Asia Impact Investment Fund I L.P. Development Impact Report 2024

November 2024

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Forewords

Double Delta is proud to present the 2024 Development Impact Review along with United Overseas Bank Venture Management. The company profiles in this year's Review demonstrate the impact that can be achieved, and how much remains to be done, in pursuit of structural and systemic changes that benefit poorer demographics. Using innovative business delivery models, technology and artificial intelligence is driving changes in critical sectors - healthcare, agriculture, education, access to finance, clean energy, among others - in ways that are commercially attractive for investment. Further, what we continue to see in South-East Asia and China is that beyond the finance we bring, broader partnership and deep embeddedness in our investee companies, based on decades of on-the-ground experience, is still in short supply. That is the gap that the Asia Impact Investment Funds continue to fill in service of our clients.

While economic and geopolitical challenges are far from absent in the region, the strength of demand for economic opportunity and solutions which enable people to meet and exceed their basic needs affordably has never been in doubt. We continue to work at the convergence of social and environmental issues, where creative entrepreneurs are finding new ways to produce, supply and distribute. We also remain cognisant that 'last-mile' delivery solutions, especially in rural areas, require thoughtful combinations of tech-enabled, digital, often AI-driven approaches with off-line, physical delivery systems.

As we advance the divestment of our first fund and deploy the remaining capital in our second, people-centred solutions anchored in sound environmental performance will remain core to everything we do.

Joost Bilkes
Managing Partner

Double Delta

Though the slowdown in the Chinese economy continues to affect the region's economies, growth in the portfolio companies of the Asia Impact Investment Funds I and II demonstrates that underlying demand for critical goods and services in markets across East and South-East Asia remains robust. The vibrancy of demand attests to the size of underserved—and, as yet, unserved—markets, along with the commercial opportunity of including millions of producers, suppliers and distributors into value chains in sustainable ways.

2024 has been a year of consolidation in the strategic positioning of our portfolio companies in their markets. In the case of AIIF I, the team has been laying the groundwork for divestments. Though slowed by challenging post-pandemic market conditions, we cautiously expect exits to gain pace in 2025. At the same time, AIIF II is developing compelling investment opportunities, many of which are at the intersection of environmental sustainability and livelihood improvement, notably in the clean-energy space.

Throughout the year, much emphasis has been placed on the sustainability of our portfolio companies. Beyond the socio-economic impact of our investments, the team has engaged deeply with investee company management to further embed the mindset that environmental, social and governance (ESG) considerations are not viewed simply as reporting or compliance requirements, rather as important factors that drive value, reduce costs and improve business resilience.

As we look ahead and hope for more favourable market conditions in 2025, this year's Development Impact Reports is a reminder of the resonance of our Funds' core objective: improving people's lives by building sustainable businesses that create opportunities and serve their needs.

Seah Kian Wee
Chief Executive Officer

UOB Venture Management

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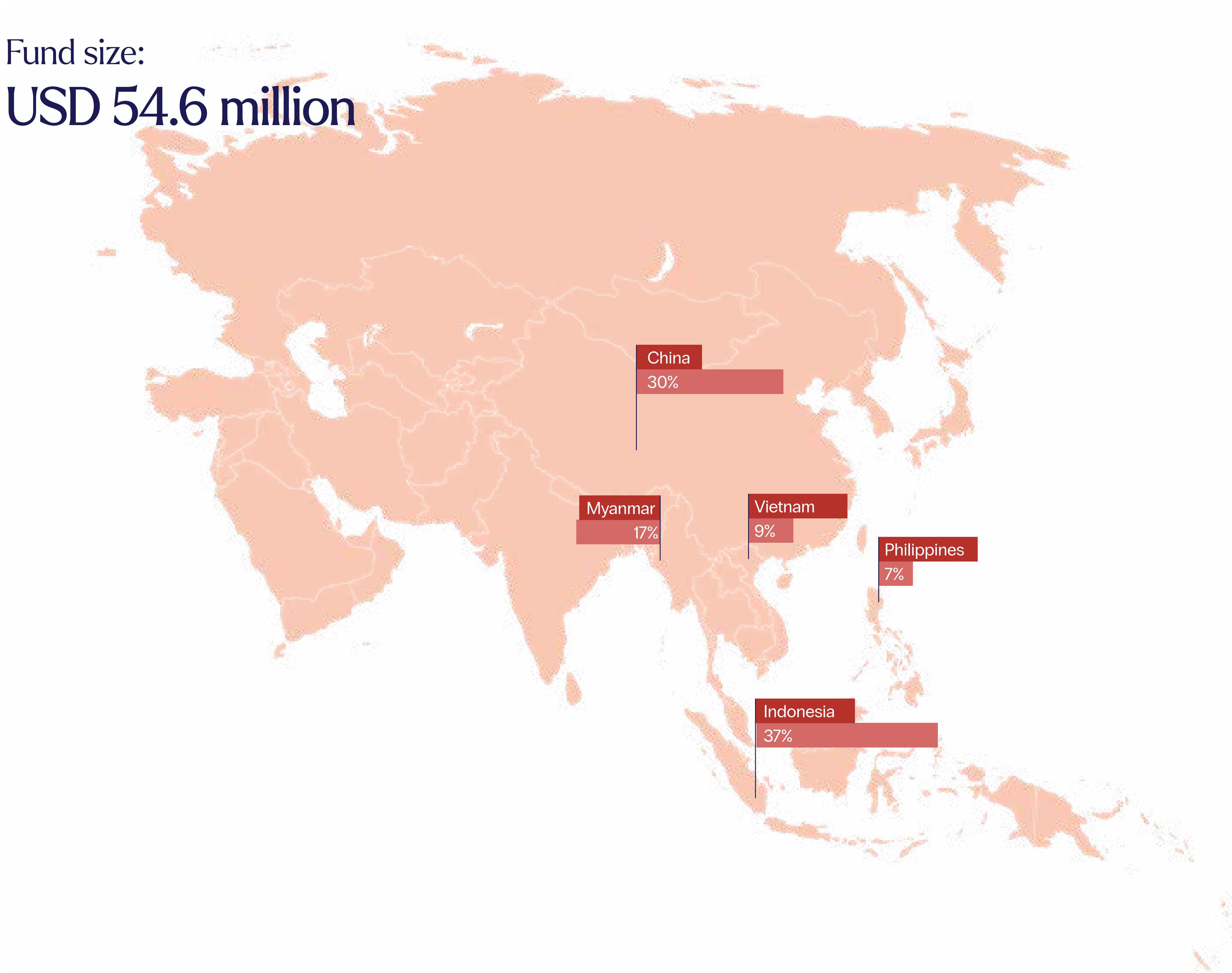
Asia Impact Investment Fund I at a glance

Fund size:
USD 54.6 million



Investments to date by country and sector

Indonesia	China	Myanmar	Vietnam	Philippines
37%	30%	17%	9%	7%
Education Ruangguru	**Healthcare** Tian Tian Ai	**Access to Finance** Alliance	**Agriculture** Rynan	**Healthcare** Lifetrack
Access to Finance Amartha	**Agriculture** Lanmei Gladsome		**Logistics/ Distribution** OkieLa	
Healthcare HaloDoc				
Agriculture TaniHub				

As at 31 October 2024

Percentages denote proportion of invested amount deployed per country.
Source: UOB Venture Management and Double Delta.

Introduction

Fund overview

In December 2016, the Asia Impact Investment Fund I L.P. (AIIF, or the Fund) reached a final close with capital commitments of USD 54.6 million. It is managed by UOB Venture Management (UOBVM) and advised by Double Delta.[1] The Fund makes investments of USD 1–8 million (including follow-on tranches) in fast-growing private businesses in China, Indonesia, Philippines, Thailand, Vietnam, Myanmar, Cambodia and Laos. Its geographical focus, along with the concentration on growth capital and inclusive business models, are unique in the region.

[1] UOBVM is a subsidiary of United Overseas Bank Limited (UOB), a commercial bank focused on Asia with headquarters in Singapore. Double Delta is the Impact Adviser to UOBVM for AIIF.

Source: UOB Venture Management and Double Delta.

The imperative of inclusion

Impact investing means many things to many people. AIIF has a very clear definition of impact investing. It is the deployment of capital in companies with the deliberate intention of generating positive social and/or environmental benefits alongside, and as a means of, achieving positive financial returns. The key point here is that the benefits are not by-products or "incidentals". They are embedded in the strategy of the business.

Within impact investing, the Fund targets **inclusive businesses**. What does this mean? The model of an inclusive business enables poor people to do two things:

- to gain access to affordable goods andservices that are vital to meeting basicneeds and building secure, sustainablelivelihoods; and/or,
- to engage more effectively (or at all) in economic opportunities in enduring andbeneficial ways.

The key points here are:

- For AIIF, the route to impact is commercial and therefore sustainable.
- The process of inclusion drives transformational change.
- The Fund sees financial opportunity in building companies that address lowerincome groups' demand for goods and services. In many cases, these have long been unaffordable or inaccessible to the poor.

These goals find expression in investments that seek to remove (or at least reduce) the so-called poverty penalty. This is defined as the cost or, effectively, the tax that derives from being poor. It can take the form of first-order obstacles: lack of access, physical distance or danger, unreliability, cost, poor quality, limited choice, discrimination; and second-order obstacles, such as lack of internet access. Taking into account the poverty penalty is important because it captures the multi-dimensional aspects of deprivation.

AIIF's definition of poverty

AIIF adopts the World Bank's definition poverty, "profound deprivation in well-being". It forces us to consider more than just familiar manifestations of poverty like malnutrition or starvation, urgent as they are, to include lack of empowerment, opportunity, security and so on.

Source: UOB Venture Management and Double Delta.

What does AIIF I mean by BoP?

AIIF I investments target people living at the base of the economic pyramid (BoP). The Fund defines the BoP as people living on US$3,000 per year or less. This encompasses those in abject or extreme poverty, those in basic poverty and the so-called "near poor", who live precarious lives and are at risk of falling into or returning to poverty. Focusing on the BoP means strengthening livelihoods in the following areas:

Access: Facilitating access to basic goods and services that improve poor people's standard of living;

Affordability: Lowering the cost of basic goods and services for poor people by supporting companies that can achieve economies of scale and increase their customer bases or reach;

Opportunity: Promoting opportunity, especially for employment, enabling the poor to generate wealth and to accumulate assets; and

Empowerment: Creating new employment opportunities for the poor which materially improve their standard of living, or improving existing employment opportunities in the same way.

Source: UOB Venture Management and Double Delta.

A disciplined approach to achieving impact

It is not enough simply to avow a focus on impact and, within that, on inclusive business. Even in just two short decades of impact investing, too many investors have been disappointed by strategies that promised much but drifted from their missions. AIIF sought to avoid this danger by designing a robust Impact Policy. The Impact Policy stipulates the business models and sectors eligible for investment, highlighted on the next page. Any investments outside these parameters are raised with the Fund's Impact Advisory Council, a panel of independent experts.

Source: UOB Venture Management and Double Delta.

AIIF: Business models and sectors eligible for investment

BoP business models	Comments
Consumer	Businesses that improve livelihoods by providing consumers with goods and services that alleviate challenges arising from one or several of the following: access, cost/affordability, quality, choice, availability.
Supplier/Producer	Businesses that source from the poor, have significant potential or need to do so and/or are seeking to increase the number of poor people in their supply chains.
Distributor	Businesses whose distribution strategies require the employment of significant numbers of BoP incumbents and, often, whose goods and services seek to improve livelihoods.
Employee	Businesses that employ significant numbers of poor people and impact their lives by improving their earning capacity, mobility, opportunity, security and by providing training.

Sectors	Sub-sectors
Agriculture	Agro-processing, food production, primary production, infrastructure, agricultural inputs, aqua-culture, niche and high-value products.
Healthcare	Service providers (hospitals, clinics, diagnostic centres), distribution and retail, light manufacturing, pooled healthcare products, medical education, application of medical technology, nutritious foods and clean water.
Education	Primary, secondary, tertiary, adult and professional education, training centres, online education solutions, teacher-training, curriculum development.
Clean/renewable energy	Investments including waste-to-energy, biogas, solar, small-hydro, technical service providers to the clean energy sector.
Sanitation, water & waste management	Water distribution and management, waste-water management, secondary and tertiary irrigation, household waste-management.
Access to finance	Microfinance, microcredit, agricultural finance, other financial services including technology enabled solutions.
General manufacturing	Basic consumer goods required by low income households, with a focus on affordability (size and price).
Affordable housing	Including construction and provision, and leasing of construction equipment to home builders.
Logistics, distribution & infrastructure	Transportation and communications infrastructure, technology enabled distribution models, logistics.

Source: UOB Venture Management and Double Delta.

As of end September 2024

Over 40,700,000 low-income individuals have been reached

Sector Highlights

Education

32,040,000

Youths from low-income households now have access to quality educational content, improving individual and national-level learning outcomes.

Relevant AIIF Company
Ruangguru

Healthcare

4,238,000

Low-income individuals have gained access to better-quality, affordable healthcare goods and specialist services.

Relevant AIIF Companies
TTA | Halodoc | Lifetrack

Agriculture

102,000

Farmers have gained access to finance, inputs and technology, and/or introduced higher-value crops, resulting in higher production yields.

Relevant AIIF Companies
Rynan | Lanmei | Gladsome | Alliance (through agriculture loans)

Access to Finance

2,398,000

Low-income individuals have gained access to finance, enabling them to build, or invest further in, their small businesses.

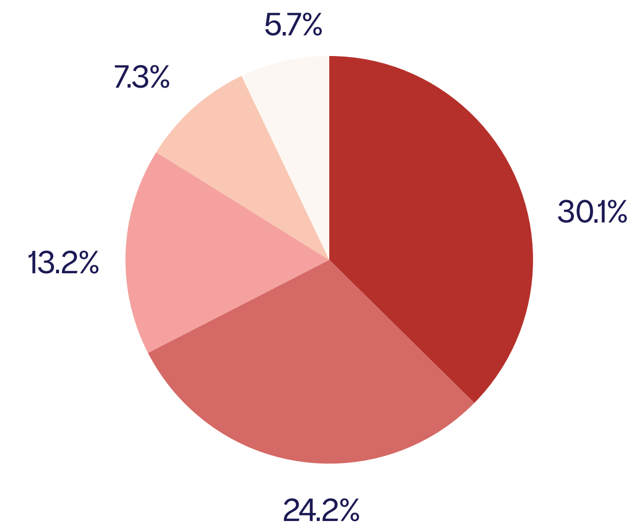
Relevant AIIF Companies
Alliance | Amartha

Source: UOB Venture Management and Double Delta.

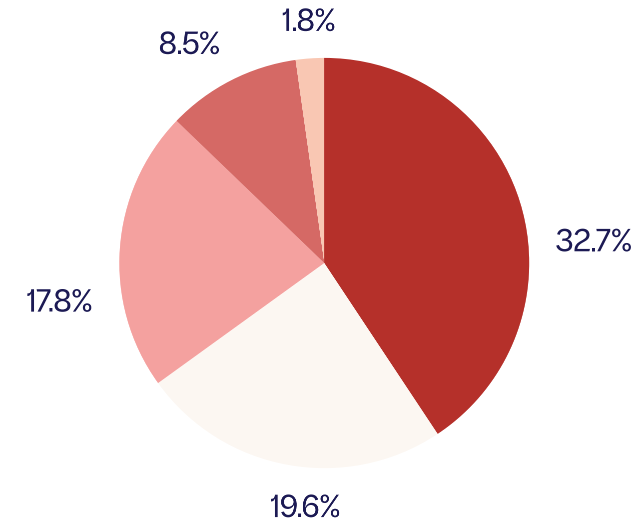
Portfolio Breakdown

	No. of deals	Invested/committed amount (USD millions)	As % of fund size
Indonesia	4	16.5	30.1%
China	3	13.2	24.2%
Myanmar	1	7.2	13.2%
Vietnam	2	4.0	7.3%
Philippines	1	3.1	5.7%
Total	**11**	**44.0**	**80.5%**

Based on invested amount



	No. of deals	Invested/committed amount (USD millions)	As % of fund size
Agriculture	4	17.9	32.7%
Access to Finance	2	10.7	19.6%
Healthcare	3	9.7	17.8%
Education	1	4.7	8.5%
Logistics, Distribution & Infrastructure	1	1.0	1.8%
Total	**11**	**44.0**	**80.5%**



As of September 2024
Source: UOB Venture Management and Double Delta, as at September 2024. Asset allocation may change from time to time without notice.

Contributions to Sustainable Development Goals (SDGs)

Setting the Standard in Impact Management Excellence

Through the Asia Impact Investment Fund with Double Delta as the impact advisor, UOB Venture Management became the first fund manager in Southeast Asia to adopt the Operating Principles of Impact Management, the industry standard for integrating impact throughout the investment lifecycle back in 2020. As we continue to push ourselves on the rigor of best practices in impact management, we have engaged Bluemark to independently verify our alignment with the Operating Principles for Impact Management (OPIM).

Their evaluation confirmed that we have significantly outperformed both Bluemark's total client base and the Emerging Markets Venture Capital investors peer group.

Please see the Verifier Statement here.

Investment updates

Ruangguru

Ruangguru: the investment at a glance

Country / region	Indonesia
Initial investment date	June 2017
Business model	Leading education technology in Indonesia addressing the deep-rooted nationwide problems in education with the utilization of technology.
Investment	USD 4.7 million
Structure	Preferred shares

Investment snapshot

Ruangguru Pte Ltd. is a leading education technology company in Southeast Asia, with core operations in Indonesia and Vietnam, offering educational content and services across the learning spectrum, from K-12 to adult learning. Starting in Indonesia, where its headquarters are located and where it offers the widest array of products and services, Ruangguru leverages technology to democratize access to quality education for the poor, improving educational outcomes and enhancing the employability of youths and working adults through lifelong learning programs.

The company's products have reached over 43 million[1] students and learners, with a strong emphasis on high-quality content. Ruangguru continually upgrades its offerings to incorporate adaptive learning, enhancing educational effectiveness. Technology enables the company to overcome the geographical challenges of delivering high-quality primary and secondary education in an archipelago of 18,000 islands spanning over 3,000 km. In a country with over 275 million people and the world's fourth-largest education system, Ruangguru is not only improving educational outcomes but also democratizing access to high-standard educational content for the underprivileged. More than 1 million teachers have accessed the platform, benefiting from both quality learning materials and teacher training modules.

2024 Update

With the pandemic still shaping educational preferences to some extent, the resurgence in demand for offline learning has been notable in Indonesia.

Ruangguru has established itself as a key player in the offline arena through its Brain Academy centres, of which there are now more than 280 across the archipelago. With roughly 50 new locations added in the year to date, including in lower-tier cities like Riau and Lampung (in central and southern Sumatra, respectively), the company is harnessing a growing appetite for face-to-face interaction. This expansion is guided by a methodical data-driven strategy. Before launching a new branch, Ruangguru assesses two key factors: competition and the local socio-economic environment. The company prioritizes regions with enough households that have disposable income to invest in their children's education. Furthermore, competition is not viewed as a deterrent; rather, Ruangguru sees it as an indication that local communities value education and are willing to spend on it. Healthy competition signals a market that is primed for growth, which aligns with Ruangguru's objective of offering affordable, high-quality education to as many students as possible.

Although Brain Academy courses are priced higher than Ruangguru's online offerings, such as ruangbelajar, they remain more affordable than other offline education providers. Since the COVID-19 pandemic, there has been a noticeable shift in demand from online to offline education, indicating that many students and parents still value face-to-face interaction, particularly for critical exam preparation. Brain Academy caters to this preference through a blended learning model, combining the flexibility of online tools with the benefits of in-person instruction—a balance that continues to be favoured by both students and parents.

[1] As at end September 2024

Localization is a core feature of the Brain Academy model, the more so since Indonesia's new Merdeka curriculum was rolled out in July 2024. The curriculum, which gives teachers more autonomy in lesson design and school-year structuring, is particularly suited to Brain Academy's decentralized approach. Local academic teams are given flexibility to adapt the national curriculum to local/regional needs, allowing teachers to tailor lesson order and content to meet specific student requirements.

As Ruangguru continues to expand, achieving and maintaining teacher quality will remain a key priority to ensure that students continue to receive high-quality education across all locations. To realize this, Brain Academy has developed a rigorous recruitment and training process. Teachers undergo comprehensive training programmes and are subject to continuous performance reviews, including student feedback and periodic exams that assess their knowledge and teaching ability. The results are tracked and used to rank teachers, with top performers rewarded with more teaching hours and opportunities for career advancement. This structured approach to teacher development has been essential in preserving the quality of instruction as the Brain Academy network continues to grow.

Understanding the Merdeka Curriculum

In March 2024, Indonesia's Minister of Education, Culture, Research, and Technology, Nadiem Makarim, announced the replacement of the 2013 national curriculum with the kindergarted-13 (K-13) Merdeka curriculum (Kurikulum Merdeka). Initially introduced in 2020, the Merdeka Curriculum allowed schools to adopt it voluntarily. Since then, it has gained significant traction, with more than 300,000 schools—approximately 80% of schools in Indonesia—implementing it.[2] The Ministry of Education is targeting nationwide adoption, including remote regions, by 2028.

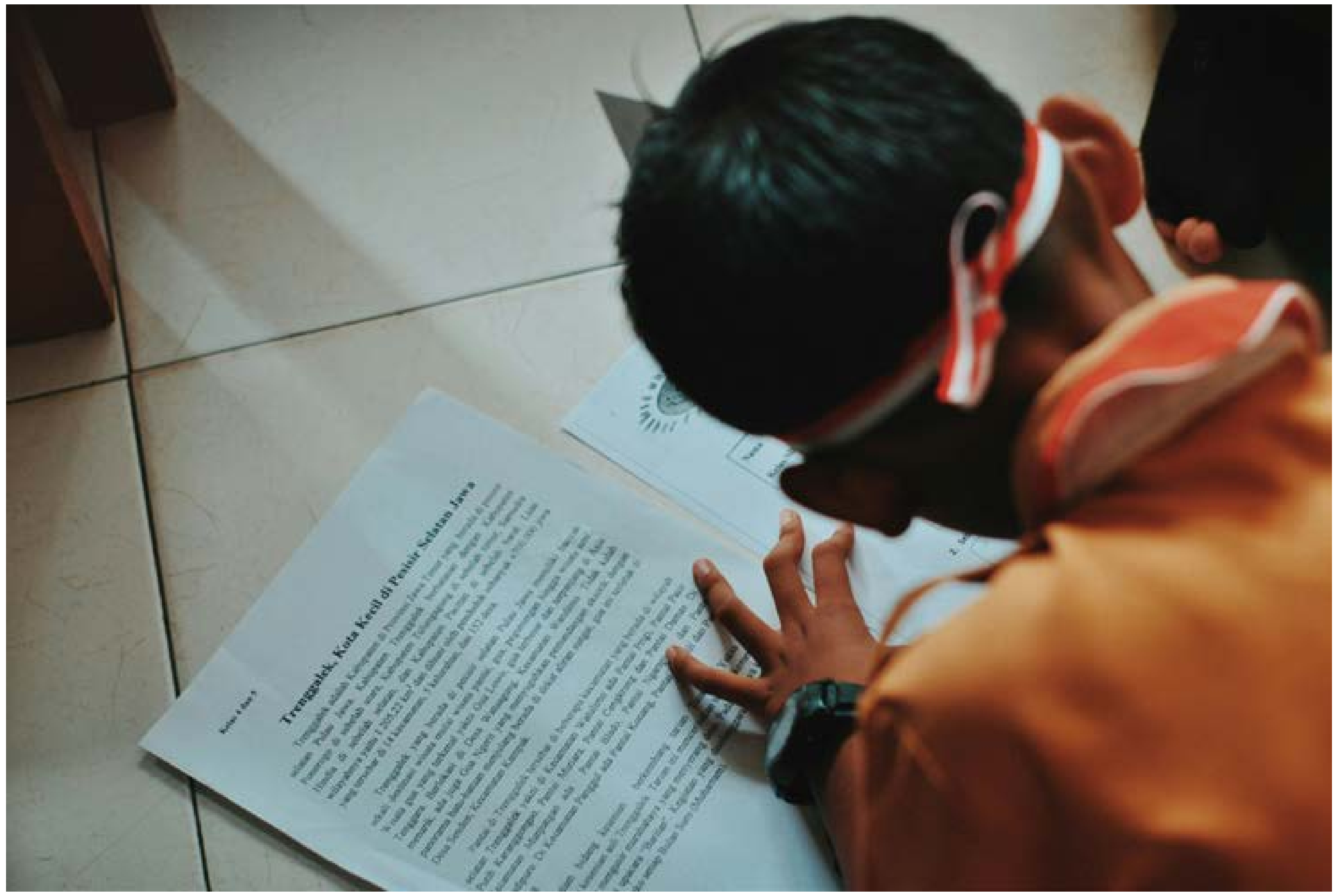
The curriculum is designed to address persistent disappointing learning outcomes in Indonesia, with student competence stagnating in the last 15 years. For example, data published by the Programme for International Student Assessment (PISA) indicate that in 2022, around 70% of Indonesian 15-year-olds were performing below international minimum competency levels in reading and mathematics.[3]

Key differences between the Merdeka Curriculum and its predecessor include a focus on essential learning materials, character development, and skills training, as well as increased flexibility for educators. The Merdeka Curriculum allows schools to tailor their operational curricula to meet the unique needs of their students and local environments.

In 2024 Ruangguru launched an education gameshow in the so-called 'reality' genre, Clash of Champions. It pits Indonesian university students from domestic universities and overseas against each other in a series of challenges that test mathematics, spatial reasoning, logic, problem-solving, and memorization skills. Contestants come from local institutions like University of Indonesia, the Bandung Institute of Technology, and Syarif Hidayatullah State Islamic University Jakarta, alongside top global names like Yale College, University of Oxford, and the National University of Singapore.

Streamed on Ruangguru's app and YouTube, the show has gained significant attention nationally, with 3.6 million views of the grand finale recorded on YouTube and more than 100 million views during the few weeks when the show was screened. The format taps into the growing trend of edutainment, engaging students in ways that traditional methods often fail to do. More substantively, the competitive format has found its way into classrooms, with students and teachers adapting elements to increase motivation for learning. The outcome has been more than an anecdotal increase in interest: the growth of K-12 revenue at the start of the 2024/25 academic of more than 50% year on year is attributable to Clash of Champions, and attests to Ruangguru's innovative approach to the market driving scale. It is planning to extend its foray into edutainment in the 2024/25 academic year, again to build interest and shape commercial education choices predicated on improved learning outcomes and pedagogical approaches.

[2] Antara News, 2024. Source
[3] Antara News, 2022. Source



Ruangguru metrics	At investment	As at September 2024
Number of registered student users (cumulative)	2.32 million	43.29 million
Number of low-income students reached (cumulative)	1.98 million[4]	34.03 million[5]

Contributions to Sustainable Development Goals (SDGs)

4 85.2% of Indonesians live on $8.20 or less a day (2011 PPP based on 2014 survey year, WorldBank ProvCalNet).

5 The data have been revised to reflect updated statistics on poverty in Indonesia. According to 2017 data from PovcalNet, 78.6% of Indonesians were living on USD 8.20/day or less (at 2011 Purchasing Power Parity (PPP)).

Amartha

Amartha: the investment at a glance	
Country / region	Indonesia
Initial investment date	November 2019
Business model	Microfinance institution with particular focus on underserved female borrowers, primarily micro-entrepreneurs.
Investment	USD 3.5 million
Structure	Preferred shares and convertible loan

Investment snapshot

AIIF invested USD 3.5 million into PT Amartha Nusantara Raya (Amartha), a fintech micro-lender targeting the under-served rural market in Indonesia.[6] Since its inception, the company has maintained a steadfast focus on female borrowers. Amartha launched microfinance operations from a small village in Bogor, West Java in 2010. In 2016, Amartha introduced a peer-to-peer (P2P) lending model that grew exponentially, facilitating capital from urban investors for loans for the underserved microentrepreneur market, The success of the P2P strategy illustrated the dearth of working capital available to female micro-entrepreneurs beyond urban centres. In response, Amartha has evolved into a platform that channels micro-loans to borrowers, starting at IDR 2.5 million (USD 167), from urban retail and institutional lenders. As of end September 2024, Amartha had disbursed loans to more than 2.7 million borrowers across Sumatra, Java, Sulawesi, Kalimantan, and Bali and Nusa Tenggara.

2024 Update

Micro, small, and medium enterprises (MSMEs) continue to play a critical role in driving Indonesia's economy. According to the Coordinating Ministry for Economic Affairs of the Republic of Indonesia, MSMEs account for 99% of all business units in the country. Their contribution to national prosperity is immense, providing 60.5% of GDP and absorbing 96.9% of the total labour force. Amartha's model of offering productive loans to entrepreneurs—particularly women—directly fuels this sector's growth. By helping small businesses scale, Amartha plays a crucial role in Indonesia's economic development.

To better understand the outcomes and impacts generated by its financial services, Amartha conducted a survey in 2023 of 705 borrowers in their second year of the loan cycle. The survey sought to assess their socioeconomic situations after receiving loans through Amartha. The findings were compelling: 90% of borrowers reported an increase in income, which allowed them to either save more or to acquire additional assets. On average, borrowers saw a 61.6% rise in their annual income, largely due to their ability to expand their businesses. Many borrowers noted that, thanks to the loans, they were able to expand their businesses beyond their local villages, selling their products in neighbouring towns and cities.

In addition to helping borrowers achieve financial progress, Amartha's efforts are paying off where improving financial behaviour is concerned. The survey revealed that 89% of participants had begun tracking their income and expenses after joining Amartha, a shift attributable to the mandatory financial literacy training provided to all new borrowers. By instilling these practices, Amartha is not only helping entrepreneurs to grow their businesses but also promoting long-term financial stability.

Amartha's digital transformation efforts have also made significant headway. The launch of the Amarthafin app allows borrowers to monitor loan disbursements,

6 Data as of 2022

repayments, and national insurance status (from Badan Penyelenggara Jaminan Sosial, also known as BPJS in Indonesia). This push toward digitalization comes at a crucial time for Indonesia's MSMEs. In 2020, data from the Indonesia Fintech Lending Association (AFPI) revealed that 72% of MSMEs lacked access to capital from banks or non-bank financial institutions (NBFIs) largely because of limited financial literacy. Through Amartha's efforts, these underserved entrepreneurs are now gradually entering the digital ecosystem, gaining access to the tools and services previously out of reach.

Amartha One agents continue to play a pivotal role in facilitating this transition. The Amartha One program was launched in mid-2022 to facilitate access to services and build income-earning opportunities with/through successful borrowers, by transforming them into sales agents. On top of serving as payment points, these agents help borrowers open bank accounts by guiding them through the document preparation process and directing them to the nearest bank, often Bank Rakyat Indonesia (BRI), one of Indonesia's largest institutions with 30 million retail clients. Beyond banking, the agents also offer hands-on support, teaching borrowers how to navigate the Amarthafin app and other digital services.

Amartha's commitment to digitalization extends to its loan operations. As of September 2024, 97% of new loan disbursements are cashless, which also reduces the risk of fraud by the loan officers, also known in Amartha as Business Partners (BPs). Loan repayments are also increasingly going digital, with a growing percentage conducted via the Amarthafin app which currently has more than 400,000 monthly active users (as at September 2024), and Amartha expects this number to rise as it continues to encourage a full transition to digital financial services. In addition to financial services, Amartha is also digitizing its training materials. The content remains largely the same, focusing on key areas such as cash flow management, debt handling, and budgeting for households and businesses. However, the new digital training now includes critical aspects of cybersecurity, such as protecting passwords and bank account information. This focus on security is particularly important in rural areas, where a single smartphone is often shared by multiple family members, increasing the risk of unauthorized access.

Amartha's geographical footprint now spans all major islands of Indonesia marking significant progress in its mission to promote financial equity and empower rural communities. By June 2024, only about 30% of Amartha's loan portfolio was concentrated in Java, with about 42% allocated to Sumatra, 18% to Sulawesi, and the remainder spread across Kalimantan, Nusa Tenggara, and Bali. This shift underscores Amartha's commitment to extending financial services to underserved areas and bridging the gap between urban and rural communities.

The effects of geographical expansion have been profound. Amartha's move into new geographies, combined with the increasing average loan size - reflecting the growing working capital needs of MSMEs - has fuelled impressive growth. In the first half of 2024, loan disbursements increased by 75% compared to the same period in 2023, highlighting both the rising demand for capital in rural areas and the success of Amartha's inclusive financial model.

Case Study: Ibu Asmawarni, Sumatra-based fruit seller

Ibu Asmawarni has operated a 20-meter-long fruit stand along the trans-Sumatra toll road since 1991. Despite starting with no access to running water or electricity, she has stuck at her business and expanded it. After securing a loan from Amartha, she was able to upgrade her stand by adding electricity and expanding the range of fruit offered.

Today, Ibu Asmawarni earns between IDR 400,000 (USD 26) and IDR 1.5 million (USD 97) daily, more than double her takings pre-Amartha. Her increased income has allowed her to better support her family, covering the cost of her children's education through to university.

Amartha metrics	At investment [7]	As at September 2024 [8]
Cumulative number of borrowers [9]	307,772	2,725,470
Average disbursed amount per loan (USD)	254.0	429.0
Number of active borrower groups	15,590	131,500

Contributions to Sustainable Development Goals (SDGs)

[7] Source: Company Management report, data as at 30 September 2019
[8] Based on management information
[9] From 30 March 2016 up till reporting date

Lanmei

蓝美农业

Lanmei: the investment at a glance	
Country / region	China
Initial investment date	October 2017
Business model	Breeder, producer and seller of blueberry seedlings, fresh and frozen blueberries and processed blueberry products.
Investment	USD 4.6 million
Structure	Ordinary shares

Investment snapshot

In October 2017, AIIF invested USD 4.6 million in Zhejiang Lanmei Agriculture Co. Ltd (Lanmei), which has developed a proprietary blueberry breed and produces anthocyanin extracts from blueberries. The Company is the leading blueberry seedlings supplier in China, accounting for one-fifth of blueberry output in the country. Since blueberries were introduced to China from North America in 1987, consumption has grown exponentially among the middle class and wealthy in first-tier and second-tier cities. Lanmei channels this demand to rural areas, enabling poor farmers to substitute low-value or even loss-making crops like tea tree and rice paddy to be substituted for blueberries, which command far higher prices.

Given that hilly and mountainous areas lend themselves to blueberry production, the founder of Lanmei, Yang Shufang, saw growing demand for the fruit as a way to lift farmers out of poverty and build resilient rural livelihoods. In addition, local blueberry consumption helps to improve the nutrition of poorer, rural farmers whose diets are restricted by food choice and prices. Few have access to so-called "superfoods", especially fruits rich in anthocyanin, a water-soluble vacuolar pigment with numerous health benefits (see below).

Health properties of anthocyanin and Lanmei's competitive advantage

Anthocyanins form a group of deep blue, purple and red pigments in plants. They belong to a category of plant-based chemicals referred to as flavonoids, whose strong antioxidant properties are believed to destroy damaging molecules such as free radicals that harm healthy cells.

Lanmei has a competitive advantage, or even barrier to entry, within the blueberry sector via its proprietary hybrid breed, "Lanmei No.1". Beyond the European wild blueberry, or vaccinium myrtillus (also known as the bilberry), Lanmei No. 1 is the only cultivated species that yields a similarly high content of anthocyanin. Because the enzyme that contains anthocyanin resides only in the fruit skin, the amount of enzyme extracted per berry is limited. In May 2023, Lanmei achieved a pivotal milestone, gaining approval from China's National Health Commission for its Blueberry Anthocyanin as a Novel Food Ingredient. This regulatory nod was instrumental in enabling Lanmei to commercially distribute its anthocyanin extract.

2024 Update

Rural revitalization continues to be a key priority for China's government, with 12.2 million people returning to villages from cities between 2012 and 2022. The total is expected to reach over 15 million by end-2025. Paired-province poverty alleviation programs, such as those between Zhejiang and Shanghai and their lower-income counterparts, are crucial in this effort. These programs focus on boosting local agriculture by attracting enterprises from wealthier regions to expand to the poorer provinces, aiming to reduce regional disparities. Lanmei continues to benefit from these efforts, as the governments of poorer provinces actively encourage the company to enter and expand in their regions, aiming to uplift local industries and drive economic development.

Lanmei continues to focus on expanding its core business of selling blueberry seedlings and achieving the commercialization of anthocyanin extracted from fresh fruit. Total land under cultivation with Lanmei No. 1, the proprietary blueberry variety developed by Lanmei, increased from 210,000 mu (14,000ha) to 236,000 mu (15,733ha) as of September 2024. At the same time, there has been moderate progress bringing anthocyanin products to market. Lanmei has secured contracts with various food and nutrition companies for small-batch orders for research and development (R&D). It is being spent on bringing various new products to market such as brain development supplements, eyecare supplements for children, diabetes management solutions and others. In the last year, Lanmei has also strengthened its business-to-business (B2B) and business-to-consumer (B2C) teams to boost distribution of anthocyanin-based products.

Regarding the seedling business, further work has gone into optimising the Lanmei No.1 variety for improved yields and quality. In recent years, the company has produced five new hybrids, now in pilot testing and certification phases.

Over the next year, Lanmei will work to progress its anthocyanin business through R&D partnerships with hospitals and collaborations with food and nutrition firms to pilot new products in areas such as supplements for brain development, eye care and diabetes management. At the same time, it will continue to play a role in rural revitalization, particularly through the Paired Provinces Alleviation Programme, where wealthier regions support the growth of the blueberry sector in less developed areas via the Company.

Case Study: Farmer Zhang, Shuige Village, Zhejiang Province

Mr. Zhang, a smallholder farmer from Shuige Village in Zhejiang Province, has experienced a marked improvement in livelihood since transitioning to growing Lanmei No.1 over ten years ago. For the previous decade, like many farmers in the region he grew tea. However, consistently low yields led him to consider alternative crops. Introduced to Lanmei No.1 by a friend, it transpired that his land was well-suited to blueberry cultivation.

Mr. Zhang received technical assistance from Lanmei on key aspects of blueberry farming, including pest management, planting, and daily care of bushes. Further, Lanmei guaranteed offtake, ensuring stable earnings in return for the produce. Today he harvests approximately 600kg/yr, sold fresh at prevailing market prices. Beyond the fact that blueberries are a higher-earning crop than tea, his takings have been increased by reduced labour costs, given that blueberry bushes are much less labour-intensive.

Case Study: From barren land to blueberry cultivation in Dongxiang District, Fuzhou City, Jiangxi Province

In Dongxiang, a region of Jiangxi province where rural incomes remain below the national average, 15,000 mu (1,000 ha) of once idle land has been converted into a blueberry plantation, yielding 300 tonnes of fruit per year and generating RMB 10 million (USD 1.4m) in earnings.

The transformation began in 2020 when local government officials conducted a thorough study of potential industries to determine the best fit for the district. After identifying blueberry cultivation as a promising option, they invited Lanmei to support the initiative. Lanmei helped establish the Dongteng Blueberry Industrial Park by supplying blueberry seedlings suited for China's terrains and providing technical assistance to train local farmers.

The introduction of the blueberry industry in Dongxiang has spurred the return of villagers who had migrated, offering employment opportunities in the industrial park and additional income through land transfer fees. It is estimated that over 4,000 villagers have benefited from this initiative.

Lanmei: Key impact data

AIF's impact assessment system tracks two groups of farmers.

Group 1 refers to individuals or co-operative members who own their land and purchase seedlings directly from Lanmei. These farmers experience income increases directly, through fruit sales.

Group 2 refers to farmers who work for fruit companies and whose income uplift derives from higher wages paid by their employers.

Note that the income differentials experienced by Group 2 farmers in poorer versus wealthier regions is likely less significant (because wages are determined by the enterprise). For this reason, we do not parse data by regional profile for Group 2.

Group 1 Farmers	**Poorer Regions**	**More well-to-do regions**
Estimated increase in income (% change in nominal amount)[10]	187% to RMB 32,980 /yr (USD 4,982)[11]	815% to RMB 104,561/yr (USD 15,798)[12]

Group 2 Farmers	**Poorer Regions**
Estimated income increase (% change in nominal amount)[13]	49% to RMB 17,000

[10] The average annual income of farmers is about RMB 11,422 , based on 2015 numbers.
[11] Net annual income in Year 3 (with percentage of increase in income), after making a loss in the first year and breakeven in Year 2
[12] Net annual income in Year 3 (with percentage of increase in income), after making a loss in the first year and breakeven in Year 2
[13] The average annual income of farmers is about RMB 11,422, based on 2015 numbers.

Lanmei metrics	**At Investment** (Baseline)[14]	**Cumulative, as at September 2024**
Group 1: Number of farmers reached directly	3,097	42,266
Group 2: Number of farmers reached through the enterprises	2,999	20,081
Total number of farmers reached	**6,096**	**62,347**

Contributions to Sustainable Development Goals (SDGs)

[14] As at May 2017

Alliance

Alliance: the investment at a glance

Country / region	Myanmar
Initial investment date	August 2017
Business model	Access to finance for low-income borrowers, predominantly women, in north-central Myanmar.
Investment	USD 7.2 million
Structure	Ordinary shares

Investment snapshot

AIIF invested USD 7.2 million in Alliance for Microfinance in Myanmar Ltd (Alliance). As one of the larger microfinance institutions (MFIs) operating in Myanmar, Alliance was established in Mandalay by FIDES of Switzerland and BASIX of India, with the support of the United Nations Capital Development Fund (UNCDF). Alliance was a compelling investment for the Fund for three reasons: the under-penetration of financial services in north-central Myanmar; the opportunity to support female entrepreneurship through Alliance's focus on women borrowers; and its development of small business and agricultural lending products.

2024 Update

Already fragile from three years of intermittent lockdowns and business disruptions during the pandemic, the political crisis that erupted in Myanmar in February 2021 and ensuing mass demonstrations and violence plunged the country into an economic crisis. High inflation, rapid currency depreciation, higher prices of staple goods and fuel, rising unemployment and the near-total cessation of foreign direct investment (FDI), let alone the tough sanctions imposed by numerous major trading partners, largely cut off the country from international markets. Conflict between ethnic armed groups and the military has continued to expand, engulfing more territory, particularly in border areas. As at September 2024, over two-thirds of Myanmar remained affected by conflict with little sign of de-escalation. The northern, eastern, western, and southeastern regions remain the most volatile, while central Myanmar and the greater Mandalay area have seen relative stability, albeit under the looming threat of spreading conflict. Despite the political and economic upheaval, there has been a gradual, if tentative uptick in economic activity post-pandemic in cities like Yangon and Mandalay.

In the challenging environment, the resilience of Alliance and its prudent risk management and commitment to employee welfare have stood out. Among Myanmar's top ten microfinance institutions, it boasts the lowest portfolio at risk (PAR 30)-levels among peers, at just 3.4% as at June 2024. The significance of this achievement should not be understated, reflecting several factors: a 37% expansion in its gross loan portfolio (GLP) from Q2 2023 to Q2 2024, a strategic pivot to the country's (relatively) lower-risk regions—these now account for 83% of operations—and a concerted focus on repeat borrowers, who comprise 90% of total disbursements. The current PAR is primarily comprised of legacy non-performing loans concentrated in high-risk areas such as northern Mandalay, Sagaing, and parts of the west. Thanks to Alliance's carefully calibrated disbursement strategy, drawing on nearly four years of domestic turmoil, all newly-issued loans are performing well, underscoring its ability to manage risk effectively while maintaining portfolio growth.

Alliance has also taken proactive measures to support staff through the uncertainty. Unlike some industry peers, it has implemented salary increases to help its staff cope with inflation (ADB [15] estimates that the inflation rate for Myanmar in 2024 will be 20.7%). While the pay rise is insufficient to keep pace with the rapid increase in the cost of living, it provides meaningful relief. In addition, Alliance has facilitated relocation of staff from conflict-affected areas to safer cities like Mandalay, ensuring they can continue working in various departments or branches under safer conditions.

Beyond the immediate sociopolitical and macroeconomic challenges, Alliance is focused on growth and innovation. The company plans to expand its presence in southern Myanmar, with new branches set to open in Yangon, Dagon, and Ayeyarwady in 2024, and more locations planned for the following year. Additionally, from 2025 Alliance aims to digitize loan collections and disbursements. Currently, only just under one-quarter of transactions are digital, but the company has set an ambitious goal of increasing this to 90% by 2027, positioning itself for future growth in an increasingly digital economy.

Case Study: Kyaw Ko Latt, a Mandalay-based weaver

Kyaw first came to know Alliance in the mid-2010s when he launched a weaving business specializing in longyi [16] in Mandalay. Alliance flyers distributed in his neighbourhood caught his attention. In 2016, not long after launching, he operated with two weaving machines and a staff of two. At that time, Alliance approved a loan of Myanmar khat (MMK) 5 million (approximately USD 2,300), providing him the working capital to purchase additional machinery.

Kyaw's business has flourished. He now operates 40 weaving machines and employs 76 people, and his relationship with Alliance has deepened in the near-ten years since his first loan. He most recently borrowed to MMK 20 million (USD 9,500). Kyaw credits much of his success to Alliance's financial support, stressing that such growth would not have been possible without access to the initial working capital electricity, generators and cotton, driven by the twin scourges of political violence and the 2020-2023 Covid-19 pandemic. Impressively, the business has managed to achieve profit margins of roughly 20%, though they would be higher were he able to pass on inflation-stoked price-hikes to customers.

Case Study: Mandalay-based borrowing group

The case of four of six women borrowers, Alliance customers since 2019, is instructive. The bond between the neighbours is strong, each having taken out individual loans of MMK 700,000 (approximately USD 300) to grow their small enterprises.

Their occupations vary considerably: one woman is a seamstress, another a cook for a catering company, whilst a third runs her own small noodle shop. The fourth provides household laundry services in the neighbourhood. Alliance funding has enabled them to acquire key inputs such as detergent and noodles, and gradually expand their businesses. They contrast their experiences with Alliance from other MFIs, the former being faster and more responsive to their business requirements. Beyond finance, they cite financial education provided, especially the importance of savings, as important value addition by Alliance. By saving regularly, they have managed to boost their monthly reserves from MMK 6,000 (USD 2.5) to MMK 14,000 (USD 6.5), an important cushion in the volatile environment. The savings are also helpful in the context of significant increases in operating costs and general price hikes.

15 Asian Development Bank, September 2024. Source: https://www.adb.org/sites/default/files/publication/995536/southeast-asia-ado-september-2024.pdf

16 A longyi is a traditional garment commonly worn in Myanmar made from a sheet of fabric that is typically stitched into cylindrical form. It is wrapped around the waist and extends down to the feet, secured by folding the fabric over itself, without the need for a knot.

Alliance metrics	At Investment (Baseline)[17]	As at September 2024
Number of borrowers reached to date; (cumulative, including those without outstanding loans with the Company)	66,105	686,067
Number of active female borrowers[18]	42,753	92,896
Number of active rural borrowers[19]	24,856	74,091

Contributions to Sustainable Development Goals (SDGs)

[17] Source: Company Impact baseline report & Management report, data as at May 2017
[18] This refers to women borrowers who have outstanding loans with the Company as of Sep 2024
[19] This refers to rural borrowers who have outstanding loans with the Company as of Sep 2024

Lifetrack

Lifetrack: the investment at a glance	
Country / region	Philippines
Initial investment date	March 2019
Business model	Provider of radiology software enabling tele-radiology with less onerous hardware requirements.
Investment	USD 3.1 million
Structure	Preferred shares

Investment snapshot

In March 2019, AIIF invested in Lifetrack Medical Systems Pte Ltd. (Lifetrack), together with the multinational medical imaging equipment manufacturer, Philips. Lifetrack is a healthcare company based in Manila that creates software solutions for radiology through its proprietary product, LifeSysTM, a cloud-and-browser RIS/PACS platform using patented RadNav technologyTM. LifeSys enables radiologists to provide high-quality, on-site and off-site diagnostic services. PACS stands for Picture, Archiving and Communication System, the industry standard for medical imaging technology for the storage, retrieval, presentation and sharing of images produced by various pieces of medical hardware (X-ray machines, CT scanners, MRI and ultra-sound machines). RIS refers to Radiology Information System, a networked software solution for managing and storing medical imagery and data. It is particularly useful for tracking radiology imaging orders and billing information, and is often used in conjunction with PACS and other software to manage archives, records and data.

Lifetrack generates revenue through software subscription fees and teleradiology reading services. Subscription to LifeSysTM enables hospitals, clinics and teleradiology customers to improve utilization of radiologists, enable flexibility, and hence provide more prompt and affordable medical imaging services for patients. Subscription fees vary with licence types, with generally higher prices or clients in developed markets. In the Philippines, to support some of its software clients, the Company also provides teleradiology reading services which are centralised in Manila, providing remote diagnoses for healthcare providers in the Philippines, India and the United States. Readings are priced by qualification, modality and body area (i.e. degree of specialisation required).

2024 Update

In the wake of the pandemic, Lifetrack has continued to build on its momentum, successfully securing contracts with major clinics and hospital chains across the Philippines. The Medical City (TMC) Clinic, with its extensive network of 63 clinics, has become a partner of note. Whilst TMC's presence is strongest in Metro Manila, it also operates in several second- and third-tier cities, including Iloilo. TMC initially adopted Lifetrack's RIS/PACS platform in a select few Metro Manila clinics in 2022. Impressed by the platform's efficiency and user-friendly interface, TMC has since expanded its usage to nearly 70% of its clinics. Lifetrack expects that its solutions will be fully deployed in all TMC clinics by 2025, further solidifying the partnership.

At the same time, Lifetrack is leveraging advancements in satellite internet technology, such as Starlink, to extend its reach. The Impact Advisory Team is actively supporting these efforts, recognizing the potential of Lifetrack's RIS/PACS system in conjunction with Starlink and portable imaging devices such as X-ray cameras and ultrasound probes. This combination offers a robust solution for delivering diagnostic imaging services in certain challenging environments, including emergency disaster relief, pandemic response, and tuberculosis screening in remote or underserved areas. Going forward, Lifetrack is also exploring international expansion, building partnerships in South-East Asia and beyond. These efforts are aimed at replicating the success seen in the Philippines on a global scale, addressing the universal need for efficient and accessible radiology services.

Case Study: A Radiologist-Technician at The Medical City (TMC) Clinic, Iloilo Province

A discussion with a female radiologist-technician at The Medical City (TMC) Clinic in Iloilo, a second-tier city in the Philippines, provides a window into the impact of Lifetrack solutions at the granular level. Over the past six months, she has been using Lifetrack's RIS/PACS platform to manage and process diagnostic imaging for patients. It is noteworthy that most TMC patients are from so-called middle-income, or in Filipino terms, Class C backgrounds [20]. Many of them work in call centers in Iloilo.

Since adopting Lifetrack solutions, the clinic has also seen a marked improvement in patient care. Diagnostic imaging results are now delivered within nine hours—a significant reduction from the previous 3-5 working days. The rapid turnaround time for diagnostic results has not only improved the clinic's reputation but has also bolstered patient trust. The radiologist-technician we spoke to has observed that patients feel easier knowing results will be provided quickly, allowing for faster medical interventions when necessary. This level of service has led to greater patient satisfaction and loyalty, with many patients returning to the clinic for their diagnostic needs.

[20] Class C typically refers to middle-income groups in the Philippines, including individuals and families who are generally employed in stable jobs, such as those in call centres, and have access to basic necessities but may limited disposable income.

Case Study: A Radiologist at The Medical City (TMC) Clinics, Iloilo Province

A second radiologist-technician at TMC working in four of the group's clinics in the Philippines also provided interesting insights. For the past year, he has been using Lifetrack's RIS/PACS system to analyze X-ray imaging, which plays a key role in diagnosing a wide range of conditions. While some of the scans he reviews are for routine annual health check-ups, others are critical for detecting serious illnesses such as tuberculosis, bone fractures, the underlying causes of lower back pain, scoliosis, and pneumonia.

Having worked with other imaging systems in various hospitals and clinics in the past, he has found Lifetrack's RIS/PACS platform to be effective and user-friendly. The system's advanced features have enhanced his ability to deliver accurate and timely diagnoses, a key factor in improving patient outcomes. He also observed significant benefits for patients with the adoption of Lifetrack. Previously, incoming cases arriving after working hours would have to wait for the next radiologist's shift to begin, often delaying workflows by at least one day. However, with Lifetrack, he and his colleagues can access and read images from their homes after office hours, ensuring quicker receipt of results by patients. This capability not only expedites the diagnostic process but also provides peace of mind to patients who might otherwise have faced anxious waiting periods.

Lifetrack metrics	At investment [21]	Cumulative, to September 2024
Number of unique BoP patients reached in Philippines with Lifetrack's system [22]	81,240	814,410

Contributions to Sustainable Development Goals (SDGs)

[21] Cumulative from January 2017 to end December 2018. This value has been updated to be as at end December 2018 which was the quarter right before the investment was deployed. This was previously reflecting the figure at baseline, which was as of end June 2018. Both patients of services and software subscription are now accounted for, previously it was only the volume for software.

[22] At baseline, 47.6% of the number of cases from the Philippines were from cities that had an average household income of less than USD500. This % is reviewed and updated on an annual basis.

Halodoc

halodoc

Halodoc: the investment at a glance	
Country / region	Indonesia
Initial investment date	January 2019
Business model	Leading online healthcare services company in Indonesia, focusing on the patient journey, simplifying access to healthcare
Investment	USD 3.0 million
Structure	Preferred shares

Investment snapshot

Established in 2016, Halodoc is a leading healthcare technology company in Indonesia. In January 2019, AIIF invested USD 3 million in Halodoc. Following this investment, several strategic investors, including insurance companies Prudential and Allianz, Astra along with the Bill and Melinda Gates Foundation (BMGF), also invested in the company. Halodoc operates as a technology-enabled healthcare platform aimed at increasing access to affordable healthcare through various services, such as teleconsultations, medication deliveries, insurance, and healthcare plans. The platform seeks to address systemic inefficiencies by streamlining the entire healthcare process for patients, from initial engagement with providers to appointments, diagnosis, treatment, medication, and payment.

According to Jonathan Sudharta, the CEO and founder of Halodoc, "We exist as a technology-driven value partner to doctors, midwives, insurers, hospitals—in short, all stakeholders in the healthcare domain—to solve pain points and improve service offerings. Without efficiency and transparency, we cannot successfully extend coverage to all." This vision is reflected in the company's performance, with more than 20 million monthly active users as of August 2024. Halodoc's role in Indonesia's healthcare sector became even more prominent during the COVID-19 pandemic.

From a business model perspective, the need for efficiency and economies of scale in Indonesian healthcare has never been greater, particularly as the goal of Universal Healthcare Coverage (UHC) remains a challenge for the nation.

2024 Update

Halodoc has continue to focus on expanding access to healthcare for ordinary Indonesians and integrating cutting-edge technology into its solutions. Its home lab and vaccination services are cases in point. This home care service enables patients to book trained phlebotomists for visits to their homes, providing care that typically requires a trip to the clinic or hospital. Services include immunizations and vaccinations for both children and adults, as well as lab tests for cholesterol, uric acid, liver function, dengue fever, blood disorders, and kidney health, along with blood screenings and vitamin booster treatments. This approach is not only more convenient but is more personal. Patients using Halodoc's telemedicine services can now obtain referrals online, with phlebotomists sent directly to their homes. The streamlined process saves time as separate bookings are no longer required. Additionally, those seeking general health check-ups without telemedicine referrals can schedule phlebotomist appointments to run the necessary tests.

[23] A phlebotomist is a medical professional who is trained to perform blood draws on children and adults. They collect and prepare blood for testing so it can be analyzed in a medical laboratory.

Currently, home lab is available in key regions including the greater Jakarta area, Bandung, Semarang, Yogyakarta, Surabaya, and Denpasar. In the future, the company hopes to expand these services to lower tier cities. In early 2024, Halodoc decided to leverage the expertise of doctors on the platform to issue referrals specifically for these services. This cross-selling initiative has proven successful, with referrals issued for the home lab vertical increasing over thirteen-fold. Looking ahead, the company aims to continue expanding this service into additional regions, further enhancing its accessibility and reach in the Indonesian healthcare landscape.

At the same time, HaloDoc is harnessing the power of artificial intelligence (AI) with its AI Doctor Assistant, AIDA, a generative AI-powered tool that helps doctors to automate summaries of patient consultations. The solution facilitates the consultation process in several ways. First, it analyses conversations to identify relevant symptoms mentioned by patients, ensuring that no critical information is overlooked. Second, it generates concise summaries that capture the key points discussed during consultations, streamlining the documentation process for healthcare providers. Finally, AIDA offers suggestions of pertinent medical information, helping doctors to make more informed decisions.

More broadly, the integration of AI enables Halodoc to understand in-consultation dynamics better, ultimately facilitating better comprehension of patient needs. AIDA also enables the sharing of doctors' notes over multiple consultations, helping to ensure continuity of care and therefore better patient outcomes. Treatment plans can be elaborated more effectively and communicated among multiple providers where necessary.

Case Study: Ibu Herni, midwife in West Java

Ibu Herni, a midwife in West Java, began her career in 2016. However, with a growing family, she sought to balance her responsibilities at home with her professional aspirations. In 2019, she shifted her focus to online work and in 2021, joined the HaloDoc platform. Already a popular figure on TikTok and Instagram, HaloDoc extended her an invitation to join the network.

The decision has paid dividends for Ibu Herni. Her social media followers, who frequently sought her advice on the above platforms, have become paying patients through HaloDoc, allowing her to monetize the consultations. The platform enables her to reach patients in remote areas, significantly expanding her practice beyond her physical location. Beyond the financial benefits, Ibu Herni also appreciates the app's patient-focused AI features. Its detailed notetaking and reminder functions for follow-up visits, immunizations, and other critical care, have solidified her relationships with patients. As a result, the rate of repeat consultations through HaloDoc has increased compared to those of walk-in patients. Approximately 30% of her income now comes from such online consultations.

As a midwife, Ibu Herni provides advice about non-prescription medications where needed. However, in cases where a pregnancy presents complications—such as patients with diabetes or high blood pressure—she refers them to specialists. The specialists visit her clinic twice a week, ensuring patients receive the necessary care beyond her expertise.

Halodoc metrics	At investment [24]	Cumulative, to September 2024
Number of unique transacting users outside Java	42,674	3,949,380 [25]
% of areas/regions in which Halodoc is active that have low penetration of hospitals and/or doctors	≈ 50%	≈ 50% [26]
% of unique transacting users identified as BoP [27]	32%	69% [28]

Contributions to Sustainable Development Goals (SDGs)

[23] Source: Company Impact baseline report & Management report, data for quarter end December 2018
[24] Cumulative from January 2019 to end of stated period
[26] Percentage may change depending on regular review update
[27] Percentage to be reviewed based on research on a yearly basis
[28] This figure has been reviewed and revised on April 2020, and is based on the Company's teleconsultation distribution across Indonesia throughout FY2019.

Rynan

Rynan: the investment at a glance	
Country / region	Vietnam
Initial investment date	April 2017
Business model	Production of high-tech agriculture inputs and monitoring systems designed to increase yields of crops, boosting farmer incomes and reducing environmental degradation.
Investment	USD 3.0 million
Structure	Preferred shares

Investment snapshot

In April 2017, AIIF invested USD 3 million to support the expansion of Rynan Technologies Pte. Ltd. (Rynan), an agricultural technology company with central operations in one of Vietnam's poorest southern provinces, Tra Vinh.

Founded by Dr Nguyen Thanh My, the company has many products and service offerings which include: (i) agricultural inputs like polymer-coated controlled release fertilizers (CRFs) that optimise crop nutrition and require fewer applications than conventional fertilizers; (ii) IoT (internet of things)- based agri-monitoring devices for farmers; (iii) "smart farming" solutions for aquaculture; and (iv) printing and packaging solutions. These solutions improve the efficiency of farming and introduce automation where possible, while also developing food traceability capabilities. Dr Nguyen's ambition is to increase the efficiency of farming, improve the quality and safety of Vietnamese food, and modernise agricultural practices to reduce waste and environmental damage. This is essential for two reasons: first, to ramp up food production in Vietnam, which needs to keep pace with rapid population growth; and second, in order for Vietnam to meet its Nationally Determined Contributions (NDCs) to global climate-change mitigation targets under the Paris Climate Agreement.[29]

2024 Update

Since late 2023, the company's smart agriculture systems designed to equip farmers with data-driven information, have gained international traction. Sales to Japan—a new market for Rynan as of 2023— have also gained momentum, reaching 52 installed insect monitoring systems and four alternate wet and dry (AWD+) rice-growing systems across the country as at September 2024. This was made possible through Rynan's strategic partnership with Sojitz, a Japanese conglomerate. Two AWD+ systems and one insect monitoring system have meanwhile been installed in Thailand, with additional installations expected before end-2024.

Tomgoxy, Rynan's sustainable shrimp farm design solution has also gained the interest of Indonesia's Ministry of Marine Affairs and Fisheries (MMAF). Under the Improvement for Shrimp Aquaculture (IISA) project, in collaboration with the Asian Development Bank (ADB), Rynan is working to introduce its strategy for sustainable shrimp aquaculture. This entails improving introducing traceability, bringing transparency in the farming process, and improving productivity, quality, profitability, and ultimately, the environmental sustainability of smallholder shrimp farming in seven provinces.[30] As one of the world's top five shrimp producers. Indonesia's share of world production was

[29] The Paris Climate Agreement enshrined each signatory's NDCs into the United Nations Framework Convention on Climate Change (UNFCCC)
[30] Source: Asian Development Bank, 2022

2.3% in 2023.[31] While the sector has high potential, growth is limited by smallholder farmers' lack of scale, limited access to finance, unsustainable farming infrastructure and practices, and low bargaining power, along with increasing quality and traceability demands from developed markets. Starting with a pilot of 30 hectares in South Sulawesi, a potential collaboration is being explored for Rynan to help establish a sustainable shrimp farm using Tomgoxy technology and design. The objective is to increase yields with a reduced carbon footprint. Rynan is also expected to train the farm operators both in Vietnam, as well as onsite in Indonesia. If successful, the project holds potential for advancing sustainable shrimp infrastructure and strengthening the supply chain in Indonesia.

In early 2024, Rynan entered a research and development partnership with Van Oord, a Dutch marine contractor known for its work on sustainability and coastal protection. Van Oord has been focusing on mangrove restoration initiatives to support clients, notably in the Middle East. Mangrove restoration has always been an important component of Rynan's sustainable shrimp farm design, as plays a role in the water recycling process. The project will focus on developing a system to store and process wastewater within confined mangrove areas, facilitating the removal of effluents, boosting carbon sequestration and reducing emissions compared to traditional water treatment methods. If proven successful, Rynan will be able to integrate this method into its Tomgoxy farm design and work in partnership with Van Oord to enter other international markets.

As at end September 2024, Rynan has successfully installed over 80 proprietary insect monitoring systems across 16 provinces in Vietnam. Rynan's Vietnam Digital Agriculture Platform Ecosystem (VPDAPEs) Smart Agri-Monitoring system—a comprehensive solution including water-monitoring, insect-tracking, crop data—has been successfully piloted in Dong Thap province, whose provincial government has been working closely with the company for several years. Its goal is to empower local authorities to manage agricultural production more effectively while supporting farmers in improving cultivation practices to achieve higher crop yields and quality. The next step is to promote adoption of the system in other Vietnamese provinces, a move Rynan has been actively exploring with various local authorities.

Through the Rynan Mekong App, Rynan's open-source agriculture platform that provides real-time data collected from Rynan 'internet of things (IoT) devices, (such as buouys measuring salinity in a river, for example), local authorities and farmers, gain access to the latest agriculture information necessary for optimizing on-farm practices. Monthly app usage typically peaks from December to March, aligning with the rice harvest season, while it dips from August to November during the flood season (reference Diagram 1 below).

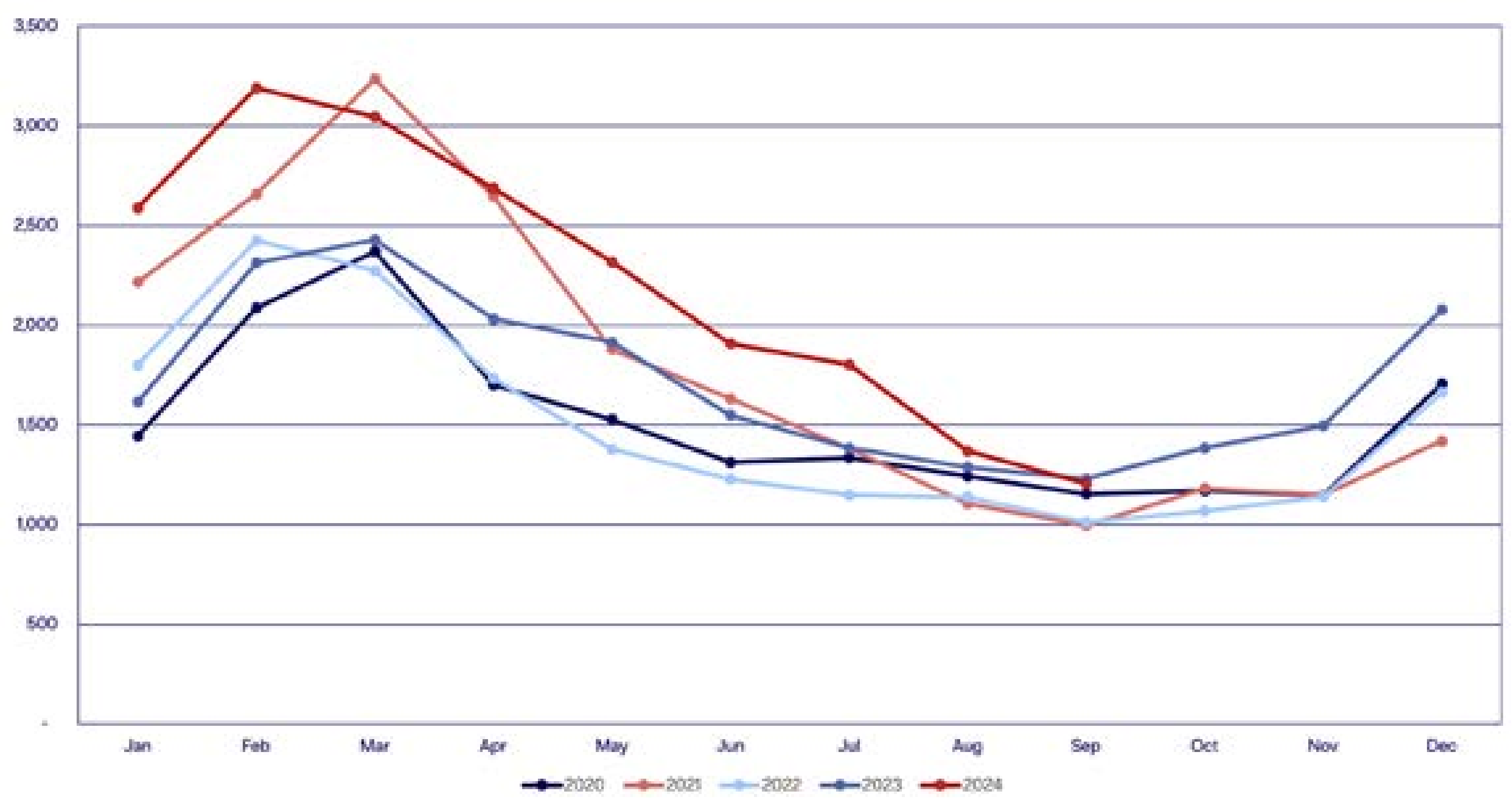


Diagram 1: Monthly Active Users on Mekong App

[31] JALA Tech, June 2024

Despite the increase in installations of various IoT agriculture systems across Vietnam, the Rynan Mekong App has maintained an average of 1,500 to 1,800 monthly active users annually, with no significant evidence of user growth or increased engagement. Although the Mekong App is freely accessible to farmers, there appears to be a lack in awareness and education efforts, as managed by local authorities. However, as of September 2024, monthly active users have shown an increase year-to-date, and we will continue monitoring to assess if this trend holds throughout the year.

Rynan has developed its insect monitoring map for rice fields in the Mekong Delta, designed to enhance the surveillance of natural insect predators, allowing for a substantial reduction in pesticide use and more targeted use when and where necessary. The tool is now utilized by Vietnam's Ministry of Agriculture and several pesticide and fertilizer companies. In 2024, research and development has focused on new data-driven products to monitor critical soil parameters, including temperature, moisture, and nutrient levels (notably nitrogen, phosphorus, and potassium).
In September 2024, we completed a small sale of shares and will continue to explore opportunities to divest our remaining stake.

Rynan metrics	Quarter ended 31 March 2018 (Start of SRF sales)	Quarter ended September 2024
Farmers using SRF[32]	49	6,440
Provinces where SRF is in use	9	61

	Quarter ended September 2024
Average monthly active users on the Mekong App[33]	1,300

Contributions to Sustainable Development Goals (SDGs)

[32] SRF refers to Smart Release Fertilizers. Figures refer to the stated reporting period.

[33] The Company has developed an app that is linked to its salinity monitoring network, water monitoring devices, insect monitoring devices and other agriculture-related systems which farmers in the Mekong Delta region can use to obtain relevant information to optimize the growth of their crops. The usage of the app would be dependent on the agriculture cultivation seasons.

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