

Strengthening Market Intelligence for Assistive Technology (AT)

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Assistive Technology*

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I. List of Acronyms

AT	Assistive Technology
APS	Assistive Products Specifications
CARhs	Coordinated Assistance for Reproductive Health Suppliers
CLASP	Consolidated Logistics for Assistive Technology Supply and Provision
DAAs	Direct-Acting Antivirals
FP	Family Planning
HCV	Hepatitis C Virus
IAPB	International Agency for the Prevention of Blindness
ISO	International Organization for Standardization
ISPO	International Society for Prosthetics and Orthotics
ISWP	International Society of Wheelchair Professionals
LMIC	Low-and Middle-Income Countries
NGO	Non-governmental organization
RHI	Reproductive Health Interchange
SRA	Stringent Regulatory Authorities
UK NHS	United Kingdom National Health Service
UNICEF	United Nations International Children's Emergency Fund
UNFPA	United Nations Population Fund
USD	US Dollar
WHO	World Health Organization

II. Problem Statement

A lack of reliable, up-to-date, and comprehensive information about assistive technology (AT) markets hinders access in low-and middle-income countries (LMICs). In 2019-2020, research was undertaken regarding the markets for ATscale’s five priority assistive products – wheelchairs, prostheses, spectacles, hearing aids and personal digital devices – to support ATscale in identifying market shaping interventions for LMICs. The reports are published on the ATscale website (<https://atscalepartnership.org/product-narratives>). This work found that there are significant market information gaps and asymmetries between buyers and suppliers across these products. For example, suppliers have expressed interest to serve LMIC markets – an interest which will likely increase following the launch of the *WHO-UNICEF Global Report on AT* in May 2022 – but often do not know what types of products are needed, who is buying, how, how much, and when. As a result, many products and services are not available in these markets. LMIC buyers have no good understanding of what products exist, and what prices are fair. As a result, they pay higher prices due to uninformed purchasing, which puts extra pressure on constrained government budgets.

Better market intelligence is a cornerstone for increasing access in LMICs. Marketing intelligence involves everyday data that is relevant to the marketing efforts of suppliers or to guide purchasing decisions from buyers. Once collected, this data can be used to analyze competition, consumer trends, and market opportunities. Market intelligence interventions aim to collect, analyze, and share new quality market data or improve the visibility of existing data. According to USAID’s Market Shaping Primer, reducing information asymmetries between buyers and suppliers is one of three key levers for market shaping. Increasing market information is also prerequisite for, and often combined with, other market shaping interventions such as reducing transaction costs and balancing market risks. The value of strengthening market intelligence has been demonstrated in areas such as HIV, family planning (FP), and vaccines. Benefits of improved market information are not only improved decision-making and coordination among stakeholders but also reduced supplier risk, reduced product shortages, increased price transparency, increased product quality, and accelerated adoption of innovative technologies and service delivery models.

Market intelligence interventions are common in global health. Examples include market reports and annual buyer-supplier meetings like the *Annual Joint UNICEF-UNFPA-WHO Meeting for Manufacturers and Suppliers* and the *Joint WHO/UNAIDS consultation with diagnostic manufacturers, partner organizations and stakeholders*. The WHO has an online compendium overview of medicines prices information. Gavi, the Vaccine Alliance published demand forecasts for vaccines and conducts routine market monitoring. The Global Fund published routinely on Price and Quality. Contrary to the HIV, FP, and vaccines markets, which are characterized by high levels of pooled spending from donors, the AT markets in LMICs are small and fragmented with limited donor involvement. Based on examples from global health markets with similar characteristics, such as medicines and diagnostics for hepatitis C virus (HCV), we believe that better transparency between buyers and suppliers should be prioritized as a first step to influence market dynamics in the short-term and to guide market shaping in the longer term. Case studies on FP and HCV are included here.

Case study 1: Family Planning (FP)
The Problem: The FP market is made up of several short and long-acting contraceptives, like condoms, orals, injections, intrauterine devices, and implants. In the late 1990s, the FP market was facing a global supply crisis with frequent product stockouts, increased emergency requests from countries, and a looming donor funding gap. As the concept of ‘contraceptive security’ started to gain

momentum, several market intelligence interventions were put in place to tackle stockouts by increasing visibility on the supply and support evidence-based actions:

- Commodity Gap Analysis: highlighted the discrepancy between donor support and the growing need for contraceptive commodities. The report was updated in 2009, 2016, 2018 and 2019, and expanded in scope over time (e.g., on usage).
- Reproductive Health Interchange (RHI): an online buyer database that tracks shipment data like contraceptive method, funder, recipient country, shipment date, quantity of product, etc.
- Coordinated Assistance for Reproductive Health Suppliers (CARhs) group: established to prevent and resolve short-term stockouts and overstocks of contraceptives.
- Procurement Planning and Monitoring Report: supports the CARhs group with systematic data collection. Captures monthly or quarterly information on country contraceptive stock and shipment statuses from over 30 countries.

In 2012, the FP community established the goal of reaching an additional 120 million girls and women with contraceptives in the world 69 poorest countries by 2020 ('FP2020'). To achieve this, suppliers and donors needed to make informed decisions on capacity planning or investment, but comprehensive information about the FP market was missing.

The Solution: The Global Markets Visibility Project was launched in 2014 to develop this comprehensive picture. The main output was a FP Market Report which: 1) consolidates supplier shipment data (both volume and value) for products over time; 2) uses data to analyze market dynamics and trends; and 3) validates and identifies gaps between supply and demand. The Report focuses on the 69 focus countries for FP2020. The public sector is defined as volumes purchased by institutional buyers (e.g., USAID, UNFPA) and Ministries of Health through tenders. Most of the data is collected from the 16 largest suppliers. This is supplemented by other sources like the RHI database, data from donors and input from industry experts.

Many suppliers were reluctant to share data. To address these concerns, formal agreements were established with each supplier to oversee the data sharing process, including ensuring data confidentiality and aggregating segments so that individual company data cannot be identified. The number of suppliers participating in the Report increased from 11 suppliers in 2015 to 16 in 2020.

The Report takes approximately 12 months to develop. Ensuring the publication of consistent and comprehensive data has several challenges. For example, some local suppliers are not included in the analysis. Although their inclusion was considered, the variance in data format and quality made it too difficult to combine with other sources. The Report relies on consistent data from the same set of suppliers to enable year-over-year comparisons.

The Impact: The FP Market report supplements other market intelligence tools. It has become the reference for shipment data, and it is considered by stakeholders to offer a unique value add:

- Inform demand forecasting: historical shipment data are used to inform annual demand forecasts. These can support market shaping interventions like volume guarantees or other procurement commitments.
- Increases commitment from suppliers: understanding the market size in the 69 focus countries and commitment from donors encourages suppliers to continue serving and potentially expand business in these markets.

- Grounds discussions with decision makers in facts: the Report grounds discussions about future planning with suppliers, governments, or donors in the reality of spending and shipping figures.

The Learnings: The FP Market Report addressed a key data gap in market visibility when it was developed. The following elements played a role in making it a success:

- Start with limited but impactful information: the Report provides specific data for 69 countries. Although some stakeholders request additional analysis and an expanded scope, it was decided to focus on a Report that can be feasibly developed annually.
- Rely on a trusted third party to manage data: supplier's concerns around data confidentiality must be addressed proactively.
- Spend time on stakeholder engagement: although it may increase the timeline, the process of engaging with stakeholders during the development of the report is key to gain consensus on the data and its framing and ultimately making the work more impactful.

Case study 2: Hepatitis C virus (HCV)

The Problem: Approximately 71 million people worldwide are chronically infected with HCV. More than 80% of the burden is in LMICs. Only 19% of people living with HCV knew their status in 2017, and only 7% received treatment worldwide. The introduction of Direct-Acting Antivirals (DAAs) in 2014 has been a game changer for HCV treatment. DAAs are superior to previous interferon-based treatment: they have fewer side effects, are orally administered over a shorter period, and are less expensive. This new treatment brought the historically neglected HCV into focus. In 2016, the World Health Organization (WHO) and its member states committed to eliminating viral hepatitis by 2030, but uptake of DAAs has been limited across several high-burden LMICs. Market challenges include lack of awareness among stakeholders on global benchmark pricing, availability of quality products, slow or limited in-country product registration, and limited domestic and donor financing. Similar challenges also exist for HCV diagnostics.

The Solution: To address these gaps and accelerate the uptake of quality treatments and diagnostics, the community needed a market report complementing the WHO Global Progress report. The purpose of the report is to examine market trends and current challenges for HCV commodities and serve as a resource for stakeholders, including ministries of finance, ministries of health, and HCV programs across LMICs, implementing partners (e.g., civil society), donors, and suppliers. The first HCV market report was published in 2020 with a focus on high burden LMICs. It covers: 1) WHO Testing and Treatment Algorithm; 2) diagnostics - quality suppliers and price transparency; and 3) treatment - quality suppliers, volume trends, and transparency on the price. Data sources of the market report include the India export database, governments, global organizations, suppliers, and other stakeholders like NGOs. Developing the report takes approximately nine months. The report format was selected so stakeholders can use it as an advocacy tool during discussions with decision-makers - e.g., using the price breakdown diagram to advocate for reduced import duties with governments.

The Impact: The HCV market report is bringing a better understanding on the HCV market and been used by organizations to advocate at the government level for better access programs, for example:

- The Indonesian Government successfully obtained 85% price reduction for its HCV program.
- The International Treatment Preparedness Coalition reported using the market report in its advocacy work with governments on HCV access programs.

- Multiple stakeholders requested to have translated versions of the report to more impactful discussions with government representatives.

Market intelligence interventions are also common outside of global health. For instance, transparent and efficient commodity markets are needed for global food security. The Food and Agriculture Organization has a Markets and Trade Division which reviews agricultural trade global issues, provides analytical and policy relevant information, and maintains a comprehensive market intelligence service of the main agricultural commodities. Also in this space, price fluctuations and spikes can affect people's food security. Understanding how markets function enables us to identify the best ways to assist people in need and maximize the positive impact of its work. The World Food Programme publishes country-based monthly price and market bulletins. These feed the quarterly Market Monitor, which provides information on price changes for the most consumed staple commodities. All price information is stored in a publicly available price database covering more than 1,500 markets.

III. Assessing Market Information Gaps in AT

Process

To assess market information gaps for AT, we must recognize that each assistive product has its own market dynamics, such as a unique supplier landscape, different target beneficiaries, and specific delivery pathways. The gaps in market intelligence will therefore differ between the assistive products. Similarly, not every gap in market intelligence is equally important for improving access. This section aims to identify and prioritize the key market information gaps for four priority products: spectacles, hearing aids, prostheses and wheelchairs.

Six categories of market information were established: 1) market structure, 2) demand, 3) pricing, 4) quality, 5) supplier landscape, and 6) innovation pipeline. The insights from the product narratives and new input from experts and stakeholders were used to map existing information and information gaps for the four products. A few considerations when interpreting this:

- The analysis focuses on products that are appropriate for use in low-resource settings, excluding for example high-end lightweight and motorized wheelchairs, or costly microprocessor-controlled prosthetic devices. The target specifications for various priority products are outlined in the recently launched WHO's Assistive Products Specifications (APS).
- Many AT involve a local fabrication and/or customization step. For example, prescription glasses are mainly supplied through optical labs where lenses are cut and mounted into frames by optical technicians. Prosthetic devices consist of multiple components that need to be assembled and custom-fit by a trained prosthetist. The analysis focuses on finished products and key consumables that are internationally traded. For example, in the case of spectacles, we consider reading glasses (finished product), lenses and frames.
- The *WHO-UNICEF Global Report on AT* indicates that most users pay for their AT out-of-pocket. The analysis mainly focuses on public sector markets, which typically involve central purchasing by donors and governments. However, many findings will also apply to independent for-profit or non-profit service providers.

Demand generation for appropriate, quality AT is essential to improving access. Several interventions can contribute to this, such as training the workforce, setting up service points and strengthening screening. Market intelligence interventions can support demand generation for AT, for example by providing

governments with the evidence they need to decide on AT financing and by providing civil society with information to better inform their constituents.

Mapping

Limited information is publicly available on the four priority products for LMIC markets. The product narratives were a first-of-a-kind overview, including market structure, including trends, funding landscape and barriers. These should be regularly updated. The availability of data on demand, pricing, quality and suppliers is summarized in table 1.

Table 1: Overview of existing information (gaps) for four assistive products

Information available?	Wheelchairs (manual)	Prostheses (lower limb)	Spectacles	Hearing Aids
LMIC demand (incl. financing)	No	No	No	No
Pricing	Partial: CLASP* <i>No public procurement pricing</i>	No	Yes: IAPB VSC**	No
Quality	Partial: CLASP* <i>Quality (incl. field) assessment</i>	No <i>Certificates; quality assessment</i>	Yes: IAPB VSC**	No <i>Limited visibility on Software</i>
Supplier	Partial: CLASP* <i>Not all suppliers included</i>	No	Yes: IAPB VSC**	Partial

* CLASP (Consolidated Logistics for Assistive Technology Supply and Provision) was established as a supply chain intermediary to create an efficient wheelchair procurement and distribution model in LMIC to better serve wheelchair service providers and ultimately users. CLASP is offering an online catalogue of quality appropriate wheelchairs. Suppliers to CLASP are selected by a Product Advisory Council to ensure quality and value to the consumer. Note that not all available products are listed on CLASP.

** IAPB (International Agency for the Prevention of Blindness) has a curated online Valued Suppliers Catalogue for (low) vision products on its website, including spectacles, which includes pricing and contact information.

Discussion

Demand-side information for suppliers

Public sector LMIC markets for AT are nascent or non-existing. Suppliers are open to invest but seek reassurance from governments that their investments will contribute to sustainable business opportunities. Many smaller companies and innovators have limited development capital so accurate and reliable information is critical to guide their investments. Suppliers seek to better understand the need and demand, including current and projected volumes, required product specifications and existing delivery capacity. Other information gaps include tender opportunities, financing options for AT such related schemes or reimbursements, and market entry requirements. Compiling and routinely updating demand-side information about AT policies and financing, country's delivery capacity and context, as well as volume and market trends (where available and feasible), will support suppliers with business planning.

Due to the nascent state of these markets, governments often lack the processes to source assistive products. In response, UNICEF Supply Division is adding AT to its catalogue, enabling

governments and UN agencies to access quality assistive products at lower prices. Collecting demand-side information about market trends, volumes and government priorities will guide UNICEF for adding new products to the catalogue and support monitoring of the existing offerings.

Supply-side information for buyers

Policy tools

Until recently, there were limited supportive tools for AT procurement. In 2020, the WHO published “APS and how to use them” to guide the procurement of 26 priority assistive products in six key areas of functional difficulties: mobility, hearing, vision, cognition, communication, and self-care. The APS describes the minimum requirements related to technical performance and function that the products should meet for safe and effective use. In addition, WHO and UNICEF published "A manual for public procurement of assistive products, accessories, spare parts and related services", which sets out the procurement process in detail, including key steps and good practice. Many LMIC governments are unaware of these tools.

Supplier landscape

An overview of suppliers and their offerings is the basic information that should be available. For some AT markets, such as wheelchairs and eyeglasses, some information has already been compiled by partners, while other markets are more opaque. For example, when working with experts to map global suppliers of prosthetic components, approximately 80 companies were identified, although it was not clear which companies were manufacturing. A listing of suppliers that make products suitable for LMIC markets should be collected, routinely updated, and disseminated. Such a listing could include the name of the company, location of headquarter, contact details and a link to the website. Where possible, publicly verifiable information about the company’s current business should be included, indicating whether these companies are selling into markets with stringent regulatory authorities (SRA).

Pricing

Prices for various AT can differ significantly between countries and regions. LMIC buyers may pay significantly more than high-income countries (HIC) for similar/same products. For example, hearing aids are 3 times more expensive to the South African government as compared to the UK National Health Service (UK NHS). For many public health products, prices are routinely monitored to provide buyers with the transparency they need to negotiate optimal terms and to guide budget allocations, for instance on the levels of coverage for AT in benefits packages. Publicly available pricing information should be routinely collected and published. This is especially the case for prosthetic components and hearing aids, which are both expensive products with relatively opaque and variable pricing. The reported information should include details on warranty, after-sales support, accessories, and ancillary products. Pricing transparency appears less of an issue in the wheelchair market, as prices and terms are publicly available on the CLASP website. Similarly, IAPB has a Valued Supplier Catalogue with a curated range of vision products, including spectacles. However, government buyers are often not aware of these online resources, so opportunities exist to improve visibility.

Quality

Transparent and reliable information about quality can assist donors and governments in making purchase decisions that maximize value for money by better matching needs and budgets. There are several quality dimensions for AT. Suppliers should comply with standards from the International Organization for Standardization (ISO) for manufacturing and durability testing. Standardized assessments of quality in field settings are also required. However, access to this information is a common gap for AT.

In the wheelchair market, CLASP has a mechanism for improving the transparency on quality. The Product Advisory Committee sets minimum thresholds for product selection, including specifications and product quality requirements. Yet gaps remain. LMIC buyers seek information on the durability of wheelchairs in field settings. Furthermore, CLASP's product listing could be expanded as some suppliers choose not to apply to CLASP due to the costs of product evaluations.

The hearing aid market is highly consolidated, and the five largest global suppliers all serve SRA markets. Differences are linked to the quality of the internal components and the quality of the firmware – i.e., the software program. The lack of global quality certifying mechanisms for both hardware and software make it difficult for new suppliers to enter the global market. There is no independent global quality-testing programme for software or certification of qualitative user experience. Audiologists may conduct a 'field test' of products by having users try them for a certain period and then report their experiences, but the results of these tests are rarely published. To date it seems that only the UK NHS has established a rigorous independent process to assess the user experience of the sound quality as part of their procurement process. To support purchasers in LMICs, compiling and publishing the existing information, as well as, conducting and publishing standardized evaluations should be considered.

The context for prosthetic components is quite like hearing aids with opaque quality markings. Several ISO standards apply, including standards for ensuring quality of the manufacturing process and others specific to structural testing of components in a laboratory environment. When surveying 17 suppliers, one in five reported not being ISO certified for structural testing of components. Of those that are certified, only one in three use a third-party testing facility, while a quarter did not specify where testing takes place. The EU Medical Devices Regulations from May 2021 aims to ensure more transparency by increasing information requirements to allow for traceability among the supply chain. Manufacturers are required to share information with the EU on conformity assessments, certificates on quality, post-market surveillance (quality management system) etc. Many prosthetic component manufacturers are not aware of required compliance. This can be attributed to systems auditing limitations - key to confirming whether manufacturers are compliant to standards as they do in house testing and, limited knowledge about reputable and affordable testing centers. Clinical field tests should complement structural testing to determine the strength, durability, functionality, safety and effectiveness of prosthetic components and products in normal use. Results from the same small-scale survey showed that almost half of the suppliers do not carry out clinical testing in field settings before introducing components into the market. To support purchasers in LMICs, we should consider expanding this survey to gather and disseminate standardized information about prosthetic components.

Interchangeability

Transparency on interchangeability is essential for prosthetic components. When surveying 17 suppliers, almost all (88%) indicated that their components are of standard dimensions and as such interchangeable with other manufacturers components. For example, most adult shins have standard dimensions that allow knees and ankles to be bolted directly onto shins. This

standardization enables interchangeability of components, hence giving buyers options when making a purchase decision.

Innovation

Most AT markets target wealthier populations in high-income countries. The service delivery pathways of these products often require specialized infrastructure and personnel, which are lacking in resource-constrained settings. Innovation in products and service provision is key to unlock access. While there are numerous initiatives around the world to develop solutions, often grassroots innovations, their uptake has been hindered by a lack of investment. Investors are not attracted to this sector because they not only lack confidence in the market, but also need to spend a significant amount of time to map innovations and assess how disruptive or commercially viable these may be. This slows uptake of solutions that could make AT provision simpler, faster, and cheaper. For example, ready-made spectacles are a potentially disruptive solution for LMIC markets, simplifying the delivery process, yet many buyers remain unaware of their existence and uninformed about the evidence. Similarly, pre-programmable hearing aids can simplify provision, thereby reducing the costs associated with fitting and prescription, but a concerted effort is required to tackle remaining evidence gaps. To increase visibility, the UK-Aid funded AT2030 programme, which is led by the Global Disability Innovation Hub, developed a the first-of-its-kind visualization of key innovators and stakeholders in the AT and disability innovation ecosystem across emerging markets: <https://at2030.org/at-innovators/map/>.

IV. The Opportunity

Strengthening market intelligence is essential to increase access for AT in LMIC markets. The product narratives were the first publications that took a comprehensive view of market access for priority AT in LMICs, but more targeted efforts are needed. Stakeholders agree that such interventions will benefit the sector. These interventions can also support ATscale and its partners, such as UNICEF, in identifying further opportunities for market shaping, for example, to negotiate prices or accelerate uptake of promising products and solutions that can make the provision of AT faster and cheaper.

V. Recommendation

ATscale is well placed to strengthen market intelligence for AT. Via targeted interventions, ATscale can: 1) influence buyer-supplier interactions, leading to the procurement of more affordable, quality assistive products; 2) identify follow-on interventions, and 3) support the work of partners such as UNICEF.

Three interventions were proposed to strengthen market intelligence:

	1. Strengthen actionable procurement information	2. Pilot a mechanism for quality rating	3. Strengthen visibility on innovation
<i>Market info gap</i>	<p><u>For buyers:</u> Purchasing is suboptimal as info is lacking on suppliers, price, and quality.</p> <p><u>For suppliers:</u> Suboptimal business planning as info is lacking on demand.</p>	<p><u>For buyers:</u> Purchasing is suboptimal as info is missing on performance of products in the field.</p>	<p><u>For buyers/suppliers:</u> Slow adoption of solutions that can make AT provision cheaper, simpler, and faster</p>
<i>Proposed Intervention</i>	Gather and share key AT market info ('AT market intelligence platform')	Facilitate peer-to-peer experience sharing between AT providers	Gather / share information on the innovation pipeline (<i>consider support vehicle</i>)

	1. Strengthen actional procurement information	2. Pilot a mechanism for quality rating	3. Strengthen visibility on innovation
<i>Info covered</i>	Supplier, pricing, quality, market size & trends	Quality	Product, provision, fabrication, financing
<i>Product</i>	Priority AT	Prosthetic components	All AT
<i>Format</i>	Online & Offline	Online	Online