Access to Assistive Technology Benefits All
ATscale, the Global Partnership for Assistive Technology, was launched to accelerate access to AT

- In 2018, eleven Founding Partners launched this cross-sector partnership, to overcome the significant gap in access to appropriate, high-quality, and affordable assistive technology (AT) globally. ATscale’s goal is to reach 500 million more people with life-changing AT by 2030 to enable a lifetime of potential.

- ATscale is moving forward with two mutually enforcing objectives which seek to develop an enabling environment across all AT on global, regional and national levels and identify targeted, catalytic interventions to address both supply and demand barriers to access for priority products.
2030 Goal

To catalyse action to ensure that 500 million more people globally are reached with life-changing AT by 2030.

ATscale has two key objectives framing its initial work:

- **Develop an enabling environment:** Grow political will, mobilise investment, drive policy reform, and strengthen targeted systems

- **Build and shape markets:** Interventions to overcome supply and demand-side market barriers for priority AT products
Assistive Technology (AT) is an umbrella term covering the systems and services related to the delivery of assistive products and services, which support many older people and people with disabilities to live healthy, productive, and dignified lives.

Assistive technology needs to be accompanied by the appropriate service delivery, including, for example: referral, assessment, prescription, ordering, product preparation, fitting/adjusting of the product to the user, training of the user or family members, follow-up, and maintenance and repairs.¹

ATscale identified five initial priority product areas from the WHO’s Assistive Product List: Hearing Aids, Prosthetics, Wheelchairs, Eyeglasses, and Assistive digital devices & software.
ATscale conducted a literature review to understand the current fact base of the return on investing in AT. The main findings are outlined in this document but can be summarised as:

- The unmet need for AT is high, it is growing and it is particularly great in LMIC.
- Lack of access concerns both assistive products and related services.
- Unemployment among people with disability due to exclusion reduces GDP and tax revenue.
- Children with disabilities are less likely to receive an education – with the lack of AT a contributing factor.
- People with disabilities receive less health care.
- There is a strong link between disability and poverty.

While evidence on the return on investing in AT and accompanying service delivery is scant, preliminary evidence shows an impact on unemployment, income, productivity, GDP and education.

- Providing AT products and services increases productivity
- Enabling the participation of people with disabilities in the workforce can reduce unemployment and impact GDP
- Improving education for children with disabilities pays off – including the provision of AT

Market barriers on both the demand- and supply-sides limit access to AT and there are opportunities to invest in market shaping strategies.
The unmet need for AT is high, it is growing and it is particularly great in LMIC

Today, over one billion people need one or more AT—this is projected to increase to two billion by 2050.²

- It is estimated that only 5-15% of AT needs are currently met. This means that at a global level:²
  - Only 5 - 15% of the 70 million people in need of a wheelchair have access to one.²
  - Only 5% of the 40 million amputees have access to prosthetics.²
  - Hearing aid production meets only 10% of global need.²
  - 200 million people with low vision do not have access to eyeglasses or other devices.²

- The burden is most acute in low-and middle-income countries (LMICs), for example:
  - **Sri Lanka**: only 0.5% of households with a person with a severe disability received any assistive device.¹
  - **Mozambique**: 0% of individuals with hearing problems used a hearing aid.³
  - **Cameroon**: Of the individuals who have access to at least one AT, 78% still require another AT to which they do not have access.⁴

- The prevalence of disability, as well as the need for AT are often underestimated.
  - In **Sri Lanka**, estimates of disability prevalence from the general census were 1.6%. But a Model of Disability Survey in 2015 put the actual figure at 19.1%. Inaccurate data on disabilities and the need for AT undermine potential political commitment.¹
Lack of access concerns both assistive products and related services

Assistive devices are needed long-term and services that accompany them, such as fitting or repair are crucial

- UNICEF found that only 25% of AT users in lower- and middle-income countries had repair services available while the majority reported either no, or limited, availability.
  - No repair services available: 28% of respondents.²
  - Limited repair services available: 47% of respondents.²
  - Repair services available: 25% of respondents.²
- In contrast, in high income countries 62% reported that repair services were available.²

A lack of services can lead to abandonment of devices.²
Unemployment among people with disability due to exclusion reduces GDP and tax revenue

- According to an ILO study of ten LMICs, economic losses due to unemployment and inactivity among people with disabilities caused by non-adapted environments were 3-7% of the countries’ GDP.\(^5\) In some countries, GDP loss has been as high as 45\%.\(^6\)

- A study from 1996 estimated that LMICs lose between $474 and $672 billion USD annually as they fail to maximise the potential of people with disabilities in work.\(^6\)

- Losses associated with reduced productivity due to vision impairment are estimated at $25 billion.\(^7\)

- Estimates of losses due to hearing impairments range widely from $1.8 billion to $194 billion.\(^8\)

In some countries, GDP loss has been as high as 45\%.
Ethiopia: Loses between $598 and $779 million of GDP from not fully addressing disability.\(^9\)

Morocco: Nearly 2% of GDP is estimated to be lost due to lower salaries and levels of employment among people with disabilities.\(^6\)

Bangladesh: Over $900 million of GDP is estimated to be lost due to exclusion of people with disabilities from work.\(^6\) In addition, exclusion of children with disabilities from education, and the resulting lower earnings of their caretakers as well as themselves when adults, is estimated to cost the economy nearly 1.75% of GDP.\(^10\)

The Philippines: Excess unemployment among individuals with unrepaired cleft lip and palate was estimated to cost between $8 and 9.8 million in lost tax revenue.\(^6\)
Children with disabilities are less likely to receive an education

It is estimated that there are more than 150 million children with disabilities.  

- Children with disabilities are likely to have poorer health, less education and fewer economic opportunities when they grow up. They are more likely to live in poverty and deal with greater inequalities.  
- In many cases lack of access to AT is a contributing factor to not being in class.  
- Girls with disabilities are particularly at risk of discrimination and abuse.  
- It is estimated that one-third of children not attending school have a disability and children with disabilities are significantly less likely to be enrolled in school than their peers.  
  - **Malawi:** A 2004 study found that a child with a disability was twice as likely to have never attended school as a child without a disability.  
  - **Tanzania:** A 2008 study found that a child with disabilities attending primary school was 50% less likely to go on to attend higher levels of education than a child without disabilities.  
- However, according to estimates from general population studies, each year of schooling increases earnings by 10%.  

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There is a close link between disability and poverty, requiring a focus on supporting people with disabilities to achieve equity and meet the SDGs.

Roughly 50% of people with disabilities cannot afford healthcare.

Roughly 50% of people with disabilities are more likely to suffer catastrophic health expenditure, pushing them into poverty.

As it relates to health seeking and health care, people with disabilities are more vulnerable to poor health often because of higher levels of poverty and exclusion, and through secondary conditions and co-morbidities. As a result, they may require higher levels of prevention, diagnosis and treatment services. People with disabilities often require specialised medical care for their underlying medical condition or impairment, alongside general health services like anyone else (vaccines, antenatal care etc.). Health services are also often lower quality, not affordable, and inaccessible for people with disabilities and:

- They are three times more likely to be denied health care
- They are four times more likely to be treated poorly in the health care system
- They are two times more likely to find health care providers' skills and facilities inadequate
- In many situations, barriers to accessing health care are even more significant for women with disabilities compared to men with disabilities.
Challenges in Access to AT for an individual has an impact across multiple dimensions in life

Simon & Tuwafu, boy with hearing impairment, and his father
Seeking specialized hearing services

Understanding the situation

"We noticed he only heard us when he looked at us. When he was not able to follow at school we decided to do something. The traditional healer in the village said we should put cooking oil in the ear."

Finding the entry point

"The health centre said they cannot do anything. At some point an NGO had a screening camp nearby. They said Simon has a big problem and that we need to go to the hospital in Blantyre. They gave us a paper, but the results were not explained. I felt confused."

Making the journey

"Our village is 100km from Blantyre. It takes 8 hours to get there with two minibuses. We didn’t get any money for the trip nor instructions on where to go in the city. We are harvesting now. I hired a helper since I cannot be there. This is not good for our family income."

Waiting

"Once we arrived at the hospital, we had to wait for the whole next day until somebody saw us. The doctor was telling us that there are only 3 of him (audiologists) in the whole country."

With the doctor

"Simon was feeling tired, it was difficult for him to communicate. The doctor seemed impatient. He then said Simon can get a hearing aid. It usually costs USD 100. That’s more than we earn in a month. The NGO paid for this one, so we got it 5 hours later."

Solution not working

"The hearing aid helped a lot... at first. But after three weeks, Simon complained that it stopped working. I couldn’t fix it. Nobody at the health centre could either. What shall we do? Travel again for 3 days to the hospital? We cannot do that. I hope the NGO has a camp here soon, then we can ask them."
While evidence on the return on investing in AT and accompanying service delivery is scant, preliminary evidence shows an impact on unemployment, income, productivity, GDP and education.
Providing AT products and services increases productivity

There is significant evidence regarding vision correction and productivity.

- Correction of near vision loss with reading glasses increases productivity by over 20%. This increases to over 30% for workers over the age of 50.¹⁷

- In a randomised control trial of tea-pickers in India, when provided low-cost glasses, relative productivity increased more than 20% among a rural cohort of mostly females.⁷

It is estimated that lost productivity among adults needing eyeglasses alone totals more than $220 billion each year.

In Pakistan, addressing disabilities of the blind could increase GDP by nearly $5 billion over ten years.⁹
Enabling the participation of people with disabilities in the workforce can reduce unemployment and impact GDP

- Data from Scotland suggests that every dollar spent on employment programs for people with disabilities led to savings of over five dollars due to decreased disability/welfare benefits and increased tax income.\(^6\)

- A study conducted in Ethiopia demonstrated a 77.5% increase in income when individuals with disabilities received a wheelchair compared to controls, leading to a 122% internal rate of return from the wheelchair donation.\(^9\)

Provision of AT often increases independence, thus reducing the need for personal assistants, freeing them up to return to paid work, thereby having a positive impact on a country’s GDP. The magnitude of that impact is yet to be fully explored.\(^{18}\)
Improving education for children with disabilities pays off – including the provision of AT

- In countries including Nepal, Bangladesh, India, Cambodia, and the Philippines, the returns on investing in the education of children with disabilities are roughly three times higher than that of children without disabilities.\(^{19}\)
  - In the Philippines, an inclusive education approach was found to raise future adult wage by more than 25\%\(^{20}\)

Although current data is limited, a prevailing hypothesis is that reduced attendance at school among children with disabilities is often linked to a lack of access to appropriate AT and, therefore, investing in AT pays off.

- A review of 60 health interventions in primary schools demonstrated that correcting vision with glasses results in improved learning outcomes that are ten times higher than deworming and three times higher than nutrition trials.\(^{17}\)
Market barriers on both the demand- and supply-sides limit access to AT and there are opportunities to invest in market shaping strategies – aligning with the second main objectives of ATscale. These approaches have been proven effective in other areas of global health.

Market shortcomings can often be observed through indicators for affordability, availability, assured quality, appropriate design, and awareness. Market shaping interventions can help overcome current market-related barriers.

In order to improve upon supply, demand, quality, and prices in LMICs for AT, a coordinated approach to overcoming identified market barriers is needed to continue to build and shape the market for AT. ATscale is striving to support this coordinated action.
Conceptual framework of the market shaping pathway

1. Observe Market Shortcomings
2. Diagnose Root Causes
3. Assess Market Shaping Options
4. Implement Customised Intervention
5. Measure Results

MARKET HEALTH PRE-INTERVENTION
- Affordability
- Availability
- Assured Quality
- Appropriate Design
- Awareness

MARKET HEALTH POST-INTERVENTION
1. Reduce Transaction Costs
2. Increase Market Information
3. Balance Supplier and Buyer Risks

The case for market shaping 1: Affordability

Affordability Shortcomings

Affordability: extent to which the price point maximises market efficiency between payers and suppliers to support health outcomes.\(^2\)

- Examples of lack of affordability of AT:
  - In many low- and middle-income countries, households with a member with a disability spend 15% of their budget on health care — one-third more than other households.\(^6\)
  - In northern Nigeria the least expensive hearing aid costs almost a month’s average salary.\(^2\)
  - In Bangladesh, about two-thirds of survey respondents reported cost as the reason for lack of access to hearing aids or wheelchairs.\(^2\)
High import duties and informal charges often levied on medical appliances contribute to the high cost which form a barrier to access to AT.

- Some countries charge a 15% tax on imported hearing aids.²

- Import duties levied on eyeglasses is as high as 93% in some countries.²
The case for market shaping 2:

Availability Shortcomings

Availability: capacity and stability of global supply to meet demand, and consistency of local access at points of service provision and after-care.\(^{21}\)
Just over 50% of research participants in South Africa, Namibia, Malawi, and Sudan received full information about how to use their AT device from providers.²

Research and innovation has focused in the high-worth segment of AT, and not on developing robust, affordable, high-quality AT that is needed in many LMIC settings - the majority of the world therefore does not benefit from advances.²

People in LMICs often rely on donations or charitable services for AT provision.²

- Product may be substandard or used and often not appropriate for the user or the context; in addition they may not be able to be maintained, repaired, or replaced locally.²
- Donations may be one-off and not be accompanied by sustained services, either due to the scope of the donation and / or the lack of integration with existing health services in LMICs.²
- Moreover, donations have the potential to exclude the end user from the market and undermine the role of the government.²
The case for market shaping 4: Awareness Shortcomings

Awareness: extent to which end users, healthcare providers, and key influencers can make informed choices about product use.21

- Low awareness of AT plays a role in limited demand for AT, resulting in low incentives for suppliers to manufacture or distribute AT.2
  - The EYElliance found a lack of awareness of eye examinations in low-income countries. In India and El Salvador, for example, many people had never bought glasses because they never had an eye exam or did not know vision problems were easily solvable.2

- To overcome this, some organisations created a market by offering subsidised glasses, as people are likely to continue purchasing affordable glasses once vision problems have been diagnosed and corrected.
Want to get involved?

We are seeking support from stakeholders across all sectors. We welcome partners who can contribute to delivering our mission.

The Partnership requires funding and seeks major backing from global donors, private sector, and civil society.

The Partnership also welcomes alignment of programming and knowledge-sharing by governments, delivery partners, in-kind donors, and technical experts.

Reach out to ATscale, The Global Partnership for Assistive Technology at info@ATscale2030.org
METHODOLOGY

ATscale compiled and reviewed relevant publications to create this document. This document draws from existing research to demonstrate the value of investing in AT (assistive products and accompanying service delivery). It uses existing data and results and is not an independent analysis nor does it provide new return on investment calculations.

While we came across some useful data and analysis, evidence on AT is both limited in quality and is not evenly distributed across all types of AT. For example, a scoping review of evidence on AT in resource-limited settings found that about 80% of papers focused on mobility and vision while hearing, communication, and cognition needs were the most underrepresented. The review of evidence for this document identified less than 50 relevant papers, further demonstrating the lack of available literature.

There is a lack of rigorous research overall but in particular on the economic impacts of providing assistive devices for persons with disabilities – which is surprising given that about 1 billion people currently live with a disability.
LIST OF REFERENCES


ATscale, the Global Partnership for Assistive Technology, was launched in June 2018 by the then Prime Minister of the United Kingdom, to revolutionise access to AT in low and middle-income countries.

**Vision**

To enable a lifetime of potential where every person can access and afford the life-changing AT they need.

**Mission**

To build a cross-sector partnership that is a catalyst for change, amplifies existing work, and coordinates and mobilises global stakeholders with a unified strategy to increase availability of and access to affordable and appropriate AT.

**Founding Partners**