research online is difficult. The information available is often incomplete, not relevant to the Pacific context and not impartial.

Many respondents highlighted their need for an easier gateway to trusted and reliable information about products and suppliers. The concept of an entity offering a catalogue of pre-selected stock that meets agreed PIC standards at competitive prices was highlighted as a means to increasing the efficiency and effectiveness of sourcing and procurement overall.

Evaluation of the products in use in the region was identified as lacking and highlighted as a missed opportunity to inform future procurement. Respondents recognized the potential benefits of systematically evaluating the performance of products but highlighted workforce capacity challenges that would make this difficult.

5.4.3 Inventory and stock management

There were just a few examples of systematic use of inventory or stock management systems for AT, despite some countries making significant headway on the development of such systems for pharmaceuticals.

5.4.4 Procurement models

Study informants highlighted that procurement solutions need to align with PIC procurement regulations. Additionally, a traditional "pooled procurement" model was identified by all stakeholders as being unlikely to succeed in this context. Rather, a supply chain hub that allows buyers to purchase at their own discretion, according to their own procurement cycle, annual plan and procurement regulations was considered more likely to be successful. Such a supply chain hub should be prepared to operate in a competitive procurement bidding environment, and be structured to have the flexibility to engage with individual PIC bidding documents, templates, compliance and governance requirements.

A small number of Pacific mobility device services are already procuring wheelchairs through CLASP (see section 3.1.1), which is an example of such a supply chain hub. The ability to customize an order through one supplier into a single consignment, consisting of the required quantity of a range of mobility devices that have been preselected by a group of experts, has obvious benefits for PICs.

6. Discussion of findings

6.1 Awareness and demand

The study highlighted low levels of awareness and information about AT among all stakeholders, and a corresponding lack of informed demand for appropriate AT and associated services.

This has significant implications for the strengthening of AT access in the region, as actions need to be advocated for and guided by well-informed Pacific stakeholders. For example, development of a Pacific APL that serves the needs and context in the Pacific requires awareness and experience of each of the different AT domains (cognition, communication, hearing, mobility, self-care and vision), product range and service requirements. In the absence of services and allocation of government funds for AT, there is also a lack of awareness and capacity in determining the cost benefits associated with access to AT for the user, families and, in particular, the health sector. While studies demonstrate cost benefits of rehabilitation, greater efforts by health ministries (in some cases social ministries) to plan and monitor expenditure on AT, in consultation with AT users, is likely to inform public resource allocation. In the longer term, and considering the many competing priorities for PICs to consider when allocating health budgets, sustaining AT services will require a stronger, more clearly articulated and well-evidenced demand.

Study recommendations, therefore, need to consider how to support a process by which Pacific stakeholders have the opportunity to be further informed and enabled to advocate for and make effective decisions now, and that AT expertise, information and knowledge are increasingly held locally as the AT sector in the region, and globally, continues to evolve.

6.2 Representation

A lack of representation in AT decision-making by those who use AT was a consistent finding. There is a clear need for effective mechanisms to better engage service users in decisions about their individual needs as well as the implementation of recommendations for strengthening AT nationally and regionally. This needs to include consideration of those who may not be represented by DPOs, such as people with disabling health conditions and older people, marginalized groups of persons with disabilities, and those with more complex functional limitations requiring AT which is less well known in the Pacific at present. It is also worth noting that if only existing AT users are consulted and tasked with prioritizing AT needs, then underserved domains such as self-care, communication and cognition, will likely remain marginalized. Consultation mechanisms, therefore, need to incorporate the needs of existing and potential AT users.

6.3 Regional and national actions

The Pacific region has a history of successful regional collaboration, with Pacific leaders working together on shared issues in order to maximize the collective potential of PICs. The study findings highlight several actions likely to be more efficiently implemented through a collaborative approach, reducing the resource burden on individual PICs. In particular, this includes the development of guidelines, standards, information and shared learning. At the same time, each PIC will need to both inform and contextualize these regional resources for its own country, and implement them within national frameworks and priorities. In the context where access to AT is prioritized in policies outside of health, a strong focus and link with national health ministries will be important to ensure that actions are informed by and support the achievement of national health priorities.

6.4 AT procurement

Procurement was confirmed to be a key barrier in access to AT throughout the region, with high degrees of frustration experienced by many service personnel and users. Practical solutions were acknowledged as needing to address more effective prioritization, access to information and knowledge by those procuring, and improved supply chain mechanisms. Overall, improvement in AT procurement has the potential for a range of economic and human resources cost savings as well as better outcomes for a greater number of service users through:

- easier access to product, supplier and other procurement information
- reduced complexity of procurement processes
- consolidating orders across AT ranges and domains (reduced logistics and freight costs)
- use of economies of scale
- harmonizing products and spare parts simplifying service delivery and maintenance
- reducing stock-outs and therefore ensuring more consistent service delivery
- consideration of the whole-of-product life cycle costs, including repairs and maintenance.

Furthermore, strengthened procurement and a corresponding increase in the availability of AT will itself increase awareness of AT, potentially acting as a catalyst for other actions, including capacity-building of national service providers.

The lack of AT product and procurement knowledge among service and procurement personnel and managers must be addressed to ensure that Pacific stakeholders become increasingly informed AT consumers, able to select the most appropriate products for use and maintenance in the Pacific context. Building an effective platform of relevant AT information, product specifications for priority products and shared results from product trials were all seen as priorities, distinct from strengthening the supply chain.

The study concluded that while there are distinct advantages in a regional approach to procurement, a “pooled procurement” model for AT is unlikely to succeed and may disadvantage smaller PICs in particular. Instead, recommendations should prioritize the establishment of a commercial supply chain hub that allows PICs and nongovernment buyers to purchase at their discretion, according to their procurement cycle, annual plan and procurement regulations. Such a supply chain hub should be prepared to operate in a competitive procurement environment, and be structured to have the flexibility to engage with individual PIC bidding documents, templates, compliance and governance requirements. An effective supply chain model that is responsive to well-informed and clearly expressed Pacific requirements, could overcome barriers, such as ensuring products meet accepted standards, reducing the need to liaise with multiple suppliers and handling of multiple consignments.

In a region with high logistical costs and many challenges, there are currently very few incentives for commercial suppliers of AT to enter the market and offer quality products. A supply chain hub (based on a commercial model) will have to make considerable investments to deliver on the expectations outlined above and sustain itself financially over the long term. For the reasons outlined in section 4.2, a purely market-based solution is unlikely to be financially viable and innovative approaches such as public–private partnerships and

donor subsidized prices should be considered. Due to the complexity of establishing a supply chain hub, the specialist technical knowledge required for appropriate use in LMICs, and the need to know and understand the Pacific region, it is unlikely that an existing commercial supplier could fulfil the task unassisted.

6.5 National AT services

Existing AT services and trained personnel were recognized as being insufficient to meet the current demand for AT even though demand is weak in comparison with overall need. Gaps and inequities were identified across the different domains of AT, throughout the various service steps and in specific contexts, such as during emergency responses.

While strengthening AT procurement has the potential to support existing AT services, parallel action is needed to grow the capacity of AT services to provide to AT users more and better AT products, and support them throughout the service steps and product life cycle. This includes consideration of workforce requirements, technical resources and service systems. Additionally, if AT provision is to be safe and successful, there needs to be effective integration with rehabilitation and across the health system to ensure that those who may need AT are identified, and their needs are considered holistically.

Furthermore, the emerging private sector engagement in AT provision could form part of the solution. However, in an operating environment that lacks product and service standards or regulations, there are considerable risks for AT users related to the appropriateness of AT solutions. If issues of minimum standards (for products, staff training and service delivery), regulation, price control and referrals could be addressed, the growing number of private pharmacies and other entities, and their location close to the communities where people live, are opportunities to increase the availability of a basic level of AT that can safely be provided with a very simple service component. Similarly, there are opportunities to be explored in supporting localized private sector provision of more specialist AT such as prescription glasses.

6.6 Cooperation and governance across the AT value chain

AT provision activities from manufacturing, supply, service delivery and use are carried out by a diverse range of organizations and stakeholders. At present, activities along this process of AT access are fragmented and complex, with minimal coordination, cooperation and feedback among different stakeholders and entities involved. Many of the current issues with procurement and supply of AT in particular stem from the challenges of communication and exchange of information among stakeholders in the supply chain.

Viewing AT provision as an AT value chain[9] may help to improve this situation. In a value chain, each stakeholder adds value at the step of the process they are performing, as well as taking an active interest in the success of the whole process. In this model, government (in particular, ministries of health as responsible for leading on AT procurement and service delivery) and nongovernmental and commercial organizations cooperate and buy in to the overall endeavour of providing appropriate AT to those who need it. Stakeholders would share and discuss collective priorities, user and procurement-related data, financing priorities and options, troubleshoot AT value chain issues, and identify further research priorities. Strengthening AT provision in the Pacific, therefore, may benefit from an overall AT value chain framework that facilitates more effective cooperation among all stakeholders for the success of the whole.

Cooperation needs to be facilitated within good governance structures. The majority of the supply chain of industrially manufactured products (including AT) consists of commercial companies. However, the majority of AT service delivery in PICs is performed by non-commercial agencies, including government, NGOs, faith-based organizations (FBOs) and others. Commercial entities are motivated to maximize financial returns while AT service providers are motivated by quality outcomes for service users. Therefore, strategies to ensure separation between organizations performing commercial supply chain activities and those delivering the "social mission" of better AT provision, is important in reducing governance risks and managing tensions that can arise when conflicting interests are merged within a single entity *(42)*.

[9] Term inspired by: http://fatvc.nish.ac.in

6.7 Financing

The cost of AT and the limited purchasing power of individual AT users and their families were identified as critical barriers to access. Combined with a lack of awareness and information, this has severely limited consumer demand and has not driven supply. Similarly, there was no identification of any ongoing public resources being allocated for AT within domestic budgets, or examples of AT financing options being considered at present by PIC governments. A lack of domestic resources, in turn, is limiting the sustainability and broader health and socioeconomic benefits of AT provision. It is also evident that the market for AT in PICs is currently made up of a small number of government departments, NGOs, FBOs and only a very small number of individual AT users and their families. Even in countries with well-developed economies, the disability products and services sector is largely dependent on government subsidies and social insurance schemes such as the National Disability Insurance Scheme in Australia.

There is a clear economic case for keeping citizens actively participating in society and addressing the downward spiral of ill health and disability, through improving access to rehabilitation and AT. Therefore, for proposed solutions to result in AT being equitably available and affordable by everyone who needs it, a system of co-payments or subsidization and support by national governments, development partners and donors will likely be necessary for the foreseeable future. With greater investment by the Pacific Islands Forum and PDF to strengthen the capacity of governments in CRPD-compliant budgeting in the future, it is anticipated that public resource allocations will progressively increase and support the sustainability of AT provision.

7. Conclusions

There is a growing and increasingly urgent need for AT in the Pacific region. The study confirmed that despite tremendous commitment and dedication by AT stakeholders and some areas of success, AT provision at present is characterized by predominantly ad hoc, fragmented services, with significant human resources, technical and policy constraints. This has led to inconsistent and inequitable access to a limited range of often inappropriate AT, with many people being left behind completely. However, existing obligations and commitments from PICs to the PFRPD, UHC, CRPD, SDGs and corresponding national frameworks create strong national and regional motivation to develop practical solutions for the sector. This is supported by increased global attention and commitment to make AT accessible for all, which is opening up new possibilities for resources, assistance and shared learning.

While confirming an overall picture of the status of AT that is already well understood by many stakeholders in the region, the study findings provide important messages for consideration in framing recommendations and next steps as follows.

- **Awareness of and information about AT**
  The study highlighted low levels of awareness of and information about AT among all stakeholders, and a corresponding lack of informed demand for appropriate AT and associated services. PIC stakeholders want to be better informed to be able to advocate for and make effective decisions.

- **Better representation in decision-making by those who use and could benefit from AT**
  There is a clear need for effective mechanisms to better engage all service users in decisions about their individual needs as well as in the implementation of recommendations for strengthening AT nationally and regionally.

- **A collaborative approach**
  A collaborative approach to the development of regional blueprint product and service specifications, guidelines, standards and other information resources is likely to be more efficient than a purely national approach. At the same time, it is recognized that each PIC will need to both inform the development of such resources and contextualize these for their own country, implementing them within the context of national frameworks and priorities.

- **Existing procurement models and approaches**
  There are distinct advantages in a regional approach to procurement; however, a "pooled procurement" model for the supply of AT is unlikely to succeed. Instead, recommendations should prioritize the establishment of a supply chain hub that allows PICs and nongovernment buyers to purchase at their discretion, according to their procurement cycle, annual plan and procurement regulations.

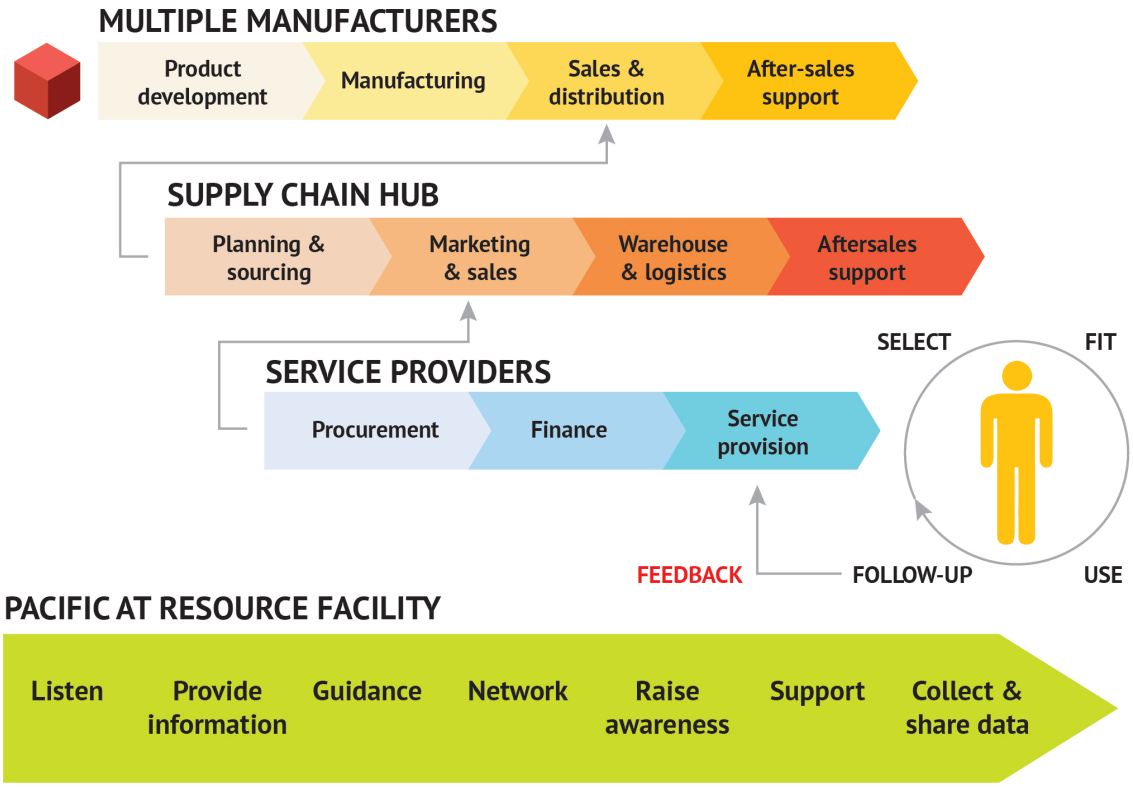
- **Access to services and affordability**
  Coordinating access to service provision and affordability of AT are two key areas that national governments could explore to increase equity of access. In order for AT to be more equitably available and affordable by everyone who needs it, increased support for service providers and some degree of subsidization of AT products by national governments may be necessary at some level.

- **The AT value chain (Fig. 8)**
  AT procurement cannot be viewed in isolation but rather as a critical and interdependent step within an overall AT value chain (inclusive of manufacture, supply, service delivery and end use). Efforts to increase access to AT in the region require coordination across and among all stakeholders and participants of the AT value chain. These efforts should be characterized by good communication with effective feedback loops among all stakeholders, particularly end users, as well as agreed guidelines and standards.

- **Governance**
  Recognizing the role and functions of each stakeholder within the AT value chain, cooperation and good governance mechanisms will help facilitate more effective economic, social and commercial outcomes. Separation between organizations performing the "social mission" of better AT provision and commercial supply chain activities should be maintained to mitigate conflicts of interest and other risks to the whole system.

- **Opportunity and risk**
  The positive impacts of timely and appropriate access to AT for individuals, communities and nations are demonstrable. In contrast, not acting now to systematically increase access to AT increases the risk of further excluding and leaving people behind, and continuing to negatively impact outcomes for people and countries meeting their national, regional and international commitments, including with respect to disability, health and disability rights frameworks.

Fig. 8. The assistive technology (AT) value chain



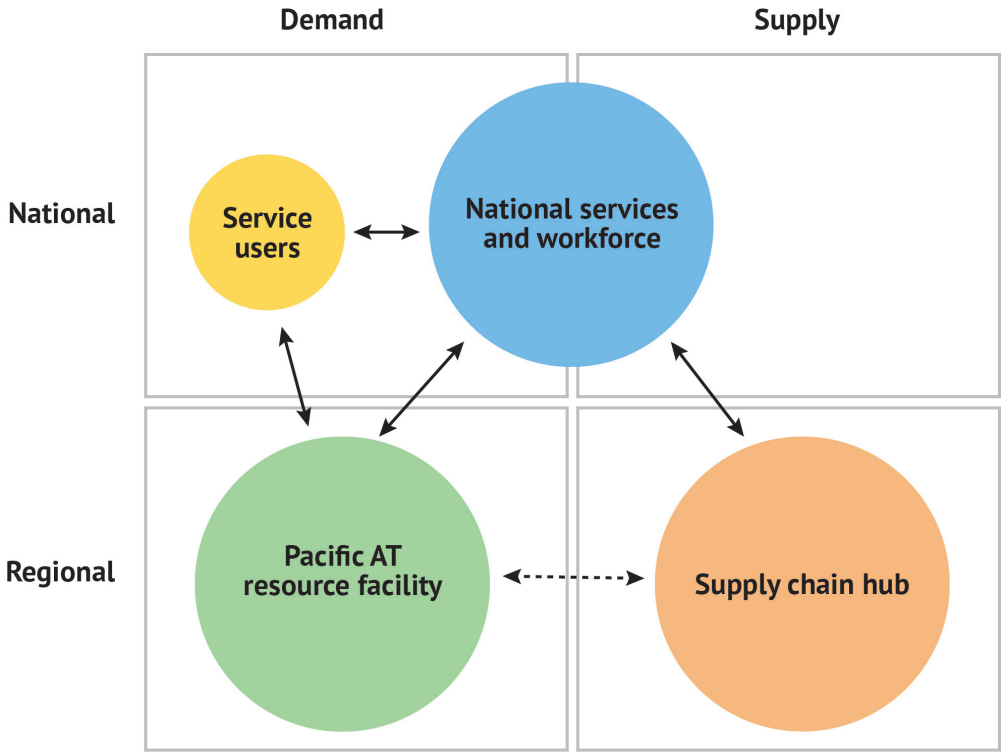
8. Recommendations

8.1 Recommendations

Three overarching study recommendations represent three interacting and interdependent areas of activities (Fig. 9).

1. **Establish a Pacific AT resource facility**
2. **Establish an AT supply chain hub**
3. **Strengthen national AT services and workforce within health systems.**

Fig. 9. Interactions of the three study recommendations positioned according to supply–demand and national–regional scope



The three recommendations need to work together across the AT value chain:

- to increase awareness of and information about AT, increase user representation, stimulate effective and sustained demand for more and better products and services;
- to socialize and promote the unifying concept of the AT value chain, and improve coordination and communication between all stakeholders; and
- to ensure that as awareness and demand are increased, the supply aspects of the AT value chain are strengthened, including improved procurement and logistics and the necessary increase in AT service capacity at the national level.

8.2 Guiding principles

The following three overarching principles are offered to guide next steps:

1. Recognize and ensure the centrality and active participation of AT users in the planning, implementation and evaluation of all actions to strengthen access to AT.
2. AT must be appropriate, affordable, consistently available and delivered through services by trained personnel.
3. Using good governance principles, maintain separation between the Pacific AT resource facility, national service providers and the supply chain hub to manage conflicts of interest.

8.3 Pacific AT resource facility

The purpose of the proposed Pacific AT resource facility is to provide Pacific AT stakeholders across the AT value chain with a source of impartial, reliable and Pacific-specific information, resources and guidance on AT products and services, drawn from global best practice and responsive to the needs, experiences and shared learning of AT users and service providers in the Pacific. The Pacific AT resource facility would be responsible for the overall promotion and socializing of the AT value chain; encouraging and facilitating all stakeholders to jointly deliver on the promise of more and better AT products and services; acting as an information and resource platform for all stakeholders; and facilitating effective feedback loops, in particular, from AT users to other participants.

8.3.1 What the proposed Pacific AT resource facility would do

- **Create a governance structure** that places the Pacific AT resource facility within an existing regional entity with the relevant mandate to provide technical advice and support to national stakeholders, and that is capable of delivering on the promise of being a source of reliable, impartial expertise, information and guidance for the region.
- **Listen to AT users** and incorporate their voice by gathering feedback, conducting market research, working with user groups and representative bodies such as DPOs and consumer groups.
- **Lead on the development of regional resources through technical assistance** with an initial priority being the development of a consensus-agreed Pacific APL with accompanying plain language product and use specifications, and subsequently create a forum for the ongoing discussion of other resources, such as service, training and product standards.
- **Provide guidance and information** about AT products, services, training and policy relevant to a range of stakeholders and made freely available through an online platform.
- **Participate in and network with international AT sector initiatives** such as GATE, ATscale and others to bring the latest learning and information to the Pacific region.
- **Raise the public profile and general awareness of AT** and advocate for, identify, create (where necessary) and publish information and educational resources and involve stakeholders in market research.
- **Develop a close partnership with the supply chain hub** to assist with market research, communicate the sectors' priorities, provide content for a product catalogue and support the beginning of the supply of priority devices.
- **Engage with national service providers and personnel** to advertise what the Pacific AT resource facility can offer, provide information and guidance, gather feedback and build relationships.
- **Support and share the results** of evaluations and product trials of AT products and their use in the region and of user feedback.
- **Participate** in collecting and facilitating access to both quantitative and qualitative data on how successful products are for users.

8.3.2 Rationale

- Key Pacific stakeholders recommended that the Pacific AT resource facility would ideally sit within a regional entity with the relevant mandate to provide technical advice and support to national stakeholders. In light of this, and the role of the Pacific AT resource facility (see section 8.1) it is also recommended that the Pacific AT resource facility be the initial focus for implementation, in order for the body to contribute to and guide the design of the implementation of the supply chain hub.
- For information and guidance to be trusted, the Pacific AT resource facility needs to be separate and independent from any commercial interests.
- The Pacific AT resource facility could be implemented in a number of different ways that maintain its impartiality.

8.4 Supply chain hub

The purpose of the proposed supply chain hub is to offer and supply a prioritized range of quality AT as cost-effectively as possible, offering the potential to reduce the current complexity of procurement experienced by PICs through the consolidation of more appropriate prioritized products by one or more readily accessible suppliers. The supply chain hub will also be designed to serve the sector, guided by the Pacific AT resource facility, with participation and contribution to the value chain integral in its mandate.

8.4.1 What the proposed supply chain hub would do

- **Create a business model** that can deliver on the promise of supplying quality AT products as cost-effectively as possible and sustain the supply chain hub initiative into the future.
- **Identify initial donor funding and investment** for start-up capital and subsidize the cost of AT products for end users; create a mechanism to transparently pass on donor subsidies, ensuring consultation with national health and social systems and finance mechanisms to inform progressive resourcing through domestic budgets and systems, particularly health, and to ensure sustainability.
- **Identify a range of reliable suppliers** through a sourcing, selection and contract negotiation process.
- **Develop a close partnership with the Pacific AT resource facility** to understand the sectors' priorities, utilize AT content knowledge to source suppliers and products for an online catalogue.
- **Source priority AT products** that meet the defined specifications, standards or guidelines and needs of the Pacific AT sector.
- **Offer replacement parts** for the AT products in the catalogue.
- **Develop an online AT product catalogue** with easy access to information on products, pricing and shipping to assist procurement personnel to make estimates for budgeting and request quotes.
- **Facilitate mixed orders** of a range of products across different AT domains, from different suppliers and in smaller quantities (than the initial suppliers' minimum order quantities).
- **Manage** warehousing, consolidation, packaging, logistics and shipping to deliver goods to PICs using the most cost-effective methods.
- **Engage with national service providers and personnel** to promote the online catalogue and build relationships.

8.4.2 Rationale

- Many processes along supply chains are commercial in nature and the majority are managed by companies. A company is expected to be the most cost-effective model to make quality AT available, provided it is separated from, yet guided by, the "social mission" of the Pacific AT resource facility and from national services.
- As a commercial entity, the supply chain hub will be expected to compete with alternative suppliers on service, quality and price.
- The supply chain hub approach is not recommended to be a pooled procurement initiative due to the complexity of brokering consensus and other challenges related to pooled procurement experienced in the Pacific. The supply chain hub is not expected to represent a group of purchasers, and, therefore, follows an indirect model of procurement. National governments would not be expected to collaborate on how the supply chain hub will function, what will be offered or on what terms. It is proposed that the catalogue of AT follows an online marketplace approach, open to anyone, without pre-commitments from national governments to procure from the hub.
- A commercial approach creates the opportunity for donors to provide start-up capital and subsidize the cost of AT for the end user, as well as to address financial sustainability of the supply hub. At the same time, donor assistance to create a revolving fund or other finance mechanism could mitigate some of the challenges of start-up cash flow, finance and payments through national governments' procurement processes. Mechanisms will need to be put in place to transparently report on the use of donor funds and ensure that savings are passed onto end users.

8.5 National services and workforce strengthening

National services and workforce strengthening is necessary for AT users to benefit from improvements in regional AT procurement. Each PIC will need to determine, within its own national priorities, health and other sector plans and actions that can be taken to make rehabilitation and AT more accessible to their citizens.

8.5.1 Recommended national actions and what they could achieve

- As much as possible, ensure AT services are localized and delivered by national personnel to ensure AT users have consistent access to sustained services.
- Support an increase in awareness and prioritizing of rehabilitation and AT provision as an integral component of health service delivery.
- Better integrate rehabilitation and AT into health systems, for example: use existing health and other screening and referral pathways to identify AT needs in the population; provide a specified range of basic AT through front-line health personnel; and channel those with more complex AT needs to integrated secondary and/or tertiary level multi-domain AT services that operate in conjunction with relevant medical specialities.
- Strengthen referral between health, education and social welfare sectors to better coordinate the provision of AT for people accessing these different services.
- Work with and contribute to the development of the proposed Pacific AT resource facility, including enabling relevant personnel to participate in forums convened to drive forward actions, such as the development of a priority Pacific APL, product specifications, service and training guidelines.
- Use resources developed by the Pacific AT resource facility, contextualizing them as required, to strengthen procurement, service delivery and workforce planning and implementation.
- Explore the potential for public–private partnership to deliver AT services, considering some of the examples of emerging models identified through this study.
- Invest in training of national personnel in those areas of AT service delivery that require specialist training, for example, prosthetics and orthotics, audiology and optometry.
- Engage national rehabilitation and AT service providers in emergency planning and response, potentially with external technical assistance as required.

9. Next steps

This study was conceived as a first step in comprehensively addressing a recognized issue of limited access to AT in the Pacific, with a focus on procurement as a key barrier. The in-country consultations with a broad range of stakeholders, regional forums, and meetings with senior health personnel and decision-makers have served to raise awareness of rehabilitation and AT, and provided multiple stakeholders with an opportunity to contribute to ideas for priority actions. Overall, the study has provided a more in-depth understanding of existing AT strengths and challenges experienced in the region and offers a framework for a way forward in the three broad recommendations.

The proposed Pacific AT resource facility (Recommendation 1) has the potential to play a pivotal role in supporting the AT value chain in the Pacific, and in particular, a consensus-driven process of development for Pacific blueprint resources that can guide and inform implementation of a supply hub (Recommendation 2) and national actions to strengthen AT procurement, workforce and service delivery (Recommendation 3). In light of this, it is logical for the Pacific AT resource facility to be the initial focus for implementation.

During consultations, Pacific stakeholders recommended that the Pacific AT resource facility sit within a regional entity with the relevant mandate to provide technical advice and support to national stakeholders. Pacific stakeholders further identified a need for key stakeholders to consult on the findings and recommendations of this report, and to determine which regional entity could host the facility, as well as the scope, partnership arrangements, collaboration mechanisms, financial and human resources requirements of this facility.

To continue the positive momentum and capitalize on increased awareness and engagement, a proposed immediate next step is to convene a technical meeting of key regional stakeholders, development partners and donors. This meeting would seek:

- to confirm the study findings and recommendations;
- to discuss establishment and potential partnership and management mechanisms for the proposed Pacific AT resource facility; and
- to identify potential finance mechanisms to progress confirmed recommendations.

Recognizing that moving into an implementation phase will take time, regional agreements and mobilizing of funds, the proposed meeting will also seek to identify priority actions that could be initiated in the short to medium term, such as, and not limited to, the following:

- Develop a Pacific Assistive Product Priority List and product specifications as a necessary precursor to improving the supply chain. This should be carried out through an inclusive process, engaging all national stakeholders, including AT users, informed by the WHO APL, and with assistance from technical partners with relevant Pacific experience.
- Explore opportunities for private–public partnerships for AT service delivery, which has been highlighted as one potential means of increasing service reach.

Further, it is recommended that this study report (inclusive of a plain-English version), be made available to all those who participated in the consultations, and further disseminated and promoted as an important contribution to the understanding of AT in the Pacific region.

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