



World Health  
Organization

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# Global report on assistive technology

Summary



**ATscale**  
GLOBAL PARTNERSHIP FOR  
ASSISTIVE TECHNOLOGY



**AT2030**

# Introduction

**In many countries, the majority of people who need assistive technology do not have access to it.** The many barriers to accessing assistive technology include lack of awareness and affordability, lack of related services, low product quality, range and quantity, and procurement and supply chain challenges. There are also capacity gaps in the assistive technology workforce, and a general lack of supportive policies. In addition, people may also face barriers related to their age, gender, type and extent of functional difficulty, living environment and socioeconomic status.

Inadequate access to assistive technology significantly affects the education, livelihood, health and well-being of individuals, impacting families, communities and all areas of society. In response, the 2018 World Health Assembly adopted a resolution on *Improving access to assistive technology*. In that resolution, World Health Organization (WHO) Member States requested the WHO Director-General to prepare a global report on effective access to assistive technology in the context of an integrated approach.

The *Global report on assistive technology* presents the latest data, scientific evidence and international experience, and was developed in collaboration with the United Nations Children's Fund (UNICEF) and stakeholders from diverse settings, multiple countries, and all regions. It presents ten recommendations intended to guide countries and stakeholders in their work to progressively improve access to assistive technology and towards universal coverage.



*“Through the Global report on assistive technology, we appeal to decision-makers in health, education, social welfare and other relevant stakeholders including civil society to take up the recommendations, towards ensuring that quality, affordable assistive products are available for everyone who needs them.”*



**Ms Catherine M. Russell**  
UNICEF Executive Director



**Dr Tedros Adhanom Ghebreyesus**  
WHO Director-General

#### About the report...

The *Global report on assistive technology* is primarily directed at policy-makers, providers of assistive technology, donors and funding agencies, and industry leaders. It is also aimed at broader stakeholders including users and potential users of assistive technology, as well as their families and caregivers.

The report explores a variety of perspectives by:

- presenting a comprehensive dataset and analysis of current assistive technology access;
- drawing the attention of governments and civil societies to the need for, and benefit of, assistive technology, including in relation to its return on investment;
- making recommendations for concrete actions that will improve access;
- supporting implementation of the United Nations (UN) *Convention on the Rights of Persons with Disabilities*; and
- contributing towards achieving the Sustainable Development Goals, especially in making universal health coverage inclusive and leaving no one behind.



The full report is available here:

<https://www.who.int/publications/i/item/9789240049451>

# Understanding assistive technology

## What is assistive technology?

‘Assistive technology’ is an umbrella term for assistive products and their related systems and services. It enables and promotes the inclusion, participation and engagement of people with disabilities, older people, people with communicable and noncommunicable diseases (including neglected tropical diseases), people with mental health conditions, and people with gradual functional decline or loss of intrinsic capacity. The positive impact of assistive products goes far beyond improving the health, well-being, participation and inclusion of individual users, as families and societies also benefit.

Assistive products can enhance a person’s functioning related to cognition, communication, hearing, mobility, self-care and vision. They may be physical products such as wheelchairs, spectacles, hearing aids, prostheses, orthoses, walking aids or continence pads; or they may be digital and come in the form of software and apps that support activities such as communication and time management. They may also be adaptations to the physical environment, such as portable ramps or grab rails.

Assistive technology is generally considered a means to participate in important areas of life, to express full citizenship, and to participate in community life and in wider society on an equal footing with others. Without it, people may suffer exclusion, be at risk of isolation and live in poverty, face hunger, and be forced to depend more on family, community and government support.



**WHO definition:** 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.

**Source:** Priority assistive products list. Geneva: World Health Organization; 2016 (<https://www.who.int/publications/i/item/priority-assistive-products-list>).



*Everyone is likely to need assistive technology during their lifetime, especially as they age.*

## **Assistive technology is important across the entire lifespan**

Access to assistive technology is a human right, and a precondition for equal opportunities and participation. While needs are rising, the majority of people who might potentially benefit from assistive technology do not have sufficient access. Yet everyone is likely to need assistive technology at some stage during their lifetime, especially as they age.

Access to assistive technology for children with disabilities is often a critical part of childhood development, access to education, participation in sports and civic life, and preparing for employment. Along with existing functional difficulties, people with disabilities who have used assistive technology throughout their life may need additional products due to gradual, age-related decline. Access to affordable, safe and effective assistive products is fundamental for maintaining and improving older people's functional abilities.

## **A dynamic field**

Assistive technology is a continuously changing and growing field especially in relation to advancement of digital technology and emerging needs, such as in ageing populations. Although some assistive products are relatively unaffected by technological progress (e.g. walking sticks, hand-propelled wheelchairs and spectacles), others have benefitted from, adapted to, and sometimes driven technological innovation.

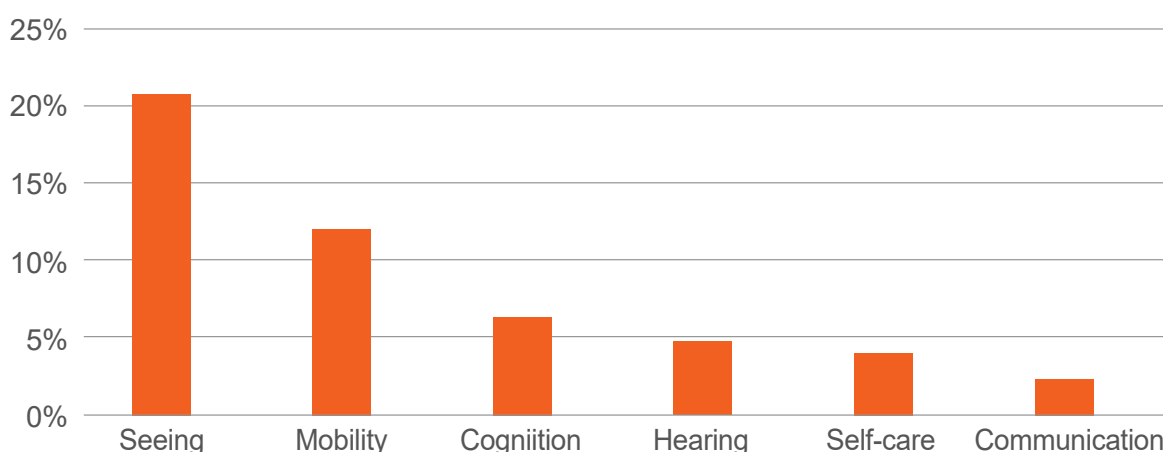


# Measuring access to assistive technology

High quality data on population needs for assistive technology, barriers to access and system preparedness for provision are important because they support the design of effective interventions, help prioritize resource allocation and raise public awareness.

To better understand the current global assistive technology access situation, data were collected from nearly 330 000 individuals across 35 countries. Based on representative self-reported population surveys in 29 countries, WHO and UNICEF estimate that there are now more than 2.5 billion people who could benefit from one or more assistive products. With populations rapidly ageing and the prevalence of noncommunicable diseases steadily rising across the world, this number is projected to rise above 3.5 billion by 2050.

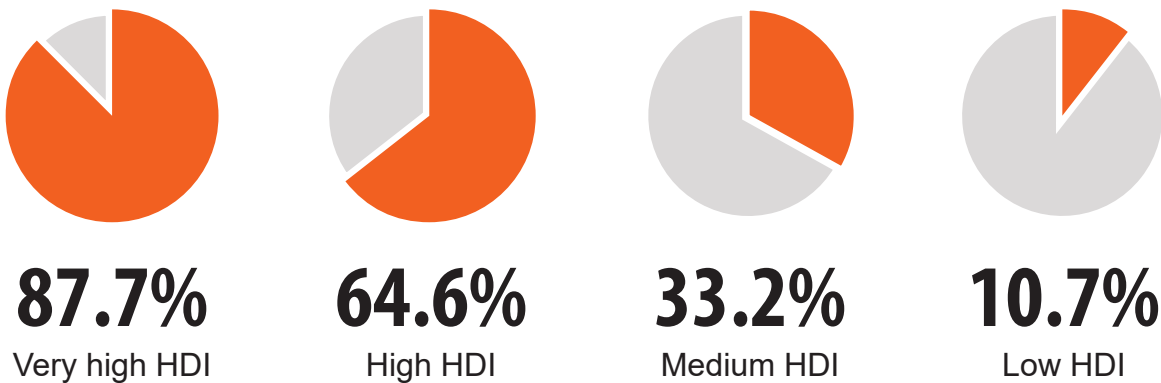
## Distribution of main self-reported functional difficulties



Self-reported need for assistive products is influenced by many factors including a person's functional ability, level of awareness, socioeconomic situation, living context, and their interaction with the environment. In the current surveys, most frequently reported assistive technology needs were spectacles, walking sticks and hearing aids.

The population needs for assistive technology were far from being fully met in most surveyed countries, and there is a considerable global inequity in terms of access to assistive technology. Survey results show that estimated access varies widely, ranging from 3% in some settings to 90% in others. Reported need for and access to some assistive products vary with the Human Development Index (HDI) – an indicator that combines life expectancy, education and gross national income as a measure of country development.

## Estimated global access to assistive products (by HDI)



The trend of increasing access along with HDI suggests that socioeconomic development influences the provision of assistive products. But HDI is not the only determinant responsible for improving access to assistive technology. Some countries in the low or medium HDI groups achieved comparable access as some with higher HDI classification.

Most people reported accessing their assistive products from the private sector, paid for either by themselves, or with financial support from family and friends. Improvements are clearly needed to tackle the high costs and inadequate availability of assistive products, and to improve essential support for people to obtain the assistive technology they need.

In most surveyed countries, more than 50% of current users found their assistive products suitable for use at home and in public environments, and to help them participate fully in desired activities. Most of the users in surveyed countries were satisfied with the specific products they were using.

Understanding the assistive technology needs in the population and identifying the key access barriers are key initial requirements for improving access. Such data are also key for monitoring outcomes of assistive technology programmes and making informed decisions for their improvement.

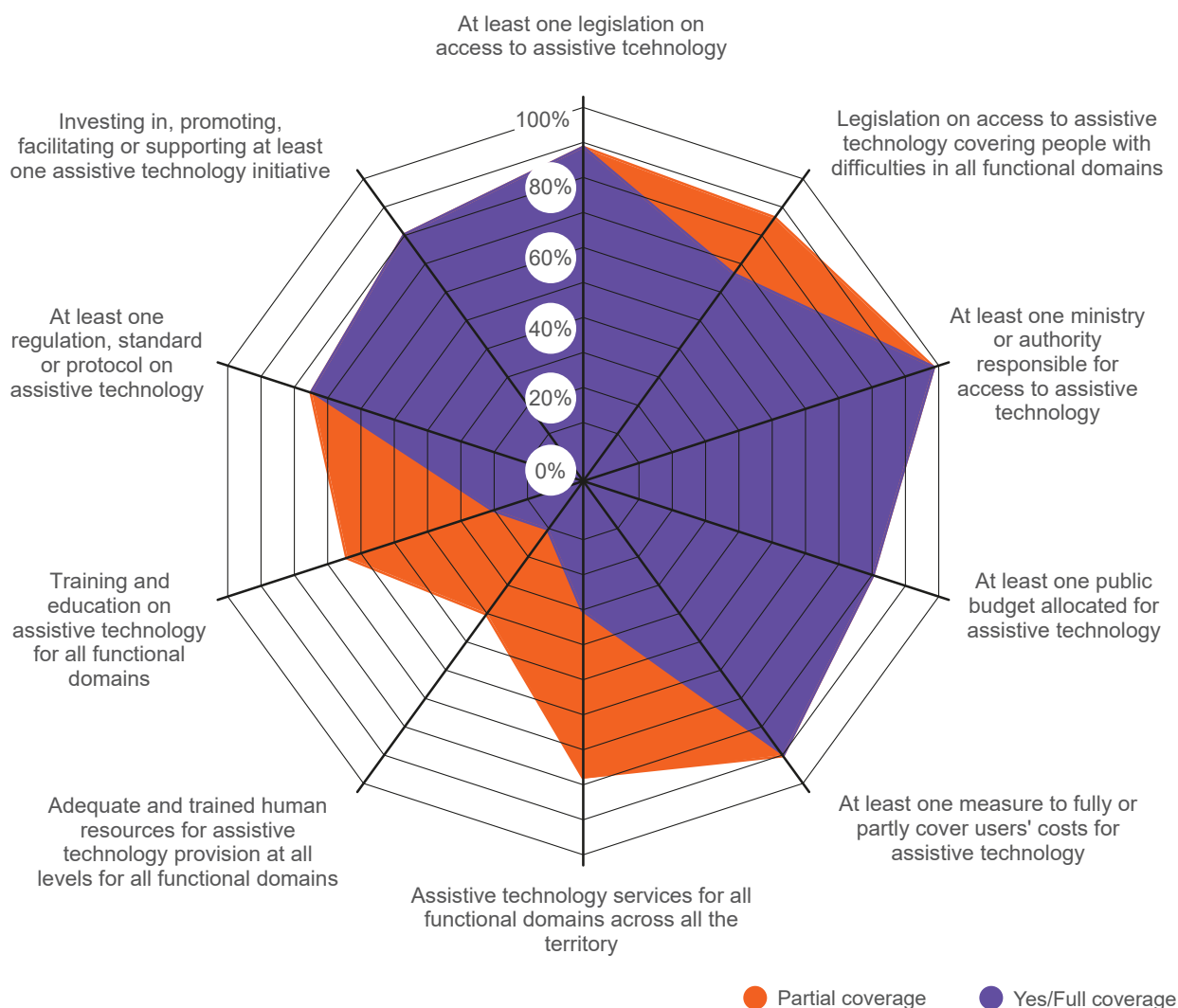


## System preparedness for providing assistive technology

To measure Member States' progress in improving access to assistive technology, WHO developed a set of indicators measuring various elements of system preparedness: governance; legislation; public budget; financing mechanisms; regulations and standards; collaborations and initiatives; service provision coverage; workforce availability; and training. By December 2021, 70 Member States had completed a survey focused on these indicators.

The results revealed important shortcomings in system preparedness, and that needs for assistive products are far from fully met in many countries. For example, having legislation in place and government bodies responsible for assistive technology does not guarantee that products or services are available for people in need. Likewise, public budgets and multiple financing mechanisms do not sufficiently cover the costs for people to obtain the products or services they need. Of particular note, shortfalls in well-trained workforces and service provision appear to exacerbate inadequate support needed for people to access assistive products, especially for communication, cognition and self-care, and to use these products safely and effectively.

### Reported elements of assistive technology system preparedness, in 70 Member States





## **Collaborations and initiatives**

Many countries reported investing in, promoting, facilitating or supporting initiatives related to assistive technology. This included schemes to improve service delivery capacity, strengthen product procurement, provide information to users and families, collect data on population-based needs for products, and increasing product affordability.

## **Regulations and standards**

Three quarters of countries had at least one regulation, standard or protocol in place on assistive technology or accessibility. Over half of countries reported having regulations on barrier-free/accessible environments and a similar proportion reported having regulations on procurement of assistive products. Regulations on inclusion of assistive products in emergency preparedness were reported by only one fifth of countries.

## **Workforce availability and training**

Only one in ten countries reported adequate and trained human resources at all levels of service delivery to provide, repair and maintain assistive products for all functional domains. Almost a third had no adequate and trained resources for any of the functional domains, and 14% had no relevant training and education.

## **Service provision coverage**

Availability of services varied considerably within countries with only a third having services in place for all functional domains across their entire territory. In around half of countries services were available only for some functional domains, or only in some geographical areas.

## **Legislation**

Most countries had at least one piece of legislation on access to assistive technology, typically covered as part of legislation on health and/or social services. About a third of countries had separate legislation on assistive technology.

## **Governance**

69 of the 70 of participating countries had at least one ministry or authority responsible for access to assistive technology, and in nearly all this was the ministry of health and/or social services. Other ministries involved in assistive technology policy and provision were education, labour and defence.

## **Public budget**

Most countries had at least one public budget allocated for assistive technology, usually within health or social services budgets, and with half allocated across three or more ministries.

## **Financing mechanism**

In the vast majority of countries there was at least one measure in place to cover users' assistive technology costs, either fully or partly. The two most common measures were a list of safe and effective assistive products that are subsidized or provided free to eligible people and public insurance schemes. Just over a third of countries had voluntary private insurance schemes and one fifth had compulsory private insurance schemes in place.

# Improving the assistive technology system

It is important that strategies to improve access to safe, effective and affordable assistive technology employ a people-centred, rights-based approach, actively engaging users in all aspects of assistive technology.

Building a person-centred assistive technology system means developing and strengthening four components: policy, products, provision and personnel.



## Policy

Policy overarches the three components described below. It includes information systems, financing, leadership and good governance. Political will, legislation and adequate funding, along with permanent implementation systems and structures, are all required to ensure universal, rights-based assistive technology access for everyone, everywhere.

## Products

The range, quality, affordability and supply of assistive products needs to improve. When possible, repairing, refurbishing and re-using assistive products can be faster and more cost-effective than purchasing new ones. Strengthening and harmonizing assistive product standards can ensure safety, performance and durability, and help to simplify procurement processes. Addressing supply chain inefficiencies and resilience can reduce transaction costs and supply disruptions. Local and regional production plays a vital role in overcoming many of these barriers.

## Provision

Service delivery or provision of assistive products and related services should take place as close as possible to where people live, including in rural areas. Services should be provided according to each individual's needs and give due consideration to the type and nature of their impairment, functional difficulty, lifestyle and environment. Where possible, services should emphasize early identification of need and timely provision in order to maximize people's opportunities.

Information and referral systems need to be simplified. Services need to be delivered across all geographic areas and populations. The range, quantity and quality of assistive products procured and provided need to improve, along with the efficiency of delivered services. Integrating assistive technology into health systems as well as social care and education sectors is important to achieving this.

## Personnel

The workforce required to ensure access to assistive technology for everyone, everywhere needs to be mapped and addressed. Training and education for dedicated assistive technology workforce, related professions and support networks are essential, including task-shifting, task-sharing and training of primary and community level workers. Adaptive staffing models and good retention strategies are also vital.

# Preparing for assistive technology in humanitarian crises

Every crisis, especially those integral to war and conflicts, creates a greater demand for assistive technology, but its provision is still not typically a priority in emergency responses. People with pre-existing functional difficulties may not have or be able to use their assistive product during a crisis, and when humanitarian facilities, services and programmes are inaccessible and not inclusive, the most vulnerable groups can get left behind.

Approaches to strengthening preparedness and reducing barriers to assistive technology in humanitarian settings must cover each component, and include:

**Policy:** Inclusive emergency response policies and programmes that ensure rights to access assistive technology are protected. Identifying effective information systems is essential to support coordination among humanitarian actors and encourage collaboration between those actors to ensure that assistive technology and associated service needs are met.

**Products:** Designing and producing assistive products to better respond to humanitarian settings, such as through:

- *Sustainable design and production:* repair, reuse and materials recovery at the local level may be alternatives to relying on global supply chains.
- *Accessible humanitarian products and infrastructure:* investing in design, and procurement of assistive products and accessibility measures that can be quickly deployed during a humanitarian crisis that are becoming more common.
- *Assistive technology catalogues and lists for humanitarian settings:* which can be expanded to include assistive products suitable for different humanitarian settings helping to facilitate procurement by humanitarian actors.

**Provision:** Ensuring that assistive technology is accessible to frontline staff when emergency medical teams are triaging those in need. Lists of essential assistive products and equipment for trauma care already exist, alongside best practices to address common types of injuries.

**Personnel:** Training all stakeholders involved in all stages of a humanitarian response – from community to international level, and from managers to staff and volunteers – in inclusive policies and practices that incorporate basic awareness of assistive technology to address functional difficulties.

Funding the implementation of policies and best practices to provide assistive technology during and after a crisis generally demands national and international financing.



# Creating enabling environments

The right to equitable access to the environment is enshrined in the UN *Convention on the Rights of Persons with Disabilities*, however enabling environments benefit everyone. Assistive technology benefits are maximized for users when their environment enables and improves their functioning and that of their assistive products.

The environment includes: products and equipment; the built, virtual and natural environment; human-made changes to the environment; services and systems; and support, relationships and attitudes. Access barriers include those related to infrastructure, information and attitudes. Enabling environments are created through policy as well as accessible and inclusive designs and the adoption of universal design principles.

For products and equipment to be useable by all, their physical, sensory and cognitive features, as well as the psychosocial and emotional characteristics they elicit must be considered. Including users in the design of products and equipment reduces the likelihood of products being abandoned.

The built environment comprises buildings, roads, transport networks, indoor and outdoor settings. Accessibility of these is impacted by their design, information availability or changing factors such as crowds. In many countries, laws mandate minimum built environment accessibility guidelines. Where these guidelines are not fully implemented, access challenges remain.

The digital environment comprises hardware and software. Where mainstream digital technology is more affordable and acceptable to use than assistive products, it is important that such technology is accessible to all. International and national guidelines, standards, policies and legislation have been established to support the development of enabling digital environments.

Services, systems and policies relevant to users include those relating to consumer goods, architecture and construction, open space planning, housing and utilities services, transport, communication, health, education, employment, and social security. The buildings, vehicles or online platforms housing these services must be accessible, services must be inclusively designed, and staff trained in accessibility.



Support, relationships and attitudes are social aspects of the environment. People or animals can offer physical or emotional support, nurturing, protection, assistance and relationships; which may influence the need for, and use of, assistive products. At a policy level, society attitudes may be reflected in legislation related to assistive technology access, or the creation of enabling environments. At a personal level, the presence or design of assistive products may lead to stigmatization, marginalization or neglect, making it important that assistive products are designed to reduce stigma.

The natural environment, including elements that have been modified by people, can also affect the need for and use of assistive technology. Natural and human caused adverse events can cause disruptions or disturbances in the physical environment. These events often increase the need for assistive technology while at the same time hindering access to and use of it.



# Moving forward

The *Global report on assistive technology* presents ten priority recommendations intended to guide governments and relevant stakeholders in their work to continually and progressively improve access to assistive technology towards universal coverage.

## Recommendation 1

### **Improve access to assistive technology within all key development sectors.**

Assistive technology provision needs to be integrated in all key development sectors, especially within health, education, labour and social care. Every country needs to have an integrated or standalone assistive technology policy and plan of actions with adequate budgetary support to improve access to assistive technology for everyone, everywhere without any financial hardship. Where needed, special focus should be given to children with disabilities, people with multiple or severe impairments, older people and other vulnerable populations.

## Recommendation 2

### **Ensure that assistive products are safe, effective and affordable.**

Assistive products should be affordable, durable, safe durable, effective and affordable. This includes developing or strengthening necessary regulatory systems and standards; systematic feedback mechanisms built into the supply chain; provision of assistive products with the support of a competent workforce; and active engagement of users and their families in product selection as well as training on use and maintenance. UN agencies can use their procurement capacity and expertise to ease these barriers through international tendering that is accessible to governments and other relevant stakeholders to ensure quality standards are upheld globally and drive best value for money.

## Recommendation 3

### **Enlarge, diversify and improve workforce capacity.**

Knowledge, skills, motivation, attitudes and deployment of personnel working in assistive technology sector are keys to success. Adequate and trained human resources of different categories and blend of skills for the provision and maintenance of assistive products need to be available at all levels of health and social services, from tertiary to community level. Investments in capacity building of dedicated and allied personnel are needed. The WHO Training on Assistive Products (TAP) and other similar materials can be used for such workforce training.

#### **Recommendation 4**

##### **Actively involve users of assistive technology and their families.**

Users and their families should be seen as partners in assistive technology provision, from service delivery design to monitoring and evaluation, and not as passive service recipients. Assistive technology services need to be organized around the person and the environment they live in, not the disease, impairment or the related financing. Users and their family members or caregivers can be encouraged and trained to do simple repair, maintenance and necessary adaptations. Peer-to-peer training and support should be encouraged.

#### **Recommendation 5**

##### **Increase public awareness and combat stigma.**

Ensure all the key stakeholders – including policy-makers, duty bearers, especially health, education, social care service providers, media and public at large – are well aware of the need for and benefit of assistive technology, including its return on investment. The assistive technology sector can be de-stigmatized through better product design, preferably universal design, and more acceptance. Political support is required to develop the assistive technology sector so it can achieve universal coverage through a rights-based approach.

#### **Recommendation 6**

##### **Invest in data and evidence-based policy.**

Every country should have periodical population-based data on the need for, access to, and supply of assistive technology to understand the gaps and trends, and in order to develop evidence-based strategies, policies and comprehensive programmes. The WHO Rapid assistive technology assessment (rATA) tool can be used to collect population-based data. The assistive technology data collection process can be integrated within other national data collection activities or the health information system, where possible. Investing in good periodic data collection and generating evidence-based policy will support quality services and promote universal coverage. Establishing a mechanism for sharing experiences, information and evidence supports policy decision-making across sectors and countries.



## **Recommendation 7**

### **Invest in research, innovation and an enabling ecosystem.**

The assistive technology sector is changing rapidly due to technological advances and evolving needs. Considering emerging needs – particularly those resulting from shifting population characteristics such as ageing – investment is urgently needed to ensure assistive products are appropriate, affordable, safe, effective, acceptable and accessible to those who need them most.

Investments in research and innovation related to all four key components of assistive technology (i.e. policy, products, provision and personnel) are needed: to increase knowledge; to transform the existing product range and develop new products utilizing emerging technologies; and to develop innovative service delivery processes taking advantage of digital technology, universal design and mainstream consumer products. This can be done in partnership with academia, civil society organizations, in particular with persons with disabilities and older persons and their representative organizations, and the private sector, as appropriate. Such initiatives can be supported by investing in and enabling ‘start-ups’ to overcome challenges and get products rapidly to market.

## **Recommendation 8**

### **Develop and invest in enabling environments.**

Enabling environments are critical for users’ independence, comfort, participation and inclusion, as they allow assistive products to be used as intended, with minimum effort by the user or caregiver. Enabling environments also benefit everyone. Investment in enabling environments is a key prerequisite to optimizing the universal purpose of assistive technology provision: to enable people to live independently and safely with dignity, participating fully in all aspects of life.

## **Recommendation 9**

### **Include assistive technology in humanitarian responses.**

Assistive technology provision during humanitarian responses increases benefits to potential users, restores productivity and dignity, and at the same time, enhances community ownership and inclusion. Efforts must be made to ensure that users in crisis settings are not further disadvantaged and that new potential users can access the assistive technology they need.

Essential assistive products can be included within the essential health care supply and alongside trauma emergency surgical kits. Training materials focusing on task-shifting can be adapted and translated rapidly. Integrated provision of appropriate services can be set up to ensure that assistive products and related services are compatible with those to be used in the long term. Emergency response facilities should be barrier-free and inclusive.

### **Recommendation 10**

#### **Provide technical and economic assistance through international cooperation to support national efforts.**

As outlined in Article 32 of the UN *Convention on the Rights of Persons with Disabilities*, international cooperation to support national efforts is necessary to improve access to assistive technology across the world. Such cooperation can support efforts in areas of research, policies, regulations, fair pricing, market shaping, product development, technology transfer, manufacturing, procurement, supply, service provision and human resources. International cooperation is essential to reducing inequity and progressively achieving universal access to assistive technology – and leaving no one behind.

