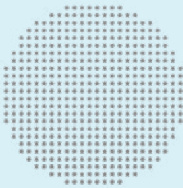


Inclusion is the Future

Opportunities for Enhanced Bilateral Trade
and Investment between Indonesia and Australia
in Medical Devices and Assistive Technology

Acknowledgement

This report has been prepared by Katalis in partnership with:



EQUITY ECONOMICS

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Acronyms

| | |
|---------|--|
| AAT | Augmentative and Alternative communication |
| AI | Artificial Intelligence |
| AP | Assistive Product |
| AR | Augmented Reality |
| AT | Assistive Technology |
| BPJS-K | Social Health Insurance Administration Body (Badan Penyelenggara Jaminan Sosial Kesehatan) |
| BPS | Badan Pusat Statistik |
| CAGR | Compound Annual Growth Rate |
| C2MD | Connect2MyDoctor (Australian telehealth provider) |
| FDI | Foreign Direct Investment |
| GDP | Gross Domestic Product |
| Gol | Government of Indonesia |
| HS | Harmonised System codes |
| IA-CEPA | Indonesia-Australia Comprehensive Economic Partnership |
| IP | Intellectual Property |
| ISO | International Organisation for Standardisation |
| JKN | Indonesia's national health insurance scheme (Jaminan Kesehatan Nasional) |
| LCR | Local content requirements |
| MD | Medical Devices |
| MoH | Ministry of Health (Indonesia) |
| MoI | Ministry of Industry (Indonesia) |
| NDIS | National Disability Insurance Scheme |
| OECD | Organisation for Economic Cooperation and Development |
| OEM | Original Equipment Manufacturer |
| R&D | Research and Development |
| RCEP | Regional Comprehensive Economic Partnership |
| USD | United States Dollar |
| VR | Virtual Reality |
| WHO | World Health Organization |

Executive Summary

Katalis is an economic cooperation program designed to maximise the benefits of the Indonesia-Australia Comprehensive Economic Partnership Agreement (IA-CEPA) and build stronger, more inclusive, economic partnerships between Indonesia and Australia. In support of this objective, Katalis commissioned research on bilateral trade in medical devices (MD)¹ and assistive technologies (AT)².

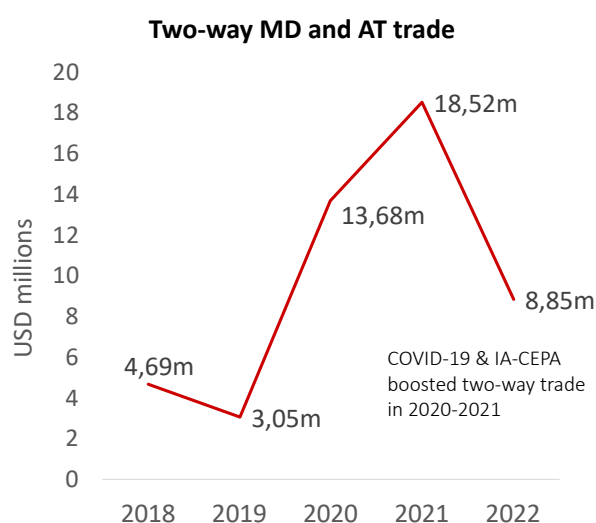
This report presents the results of this research and describes Indonesian and Australian industry capabilities and trade flows. The findings and recommendations presented in this report offer a platform to deepen bilateral industry links and economic opportunities, while improving outcomes for all people, especially people with disability.

Strong growth outlook and complementary industry capabilities

There is significant unrealised potential to grow the size of Indonesia-Australia two-way trade in MD and AT. In 2018, two-way trade between Indonesia and Australia in MD and AT was valued at USD 4.7 million and accounted for just 0.05% of total two-way trade. Boosted by demand arising from COVID-19 and IA-CEPA coming into force in 2020, two-way MD and AT trade grew by a 9% compound annual growth rate (CAGR) between 2018 and 2022, reaching USD 8.9 million or 0.07% of total two-way trade in 2022. As Indonesia's emerging MD/AT industry continues to develop, increased exports are expected to follow.

In Indonesia, demographics, rising incomes, and the ambitious Government goal of universal health coverage underpin an optimistic growth outlook for MD and AT. Indonesia is the fourth most populous country in the world, and is predicted to reach 300 million people by 2030. It also has one of Asia's fastest ageing populations. The number of people aged 65 and over is predicted to grow 173% and to account for 10.5% of the total population by 2035³. At the same time, Indonesia's middle class is growing rapidly, with the number of households with disposable income greater than USD25,000 predicted to overtake Australia by 2030, representing a burgeoning middle class consumer market with increasing healthcare needs. Contributing to projected growth in healthcare spending (and anticipated trade in MD and AT), is the rollout of the Government of Indonesia (GoI's) national health insurance scheme, Jaminan Kesehatan Nasional (JKN), which provides near universal coverage.

The MD industry in Indonesia is emergent and prioritised for development by the GoI. As Indonesia's



Source: Trade Map, 2023.

MD industry accelerates its growth and becomes internationally competitive, further opportunities to export to Australia will arise. It is expected that exports of lower-value MD where Indonesia is cost-competitive could grow initially, followed by growth in more technologically advanced MD over the period to 2035.

In Australia, similar population trends including an aging population and rising incomes as well as comprehensive national health insurance, is likely to fuel current and projected growth in the MD and AT markets. While hosting a considerably smaller population (26.6 million), Australia is experiencing similar trends regarding the growth in the size of the aging population. Currently 16% of the population is over 65. This number is projected to steadily increase to reach 20% by 2066⁴.

1 This report uses the following Harmonised System (HS) codes to analyse the MD trade: HS 9018 (medical appliances and instruments); HS 9019 (mechano-therapy devices); HS 9020 (breathing appliances and gas masks); HS 9022 (x-ray and radiotherapy apparatus); and HS 9402 (medical furniture).

2 This report uses the following HS codes to analyse AT: HS 9021 (which broadly covers products such as hearing aids, artificial limbs, pacemakers, orthopaedic appliances, and appliances which can be implanted into the body); HS 8713 (manual and mechanised wheelchairs); and HS 9003 and HS 9004 (corrective eyewear, spectacles and frames).

3 Jones, 'Policy brief: The 2010 to 2035 Indonesian Population Projection', https://indonesia.unfpa.org/sites/default/files/pub-pdf/Policy_brief_on_The_2010_%E2%80%93_2035_Indonesian_Population_Projection.pdf.

4 AIHW, 2023, <https://www.aihw.gov.au/reports/older-people/older-australians/contents/demographic-profile>.

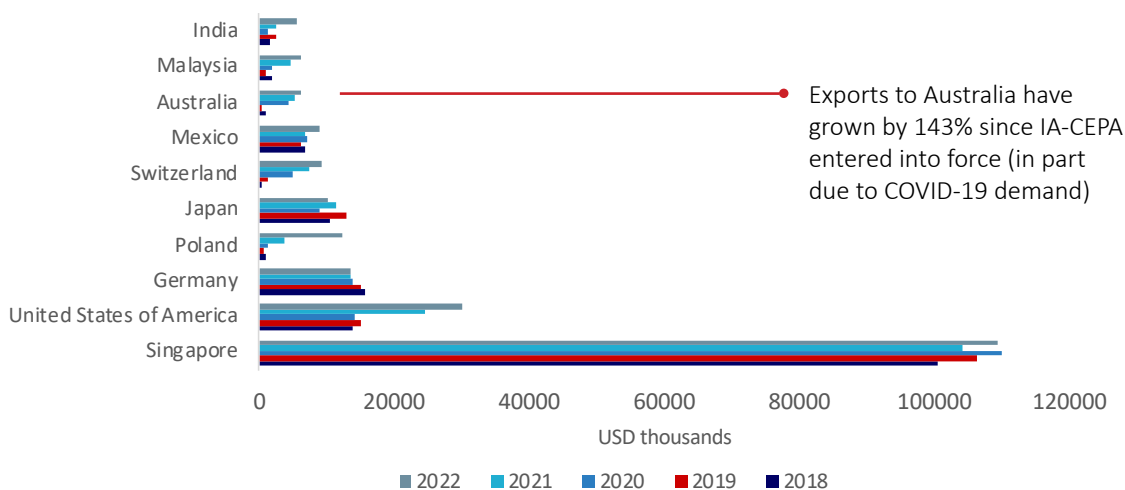
Australia’s MD industry is highly specialised and export-oriented, with local manufacturers specialising in high-margin, niche technologies. Technological advances and ongoing investment in research and development mean manufacturers have been able to offer the latest medical devices to downstream markets, keeping them at the forefront of innovation and driving industry sales.

Deep dive: Medical Devices

Indonesia is a net importer of MD, and imports are growing faster than exports as Indonesia’s local production cannot meet local demand. Medical appliances and instruments, such as surgical face masks, syringes, needles, electro-diagnostic appliances (Harmonised System code; HS 9018),⁵ is the largest category of both imports and exports, accounting for 62% of all medical device imports in 2022. The second largest import category is x-ray and radiotherapy apparatus (HS 9022), which has grown by 12% CAGR since 2018, and accounted for 22% of medical device imports in 2022.

Australia is Indonesia’s 8th largest destination market for MD exports, especially for medical furniture and appliances, with growth of 143% since 2020 to reach USD 6.3 million. While some of the growth may be due to increased demand for hospital beds arising from COVID-19, as well as IA-CEPA coming into force in 2020, it indicates Indonesia is an internationally competitive supplier of medical furniture, with potential to grow.

Indonesia’s exports of medical devices, top 10 destination markets, 2018-2022, USD



Source: Trade Map, 2023.

Indonesian imports of Australian MD grew rapidly between 2018 and 2021, to reach USD12.9 million. The composition of trade was strongly influenced by COVID-19, with greater demand for mechano-therapy appliances, including artificial respirators, in 2021. However, the specific products imported shift annually, suggesting imports are more to fill gaps in supply—when local content requirement (LCR) regulations permit and not indicative of an ongoing, sustainable commercial relationships.

Due to the specialised nature of Australia’s MD industry, Australia remains a net importer of MD, although exports are growing faster than imports. Exports have been dominated by artificial respirators and oxygen therapy products (HS 9019), especially during the pandemic. Indonesia is an underdeveloped market for Australian exports of MD, representing less than 1% of overall MD exports (or USD3.3 million) in 2022.

⁵ HS 9018 refers to medical appliances and instruments including but not limited to surgical face masks, syringes, needles, electro-diagnostic appliance.

Deep dive: Assistive Technology

Indonesia's AT market is large and expected to grow, but imports are well below what would be expected considering the population size and nascent state of the domestic industry. Indonesia's market is valued between USD180-200 million,⁶ with the JKN and the large and aging population expected to create future growth.⁷ In 2022, imports were valued at USD143.3 million, with corrective eyewear and spectacles accounting for 60% of this (USD86.7 million). Growth of Indonesia's domestic industry is hampered by a lack of quality standards and investment, particularly for AT provided under the JKN.

Accessibility and affordability remain major barriers to accessing AT in Indonesia, with significant unmet needs particularly for women and rural populations. Indonesia's AT prices are far higher than comparable countries in ASEAN (and Australia), making them unaffordable for all but the richest 20% of households. As a result, 60% of the 4.6 million Indonesians with a moderate or severe disability (and need for AT) are not

using any AT.⁸ Indonesia has a shortage of every type of AT, especially for women (77%) and people living in rural areas (62%),⁹ and for glasses (80% of people in need do not have them) and mobility aids (28% of people who need a walking cane do not have one; over 75% of people who need a prosthetic do not have one).¹⁰

Australian exports of AT to Indonesia are underdone. Australia's exports of AT to Indonesia peaked at USD323,000 in 2018 and were valued at only USD261,000 in 2022. Australian exports of AT are dominated by a few products, including orthopaedic articles (37% of all exports in 2022), artificial body parts (24%), hearing aids (12%) and corrective eyewear (11%). Australian exports of AT largely target Western markets, reflecting both the relatively high cost of manufacturing AT in Australia and the types of products in which Australia is internationally competitive (e.g. high value, adaptive and individualised AT).

Bilateral trade opportunities

Boosting bilateral market insights and removing actual and perceived barriers to trade will be key to growing trade and investment. There is currently limited understanding of the two-way market opportunity, but high interest exists on both sides. In addition to increasing awareness of trade opportunities in the MD and AT sectors, reducing the negative impact on industry development and trade relationships from non-tariff barriers such as LCR will be critical.

Existing investments can be leveraged to increase bilateral trade and investment. Recent significant infrastructure investments by Australian companies like Aspen Medical International present opportunities for growth in Foreign Direct Investment (FDI) and MD/AT exports from Australia. Working closely with established partners will assist Australian companies to navigate complex local market dynamics.

Strong demand and fewer market entry barriers for digital health services and AT suggest the digital space offers opportunities for enhanced short-term trade. There is already strong demand for digital health and AT supports, such as text-to-speech, screen magnifiers, screen readers, video communication tools, and augmentative and alternative communication devices designed for the Indonesian market. In addition, Asia, including Indonesia, is experiencing significant growth in digital health care.¹¹ This growth and unmet demand unlocks significant opportunities for bilateral health services and medical technology (MedTech) trade in Indonesia, which are not subject to LCR and other restrictive non-tariff trade barriers. Encouraging examples of the potential are a recent commercial partnership between Australia's telehealth provider Connect2MyDoctor (C2MD) and Surabaya's Locus Medical Hub, and the entry to the Indonesian market by Spokle, an Australian AT company that offers a speech therapy application.

6 Author estimation.

7 Katalis analysis of Susenas data estimate that there are 5,805,162 households in Indonesia with disability related spending/a member of a household with disability. Of these households:

- 1,722,991 households have per capita spending of over IDR1.5 million (AUD147) every month.
- 1,824,707 households have household expenditure of IDR5 million (AUD491) every month.

8 BKF-Prospira,2021.

9 Ardianuari et al., 2023 'Assistive Technology unmet need in Indonesia: challenges and opportunities for enhancing equitable access'.

10 Cameron and Suarez, 2017, 'Disability in Indonesia', https://www.monash.edu/__data/assets/pdf_file/0003/1107138/Disability-in-Indonesia.pdf.

There are also opportunities for bilateral cooperation to support Indonesian industry development. This could include Australian support for the introduction of industry-wide national quality standards that align to international standards, which would be catalytic for industry development by overcoming one of the major barriers to Indonesia’s global competitiveness, while ensuring devices are safe and meet needs.

Bilateral economic cooperation could also support Indonesia’s needs for skills and knowledge transfer in AT.

This could be achieved by leveraging the existing skills exchange between Australia and Indonesia to strengthen health care professionals’ skills in prescribing AT. It could also include innovative research collaborations that support technology and knowledge transfer, such as that being explored by Koneksi, the Indonesia and Australia Knowledge, Technology and Innovation Collaboration, which is connecting industry, universities, government and civil society to create an enabling environment for bilateral collaboration across the AT value chain and build capacity in Indonesia’s AT industry. Bilateral industry cooperation is also a promising area of potential, by combining Australia’s expertise in research and development, design, after-sales and service, with Indonesia’s expertise and cost-competitiveness in manufacturing at scale. Australian technology and knowledge could build up Indonesian AT manufacturing capability, which aligns with, and directly supports, GoI industry development ambitions.

11 Baur et al., 2021, ‘The future of healthcare in Asia: Digital health ecosystems’, McKinsey & Company.



Chapter 1

Introduction

In 2020, Indonesia and Australia entered into the Indonesia-Australia Comprehensive Economic Partnership Agreement (IA-CEPA), which opened new trade and investment opportunities for both countries. Katalis, a five-year (2020-25) government-backed business development program, was established to assist businesses to unlock the potential of these opportunities.

As part of its goal to identify new trade and investment opportunities, Katalis has invested in a series of market research and feasibility studies in the health sector. These include a scoping study of medical tourism, a comparative assessment of nursing standards and support for bankable feasibility studies to support healthcare investment in Indonesia. This study, a comprehensive scoping study on bilateral trade and investment opportunities for Medical Devices (MD) and Assistive Technology (AT), is the latest investment by Katalis to deepen understanding of bilateral trade and investment opportunities. The analysis of AT reflects the importance of this growing and lucrative subset of the MD industry and its significance as an enabler for greater inclusion and participation.

The purpose of this study is to examine the industry composition, capabilities, and trade flows in both countries to identify complementarities and opportunities. The findings and recommendations offer a platform to begin deepening bilateral industry links and economic opportunities, while improving outcomes for all people, especially people with disability.

This study opens with an overview of the global medical device market, before moving to deep dives into the demand and supply of MD in Indonesia and Australia. The second part of this study focuses on AT in particular, first with an overview of the global market for AT, then a more comprehensive study of the Indonesia and Australia markets. This study then concludes by outlining the opportunities and challenges to increasing bilateral trade and investment in these areas and provides recommendations for policymakers.

1.1. Definitions and parameters

Key terms used in this report include:

Medical Devices

MD are a broad-ranging category, but for this report, MD are defined as any apparatus, implement, machine, appliance, implant, reagent for in vitro use, software, material or other similar or related article, intended by the manufacturer to be used, alone or in combination for a medical purpose in humans.¹² Therefore, MD may be used by the individual or patient, and/or by their medical or health professional, in a range of settings, including at home, in sport and leisure, in primary care, acute care or aged care. This report uses the following Harmonised System (HS) codes to analyse the MD trade: HS 9018 (medical appliances and instruments); HS 9019 (mechano-therapy devices); HS 9020 (breathing appliances and gas masks); HS 9022 (x-ray and radiotherapy apparatus); and HS 9402 (medical furniture).

Assistive Technology

AT enables and promotes the inclusion, participation and engagement of people with disability, ageing populations and people living with chronic conditions.¹³ AT is used as an umbrella term in this report to cover the systems and services related to the delivery of Assistive Products (AP), which are products that maintain or improve an individual's functioning and independence, and thus their well-being. AT and AP are used simultaneously throughout this report, but AT is used to also encompass its enablers. An important point of difference between MD and AT is that AT is used by the affected individual, while MD may be used by a medical or health professional. This report uses the following HS codes to analyse AT: HS 9021 (which broadly covers products such as hearing aids, artificial limbs, pacemakers, orthopaedic appliances, and appliances which can be implanted into the body); HS 8713 (manual and mechanised wheelchairs); and HS 9003 and HS 9004 (corrective eyewear, spectacles and frames).

¹² Definition adapted from the World Health Organization (WHO) and the Australian Therapeutic Goods Act 1989.

¹³ WHO and UNICEF, 2022, 'Global report on assistive technology', <https://www.who.int/publications/i/item/9789240049451>.

Approach and methodology

This study made use of both quantitative and qualitative methods, including interviews with AT/MD industry stakeholders, consultations with the Indonesian and Australian disability sector, a survey of Australian AT providers and analysis of data on global and two-way MD and AT trade. Case studies from interviewed industry stakeholders were used to support regulatory and market analysis of the composition of the respective industries and the major players. This analysis also builds on recent research undertaken by Prospera,¹⁴ which describes the composition of the Indonesian AT market and its contributors.

This study was conducted from Australia and is primarily based on desk-research, supplemented by online interviews and surveys with industry. Virtual consultations were undertaken as part of the Disability Inclusion Matters Public Dialogue hosted by Katalis and INKLUSI, in addition to targeted consultations with Indonesian disability sector stakeholder, which together, provided invaluable insights and lived experiences to inform this research and fill knowledge gaps.

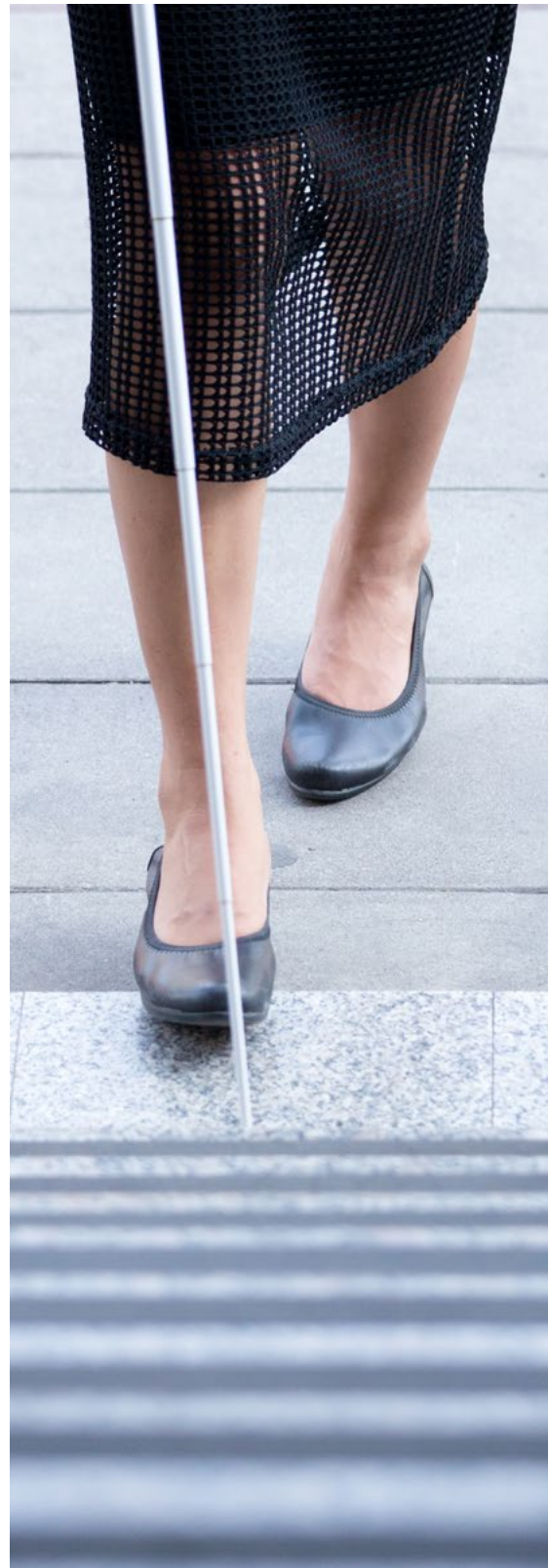
COVID-19 impacts on trade

It is important to note that global MD and AT trade flows were likely skewed between 2020-2022 due to specific demand for products to support COVID-19 prevention and treatment, and the types of products that Australia and Indonesia traded over this period may not reflect true demand in a non-COVID-19 context.

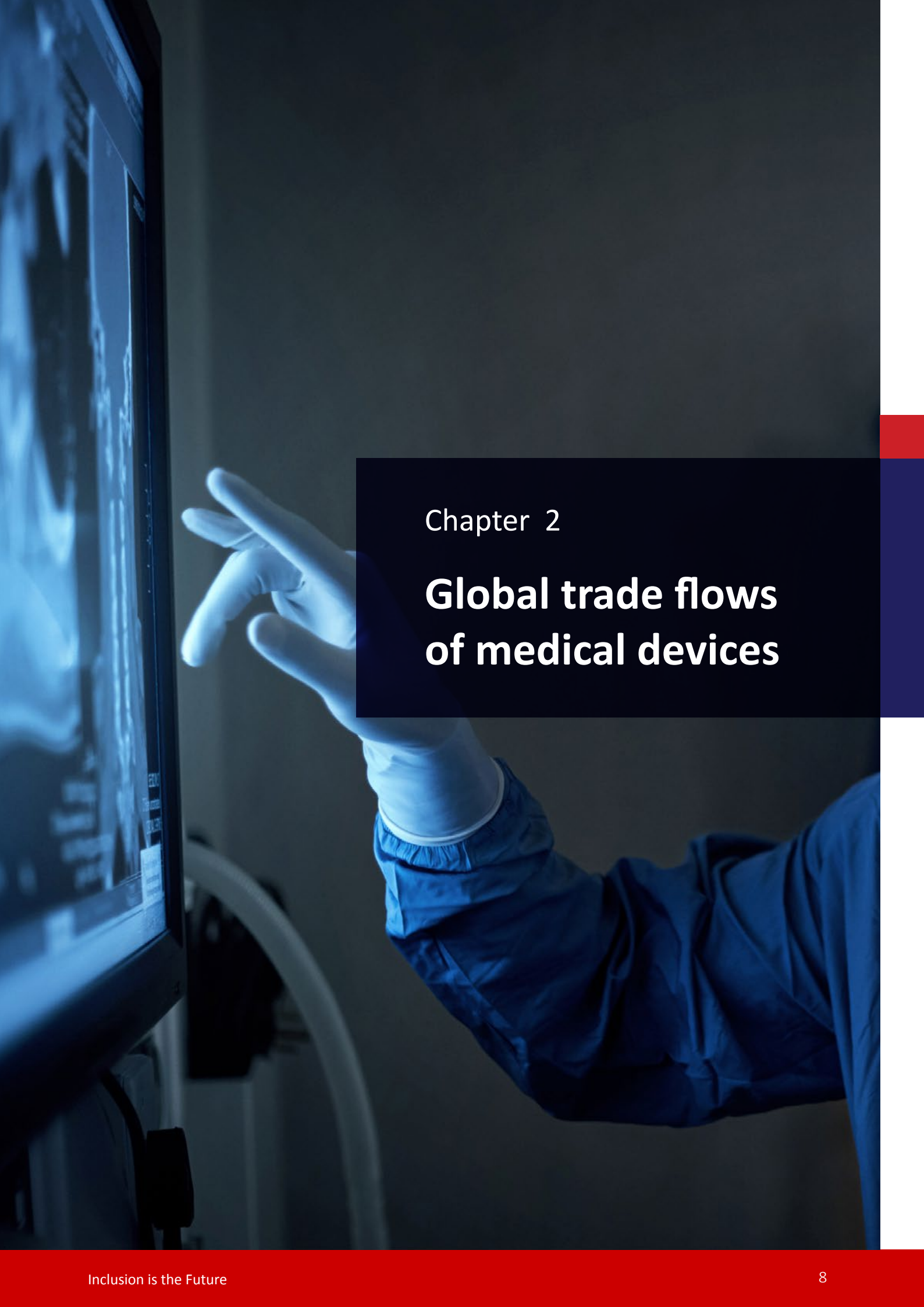
Further, COVID-19 disrupted access to essential health services, with nearly 3.5 million Indonesians losing access to affordable health care due to job losses, while reduced mobility, facility closures and caution in the context of the pandemic contributed to a decrease in the demand for health care, especially preventative health care. Delayed and foregone health care could lead to greater health care needs in the future.

Intended audience

The intended audience for this report is policymakers, industry and businesses interested in exploring bilateral trade and investment and deeper economic cooperation, particularly to support improved outcomes for people with disability.



¹⁴ Prospera – Australia Indonesia Partnership for Economic Development is a partnership between Australia's Department of Foreign Affairs and Trade and Indonesia's Coordinating Ministry for the Economy. Prospera works with Indonesian government agencies, providing them with evidence to inform policy-making.

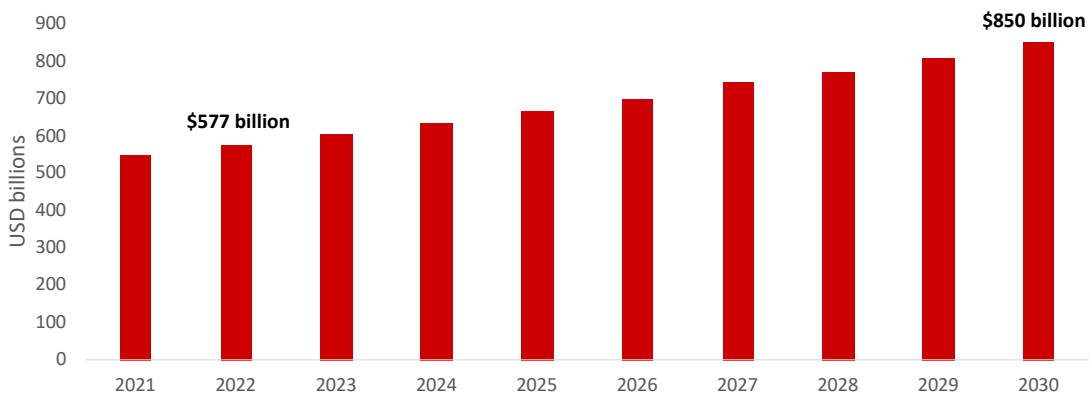


Chapter 2

Global trade flows of medical devices

The global MD¹⁵ market is large and growing, driven by an ageing population, an increase in the number of people who are living with chronic diseases and rising incomes, particularly in the Asia Pacific. Together, this is driving demand for MD that can help to diagnose, treat, and manage diseases. There are an estimated 2 million different kinds of MD on the global market, across more than 7000 generic device groups. This market was valued at USD 577.26 billion in 2022 and is expected to reach around USD850 billion by 2030, a compound annual growth rate (CAGR) of 5.5%.¹⁶

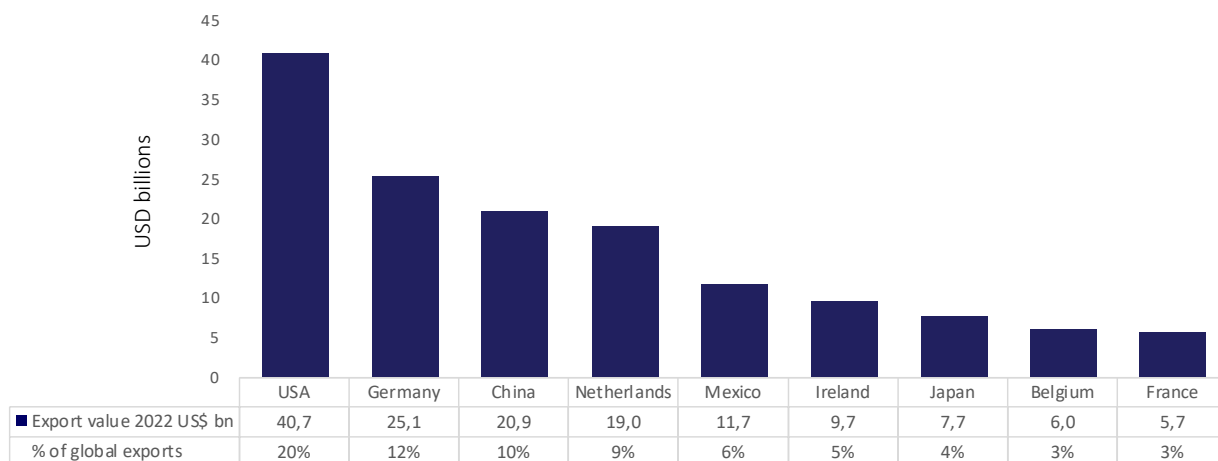
Figure 1: Size of the global MD market, 2021-2030, USD



Source: Precedence Research, 2023.

The global production and export of MD is highly concentrated. The top 20 producer countries accounted for over 80% of global production in 2021. The US is the largest producer of medical devices, followed by Germany, China and the Netherlands.¹⁷ The top 10 exporters of medical devices account for 70% of overall exports worldwide, led by the USA, which alone accounted for 20% of all exports of medical devices in 2022. Other major exporters include Germany, China and the Netherlands, accounting for 12%, 10% and 9% of global exports respectively in 2022. China is the fastest growing exporter of medical devices, with growth in exports from USD12.4 billion in 2018 to USD20.9 billion in 2022; a CAGR of 11%. Australia and Indonesia are minor players in the global trade of MD, ranked 23 and 41 in 2022, respectively.

Figure 2: Top 10 global exporters of MD, 2022, USD



Source: Trade Map, 2023.

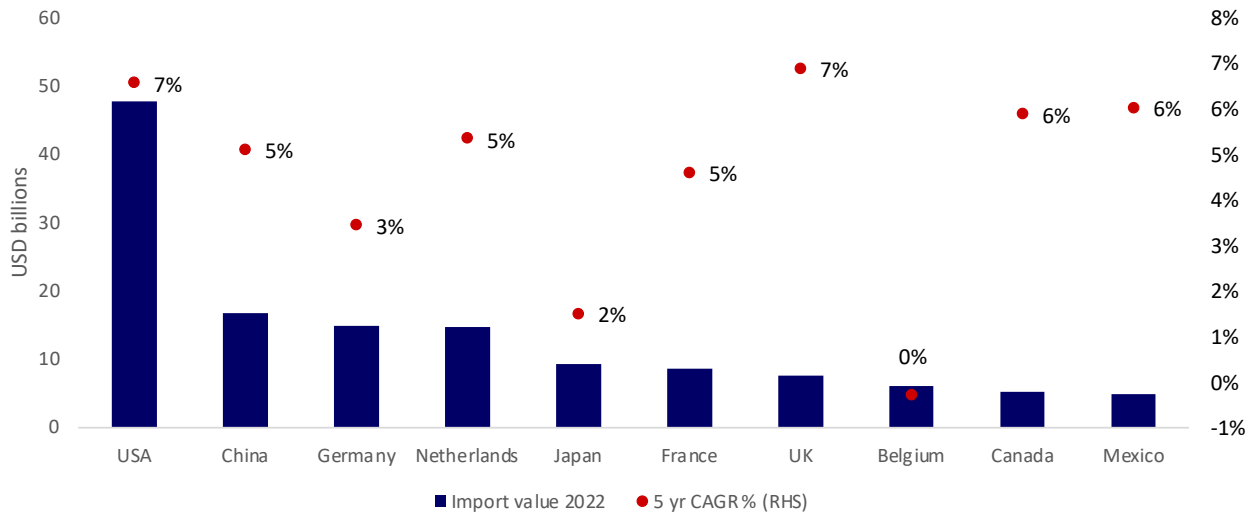
15 This report uses the following Harmonised System (HS) codes to analyse the MD trade: HS 9018 (medical appliances and instruments); HS 9019 (mechano-therapy devices); HS 9020 (breathing appliances and gas masks); HS 9022 (x-ray and radiotherapy apparatus); and HS 9402 (medical furniture).

16 Precedence Research, 2023, <https://www.precedenceresearch.com/medical-devices-market>.

17 Euromonitor, 2023, 'Global Overview of the Pharmaceuticals and Medical Equipment Industry'.

The import markets for MD are also relatively concentrated. Worldwide, USD210.5 billion worth of MD were traded in 2022. The largest import markets were the USA (22%), China (8%), Germany (7%) and the Netherlands (7%). Australia was the 14th largest import market, valued at USD3.8 billion in 2022 while Indonesia was the 30th largest import market, valued at USD1.1 billion in 2022, a 6% CAGR since 2018.

Figure 3: Top 10 global importers of MD, 2022, USD



Source: Trade Map, 2023.

There is significant overlap in the largest importers and exporters of MD, with the USA as both the largest exporter and importer, and Germany, China and the Netherlands in the top four for both imports and exports.



Chapter 3

Indonesia's demand and supply of medical devices

This section discusses Indonesia’s healthcare sector and the main factors influencing market demand for and supply of MD, relevant government policies and trade flows.

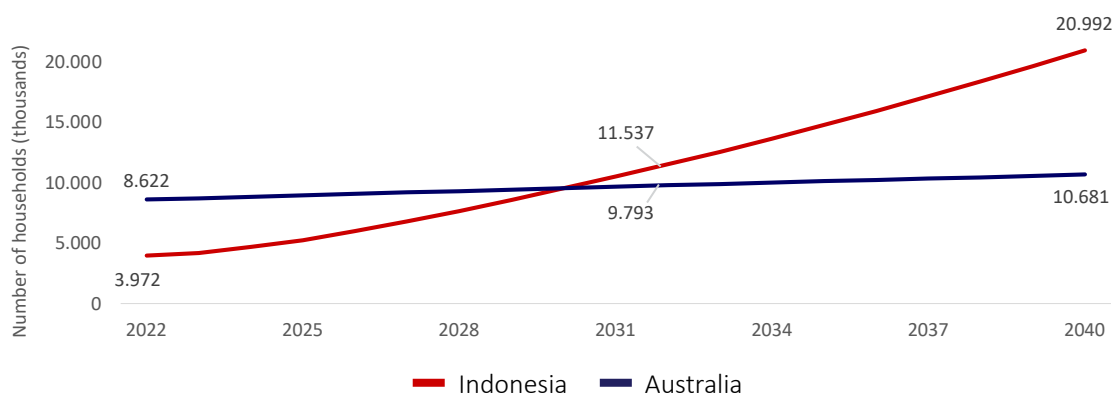
3.1. Market demand

3.1.1. Demographics

Indonesia’s population is large, and ageing. With an estimated 278 million people, Indonesia is the fourth most populous country in the world behind China, India, and the USA. By 2030, the population is expected to reach over 300 million. Indonesia is also one of Asia’s fastest ageing populations, with people aged 65 and over projected to grow 173% by 2035, from 7.0% (2022) of the population to 10.5% of the population.¹⁸

Indonesia’s growing middle class is driving demand for quality healthcare. Analysis of household disposable income data highlights that the number of Indonesian households with disposable income greater than USD25,000 is projected to overtake Australia after 2030 and rapidly increase through to 2040, representing a burgeoning middle class consumer market with increasing healthcare needs.

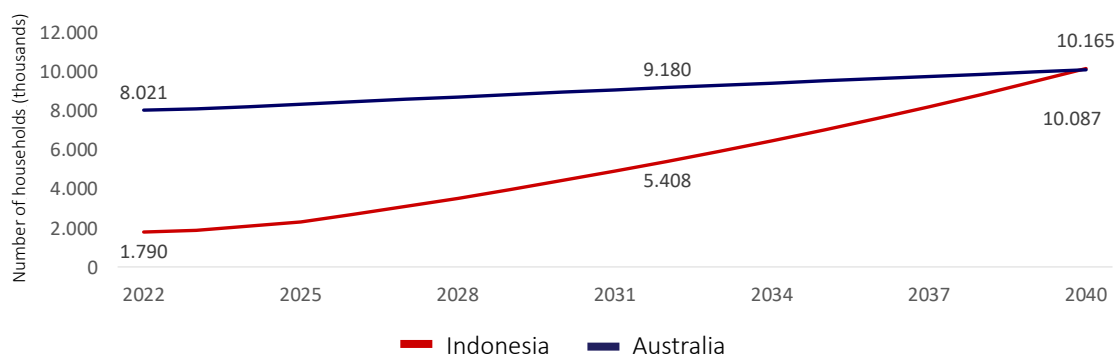
Figure 4: Households with disposable income over USD25,000, Indonesia and Australia



Source: Equity Economics analysis of Euromonitor, 2023. USD constant.

The purchasing power of Indonesia’s upper-middle class is growing. Households with disposable income over USD25,000 is growing and is predicted to exceed Australia by 2030. At the higher threshold of USD35,000, which is commonly used as a proxy for households able to afford premium Australian products and services, the number of households in both countries is projected to be nearly equal in 2040. This highlights the rapidly growing purchasing power of the Indonesia’s upper-middle income consumer market, which will increasingly demand higher levels of healthcare.

Figure 5: Households with disposable income over USD35,000, Indonesia and Australia



Source: Euromonitor, 2023. USD constant.

¹⁸ Jones, 'Policy brief: The 2010 to 2035 Indonesian Population Projection', https://indonesia.unfpa.org/sites/default/files/pub-pdf/Policy_brief_on_The_2010_%E2%80%932035_Indonesian_Population_Projection.pdf.

3.1.2. Trends

Demographics, public and private investment and digitalisation are key trends. Indonesia's demographic changes (i.e. a growing, ageing and increasingly wealthier population) together with Government policies and planned public and private investment in the healthcare sector will shape demand for MD, particularly efforts to meet more of Indonesia's health needs locally.

The rapid rise of digital health is another important trend. It is quickly transforming Indonesia's healthcare landscape, offering significant opportunities to improve access, affordability, and quality of care for millions of people. By 2025, over 75% of the value of healthcare in Asia will be driven by digitalisation of care delivery.¹⁹

3.1.3. Healthcare sector

3.1.3.1. Policies

Indonesia's healthcare sector is growing and modernising at the same time, spurred by the rollout of the Government's universal healthcare program (Jaminan Kesehatan Nasional; JKN). The implementation of the JKN since 2014 has become the largest in the world, covering over 200 million people and resulting in increased access to healthcare, and thus demand for hospitals, doctors and medical equipment. The JKN is managed by the Social Security Administering Body for Health (BPJS-K), which is separate from the Ministry of Health (MoH). This agency contracts and pays both public and private providers across the country, although purchasing policies are set by the MoH. By 2019, JKN covered over 84% of the population with a comprehensive benefits package and reduced individual out-of-pocket expenditures on healthcare from 47% to 32%.²⁰ As of March 2023, JKN reached 91% of the population.²¹

The Government of Indonesia (GoI) aims to strengthen primary healthcare as part of its five-year Mid-Term National Development Plan (2020-2024). As part of its drive towards universal healthcare, the GoI is shifting to a cost-effective primary care-orientated delivery system that encourages preventative efforts, supported by innovation and technology. The Government aims to reduce the overall burden of poor health and reduce overuse of expensive secondary and tertiary care.

In 2023, the GoI introduced its Omnibus Law on Health which attempts to reform Indonesia's health system. Under the new law, the GoI plans to offer fiscal and non-fiscal incentives for MD manufacturers that carry out research, development and innovation activities in Indonesia, as well as those that use local raw materials in their production. This is expected to be catalytic in supporting industry development.

3.1.3.2. Infrastructure

The Indonesian healthcare sector is at a comparatively lower starting point compared to other ASEAN countries. Indonesia currently has just 1.2 hospital beds per 1000 people (compared to 2.1 and 2.6 beds per 1000 people in Thailand and Vietnam). Further, more than 1.2 million Indonesians collectively spend more than USD2 billion annually on healthcare overseas, mainly in neighbouring Singapore and Malaysia.²² This reflects the comparatively lower historical capacity of Indonesian hospitals, combined with a lack of trust in the local healthcare system and infrastructure.²³

There is huge demand for new and upgraded health infrastructure across Indonesia, and recent liberalisation efforts are attracting Foreign Direct Investment (FDI). The opening up of the healthcare sector has attracted foreign investment, such as from Aspen Medical International which is planning 23 hospitals and 650 community clinics in West Java alone. Separately, a designated health special economic zone in Sanur, Bali will be home to the new Sanur International Hospital, as part of GoI plans to position Bali as a world-leading health tourism destination.

19 Baur et al., 2021, 'The future of healthcare in Asia: Digital health ecosystems', McKinsey&Company.

20 World Bank, 2021, 'World Bank Approves Support to Strengthen Health Insurance, Improve Quality of Health Care in Indonesia', <https://www.worldbank.org/en/news/press-release/2021/12/16/world-bank-approves-support-to-strengthen-health-insurance-improve-quality-of-health-care-in-indonesia>.

21 Tempo, 2023, 'BPJS Kesehatan Claims Nearly 91% Indonesians Covered by JKN-KIS - News En.tempo.co', <https://en.tempo.co/read/1702469/bpjs-kesehatan-claims-nearly-91-indonesians-covered-by-jkn-kis>.

22 ASEAN Briefing, 2020, 'Indonesia's Healthcare Industry: Growing Opportunities for Foreign Investors', <https://www.aseanbriefing.com/news/indonesias-healthcare-industry-growing-opportunities-foreign-investors>; Connors, 2023, 'Australian firms Aspen Medical and Docta push into Indonesia with West Java hospital', <https://www.afr.com/world/asia/australian-joint-venture-leads-foreign-push-into-indonesia-s-hospitals-20230619-p5dhr>.

23 PWC, 2020, 'Investing in Indonesian Healthcare: Opportunities for Australian businesses', <https://www.pwc.com/au/asia-practice/assets/asia-taskforce-discussion-paper05.pdf>.

3.1.3.3. Workforce

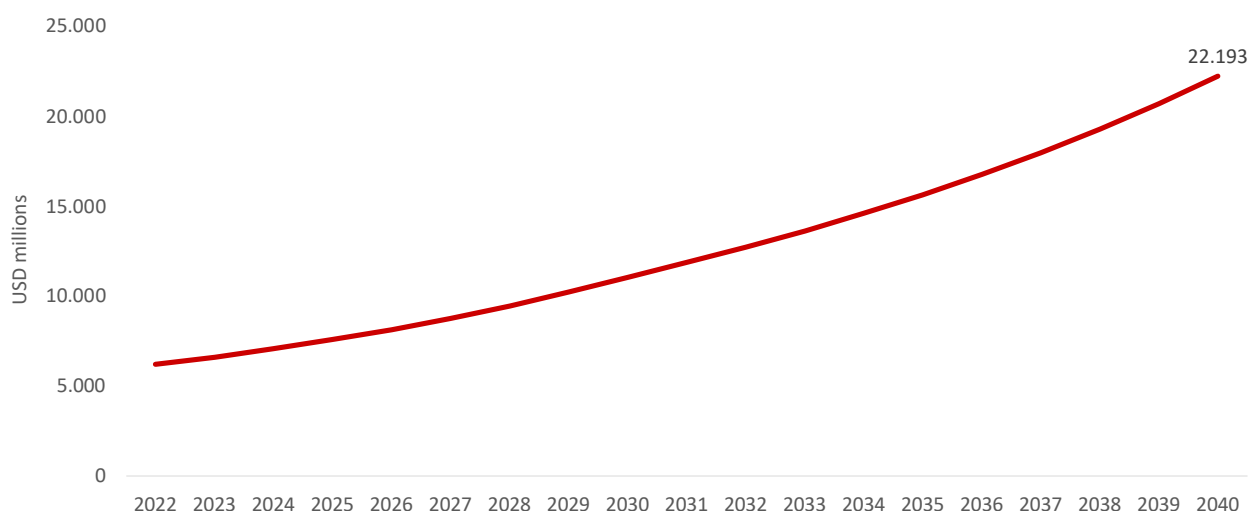
Recent growth in Indonesia’s healthcare sector is spurring demand for a skilled healthcare workforce. In 2021, Indonesia had less than one medical doctor per 1000 people and 1.1 nurses per 1000 people,²⁴ well below the OECD average of 8.8 nurses and 3.6 doctors per 1000 people. In recognition of these significant gaps, the GoI has made a key priority improving both access to health workers, especially in rural areas, and quality of health providers.

3.1.3.4. Expenditure

Historically, healthcare spending in Indonesia has been comparatively lower than other ASEAN countries, at only 3.3% of Gross Domestic Product (GDP) compared to an average of 4-5.5% of GDP.²⁵ Analysis of World Health Organization (WHO) global health expenditure data indicates GoI spending accounts for 55% of total health expenditure in Indonesia.²⁶ Within this, around 17% is the contribution to the JKN.

However, consumer healthcare spending on pharmaceutical products, medical appliances and equipment is projected to grow significantly. In 2022, medical expenditure in Indonesia reached USD6.6 billion. By 2040, expenditure is expected to reach USD22.2 billion.²⁷ This dramatic increase in spending on MD is in line with the projected population growth and aging rates – Indonesia’s large and growing ageing population will increase demand for medical services and treatments, which in turn fuels demand for MD and AT.

Figure 6: Projected Indonesian consumer expenditure on pharmaceutical products, medical appliances and equipment, 2022-2040, USD



Source: Equity Economics analysis of Euromonitor data, 2023.

Outside of JKN, 20 million Indonesians are covered by private health insurance.²⁸ Private health expenditure in Indonesia accounts for around 44.5% of overall healthcare spending. Within this, 31.8% is for out-of-pocket expenditure, while the rest is other private health expenditure. The remainder of health expenditure, around 0.5%, is funded by overseas development assistance.

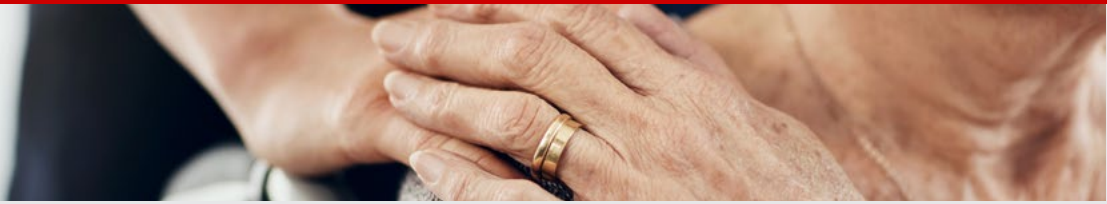
24 WHO, 2023, Global Health Workforce statistics database, <https://www.who.int/data/gho/data/themes/topics/health-workforce>.

25 PWC, 2020, 'Investing in Indonesian Healthcare: Opportunities for Australian businesses': [asia-taskforce-discussion-paper05.pdf](https://www.pwc.com/au/asia-taskforce-discussion-paper05.pdf) (pwc.com.au).

26 WHO, 2023, Global Health Expenditure Database, <https://apps.who.int/nha/database>.

27 Euromonitor, 2023.

28 ASEAN Briefing, 2020, 'Indonesia's Healthcare Industry: Growing Opportunities for Foreign Investors' <https://www.aseanbriefing.com/news/indonesias-healthcare-industry-growing-opportunities-foreign-investors>.



Box 1: Comparing the private health insurance markets in Australia and Indonesia

The latest available Australian private health insurance membership data shows that 11.67 million people, or 44.9% of Australia's population, has private health insurance hospital cover and 14.41 million people (55.1 % of the population) have private extras cover.

While the 20 million Indonesians currently covered by private health insurance only accounts for just over 7% of the total population, the overall size of private health insurance market is larger than Australia and will only continue to grow in line with rising incomes.

Source: Australian Prudential Regulatory Authority, May 2023.

3.2. Supply of medical devices

3.2.1. Industry capability

Indonesia's MD industry is growing, but lags regional leaders such as China, India, Singapore, Korea and Japan.

In 2022, the Indonesian MD market was valued at USD3.8 billion. Imports are estimated to supply up to three-quarters of Indonesia's MD market,²⁹ largely composed of sophisticated medical instruments such as diagnostic tools and medical lasers.

The industry is emergent and prioritised for development. The number of MD and equipment production facilities in Indonesia has grown from just 193 in 2015 to 891 in 2021; a 361% increase in 5 years.³⁰ Local production was estimated to be valued at USD2.5 billion in 2022.³¹ Industry growth can be partly attributed to Indonesia's *Action Plan for the Development of the Pharmaceutical and Medical Device Industry*,³² which lists the MD industry as a priority industry for development and details several targeted subsectors (Box 2 and Annex 1).



Box 2: Indonesia's Action Plan for the Development of the Pharmaceutical and Medical Device Industry

The Action Plan aims to achieve three main goals by 2035:

1. Reduce imports from 94% to 45% (via import substitution policies),
2. Increase the market value from IDR12 trillion to IDR130 trillion,
3. Increase the number of items of local MD from 60 items to 400 items.

It prioritises the development of low-technology medical devices first between 2016-2020, then follows an industrial upgrading pathway to medium-technology medical devices in 2020-2024 and finally high-tech medical devices between 2025-2035.

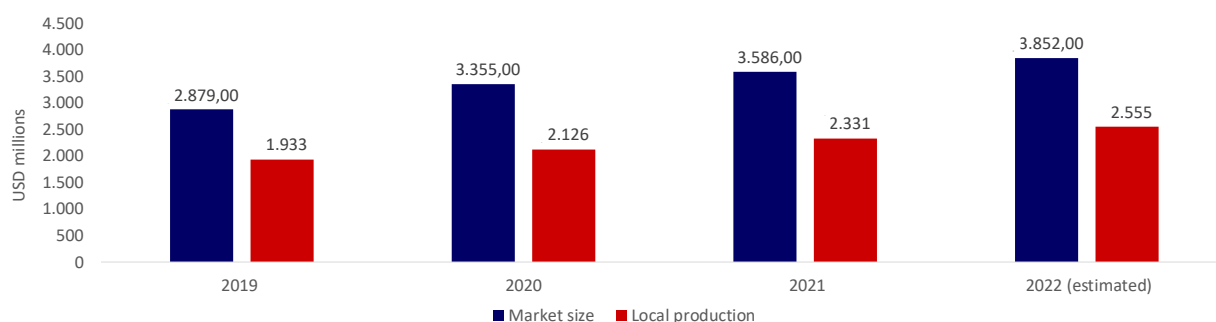
29 ASPAKI, 2021; ASEAN Briefing, 2020, 'Indonesia's Healthcare Industry: Growing Opportunities for Foreign Investors' <https://www.aseanbriefing.com/news/indonesias-healthcare-industry-growing-opportunities-foreign-investors>.

30 Incorp, 2022, 'Will this new SEZ be the future of the healthcare industry in Indonesia?', <https://www.cekindo.com/blog/future-of-the-healthcare-industry>.

31 ASPAKI, US Department of Commerce: Indonesia- Healthcare (Medical Devices & Equipment) (trade.gov).

32 Outlined in Ministry of Health Regulation No. 17/2017.

Figure 7: Indonesian market size and local production of medical devices and equipment, USD



Source: Indonesian Medical Device Producers Association, US Department of Commerce.

Indonesia’s MD sector is dominated by small and medium sized businesses and concentrated in low-technology, lower value categories. The top ten businesses account for 40% of the market, with the remaining 60% of the market comprised of 322 MD manufacturers.³³ The main MD produced in Indonesia are manual wheelchairs, patient beds, coronary stents, anaesthesia machines, needles, surgical threads, gloves and bandages. This is consistent with analysis of data from BPS which suggests that the value of production remains low and appears to vary significantly from year to year.³⁴ Indonesia is a net importer of advanced technology MD.

3.2.2. Medical device procurement

Since 2014, GoI has used an e-catalogue or online procurement system to procure medical products used under the JKN. The e-Katalog system was introduced by the Ministry of Health (MoH) to increase transparency and simplify transactions for products available for reimbursement under the JKN. It is managed by the Indonesian Government Agency for Procurement of Goods (Lembaga Kebijakan Pengadaan Barang/Jasa Pemerintah). The e-catalogue lists thousands of MD, and allows public and private hospitals and clinics to purchase medical equipment at a pre-negotiated price without a national or hospital public tender. It also offers a publicly searchable database and ordering system for all listed MD, along with their current list prices.

Local content requirements (LCR) apply for MD procured under JKN, but private sector procurement may offer an alternative path to market. Private sector healthcare spending represents around 45% of total healthcare spending in Indonesia, with over 60% of Indonesia’s hospitals privately managed.³⁵ This creates opportunities in the private market to procure imported MD without being impacted by the LCR. However, prices offered in the e-Katalog tend to be lower than prices in the private market,³⁶ which may make it challenging for companies seeking to sell outside of the e-Katalog to compete.

3.2.3. Regulation

3.2.3.1 Local content requirements

Local content requirements significantly impact imports of MD in Indonesia. In June 2021, the Ministry of Industry (MoI) introduced LCR for MD,³⁷ effectively banning imports of over 5,400 MD products across 79 categories from the e-Katalog system. Given more than half of health expenditure is driven by government spending, mostly through the JKN, this has had a significant impact. In addition, LCR apply to both public and private health care expenditure that is funded or reimbursed through the JKN, creating an impact on MD imported for the private health care system as well.³⁸

33 CSIS Indonesia, 2023, ‘Economic Impacts of Local Content Requirements in Indonesia, https://s3-csis-web.s3.ap-southeast-1.amazonaws.com/doc/Economic_Impacts_of_Local_Content_Requirements_in_Indonesia.pdf?download=1.

34 Statistics Indonesia, 2023, ‘Manufacturing Industry: Production Value- Medical, Ortopedik & Proesthetic Equipment’

35 International Trade Administration, 2022, ‘Indonesia – Country Commercial Guide: Healthcare (Medical Devices and Equipment), <https://www.trade.gov/country-commercial-guides/indonesia-healthcare-medical-devices-equipment>.

36 Ibid.

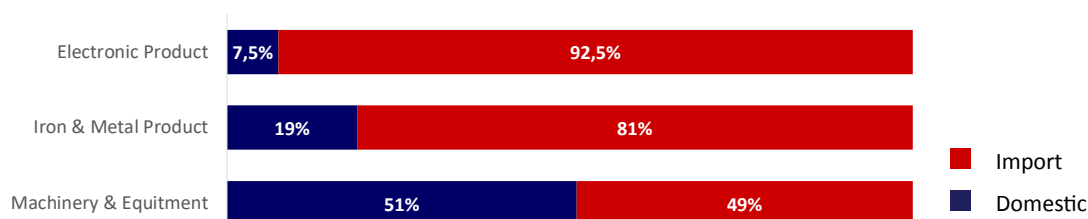
37 Within the 40% LCR rules, the Indonesian Ministry of Industry requires that 80% of the local content should come from local manufacturing, while the balance (20%) can come from research and development.

38 This provision is stated in a) law (Undang-Undang number 3 of 2014 on industrial affairs, article 85 and 86; and b) government regulation (Peraturan Pemerintah number 29 of 2018, article 57).

These requirements in effect limit the procurement of MD through government channels (e-Katalog, JKN) to only locally manufactured MD that are certified to have at least 40% local content.³⁹ This has decreased the domestic supply of MD and raised prices, and has not translated into increased local production – locally made products accounted for only 12% of medical equipment transactions between 2019 and 2022.⁴⁰

Indonesian manufacturers continue to face challenges in meeting LCR. A CSIS Indonesia⁴¹ analysis of Badan Pusat Statistik (BPS) 2016 Input-Output data suggests that the two primary inputs for the MD industry are imported iron and metal goods, and imported electronic products. The third primary source, machinery and equipment, relies on imports for nearly half of their goods. The dominance of low-technology MD in Indonesia’s domestic MD industry is likely because these products can meet LCR.⁴²

Figure 8: Indonesia’s inputs to production of MD products



Source: CSIS, 2022, BPS input-output data.

Exemption processes for LCR are opaque and are administered by a ‘freeze’ and ‘unfreeze’ mechanism, impacting the attractiveness of commercial opportunities. The MoH monitors the local production of, and demand for, MD and uses a freeze-unfreeze mechanism to allow imports where local production is not able to meet domestic demand. However, the process is opaque, and it is challenging for prospective global suppliers to infer the commercial opportunities which may/may not exist and are subject to change. Overall, LCRs have been found to be negatively correlated with productivity, output, export, worker productivity and value-add of Indonesia’s MD industry.⁴³

3.2.3.2. Medical device imports

The MoH requires domestic producers and importers to obtain licences to distribute MD.⁴⁴ Stringent requirements apply for domestic manufacturers that assemble medical devices locally (combining local and imported components), including that local components must be prioritised over imported components. In addition, domestic manufacturers that produce Original Equipment Manufacturer (OEM) products that use the trademark from the principal/original brand holder can only obtain distribution licenses for up to three years. These licenses can only be extended once, with the additional provision that the MoH can evaluate whether domestic industry capability allows local production of similar products.

These distribution licences create an additional barrier to trade and investment by adding red tape and complexities, and limiting OEM medical device manufacturers to a maximum six-year distribution period in Indonesia.

Medical devices are also affected by regulations for Halal certification and registration. Medical devices that incorporate animal products must be certified as halal under Indonesia’s Halal Certification Law.⁴⁵ In addition, prior to importation, MD must receive a registration number and product license (e.g. marketing license) issued by Indonesia’s MoH to a local, licensed distributor.⁴⁶

39 In practice, if domestic demand is greater than local supply, imports are allowed via an ‘unfreeze’ mechanism

40 Ibid.

41 CSIS Indonesia, 2023, ‘Economic Impacts of Local Content Requirements in Indonesia’, https://s3-csis-web.s3.ap-southeast-1.amazonaws.com/doc/Economic_Impacts_of_Local_Content_Requirements_in_Indonesia.pdf?download=1.

42 Ibid.

43 Ibid.

44 Ministry of Health Regulation 26/2018 and 62/2017, https://regalkes.kemkes.go.id/informasi_alkes/Regulasi%20Lisensi%20Produk.pdf.

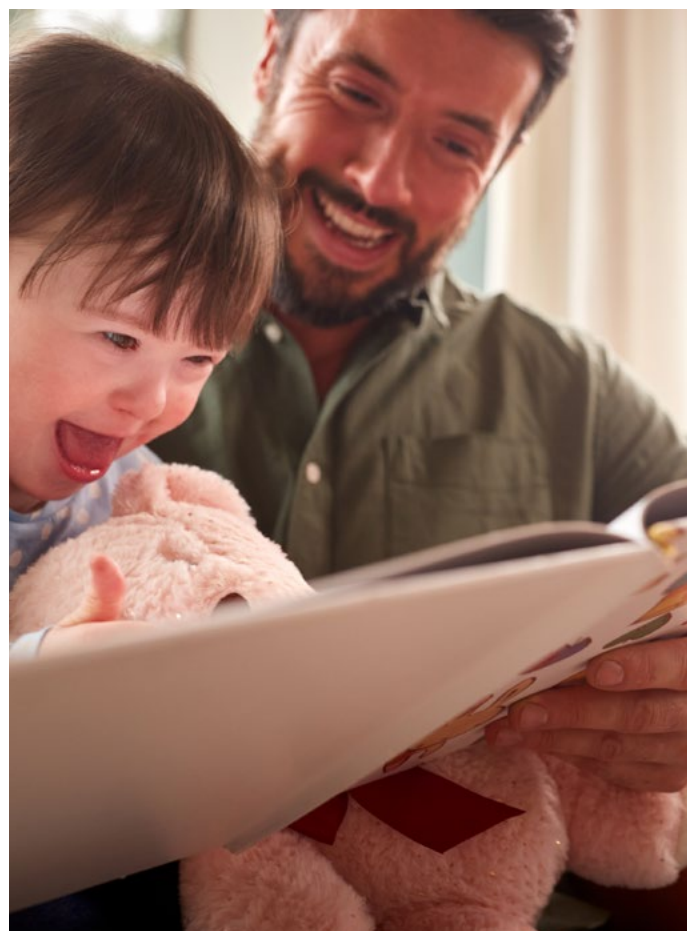
45 Presidential Regulation 06/2023, <https://www.lexology.com/library/detail.aspx?g=f9aea47c-bba2-4029-a258-cf771845423e>

46 Asia Actual, 2022, ‘Medical Device Registration’, <https://asiaactual.com/indonesia/medical-device-registration>.

3.2.3.3. Foreign direct investment

Despite challenges, Indonesia's health sector is successfully attracting FDI. In 2021, MD were removed from Indonesia's *Negative Investment List*, opening opportunities for 100% foreign ownership of companies that produce MD. This regulatory change aims to attract foreign investment and grow domestic production capabilities. Several foreign MD companies have taken advantage of the new environment to set up manufacturing facilities in Indonesia. For example, JMS, a Japanese company that is a major supplier of medical disposables and haemodialysis equipment, has set up its manufacturing site in Batam Island (a special economic zone), while Paramount, a Japanese manufacturer of hospital beds, has set up in Bekasi. Established foreign firms who already have a foothold in Indonesia include Siemens, GE Healthcare, Phillips and Pfizer. These companies have greatly benefited from the rollout of the JKN program for equipment such as MRI machines, PET-CT scanners, and intensive care unit equipment, among others.

However, foreign investors continue to face regulatory challenges. Restrictive regulations and legal and regulatory uncertainty continue to complicate the investment climate. Regulations on FDI in Indonesia require that any FDI in Indonesia must be in the form of a limited liability company with minimum capital of IDR10 billion (around AUD1 million), excluding land and building and with the foreign investor holding shares in the company.⁴⁷

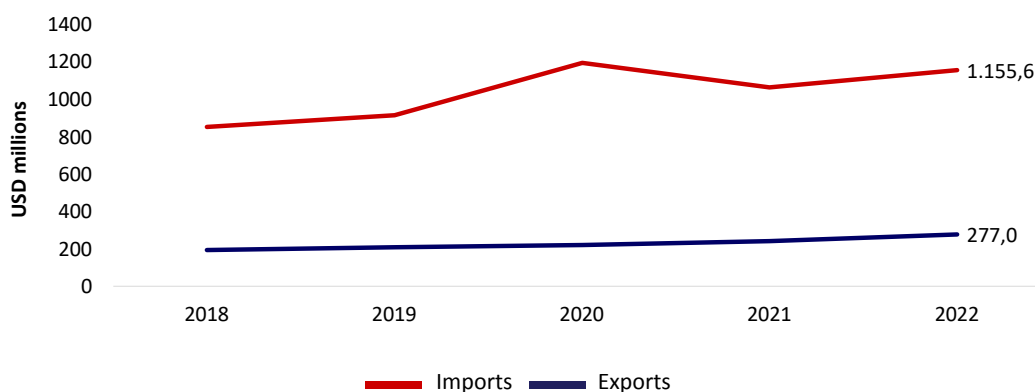


3.3 Trade flows in medical devices

3.3.1. Trade flow overview

Indonesia is a net importer of medical devices, with imports valued at USD1.12 billion and exports valued at USD277 million in 2023. The composition of Indonesia's MD imports did not change greatly over 2019-2022.

Figure 9: Indonesia's MD trade, 2018-2022, USD

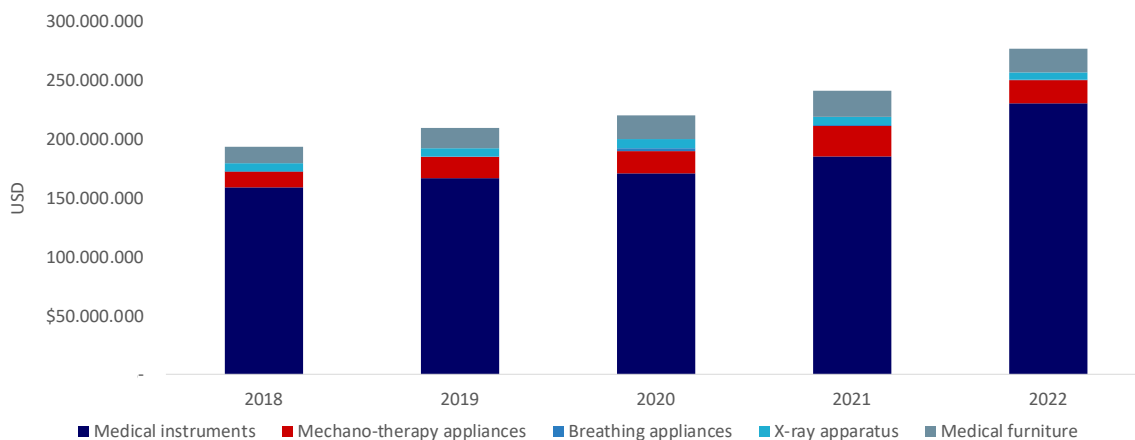


Source: Trade Map, 2023.

47 Indonesian Law No. 25/2007.

Surgical face masks, syringes, needles, and electro-diagnostic appliances continue to dominate Indonesia's exports of MD. Medical appliances and instruments (covered by HS 9018) is the largest category of imports and exports alike.

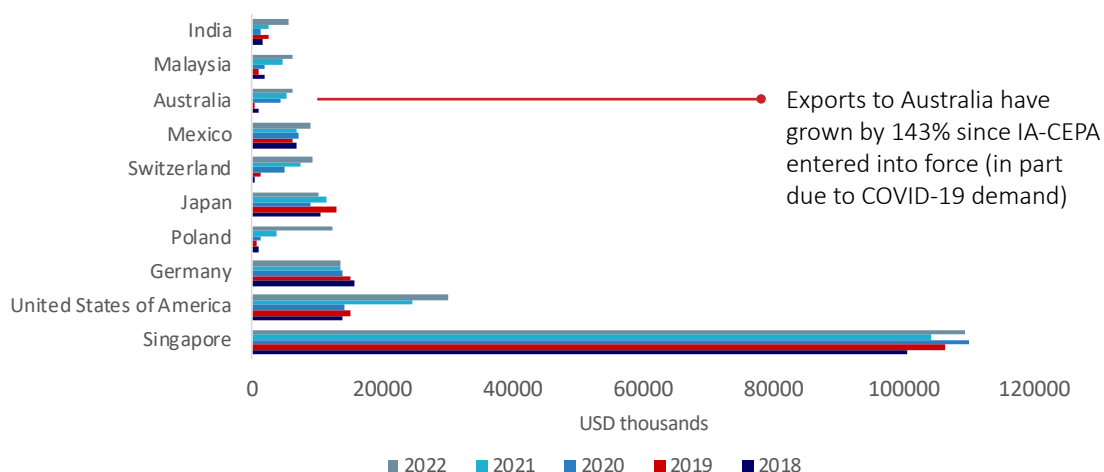
Figure 10: Indonesia's exports of medical devices, by category, 2018-2022, USD



Source: Trade Map, 2023.

Australia is Indonesia's 8th largest destination market for MD exports, growing by 143% since 2020 to reach USD6.3 million in 2022 (albeit from a low base). Exports to Australia are dominated by medical furniture (e.g. operating tables and hospital beds) and medical appliances and instruments, valued at USD4.0 million and USD2.3 million respectively in 2022. This export growth may be due to the impacts of IA-CEPA entering into force in 2020, combined with increased demand for hospital beds arising from COVID-19. Nonetheless, this growth indicates that Indonesia is an internationally competitive supplier of medical furniture, with potential to grow exports.

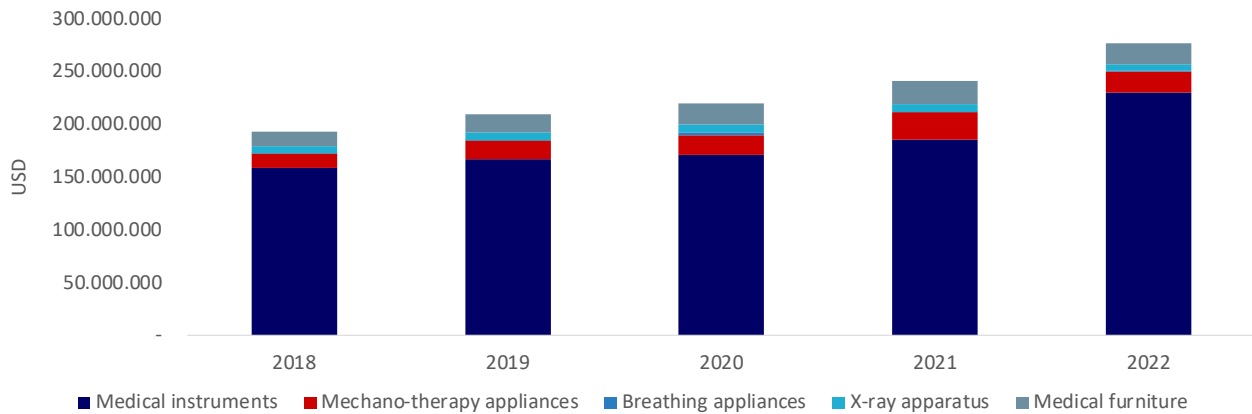
Figure 11: Indonesia's exports of MD, top 10 destination markets, 2018-2022, USD



Source: Trade Map, 2023.

Indonesia's imports of MD have grown at a faster rate than its exports, as domestic demand outstrips the capacity of local suppliers. As such, Indonesia remains reliant on imports to meet local demand in the short term. Indonesia's imports of MD are dominated by medical appliances and instruments (HS 9018), which accounted for 62% of all medical device imports in 2022. The second largest import category is x-ray and radiotherapy apparatus (HS 9022), which have grown by 12% CAGR since 2018 and accounted for 22% of all MD imports in 2022.

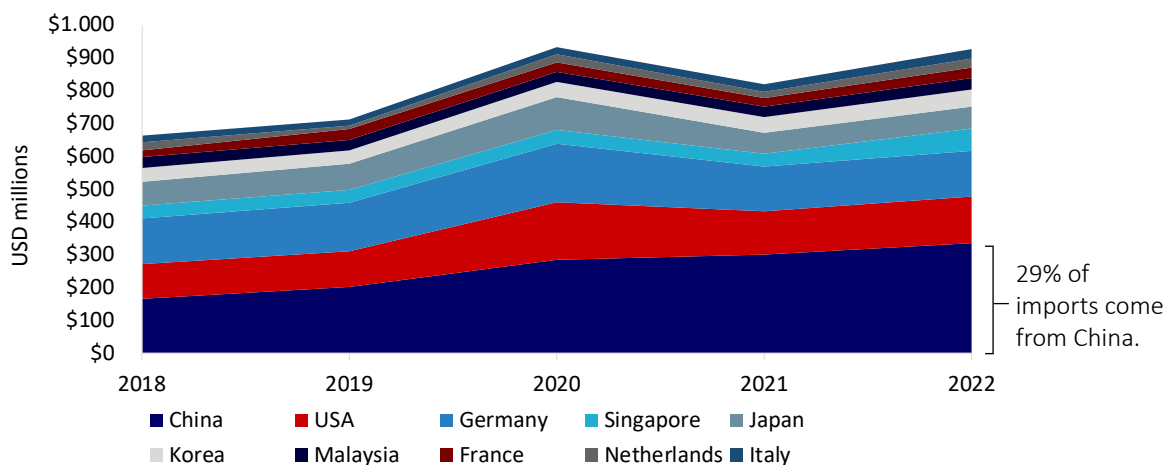
Figure 12: Indonesia's imports of MD, by category, 2018-2022, USD



Source: Trade Map, 2023.

China supplies one third of Indonesia's MD imports. China is the largest supplier of MD to Indonesia in all but one of the medical device categories, respiratory devices (HS 9020), for which it is the second largest supplier after Singapore. The USA and Germany are the second and third largest suppliers, both accounting for 12% of imports, followed by Singapore and Japan, which both account for 6% of imports.

Figure 13: Indonesia's imports of MD, top 10 suppliers, 2018-2022, USD



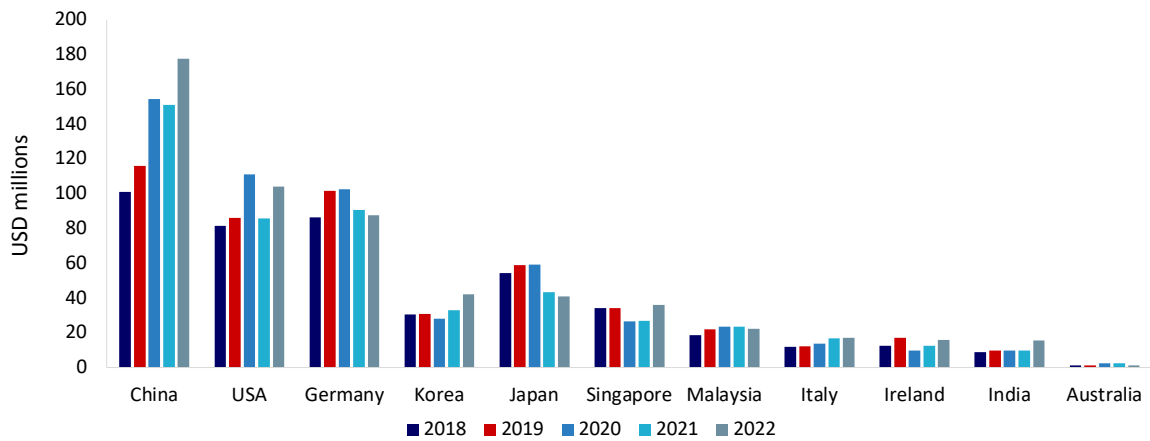
Source: Trade Map, 2023.

3.3.2. Imports: Medical appliances and instruments (HS 9018)

Indonesia's imports of medical appliances and instruments (covered by HS 9018) have increased steadily.

Imports were valued at USD568.6 million in 2018 and rose to USD719.8 million in 2022; a 5% CAGR over the period. Imports from China grew by 12% CAGR over the same period to reach USD177.4 million, to account for a quarter of all imports in 2022. Other major suppliers include the USA, Germany, Korea, and Japan. Australia is a minor supplier, with imports peaking in 2020 at a value of USD2.6 million, before decreasing to USD1.4 million in 2022. Several other suppliers also saw declining import values during the pandemic, potentially reflecting a re-prioritisation of spending on MD/healthcare based on the urgent requirements to manage COVID-19 infections.

Figure 14: Indonesia's imports of medical appliances and instruments, top 10 suppliers, 2018-2022, USD

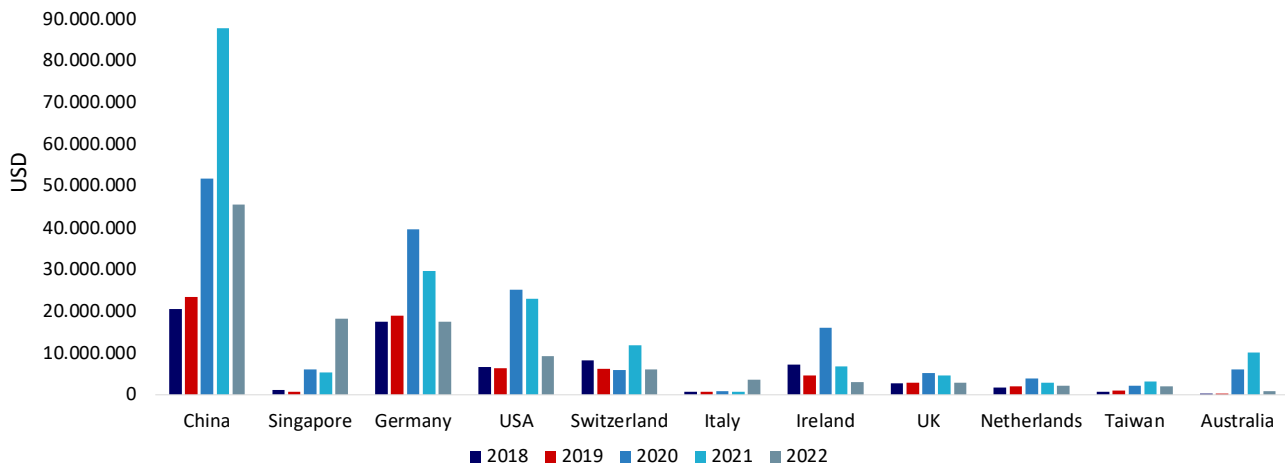


Source: Trade Map, 2023, medical appliances and instruments as defined as HS code 9018.

3.3.3. Imports: Mechano-therapy devices including respiratory devices (HS 9019)

Imports of mechano-therapy devices, including respiratory devices, have grown by 88% since 2018, to USD123.4 million, partly due to increased demand during the pandemic for respirators. China is the dominant source market, with imports from China growing by 17% since 2018 to reach USD45.5 million, 37% of all imports. Imports from Singapore also experienced strong growth over the period, albeit from a low base, to reach USD18.1 million in 2022, while imports from Germany decreased. Australia is a minor supplier, growing imports from USD284,000 in 2018 to peak at USD10.0 million in 2021 before declining again in 2022.

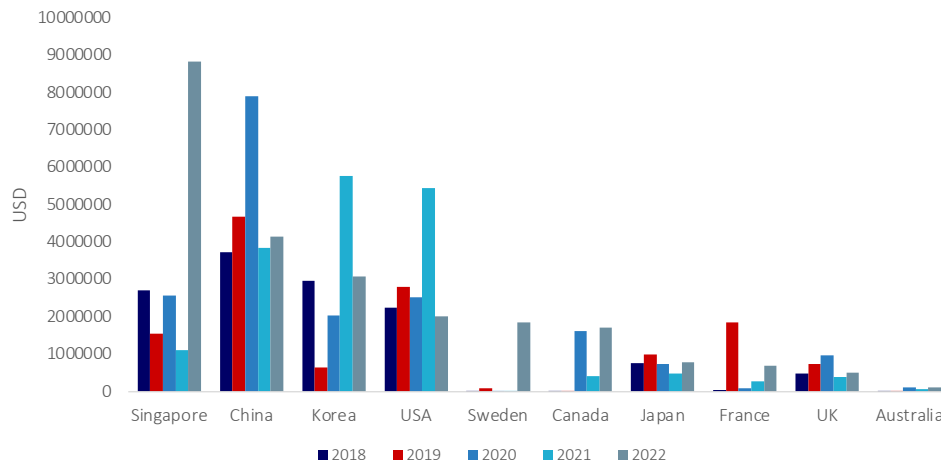
Figure 15: Indonesia's imports of mechano-therapy devices, top 10 suppliers, 2018-2022, USD



Source: Trade Map, 2023, mechano-therapy devices i.e. respirators as defined as HS code 9019.

Indonesia's imports of breathing appliances rapidly increased during the pandemic. Imports rose from USD16.4 million in 2019 to USD25.1 million in 2022. Singapore, China and Korea were the dominant source markets, accounting for 35%, 17% and 12% of total imports in 2022. Imports from Australia are negligible, reaching a maximum value of USD116,000 in 2022.

Figure 16: Indonesia's imports of breathing appliances, top suppliers, 2018-2022, USD

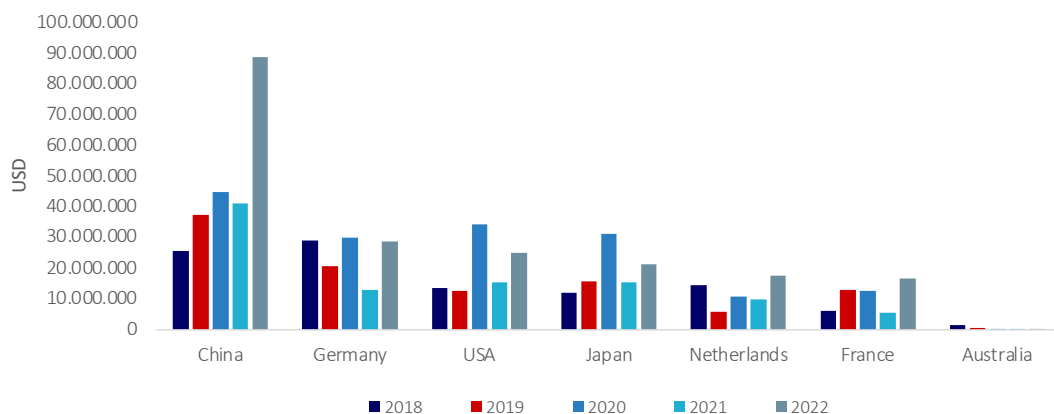


Source: Trade Map, 2023, respiratory devices as defined by HS code 9020.

3.3.4. Imports: X-ray and radiotherapy apparatus (HS 9022)

Indonesia's imports of x-ray and radiotherapy apparatus have grown by a 12% CAGR since 2018, reaching USD249.6 million in 2022. Imports from the major source market, China, have grown by 28% since 2018 and now account for over one-third of all imports. Germany, the USA and Japan are other major source markets. Imports from Australia have declined from a low USD1.6 million in 2018 to negligible USD52,000 in 2022, perhaps replaced by strong growth in imports from France, Japan, the US and China.

Figure 17: Indonesia's imports of apparatus for x-ray or radiotherapy, top suppliers, 2018-2022, USD

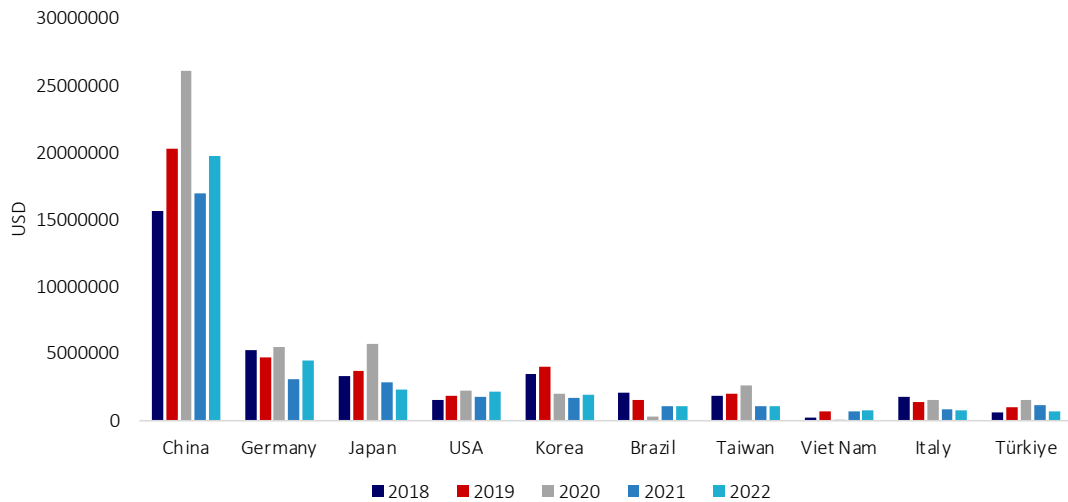


Source: Trade Map, 2023, HS code 9022, apparatus for x-ray and radiotherapy.

3.3.5. Imports: Medical furniture and equipment (HS 9402)

Indonesia's imports of medical furniture and equipment have declined since the onset of the pandemic, likely due to growth in the domestic industry. In 2022, medical furniture and equipment imports were valued at USD36.6 million. China supplies over half of Indonesia's imports of medical furniture, followed by Germany (12%), Japan (6%) and the US (6%). Imports from Australia peaked in 2018 at the value of USD400,000 and declined to just USD4,000 in 2022.

Figure 18: Indonesia’s imports of medical furniture, top 10 suppliers, 2018-2022, USD



Source: Trade Map, 2023, medical furniture as defined as HS code 9402.

3.4. Summary findings

Indonesia’s healthcare sector is undergoing a period of transformation, modernisation and growth, partly driven by the implementation of the JKN, which is building access to healthcare and thus demand for hospitals, doctors and medical equipment. Indonesia’s growing, ageing and wealthier population is demanding higher quality healthcare, fuelling demand for MD that cannot be met by local production.

However, imports are affected by LCR that apply to the majority of publicly procured MD in Indonesia, and even if LCR do not apply (e.g. for private procurement), imports may not be able to compete on price. In the absence of greater regulatory certainty and transparency over the application of LCR regulations and when the freeze/unfreeze mechanism will be applied, the Indonesian market for MD will remain difficult for Australian exporters to enter in the near term and continue to be characterised by one-off or short term and inconsistent commercial sales.

However, Australia offers a major opportunity for Indonesia’s exports of medical furniture. With strong backing by the GoI, Indonesia’s MD industry is likely to continue its recent growth, creating more export opportunities. Boosting foreign direct investment in this sector will help to fast-track industry development and technology and knowledge transfer.

Australian investments in Indonesia’s healthcare infrastructure can be supported by, and create the right conditions for, FDI and Australian exports. Recent investments by Australian companies like Aspen Medical, which is planning to build 23 hospitals and 650 clinics in West Java over the next 13 years, can be used as ‘anchor investments’ to attract FDI and grow exports from across the Australian health sector ecosystem, particularly MD. Australian companies seeking to leverage these opportunities would benefit from close relationships with established local partners, recognising the complexities in Indonesia’s market for import and production of MD.



Chapter 4

Australia's demand and supply of medical devices

This section discusses Australia’s healthcare sector and the main factors influencing market demand for and supply of MD, relevant government policies and trade flows.

4.1. Demand for medical devices

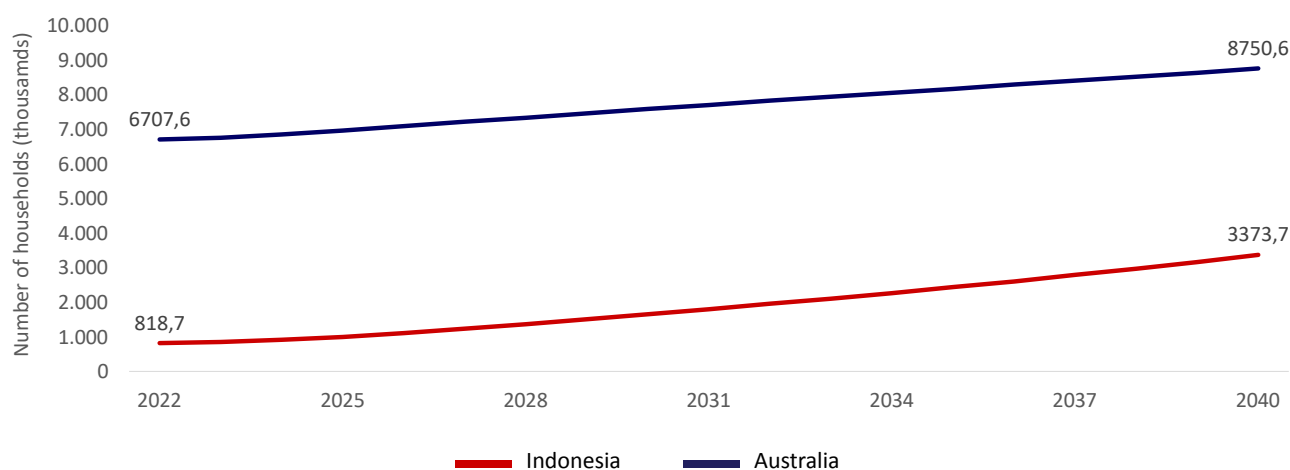
4.1.1. Demographics

Australia’s population is ageing and increasingly interested in preventative healthcare. Currently, 16% of Australia’s population is over 65, and this is projected to steadily increase to reach 20% by 2066.⁴⁸ There is also an increasing focus on preventative healthcare in Australia. Combined, these factors are likely to increase demand for MD for screening and early diagnosis of diseases, as well as for chronic diseases and other age-related conditions.

Australia will continue to be a lucrative market for MD, underpinned by high levels of disposable income.

Although Australia is projected to have roughly equal the number of households as Indonesia with disposable income greater than USD35,000 by 2040 (Figure 5), when the threshold is raised to USD55,000, the number of Australian households with this level of disposable income is projected to be more than double Indonesia. This reflects the enduring trend of a relatively wealthier consumer market, who therefore have a higher ability to pay for healthcare.

Figure 19: Households with a disposable income greater than USD55,000, Indonesia and Australia



Source: Equity Economics analysis of Euromonitor, 2023, USD constant.

4.1.2. Trends

Demand for convenience, growth in patient-centric care and COVID-19 are shaping Australia’s MD industry. In Australia, minimally invasive procedures are growing in popularity, alongside an increasing focus on patient-centric care and home healthcare. There is also growing use of telehealth, which was accelerated by the pandemic. These factors are driving demand for MD that can be used at home as well as for remote patient monitoring devices and virtual care devices.

Technological advances and ongoing investment in research and development (R&D) mean Australian manufacturers can offer the latest medical and surgical equipment to downstream markets, keeping them at the forefront of innovation and fuelling industry sales. The high rate of healthcare expenditure together with government incentives encourage MD companies to invest in R&D, in turn developing new products and creating new revenue streams. Advancements in specialised products among local manufacturers are likely to drive demand from export markets, which provide an important source of downstream demand, with many Australian companies manufacturing cutting-edge niche medical, health and dental equipment.

48 AIHW, 2023, ‘Older Australians: demographic profile’, <https://www.aihw.gov.au/reports/older-people/older-australians/contents/demographic-profile>.

4.1.3. Healthcare sector

4.1.3.1. Policies

Medicare is Australia's universal health insurance scheme, and it guarantees all Australians access to a wide range of health and hospital services at low or no cost. Medicare pays for some or all of the costs of various medical services, including tests, imaging and scans, delivered in public and private hospitals. It ensures all Australians have equitable access to health care when they need it, regardless of where they live or their ability to pay. By supporting access to healthcare, this in turn increases demand for MD. Further, Medicare's safety nets support people who have high out-of-pocket medical costs for services provided out-of-hospital. Once a person's out-of-pocket costs reach a certain level, Medicare gives a higher benefit (subsidy) back for the rest of the year.

Medicare is partially funded by the Medicare levy, which is applied through Australia's taxation system. The Medicare levy is 2% of a person's taxable income, although some individuals and households

can get a reduction or exemption depending on their circumstances (e.g. for low-income earners).

More than half of Australians have some form of private health insurance. As at May 2023, 14.41 million people (55.1% of the population) have private insurances for 'extras' (services provided out-of-hospital) and 11.67 million people (44.9% of the population) have private insurance for hospital services.⁴⁹ Australians can receive a private health rebate from the government to help cover the cost of private health insurance, depending on their circumstances and income level.

Australia also supports eligible people to meet some of the costs associated with disability, including AT and MD, through the National Disability Insurance Scheme (NDIS), which was fully implemented in 2020. This drives demand for MD and AT.

4.1.3.2. Infrastructure

The Australian healthcare system operates under a shared public-private model, however, Australia's hospital infrastructure is below the OECD average. The number of hospital beds provides an indication of the resources available for delivering services to inpatients – Australia has 3.8 hospital beds per 1000 people, which is slightly below the OECD average of 4.4 beds.⁵⁰

4.1.3.3. Workforce

Over 1.5 million people are employed in Australia's health care workforce, with women accounting for over 70%.⁵¹ Hospitals are the largest employer, while allied health services (which support the prescribing and fitting of AT) is the third largest employer. Australia has a relatively high number (12.2) of practicing nurses per 100 people, compared to the OECD average (8.8 nurses). Australia's doctor workforce (3.8 practicing physicians per 100 people) is slightly above the OECD average (3.6 practicing physicians per 1000 people) as well.⁵²

Growth in Australia's healthcare workforce is higher than any other sector. Workforce demand in the healthcare sector is projected to increase by around 15% between 2021 and 2026,⁵³ which is likely to create major workforce shortages especially in regional areas.

49 Australian Prudential Regulatory Authority, May 2023.

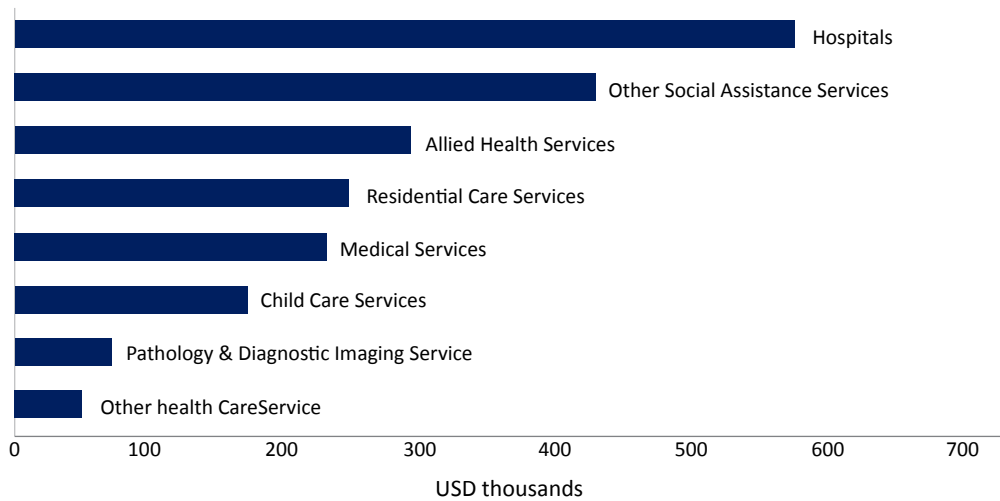
50 2019 figures, sourced from OECD, 2021, 'Health at a Glance: Highlights for Australia', <https://www.oecd.org/australia/health-at-a-glance-Australia-EN.pdf>.

51 Australian Government, 2019, 'Labour Market Insights: Health Care and Social Assistance', <https://labourmarketinsights.gov.au/industries/industry-details>.

52 2019 figures, sourced from OECD, 2021, 'Health at a Glance: Highlights for Australia', <https://www.oecd.org/australia/health-at-a-glance-Australia-EN.pdf>.

53 ABS, 2021, 'Labour Force Survey, Detailed, November 2021, seasonally adjusted and Jobs and Skills Australia, 2021 Employment projections for the five years to 2026'

Figure 20: Employment by sector in the health care and social assistance industry



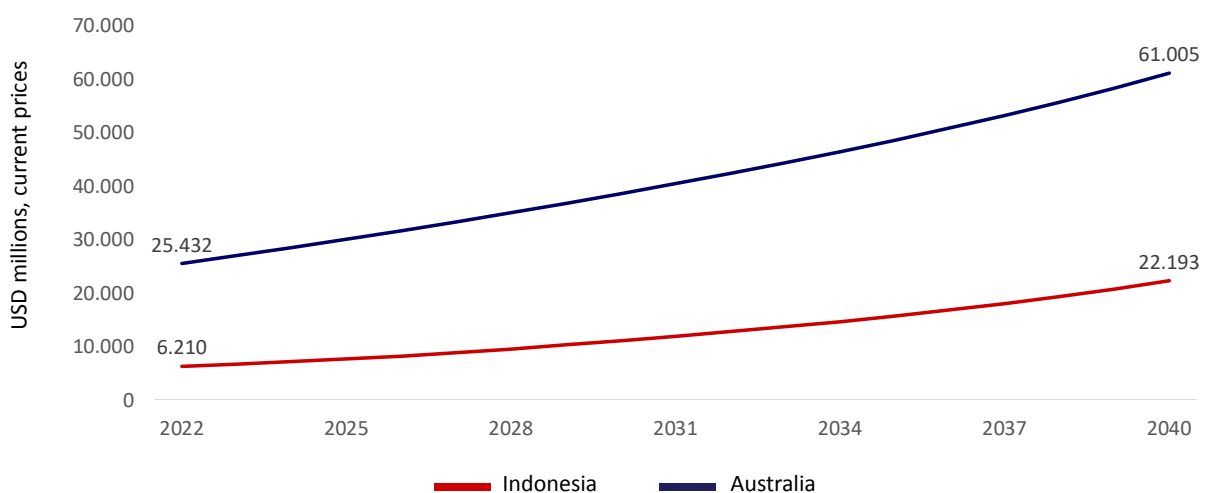
Source: ABS, Labour Force Survey, Detailed, February 2023, seasonally adjusted.

4.1.3.4 Expenditure

Australia is one of the world’s top 10 countries in terms of healthcare per capita expenditure. In 2020, healthcare expenditure accounted for 10.2% of GDP, equivalent to USD5,133 per capita.⁵⁴ Even prior to COVID-19, Australia was spending over USD140 billion annually on health expenditure, and this is likely to have only increased following the pandemic.⁵⁵

Consumer expenditure on pharmaceutical products, medical appliances and equipment is also projected to grow, from USD25.4 million in 2022 to USD61.0 million in 2040. This reflects increased demand from Australia’s rapidly ageing population as well as high levels of consumer income. This is nearly three times the expected value of equivalent spending in Indonesia – with a population over ten times the size. This highlights just how lucrative the Australian MD market is, underpinned by public expenditure through the NDIS and Medicare.

Figure 21: Consumer expenditure on pharmaceutical products, medical appliances and equipment, USD



Source: Equity Economics analysis of Euromonitor, 2023.

⁵⁴ The OECD average is USD5,109 per capita.

⁵⁵ 2019 values using WHO, 2023, Global Health Expenditure Database, <https://apps.who.int/nha/database>.

4.2. Supply of medical devices

4.2.1. Industry capability

Australia's medical and surgical equipment manufacturing industry is thriving, and the outlook continues to be promising. Over the past five years, the industry has grown at a CAGR of 8.3%, to reach USD4.5 billion.⁵⁶ Industry revenue is forecasted to grow at an annualised 2.3% to USD7.8 billion by 2028 as public health expenditure remains strong.⁵⁷ The COVID-19 pandemic caused MD sales to private and public hospitals to skyrocket, surging up 31.9% in 2020-21.

The medical device industry is highly specialised and export oriented, with local manufacturers specialising in high margin, niche technologies including in cardiovascular, diagnostic, hearing, orthopaedic, respiratory devices, as well as health technology, infrastructure, services and clinical trials. Australia is a global leader in the development of specialised medical technologies such as hearing implants, bionic arms and legs, and medical imaging technologies. Australian companies

are also at the forefront of developing new digital health technologies, such as remote monitoring and telehealth systems. Australia's MD industry is mature, competitive and characterised by significant sustained investment in R&D. Nearly all medical technology products manufactured in Australia are exported, highlighting the industry's international competitiveness. At the same time, approximately 80% of domestic demand for MD and diagnostics is met by imports.

Australia's MD industry is moderately concentrated. It is made up of a small number of global multinational companies (approximately 20% of industry revenue) and many small and medium-sized enterprises (80% of industry revenue). The top four players account for less than 40% of industry revenue in 2023.⁵⁸ Australia's MD market is dominated by medical and surgical equipment (41.0%), medical and surgical instruments (32.1%), hearing aids and implants (17.0%) and dental equipment (9.9%).

Box 5: Major players in the Australian MD industry

Major players in the Australian medical device industry include:



ResMed Holdings (22.4% market share): Wholly owned subsidiary of US-based ResMed Inc., a respiratory medical device manufacturer that specialises in products that help diagnose and treat breathing-related sleep disorders.



Baxter Healthcare Pty Ltd (5.9 % market share): Foreign-owned proprietary company that manufactures medical and pharmaceutical products in Australia, including hospital devices and equipment, blood collection equipment and surgical aids.



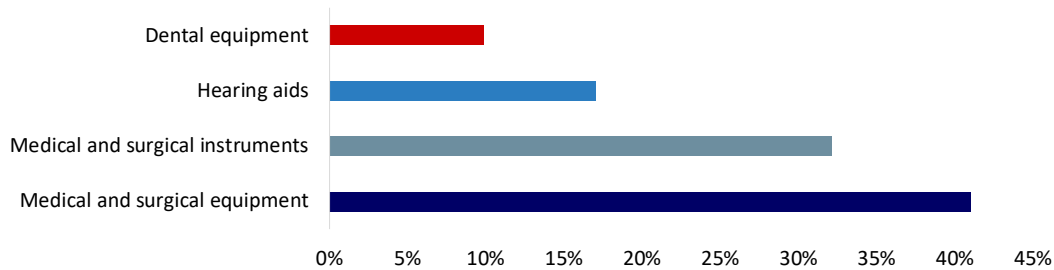
Cochlear Ltd (5.0% market share): Australian company that designs, develops and manufactures implantable hearing solutions.

⁵⁶ Ibisworld, 2023, 'Medical and Surgical Equipment Manufacturing in Australia'.

⁵⁷ Ibid.

⁵⁸ Ibid.

Figure 22: Australia MD product segmentation



Source: IBISWorld, 2023.

4.2.2. Regulations and incentives

All MD imported or produced in Australia are required to meet the Australian Register of Therapeutic Goods requirements⁵⁹ and conformity assessment procedures. Unless a specific exemption applies, MD must be included on the Australian Register of Therapeutic Goods before they can be supplied in Australia. Health professionals who import MD for use in their clinical practice are considered to be supplying the devices to the general public, and so must comply with all regulatory requirements as sponsors.⁶⁰

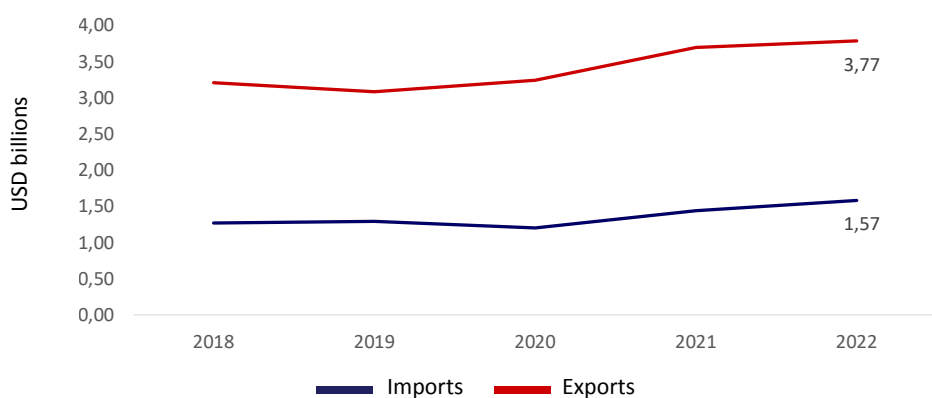
The Australian Government supports industry development through a number of initiatives to foster innovation and growth. This includes targeted MedTech industry growth centres⁶¹ and MedTech precincts in several states, targeted MedTech accelerator programs and manufacturing centres,⁶² a dedicated medical research future fund⁶³ and research funding, as well as a tax incentive for R&D.⁶⁴

The USA is Australia’s largest trading partner for MD, accounting for 35% and 30% of all exports and imports

4.3 Medical devices trade flows in Australia

Despite the fast-growing nature of Australia’s domestic MD industry, Australia remains a net importer of medical devices. In 2022, Australia imported USD3.77 billion of MD and exported USD1.57 billion worth of medical devices. Imports grew by a CAGR of 3% over the period and exports grew by 4%.

Figure 23: Australia’s MD trade, 2018-2022, USD



Source: Trade Map, 2023.

59 Australian Government Therapeutic Goods Administration, 2023, 'Importing & supplying medical devices', <https://www.tga.gov.au/resources/resource/guidance/importing-supplying-medical-devices>.

60 These requirements are listed here : Australian Government Therapeutic Goods Administration, 2023, 'Importing & supplying medical devices', <https://www.tga.gov.au/resources/resource/guidance/importing-supplying-medical-devices>.

61 MTPConnect, 2023, <https://www.mtpconnect.org.au/>.

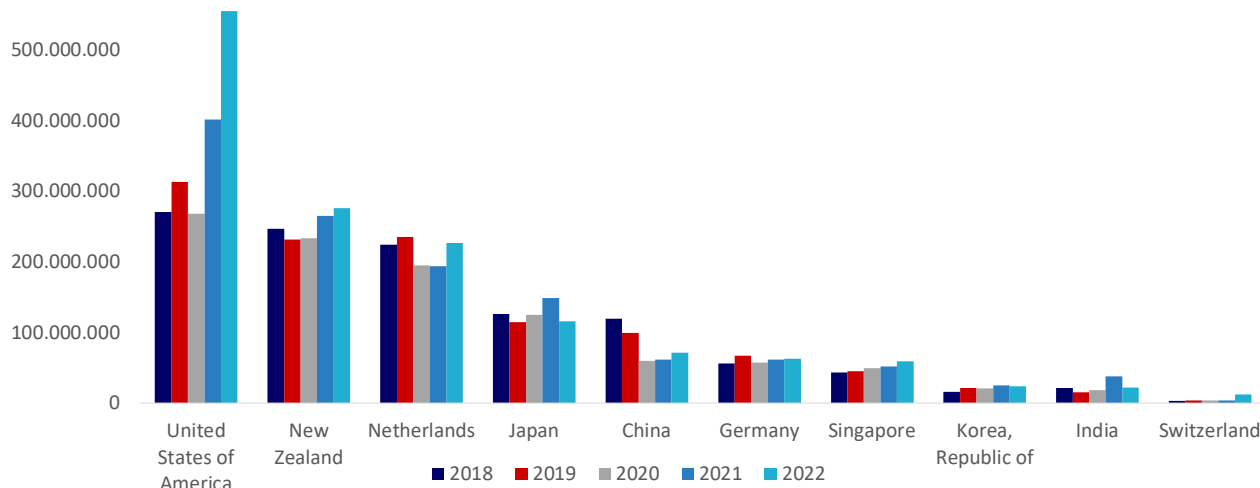
62 Victorian State Government, 2023, 'Australian Medtech Manufacturing Centre', <https://djsir.vic.gov.au/about-us/overview/strategies-and-initiatives/australian-medtech-manufacturing-centre>

63 Australian Government Department of Health and Aged Care, 2023, '\$73 million for medical technology and research', www.health.gov.au/news/mrff-73-million-for-medical-technology-and-research.

64 Australian Taxation Office, 2023, 'Research and development tax incentive', ato.gov.au.

The USA is Australia’s largest trading partner for MD, accounting for 35% and 30% of all exports and imports by value in 2022. Other major export markets include New Zealand (18%), the Netherlands (14%) and Japan (7%), accounting for 18%, 14% and 7% of exports by value in 2022. Indonesia is Australia’s 24th-largest export destination for medical devices and represented just 0.2% of exports (USD3.3 million) in 2022.

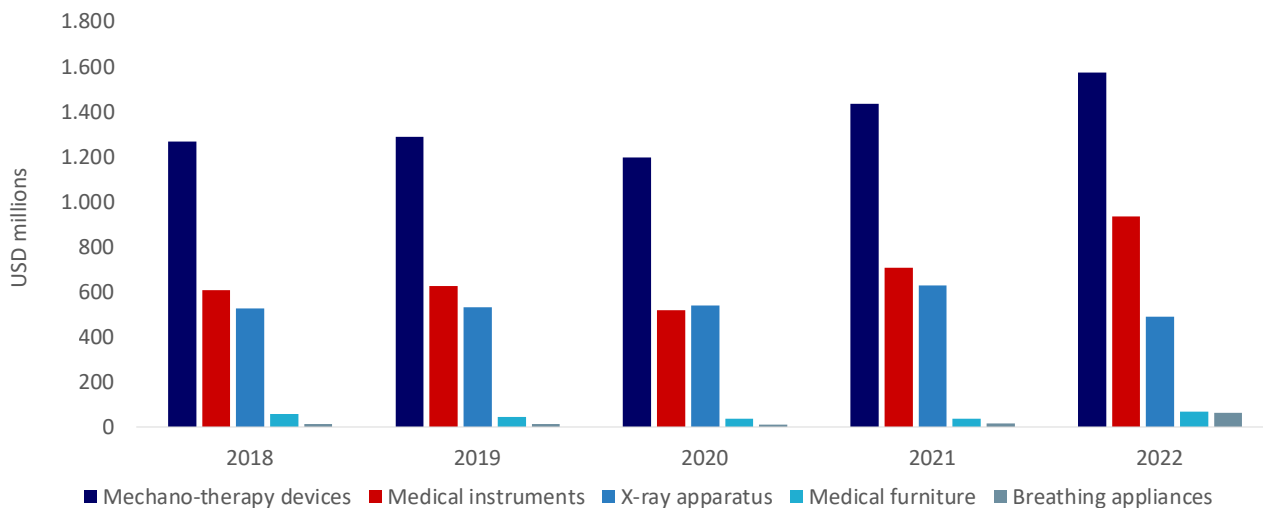
Figure 24: Australia’s MD exports, top 10 markets, 2018-2022, USD



Source: Trade Map, 2023.

Two product categories dominate exports: artificial respirators and oxygen therapy products (HS 901920) and surgical instruments and appliances (HS 90189000). The pandemic caused a spike in demand for artificial respirator and oxygen therapy exports, but this is expected to return to trend in 2023.

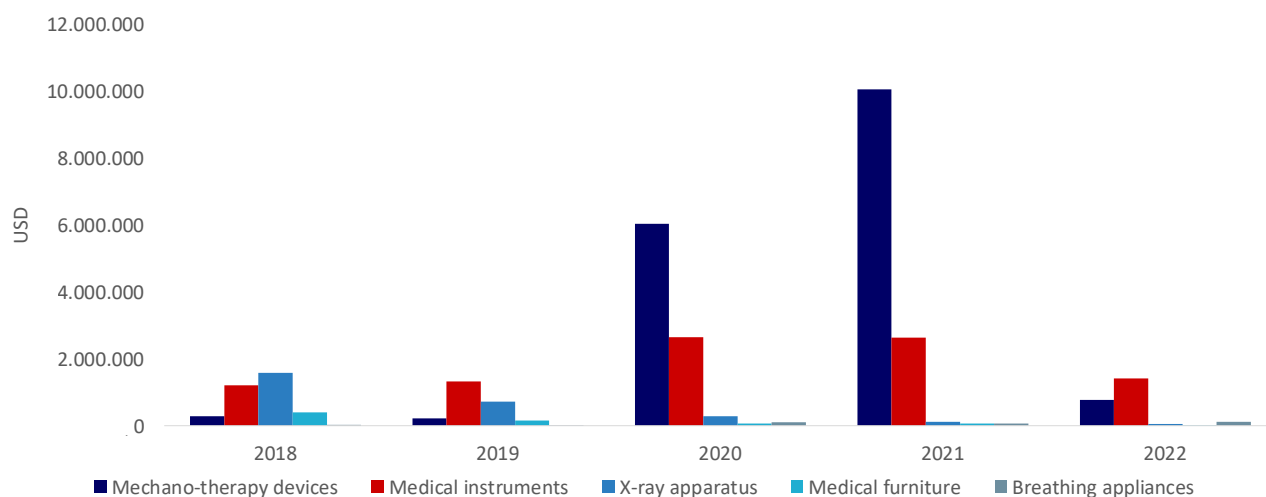
Figure 25: Australia’s MD exports by category, 2018-2022, USD



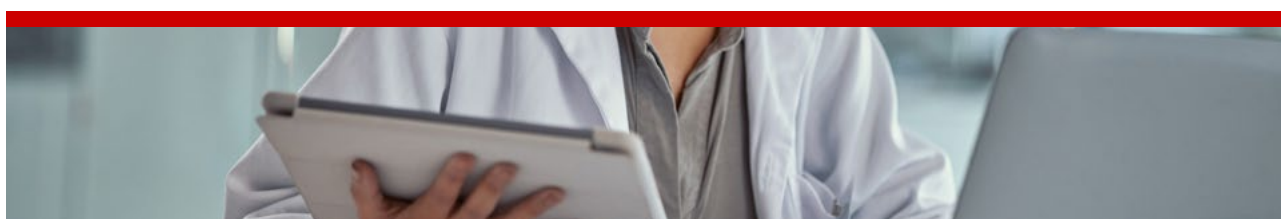
Source: Trade Map, 2023.

Indonesian imports of MD from Australia grew rapidly between 2018 and 2021 to reach USD12.9 million, but the composition of trade was strongly influenced by the pandemic. Imports of mechano-therapy appliances, including artificial respirators, accounted for nearly 80% of total imports of MD from Australia in 2021. However, by 2022, MD imports from Australia returned to pre-pandemic values, USD2.4 million, with medical instruments and appliances (HS9018) accounting for 60% of all imports. However, the types of products imported are inconsistent and shift between categories each year, suggesting they are more to fill gaps in supply, subject to LCR regulations, rather than indicating an ongoing commercial relationship.

Figure 26: Indonesian imports of MD from Australia, by category, USD



Source: Trade Map, 2023.



Box 6: Growing bilateral trade in digital health

The acceleration of digital health in both markets will be transformative, unlocking significant opportunities for trade in health services and MedTech, which is less encumbered by regulatory barriers. A recent commercial business partnership between Australia’s Connect2MyDoctor (C2MD) and Surabaya’s Locus Medical Hub will see C2MD’s telehealth module integrated into Locus Medical Hub to develop use cases with clinicians and patients. This commercial partnership highlights the potential for greater bilateral trade in digital health, leveraging Australia’s expertise in telehealth.

4.4. Summary findings

Australia will continue to be a lucrative market for MD, underpinned by high levels of disposable income, an ageing population and public subsidies on healthcare expenditure. While Australia has a thriving domestic MD industry, it is heavily export-focused, so Australia meets most of its demand through imports.

The domestic MD industry has strong R&D capabilities, access to global markets and supportive government policies. Industry investment, and in turn growth, is supported by the high levels of healthcare expenditure together with generous government incentives.

Australia’s capabilities and competitiveness in niche MD combined with Indonesia’s large unmet demand create a strong business case to invest in more strategic commercial trade relationships. After reaching a peak in 2021, medical device imports to Indonesia from Australia have subsided to pre-pandemic levels. The trade relationship is inconsistent and sporadic, largely to fill gaps in supply. However, there are clear opportunities to grow and reshape the bilateral trade relationship in MD, to benefit both countries.



Chapter 5

Assistive technology

5.1. Definition and uses

Assistive technology enables and promotes the inclusion, participation and engagement of people with disability, ageing populations and people living with chronic conditions.⁶⁵ It has applicability across a person's lifespan. For example, for people with disability, functional difficulties may be compounded as other functions decline due to ageing.⁶⁶

Box 7: Assistive Technologies vs Assistive Products



Assistive Technology is used as an umbrella term in this report to cover the systems and services related to the delivery of Assistive Products (AP), including its enablers.



Assistive Products maintain or improve an individual's functioning and independence, thereby promoting their well-being.

Assistive technology has a breadth of uses. It may be designed to enable any or many kinds of functionality (e.g., cognition, communication, self-care, hearing) and may be used in many settings, including in the home, for transport, in the community, or healthcare or aged care settings. While AT may be used by anyone, not everyone has access to it.⁶⁷

5.2. Global market for Assistive Technology

The need for AT in the global population is considerable. It is estimated that 31.3% of the world's population would benefit from AT, or 11.3% if spectacles are excluded. This means there are around 2.5 billion people globally who need at least one AP, or around 900 million who need AP other than spectacles.⁶⁸

Assistive technology needs grow as the population ages. Around two thirds of the global population aged 60 years and older require at least one AP. By 2050, this is projected to increase to 3.5 billion with spectacles, or 1.3 billion without spectacles. This is largely attributed to ageing, with the global population aged 60 years or older expected to double in size to 2.1 billion by 2050.⁶⁹

Table 1: Estimates of the prevalence of need for AP

| Age group | Prevalence of need for AP (including spectacles) | Prevalence of need for AP (excluding spectacles) |
|-------------|--|--|
| < 18 years | 9.7% | 4.3% |
| 18-59 years | 28.7% | 8.2% |
| > 60 years | 68.7% | 31.2% |

Source: WHO Global Report on Assistive Technology, 2022.

65 WHO and UNICEF, 2022, 'Global report on assistive technology', <https://www.who.int/publications/i/item/9789240049451>.

66 Ibid.

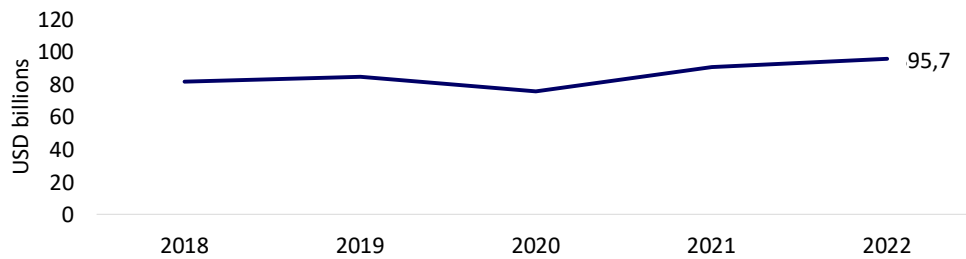
67 Ibid.

68 WHO and UNICEF, 2022, 'Global report on assistive technology', <https://www.who.int/publications/i/item/9789240049451>.

69 Ibid.

There are many barriers to accessing AT, including lack of awareness and affordability, lack of services, inadequate product quality, range, and quantity, as well as procurement and supply chain challenges. There are also capacity gaps in the AT workforce that result in a lack of specialised support for people to access the AT they need.

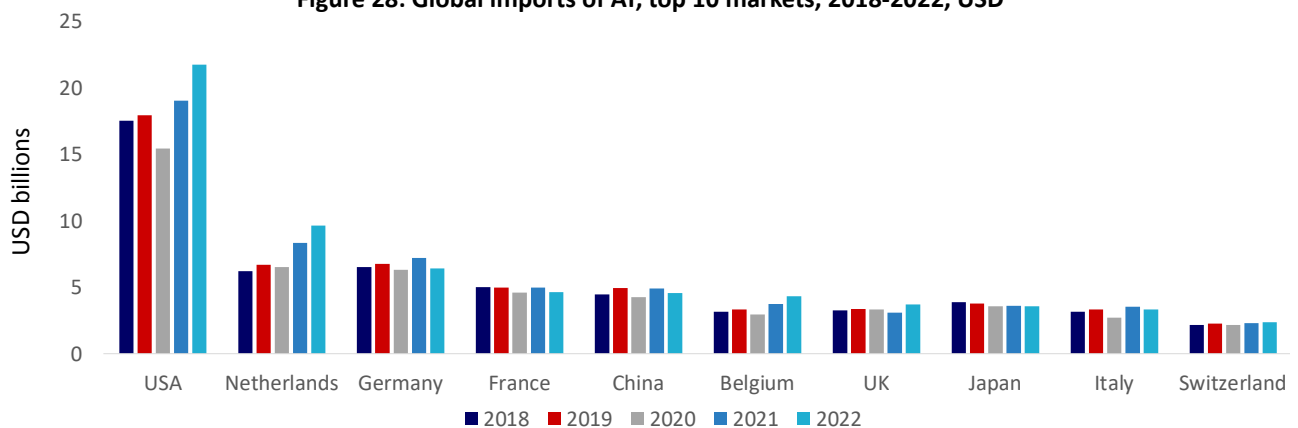
Figure 27: Global imports of AT, 2018-2022, USD



Source: Trade Map, 2023, AT is defined as HS code 9021, HS code 8713, HS 9003 and HS 9004.

Australia and Indonesia are both globally significant markets for AT. Australia is the 14th largest market globally for AT, importing over USD2 billion worth of AT in 2022 (or 2% of global imports). Although Indonesia is currently ranked number 51 globally, with imports worth USD143.3 million in 2022, it has strong potential to be a major global market in the future, considering both favourable demographic trends and rising incomes.

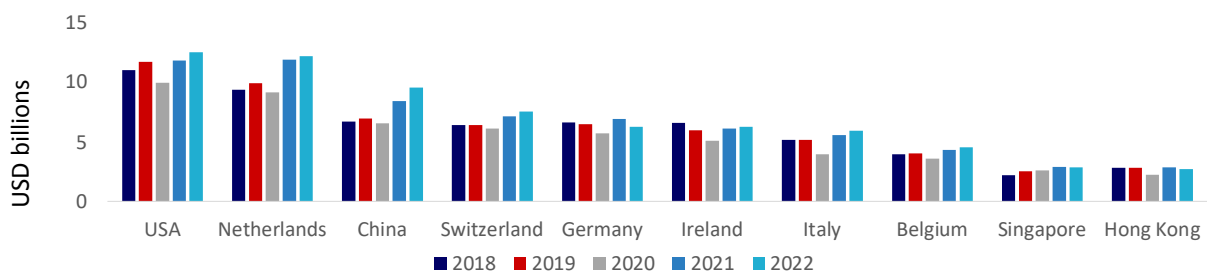
Figure 28: Global imports of AT, top 10 markets, 2018-2022, USD



Source: Trade Map, 2023.

Interestingly, several of the largest markets for importing AT are also the largest exporters of AT globally. The USA, Netherlands, China and Germany have all invested heavily in their domestic AT industries over many decades, resulting in highly competitive industries, centred around world-class universities and industry clusters undertaking cutting-edge R&D, and specialising in distinct product categories such as wheelchairs, prosthetics and speech-generating devices. The top 10 exporters accounted for nearly 80% of global AT exports in 2022.

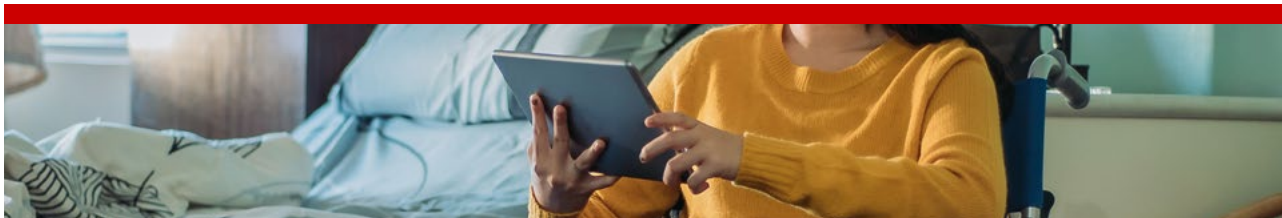
Figure 29: Global exports of AT, top 10 suppliers, 2018-2022, USD



Source: Trade Map, 2023.

5.3. Emerging trends in assistive technology

Technological advances are supporting inclusion. Technology such as emotional and conversational artificial intelligence (AI), assistive robotics and social companions, and specialised hiring and learning platforms and tools can address some of the challenges and discrimination faced by people with disability, including cognitive diversity, by creating more accessible workplaces, and hiring, learning and accommodation practices.



Box 8: Innovative uses of technology to support inclusion



Companies like Robokind and LuxAI use social robotics for emotional training for students with autism spectrum disorder, while Brainpower is a wearable device that helps neurodiverse individuals with social-emotional learning. Beme.AI empowers people with autism to thrive through well-being and development tracking and analytics, while Eyejustread supports those with dyslexia and attention deficit and hyperactivity disorder.



At the same time, AI such as ChatGPT can support inclusivity by being able to understand poorly written commands or sentences, or by simplifying complex texts into simpler summaries for early-stage readers. These kinds of AI tools can also assist people with a communication disability to get their message across more efficiently or effectively, such as by suggesting scripts for a given social situation, modelling how to be 'more polite' or 'more direct' in written communication, or drafting or improving texts for emails, instructions, or assignments.



E-sports and gaming are also becoming increasingly inclusive and accessible thanks to innovations such as the QuadStick, a mouth-operated adaptive game controller that allows quadriplegics to enjoy video games. Minds at Play, an Australian organisation, delivers role-playing gaming sessions of Dungeons and Dragons and Minecraft, primarily to neurodiverse people, to help teach social and communication skills.

Assistive technology is broadening from being perceived as just for medical use, with recreation and leisure applications growing rapidly. The interface between AT and mainstream technology has been identified as an important emerging area of opportunity by researchers and policy makers.⁷² Virtual reality (VR) and Augmented Reality (AR) offer many applications for people with disability, such as AR-enhanced hearing aids, AR glasses that can correct colour blindness and VR-simulated social interactions to help persons with autism spectrum disorder practice social interactions.

⁷² See for example, the University of Sydney's Centre for Disability Research and Policy.



Chapter 6

**The Indonesian
market for assistive
technology**

This section discusses the Indonesian market for AT broadly, including the main factors influencing market demand for and supply of AT, relevant government policies and trade flows.

6.1. Market overview

Indonesia’s AT market is large and expected to grow. It is currently estimated to be valued between USD180 200 million,⁷³ with future growth predicted due to the progressive rollout of the JKN and the large and aging population.⁷⁴

Indonesia has a sizeable population of people with disability. It is estimated that as many as 9% of Indonesia’s population (or over 23.3 million people) are living with a moderate to severe disability,⁷⁵ including mobility (18.1%) and vision (18.4%) difficulties.⁷⁶ The prevalence of disability increases with age, with 26% of people over 60 years old having a disability. As Indonesia is one of Asia’s fastest growing populations, the number of people with disability will likely increase significantly as the population grows and ages.⁷⁷ Amongst people with disability, 40% have more than one impairment⁷⁸ and may require multiple AT support. Disability is predominantly acquired, with disease the most common cause of disability (60%), and accidents causing 16% of disability.⁷⁹

Table 2: Breakdown of moderate/severe disability, by type

| | Type of disability | Secondary type | | | | | | |
|--------------|--------------------|----------------|---------|---------|-------------|---------------|-----------|---------------|
| | | Seeing | Hearing | Walking | Remembering | Communicating | Self-care | >2 conditions |
| Primary type | Seeing | 18.40% | 2.70% | 3.00% | 1.40% | 0.10% | 0.20% | 11.50% |
| | Hearing | | 9.10% | 1.20% | 1.20% | 2.00% | 0.10% | 12.30% |
| | Walking | | | 18.10% | 1.50% | 0.30% | 4.50% | 15.60% |
| | Remembering | | | | 7.00% | 2.90% | 0.30% | 16.90% |
| | Communicating | | | | | 2.40% | 0.50% | 13.20% |
| | Self-care | | | | | | 1.90% | 13.30% |

Source: Author adaption of Prospera (2023) analysis of Supas 2015 data.

73 Author estimation.

74 Katalis analysis of Susenas data estimate that there are 5,805,162 households in Indonesia with disability related spending/a member of a household with disability. Of these households:

- 1,722,991 households have per capita spending of over IDR1.5 million (AUD147) every month.
- 1,824,707 households have household expenditure of IDR5 million (AUD491) every month.

75 Sakernas, 2019.

76 Prospera, 2023, analysis of Supas 2015 data.

77 Australia Indonesia Partnership for Economic Governance, 2017, ‘Disability in Indonesia: What we can learn from the data?’, https://www.monash.edu/__data/assets/pdf_file/0003/1107138/Disability-in-Indonesia.pdf.

78 Australia Indonesia Partnership for Economic Governance, 2017, ‘Disability in Indonesia: What we can learn from the data?’, https://www.monash.edu/__data/assets/pdf_file/0003/1107138/Disability-in-Indonesia.pdf.

79 Ibid.



Box 9: Gender and disability

The incidence of disability in Indonesia is similar for males and females – between 47-54% of people with disability are estimated to be women. However, women and girls with disability face different risks and challenges compared to men with similar conditions, such as greater risks of being a victim of crime, particularly domestic and sexual violence, and higher levels of inequality and discrimination when accessing services, including judicial and reproductive health services.

Women with disability have lower rates of participation in the labour force, with just 41% of women with disability working, compared with 71% of men with disability. Women with disability are also less likely to secure 'decent work' than women without disability, or men with disability.

Across Indonesia, 75% of people with disability work in the informal sector, with women with disability disproportionately represented. Informal workers lack legal and regulatory protections, contractual security, access to government social protection programs, fair wages, and have weak bargaining power.

There are also gendered impacts within households, with caregivers, usually women, participating at lower levels in the labour market as a result of their caring responsibilities.

Source: MAMPU, 2018, 'Mapping MAMPU's engagement with women with disabilities in Indonesia'; AIPJ, 2017, 'Disability in Indonesia: What we can learn from the data?' Monash University.

There is a large unmet need for AT among people with disability in Indonesia. In Indonesia, approximately 2.4 million people with disability require AT to support mobility, and 2.2 million people require optical or other types of AT.⁸⁰ However, 60% of the Indonesian population with a moderate or severe disability are not using any form of AT.⁸¹ The unmet need is larger for women (77%) and people living in rural areas (62%),⁸² reflecting the additional barriers faced by these populations to accessing AT.

AT for vision, such as glasses, is one of the largest areas of unmet need. For people with limited vision, 80% of those who report that they need glasses do not have them, and 28% of those who say they need a walking cane do not have one. Access to prosthetics is also very low, with less than 25% of people who could benefit from having a prosthetic able to access one.⁸³ Stakeholder consultations confirm that there is a shortage of every type of AT in Indonesia.

80 Prospera, 2023.

81 BKF-Prospera, 2021.

82 Ardianuari et al., 2023 'Assistive Technology unmet need in Indonesia: challenges and opportunities for enhancing equitable access'.

83 Australia Indonesia Partnership for Economic Governance, 2017, 'Disability in Indonesia: What we can learn from the data?', https://www.monash.edu/__data/assets/pdf_file/0003/1107138/Disability-in-Indonesia.pdf.

Table 3: Unmet demand for assistive technology

| Health impairment | Assistive technology needed | % unmet need |
|-----------------------|-----------------------------|--------------|
| Vision | Glasses | 80% |
| | Walking cane | 28% |
| Hearing | Hearing aid | 91% |
| Speaking | Sign language | 54% |
| Using arms and finger | Prosthetic | 60% |
| Using legs (walking) | Prosthetic | 75% |
| | Wheelchair | 24% |
| | Walking aid | 28% |
| Physical impairment | Prosthetic | 90% |
| | Wheelchair | 25% |
| | Walking aid | 33% |
| Paralysis | Wheelchair | 11% |
| | Walking aid | 63% |
| Chronic diseases | Breathing aid | 31% |

Source: Cameron and Suarez, 2017 calculations using Susenas 2006 data.

There is also large unmet demand for wheelchairs in Indonesia. Between two to three million people require wheelchairs in Indonesia,⁸⁴ but the unmet need is between 11% and 25% depending on the medical condition. A WHO study found that of Indonesian participants without a wheelchair, between 40% to 100% had never had a wheelchair, reflecting the low availability of wheelchairs that are of sufficient quality and suitable for the Indonesian environment.⁸⁵ Of those who had a wheelchair previously, only 25% to 50% had discussed wheelchair options with, or received training from, the provider.⁸⁶

Most people with disability (94%) do not have access to rehabilitation services.⁸⁷ This includes access to education and training such as sign language and speech therapy, which would support people with vision, hearing and speaking difficulties to better function in their communities.

Assistive technology in Indonesia is mainly sourced from the private sector.⁸⁸ A recent survey by WHO of 11,000 Indonesians with disability found 74.5% sourced their AT from the private sector, compared to 6.5% from the public sector. This may reflect the impact of import barriers on publicly procured AT.

Indonesians with a disability find AT unaffordable and ill-suited to their needs. More than half (51%) of people with disability surveyed for WHO's study reported that AT is unaffordable.⁸⁹ In addition, 35% reported that the AT they currently use is unsuitable for the home, and 31% reported that the AT they use is unsuitable for the public environment. These figures highlight the importance of access to AT that is customised, fit for purpose, as well as broader accessibility challenges in public spaces.⁹⁰

84 WAFCAI, 2023, 'Sejarah (History)', <https://wafcai.or.id/p/about/sejarah>.

85 WAFCAI, 2023, 'Sejarah (History)', <https://wafcai.or.id/p/about/sejarah>.

86 WHO, 2019, 'Global Perspectives on Assistive Technology', https://momentum4humanity.org/wp-content/uploads/2021/04/UCPW_The-wheelchair-users-voice_-Preliminary-results-related-to-unmet-need-for-assistive-technology-in-Indonesia-and-El-Salvador.pdf.

87 Ibid.

88 Ardianuari et al., 2023 'Assistive Technology unmet need in Indonesia: challenges and opportunities for enhancing equitable access'.

89 Ibid.

90 Ibid.

Publicly provided AT tends to be one-size-fits-all and not customised to meet individual needs. The lack of customisation partly accounts for the lack of suitability of AT for use in daily lives. There are widespread reports that AT devices are abandoned due to not meeting user needs.⁹¹

Indonesian industry stakeholders report strong unmet demand for digital AT supports such as text-to-speech, screen magnifiers, screen readers, video communication tools, and augmentative and alternative communication (AAT) devices. Most of these supports are designed for English-speaking markets and few include Indonesian language and content that reflects the Indonesian cultural context, creating a gap in the market. One exception is Spokle, an Australian AT company that successfully entered the Indonesian market in 2018 with its speech therapy app, tailored to Indonesian consumer needs.



Box 10: Disability legislation in Indonesia

The *GoI Law No.8 of 2016 on People with Disability* establishes equal rights for people with disability. In addition to equal pay, it requires employers to provide reasonable accommodation (or adjustments) and imposes penalties for non-compliance. The law also establishes employment quotas and requires that at least 2% of the workforce in the public sector and 1% of the workforce in the private sector, must be people with disability. Despite this regulatory framework, discrimination against people with disability continues in practice.

6.2. Government-subsidised assistive technology

Implementation of the JKN is expected to increase demand for AT, like with MD, by lowering the upfront cost for access to select AT. However, disability sector consultations reveal that the JKN subsidy may be insufficient and still leaves large out-of-pocket expenses for items such as hearing aids, with flow-on impacts for accessibility. In addition, demand may be limited to a subset of AT, with only seven types of AT currently subsidised by the JKN. Another 11 AT have been proposed for inclusion, but this would still fall below the 50 types of ‘Priority AT’ recommended for subsidisation by the WHO⁹² to support people with disability to live a healthy, productive and dignified life. Noting the prevalence of mobility and vision issues in people with moderate/severe disability, expanded coverage of walking/leg/arm support devices, prosthesis and optical aids would greatly improve accessibility and affordability for people with disability.

For privately sourced AT outside of JKN, some AT providers or foundations offer cross-subsidisation, however the contribution varies, and recipients are still out-of-pocket. Some social enterprises and foundations provide AT at no cost but the majority of privately sourced AT requires large out-of-pocket expenses and is unaffordable for all but the wealthy.

⁹¹ Disability and Inclusion Matters stakeholder consultation conducted by Katalis.

⁹² WHO, 2023, ‘Priority assistive products list’, [https://www.who.int/news-room/feature-stories/detail/priority-assistive-products-list-\(apl\)](https://www.who.int/news-room/feature-stories/detail/priority-assistive-products-list-(apl))

Table 4: AT currently subsidised through JKN and AT under consideration

| | | |
|--|--|---|
| Currently subsidised AT | Neck braces | Glasses |
| | Crutches | Back braces |
| | Hearing aids | Some specific prosthetics |
| | Dentures | |
| AT under consideration for inclusion in JKN | Walking support devices: cane, axillary crutches, walker, rear-wheel drive, paraplegic wheelchair, tetraplegic wheelchair (adaptive) | Body replacement devices: partial foot prosthesis, ankle disarticulation/syme prosthesis, transtibial (below-knee) prosthesis, transfemoral (above-knee) prosthesis, partial hand prosthesis, transradial (below elbow) prosthesis, transhumeral (above elbow) prosthesis |
| | Leg support devices: ankle foot orthoses (AFO) | Spinal deformity support device: scoliosis |
| | Knee and leg support devices: knee ankle foot orthose (KAFO) | Optical aids |
| | Wrist, forearm and finger support devices | Non-optical support devices |
| | Cervical spine support devices: rigid cervical orthosis | Hearing aids |
| | Spinal support: thoracic lumbosacral orthosis | |

6.3. Indonesia's assistive technology industry

6.3.1. Manufacturers, importers and retailers

Assistive technology providers in Indonesia are diverse and offer a wide range of AT products and services, although most are based in Java and supply tends to be limited. Providers include civil society organisations, such as organisations for people with disability, and non government organisations (see Annex 2 for list of providers). For example, UCP and Ohana provide wheelchairs, while Yakkum provides prosthesis and orthoses. Beyond the manufacturing or importation and retail of AT, some also assist with fitting, servicing and repairs of AP such as wheelchairs. UCPRUK, for example, provide WHO-standard wheelchair services including adaptive wheelchair services and repair centres, that ensure the proper fitting and servicing of wheelchairs to support mobility and independence. These organisations also play a critical role in disseminating information about, and access to, AT.

However, wheelchair industry stakeholders report they are unable to source the wheelchairs they require. For example, one industry stakeholder reported that in the greater Jakarta area alone there

is unmet need of over 500 wheelchairs each year. There are also significant limitations in finding local manufacturers to meet demand for scripted and adaptive wheelchairs. They also report challenges in offering after sales servicing, including finding spare parts to repair existing wheelchairs in circulation. Stakeholder consultations found that local AT providers in Kalimantan and Sumatra have very limited production capacity, with some reporting only producing four AT devices annually. Partnering with larger producers in Java-Bali has been found to help to some extent in filling supply gaps.

Indonesia has a comparative advantage in cost-competitive manufacturing at scale. This reflects its competitive labour costs, strategic location within regional value chains, growing manufacturing infrastructure, including industrial parks and special economic zones, and diverse manufacturing base, including an emerging electric vehicle supply chain. There is untapped potential to leverage these advantages to accelerate domestic AT industry development.

6.3.2. Skills, workforce and training

There is a shortage of trained healthcare workers and technicians in Indonesia's AT sector, which contributes towards gaps in diagnosis, fit and adjustment of AT and compounds accessibility issues.⁹³ Access to AT technicians outside of Java-Bali is limited, with many living outside of these areas opting to travel to Malaysia to source more affordable AT. This is also linked to a lack of awareness about the availability and benefits of AT among the public and healthcare providers. Industry consultations reveal there is also a need for further training for nurses to provide specialised support for people with disability in hospital settings.

6.3.3. Regulation

The LCR introduced for MD in 2021 also apply to some AT, however, they do not apply to digital technologies such as speech therapy and digital health services. As with MD, the LCR limit the import of AT procured through government channels (e-Katalog) to only locally manufactured AT that are certified to have at least 40% local content.⁹⁴ As with MD, the LCR have resulted in decreased supply of AT in the domestic market and raised consumer prices. One AT provider consulted for this study reported they are unable to import hearing aids and was unsure of future supply.

The LCR also impacts local production of AT, which relies on imports of intermediate inputs, largely from China, thus making it difficult to meet the 40% LCR and in turn increasing domestic cost of production. As noted previously, the LCR rules include an opaque mechanism for freeze-unfreeze depending on the capacity of local production to meet local demands. This discourages domestic and international investment. A commonly reported work-around is to import second-hand AT devices and then assemble together with some local materials to meet the 40% LCR.

There are limited standards for locally produced AT. Some assistive devices such as upper-lower limb prosthesis can be locally made, however, there are currently no quality standards for many devices.⁹⁵

The WHO recommends developing standards and technical specifications to guide manufacturing and procurement of assistive products that are fit for purpose. Disability sector consultations reveal the need for expanded quality standards to ensure devices are safe to use and adequately meet the needs of people with disability. This is particularly pertinent for AT provided under the JKN.

Limited quality standards for domestically produced AT means that locally sourced devices tend to be of lower quality, not comfortable nor adaptive to



user needs. Industry consultations found that where possible, people with disability seek imported AT from countries such as Germany or Japan (if they can afford to do so), as they have higher (nationally mandated and internationally aligned) quality standards. These devices tend to offer greater comfort and durability for users and require less maintenance.

Regional evidence suggests that implementing industry standards can lead to positive developments at the industry and consumer level. Research from the ASEAN region shows that implementing industry standards does not impact AT prices, but instead helps catalyse domestic industry development and plays a central role in ensuring availability of safe and effective devices. Developing internationally aligned national quality standards for Indonesia would therefore be expected to support global industry competitiveness.

93 Prospera, 2023, 'An analysis of Assistive Technology for persons with disability under JKN: preliminary results'. Industry stakeholder consultations found that AT providers in Indonesia don't know the HS code of each AT device and are not able to check if the LCR applies.

94 In practice, if domestic demand is greater than local supply, imports are allowed via an 'unfreeze' mechanism.

95 Industry consultations revealed there is not a publicly available list of AT with standards and found that as of 2022, there were around 25 standards for AT including one for general AT, 20 for wheelchairs, and one for visual aid devices. The development of further industry standards, including standards for spare parts, is planned.

6.3.4. Other challenges

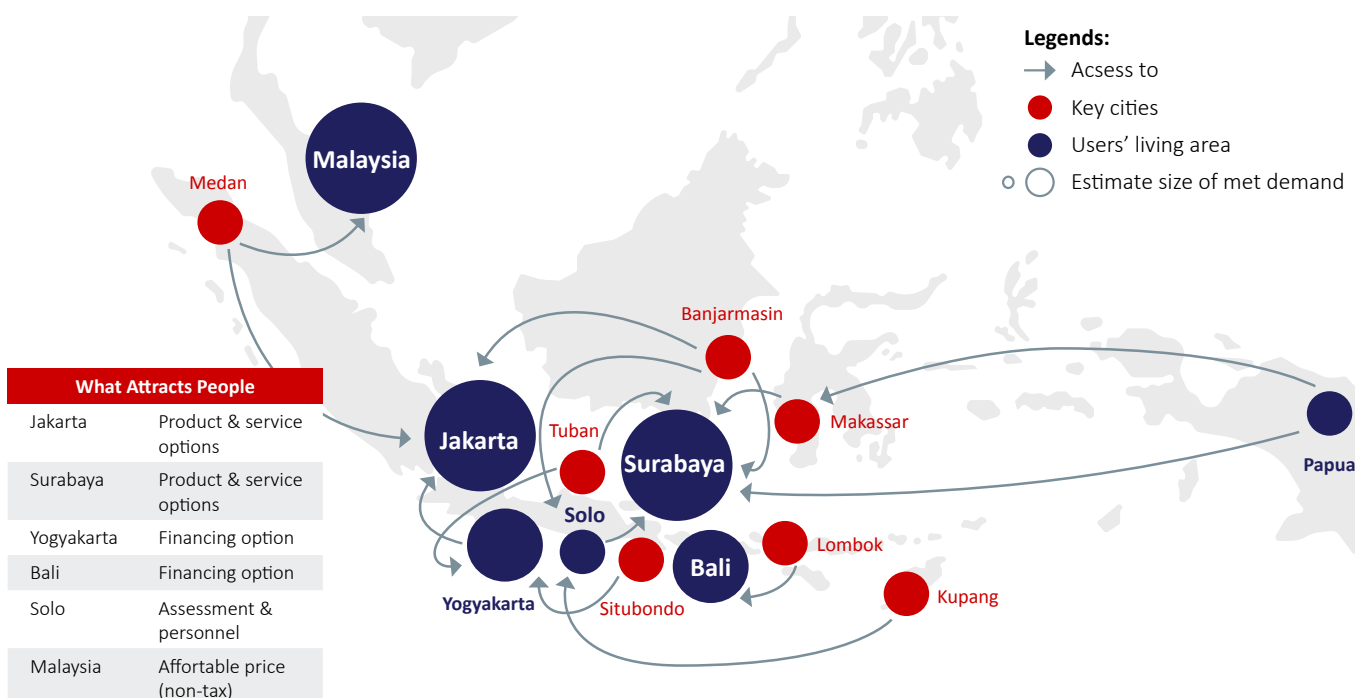
As with MD, accessibility and affordability are major barriers to accessing AT in Indonesia. Indonesia's AT prices are far higher than in Australia or comparable countries in ASEAN and are unaffordable for all but the richest 20% of households.⁹⁶ In addition to the impact from LCR, the high prices are because most AT are imported, either as intermediate inputs or stand-alone products, and so attract a 5-30% import tax (depending on product category), in addition to the 10% VAT and shipping and handling fees.

While more basic AP such as crutches and canes have greater availability, most AT are either made or imported by providers operating in Java, especially AT that are adaptive and customised (e.g., adaptive wheelchairs).

Customers outside of Java face additional transport fees for fitting and shipping or must travel to key cities in Java (e.g., Jakarta, Yogyakarta or Surabaya) to access required AT products.

Travel to Malaysia or Singapore is common, with industry stakeholders reporting that AT is up to one-third cheaper than in Indonesia. Importers in Malaysia and Singapore do not face the same barriers as Indonesia and are able to import AT more efficiently from countries such as Hong Kong, Cambodia, China and India.

Figure 30: Regional distribution of AT products, in and around Indonesia



Source: Prospera, 2023.

Assistive technology providers and technicians, including for maintenance and spare parts, tend to be Java centric and the number of providers working with referral hospitals is limited. Further, access to subsidised AT is hindered by costly and inefficient assessment processes that require patients to locate the few available providers partnering with JKN and hospitals, while also finding hospitals/healthcare providers with the relevant specialist. For example, not all JKN-partnered hearing centres have qualified audiologists, and not all hospitals have prosthesis and orthoses specialists.

The provision of some AT is not of sufficient quality nor adaptive or customised leading to the need for frequent replacement. Hospitals generally provide one-size-fits-all AT products, such as walking canes and wheelchairs, which are not customised to the individual and have to be replaced more frequently than the JKN scheme allows.

⁹⁶ Prospera, 2023, 'An analysis of Assistive Technology for persons with disability under JKN: preliminary results'.

Compounding issues around the lack of customisation, AT users are not typically able to ‘try before they buy’ due to an absence of retailers with devices in stock that can be viewed and tested. Although industry consultations revealed that the wealthy can ‘try before they buy’ AT, the majority of AT users are purchasing AT without having tested if it meets their individual needs.

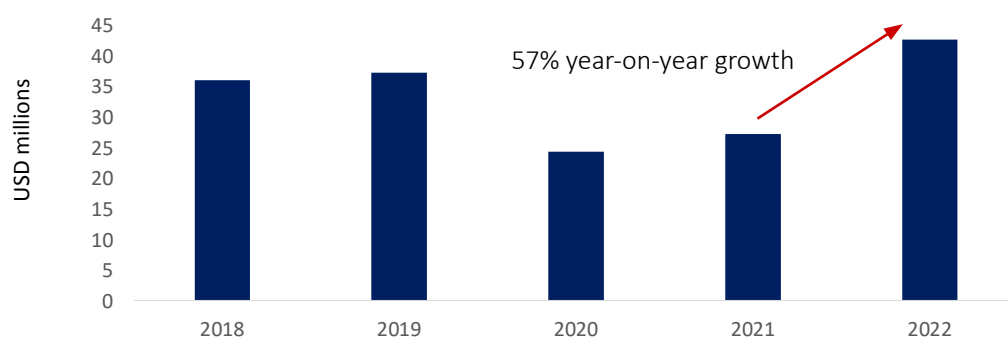
Finally, to access GoI AT initiatives, a Kartu Keluarga (family card) and identification card is needed. People with disability may not have these forms of registration, including due to challenges physically accessing government offices where registrations are conducted. Many people who lack these cards are not registered with government AT services.

6.4. Indonesia’s assistive technology trade flows

6.4.1. Imports

Indonesia’s imports of AT plummeted during the early stages of the pandemic, recovering in 2022 to reach USD143.3 million.⁹⁷ The decline in part reflects the challenges accessing elective and non-emergent healthcare services during COVID-19 restrictions as well as pandemic-related lost income, which compounded existing affordability issues for AT in Indonesia.

Figure 31: Indonesia’s AT imports, 2018-2022, USD



Source: Trade Map, 2023.

Indonesia’s AT imports are dominated by corrective eyewear and spectacles, accounting for 60% of all AT imports in 2022, or USD86.7 million. This is not surprising, given that of the estimated 23 million Indonesians with disability, approximately 37% have vision difficulties (not to mention the broader population also requiring glasses).⁹⁸ Around 80% of people who require glasses do not have them. This may reflect affordability, as optical aids are not currently covered under JKN, so lower income populations may seek to acquire items from unregistered businesses.⁹⁹ The growing incidence of conditions such as myopia and presbyopia,¹⁰⁰ will boost future demand for corrective eyewear, alongside a growing demand among younger consumers for fashion focussed spectacles.¹⁰¹

⁹⁷ Defined by HS codes 9021, 8713, 9003 and 9004.

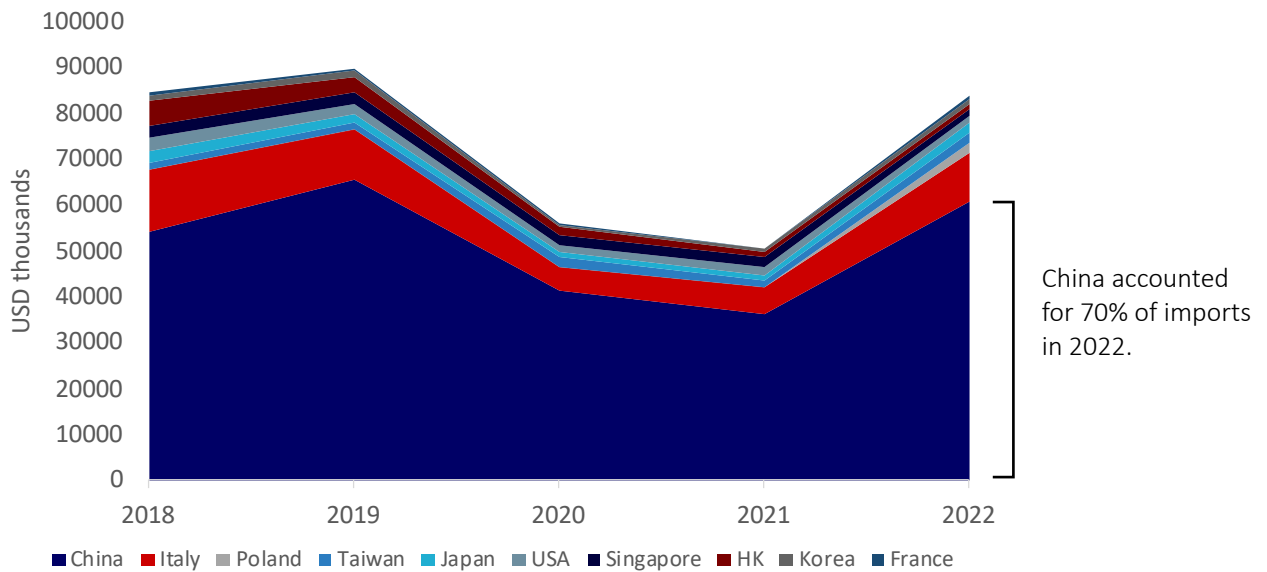
⁹⁸ Author estimate based on analysis contained in Prospera, 2023.

⁹⁹ Walker, J et al., „2020, ‘Country Capacity Assessment for Assistive Technologies: Informal Markets Study, Indonesia, Global Disability Innovation Hub Report’, AT 2030 Programme, GDI Hub, London.

¹⁰⁰ This is in part due to ageing populations, increased use of screens and reading under poor lights, among other factors.

¹⁰¹ Euromonitor, 2023, ‘Spectacles in Indonesia’

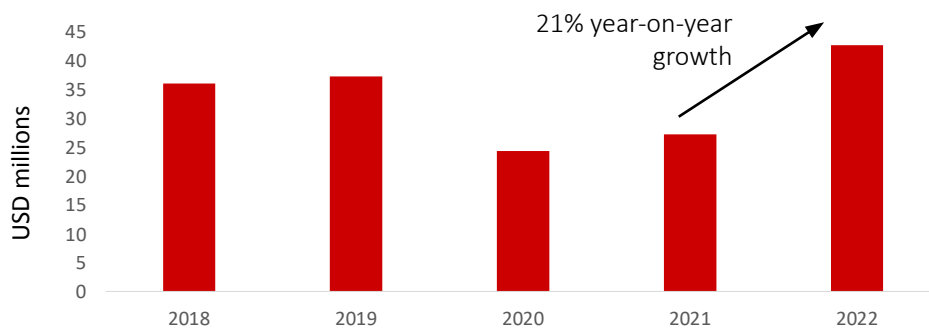
Figure 32: Indonesia's imports of corrective eyewear and spectacles, top 10 suppliers, 2018-2022, USD



Source: Trade Map, 2023, using HS 9003 and HS 9004.

Imports of a broad range of AP captured under HS 9021, such as hearing aids, artificial limbs, pacemakers, orthopaedic appliances, and appliances which can be implanted into the body, grew from USD24.3 million in 2020 to USD42.6 million in 2022. The growth in AP imports may reflect the expanded population coverage of JKN and the decrease in out-of-pocket health care expenses. Within HS 9021, imports were dominated by orthopaedic and fracture appliances, artificial joints, pacemakers and appliances which are worn, carried or implanted in the body.

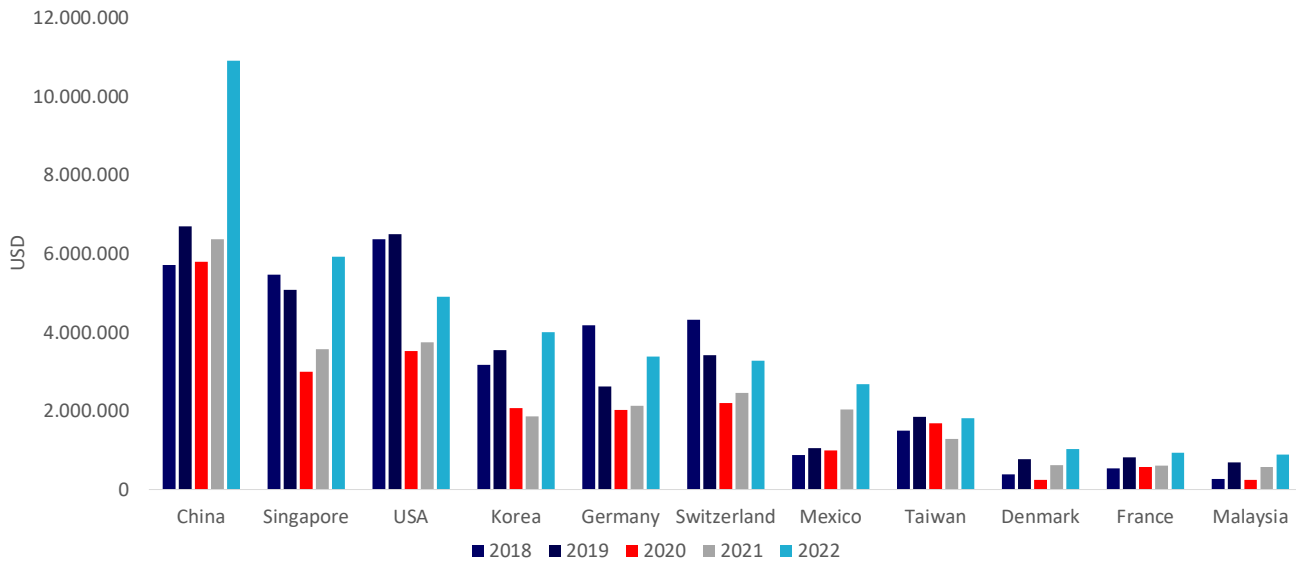
Figure 33: Indonesia imports of AP under HS9021, 2018-2022, USD



Source: Trade Map, 2023, assistive products as captured HS code 9021.

China is a large and growing trading partner for imports of items captured under HS 9021. Indonesia sourced a quarter of its imports of HS 9021 products from China in 2022, valued at USD10.9 million, with imports from China growing by 16% since 2018. The second largest supplier was Singapore, accounting for 14% of imports, followed by USA (11%), Korea (9%), Germany (8%) and Switzerland (8%). Imports from Australia were non-existent in 2022 and peaked at USD13,000 in 2019.

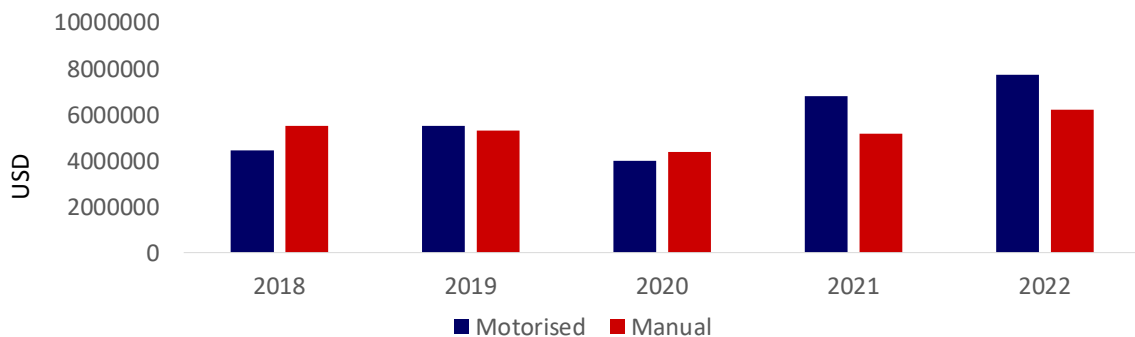
Figure 34: Top 10 suppliers for Indonesian imports of AT, 2018-2022, USD



Source: Trade Map, 2023, using HS code 9021.

Indonesia’s wheelchair imports were valued at USD13.9 million in 2022, having experienced 12% CAGR since 2018. Just over half of all wheelchair imports were motorised wheelchairs, valued at USD7.7 million in 2022, with the remainder manual wheelchairs, valued at USD6.2 million in 2022. Indonesia also produces some manual wheelchairs domestically and receives donations of wheelchairs from international foundations.¹⁰²

Figure 35: Indonesia’s wheelchair imports, 2018-2022, USD

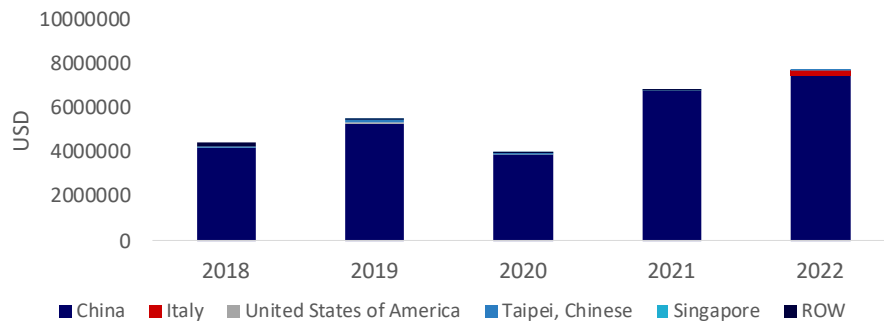


Source: Trade Map, 2023, using HS code 871310 and 871390.

Indonesia sources nearly all its motorised wheelchairs from China (97% of all imports in 2022). A small number of motorised wheelchairs were sourced from Italy in 2022, with marginal amounts from the USA and Taiwan over the period. Indonesia last imported motorised wheelchairs from Australia in 2018, with imports valued at USD91,000, equivalent to between 5-15 chairs (depending on the level of complexity).

102 Walker, J et al., 2020, ‘Country Capacity Assessment for Assistive Technologies: Informal Markets Study, Indonesia’, Global Disability Innovation Hub Report’, AT 2030 Programme, GDI Hub, London.

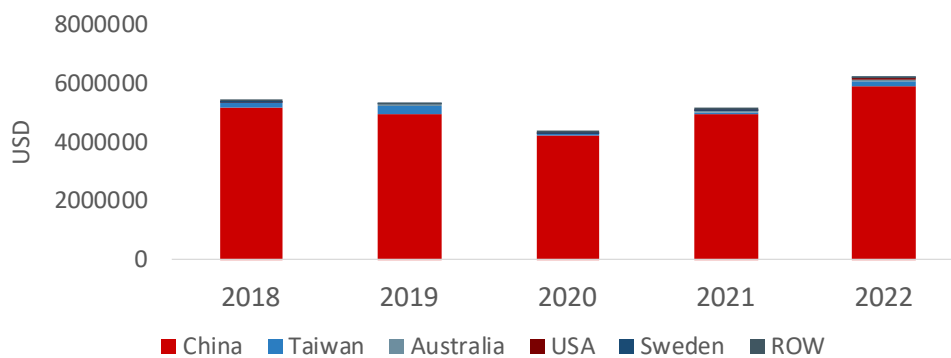
Figure 36: Indonesia's motorised wheelchair imports, top 5 suppliers, 2018-2022, USD



Source: Trade Map, 2023, using HS 871390, ROW= rest of world.

Similarly, manual wheelchair imports are also largely sourced from China. China accounted for 95% of all imports in 2022, valued at USD5.9 million. Taiwan and the USA both also supplied a small number of manual wheelchairs over the period. Indonesia imported only sporadically from Australia over the period, with imports valued at USD23,000 in 2019, nil in 2020 and 2018, and then USD75,000 and USD94,000 in 2021 and 2022.

Figure 37: Indonesia's manual wheelchair imports, top 5 suppliers, 2018-2022, USD

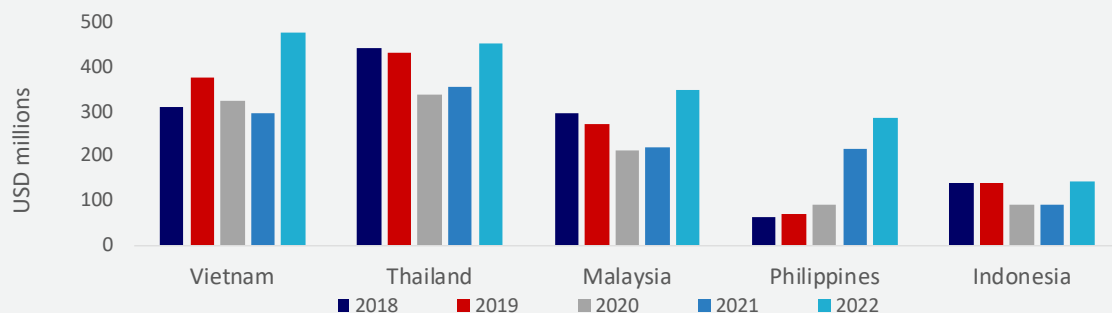


Source: Trade Map, 2023, using HS 871310, ROW= rest of world.

Box 11: Indonesia imports of AT lag behind other ASEAN countries

Indonesia's imports of AT, valued at US143.3 million in 2022, are well below what would be expected to service the needs of the fourth most populous country in the world, and markedly lower than neighbouring ASEAN countries. This partly reflects the unintended consequences of the current barriers to imports, as well as continued challenges around accessibility and affordability.

Figure 38: Indonesia's AT imports, relative to selected ASEAN countries, 2018-2022, USD



Source: Trade Map, 2023.

6.4.2. Exports

Consistent with an industry in the early stages of development, Indonesian exports of AT (HS 9021¹⁰³) are still quite small. Exports were valued at USD7.5 million in 2022 and were largely to Singapore (worth USD4.2 million), and dominated by articles or appliances which are worn, carried or implanted into the body. Indonesia has also started exporting artificial parts of the body to Switzerland, albeit in smaller volumes, valued at USD2.9 million in 2022. In the absence of domestic production data, this trade data is a proxy for indicating a level of excess supply domestically and indicates a growing industry capability.

There is export growth potential in orthopaedics and other appliances. Analysis by ITC¹⁰⁴ of Indonesian export unrealised potential found Indonesia could grow its exports of orthopaedics and other appliances (HS9021) to USD4.8 million. Indonesia does not currently export manual wheelchairs and exports negligible values of motorised wheelchairs (likely samples/re-exports). Similarly, Indonesian exports of spectacles and corrective eyewear are small, valued at just over USD1.1 million in 2022.



Box 12: Beyond exporting: the importance of after sales servicing

For some suppliers of AT, such as wheelchairs, entering the Indonesian market is not a simple as exporting a wheelchair. A local presence also needs to be established to assist with after sales services, including ensuring correct fit, and providing essential servicing and repairs throughout the life of the wheelchair, including adjusting for growth. This means some exporters of AT also need to invest in establishing a local Indonesian presence.



Box 13: Growing bilateral research partnerships in AT

Koneksi, the Australia and Indonesia Knowledge, Technology and Innovation Collaboration, is currently exploring AT bilateral research partnerships. Koneksi supports research collaborations and partnerships aimed at supporting bilateral knowledge and technology transfer which build partner capacity in relation to disability inclusion. These partnerships will focus on connecting industry, universities, government and civil society to create an enabling environment for bilateral collaboration, in turn catalysing capacity building of Indonesia's AT industry and supporting greater bilateral cooperation across the AT value chain.

103 HS 9021, which broadly covers AT products such as hearing aids, artificial limbs; pacemakers, orthopaedic appliances, and appliances which can be implanted into the body.

104 ITC, 2023, 'Export Potential', subscription only. Calculated as follows: Potential export value of product k supplied by country i to market j, in dollars, is calculated as supply × demand (corrected for market access) × bilateral ease of trade.



6.5. Summary findings

Indonesia has a sizeable population of people with disability and the AT market is expected to grow significantly as the population grows and ages, and with the progressive rollout of the JKN. However, accessibility and affordability are major barriers to accessing AT in Indonesia and consequently there is a large unmet need.

Indonesia's AT industry is in its early stages of development and has a way to go before local production will be able to meet growing domestic demand for AT. Noting Gol ambitions to reduce dependence on imports in the long term, there remains an unrealised opportunity to grow bilateral trade and investment in AT to support Indonesia's unmet needs.

Domestic industry development could be supported by reducing non-tariff barriers such as LCR and introducing national quality standards. Evidence shows that LCR are negatively impacting development of the local AT industry and impeding commercial trade relationships. Evidence also shows quality standards can be catalytic for domestic industry development, while also ensuring the devices are safe and meet the needs of people with disability. As with MD, introducing internationally aligned quality standards would be an important precursor to growing Indonesia's exports of AT to international markets, such as Australia, and increase the global competitiveness of Indonesia's AT industry.



Chapter 7

The Australian market for assistive technology

This section discusses the Australian market for AT broadly, including the main factors influencing market demand for and supply of AT, relevant government policies and trade flows.

7.1. Market overview

The Australian AT market is estimated to be valued at around USD2.63 billion annually, although continued growth in Australia's NDIS means this figure may be conservative. Australia's imports of AT alone were valued at AUD3.2 billion in 2022¹⁰⁵. With the addition of domestic production, the Australian market could be worth an approximate AUD4 billion. The large size of Australia's AT market reflects the structure of the NDIS, which offers full coverage and does not place a price ceiling on AT products as long as they are 'reasonable and necessary'.¹⁰⁶

The low barriers to access to AT for NDIS participants and full coverage funding have made Australia a lucrative market for AT, both for domestic and international manufacturers and suppliers. Australia's National Disability Insurance Agency estimates that Australia makes up around 4% of global AT spend,¹⁰⁷ which is comparably high for its population size.

Of 4.4 million Australians with disability, over half (53.1% or 2.3 million) use aids or equipment because of their condition.¹⁰⁸ People with disability may use a variety of aids or equipment depending on personal and environmental factors, level of impairment or activity limitation, accessibility and affordability. Communication aids are the most common, used by

29.4% of people with disability, while 18.4% use a hearing aid and 17.1% use mobility aids. Extrapolating these figures to the total Australian population, it can be estimated that at least 2.5 million people may require AT.

Australia's AT market has undergone massive change with the introduction of the NDIS, including extreme growth and the rise of more individual providers, both small businesses and larger conglomerates. A high percentage of AT in Australia is imported, with industry experts estimating it is as high as 80-90%. The NDIS has created market conditions in Australia that are optimal for testing new products. Broadly, it has introduced more contributors to the market.

There has been an influx of multinationals who see Australia as a 'testing market'. For most multinationals, Australia is a 'second market' (to sell to), after their country of origin, reflecting the view that Australia offers fertile ground for market testing prior to exporting to other large markets (e.g., America, Europe, etc). The growth in imports from multinationals has resulted in a small loss of some Australia's homegrown manufacturers and R&D capability, however, has improved access to a diverse range of products and increased competition.

7.2. Government subsidisation of assistive technology

The size and scale of Australia's NDIS sets it apart as world leading. Prior to the introduction of the NDIS, AT was subsidised or partially subsidised for only some Australians through a patchwork of government programs, typically with significant waiting lists. The introduction of NDIS in 2013, and staged growth until full implementation in 2019, signified a big shift in the way disability care was conceived in Australia, toward person-centred care that is tailored and funded to the individual, with a large degree of individual choice and control. This change catalysed the formation and ongoing growth of a new social care market and a parallel need for a new disability support services workforce (i.e., allied health professionals, disability support workers).¹⁰⁹

The NDIS provides personalised budgets to Australians that meet the scheme's criteria that can include an allocation toward AT needs. The NDIS provides full coverage of AT (with no co-payment) if it satisfies the 'reasonable and necessary' criteria. There are no limitations or restrictions on type of AP, and only those categorised as high cost (over AUD15,000) require a prescription from an authorised health professional in addition to quotation and approval.

105 Trade Map, 2022.

106 AT categorised as high cost (AUD15,000+) require a prescription from an authorised health professional in addition to quotation and approval.

107 This includes imports and domestic production.

108 2018 study from the Australian Bureau of Statistics.

109 Mellifont, Smith-Merry & Bulkeley, 2023, 'The employment of people with lived experience of disability in Australian disability services', <https://doi.org/10.1111/spol.12898>.

Of the estimated 4.5 million Australians living with disability, around 13% are NDIS participants. Of these, 102,980 have funds committed toward AT (funds allocated to be spent on AT and covered by the NDIS) valued at AUD575 million (2022). However, not all the allocated funds were actually used, with payments totalling only AUD332 million (utilisation of 58%). This highlights that demand for AT in Australia is outstripping supply.¹¹⁰

7.3. Australia's assistive technology industry

7.3.1. Manufacturers, importers, and retailers

The Australian AT industry is thriving domestically with a few firms looking to expand their footprint. The Australian-owned domestic manufacturing businesses identified through this research are experiencing growing demand, with the high-quality of their AT credited for their success and ongoing competitiveness. Most have a core focus on the domestic market, although some have a secondary sales footprint internationally and are interested in expanding to new markets, including Indonesia.



Box 14: Pelican Manufacturing

Pelican Manufacturing is a Perth-based company offering 500 AT products, including around 200 custom made products that can be adapted to meet user needs. They make practical items which are simple, low tech, with a low number of parts. Products can assist manual handling, pressure care, theatre and post-operative care and patient dignity. They include hoist slings, aids to daily living, restraints, physiotherapy items, medical devices, and medical and healthcare supplies.

Of the Australian AT companies surveyed for this research, none are currently exporting to, or importing products/intermediate inputs, from Indonesia. However, one-third expressed an interest in the Indonesian market, with offerings ranging from accessible customised e-bikes for persons living with disability, memory and cognition supports, mobility supports including short statured/bariatric/aged care/ergonomic seating and thermostatic (temperature controlled) showers.

Australia has a broad range and sizeable number of AT retailers and vendors and a smaller number of specialised manufacturers. In 2018, there were estimated to be 350–400 Australian specialist retailers focused primarily on AT, excluding generalist providers of basic AT items (such as supermarkets and pharmacies). At this time, specialist retailers were obtaining AT from approximately 300 AT importers/distributors, with about 80% of AT coming from less than 40 manufacturers/importers.¹¹¹ Currently, the National Equipment Database, Australia's largest database of AT, lists over 3,100 vendors offering over 22,000 individual AP. This wide offering highlights the attractiveness of the Australian market for global manufacturers and distributors of AP.

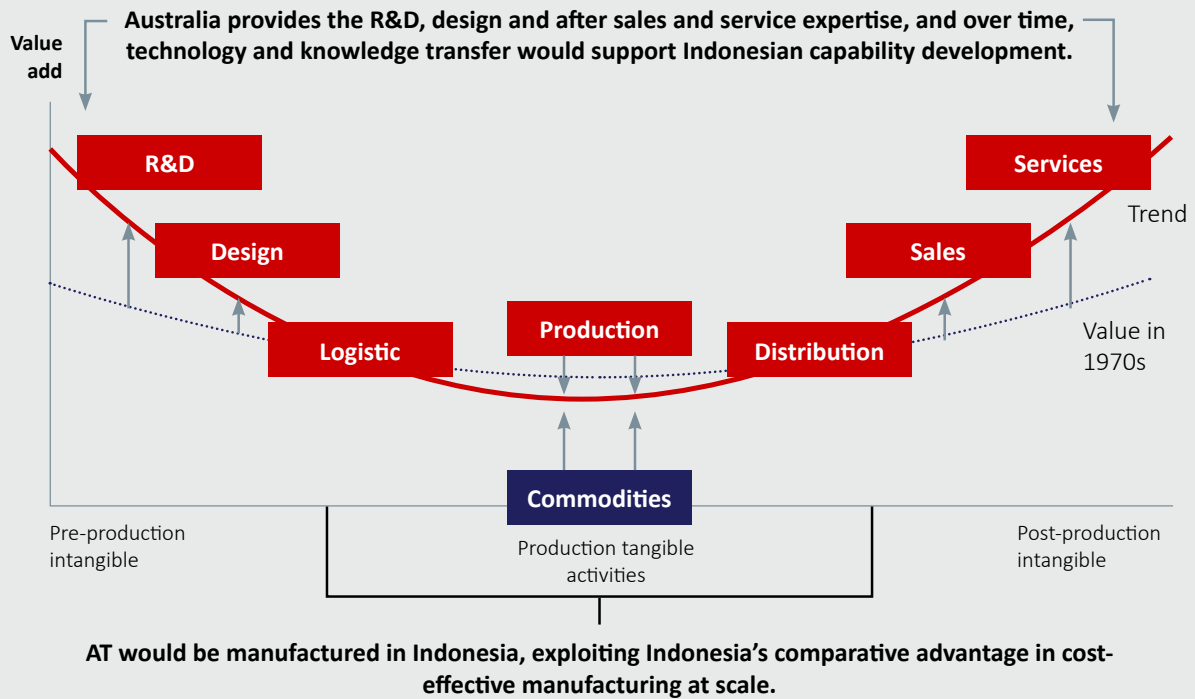
Australian industry has a comparative advantage in R&D, design, after sales and service, however, Australia's high cost of manufacturing means it is not cost competitive at manufacturing non-customised AT. Therefore, overall, Australia is a net importer of AT. Australian AT manufacturers tend to be mainly small and medium enterprises which produce innovative and customised products to meet the specific needs of their customers. It is unclear how the industry composition may have changed over the last five years other than likely to have increased in line with growing AT sales and use.

¹¹⁰ Australian National Disability Insurance Scheme, 2023, <https://data.ndis.gov.au/explore-data>.

¹¹¹ Assistive Technology Suppliers Australasia, 2018, 'AT in Australia', https://atsa.org.au/wp-content/uploads/2018/03/AT_IN_Australia.pdf.

Box 15: A future vision for a bilateral AT value chain

Bilateral cooperation and industry engagement could be leveraged to create an integrated Indonesia-Australia AT value chain. There is potential to combine Australia’s expertise in R&D, design, after-sales and service, with Indonesia’s expertise, and cost-competitiveness in manufacturing at scale. Under this bilateral value chain development approach, Australian technology and knowledge would be transferred to build up Indonesian AT manufacturing capability. This approach is both aligned with, and supportive of, Gol industry development ambitions. The bilateral value chain could be centred around one of Indonesia’s industrial estates or special economic zones.



Source: Smile Curve adapted from Advanced Manufacturing Growth Centre Sector Competitiveness Plan 2017, concept adapted from Proactive Ageing, 2023.

In addition to specialist AT, there are a range of Australian companies producing mainstream technologies that are adaptable to the needs of people with disability. Mainstream technologies are increasingly playing a crucial role in supporting people with disabilities and empowering them to live more independent and fulfilling lives. From smartphones and smart homes to voice-activated assistants and VR, these technologies are breaking down barriers and creating new possibilities for inclusion and participation. Australian companies operating in this space include Veality, which provides hardware, adaptive software and content to assist people with disability and their carers to use VR technology for therapy, education, entertainment and socialisation. Another Australian company, House with No Steps, has debuted a VR prototype to better train disability support workers on how to manage high risk situations, by using the technology to practice responses to a variety of situations without putting a client, or themselves, in harm’s way.

7.3.2. Skills, workforce and training

A skilled workforce is required to realise the full benefit of most AT, from selection to application.

The selection of most AT should involve the support of appropriately trained professionals (e.g., occupational therapists and physiotherapists, etc.). Beyond manufacturing, there is also a need for an appropriately trained workforce at each stage of the AT life cycle to prescribe, fit, adjust, maintain or service a given product. It should be noted that there are some categories of low-tech/low customisation AT which may require little to no technical knowledge in their selection, fit, correct use or maintenance.

There is no formal national accreditation or credentialing system in relation to AT in Australia.

Prescribing AT (often called 'scripting' of products) is primarily through allied health professionals, such as occupational therapists, physiotherapists, podiatrists and speech pathologists who typically receive some AT training as part of their tertiary qualifications. Advice and some ongoing user support for AT may also be provided through the manufacturer, supplier or retailer, many of which are increasingly employing allied health or technically trained staff. Best practice is an active partnership that brings the collective expertise of the user, the qualified prescriber and the supplier/retailer to identify and adopt the best AT solution.¹¹²

Using the NDIS as a proxy for the whole Australian AT market, there is a significant gap between needs (i.e., committed support) and capacity to deliver (i.e., actual payments); to the order of around 60% utilisation. According to NDIS, this gap is predominantly a labour-force and access issue rather than a problem of insufficient supply of AT. There are waiting lists of customers seeking assistance with selection and fit, especially in rural/regional areas that have less access to the wide range of products available in urban areas.

7.3.3. Regulation

Some AT require regulation through Australia's Therapeutic Goods Association. Australian AP standards are identical to the International Organisation for Standardisation (ISO) equivalent standard, which Australia contributes towards. However, there is work underway to align Australian AT with international standards and conventions in naming and classification, with products and classes set out in the ISO. The industry is also regulated by the Australian Competition and Consumer Commission, which focuses on product safety.



The AT workforce in Australia is made up of allied health professionals and industry personnel who have developed skills and experience via tertiary qualifications and 'on the job'. A growing number of AT industry experts and leaders are advocating for development and oversight of a dedicated pipeline of AT workers.

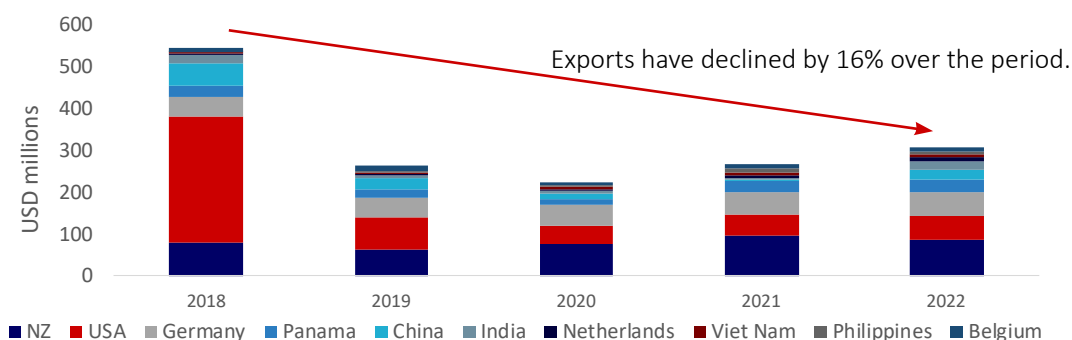
112 Ibid.

7.4. Australian assistive technology trade flows

Australia's exports of AT have declined in recent years. In 2018, Australia's exports of AP were valued at USD846.6 million, but declined to USD363.2 million in 2022, likely due to the rise of lower-cost competitors and the re-allocation of some healthcare spending during the pandemic to 'essential' healthcare services.

Major export destinations for Australian AT include New Zealand, USA, Germany, Panama, and China. Exports to the USA have declined significantly since 2018, whereas exports to emerging markets such as Vietnam and the Philippines have grown, from a low base, reflecting the increased purchasing power of the rising middle class in these countries. Australia's exports of AT to Indonesia peaked at USD323,000 in 2018 and were valued at only USD261,000 in 2022.

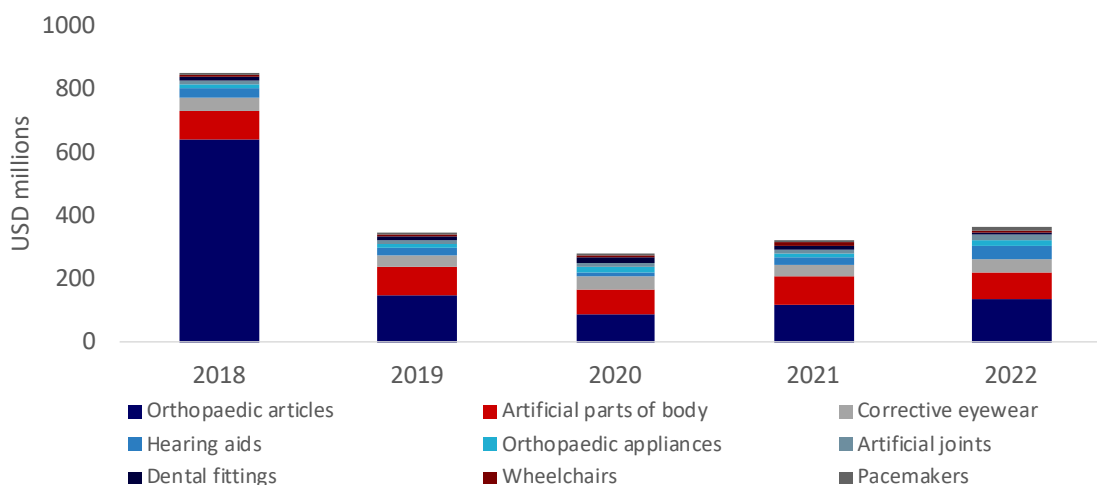
Figure 39: Australian exports of AT, top 10 markets, 2018-2022, USD



Source: Trade Map, 2023.

Australian exports of AT are dominated by a few products, including orthopaedic articles (37% of all exports in 2022), artificial parts of the body (24%), hearing aids (12%) and corrective eyewear (11%). Australia's exports of orthopaedic articles experienced a declining CAGR of 27% over 2018 to 2022, but exports of pacemakers grew by CAGR of 31% (although from a low base), and hearing aid exports grew by a CAGR of 9%.

Figure 40: Australian AT exports, by type, 2018-2022, USD



Source: Trade Map, 2023.

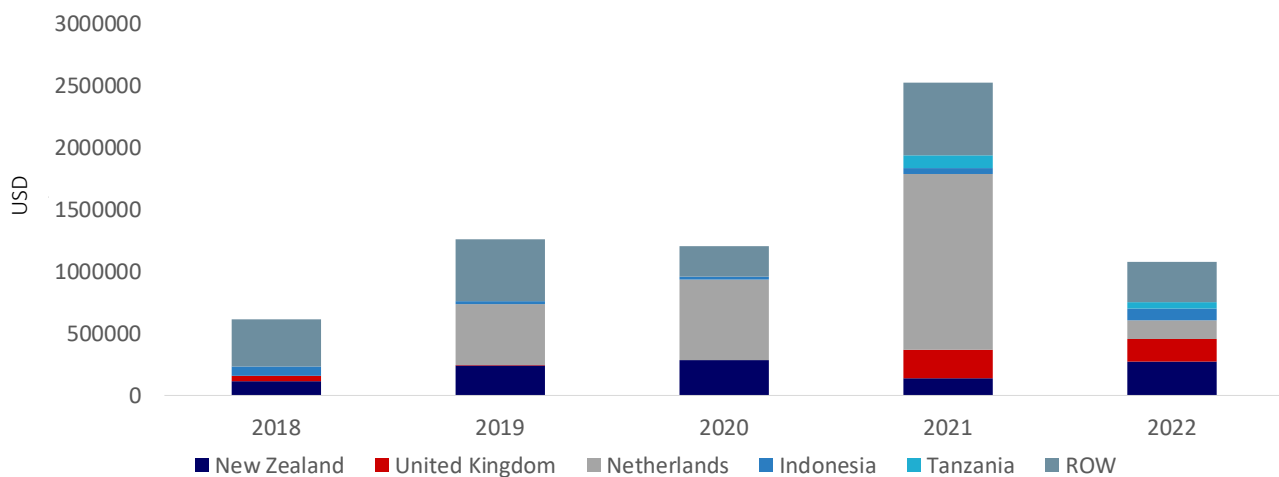
Australian exports of manual wheelchairs are relatively minor and were valued at just over USD1 million in 2022 (after peaking at USD2.5 million in 2021). Manual wheelchairs are exported to three main markets – New Zealand, the UK and the Netherlands. Indonesia is Australia’s fourth largest export market for manual wheelchairs, but exports are underdeveloped and only valued at USD96,000 in 2022



Box 16: Glide – Australia’s largest wheelchair manufacturer

Glide is a leading Australian manufacturer of high-quality manual and powered wheelchairs and have achieved ISO 9001 Quality Assurance accreditation. Glide specialises in manufacturing scripted wheelchairs that are custom made for individuals, accounting for mobility challenges and personal comfort preferences, including maternity, children’s and bariatric wheelchairs. Customised scripted wheelchairs offer people with disability a higher quality of life by increasing mobility and workforce participation. Glide produces top-of-the-line power wheelchairs that can be controlled by hand, chin and eye gaze as well as entry-level power wheelchairs. The wheelchairs are manufactured in Western Australia (with most components produced by Glide directly). With a newly completed larger manufacturing facility, they are looking to increase production and enter new export markets, with an interest in Indonesia.

Figure 41: Australian exports of manual wheelchairs, 2018-2022, USD



Source: Trade Map, 2023, using HS 871310, ROW= rest of world.

Australia does not currently export motorised wheelchairs to Indonesia. In 2022, Australia exported USD6 million of motorised wheelchairs to five main destination markets – the UK, New Zealand, the Netherlands, Norway and the USA. It is notable that the largest export destinations for Australia’s higher value motorised wheelchairs are wealthy, western countries.

Box 17: Control Bionics and Deakin University develop world-first autonomous wheelchair

Control Bionics is an Australian company specialising in advanced AT, such as the world-first NeuroNode wireless wearable device that allows people to use brain signals to complete tasks that would otherwise require a keyboard, mouse, joystick or touchscreen. Users can control a cursor on a smartphone or computer using eye-tracking and then select actions with a neural signal. The NeuroNode can also control devices like the Obi Dining Robot, which mimics the functionality of a human arm to provide an independent dining option for users with extremity strength and mobility challenges.

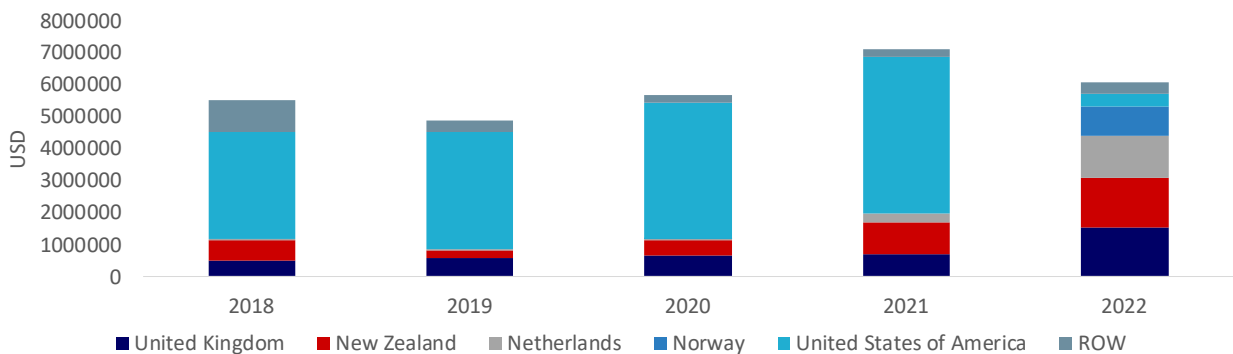
Control Bionics collaborated with researchers from Australia’s Deakin University’s Applied AI Institute to develop a world-first autonomous driving wheelchair module called DROVE. DROVE uses a wheelchair-mounted digital camera system, the NeuroNode interface, and sensors throughout the home to achieve accuracy to within centimetres. It can navigate doorways and tight hallways, reverse and detect and stop for unexpected obstacles. The system can also make tasks easier by ensuring the wheelchair is always in the correct position.

Users who tested the technology report the system provides life-changing independence and control over their lives by allowing them to move freely around the home. The DROVE system is currently only available in Australia, but Control Bionics has plans to expand to global markets.

*Source: CSIRO, 2023, ‘Artificial intelligence wheelchair puts users in control’:
Artificial intelligence wheelchair puts users in control - CSIRO.*

Analysis of Australia’s export potential for AT reveals that Australia is well placed to grow its exports of artificial teeth, pacemakers, artificial body parts and hearing aids.¹¹³ This aligns with recent strong growth in Australia’s exports of pacemakers and hearing aids, which experienced a CAGR of 31% and 9% respectively since 2018 (see Figure 39).

Figure 42: Australian exports of motorised wheelchairs, top 5 markets, 2018-2022, USD



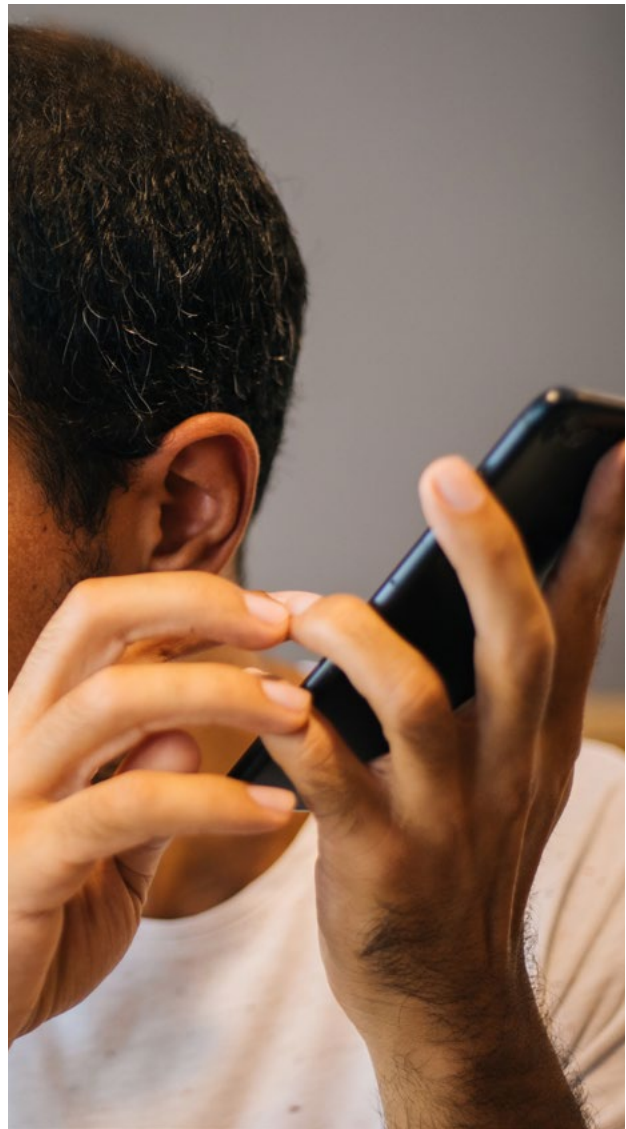
Source: Trade Map, 2023, using HS 871390, ROW= rest of world.

7.5. Summary findings

The NDIS has been a shaping force for driving the growth of Australia's AT and disability sector. The NDIS has catalysed the formation and ongoing growth of a new social care market and a parallel need for a new disability support services workforce. It has also made Australia a lucrative market for AT, both for domestic and international manufacturers and suppliers, and led to an influx of multinationals who see Australia as a 'testing market'.

Domestic manufacturing businesses are by all accounts thriving and experiencing growth, with the high quality of their AT credited for their continued success and ongoing competitiveness. Most have a core focus on the domestic market, although some have a secondary sales footprint internationally and are interested in expanding to new markets including Indonesia.

Australian exports of AT to Indonesia are underdone. This reflects both the limited understanding Australian exporters have of the opportunities available in Indonesia, as well as the perceived and actual barriers to accessing the Indonesian market (more detail in next section). Australian exports of AT largely target Western and developed markets, reflecting the relatively high cost of manufacturing AT in Australia (compared to China or ASEAN) as well as the types of products in which Australia is internationally competitive in (e.g., high value, adaptive and individualised AT).



113 ITC, 2023, 'Growth of national supply and international demand of products exported by Australia in 2022' (subscription only).



Chapter 8

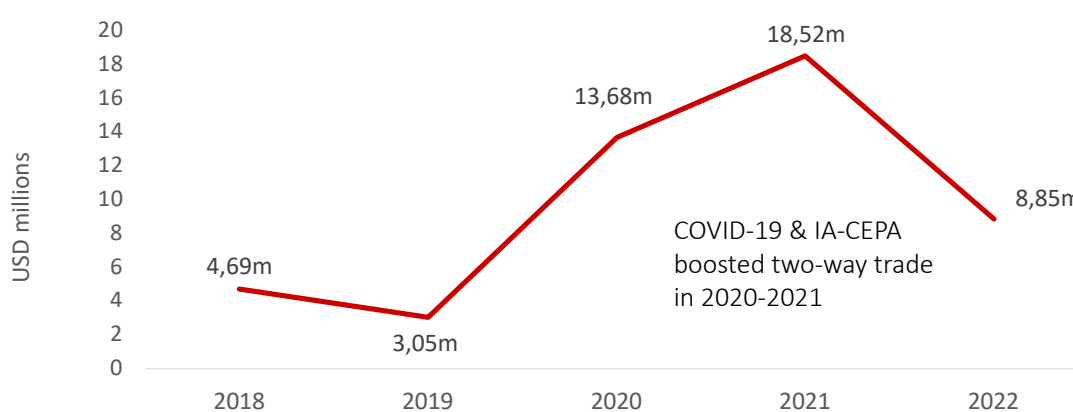
Opportunities, challenges and recommendations for bilateral trade and investment

This section presents the current and emerging opportunities and challenges as well as recommendations to enhance bilateral trade and investment in medical devices and assistive technology.

8.1. Two-way trade in medical devices and assistive technologies

There is unrealised potential to significantly grow the size of Indonesia-Australia two-way trade in AT and MD. Two-way MD and AT trade was valued at USD4.7 million in 2018 and accounted for just 0.05% of total two-way trade. Partly due to demand stemming from COVID-19, two-way MD and AT trade increased in 2020 and 2021, but appears to have returned to trend in 2022, with a value of USD8.9 million or 0.07%. Two-way MD and AT trade grew by a 9% CAGR over the period from 2018 to 2022. It is difficult to make projections of future two-way trade values based on the historical data, as the impacts of COVID-19 and IA-CEPA entering into force in 2020 skew any potential trends – however, opportunities are clearly evident.

Figure 43: Indonesia’s two-way MD and AT trade with Australia, 2018-2022, USD



Source: Trade Map, 2023.

8.2. Medical devices

8.2.1. Opportunities

Australia is already a major destination market for Indonesia’s exports of medical furniture, with exports valued at USD4 million in 2022. Although some of the recent growth in exports of medical furniture could be attributed to the impacts of COVID-19 and IA-CEPA entering into force, it indicates that there is potential for future growth.

There is further opportunity to grow bilateral trade, demonstrated by the growth in Indonesian imports of Australian MD between 2018 and 2021, largely driven by pandemic-related demand for artificial respirators. As the impacts of the pandemic subsided, so too did imports of MD from Australia, returning to pre-pandemic levels and composition. Further investment is required to develop ongoing commercial relationships, and in turn support Indonesia to meet its large and growing MD needs.

Indonesian exports will grow as Indonesia’s MD industry develops, likely starting with lower-value MD followed by more technologically advanced MD to 2035. Boosting FDI in this sector will help fast-track industry development and technology and knowledge transfer.

Leveraging existing investments can stimulate bilateral trade and investment. Investment by Australian companies, like Aspen Medical International, can be used as an ‘anchor’ for other investments and grow Australian exports from across the health sector ecosystem.

8.3. Assistive technologies

8.3.1. Opportunities

There is significant potential for expansion in Indonesia-Australia bilateral trade and investment in AT. In particular, Australian exporters either do not understand the Indonesian market or are deterred by perceived, and actual, barriers to access.

Indonesia has a clear unmet need for AT, with unrealised potential for imports to supplement domestic production to meet the needs of people with disability. While GoI aims to reduce dependence on imports in the long-term, in the short-term, imports could help to address issues around affordability and accessibility, that make AT largely unaffordable for average Indonesians.

Greater bilateral cooperation could catalyse growth in Indonesia's AT industry, by introducing industry-wide national quality standards. The lack of standards reduces Indonesia's competitiveness in global markets. Introducing quality standards that align with international standards would not only support growth in Indonesia's exports of AT, but also ensure products are safe and fit for purpose for people with disability. Australia, through Standards Australia or Australian Rehabilitation & Assistive Technology Association, could support Indonesia to develop national standards which, where possible, are harmonised with international standards.

The barriers to AT goods trade do not apply to digital trade, creating immediate opportunities for bilateral trade in the intersection between technology and AT. The experiences of Spokle, an Australian AT company that successfully launched their speech therapy app in Indonesia in 2018, shows the unmet demand in Indonesia for digital AT designed for the Indonesian market.

Indonesia is also a potential prime market for Australian companies producing relevant offerings that could be tailored to meet Indonesian market needs. Innovative products developed by Australian companies like Veality and House with No Steps, could have applicability in Indonesia if tailored appropriately, offering good opportunities for immediate expansion in bilateral trade.

Collaboration in innovative research which supports technology and knowledge transfer and disability inclusion also has significant potential for growth in the short-term. As highlighted in the experience of Koneksi with the Australia and Indonesia Knowledge,



Technology and Innovation Collaboration, there is interest across industry, universities, government and civil society in greater collaboration to create an enabling environment for bilateral collaboration, that can in turn, build capacity of Indonesia's AT industry. Greater bilateral cooperation could also address skills gaps identified in stakeholder consultations, leveraging the existing skills exchange between Australia and Indonesia to strengthen health care professionals' knowledge and skills in prescribing AT.

Over the medium to long term, the groundwork of Koneksi in fostering greater bilateral cooperation and industry engagement could be leveraged to create an integrated Indonesia-Australia AT value chain.

This would enable each country to specialise according to their comparative advantage, in turn meeting the shared challenge for affordable, accessible, adaptive and customised AT. Bilateral cooperation at an industry level could combine Australia's expertise in R&D, design, after-sales and service, with Indonesia's expertise, and cost-competitiveness in manufacturing at scale (Box 15). Under this bilateral value chain development approach, Australian technology and knowledge would be transferred to build up Indonesian AT manufacturing capability, potentially centred around one of Indonesia's industrial estates or special economic zones. This would align with, and directly support, GoI industry development ambitions. It would also be synergistic to Katalis-supported bilateral cooperation in developing the electric vehicle supply chain, with both drawing on Australian automotive industry engineering, design, technology and know-how and Indonesian manufacturing capability and competitiveness.

8.4. Challenges to enhancing bilateral trade and investment in medical devices and assistive technology

Interest in expanding trade and investment is negatively impacted by actual and perceived barriers to trade and investment. Industry stakeholder consultations in Australia identified interest in expanding bilateral trade and investment, but also identified a range of barriers, both perceived and actual. The key barrier identified was a lack of networks in Indonesia for distribution, but other challenges included language barriers, lack of market information, establishment costs and regulatory barriers such as LCR.

The opaqueness of the LCR process deters foreign investors. The freeze-unfreeze mechanism managed by the Indonesian MoH allows imports when domestically produced products are not able to meet local needs, but this information is not publicly available and is subject to change (based on supply and demand). In effect, a foreign company interested in supplying the Indonesian market has no visibility over the market opportunity that may exist, or for how long imports will be 'unfrozen'. Australian industry suggested that the Indonesian market will only be viable if scale can be achieved (e.g., a minimum of 1000 manual wheelchairs would need to be produced to offer competitive pricing), which requires a long-term and sustained commitment that requires a much greater degree of certainty in market conditions.

Assistive technology equipment can be complex, and often requires a specialist expertise to set up, fit and maintain. In Australia, providers of specialised AP generally also offer a customised scripting and fitting service, along with after-care and maintenance services, which can include preventative and corrective maintenance, growth adjustment and annual servicing.

This is particularly relevant for paediatric equipment, which requires regular adjustment as children grow. Interviews with Australian manufacturers highlighted that beyond simply exporting AP to Indonesia, they also need to invest and establish a local presence for after sales servicing and maintenance.

Lack of understanding of Indonesia's private insurance markets and its demographic context mean Australian manufacturers are not aware of the opportunities that exist. Anecdotally, Australian manufacturers believed there may not be a private Indonesian market open to paying higher prices for higher quality AT, if similar products are already imported from elsewhere and available cheaper. However, this reveals a general lack of understanding of the Indonesian market – to the contrary, Indonesia's private health insurance market is greater than that covered by Australia (20 million Indonesians covered by private health insurance compared to 14.42 million Australians). In addition, Jakarta's per capita income is roughly equivalent to that of Australia, and with an estimated 11 million people living in Jakarta, this is a sizeable potential consumer base on its own. Raising awareness of the unmet needs and significant and growing market opportunity in Indonesia will be an important part of efforts to boost bilateral trade.

Intellectual property (IP) rights were consistently highlighted by Australian companies as a perceived barrier when considering expansion into Indonesia.¹¹⁸ Concerns over the adequacy and effectiveness of IP protection and enforcement in Indonesia were raised, including reports of widespread piracy and counterfeiting, and inadequate enforcement against dangerous counterfeit products. Australian companies view IP breaches as having the potential to destabilise or even destroy a MD/AT business (including in the core domestic market), with the cost to enforce a patent breach seen to be a secondary factor. The Regional Comprehensive Economic Partnership (RCEP) entered into force for Indonesia on 2 January 2023. RCEP's IP Chapter provides a higher standard of IP protection than Indonesia's existing laws and required Indonesia to accede to several international IP agreements (to which it was previously not a party). This should in part address these concerns as a barrier to entry but requires communication on the changes and additional protections now afforded to international IP holders in Indonesia.



114 Unlike Australia, Indonesia takes a 'first-to-file' approach to trademark registration. This means the first party to seek registration of a trademark will generally acquire the registered rights, regardless of who is the first user of the trademark in Indonesia. This approach means it is easy for trademark "squatters" or unscrupulous business partners to register a trademark in Indonesia and seek payment from the legitimate trademark owner in exchange for transfer of the trademark registration.

Lack of contextual and cultural understanding also impacts Australian willingness to engage in the Indonesian market. Some Australian manufacturers questioned the suitability of AT for Indonesia's context, questioning if accessibility challenges mean Indonesians may have had to find their own adaptations to complete life tasks without the range of AT that Australians take for granted. Stakeholders also highlighted cultural differences that might lead to less perceived need for AT that promotes independent living, such as multigenerational family living or cultural expectations to care for family members. Overall, there is a limited understanding of the aged care and disability care sector in Indonesia and existing needs.

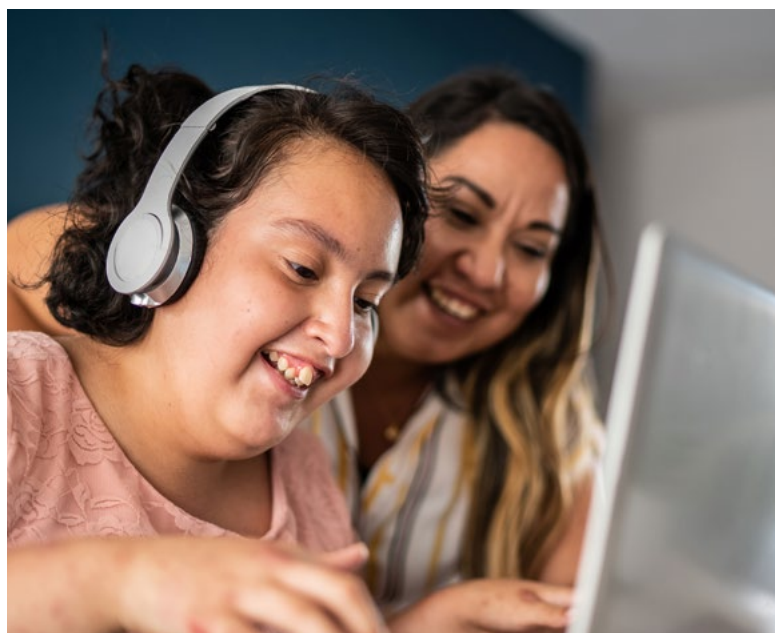
8.5. Recommendations

Boost bilateral market insights and understanding of market needs. There is both significant interest from both Australia and Indonesia, and significant unrealised potential to grow bilateral economic cooperation in supporting better outcomes for people including those with disability. A practical first step to realising this potential would be by developing knowledge products and undertaking strategic industry and disability sector information sharing and outreach activities. This foundational groundwork is a necessary precursor to supporting greater commercial success as Indonesia's MD/AT industries accelerate growth and seek access to export markets.

Strengthen sharing of market information to support long-term commercial relationships. Building longstanding relationships with Indonesian MD/AT importers and distributors who can share in-market industry information may help mitigate the opaqueness of the LCR freeze-unfreeze mechanism. The absence of free-flowing and transparent information on market opportunities over the medium to long term, makes it difficult for foreign suppliers to have the confidence to make the necessary investments in, and commitments to, the Indonesian market in terms of both scale and local presence.

Advocate for the removal of behind-the-border barriers to trade. IA-CEPA negotiations to date have been successful in removing tariffs. Future IA-CEPA trade negotiations should consider addressing the behind-the-border barriers, such as the LCR.

Build upon and leverage existing trade and FDI activities to spur deeper commercial linkages. Australia is already the major destination market for Indonesia's exports of medical furniture, which creates an entry point to support businesses to expand into other product categories where Indonesia is internationally competitive. Recent anchor investments in the Indonesia healthcare sector, such as the Aspen Medical International investment, provide another entry point to crowd in more trade



and investment activities in medical devices and assistive technology.

Prioritise the introduction of national quality standards to increase global competitiveness of Indonesia's exports of AT. Introducing internationally aligned quality standards would support growth in Indonesia's exports of AT to international markets, as well as ensuring locally produced AT is fit for purpose and meets user needs.

Explore opportunities for enhanced digital health bilateral trade. As healthcare across Asia increasingly goes digital, the acceleration of digital health in both markets will be transformative, unlocking significant opportunities for bilateral health services and MedTech trade, which is less encumbered by regulatory barriers impacting goods trade. The commercial partnership between C2MD and Surabaya's Locus Medical Hub highlights potential for greater bilateral trade in digital health, leveraging Australia's expertise in telehealth and Indonesia's high level of unmet and emerging demand.

Annex 1: Import substitution planning in Indonesia's medical device industry

The development scenario for the medical equipment industry from 2016 to 2035 is outlined in the following table.

Further details regarding which healthcare equipment products are planned for domestic development and have the potential for freezing are outlined in the MoH Regulation No. 17/2017 on the Action Plan for the Development of the Pharmaceutical and Medical Device Industry. In this regulation, the development of the Indonesian Medical Devices Industry is aimed at achieving three main goals, targeted to be accomplished by the year 2035:

- Reduce imports from 94% to 45%
- Increase the market value from IDR 12 trillion to IDR 130 trillion
- Increase the number of items of local medical devices from 60 items to 400 items.

| Medical Devices Categories | Periods | | |
|----------------------------|--|--|--|
| | 2016-2020 (Low Tech) | 2020- 2024 (Medium Tech) | 2025-2035 (High Tech) |
| Implant | <ul style="list-style-type: none"> • Scaffold Hydroxyapatite • Intraocular Lens (IOL) • Bare Metal Stent • Implant Trauma: <ul style="list-style-type: none"> - Mini Fragments - Small Fragments - Large Fragment - Cranio-maxillo Facial • Implant Arthroplasty: <ul style="list-style-type: none"> - AMP - Bipolar - Shoulder - Total Elbow • Implant Spinal • Implant Locking System • Interlocking Nails: <ul style="list-style-type: none"> - Femoral Nail - Tibial Nail - Reconstruction Nail - Humerus Nail - PFN • Instruments Basic Orthopaedic: • Instruments AMP • Needle Holder | <ul style="list-style-type: none"> • Injectable Hyaluronic Acid • Gentamicin Bone Cement • Foldable IOL (Intraocular Lens) • Drug-Eluting Stent • Absorbable Stent • Total Hip Replacement (THR) • Total Knee Replacement (TKR) • Instruments for THR and TKR • Arthroscopy • General Surgery Instruments • Major Surgery Instrument Set • Laparotomy Instrument Set • Obstetric Surgery Instrument Set • Caesarean Section Surgery Instrument Set • Circumcision Surgery Instrument Set • Curette Surgery Instrument Set • OB/GYN Surgery Instrument Set | <ul style="list-style-type: none"> • Hip and Knee Implants (ceramic) • Microsurgery Instruments • Vasectomy Surgery Instruments • Prostatectomy Surgery Instruments • Plastic Surgery Instruments • Eye Surgery Instruments • Appendectomy Surgery Instruments • Hysterectomy Surgery • Instrument Set • Paediatric Surgery Instrument Set |

| | | | |
|---|--|--|--|
| <p>Electro medics</p> | <ul style="list-style-type: none"> • Thermo Scan (Thermometer) • Fetal Doppler • Nebulizer • Dental Chair • EKG Monitor • Aspirator / Suction Unit • Baby Incubator • Professional Blood Pressure Monitor • X-Ray Equipment • Body Scale • Digital Blood Pressure Monitor • Infant Warmer • Phototherapy Unit / Blue Light • Infant Incubator • 12-Channel Telemetry EKG • CPAP (Continuous Positive Airway Pressure) • Nerve Stimulator • Infusion Pump • Needle Destroyer | <ul style="list-style-type: none"> • Vital Sign Monitor • Hearing Aid Device • Needle Destroyer (ozone) • Haemodialysis Machine • Blood Storage • Patient Monitor • Telemedicine • Ultrasound (USG) • Early Detection of Blood Vessel Blockage • Calibration Equipment • Automated Dialyzer • Blood Washing Device | <ul style="list-style-type: none"> • Hip and Knee Implants (ceramic) • Microsurgery Instruments • Vasectomy Surgery Instruments • Prostatectomy Surgery Instruments • Plastic Surgery Instruments • Eye Surgery Instruments • Appendectomy Surgery Instruments • Hysterectomy Surgery • Instrument Set • Paediatric Surgery Instrument Set |
| <p>Disposables & Consumables</p> | <ul style="list-style-type: none"> • IV Catheter • Infusion Set • Foley Catheter • Ventriculoperitoneal (VP) Shunt • Disposable Syringe • Syringe with Needle • Auto Disable Syringe • Anti-Needle Stick Devices • Tubular Metal Needle • Surgical Apparel • Plastic Lens • Hernia Mesh • Surgical Thread • Urine Bag • Blood Bag • Cold Patch • Body Support • Auto Safety Syringe • Microregulator • Infusion Set • Gloves • Wound Dressing | <ul style="list-style-type: none"> • Transfusion Set • Lensa Tri Index • Disposable Surgical Instrument (Blade) • Filter Transfusion Set • Haemostatic Absorbable • Dialyzer • Sterile Hypodermic Needle • Intra Uterine Device (IUD) • Capsular tension ring • Glaucoma implant | <ul style="list-style-type: none"> • IOL Cartridge and Disposable Injector • Derma filler • |

| | | | |
|-------------------------------------|---|--|--|
| <p>Diagnostic reagent</p> | <ul style="list-style-type: none"> • Blood Glucose Meter HbA1c • Prestige TRX/TMS System Kit • Multi-Purpose System Kit • Drug Test Kit • Hepatitis Test Kit • Tuberculosis (TB) Test Kit • TB Diagnostic Kit: Isothermal DNA Amplification Method • Clinical Chemistry Reagents: Creatinine, Glucose, Albumin, Total Bilirubin, Direct Bilirubin, Total Protein • Microbiology Reagents • Immunology Rapid Test • Rapid Agglutination Reagents • ELISA/CLIA Reagents | <ul style="list-style-type: none"> • Clinical Chemistry Analyzer with a throughput of 150-200 tests per hour • Rapid Test for Serology and Immunology | |
| <p>Instrument Diagnostic</p> | <ul style="list-style-type: none"> • Aneroid Sphygmomanometer • Aneroid Clock Sphygmomanometer • Stethoscope • Refraction Unit • Electric Table • Ophthalmoscope • Trial frame | <ul style="list-style-type: none"> • NIBP Cuff • Trial Lens Set • Chart Projector • Auto Keratometer • Surgical Instrument • Spirometer • Slit Lamp | <ul style="list-style-type: none"> • Non-Contact Tonometer • Operating Microscope • Fundus Camera • Auto Refractometer |
| <p>PACS</p> | <ul style="list-style-type: none"> • USG • Transvaginal • USG 4D • ECG Synchronizer (Automatic Synchronizer with gamma camera) | | |
| <p>Software & IT</p> | <ul style="list-style-type: none"> • Blood pressure computer • Patient transducer and electrode cable (including connector) • Manual patient transfer device | | |

| | | | |
|----------------------------------|---|---|---|
| <p>Hospital Furniture</p> | <ul style="list-style-type: none"> • Operating table • Child's bed • hospital bed • Baby cot trolley • Examination table • Gynaecological chair & table • Bowl stand • Bed screen • Bran card • Medical cabinet • Medication chart • Oxygen trolley • Mayo table • Beside cabinet • Infusion stand • Instrument tray • Chair electric • Refracting unit chair • Ambulance stretcher • Folding scoop • Extrication device • Head immobilization • Emergency soft case | <ul style="list-style-type: none"> • Hospital bed • Carbon Composite (Non Fero) | |
| <p>Radiology</p> | <ul style="list-style-type: none"> • Film viewer • Film dryer • Dsa • Fluoroscopy • C-arm • Computed radiography • Nebulizer radio aerosol • Neonatal phototherapy unit • X-ray film viewer • X-ray film dryer | <ul style="list-style-type: none"> • X-ray portable • Tele radiology | <ul style="list-style-type: none"> • MS-CT scanner |
| <p>Others</p> | <ul style="list-style-type: none"> • Steam Sterilizer • Electric Sterilizer | | |

| | | | |
|--------------------|--|--|--|
| <p>POCT</p> | <ul style="list-style-type: none"> • Antimitochondrial antibody immunological test system • Catecholamines (total) test system (card) • Plasmodium species antigen detection assays • Multiple autoantibodies immunological test system. • Methamphetamine test system (strip & midstream) • Morphine test system (strip & midstream) • Cholesterol (total) test system • Urea test system • Uric acid test system • Creatinine test system • Amylase test system • Lipoprotein test system • Triglycerides test system • Glucose test system • Glycosylated haemoglobin assays • Calcium test system • Alkaline phosphatase or isoenzymes test system • Bilirubin (total and direct) test system • Aspartate aminotransferase (AST/SGOT) test system | | |
|--------------------|--|--|--|

Annex 2: Select list of assistive technology product providers in Indonesia

| Provider name | Type of provider | Type of product provided | Location |
|---------------------------------------|------------------|---|---|
| UCP-Roda Untuk Kemanusiaan (UCP-RUK) | Foundation | Wheelchair (adaptive, children-size) and wheelchair repair centres | Yogyakarta |
| PT Alat Bantu Dengar Indonesia (ABDI) | Firm | Visual aid (optical, manual devices) | West Java |
| WAFCAI | Firm | Hearing aid (behind-the ear, bone-conduction), including Cochlear implants | 25 + branches in Indonesia |
| Yayasan Sabtu Pontianak | Foundation | Wheelchair (adaptive, children-size) | North Jakarta |
| PT Mega Andalan Kalasan | Foundation | Prosthesis, children focussed | West Kalimantan |
| Yayasan Layak Jakarta | Firm | Manual wheelchair, spare parts for wheelchair, non-AT healthcare devices (general)* | Yogyakarta |
| PT Visi Inklusi Jakarta | Not for profit | Visual aid | South Jakarta |
| CV Ibrahim Medica | Firm | Visual aid, ophthalmologist medical devices | South Jakarta |
| PT Kuspito Kaki Palsu | Firm | Prosthesis, Orthoses (by request) | |
| Yayasan PUSPADI Bali | Foundation | Wheelchair (adaptive, children-size), prosthetics, orthotics, mobility aids * | Bali |
| Yayasan Pusat Rehabilitasi YAKKUM | Foundation | Prosthesis, orthoses * | Yogyakarta |
| Yayasan St. Damian Cancar | Foundation | Prosthesis, orthoses, wheelchair, cane | East Nusa Tenggara |
| Pusat Rehabilitasi Harapan Jaya | Foundation | Prosthesis, orthoses | Sumatera Utara |
| PT Mitra Veterindo Selaras | Foundation | Orthopaedics | Tangerang |
| Optik Melawai | Firm | Spectacles | Largest eyewear retailer with outlets across Indonesia. |


Annex 3: Select list of assistive technology product providers in Australia

| Organisation Name | Type of product/service provided |
|---|--|
| EveryBody eBikes | Accessible e-bikes |
| Good Karma Corp Pty Ltd T/as Memory Machine | Cognition support |
| Wild West Wheelchairs | Wheelchair |
| Sleep Electric | Adjustable beds |
| REHABHIRE | Broad range of AT products |
| Posture Balance | Adjustable chairs |
| Hearing Connections | Service provider for people with hearing loss |
| Emprise Mobility | Mobility equipment |
| Therm-Oz Showers Pty Ltd | Thermostatic shower mixer |
| Peak Care Equipment | Broad range of AT products |
| Tunstall Healthcare | Monitored AT solutions to support independent living |
| GMobility | Mobility and rehabilitation products |
| Pelican manufacturing | Mobility and adaptive aids |
| Glide | Wheelchairs- manual and power |



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