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ASSISTIVE TECHNOLOGY IN TAJIKISTAN:

SITUATIONAL ANALYSIS





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Abstract

This publication summarizes the current gaps, needs and opportunities for intervention in the field of assistive technology in Tajikistan. The situational analysis was conducted under the leadership of the Ministry of Health and Social Protection, Republic of Tajikistan and with technical support from the WHO Country Office, Tajikistan. It was undertaken in collaboration with different Government ministries and State agencies, development partners, United Nations agencies, nongovernmental organizations, disabled people's organizations and users of assistive products. It adopted a realist synthesis approach, responsive to the unique social, cultural, economic and political circumstances in the country. The evaluation focuses on assistive technology policy and governance, service provision and the impact of assistive technology on the health and well-being of individual users and their families, with the aim of improving access to high-quality, affordable assistive products in Tajikistan.

Keywords

ASSISTIVE TECHNOLOGY

ASSISTIVE PRODUCTS

PRIORITY ASSISTIVE PRODUCTS

ASSISTIVE PRODUCTS – policy

ASSISTIVE PRODUCTS – products

ASSISTIVE PRODUCTS – personnel

ASSISTIVE PRODUCTS – provision

PERSON WITH DISABILITIES – rehabilitation and assistive products

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Abbreviations

APL	assistive products list
ATA	assistive technology assessment tool
ATA-N	assistive technology needs survey
ATA-S	assistive technology systems survey
CBR	community-based rehabilitation
ICRC	International Committee of the Red Cross
ISPO	International Society for Prosthetics and Orthotics
NOC	National Orthopaedic Centre
PPA	Agency on Public Procurement of Goods, Works and Services
SEOP	State Enterprise Orthopaedic Plant
TJS	Tajik somoni (currency)
UNICEF	United Nations Children's Fund

Executive summary

Purpose

The main purpose of the situational analysis was to inform the process of developing a national assistive products list (APL) for Tajikistan, in compliance with action 2.2.11 of the National Programme on Rehabilitation of Persons with Disabilities 2017–2020. The objective was to identify the total need for different assistive products in the country, and to evaluate ways in which the assistive technology system could be strengthened.

Methods

200 persons with disabilities participated in a survey designed to collect information on self-reported need for assistive products, user experiences and barriers to access. An additional 11 focus groups made up of persons with disabilities and older adults held in-depth discussions on assistive technology. The major providers of assistive technology (Government facilities, nongovernmental organizations, local producers) were also interviewed as part of the research.

Results

Over the last three years, Tajikistan has made significant progress in improving access to assistive technology: the budget assigned to assistive technology has steadily increased, the range of assistive products provided by the Government has broadened, and assistive technology facilities have been upgraded. In 2018, Tajikistan renewed its commitment to ensuring access to assistive technology by signing the Convention on the Rights of Persons with Disabilities. The Government of Tajikistan played an important role in the adoption of World Health Assembly resolution WHA71.8 on improving access to assistive technology, and the related side event. Despite these

commendable efforts, resources remain inadequate to meet the national demand for assistive products. In particular, Tajikistan lacks qualified assistive technology professionals, and funding is still insufficient. The field research revealed that assistive products are often distributed without the appropriate steps of service provision being observed. As a result, beneficiaries have received assistive products that are inappropriate or ill-fitting, or which they are unable to use. In such cases, the utility of the device is limited and it is commonly abandoned or used only on rare occasions. Many users also reported that the products they received are of low quality and durability. This issue is of particular concern, since almost half of the survey respondents claimed that they had nowhere to go for repairs. Moreover, many survey and focus group participants were unaware that they were entitled to assistive products, or did not know where or how to obtain them.

Conclusion

The results of the survey and focus group discussions were presented at a meeting with Government and other stakeholders on 20 April 2018, at which a consensus was reached on 30 assistive products for the national APL (see Annex 4). Adoption of the APL is an important milestone but, in order to reap the full benefits of assistive technology, more should be done to ensure that assistive products are of sufficiently high quality and that they are provided using appropriate service procedures. To this end, Government and development agencies are already collaborating on projects that include the expansion of the assistive technology centres in Kulob and Khorog, drafting of standards and specifications for the products on the APL and training of local staff in assistive technology (including sponsorships for study abroad). Also, the national orthopaedics centre should be strengthened to become a National Assistive Technology Centre where all products and related services from the National APL are available.

The National Programme on Rehabilitation of Persons with Disabilities 2017–2020 outlines a clear strategy for strengthening of assistive technology in Tajikistan. The multisectoral steering committee responsible for implementation, monitoring and evaluation of the National Programme on Rehabilitation of Persons with Disabilities needs to take a stronger leadership role on assistive technology. The steering committee had an active role in developing the national APL and has started to assume an oversight role for assistive technology, which needs to be reinforced through diligent review of assistive-technology-related activities.

User groups should also be involved or consulted in all decisions and activities related to assistive technology.

The Government of Tajikistan has shown considerable progress to realize the rights of persons with disabilities and to improve the provision of assistive products. To continue its efforts and commitment, Tajikistan will need to further strengthen its assistive products provision system including service delivery facilities, trained personnel and procurement of quality products at an affordable price.



1. Introduction

1.1 Background

Assistive technology enables people to live independent, productive and healthy lives. Many individuals need assistive products to participate in social activities, to work or to go to school. Without assistive products, these people are at risk of falling into poverty and social exclusion and may become a burden on their family and on society. Therefore, the positive impact of assistive technology goes beyond individual benefits: by enabling a more productive workforce and decreasing the need for hospitalization, the health and welfare costs to the State are also reduced. Consequently, access to assistive products is not only a human right protected under the Convention on the Rights of Persons with Disabilities, it is also a worthwhile long-term investment (1).

The assistive technology sector consists of five interlinked areas that are known as the “5 Ps”: policy, provision, products, personnel and people. These are the building blocks of an effective assistive technology system; to a great extent, the assistive technology sector of any country is only as strong as its weakest element. Having qualified personnel and a good provision system in place will not be enough to meet the country’s assistive technology needs

if appropriate assistive products are not available. Conversely, high-quality assistive products are not sufficient in themselves – qualified personnel to assess and fit the products and equipped facilities are also necessary. Fig. 1 illustrates the 5 Ps and how the areas are interrelated (2). People are at the centre of the system, since a user-centred approach is crucial to the successful application of assistive technology.

The efficacy of assistive products depends on the context in which they are supplied. The physical environment, societal attitudes and health-care services can all act as facilitators or as barriers to their use. Inaccessible infrastructure, for example, will reduce the mobility of a wheelchair user. Likewise, societal attitudes can deter people from using assistive products, such as hearing aids, because they do not want to be stigmatized as being disabled. Moreover, in some cases, assistive products are only effective when used as part of a broader rehabilitation programme (as is often the case for orthoses); and where rehabilitation services are not available, the devices have limited utility. Taking all these factors into consideration, development of the assistive technology sector needs to go hand in hand with interventions that are aimed at reducing barriers to the use of the products, so as to maximize the benefits to both users and society.

Assistive technology

is the application of organized knowledge and skills related to assistive products, including systems and services. Assistive technology is a subset of health technology.

Assistive products

are any external product (including devices, equipment, instruments or software), especially designed or generally available, the primary purpose of which is to maintain or improve an individual's functioning and independence and thereby promote his/her well-being. Assistive products are also used to prevent impairments and secondary health conditions.

Source: (1).

Fig. 1. The 5 Ps

1.2 Main findings

The present situational analysis shows an assistive technology sector in Tajikistan that is underdeveloped and in need of greater investment, although the Government's reforms are leading the country in the right direction.

The research suggests that only a small fraction of people in need in Tajikistan have access to appropriate assistive technology. There is a need to expand provision, but there are challenges in the lack of funding and resources. The quantity, quality and range of assistive products available through public provision are inadequate to meet the demand. Most health workers have a limited understanding of assistive technology, and there are few workers with a specialized knowledge of this technology. Crucial aspects of service provision for assistive technology are often overlooked: for instance, repair services are not accessible to everyone, or user training and follow-up are not included in the service procedures.

Public provision of assistive products in Tajikistan is centralized under the State Enterprise Orthopaedic Plant (SEOP), also known as the National Orthopaedic Centre (NOC), which is responsible for the procurement, production and distribution of all publicly funded assistive products. The focus is primarily on mobility devices, such as prostheses, orthoses, wheelchairs,

walkers, crutches and orthopaedic shoes. Until recently, only mobility products were available, but in 2015 NOC started providing hearing aids, white canes and some other assistive products in different categories.

Nongovernmental and international organizations make important contributions to assistive technology in Tajikistan, including provision of high-quality assistive products, donations of machinery and material to NOC and training and sponsoring of students to study abroad. Collaboration between Government facilities and the international community is well established and very successful.

Despite all its problems, the country has taken decisive action to reform the assistive technology sector. The multisectoral National Programme on Rehabilitation of Persons with Disabilities 2017–2020 (resolution No. 455 of 28 October 2016) identifies the major gaps and guides the country in the right direction. In the last

Tajikistan country facts

Population (3):	9 million
GDP per capita (4):	US\$ 819
Rural population (5):	73.6%
Age distribution (3):	
0–19 years:	44.3%
20–64 years:	52.4%
65+ years:	3.3%
Administrative:	four provinces/regions (divided into 58 districts)



GDP: gross domestic product.

Map source: Political map of Tajikistan. In: One World – Nations Online [website]. Bangkok: One World – Nations Online; 2019 (<https://www.nationsonline.org/oneworld/map/tajikistan-political-map.htm>, accessed 30 January 2019).

two years, remarkable progress has been made from a policy perspective, with the signing of the Convention on the Rights of Persons with Disabilities in March 2018 (6); development of a national priority assistive products list (APL) (7); ongoing work on standards and specifications for assistive products; and an economic assessment of wheelchair production and procurement options for Tajikistan, which is currently in progress. Also, the Government of Tajikistan played an important role in the adoption in May 2018 of World Health Assembly resolution WHA71.8 on improving access to assistive technology and the related side event.

1.3 Research methodology

The aim of the present situational analysis was to assess the current state of the assistive technology sector in Tajikistan – from the perspective of both end users and providers. The research findings can be used to inform the planning and development of services for the provision of assistive products, by mapping and identifying gaps in the current provision.

The research methodology was based on the assistive technology assessment (ATA) tool developed by WHO in 2016. The ATA consists of two parts: a needs survey (ATA-N) and a systems survey (ATA-S).

For the Tajik situational analysis, a modified version of the ATA was used; one that was better suited to the country context and to meeting the goals of the research. A rapid needs survey (see Annex 1 and section 1.3.1) and focus group guidelines (see Annex 2 and section 1.3.2) were created by adapting ATA-N, and a systems survey (see Annex 3 and section 1.3.3) was drafted on the basis of ATA-S. These three research activities were conducted simultaneously between February and May 2018.

Based on the above analysis, a consensus meeting was held in Dushanbe on 20 April 2018 to draw up the priority assistive products list. The meeting involved representatives from the Ministry of Health and Social Protection and other stakeholders, including the Government, donor agencies, nongovernmental organizations, disabled people's organizations and

users of assistive products, to identify the products most needed in the country. Following extensive deliberations and on the basis of the assistive technology situation in Tajikistan, a consensus was reached on a priority APL comprising 30 products. The list is the basis for strengthening the assistive technology sector in Tajikistan.

1.3.1 Rapid needs survey

The rapid survey was developed to collect information on individual needs for assistive products among persons with disabilities. The survey was in three parts.

Part A (10 questions) dealt with the met and unmet needs for different assistive products. Participants were asked to identify assistive products that could help them and to specify whether they were currently using those products.

Part B (19 questions) dealt with assistive products in use. Only interviewees currently using assistive products were asked to complete this part, in which they had to provide additional information on the products concerned and related services.

Part C (6 questions) dealt with barriers to access. Participants who did not have the assistive products they needed, or no longer used them, were asked about the barriers that stopped them acquiring or using the devices concerned.

The survey was translated into Tajik and Russian. It was implemented with the support of seven nongovernmental organizations that work on community-based rehabilitation (CBR) in different regions of the country with the financial support of the Ministry of Health and Social Protection, through a public-private partnership. Participants were selected at random from the CBR programmes of the nongovernmental organizations. After training on the survey, two staff members from each nongovernmental organization interviewed 25–35 people with disabilities within their CBR programme. Twelve districts were covered by the survey – the locations of the interviews are shown on the map in Fig. 2 below.

Fig. 2. Locations of rapid survey interviews



Source: adapted from Political map of Tajikistan. In: One World – Nations Online [website]. Bangkok: One World – Nations Online; 2019 (<https://www.nationsonline.org/oneworld/map/tajikistan-political-map.htm>, accessed 30 January 2019).

Demographic characteristics of participants:

- total participants = 200
- average age = 18.1 years
- sex = 45.5% female, 54.5% male
- disability type distribution is in Table 1 below.

1.3.2 Focus groups

In parallel with the survey, 11 focus group discussions were organized at different locations in the country: five in Dushanbe, three in Sughd Region, two in Rogun and one in Tursunzade. The aim of the focus groups was to come to a better understanding of the needs of and challenges facing persons with disabilities. During the

discussions, participants were encouraged to describe their experiences of obtaining and using assistive products and share their hopes and expectations for the future.

Disabled persons' organizations – including the Association of Blind People, the National Union of Deaf People and the National Union of Disabled People of Tajikistan – helped to organize the focus groups by identifying participants and making venues available. One of the discussions was held at the elderly people's club in Dushanbe, providing the perspective of older people on assistive technology needs. Between six and 12 people were invited to the focus groups, and the discussions lasted for one hour.

Table 1. Distribution of disabilities among rapid survey participants

Do you have difficulty:		Yes, a lot of difficulty (%)	Yes, some difficulty (%)	No (%)
A1*	Sitting or standing?	48.0	28.0	24.0
A2	Walking or climbing steps?	46.5	34.0	19.5
A3	Seeing?	6.5	18.0	75.5
A4	Hearing?	6.0	6.0	88.0
A5	Speaking/communicating?	22.0	15.0	63.0
A6	With pain or deformities?	32.0	44.0	24.0
A7	Remembering?	8.5	17.5	74.0
A8	With decrease/loss of sensation?	21.0	30.0	49.0
A9	Controlling the bladder or bowel?	13.5	21.0	65.5
A10	With your self-care?	39.0	37.5	23.5

* A1, A2, etc.: questions in the rapid survey – see Annex 1.

1.3.3 Systems survey

The analysis of the assistive technology system involved:

- collection and analysis of available statistical data on assistive products and disability;
- a review of policy documents and legislation;
- interviews with stakeholders and service providers; and
- visits to assistive technology centres.

1.4 Data-gathering and limitations

The analysis relies heavily on the rapid survey results, which were relatively limited in scope. Only 200 people participated in the survey, chosen at random from CBR programmes. A larger sample of people randomly selected from the entire population would have produced more accurate results to assess the overall need for assistive technology; however, this was not possible because of time and budget constraints.

In interpreting the results, it is important to consider that, as recipients of CBR programmes, survey

participants were in a privileged position, and were more likely than others to have obtained assistive products and related services from nongovernmental organizations. Unfortunately, other persons with disabilities in Tajikistan who are not beneficiaries of CBR programmes are likely to enjoy less favourable conditions with respect to assistive technology.

Persons with mobility impairments were overrepresented in the survey. Over 80% of participants said that they had at least some difficulty walking. People with hearing difficulties, on the other hand, accounted for only 12% of the sample, and fewer than 25% had difficulties with vision. Although it is possible that Tajikistan has a very high proportion of people with mobility impairments, the sample is more likely biased towards mobility because the CBR programmes are more likely to work with persons with these types of disability.

Focus group discussions were organized to compensate for some of the above-mentioned limitations of the survey. To ensure wider representation from all potential users of assistive technology, focus groups were organized with members of the Association of Blind People and the National Union of Deaf People, older persons and other groups around the country.

1.5 Report outline

The remainder of this report is divided into five chapters, one for each major area of the assistive technology and an additional chapter on the APL and quantifications:

- Chapter 2 – policy;
- Chapter 3 – provision;
- Chapter 4 – products and related services;
- Chapter 5 – personnel; and
- Chapter 6 – national APL and quantification of needs.

As discussed earlier in the report, **people** are at the heart of the system – hence, a user-centred approach is the lens used for the analysis in each chapter. The findings of the rapid survey and of the focus groups are discussed in Chapter 4. The findings of the systems survey are discussed in Chapters 2, 3 and 5. Every chapter consists of a description of the current situation, followed by a discussion and recommendations.



2. Policy

2.1 Policies and legislation

Although Tajikistan does not have a national strategy or specific policies on assistive technology, the recently signed Convention on the Rights of Persons with Disabilities and the National Programme on Rehabilitation of Persons with Disabilities 2017–2020 provide a framework and guidance for developing the sector.

Assistive technology is an integral part of the **National Programme on Rehabilitation of Persons with Disabilities 2017–2020**. The programme calls for a new assistive technology system that will improve access to assistive devices and relevant services. To achieve this, the programme outlines an action plan with specific objectives for the country, including the following:

- increasing access to high-quality assistive products by increasing Government funding;
- increasing awareness and enhancing knowledge among stakeholders on assistive products and their benefits;
- establishing maintenance and repair facilities;
- training staff in delivery of assistive technology services;
- reorganizing assistive technology from a distribution model to a service provision model;
- improving procurement by expanding the range and increasing the quality of assistive technology.

This comprehensive action plan addresses the greatest challenges facing the assistive technology sector, which became clear during the field research.

By endorsing the **Convention on the Rights of Persons with Disabilities**, Tajikistan is committed to ensuring the availability of high-quality assistive devices. Four articles of the Convention address access to assistive technology:

- Article 4 – general obligations
- Article 20 – personal mobility
- Article 26 – habilitation and rehabilitation
- Article 32 – international cooperation.

Tajikistan has no legislation on assistive technology per se, but two Government decrees (resolutions) lay down rules for provision and entitlements: resolution No. 604 of 2011 on “Rules on provision of assistive devices to people with disabilities” and resolution No. 295 of 2013 on “List of specialized assistive devices and individual use products for people with disabilities, with supply and import exempted from value added tax and customs duties”.

At present, there is no body with oversight over assistive technology, but the steering committee for the National Rehabilitation Programme assumes this task. The Government has a national health information system, but it does not include data on assistive technology. NOC maintains its own database, but data are limited to the number of products provided, patients and supplies. NOC does not follow up with patients and does not keep track of assistive technology outcomes. This general lack of information precludes the possibility of monitoring and evaluation of the assistive technology sector.

2.2 Rules on provision of assistive products

Eligibility. Only people who have obtained a disability certificate from the Agency for Medical and Social Examination are eligible for a Government-funded product.

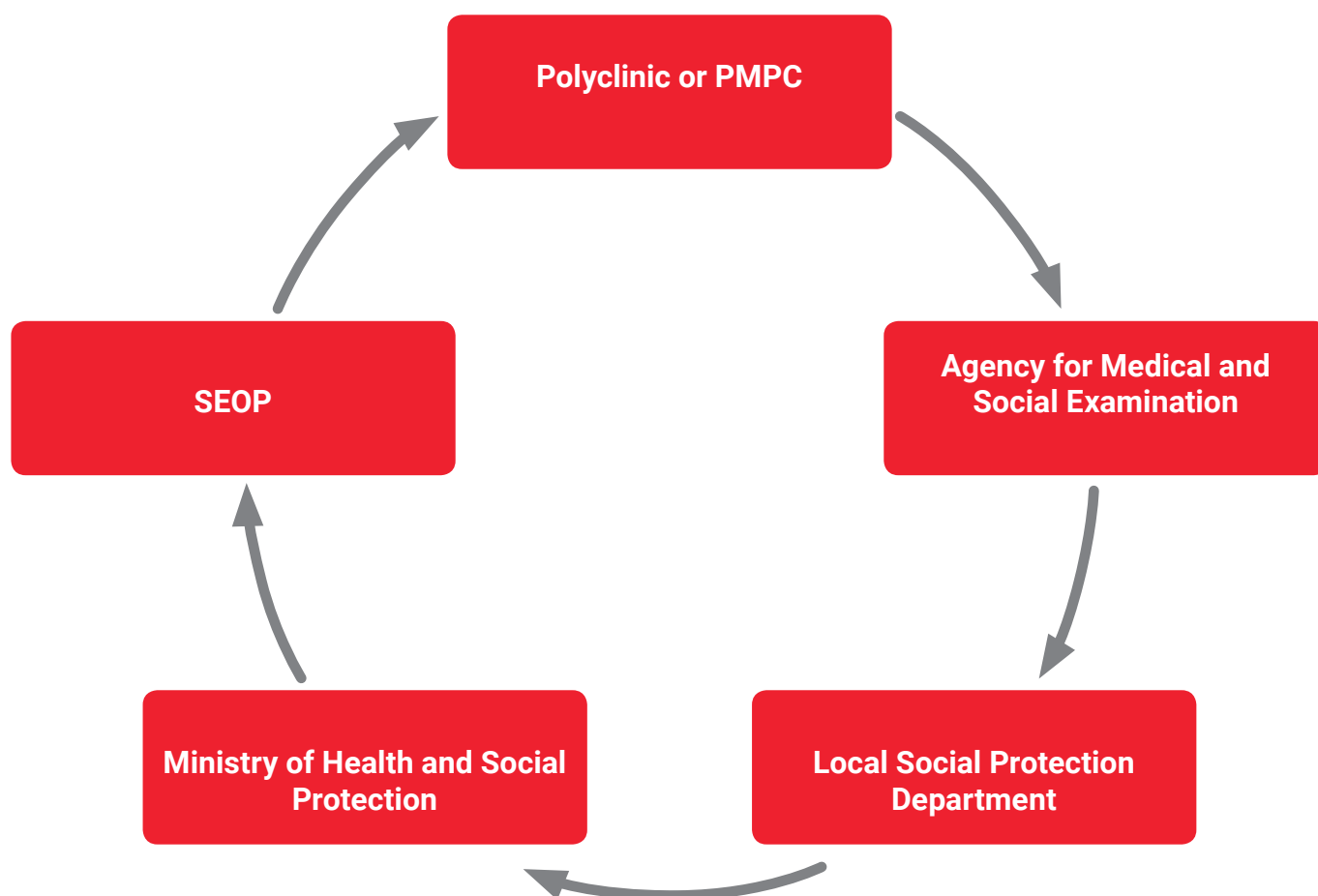
Costs. Assistive products are free of charge (financed from the State budget). Travel costs for the person with disability and his/her carer to the facilities where products are produced or delivered are reimbursed by the State. Accommodation and meals required during the production process are also financed from the State budget.

Procedure. For the person registered as disabled, the process of obtaining an assistive product usually begins at the local health-care facility (polyclinic or

psychological, medical and pedagogical commission) (Fig. 3). After assessment, the health-care facility will issue a prescription for a device to the person in need. If the request is for a Government-funded wheelchair, the applicant will also need a prescription from the Agency for Medical and Social Examination. It is important to note that these “prescriptions” do not constitute a customized plan based on individual need, with technical characteristics and measurements, special features or device requirements (8); in WHO terminology, the prescriptions are merely a referral to another facility. After obtaining a prescription, the candidate must apply to his/her local social

protection department with supporting documents (copy of passport, individual rehabilitation plan and a written application) to obtain a wheelchair. After checking the documentation, the local social protection department issues an order and sends it to the Ministry of Health and Social Protection. This puts the applicant on a waiting list for a wheelchair or other device. The Ministry compiles all the orders from the local protection entities and applies for centralized procurement by NOC. For other assistive products, such as prostheses and orthoses, the patient will usually bypass the local social protection department and be referred directly to NOC.

Fig. 3. Process for obtaining a Government-funded assistive product



MOHSP: Ministry of Health and Social Protection; PMPC: psychological, medical and pedagogical commission.

Assistive products provided. The following products are currently provided under Government resolution No. 604:

- elbow/axillary crutches, walking sticks, walkers/rollators;
- wheelchairs, manual or assistant-controlled, for children and adults;
- prostheses for upper and lower limbs;
- orthoses and braces for upper limbs, lower limbs and spine (leather corset); and
- orthopaedic footwear (including winter footwear and footwear for prostheses).

As stated above, since 2015 the Government has started to provide additional assistive products (hearing aids, white canes and some others) from various categories of product.

In April 2018, during a meeting with the Government and stakeholders, a consensus was reached on a new national APL. The list comprises 30 priority assistive products (see Chapter 7) that are essential for the well-being of people with disabilities, older people and people with noncommunicable diseases, among others. It has been approved by the Ministry of Health and Social Protection and is currently awaiting Government approval.

Replacement and repairs. As per the current rules previously supplied assistive devices are replaced at the request of the person with disability in three situations: when the product is beyond repair, when its useful life is over, and when there is a need to change it for a different type of device. The useful life varies according to the product – from 6 months for orthopaedic shoes to 4 years for a wheelchair. Repair services for broken assistive products are guaranteed at the expense of the State.

2.3 Procurement process

The Ministry of Health and Social Protection conducts a process of procurement for assistive products every year. Procurement is conducted by open tender.

The Ministry of Health and Social Protection collects requests for assistive products (mainly wheelchairs)

from the local social protection departments and compiles them into a single datasheet. The compiled requests are sent to NOC so that the latter can initiate the procurement of assistive products in accordance with the demand. The treasury department of the Ministry of Finance also specifies the total availability of financial resources for the order. On the basis of the demand and the available budget, NOC prepares a procurement list and submits a request to the Agency on Public Procurement of Goods, Works and Services (PPA) to announce a tender and invite providers of assistive products to bid.

The call for tender is publicized on the PPA web portal in Russian and in local newspapers in Tajik and Russian. The information in the tender states the quantities and very basic technical characteristics of the required assistive products. Bidders have 4 weeks to prepare and submit a proposal, including a technical report, budget and legal documents.

The commission in charge of evaluating the proposals is made up of representatives of the Ministry of Health and Social Protection, NOC and PPA. During the evaluation process, the commission reviews and compares the different proposals and selects a winner. Although there are no fixed measures for evaluating the bids, price is usually the main criterion. The commission will also take into consideration other factors, such as the time frame for delivery and the warranty provided, but the provider quoting the lowest price will usually win. After the evaluation process, the contract is signed between NOC and the successful bidder. The conditions of delivery and payment are specified in the contract.

The winner of the 2017 tender for wheelchairs was a local supplier, Zuhro 2012 LLC, with a proposed budget of TJS 860 400 (US\$ 91 500), out of a total budget of TJS 893 500 (US\$ 95 000) available for wheelchairs. This order consisted of 700 wheelchairs imported from China (Table 2). The price of a basic manual wheelchair was TJS 1020 (US\$ 110) per unit, including transportation. The retail price of the wheelchairs was not specified, but transportation costs from China are very high – over US\$ 30 per unit. Twenty electrically powered wheelchairs were included in the original budget, but authorization for this order was later denied and they were dropped from the order.

Table 2. Wheelchair procurement 2017

Supplier	Model	Number of units	Cost per unit (TJS)	Total cost (TJS)
Zuhro 2012 LLC	Wheelchairs (manual)	500	1020	510 000
	Wheelchairs with commode	50	1100	55 000
	Wheelchairs with hand gear	50	2050	102 500
	Wheelchairs for children	100	909	90 900
	Electrically powered wheelchairs	20	5100	102 000

Other assistive products were also procured and supplied by NOC in 2017. The following ready-made products were supplied in 2017 by NOC and its regional branches: canes (2163), axillary crutches (875), white canes (242), hearing aids (216), walkers (138).

A separate annual budget is also allocated to NOC for the manufacture of assistive products. In 2017, the total budget was TJS 423 562 (US\$ 45 000). This funding was used to manufacture the products shown in Table 3 below.

Table 3. Assistive products produced by NOC, 2017

Assistive product	Annual production (No.)
Orthopaedic footwear (pairs)	4200
Footwear for prostheses	1600
Limb prostheses	240
Arm prostheses	20
Orthoses – lower limb	86
Orthoses – upper limb	80
Orthoses – lower limb (poliomyelitis)	300
Orthoses – upper limb (poliomyelitis)	270
Crutches – axillary/elbow	360
Cervical collar	5
Corset	36
Mobility device	72
Repair of wheelchair	12
Repair of prostheses and orthoses	600
Wrist splint	10

The budget for 2018 is estimated at TJS 1.3 million (US\$ 140 000) and, on the basis of the 2017 waiting lists, the following products are expected to be procured (Table 4).

Table 4. Assistive product procurement list for 2018

Model	No. of units	Cost per unit (TJS)
Wheelchair (for home use)	500	1050
Wheelchair (with hand gear)	100	2200
Wheelchair (with commode)	50	1150
Wheelchair (children)	100	900
Mobility devices	100	405
Mobility devices for children	100	300
Hearing aids	250	280
Axillary crutches	800	130
Canes/walkers	2000	60
White canes	400	40
Elbow crutches for children	300	90

2.4 Discussion and recommendations

Most assistive products are expensive, and many persons with disabilities in Tajikistan cannot afford to pay for them. Residents of rural areas will also

need to travel to Dushanbe or Khujand to obtain devices, and this brings additional costs. Resolution No. 604 acknowledges the costs and entitles person with disability to free (Government-funded) assistive products, and the associated costs of travel and overnight stay are reimbursed by the State. The rules on provision also recognize the importance of guaranteeing repair services and replacement of the device at the end of its estimated lifespan. These are important provisions which safeguard the rights of persons with disability to access assistive technology. However, the current legal provisions also exclude many people in need from obtaining devices, for the various reasons described below.

The protocol requires the individual to have a disability certificate in order to obtain a Government-funded assistive product, and this denies access to a large part of the population in need. Not only are many people with disabilities not registered with the Government, but other groups of people who do not identify as disabled also need assistive products, most notably older persons and people with noncommunicable diseases. The current criteria should be reconsidered in favour of a model based on a functional perspective. A framework such as the International Classification of Functioning, Disability and Health offers a starting point for a new eligibility model. The newly developed national APL demonstrates the Government's willingness to go beyond disability in the strict sense, since it includes several assistive products that are primarily used by older persons and people with noncommunicable diseases.

Many potential beneficiaries lack knowledge about their entitlements or do not know how to apply for an assistive product. Some persons may require assistance or support in the application process, since persons with disabilities are more likely to be illiterate (9). The procedure for obtaining devices is complex, and often involves extra costs – for example, getting to and from the local social protection departments might be difficult for a person with disabilities because of the physical inaccessibility of the premises and the transportation costs involved.

The absence of a Government body or committee with oversight over assistive technology hampers the development of the sector. This narrative is mirrored in many other countries in which responsibility for

provision of different types of assistive technology is shared among different ministries and departments (e.g. health, social protection, education), with no clear demarcation of the roles and responsibilities of each. In these cases, and in the absence of a national assistive technology strategy, assistive technology has a tendency to “fall through the cracks”, and reform of the sector becomes challenging. The National Programme on Rehabilitation of Persons with Disabilities 2017–2020 outlines the objectives for assistive technology, but the steering committee needs to take a stronger leadership role on assistive technology. The steering committee had an active role in developing the national APL and has started to assume an oversight role for assistive technology, which needs to be reinforced through diligent review of assistive-technology-related activities. User groups should also be involved or consulted in all decisions and activities related to assistive technology.

Another barrier to the development of the assistive technology sector is lack of a comprehensive information system on assistive technology. The Government should maintain records that include feedback from users on assistive technology, which would contribute to an understanding of user needs and allow for monitoring and evaluation of progress. An essential part of an information system is to inform end users and health professionals about the existence and availability of assistive products provided by the State. Some countries have websites that provide relevant information on assistive products (10). Although this is a viable option for Tajikistan, information should also be disseminated through community-based channels, verbally or in print, to reach people in rural areas who do not have access to the Internet.

The Government tender for procurement of assistive products is available only in Tajik and Russian and is not widely publicized. As a result, the information does not reach potential suppliers that could offer more favourable terms. Translating the tender information into English and advertising it more extensively on the Internet would enable more international bidders to apply.

Finally, if Tajikistan is to fulfil its commitments under the Convention on the Rights of Persons with Disabilities, a much higher budget needs to be set aside for assistive technology. The budget should cover the

cost of procurement of a greater number of assistive products, as well as the costs of service provision. Estimates of the total need for each product on the APL in Tajikistan would make it possible to draw up an approximate budget that could be submitted to the Ministry of Finance for consideration.

Recommendations

1. **Ensure regular discussions on assistive technology in the national steering committee.**
 2. **Set up a comprehensive information system for assistive technology.**
 3. **Advertise tenders for procurement more extensively.**
 4. **Draw up estimates of total need for assistive products in the country for budgeting purposes.**
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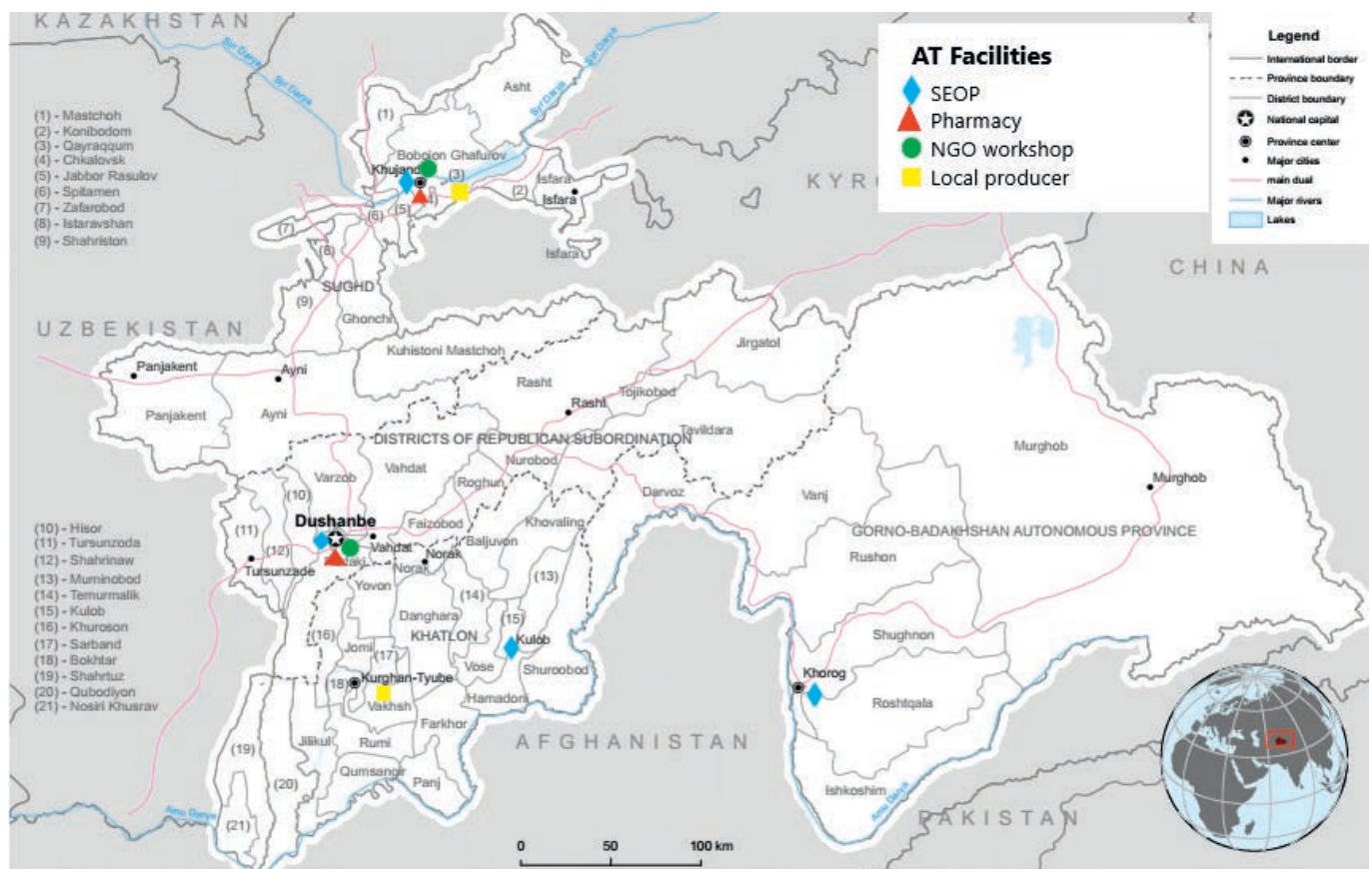


3. Provision

In Tajikistan, most assistive products can be obtained only in Dushanbe or Khujand. A total of 73.6% of people in Tajikistan live in rural areas and have to travel long distances to these cities (11). For the location of providers, see Fig. 4 below.

There is no large-scale production of assistive products in Tajikistan. There are only two manufacturers, in Sughd and Vakhsh; between them they produce fewer than 50 wheelchairs a year, alongside other mobility aids. SEOP (or NOC) and nongovernmental organization workshops also manufacture small numbers of mobility devices such as walkers, standing frames and postural-support chairs.

Fig. 4. Location of assistive technology providers



Source: United Nations Office for the Coordination of Humanitarian Affairs. AT: assistive technology; NGO: nongovernmental organization; SEOP: State Enterprise Orthopaedic Plant.

3.1 Providers

3.1.1 Public providers

SEOP/NOC. the main centre in Dushanbe was founded in 1942 as an orthopaedic shoe manufacturing plant. Today NOC is the only prosthetics and orthotics provider in the country. The centre also provides mobility devices such as walkers and crutches – some of which are manufactured at the workshop using locally sourced materials, while others are imported or received as donations. Since 2015, NOC has also provided hearing aids and white canes in limited numbers, although no staff have been trained to fit these devices.

The largest facility is in Dushanbe, but NOC also has branches in Khujand, Kulob and Khorog – one in each region of the country. A total of 109 employees work in these facilities, including 10 prosthetics and orthotics technicians (two of whom obtained a category II diploma from the International Society for Prosthetics and Orthotics (ISPO) after study in Armenia), five shoemakers and one physiotherapist trained on the job. Most of the professionals working at NOC have not been trained to international standards, with the exception of the two prosthetists/orthotists trained to ISPO category II standard.

Prosthetic and orthotic materials and components used by NOC are imported from China. They are inexpensive but generally low-quality (see Chapter 4). NOC cannot afford high-end products, as it operates on a very low budget. For 2017, the budget was approximately TJS 500 000 (US\$ 56 000), of which TJS 120 000 (US\$ 13 500) is designated for salaries only.

In previous years, the facility suffered from shortages of materials and components that brought production to a standstill for several months. To manage its resources, NOC has introduced a quota limiting the total number of prostheses produced to 10–15 per month. Total production falls well short of the approximate 400 requests per year, and the number of people on the waiting list for these products is continuing to grow. Approximately 220 people are currently waiting for a lower limb prosthesis from NOC in Dushanbe. Even at the Khujand branch, where prostheses have been produced only since January 2017, 75 people are already on the waiting list.

NOC staff also reuse parts and components from old devices to make new ones. For example, elbow crutches are produced by recycling handles from old devices, and the pylons from old prostheses are also occasionally reused.

Although NOC centres offer repair services for all devices – they repaired 974 devices in 2017 alone – follow-up of patients is not part of the procedure.

3.1.2 Non-profit providers

United Nations agencies and international nongovernmental organizations make important contributions to the assistive technology sector through direct provision of products and by supporting public providers with training and equipment. Some of the main organizations involved are discussed below.

Operation Mercy – between 2015 and 2018, Operation Mercy donated 569 wheelchairs of different models to Tajikistan (Table 5). These wheelchairs were procured by Operation Mercy through funding from its donors. A total of 233 wheelchairs were donated for service provision through NOC. Most of the other wheelchairs (277) were delivered through the Operation Mercy wheelchair workshop in Sughd Region. WHO and the Ministry of Health and Social Protection are currently working to facilitate the integration of Operation Mercy workshops with NOC branches in Dushanbe and Khujand. Operation Mercy also produces a small number of other assistive products, such as standing frames, sitting supports and walkers, in its workshop in Sughd Region.

Table 5. Operation Mercy wheelchairs supplied to Tajikistan since 2015

Wheelchair model	Number of units	Cost per unit (US\$)
WM3-01S/M/L/XL	195	245
WM4X-01S/M/L/XL	196	250
K3-02	95	170
Moti-Go	65	302
Moti Start	8	120
Multi Sport S	10	420

Note: the sum of US\$ 34 400 was spent on transportation for all the above.

Caritas – provides assistive devices mainly through social agency home-based units (SAHU) and implementing partners (local nongovernmental organizations). Caritas has a system of lending wheelchairs to its beneficiaries for set periods of time. Training manuals for the manufacture of assistive products have also been developed. Local carpenters are among those trained by Caritas in the production of devices such as toilet chairs, corner chairs and standing frames. Caritas then commissions the production of assistive products from its trainees.

ICRC MoveAbility – supports NOC with ad hoc equipment, technical support and training. The International Committee of the Red Cross (ICRC) conducted training for NOC staff and supported students in obtaining training in Viet Nam in shoemaking, prosthetics and orthotics.

UNICEF – provided NOC with equipment and machinery for the production of postural-support aids, such as standing frames and postural-support chairs.

WHO – conducted basic training for wheelchair services in December 2015. A total of 42 participants from Tajikistan and Kazakhstan learned how to correctly fit, modify and adapt wheelchairs for various users (12); how to service wheelchairs; and how to train users in using their new chairs. Since 2015, WHO has been instrumental in extending the range of assistive products provided by NOC and adding hearing and vision devices. WHO has also provided technical support for developing the national APL and is now developing standards and specifications for the devices on the list. In addition, WHO is conducting an economic assessment of the viability of local production of wheelchairs in Tajikistan.

3.1.3 Private providers

Pharmacies in Dushanbe and Khujand sell assistive products, most of which are imported from China. Walking frames, rollators, walking sticks, wheelchairs and motorized wheelchairs are available. Hearing aids (sound amplifiers) can also be purchased in various models, with costs ranging from US\$ 15 to US\$ 90.

Additionally, reading glasses and spectacles are available at opticians in Dushanbe and Khujand, with a starting price of US\$ 15 for reading glasses.

Many people obtain assistive products and services from outside the country, mainly from the Russian Federation, either in person or through relatives living abroad (see section 4.1).

3.2 Local production

3.2.1 Dilshod

Dilshod is located in the small district of Vakhsh, 120 kilometres south of Dushanbe. Wheelchairs and other mobility aids are manufactured at this workshop, using locally sourced materials. From 2012 to 2013, AAR Japan supported Dilshod in wheelchair production with equipment and training for its technicians. In 2012, the Ministry of Health and Social Protection concluded an agreement with Dilshod for the supply of 220 wheelchairs over two years, but the tender was not renewed in the following years, and the centre now struggles to find clients.

Owing to a lack of demand, production has decreased every year since 2012, and the workshop is now almost out of business. The centre currently has no full-time staff, and its doors remain closed most of the time. The trained technicians work at the centre only in their spare time, when an order is placed. Table 6 shows the output over the period 2015–2017.

Table 6. Production of wheelchairs and other assistive products by Dilshod, 2015–2017

Year	Total wheelchairs produced	Other assistive products
2015	45	60
2016	40	50
2017	28	45

Two wheelchair models are manufactured – a three-wheel and a four-wheel model. All wheelchairs are customized to the recipient's needs. The prices range from TJS 1500 (US\$ 160) to TJS 2250 (US\$ 240), depending on model and size. Repair services are also provided at the centre. Other assistive products that the workshop produces include standing frames, walkers and sitting support. The centre works with schools in the districts to meet the needs of children with disability.

The wheelchairs are outdated in design (see Fig. 5) and are not suitable for active users. Feedback from the staff of international nongovernmental organizations also highlighted concerns regarding their strength and durability. Many people who have obtained wheelchairs from Dilshod do not use them on a regular basis because they are impractical to use. The director of Dilshod acknowledges that there are problems with the wheelchairs and has asked for more training and support to produce better-quality products.

Fig. 5. Wheelchair produced at Dilshod



3.2.2 BODOM

This Soviet legacy industrial complex in Sughd Region, occupying 12 hectares of land, was established well before Tajikistan gained its independence. Much of the infrastructure is severely damaged, and the machinery, dating from the 1980s, has now mostly fallen into disuse. During the Soviet era, it housed a thriving industry manufacturing car parts; now, only 10% of the factory is operational, producing components for an aluminium factory. Between 1990 and 2010, BODOM moved into manufacturing bicycles, wheelchairs and other aluminium-based products and devices, including crutches and walkers. Until 2010, the centre produced 200–300 wheelchairs per year, commissioned by NOC. In 2010, the production of wheelchairs ceased because the centre lost the tender to supply NOC. BODOM wheelchairs retailed for approximately TJS 1600 (US\$ 170) per unit, and could not compete with the Chinese wheelchairs that, at the time, were selling for US\$ 110 per unit.

Although BODOM is no longer producing wheelchairs, it retains the capacity to do so. In 2015, a few dozen wheelchairs were produced to fulfil an order from a nongovernmental organization. According to the director, even in its present state (with only a small fraction of the factory operational), the centre has the capacity to produce up to 600 units per year. The wheelchairs it produced came in two models. The designs were very outdated, and the director himself stated that their quality was not very good, as they were too heavy – he also stated that they were for use only inside the home.

3.3 Discussion and recommendations

In their current capacity, assistive technology providers in Tajikistan cannot meet the assistive technology needs of the country. NOC will need more resources of all kinds (financial, personnel and equipment) to scale up production, procurement and provision of all devices if it is to meet the needs of the population.

Nongovernmental organizations and public providers focus mostly on mobility impairments, while sensorial, cognitive and self-care devices are overlooked. However, in recent years, NOC has started to provide hearing aids and white canes, suggesting the beginning of a transition from an orthopaedic facility to an assistive technology centre. Extending assistive technology services for people with visual and hearing impairments is a positive development. For a low resource country like Tajikistan, an assistive technology centre that caters for different types of impairments is also more efficient for both the user and the State. The advantage consists in being assessed for and fitted with different types of assistive products during a single visit at the same location, thus reducing the burden of travel to different facilities. Providing all devices at the same facility is also an efficient use of Government resources, since there can be a shared space for assessment, training and administration. This shift will require NOC to recruit competent personnel for the provision of sensorial devices.

NOC does not follow up with patients after provision of assistive products – this should become part of its standard procedures to ensure that products and services continue to meet the needs of the user. NOC staff should schedule appointments with patients for follow-up. The appointments are also an opportunity to conduct minor repairs or maintenance on the devices, or answer any questions users may have about their use.

The majority of the population of Tajikistan (73.6%) still lives in rural areas; for many people, the long distances to Dushanbe or Khujand are a significant obstacle to obtaining the products they need. The results of the survey confirmed that 37% of the people who do not have the assistive products they need attributed the cause to the device not being available in their community (see Fig. 11, p. 26). To overcome the burden of travel, some devices (e.g. crutches or walkers) should be supplied at primary health care centres by nurses or CBR workers who have received basic training. Wheelchairs are currently distributed at the district level; however, these are delivered at the local social protection departments by people who are not appropriately trained and at locations that are not equipped for wheelchair provision (i.e. they lack the tools for fitting or making adjustments or minor repairs). It would be preferable if wheelchairs were

provided at health-care centres by health workers who have an understanding of the secondary complications that may arise from use of the device. In any case, whether the wheelchairs are supplied at health facilities or by local social protection departments, the staff appointed for the task should be trained in the eight steps of service provision recommended by WHO. One possibility for local social protection departments is to contract a trained technician for the supply of wheelchairs in a number of adjacent districts. Local social protection departments can also work in close collaboration with psychological, medical and pedagogical commissions and primary health care centres that may be better equipped, in terms of staff and facilities, to provide wheelchair services.

Local producers Dilshod and BODOM are unable to produce high-quality wheelchairs at a competitive cost, and are now almost out of business. Multiple factors have contributed to their failure, some of which could be mitigated through better planning, while others are beyond their control. Both centres are located far from the capital, where most economic activity takes place and where there is the highest need for wheelchairs. The wheelchair designs are outdated and not suitable for active users. The production capacity is too low to meet Government tenders, and the centres do not have good working relationships with the Government, the main purchaser of wheelchairs in the country. Although the experiences of Dilshod and BODOM suggest that local production of wheelchairs might not be sustainable, the National Rehabilitation Programme explicitly calls for an assessment of the possibility of producing assistive devices locally. In compliance with this request, an economic assessment will be conducted to examine the viability of setting up a wheelchair manufacturing centre in Dushanbe, producing better-quality wheelchairs in larger numbers, to compete in the Government yearly tender. Tajikistan enjoys favourable conditions in this respect, since labour costs are very low and transportation costs from other countries are very high; however, it should be noted that small-scale local production of wheelchairs is rarely sustainable.

Even though Dilshod and BODOM may not be efficient in producing wheelchairs for the Tajik market, they are important resources for the country. Both centres are equipped with machinery and skilled labour that is scarce in Tajikistan. Additionally, they offer

much-needed repair services and have the capacity to produce customized wheelchairs for complex cases. These centres could be reorganized to focus on repairs and adaptations for complex cases, and could be supported in these activities.

The non-profit sector has a very positive impact on assistive technology in Tajikistan. Cooperation between public providers and international organizations should be strengthened and further integrated. Public facilities should continue to benefit from the training and resources that the international community can provide. Only through this cooperation can there be an accelerated transformation of the sector with lasting effects on the country.

Recommendations

1. Support NOC in the transition from orthopaedic plant to assistive technology centre, in close cooperation with health facilities (primary, secondary and tertiary).
2. Introduce regular follow-up appointments with all patients who receive a Government-funded product.
3. Increase resources for NOC – financial, personnel, equipment.
4. Involve primary health care centres in the provision of basic assistive products.
5. Conduct an economic assessment of the sustainability of local wheelchair production.
6. Support local producers in providing repair services.
7. Ensure that all wheelchairs are provided only by staff trained in service provision and in facilities that are equipped for providing services that include training and minor repairs.



4. Products

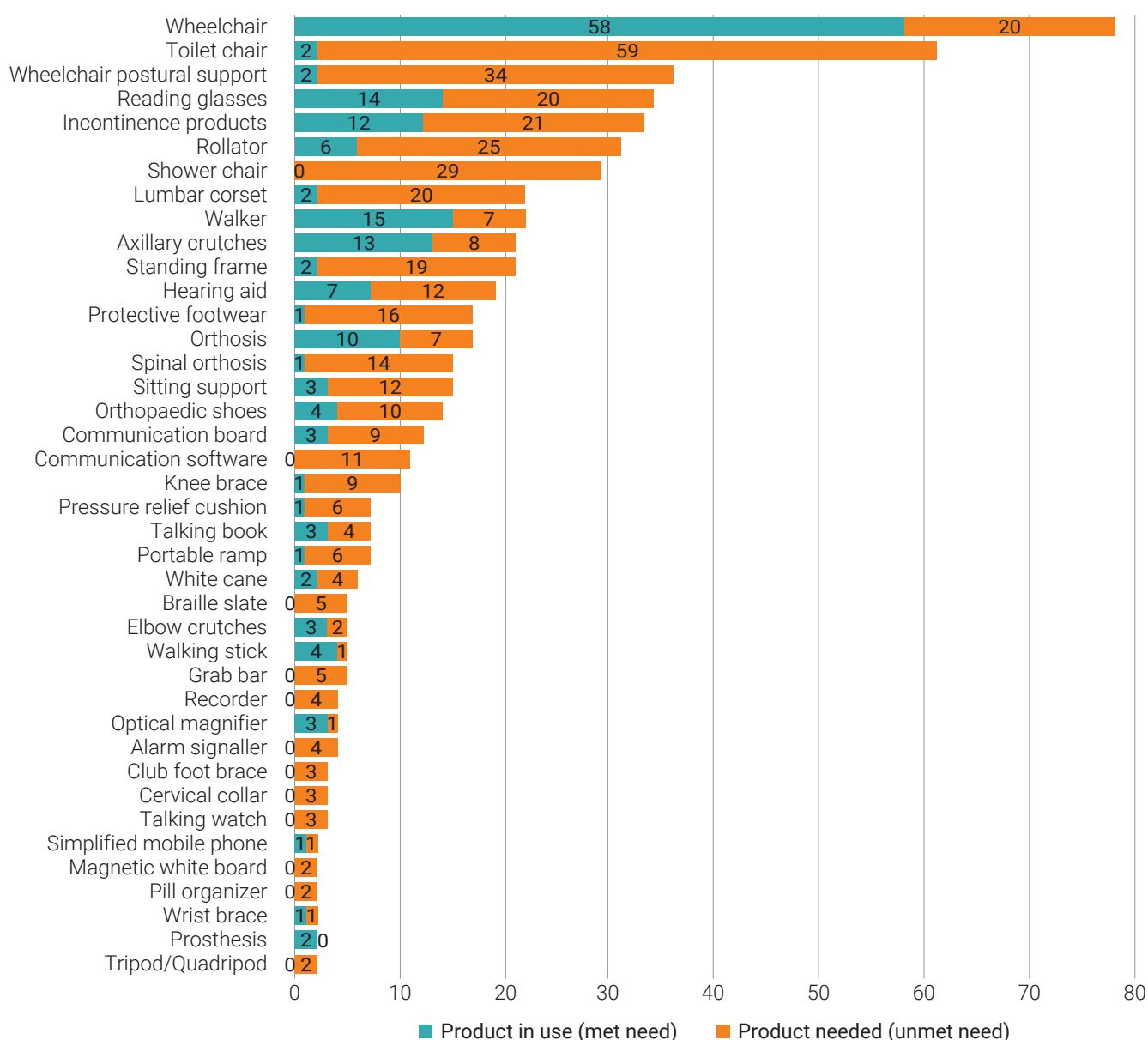
4.1 Rapid survey results

During the rapid survey, the 200 participants were shown a number of assistive products and asked to select the ones that could help them (Part A of the rapid survey). The respondents were also asked whether or not they had the products they needed. Fig. 6 illustrates

the results. The blue bar represents the met need (the person has the device) while the yellow represents the unmet need (the person needs, but does not have, the device). The sum of met and unmet need constitutes the total need. The products are ranked from the most-needed to the least-needed.

Fig. 6. Total need for assistive products

Part A Total need for assistive products



For the majority of assistive products, the need was mostly unmet. A total of 33 people of the 200 people interviewed said that they had no products at all.

Survey participants were asked to provide additional information on the assistive products they used (Part B, question B1 of the rapid survey). They answered questions relating to use of the following 126 devices:

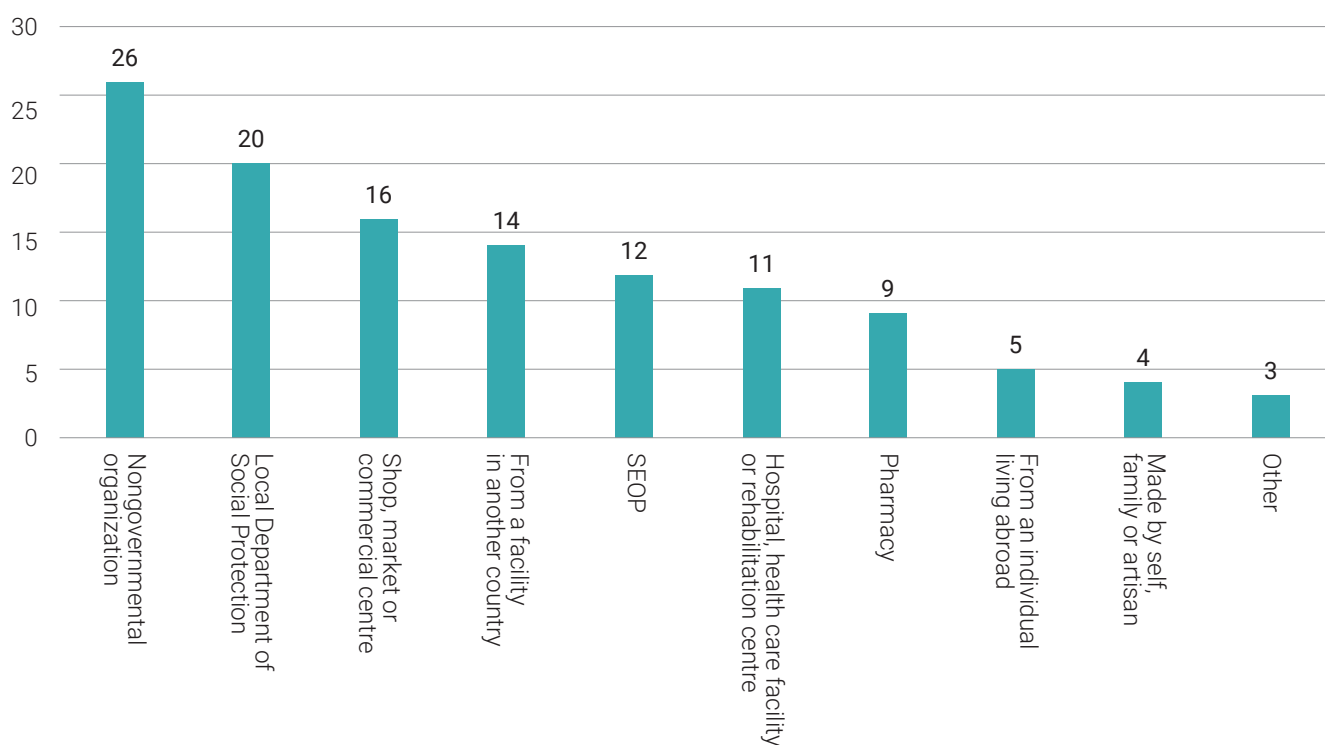
- wheelchairs: 58
- orthoses: 14

- crutches: 13
- walkers: 13
- reading glasses: 11
- hearing aids: 5
- others: 12.

Fig. 7 shows the provenance of these assistive products.

Fig. 7. Source of assistive products

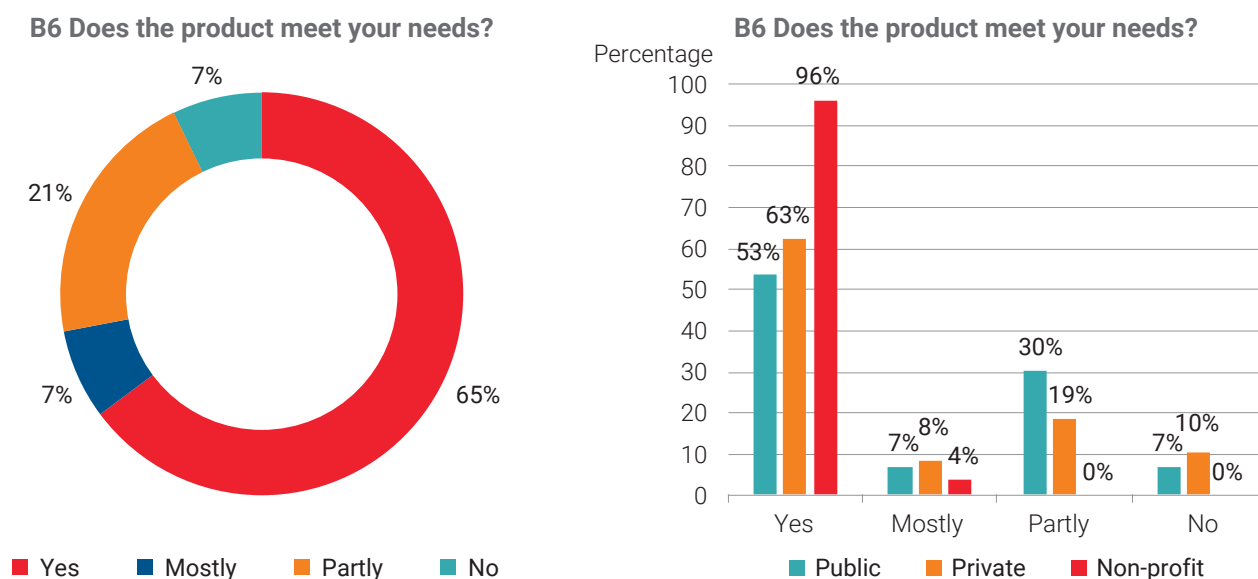
B1 From where did you get the assistive product?*



*Six participants did not answer the question.

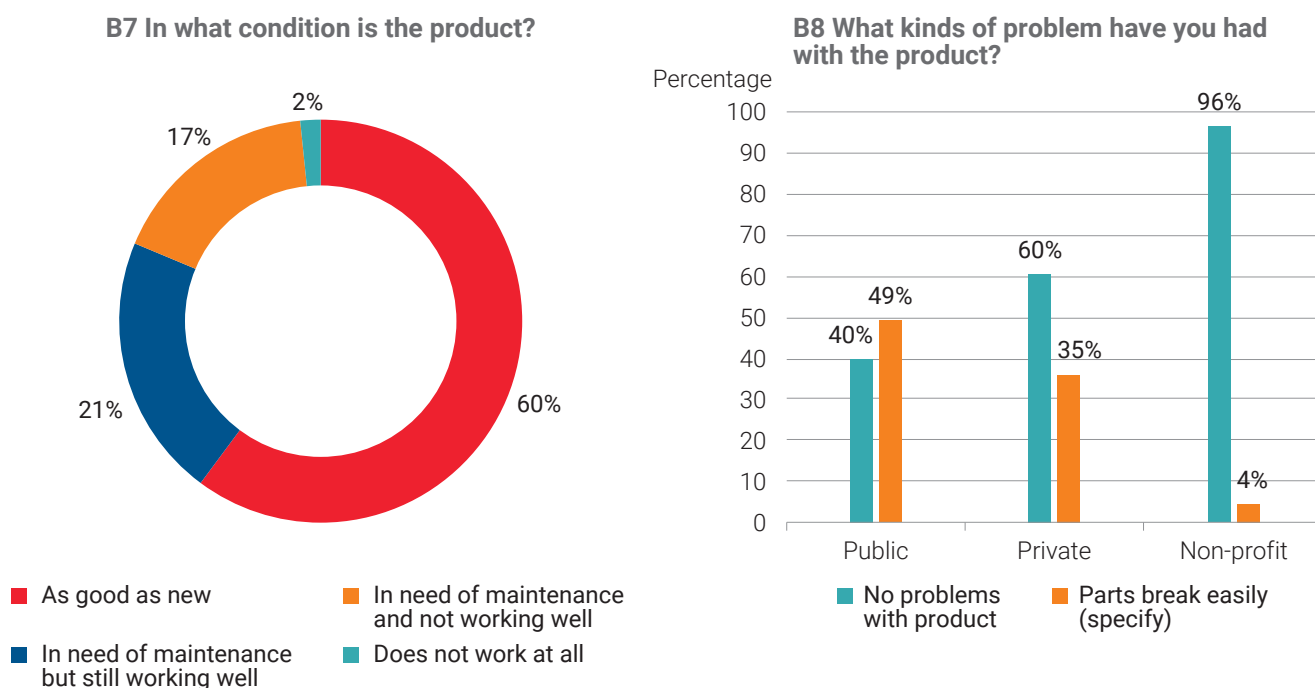
People obtain assistive products from a variety of sources. Nongovernmental organizations were the main providers, although they accounted for less than one quarter of the total provision. Many people obtained devices from family members living abroad or from

facilities in other countries, especially the Russian Federation. As a measure of product performance, the participants were asked whether products obtained from various providers met their needs (Part B, question B6 of the rapid survey). See Fig. 8.

Fig. 8. Usefulness of products supplied by different providers

Although almost two thirds of respondents answered that the assistive products fully met their needs, there were significant differences between providers. A total of 96% of those who received the assistive product from a nongovernmental organization said that their needs were fully met, but only 63% and 53%, respectively, of persons who obtained the product from the public and from the private sector were equally satisfied.

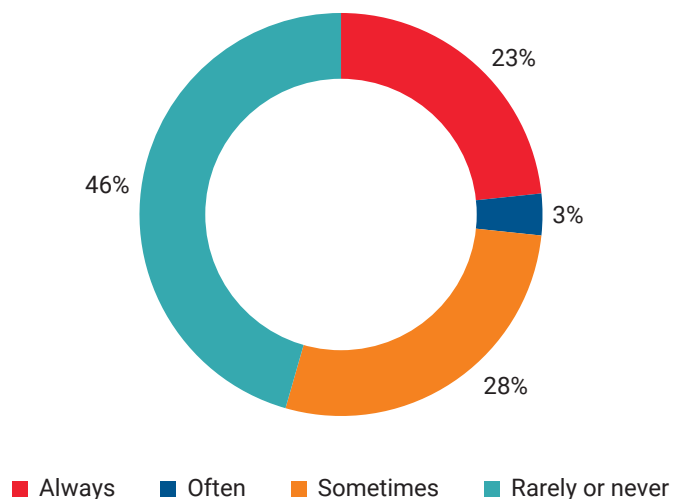
Participants were also asked about the condition of the product and any problems they had with it (Part B, questions B7 and B8 of the rapid survey). A total of 60% said the product was “as good as new” but, again, there were significant differences between providers. A total of 49% of respondents who had obtained devices from the public sector said that the device had parts that broke easily, compared with only 4% of respondents with devices provided by the non-profit sector. See Fig. 9.

Fig. 9. Condition of the product and any problems experienced

Although users reported that many of the public and private sector devices break easily, almost half the participants (46%) said they rarely or never have a place where they can go for repairs (Part B, question B15 of the rapid survey). See Fig. 10.

Fig. 10. Availability of repair and maintenance services

B15 If there is something wrong with the product, is there somewhere you can go for repairs or maintenance?



When asked about service provision (Part B, questions B12–B14 of the rapid survey), most participants said that the assistive product was prescribed following an assessment (81%), that it was fitted/customized to their

needs (77%), and that training was provided on how to use and care for the product (68%). It is encouraging that most survey participants reported that these service steps were observed. See Table 7.

Table 7. Assessment, customization and training for assistive products

	B12 Was the product prescribed for you following an assessment? (% of respondents)	B13 Was the product fitted to you or customized to your needs? (% of respondents)	B14 Have you received any training on how to use and take care of the product? (% of respondents)
Yes	81	77	68
No	14	17	19
Missing (no answer)	5	6	13

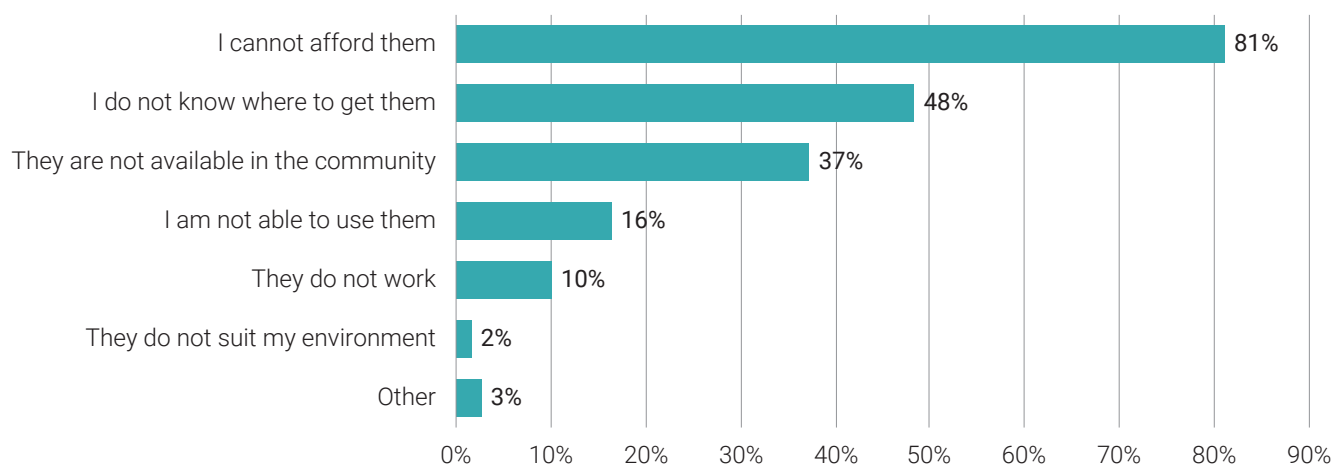
In Part C of the survey, participants who reported not using a product that could help them were asked to explain why they were not using the product (Part C, question C6 of the rapid survey). Fig. 11 shows the barriers to access.

Being unable to afford the product was the main reason that stopped people from getting the device

they needed – 81% mentioned this issue. Lack of availability and lack of awareness were also important barriers. A total of 48% of people said that they did not know where to obtain the devices. During the focus group discussions, it also became apparent that many persons do not even know of the existence of many products that could help them, and do not know that they are entitled to them.

Fig. 11. Reasons for not using assistive products

C6 You told me that you do not use assistive products that could help you. What stops you from using them?



4.2 Assistive products

4.2.1 Wheelchairs

The self-reported need for wheelchairs was higher than that for any other product. A total of 78 persons (39%) expressed a need for a wheelchair: 58 of them had a wheelchair they could use, while the remaining 20 did not. Thus the need was mostly met, since most survey participants were beneficiaries of CBR programmes and many of them had received a wheelchair from a nongovernmental organization CBR programme supported by the Ministry of Health and Social Protection. Unfortunately, only some persons with disabilities in the country are recipients of CBR programmes, so the unmet need is likely to be much higher among the general population. Persons in need of a Government-funded wheelchair are placed on a waiting list. At the current rate of wheelchair provision, as at July 2018, more than 1000 people are on the waiting list and the last person on the list is due to receive a wheelchair in December 2019.

Postural-support wheelchairs were more difficult to find – 36 persons needed such a wheelchair, but only two had access to one. Some focus group participants had modified their basic wheelchairs by installing belts and cushions to improve postural support.

Satisfaction rates were very high for wheelchairs provided by nongovernmental organizations, whereas users who received wheelchairs from public or private sources were less satisfied with their quality (Part B, questions B6.WC and B8.WC of the rapid survey). See Fig. 12. Recipients of wheelchairs provided by nongovernmental organizations received assessment, fitting and training in most cases (Part B, questions

B12.WC, B13.WC and B14.WC of the rapid survey). See Table 8.

No participants who attended the focus group discussions were using Government-provided wheelchairs, but some reported negative experiences with them in the past. The local social protection departments had provided wheelchairs of the wrong size, and no adjustments had been made for the user. A mother said that her daughter had been given a wheelchair that was too big for her; they had been told that it was the only size available at the time, so they had to use pillows to fill the gaps on either side of the daughter's pelvis. Pressure-relief cushions were never provided with the wheelchairs. Two wheelchair users had developed pressure sores in the past because of incorrectly fitted wheelchairs and a lack of pressure-relief cushions. No one had received any training on the use or maintenance of the wheelchairs. Other complaints people made about the wheelchairs included: weight (too heavy), difficulty of manoeuvring (self-propelling) or castor wheels breaking easily.

Most people made little use of their wheelchairs: some only used them for a few hours a day to go outside in the summer, and were always accompanied by other people. The Government-provided wheelchairs are not suitable for outdoor use, and this reduces the autonomy of users. During a focus group discussion in Sughd Region, one parent enthusiastically described how receiving wheelchairs from Operation Mercy had changed the lives of his two daughters, who have cerebral palsy. Previously they had used Government-funded wheelchairs, but they had felt unsafe going out in them because the wheelchair would shake when used outdoors. Now they feel much more confident going outside with the wheelchairs that have been customized for them, and they now leave the house more frequently.

Case study 1:

Seven years ago, Safo suffered a spinal cord injury that left his lower limbs paralysed. He does not work, and spends most of his days at home, sitting on a mattress. After his accident, he received a donated wheelchair from a nongovernmental organization, but he described it as never working well for him. In particular, the tyres always burst and he did not have a pressure-relief cushion. Now he has a new wheelchair. His family had to fit a belt on the frame of the wheelchair to stop his torso from tilting forward. He only uses the wheelchair to go outside the house for a few hours a day in the summer, as there is insufficient space in his flat. When he uses it outside, he always has a family member with him. In previous years, he used to go out alone, but one day he fell and injured his face, and he has been scared to be outside by himself since then. He exercises his arm muscles and they have been getting stronger. He says that, if he had a better wheelchair and some training, he would have the confidence to go out by himself again.

Fig. 12. Satisfaction with wheelchairs and problems experienced, by provider

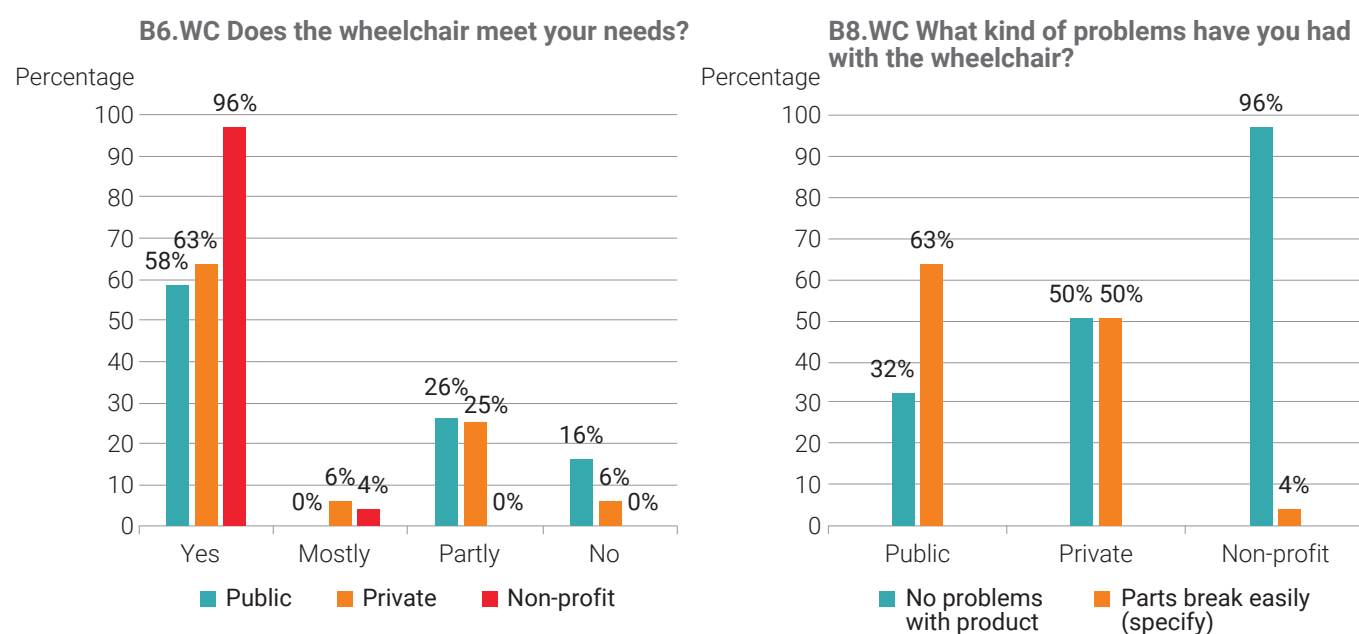


Table 8. Assessment, fitting and training for wheelchair use, by provider

Wheelchairs only	Wheelchair was prescribed following an assessment (B12.WC) (% of respondents)	Wheelchair was fitted according to the needs (B13.WC) (% of respondents)	Wheelchair training on use and maintenance (B14.WC) (% of respondents)
Public	63	37	58
Non-profit	100	100	83
Private	88	88	50

4.2.2 Self-care products

The combined need for self-care products was very high, but very few people used them. These devices, often overlooked by providers, can make a big difference to persons with disabilities and their families.

Toilet chairs were the second most frequently selected assistive product in the survey, but only two of the 61 people needing a toilet chair actually had one. Many toilets in Tajikistan require users to squat, which is difficult or impossible for persons with mobility impairments. Many wheelchair users also live in apartments with small, inaccessible bathrooms, and this also contributes to the high need for self-care assistive products.

Toilet chairs are available in the pharmacies in Dushanbe and Khujand, and NOC also procures a small number. During the focus group discussions, a participant said that incontinence products, such as adult diapers, are also available at the market, but that they are expensive.

4.2.3 Mobility aids

The survey found a high need for mobility aids other than wheelchairs, such as walkers, crutches and walking sticks. The 200 survey participants reported a combined need for 86 mobility aids of these kinds. The total need was almost twice as high for walkers and rollators (55 selected) than for axillary/elbow crutches (26 selected). In the case of walkers and axillary crutches, the need was mostly met, while in the case of rollators and elbow crutches it was mostly unmet.

In some cases, focus group participants were using crutches that were too high or too low, and complained of joint pains from using them. Incorrectly fitted crutches and walkers are harder to use and increase the chance of falls and injury. One man with lower limb paralysis due to poliomyelitis (polio) described the challenges of being a lifelong crutch user, but being unable to find crutches in Tajikistan that would hold his weight and having to replace the crutches frequently. He now uses a stronger crutch that a friend purchased for him in Dubai.

Participants also complained that the rubber tips at the bottom of the crutches wear out very fast (within 1 month); it is not easy to replace them, as they are both hard to find and expensive.

Case study 2:

Aziza is a woman in Dushanbe who uses elbow crutches to support her while walking. She obtained the crutches from NOC, but they are too short for her and not height-adjustable. She never received training on how to use the crutches. She feels pain in her shoulder muscles and her hands from using the crutches. She wishes to have crutches that are adjustable in height so that she can wear different shoes, and she would like to have padding on the handgrips to relieve the pressure on her hands. She also uses a wheelchair and needs a postural-support cushion, but cannot find one in Tajikistan.

4.2.4 Orthoses

Although 161 survey participants (80.5%) had at least some difficulty with walking, only 17 people (8.5%) reported a need for an orthosis. Lower limb orthoses may benefit people with a variety of conditions that are prevalent in Tajikistan, such as cerebral palsy, post-polio paralysis and stroke. Two factors help to explain why the self-reported need was so low.

First, a common problem among focus group participants, especially for children with cerebral palsy, was the onset of contractures. A hip, knee or ankle contracture needs to be straightened before a functional orthosis for standing or walking can be fitted. However, during the focus group discussions, it transpired that the persons affected did not know what could be done, or could not afford treatment; hence, the contractures were left untreated, in some cases for several years. People in this situation resorted to using wheelchairs or crutches, and reported a need for these assistive products during the survey.

Second, knowledge of the applications and benefits of orthoses is limited. Some potential beneficiaries did not know about the existence of orthoses that could help them. Others had negative experiences with badly fitted orthoses in the past, and did not want to go back to

using them. The lack of knowledge about orthoses also indicates that staff of nongovernmental organizations working in CBR programmes also need more training on assistive technology and its uses.

In Tajikistan, there are widespread misconceptions that exacerbate the above-mentioned problems. Some physicians in the country have been taught that contractures should never be stretched and that using an orthosis inevitably leads to muscle atrophy. More education is needed to dispel these myths and inform health-care staff about cases when orthotic treatment is indicated and what it can achieve.

Spinal orthoses are also produced at NOC, mainly cervico-thoraco-lumbo-sacral orthoses (Milwaukee models). The prosthetists and orthotists in Dushanbe said that they needed more training for spinal orthoses, especially thoraco-lumbo-sacral and lumbo-sacral orthoses, which require advanced orthotic skills.

Case study 3:

Dilya, a 7-year-old girl with cerebral palsy who lives with her family in Rogun, uses bilateral ankle-foot orthoses made in the Islamic Republic of Iran. She did not go to the country; her father took her measurements and sent them to the production workshop, and they received the devices by post. She has already had two pairs made as she outgrew the old ones. She wears the orthoses at home, and her father says that they help to keep her legs straight and that she can walk, with someone holding her hands, when she uses them. When she was younger, she had ankle-foot orthoses made in Tajikistan that did not have padding and were uncomfortable to wear. They also did not have rubber soles, so they were slippery and difficult to walk with. Dilya also uses a walker that her father made for her.

4.2.5 Prostheses

Only the NOC centres of Dushanbe and Khujand provide prostheses. The material and components used for prosthesis manufacture are inexpensive Chinese imports, seemingly of low quality and durability. The solid ankle cushion heel (SACH) feet are fragile and wear out fast. NOC staff reported that, in some cases, when

the users are active and reside in mountainous areas, the SACH feet will break within 3 months of delivery. One of the prosthetists interviewed said that the polypropylene was more difficult to use and less resistant than the type she used during her training in Viet Nam. The ethylene vinyl acetate foam used for producing liners and for padding also wears out very quickly.

The prosthetists at NOC complained that, because of incorrectly performed amputations, the residual limbs of some of their patients are not suitable for fitting prostheses. In some cases the stump is too short, or bone spurs develop because cut bones have not been rounded off and sealed. It is not uncommon for amputees to be subjected to reamputation because the first amputation has not been performed correctly.

4.2.6 Orthopaedic shoes

Orthopaedic shoes produced at NOC are custom-made for each patient, following casting and production of a mould that is stored at the centres so that it can be reutilized when shoes need to be replaced. The shoes are provided for a variety of pathologies: foot deformities, leg length discrepancy, flat feet, etc. The types of shoe produced include special footwear for prostheses and winter footwear, but not protective footwear for diabetics. Unlike orthopaedic shoes, which are generally manufactured to accommodate and compensate for foot deformities, protective footwear is designed to protect the insensate foot from pressure injuries by redistributing ground reaction forces. The number of orthopaedic shoes manufactured at NOC far exceeds that of any other product.

NOC has a long history of manufacturing orthopaedic shoes, and they are the only product that the Khorog and Kulob branches manufacture; this may begin to explain why so many are produced. The law is also generous with regards to provision of this assistive product – resolution No. 604 entitles patients to a new pair of orthopaedic shoes every 6 months. As a consequence, orthopaedic shoes are allegedly in very high demand from patients.

In 2017, over 4200 shoes were delivered, which is more than 10 times as many as the number of orthoses in the same year. It would seem that orthopaedic shoes are overprescribed. Occasionally, they will be supplied

to manage conditions for which a foot or ankle-foot orthosis would be more appropriate. In other situations, they are supplied for small deformities that might not justify use of the device, e.g. hallux valgus (bunion).

NOC originated as a shoe manufacturing plant and, to some extent, it is perceived as focusing primarily on this device, which leads to high demand from clients for orthopaedic shoes and a high capacity to produce them at NOC branches. NOC has evolved into an assistive technology centre that has much more to offer than orthopaedic shoes, and it needs to work on changing its image accordingly and offering more alternative products to its clients.

There was dissatisfaction among the focus group participants regarding the quality of the orthopaedic shoes. The shoes are uncomfortable and lose their shape quickly. For many users, the appearance of the shoes was an issue, with some saying they were embarrassed to wear them.

NOC needs to strengthen the knowledge and skills of its staff in orthopaedic shoe production. The newly trained shoemakers who recently joined the organization can make important contributions if given the chance to practise what they have learned. To capitalize on their knowledge and skills, NOC needs to enable them to work with different materials and designs and be flexible enough to modernize its production procedures.

4.2.7 Reading glasses

Reading glasses are the most-needed sensory product, ranked fourth of all the products in the survey. Although the product is available from opticians and pharmacies in Dushanbe and Khujand, and relatively inexpensive compared with other products, the survey revealed that only 14 of the 34 persons who needed them had access to glasses.

Reading glasses are mostly needed by older persons, and this was also apparent during the focus group discussion with older persons in Dushanbe, in which the majority of participants used or needed reading glasses. Some of the participants told us they could not afford the US\$ 10–20 required to buy them.

4.2.8 Products for people with blindness

The schools for the blind in Tajikistan are equipped with Braille slates, and children are taught to read and write in Braille. However, there are no providers of Braille slates for personal use, and Braille paper is expensive. To support the education of children and adults with blindness, the Italian society for blind people made a donation of 4.5 tonnes of Braille paper to Tajikistan in September 2017, with WHO and Ministry of Health and Social Protection facilitation.

Folding white canes are available from NOC in limited numbers (see Fig. 13). During the focus group discussion with the Association of Blind People, one participant said these are too heavy and not good for sensing the environment as the rubber tips are not designed for the purpose and do not convey sensation well. Also, at NOC there are no mobility orientation instructors; the white canes provided are not always the right length for the user, often being too long.

Fig. 13. White cane from SEOP



Two members of the Association of Blind People were trained by the charity CBM in Jordan to become mobility orientation instructors. NOC should work in collaboration with these trainers for the provision of white canes and other vision-related devices.

4.2.9 Hearing aids

Hearing aids are available only in the private sector, and most Tajik people cannot afford them. The SOMEAD private clinic in Dushanbe sells them for US\$ 500–600.

NOC provides some personal sound amplifiers, and pharmacies also sell sound amplifiers for as little as US\$ 20. Unlike hearing aids, which differentiate between different frequencies of sound, sound amplifiers make all sounds louder. Although they are not the most suitable assistive solutions for persons with hearing impairments, they are still useful for many older persons who experience gradual hearing loss, with the advantage that they are relatively inexpensive. Unfortunately, the sound amplifiers sold in pharmacies in Dushanbe and Khujand are of poor quality.

The focus group participants had experienced a variety of problems with the hearing aids and sound amplifiers. For some people, they did not work at all. In other cases, people struggled to use them because they were the wrong size, or the device whistled in their ear, or they did not know how to use them. Out of exasperation, these people quickly abandoned the device. The lack of diagnostic equipment for hearing loss also poses a challenge for provision.

Sound amplifiers can be useful for some people with disabling hearing loss, but in Tajikistan their quality is very low. Introducing standards and specifications for these devices would ensure that they meet minimum criteria and are safe to use.

The survey and focus group discussions revealed dissatisfaction with Government-provided products. Most of the participants reported that the devices do not work as they should, and that they are difficult to use and break easily. The overall quality of Government-procured products is very low. Devices that do not perform well are often abandoned or used only on rare occasions. Some products and components are of such low quality that they are not worth investing in at all. Introducing minimum standards and specifications for each assistive product would be an effective way of avoiding the procurement of substandard products.

In an effort to provide more assistive products, the Government is procuring less expensive products. However, it may end up spending more over time by procuring low-quality products that break down more easily and consequently need to be replaced more often. In other words, it is more cost-effective for the State to provide a device for US\$ 80 that is likely to last for five years than to provide a device that costs US\$ 50 but is likely to be broken beyond repair within the first year. Procuring high-end, expensive products is not necessary, but high-quality, low-cost products can be found, and spending slightly more on such products would be more cost-effective than procuring the cheapest products available. “Number-boasting” about assistive product provision is a common problem in many countries: nongovernmental organizations and governments alike are guilty of this. Providers misleadingly point to the number of assistive products donated or supplied as a measure of accomplishment when, in fact, the indicator of success should be the utility of those products to the users and the duration of their useful life.

4.3 Discussion and recommendations

There is a need to increase the supply of all assistive products and to broaden the range of devices provided, taking into account the real needs of the population. The survey found a high need for many assistive products that are currently not provided by the Government, such as reading glasses and various self-care products. Fortunately, these devices are part of the recently developed national APL.

The provision of all assistive products should follow appropriate service provision steps, including assessment, fitting and training in the use and maintenance of the product. The results of the survey and the discussions in the focus groups clearly showed that these service steps are often neglected. The multisectoral National Programme on Rehabilitation of Persons with Disabilities 2017–2020 also acknowledges this to be a problem and aims to change assistive technology from a distribution model to a service provision model. When assessment, fitting and training are ignored, the user may be in a situation

where he/she is unable to use the product or may feel pain or discomfort when using it, or the wrong product may have been prescribed. In such cases, the assistive products are likely to be abandoned.

All devices will eventually break or wear out, but almost half the survey participants said they rarely or never had a place to go for repairs. Increasing the number and accessibility of maintenance and repair services would enable the products to serve the users for longer.

Recommendations

1. Adopt the national APL.
2. Introduce technical specifications and minimum standards for all assistive products on the APL.
3. Increase availability and accessibility of repair centres for APL products.
4. Enforce a procedure for the provision of all assistive products that includes follow-up of patients.
5. Train CBR workers and health-care staff in the uses and benefits of assistive products.



5. Personnel

5.1 Types of personnel

The lack of trained specialists and rehabilitation professionals is one of the main challenges holding back the assistive technology sector. There are no hearing-aid technicians, physiotherapists, occupational therapists, wheelchair technicians or speech therapists trained to international standards, and only two ISPO-certified prosthetists/orthotists (category II). People currently working in any of these capacities have learned on the job and through short training courses.

Rehabilitation practices in the country are not favourable for the professional development of assistive technology specialists. As the country's rehabilitation system has always operated in the absence of these professionals, there is limited perceived need for them and the skills they bring. Indeed, some rehabilitation and assistive technology professionals do not even have official recognition – for instance, prosthetists/orthotists and speech therapists are not included in the All-Republican Classifier of Occupations in Tajikistan. Although the latter lists physical and occupational therapists, there is no education, training or licensing for these professions.

The country struggles to retain qualified health professionals, who have much better career prospects abroad (5). Salaries are low in Tajikistan, and working conditions are better in other countries, such as the Russian Federation. Therefore, the most talented workers will often leave the country when the opportunity arises.

The health workforce comprises mainly physicians of different specializations and a relatively high number of nurses (Table 9). Only one in six physicians works in rural areas, but a higher proportion of nurses is deployed to these areas. These health workers could potentially constitute an important resource for assistive technology, but unfortunately most are not knowledgeable about assistive products and their use, and they currently play no role in provision.

5.2 Educational facilities

There is currently no professional human resource development in the fields of physiotherapy, occupational therapy, prosthetics and orthotics, speech therapy, physical medicine or rehabilitation. Universities in Tajikistan do not have courses on these disciplines, and there are no professionals qualified to international standards to teach such courses.

The Ministry of Health and Social Protection, WHO and ICRC MoveAbility have sponsored students to study abroad in India and Viet Nam. WHO has sponsored one physiotherapist, one occupational therapist, four rehabilitation therapy assistants and two physical medical rehabilitation students, with binding agreements that they will work in Tajikistan for a number of years on completion of their respective programmes. It is envisaged that, when these trained professionals return, education programmes can

Table 9. Tajikistan health workforce

Health workforce	Total number of personnel	Number of female personnel	Number of personnel working in rural areas	Number of personnel in public services	Average salary in public services in (TJS)
Physicians (all specializations)	18 716	7295	3142	17 392	945
Nurses	51 788	43 623	17 977	50 379	586

Data source: Ministry of Health and Social Protection, statistical reporting form No. 17 "Report on health workforce".

be introduced in the country with the support of international professional associations.

5.3 Task-shifting

In the absence of qualified assistive technology professionals, training of non-specialists, such as nurses and CBR workers, in the provision of assistive products becomes very important. Many assistive products can be delivered by “generalists” with minimum training but, regrettably, health workers do not receive any relevant training in assistive technology. Medical doctors also do not receive training in assistive products, and even the commissions of the Agency for Medical and Social Examination have little information on the assistive products available and their uses. The action plan of the multisectoral National Programme on Rehabilitation of Persons with Disabilities 2017–2020 includes the introduction of rehabilitation and assistive technology courses for medical doctors and nurses, which will address the need for new graduates who will join the labour market equipped with these skills.

A number of short training courses on rehabilitation and assistive technology have been provided by international and nongovernmental organizations, including UNICEF and WHO. Participants spoke very highly of these courses, but sustainability remains an issue in the absence of formal supervision and continuing education. Participants also complained of the lack of formal Government-recognized certification for these courses and the lack of opportunities to refresh and upgrade their knowledge.

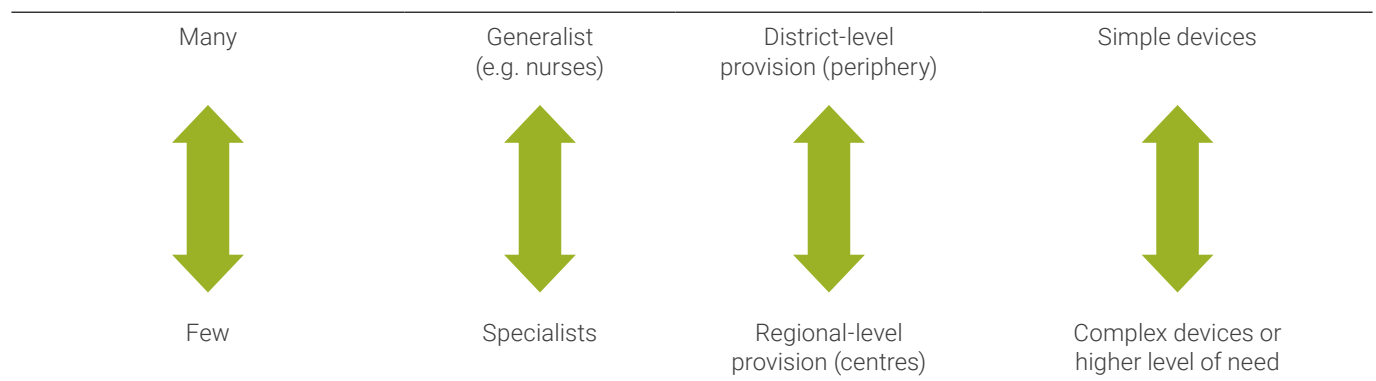
5.4 Discussion and recommendations

A multidisciplinary health workforce is necessary to meet the assistive technology needs of any country. Low-income countries should strive for the right balance of rehabilitation and assistive technology “specialists” (prosthetists and orthotists, occupational therapists, speech therapists, audiologists, etc.), skilled in the provision of specific types of product, and “generalists” (nurses, CBR workers, etc.) with

basic training in providing assistive technology (13). The situation of Tajikistan is that assistive technology specialists are lacking and generalists have no training in assistive technology. Developing the right skill-mix is the long-term objective, and a strategy is needed to achieve this. The multisectoral National Programme on Rehabilitation of Persons with Disabilities 2017–2020 envisages actions to enhance capacity and diversify the health workforce, including calls to review university curricula, retain trained health workers in the country and recognize more rehabilitation professions.

Ideally, all health-care workers should have baseline competencies for all the assistive devices on the APL. Generalists need to be trained in the provision of simple assistive devices, and should be equipped to provide the population with these products at a district level. “Simple” devices are those products that do not need advanced skills for manufacture or fitting, such as crutches, walkers, canes and reading glasses. For people in need of more complex devices or for cases of higher complexity, the generalists should be able to refer patients to specialized centres at the regional level, such as NOC and its branches. Eventually, a network of centres providing assistive products at district level and supported by NOC should be involved in the provision of assistive technology. Implementing this strategy requires a phased approach, starting with the consolidation of all four branches of NOC as fully functional independent assistive technology centres with qualified staff. At a later stage, NOC should strengthen ties with selected district hospitals and provide resources and training. Finally, staff members of the district hospitals (or primary health units) should be in a position to deliver simple devices and rely on NOC for referrals and additional support. This model (Fig. 14) ensures that the greatest need for basic devices in the communities is met, while allowing individuals with higher levels of need to be seen by personnel with additional specialized training.

Higher-education institutes in Tajikistan do not offer degrees for rehabilitation and assistive technology professionals; therefore, it is important to support students in studying these disciplines abroad. In the long term, training of such professionals within Tajikistan is a necessary step to ensure a stable supply of personnel, as the sector expands and other specialists retire or leave the country. A module or component on assistive technology should be included

Fig. 14. Task-shifting model

in all training courses for the health-care professions. For example, the nurse training curriculum should include training related to all products of the APL and how to fit selected products.

Training of the current health workforce (outside the education system) requires a different approach. A professional education programme based on the “train the trainer” principle, in which assistive technology advisors are trained to train health-care staff working in different districts across the country in assistive technology provision, would need to be implemented.

Recommendations

1. Allow primary-level health workers to provide basic assistive products.
2. Include assistive technology in the university curriculum of nurses and other health professionals.
3. Enable NOC to support the staff of primary health care centres in providing assistive technology.
4. Increase opportunities for the training of assistive technology specialists in-country and abroad.



6. National Assistive Products List and quantification of needs

Following the completion of the rapid survey, focus group discussions and systems survey, the results were used to develop a national APL of the most highly needed assistive products for Tajikistan. The results from Part A of the survey (met and unmet need) were also used to derive estimates of the total need for each of the assistive products included in the APL.

6.1 National Assistive Products List

The consensus meeting on 20 April 2018 in Dushanbe brought together representatives from the Ministry of Health and Social Protection and other stakeholders, including the Government, donor agencies, nongovernmental organizations, disabled people's organizations and users of assistive products, to identify the products most needed in the country.

The findings of the rapid survey and focus group discussions were presented during the meeting. The 57 participants were divided into five groups according to their interests and expertise – three groups were assigned to discuss “mobility and self-care” products, and the remaining two “sensorial and cognitive” products. Building on the current list of assistive products provided by the Tajik Government (12 items), the groups were asked to select an additional 7–9 products to be included in the APL. Following the group work, discordances between the groups were settled in the plenary discussion, during which every participant had a chance to speak in favour or against inclusion of any device. Where disagreements persisted, the issue was put to a vote.

A consensus was reached on 30 assistive products that were included on the first national APL for Tajikistan (see Table 10 and Annex 4).

6.2 Quantification of needs

6.2.1 Methodology

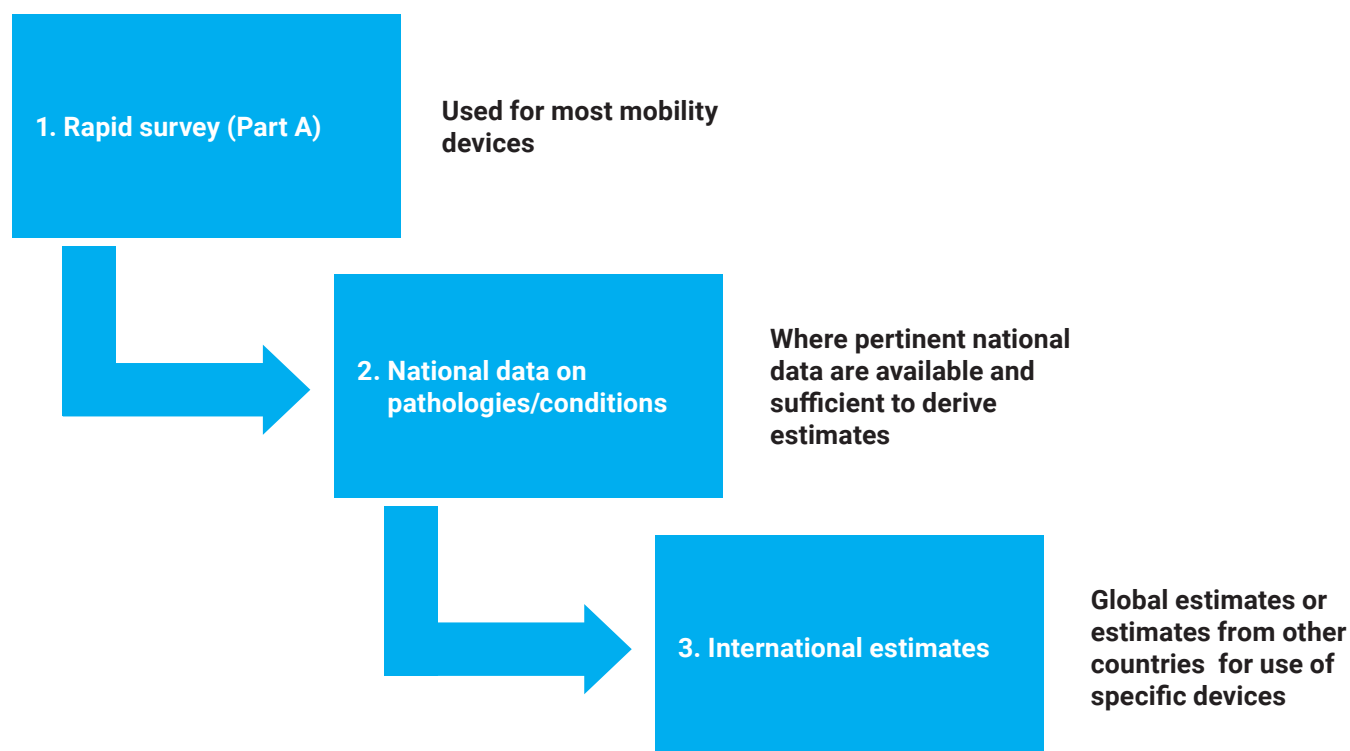
Quantifying the national annual need for assistive products on the APL is very important for planning services and procurement. No data on assistive product needs are available in Tajikistan, and finding accurate estimates would require an extensive census of the population. Nevertheless, by making some assumptions, it is possible to arrive at some broad estimates, while acknowledging that these may contain a certain degree of error. At best, these estimates should be used as a landmark, and will need to be refined as more evidence emerges.

Three methods were used for calculating estimates of need for the assistive products on the APL (Fig. 15). The nature of the product and available information determined the method used to obtain data on the device concerned.

1. Survey results. The results from the rapid survey were used to derive needs estimates for most mobility and self-care products on the APL, including estimates for wheelchairs, incontinence products, crutches, shower chairs, etc. Survey results were not used for estimating the need for products that help people with vision, hearing and cognition impairments, as these people were underrepresented in the survey. The survey was relatively limited as the participants were selected from CBR programmes and the sample was relatively small. Nevertheless, the results can be used to calculate broad needs estimates for products on the APL and approximate ratios for the number of each product needed annually.

Table 10. Priority Assistive Products List

Mobility products <ol style="list-style-type: none"> 1. Wheelchairs (manual) 2. Wheelchairs (manual) with postural support/ postural-support kit 3. Axillary crutches 4. Elbow crutches 5. Rollators 6. Walking frames 7. Walking sticks 	Mobility products – local production <ol style="list-style-type: none"> 8. Orthopaedic shoes 9. Orthoses – lower limb 10. Orthoses – upper limb 11. Orthoses – spinal 12. Prostheses – lower limb 13. Prostheses – upper limb 14. Sitting supports 15. Standing frames 	Mobility products – procurement <ol style="list-style-type: none"> 16. Club foot braces 17. Protective footwear – diabetic and neuropathic 18. Lumbar corsets 19. Pressure-relief cushions 	Communication and cognitive products <ol style="list-style-type: none"> 29. Communication boards 30. Simplified mobile phones
Vision products <ol style="list-style-type: none"> 23. Braille slates 24. Magnifiers, optical 25. Reading glasses 26. White canes 	Hearing products <ol style="list-style-type: none"> 27. Hearing aids 28. Closed captioning displays 	Self-care products <ol style="list-style-type: none"> 20. Toilet chairs 21. Shower chairs 22. Incontinence products 	

Fig. 15. Three methods of estimating need

2. **Indirect method.** For most of the remaining products on the APL, estimates of the total need were obtained from the prevalence or incidence of related pathologies or conditions. Some conditions or pathologies are strongly associated with specific assistive products, and some APL products are needed predominantly by people who live with particular conditions. To derive estimates from these correlations, three sets of data are used:

- prevalence or incidence rates for the pathologies/conditions most strongly correlated with use of the devices
- evidence or studies on the degree of correlation between each pathology/condition and assistive products
- demography of the country and age distribution.

3. **International data.** For some APL products, there were no country or regional data, so international data were used to derive estimates. Also, some assistive products are useful to people with diverse conditions or pathologies, so it is impractical to base the estimates on correlations with pathologies or medical conditions. In these cases, international data were also used.

Formulae and examples

1. **Survey results.** Almost 150 000 people are registered as person with disability (D) and entitled to Government-funded assistive products. Data on the survey need (Sn) for different assistive products was collected during the survey and are presented in Fig. 6. By multiplying the number of people who reported a need for a product by the total number of registered people with disabilities in the country, we obtain an estimate of the number of people who need the device. To calculate the annual need, the approximate lifespan of the device (L) also needs to be part of the equation, as this will determine the replacement rate. By dividing the total number of persons in need by the average lifespan the device annual estimates are found. Approximate lifespan was based on international norms and maximum lifespan for any products was set at 7 years with appropriate repairs and maintenance facilities. See Annex 2.

Box 1. Calculation method from survey results

Formula: $S_n (\%) \times D / L = \text{annual estimated need}$

Example: Manual wheelchairs →
 $39\% \times 150\,000 / 5 = 11\,700^*$

**Estimated need for the registered population with disabilities – excludes need for wheelchairs among non-registered persons.*

2. **Indirect method.** Estimates are based on national or regional data on the prevalence of certain conditions/pathologies that are associated with need for an assistive product. For example, there is a very strong correlation between number of lower limb amputations and the need for prostheses, or between presbyopia and the need for reading glasses. Studies providing evidence on the degree of correlation between the condition/pathology and product need were consulted to determine a numerical value for the correlation. A maximum correlation of 0.9 was set (taking into account personal preferences and counter-indications to product use). The estimated cases (Ec) of people with the condition/pathology multiplied by the correlation (C) factor divided by product lifespan (L) produces the annual needs estimates. See Annex 2.

Box 2. Calculation method from indirect sources

Formula: $E_c \times C / L = \text{annual estimated need}$

Example: reading glasses →
 $702\,167 \times 0.9 / 7 = 90\,279$

Example: protective footwear →
 $687\,551 \times 0.15 / 3 = 34\,378$

3. **International data.** In the absence of regional/national data, statistics from other countries or global estimates on the need for assistive products are applied

to Tajikistan. This method produces inaccurate results depending on the differences in demographics, history, health-care systems and many other factors that affect health risks. Nevertheless, a comparison with the need in other countries is an indication of the possible need in Tajikistan, especially for those assistive products where there is no intrinsic factor that significantly alters need within a country (e.g. communication boards, lower limb orthoses). Using global estimates or estimates from countries that have similar contexts is likely to produce more accurate results.

Example. Communication boards can help people with a variety of conditions (speech impairments, autism, locked-in syndrome (pseudocoma), etc.). A study in the United Kingdom of Great Britain and Northern Ireland found that approximately 0.5% of the population of the country could benefit from communication boards.

Although the United Kingdom and Tajikistan are very different countries, no data were found from more similar populations, so the United Kingdom estimates were used.

Box 3. Calculation method from international sources

Example: communication boards →
 $(9\ 046\ 722 \times 0.5) \times 0.9 / 7 = 5816$

6.2.2 Annual estimates

See Table 11 for annual estimates and Annex 5 for more information.

Table 11. Annual estimates of need for products on the Assistive Products List

No.	Assistive product	Item	Annual need	No.	Assistive product	Item	Annual need
1	Reading glasses	Unit	90 279	16	Simplified mobile phones	Unit	3 235
2	Hearing aids	Unit	56 329	17	Standing frame	Unit	3 150
3	Protective footwear	Pair	34 378	18	Axillary crutches	Pair	3 150
4	Wheelchair	Unit	11 700	19	Sitting support	Unit	2 250
5	Toilet chair	Unit	9 150	20	Magnifiers, optical	Unit	1 186
6	Incontinence products	Set	8 250	21	Prosthesis, lower limb	Unit	900
7	Communication board	Unit	5 816	22	Walking stick	Unit	750
8	Lumbar corset	Unit	5 500	23	Elbow crutches	Pair	750
9	Wheelchair with postural support	Unit	5 400	24	White cane	Unit	593
10	Rollator	Unit	4 650	25	Braille slate	Unit	593
11	Shower chair	Unit	4 350	26	Club foot brace	Unit	245
12	Orthosis – spinal (rigid)	Unit	4 203	27	Orthosis, upper limb	Unit	223
13	Orthosis – lower limb	Unit	3 659	28	Prosthesis, upper limb	Unit	162
14	Orthopaedic shoe	Pair	3 500	29	Pressure-relief cushion*	Unit	NA
15	Walker	Unit	3 300	30	Closed captioning	NA	NA

*Pressure-relief cushions should be provided with every wheelchair.



7. Conclusion and way forward

7.1 Positive developments and encouraging signs

There have been many positive developments in the sector over the last few years. The Convention on the Rights of Persons with Disabilities was signed in March 2018, committing the Government to the provision of assistive technology. In 2016, the multisectoral National Programme on Rehabilitation of Persons with Disabilities 2017–2020 was adopted. This lays out a comprehensive plan for developing the assistive technology sector. The financial budget for assistive technology has increased over the years and is forecast to grow exponentially in the coming years – the budget for 2019 will be in excess of TJS 2 million. The Government of Tajikistan played an important role in the adoption in May 2018 of World Health Assembly resolution WHA71.8 on improving access to assistive technology and the related side event. It is evident that there is a real political will to develop the assistive technology sector in the country and the way forward is already mapped out.

The national APL has been drawn up, thereby increasing the range of assistive products provided by the Government. This list was based on the needs of the population, as reported through the rapid needs survey. The survey was also used to derive estimates of the need for the various products on the APL to help the Government plan the procurement of these products. The APL improves access to a greater number of devices and upholds the right to equal participation in society of a greater number of persons with disabilities. Technical specifications for the products on the APL are already being drafted, and these will strengthen procurement practices and ensure the quality of devices entering the country.

The capacity of NOC to provide assistive technology services has also increased significantly over the last few years. The Khujand branch has extended its services to include provision of a greater variety of assistive products, including prosthetics and orthotics

services. The Government is already working to expand the capacity of the Kulob branch to provide a variety of assistive products, and it plans to increase the capacity of the Khorog branch by 2019. Since 2015, NOC has also started to look beyond mobility products and provide hearing aids and white canes, making it more of an assistive technology centre.

7.2 Gaps to be addressed and way forward

Policy. Policies should be more inclusive of all potential beneficiaries of assistive technology. At present, only people who are registered as disabled are eligible for assistive technology. Not only are many people with disability not registered with the Government, but many people who are not disabled also need assistive products. Several products on the APL, such as reading glasses and protective footwear, are used primarily by elderly people or people with noncommunicable diseases. These groups of people should qualify for assistive products through the Government mechanism, and the eligibility criteria should be changed to include them.

Government policies should facilitate access to appropriate assistive technology services for all those in need – this includes raising awareness about assistive products and ensuring that procedures to obtain them are not difficult or costly. The Ministry of Health and Social Protection acknowledges this policy gap and is expanding the eligibility criteria to include all groups in need.

Products. The survey and the focus groups revealed dissatisfaction with Government-provided products. Low-quality products do not meet the needs of the user, break more often and have a shorter lifespan. As a result, although they are generally less expensive, they are not good long-term investments.

Introducing standards and specifications for all the products on the APL would ensure that the products meet minimum requirements. Price must not be the only criteria for evaluating bids on Government tenders – the functionality, safety and durability of the devices are equally important.

Provision. Successful assistive technology applications require assistive products to be accompanied by appropriate services (including assessment, fitting and user training) and repair and maintenance, so that the products continue to benefit the user over time. Unfortunately, the research found that assistive products are often still distributed without appropriate services. NOC does not follow up with patients, and most users do not have access to repair services when their assistive products break.

The National Programme on Rehabilitation of Persons with Disabilities 2017–2020 calls for assistive technology to be changed from a distribution model to a service provision model. For this shift to occur, a mandatory procedure for the provision of all assistive products needs to be observed. Follow-up of users and repair and maintenance services should be available. Investing

in repair and maintenance facilities is cost-effective in the long term, as the devices will need to be replaced less frequently if they are adequately maintained and repaired. Therefore, in planning assistive technology services, part of the budget must be allocated to the additional services that go with the product.

Personnel. There is a shortage of skilled assistive technology professionals in the country. Moreover, the general health workforce is not knowledgeable about assistive technology and its applications. There are no higher-education facilities in Tajikistan that offer degrees or professional development for assistive technology professionals.

Educational programmes must be strengthened in Tajikistan to address the shortage of skilled assistive technology professionals. While education programmes are being developed, students need to be supported to study professions related to assistive technology abroad. Non-specialized health workers (e.g. nurses) should also receive training in assistive technology so that they are in a position to assess and provide some assistive products at primary health care centres.

References

1. Priority Assistive Products List: improving access to assistive technology for everyone, everywhere. Geneva: World Health Organization; 2016:1–12 (http://apps.who.int/iris/bitstream/10665/207694/1/WHO_EMP_PHI_2016.01_eng.pdf?ua=1, accessed 23 November 2018).
2. Global Cooperation on Assistive Technology – about us. In: Public health, innovation, intellectual property and trade 2018 [website]. Geneva: World Health Organization; 2018 (http://www.who.int/phi/implementation/assistive_technology/phi_gate/en/, accessed 29 November 2018).
3. Population pyramids of the world from 1950 to 2100: Tajikistan. In: PopulationPyramid [website] (<https://www.populationpyramid.net/tajikistan/2018/>, accessed 23 November 2018).
4. Report for selected country groups and subjects. In: International Monetary Fund [website]. Washington (DC): International Monetary Fund; 2017 (<https://www.imf.org/external/pubs/ft/weo/2017/01/weodata/weorept.aspx?pr.x=38&pr.y=11&sy=2017&ey=2020&scsm=1&ssd=1&sort=country&ds=.&br=1&c=923&s=NGDPD%2CNGDPDPC%2CPPPGDP%2CPPPPC%2CLP&grp=0&a=>, accessed 23 November 2018).
5. Situational analysis: state of rehabilitation in Tajikistan. Copenhagen: WHO Regional Office for Europe; 2015 (<http://www.euro.who.int/en/publications/abstracts/situational-analysis.-state-of-rehabilitation-in-tajikistan>, accessed 23 November 2018).
6. Participation in the signing of the United Nations Convention on the Rights of Persons with Disabilities. In: President of the Republic of Tajikistan [website] (<http://www.president.tj/en/node/17370>, accessed 23 November 2018).
7. Tajikistan develops its first list of essential assistive products for older people and people with disabilities. In: WHO Regional Office for Europe [website]. Copenhagen: WHO Regional Office for Europe; 2018 (<http://www.euro.who.int/en/countries/tajikistan/news/news/2018/5/tajikistan-develops-its-first-list-of-essential-assistive-products-for-older-people-and-people-with-disabilities>, accessed 23 November 2018).
8. Mishra S et al. Situational analysis on wheelchairs and mobility devices in Tajikistan. Copenhagen: WHO Regional Office for Europe; 2014 (<http://www.euro.who.int/en/countries/tajikistan/publications/situational-analysis-on-wheelchair-and-mobility-devices-in-tajikistan-2014>, accessed 23 November 2018).
9. Groce NE, Bakshi P. Illiteracy among adults with disabilities in the developing world: an unexplored area of concern. London: Leonard Cheshire Disability and Inclusive Development Centre; 2009 (<http://discovery.ucl.ac.uk/id/eprint/56202>, accessed 23 November 2018).
10. Andrich R. Service delivery systems for assistive technology in Europe. Linz: Association for the Advancement of Assistive Technology in Europe; 2012:1–27 (https://aaate.net/wp-content/uploads/sites/12/2016/02/ATServiceDelivery_PositionPaper.pdf, accessed 23 November 2018).
11. Mishra S et al. Case study. Disability and rehabilitation in Tajikistan: development of a multisectoral national programme to leave no one behind. Public Health Panorama. 2018(1):3–10.
12. Better wheelchair service provision in Tajikistan. In: WHO Regional Office for Europe [website]. Copenhagen: WHO Regional Office for Europe; 2018 (<http://www.euro.who.int/en/countries/tajikistan/news/news/2016/01/better-wheelchair-service-provision-in-tajikistan>, accessed 29 November 2018).
13. Smith EM, Gowran RJ, Mannan H, Donnelly B, Alvarez L, Bell D et al. Enabling appropriate personnel skill-mix for progressive realization of equitable access to assistive technology. Disabil Rehabil Assist Technol. 2018; 13(5):445–53 (<https://www.tandfonline.com/doi/full/10.1080/17483107.2018.1470683>, accessed 23 November 2018).

Annex 1. Rapid survey

Part A. Needs for assistive products

Interviewer's name:

ID:

Date:

Respondent's name:

Age (years):

Place:

Sex: ☐ Male ☐ Female

District:

Province:

Telephone:

Which of the following products do you think are useful to you? Tick the black box if you already have and use the product and the red box if you need but do not have the product. You may choose more than one.

A1. Do you have difficulty sitting or standing?
Examples: Child/adult/older adult cannot sit or stand independently.

☐ No ☒ Yes ☒

Some difficulty ☐

A lot of difficulty ☐



Standing frame



Sitting support



Grab bar

A2. Do you have difficulty walking or climbing steps?
Examples: Due to discomfort, pain, tiredness, risk of falling, limb loss, difficult to climb steps or walk independently inside or outside the house.

☐ No ☒ Yes ☒

Some difficulty ☐

A lot of difficulty ☐



Walking stick



Tripod/quadrupod



Axillary crutch



Walker



Rollator



Elbow crutches



Orthosis



Knee brace



Prosthesis



Wheelchair



Wheelchair with postural support



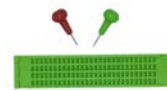
Portable ramp

Which of the following products do you think are useful to you? Tick the black box if you already have and use the product and the red box if you need but do not have the product. You may choose more than one.

- A3.** Do you have difficulty seeing?
Examples: Reading books, newspapers, smart phones or signboards, identifying people across the road.
☐ No ☒ Yes ☒
 Some difficulty ☐
 A lot of difficulty ☐



☐ ☐
White cane



☐ ☐
Braille slate



☐ ☐
Reading glasses



☐ ☐
Optical magnifier



☐ ☐
Talking watch



☐ ☐
Talking book

- A4.** Do you have difficulty hearing?
Examples: Problems hearing when others talk or when answering the phone.
☐ No ☒ Yes ☒
 Some difficulty ☐
 A lot of difficulty ☐



☐ ☐
Alarm signaller



☐ ☐
Hearing aid

- A5.** Do you have difficulty speaking or communicating?
Examples: Understanding others or being understood.
☐ No ☒ Yes ☒
 Some difficulty ☐
 A lot of difficulty ☐



☐ ☐
Communication board



☐ ☐
Communication software

- A6.** Do you have pain or deformities in your hands, arms, feet, neck or back?
Examples: Arthritis, spinal deformity, wrist-drop.
☐ No ☒ Yes ☒
 Some difficulty ☐
 A lot of difficulty ☐



☐ ☐
Cervical collar



☐ ☐
Lumbar corset



☐ ☐
Spinal orthosis



☐ ☐
Wrist brace



☐ ☐
Club foot brace



☐ ☐
Orthopaedic shoes

- A7.** Do you have difficulty remembering?
Examples: Forgetting appointments, medication, phone numbers, difficulty preparing meals or finding places.
☐ No ☒ Yes ☒
 Some difficulty ☐
 A lot of difficulty ☐



☐ ☐
Pill organizer



☐ ☐
Magnetic white board



☐ ☐
Simplified mobile phone



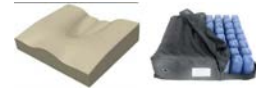
☐ ☐
Recorder

Which of the following products do you think are useful to you? Tick the black box if you already have and use the product and the red box if you need but do not have the product. You may choose more than one.

- A8.** Do you have difficulty with decrease/loss of sensation in feet, legs, hands, buttocks or back?
Examples: Numbness, ulcers in feet, buttocks or back.
☐ No **↓** Yes **→**
 Some difficulty ☐
 A lot of difficulty ☐



Protective footwear

☐ ☐


Pressure-relief cushion

☐ ☐

- A9.** Do you have difficulty controlling the bladder or bowel?
Examples: Leaking of urine or stool or wetting pants.
☐ No **↓** Yes **→**
 Some difficulty ☐
 A lot of difficulty ☐


☐ ☐

☐ ☐

Incontinence products (diaper, pull-up underwear)

- A10.** Do you have difficulty with your self-care?
Examples: Eating, dressing, bathing or toileting.
☐ No **↓** Yes **→**
 Some difficulty ☐
 A lot of difficulty ☐



Shower chair

☐ ☐


Toilet chair

☐ ☐

- A11.** If you answered yes to any of the questions, can you think of any other assistive product that could help you with your condition? Please specify:

- A12.** Do you have a disability certificate?

☐ Yes ☐ No

If yes, which disability category: category I ☐ category II ☐ category III ☐

Part B. Assistive products in use

B0 ATA needs ID number:
(Same as in Part A.)

[Fill out one Part B for each product in use – one for each black box ticked in Part A, and only for the products listed below]

Select type of product used as indicated in Part A

- | | |
|---|---|
| <input type="checkbox"/> Orthosis | <input type="checkbox"/> Walker |
| <input type="checkbox"/> Orthopaedic shoes | <input type="checkbox"/> Rollator |
| <input type="checkbox"/> Prosthesis | <input type="checkbox"/> White cane |
| <input type="checkbox"/> Wheelchair | <input type="checkbox"/> Braille slate |
| <input type="checkbox"/> Wheelchair with postural support | <input type="checkbox"/> Hearing aid |
| <input type="checkbox"/> Walking stick | <input type="checkbox"/> Communication board |
| <input type="checkbox"/> Tripod/quadrupod | <input type="checkbox"/> Communication software |
| <input type="checkbox"/> Axillary crutches | <input type="checkbox"/> Reading glasses |
| <input type="checkbox"/> Elbow crutches | |

B1 From where did you get the assistive product?

- | | |
|--|--|
| <input type="checkbox"/> Shop, market or commercial centre | <input type="checkbox"/> Local department of social protection |
| <input type="checkbox"/> Pharmacy | <input type="checkbox"/> NGO ¹ (specify): |
| <input type="checkbox"/> Hospital, health-care facility or rehabilitation centre | <input type="checkbox"/> Webshop on the Internet |
| <input type="checkbox"/> From a facility in another country | <input type="checkbox"/> Made by self, family or artisan |
| <input type="checkbox"/> State Enterprise Orthopaedic Plant (SEOP) | <input type="checkbox"/> From an individual living abroad |
| <input type="checkbox"/> / National Orthopaedic centre | <input type="checkbox"/> Other (specify): |
| | <input type="checkbox"/> Missing (specify): |

B2 Approximately how much did you pay for the product?

B3 How long did you have to wait for the product, from the time it was prescribed to you until it was delivered?

- ☐ Less than 1 week
☐ Between 1 week and 1 month
☐ Between 1 and 3 months
☐ Between 3 months and 1 year
☐ Over 1 year
☐ Missing (specify):

B4 How far did you have to travel to get the product?

- ☐ Less than 30 min
☐ Between 30 min and 2 hours
☐ Between 2 and 4 hours
☐ Between 6 and 8 hours
☐ More than 8 hours
☐ Missing (specify):

¹ Editor's note: NGO: nongovernmental organization.

B5 How long have you been using the product?

- ☐ Less than 1 year
☐ Between 1 and 3 years
☐ Between 3 and 5 years
☐ More than 5 years
☐ Missing (specify):

B6 Does the product meet your needs? (Does it do everything that you want it to do?)

- ☐ Yes
☐ Mostly
☐ Partly
☐ No
☐ Missing (specify):

B7 In what condition is the product?

- ☐ As good as new
☐ In need of maintenance but still working well
☐ In need of maintenance and not working well
☐ Does not work at all
☐ Missing (specify):

B8 What kinds of problem have you had with the product?

Parts that fail or break easily (list):

- ☐ No problems with product
☐ Missing (specify):

B9 What, if anything, would you like to change about the product to make it better? (More than one option can be selected.)

- ☐ Size
☐ Weight
☐ Easier to move
☐ Appearance
☐ Easier to use
☐ Reliability
☐ Other (specify):
☐ I do not want to change anything
☐ Missing (specify):

B10 How easy is it for you to use the assistive product within your home?

- ☐ Very easy
☐ Somewhat easy
☐ Somewhat difficult
☐ Very difficult
☐ I do not use it at home
☐ Missing (specify):

B11 How easy is it for you to use the assistive product outside home?

- ☐ Very easy
☐ Somewhat easy
☐ Somewhat difficult
☐ Very difficult
☐ I do not use it outside home
☐ Missing (specify):

B12 Was the product prescribed for you following an assessment (i.e. looking at you, asking you questions or taking measurements)?

- ☐ Yes
☐ Missing (specify):
☐ No

B13 Was the product fitted to you or customized to your needs?

- ☐ Yes
☐ Missing (specify):
☐ No

B14 Have you received any training on how to use and take care of the product? If yes, from whom? (More than one option can be selected.)

- | | |
|---|---|
| <input type="checkbox"/> No | <input type="checkbox"/> Physiotherapist |
| Yes, by: | <input type="checkbox"/> Missing (specify): |
| <input type="checkbox"/> Physician | |
| <input type="checkbox"/> Nurse | |
| <input type="checkbox"/> Occupational therapist | |
| <input type="checkbox"/> Pharmacist | |
| <input type="checkbox"/> Prosthetist or orthotist | |

B15 If there is something wrong with the product, is there somewhere you can go for repairs or maintenance?

- | | |
|--|---|
| <input type="checkbox"/> Always | <input type="checkbox"/> Missing (specify): |
| <input type="checkbox"/> Often | |
| <input type="checkbox"/> Sometimes | |
| <input type="checkbox"/> Rarely or never | |

B16 How important is the product for you to do your work or go to school?

- | | |
|---|---|
| <input type="checkbox"/> Very important | <input type="checkbox"/> Not applicable |
| <input type="checkbox"/> Important | <input type="checkbox"/> Missing (specify): |
| <input type="checkbox"/> Of some importance | |
| <input type="checkbox"/> Not important | |

B17 How important is the product for you to participate in social events and be an active member of your community?

- | | |
|---|---|
| <input type="checkbox"/> Very important | <input type="checkbox"/> Not applicable |
| <input type="checkbox"/> Important | <input type="checkbox"/> Missing (specify): |
| <input type="checkbox"/> Of some importance | |
| <input type="checkbox"/> Not important | |

B18 How important is the product to your health?

- | | |
|---|---|
| <input type="checkbox"/> Very important | <input type="checkbox"/> Not applicable |
| <input type="checkbox"/> Important | <input type="checkbox"/> Missing (specify): |
| <input type="checkbox"/> Of some importance | |
| <input type="checkbox"/> Not important | |

B19 How important is the product to your enjoyment of life?

- | | |
|---|---|
| <input type="checkbox"/> Very important | <input type="checkbox"/> Not applicable |
| <input type="checkbox"/> Important | <input type="checkbox"/> Missing (specify): |
| <input type="checkbox"/> Of some importance | |
| <input type="checkbox"/> Not important | |

Additional comments:

Part C. Abandonment of and barriers to use of assistive products

C0 ATA needs ID number:
(Same as in Part A.)

[Fill out one Part C for each product in need – one for each red box ticked in Part A]

Select type of product in need as indicated in Part A	Skip instructions
<input type="checkbox"/> Standing frame <input type="checkbox"/> Sitting support <input type="checkbox"/> Grab bar <input type="checkbox"/> Walking stick <input type="checkbox"/> Tripod/quadripod <input type="checkbox"/> Axillary crutches <input type="checkbox"/> Elbow crutches <input type="checkbox"/> Walker <input type="checkbox"/> Rollator <input type="checkbox"/> Orthosis <input type="checkbox"/> Orthopaedic shoes <input type="checkbox"/> Prosthesis <input type="checkbox"/> Knee brace <input type="checkbox"/> Wheelchair <input type="checkbox"/> Wheelchair with postural support <input type="checkbox"/> Portable ramp <input type="checkbox"/> White cane <input type="checkbox"/> Braille slate <input type="checkbox"/> Reading glasses <input type="checkbox"/> Optical magnifier	<input type="checkbox"/> Talking watch <input type="checkbox"/> Talking book <input type="checkbox"/> Alarm signaller <input type="checkbox"/> Hearing aid <input type="checkbox"/> Communication board <input type="checkbox"/> Communication software <input type="checkbox"/> Cervical collar <input type="checkbox"/> Lumbar corset <input type="checkbox"/> Spinal orthosis <input type="checkbox"/> Wrist brace <input type="checkbox"/> Club foot brace <input type="checkbox"/> Pill organizer <input type="checkbox"/> Magnetic white board <input type="checkbox"/> Simplified mobile phone <input type="checkbox"/> Recorder <input type="checkbox"/> Protective footwear <input type="checkbox"/> Pressure relief cushion <input type="checkbox"/> Incontinence products <input type="checkbox"/> Shower chair <input type="checkbox"/> Toilet chair <input type="checkbox"/> Other (specify)
C1 Have you used any assistive product of this kind in the past? <input type="checkbox"/> Yes <input type="checkbox"/> No	If "No", go to C6.
C2 Do you have an assistive product of this kind that you no longer use? <input type="checkbox"/> Yes <input type="checkbox"/> No	If "No", go to C6.
C3 How long have you had the assistive product? <input type="checkbox"/> Less than 1 year <input type="checkbox"/> Between 1 and 3 years <input type="checkbox"/> Between 3 and 5 years <input type="checkbox"/> More than 5 years <input type="checkbox"/> Missing (specify):	
C4 Is the product in working condition? <input type="checkbox"/> Yes <input type="checkbox"/> No	If "No", go to C6.

C5 Why are you no longer using the product? (More than one option can be selected)

- | | |
|---|---|
| <input type="checkbox"/> No longer needed | <input type="checkbox"/> Poor fit |
| <input type="checkbox"/> Ineffective | <input type="checkbox"/> Too heavy |
| <input type="checkbox"/> Too difficult to use | <input type="checkbox"/> Dislike appearance |
| <input type="checkbox"/> Unsuitable to my environment | <input type="checkbox"/> Other (specify): |
| <input type="checkbox"/> Pain | <input type="checkbox"/> Missing (specify): |

C6 You told me that you do not use assistive products that could help you. What stops you from using them? (More than one option can be selected)

- | | |
|--|--|
| <input type="checkbox"/> They are not available in the community | <input type="checkbox"/> I am not able to use them |
| <input type="checkbox"/> I do not know where to get them | <input type="checkbox"/> They do not suit my environment |
| <input type="checkbox"/> I cannot afford them | <input type="checkbox"/> Other (specify): |
| <input type="checkbox"/> They do not work | <input type="checkbox"/> Missing (specify): |

Additional comments:

Annex 2. Focus group guidelines

Assistive technology assessment – Focus group guidelines

1. Products in use – (participants look at the form and tick devices they have)

1.1 Can you tell me how and where you got the products that you use?

- ☐ What difficulties did you face in getting the products? (cost, travel, waiting times, don't know where to go, etc.)
- ☐ Who supported you in getting the product? (Who told you about where to go?)
- ☐ Did someone fit/adjust the product to your personal needs? Did someone teach you how to use the product and how to take care of it? (Any other problem with the service?)

1.2 How would you rate the quality of the device?

- ☐ Does the product work well? Have you had any problems with the device? Does it do everything you want it to do?
- ☐ If it breaks, where do you go for repairs?
- ☐ What would you like to change about the device? How would you want to improve it? (Less heavy, easier to use, better looking, etc.)

1.3 How important is the device to you?

- ☐ Where do you use the device? (Do you use it outside the house? Why not?)
- ☐ What does the device enable you to do? (Go to work/school, stay healthy, participate in activities)
- ☐ What does the device mean to you?

2. Needed products – (participants look at the list and tick the devices they need)

2.1 Why have you been unable to get or use these assistive products?

- ☐ Have you used any such products in the past? Why have you stopped using them?
- ☐ What other products might you need?

3. How to improve the assistive technology sector

3.1 We have discussed many problems and situations regarding the assistive technology sector such as

- ☐ In your opinion, how does the assistive technology sector need to change in the future to better meet your needs?
- ☐ What changes are your priority?
- ☐ What products should be included?
- ☐ How would you like service provision to be organized in the future?

Annex 3. Systems survey

OVERSIGHT

1. What are the regulatory bodies for assistive technology and what are their roles?

2. Is there a national committee to address the issue of assistive technology?
If "Yes", who leads the committee?

3. Is there an assistive technology national strategy, plan or programme?

4. What legislation or policies regulate the provision of assistive technology?

PROCUREMENT, SUPPLY AND DISTRIBUTION

5. What is the Government budget for procurement of assistive products?

6. By what mechanism does the Government procure assistive products?

- ☐ Bulk purchase
☐ Yearly tendering
☐ Individual need
☐ Other (specify):

7. Which products are procured by the Government and from whom? (Use table)

8. After procurement, how are the assistive products distributed among the various structures?

9. Wheelchair procurement

Technical specifications for procurement of wheelchairs:

Type of wheelchairs procured:

- ☐ Wheelchair for active user
☐ Manual assistant-controlled wheelchair
☐ Wheelchair with postural support

Supplier	Model	Number of units	Cost per unit	Transportation cost

REGULATIONS

10. What regulations and standards do assistive products need to comply with before being placed in the market?

11. Do assistive products need to be registered with a Government authority before being placed in the market?

12. Who is authorized to prescribe different assistive products?

13. Who is authorized to fit different assistive products?

FACILITIES AND PERSONNEL

14. Health workforce in the country:

Health workforce	Total number of personnel	Number of female personnel	Number of personnel working in rural areas	Number of personnel in public services	Average salary in public services
Physicians					
Nurses					
Social workers					

15. Certified specialists in the country:

Certified specialists	Total number of personnel	Number of female personnel	Number of personnel working in rural areas	Number of personnel in public services	Average salary in public services
Rehabilitation doctors					
Orthopaedic doctors					
Prosthetists/Orthotists					
Wheelchair technicians					
Physiotherapists					
Occupational therapists					
Ophthalmologists					
Opticians					
Braille teachers					
Mobility orientation trainers					
Audiologists					
Hearing aid technicians					
Speech and language therapists					
Neurologists					
Psychologists					
Biomedical engineers					
CBR workers					

16. Which public facilities provide assistive technology services?

FINANCING

17. What Government financing schemes for assistive products exist? (More than one option can be selected.)

- ☐ Assistive products are included in national health insurance.
- ☐ Assistive products are provided free of charge (or at subsidized cost) at facilities with a medical prescription.
- ☐ Vouchers or cash are provided for assistive products after a needs assessment.
- ☐ Other (specify):

18. Who is entitled to assistive products under these schemes?

19. Which assistive products are provided under these schemes?

20. Is there any out-of-pocket payment from the beneficiary?

INFORMATION AND RESEARCH

21. Does the Government have a national health information system?

If "Yes", are assistive-technology-related data included?

22. Does the Government have a general information system on assistive technology?

If "Yes", what kind of data are collected?

Yes

- ☐ Registry of assistive products
- ☐ Number of products provided
- ☐ Number of users
- ☐ Other (specify):

☐ No

23. Is there a monitoring and evaluation strategy for assistive technology provision in the country?

If "Yes", which agencies are responsible for monitoring and evaluation?

24. Are there any agencies or institutes conducting research in the field of assistive technology?

If "Yes", which one(s)?

Annex 4. Assistive Products List



Mobility products

1. Wheelchairs (manual)
2. Wheelchairs (manual) with postural support/postural-support kit
3. Axillary crutches
4. Elbow crutches
5. Rollators
6. Walking frames
7. Walking sticks



Mobility products – local production

8. Orthopaedic shoes
9. Orthoses – lower limb
10. Orthoses – upper limb
11. Orthoses – spinal
12. Prostheses – lower limb
13. Prostheses – upper limb
14. Sitting supports
15. Standing frames



Mobility products – procurement

16. Club foot braces
17. Protective footwear – diabetic and neuropathic
18. Lumbar corsets
19. Pressure relief cushions





Self-care products

20. Toilet chair

21. Shower chairs

22. Incontinence products



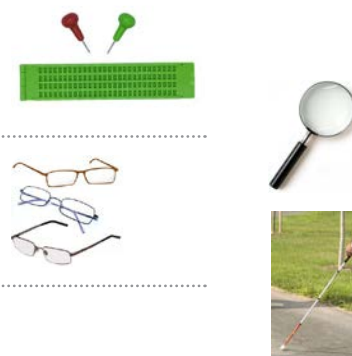
Vision products

23. Braille slates

24. Magnifiers, optical

25. Reading glasses

26. White canes



Hearing products

27. Hearing aids

28. Closed captioning displays



Communication and cognitive products

29. Communication boards

30. Simplified mobile phones



Annex 5. Quantification calculations

Table A5.1. Indirect calculations

Assistive product (AP) (C/P)	Condition/ pathology (C/P)	Sample analysed	Sample size	Incidence (%)	Prevalence (%)	Total cases (Tc)	Correlation (C)* (L)**	Subtotal	Total annual need	Source
Orthoses, spinal (rigid)	Scoliosis	Females aged 10 to 15	420 317	10.0		42 032	0.1	1	NA	4203
Club foot braces	Club foot	Live births (2017)	272 197	0.1		272	0.9	1	NA	245 http://countrymeters.info/en/Tajikistan#population_2017
Communication boards	Need for AAC (based on UK data)	All	9 046 722	NA	0.5	45 234	0.9	7	NA	5816 https://www.asha.org/PRP-SpecificTopic.aspx?folderid=8589942773&section=Key_Issues
Simplified mobile phone	Dementia	Population age > 60	503 199	NA	5.0	25 160	0.9	7	NA	3235 http://www.who.int/news-room/fact-sheets/detail/dementia
Reading glasses	Presbyopia	Population age > 40	1 603 122	NA	43.8	702 167	0.9	7	NA	90 279 https://jamanetwork.com/journals/jamaophthalmology/fullarticle/420914
Protective footwear	Diabetes	All	9 046 722	NA	7.6	687 551	0.15	3	NA	34 378 http://www.who.int/diabetes/country-profiles/en/
Orthoses – lower limb	NA	NA	NA	NA	NA				NA	3 659 Based on Mobility India average annual production
Orthoses – upper limb	NA	NA	NA	NA	NA				NA	223 Based on Mobility India average annual production
Prostheses – lower limb	Amputees	NA	NA	NA	NA	3 000	0.9	3	NA	900 http://landminesurvivors.org/documents/indicator_tajikistan.pdf
Prostheses – upper limb	Amputees	NA	NA	NA	NA	900	0.9	5	NA	162 https://web.stanford.edu/class/engr110/2011/LeBlanc03a.pdf
Braille slates	Blindness	NA	NA	NA	NA	4611	0.9	7	NA	593 Estimates by Association of Blind People
Magnifiers, optical	Low vision	NA	NA	NA	NA	9221	0.9	7	NA	1186 Estimates by Association of Blind People
White canes	Blindness	NA	NA	NA	NA	4611	0.9	7	NA	593 Estimates by Association of Blind People

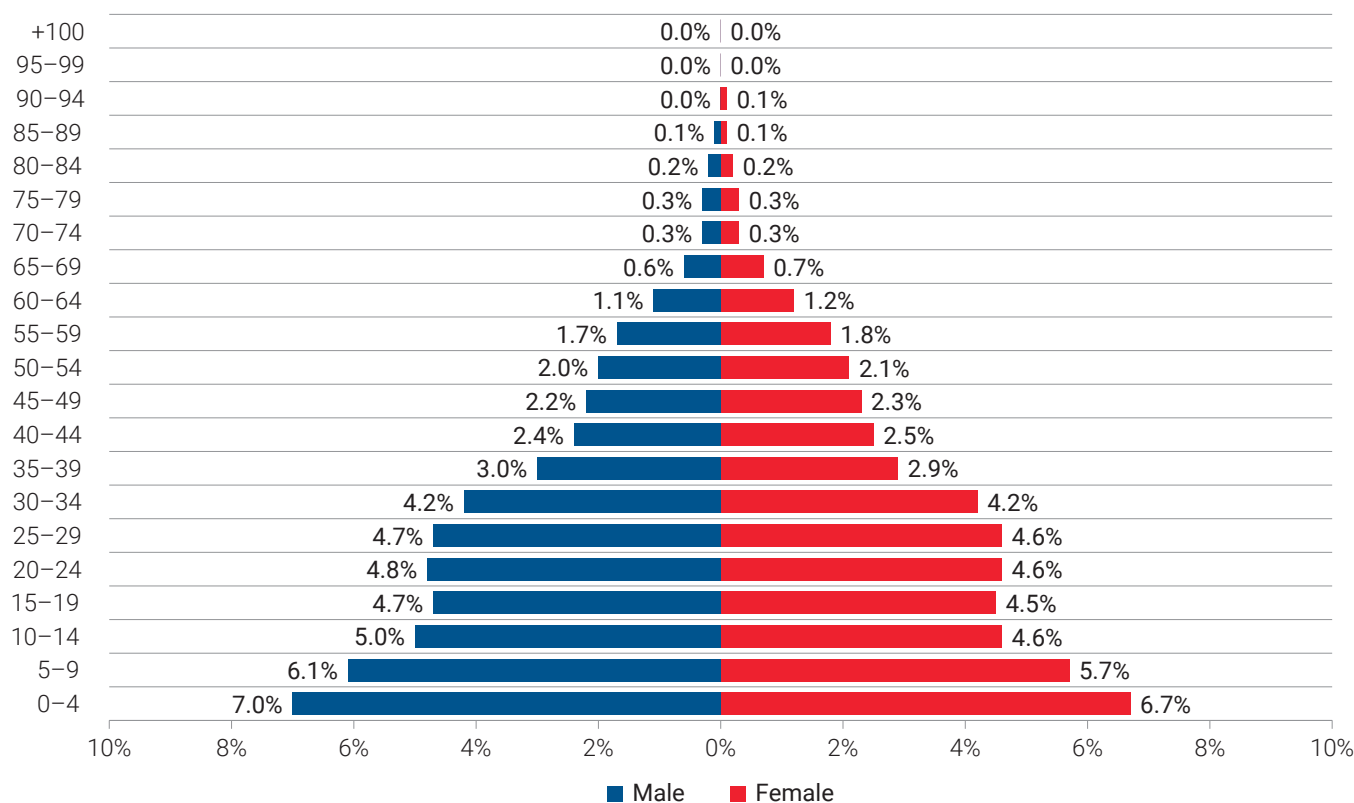
Assistive product (AP)	Condition/ pathology (C/P)	Sample analysed	Sample size	Incidence (%)	Prevalence (%)	Total cases (Tc)	Correlation (C)*	Lifespan (L)**	Subtotal	Total annual need	Source
Hearing aids	Disabling hearing loss	Population age > 65 years	292 681	NA	36.6	107 121	0.8	5	17 139	56 329	http://www.who.int/deafness/estimates/en/
NA	Disabling hearing loss	Population 35–64 years	2 294 258	NA	6.6	151 421	0.8	5	24 227		
NA	Disabling hearing loss	Population 15–34 years	3 278 939	NA	1.3	42 626	0.8	5	6 820		
NA	Disabling hearing loss	Population 0–14 years	3 180 545	NA	1.6	50 889	0.8	5	8 142		
* max. correlation set at 0.9											
** max. lifespan set at 7 years											

AAC: augmentative and alternative communication.

Table A5.2. Survey calculations

Assistive product (AP)	Total need (survey) No. (%)		Sample size*	Total people in need	Lifespan (L)	Total annual need
Wheelchair	78	(39.0)	150 000	58 500	5	11 700
Toilet chair	61	(30.5)	150 000	45 750	5	9150
Incontinence products	33	(16.5)	150 000	24 750	3	8250
Lumbar corset	22	(11.0)	150 000	16 500	3	5500
Wheelchair with postural support	36	(18.0)	150 000	27 000	5	5400
Rollator	31	(15.5)	150 000	23 250	5	4650
Shower chair	29	(14.5)	150 000	21 750	5	4350
Orthopaedic shoes	14	(7.0)	150 000	10 500	3	3500
Walker	22	(11.0)	150 000	16500	5	3300
Standing frame	21	(10.5)	150 000	15750	5	3150
Axillary crutches	21	(10.5)	150 000	15750	5	3150
Sitting support	15	(7.5)	150 000	11250	5	2250
Walking stick	5	(2.5)	150 000	3750	5	750
Elbow crutches	5	(2.5)	150 000	3750	5	750

* Registered as person with disability with Government (rounded to nearest 500 people).

Fig. A5.1. Population structure, Tajikistan, 2018

THE WHO REGIONAL OFFICE FOR EUROPE

The World Health Organization (WHO) is a specialized agency of the United Nations created in 1948 with the primary responsibility for international health matters and public health. The WHO Regional Office for Europe is one of six regional offices throughout the world, each with its own programme geared to the particular health conditions of the countries it serves.

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