Asia Impact Investment Fund I L.P. Development Impact Report 2023

November 2023

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Forewords

2023 has been a consequential year both for the management of the Asia Impact Investment Funds I and II and the fund portfolios themselves. Having pioneered the creation of a bespoke impact investment product for ultra-high and high net-worth clients nearly ten years earlier, Credit Suisse's private banking arm spun out the impact advisory team into an independent entity, Double Delta. The Double Delta team has harnessed the institutional underpinnings and strong internal controls developed within Credit Suisse to create a family of funds uniquely providing risk capital to lower-middle market companies in South-East Asia and China. As a stand-alone entity, Double Delta is now an important actor in the region's impact landscape, much of which remains focused either on very small transactions and incubation/acceleration-stage interventions, or much larger deals.

Though the slowdown in the Chinese economy and reverberations across Asia and the world have made for a challenging investment climate in 2023, the Double Delta team has steadfastly concentrated on adding value to portfolio companies in numerous ways, from building partnerships and procuring relevant sectoral expertise to assist in sourcing complementary debt and other financing. Given that most investees are primarily orientated towards domestic demand and un-/underserved, or inefficient internal markets, Double Delta has been mobilising the team's relationships and decades of impact investment, development finance and SME development expertise to help them navigate the challenges and opportunities they face. It is my strong conviction that our determination to build up business models that facilitate inclusion and full economic participation for all continues to resonate with investors and portfolio companies alike.

With our UOBVM partners, we are working to maximise the value from the AIIF I as the pace of divestment accelerates, yet remaining mindful that we position investees to build on the impact-orientated theses we participated in crafting. AIIF II, meanwhile, continues to take risk-mitigated stakes in companies that are forging opportunities for the many and helping the less fortunate overcome perennial obstacles to inclusion. As we continue to grow our suite of funds in future, we honour the foresight and risks taken by the Credit Suisse (now UBS) private bank in launching the AIIF initiative, and redouble our commitment to the best possible stewardship of these critical vehicles.

Joost Bilkes
Managing Partner

Double Delta

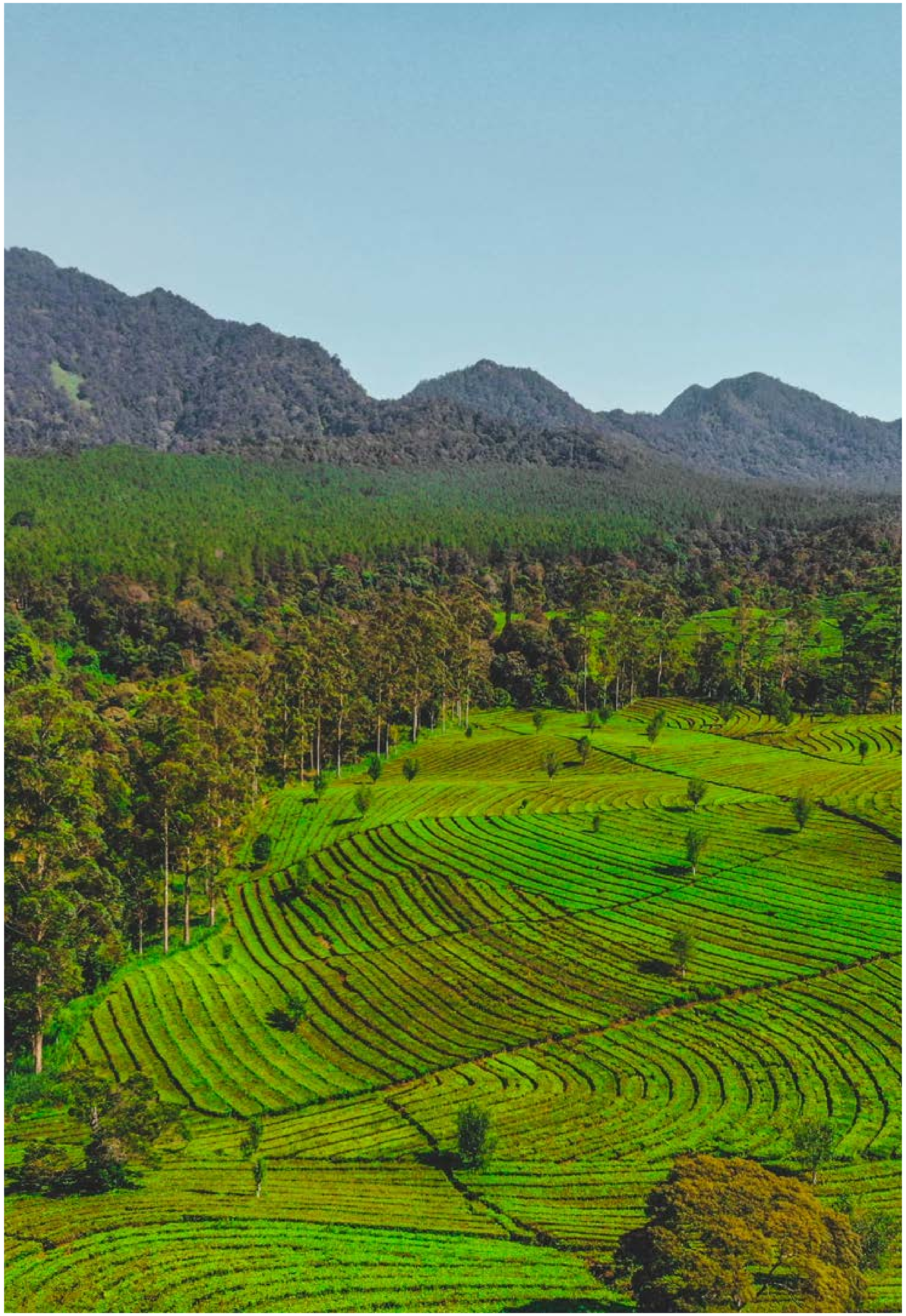
I am delighted to introduce the 2023 Development Impact Report for the Asia Impact Investment Fund I L.P. As the analysis suggests, we remain cautiously optimistic about the outlook of the ASEAN-China region. The Chinese economy is beginning to show signs of recovery, with economic data in the third quarter of 2023 indicating broad-based upticks in consumption, industrial activity and employment creation. This should position China to achieve the annual average real GDP growth target of 5%. Meanwhile, the ASEAN economies are bouncing back from the pandemic at a faster pace than the global average. This said, the ongoing crisis in China's property sector, and the disappearance of 'easy money' is forcing start-ups and early-stage companies to focus on profitability, and is producing headwinds that continue to have an impact on the fundraising environment and stock market performance.

The fact that our investment portfolios are focused on sectors that benefit China's base of the pyramid population, and are strongly aligned with government policy, notably the Common Prosperity Goal, has helped to insulate performance, to a greater or lesser extent, from less favourable macroeconomic trends. Agriculture continues to be an area that the government pays attention on as they look towards more sustainable growth in the sector with efficiency improvement and environmental considerations. In Indonesia and Philippines, millions struggle for access to quality primary care, let alone specialist care. Similarly, the vibrance of the small and medium-sized enterprise (SME) sector in urban and rural settings alike has continued to drive entrepreneurship and small-scale lending, whether for commerce or agriculture.

Our steadfast focus on sponsor quality, alignment of interests with co-investors and deep engagement with investee companies is paying dividends in terms of their ability to weather the inevitable turbulence generated by geopolitical tensions within and beyond the region. We have remained attentive to the capital needs of the portfolio to ensure that it is as well-positioned as possible for continued steady growth. We also remain cognisant that, as AIIF I concentrates on realising value and divestment, it is the quality of each company—financial and managerial—that will attract suitable purchasers or enable successful listings.

Seah Kian Wee
Chief Executive Officer

UOB Venture Management



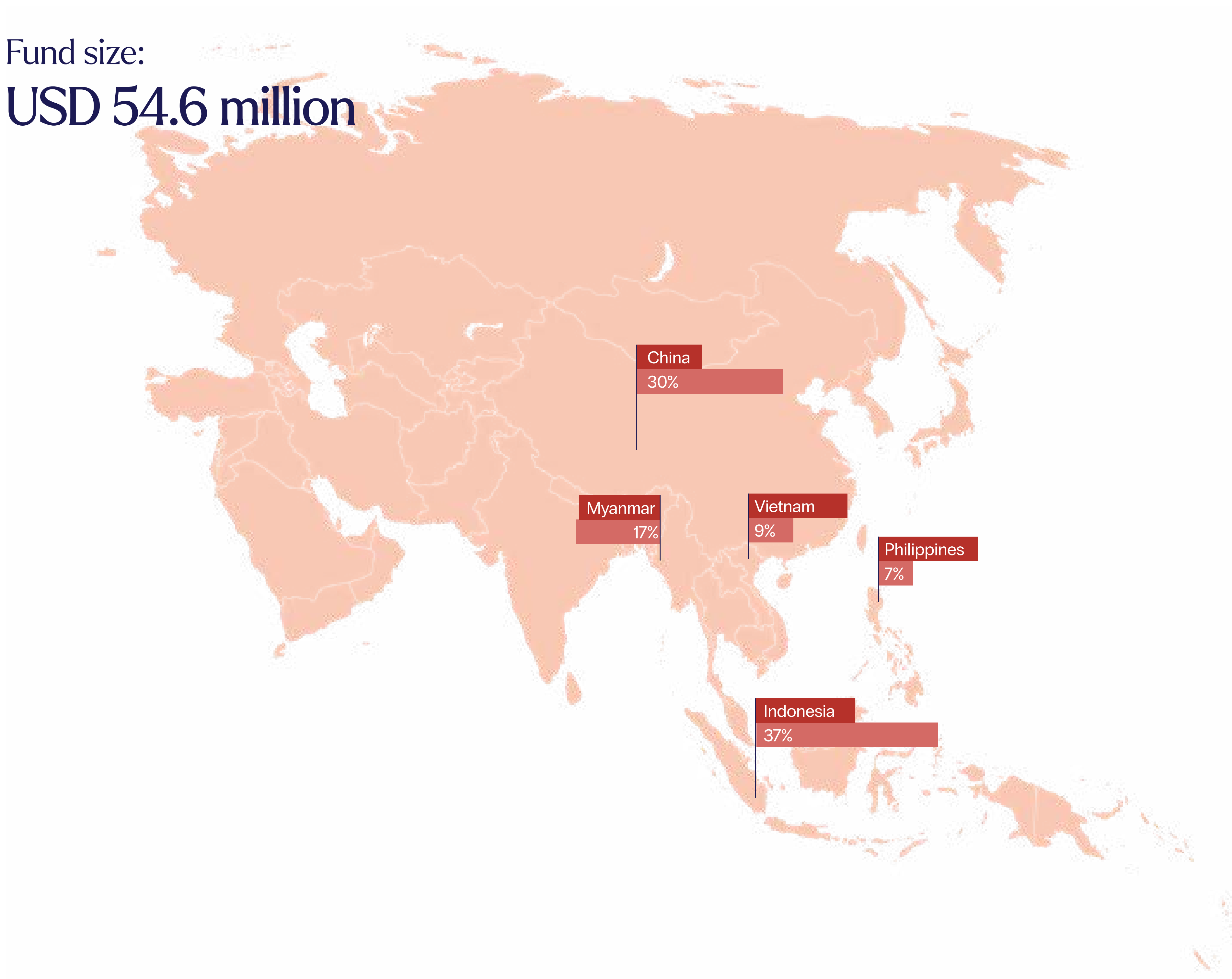
Contents

[1] This information is solely for illustrative purposes only and it does not constitute an offer or invitation, nor does it contain any advice or recommendation, to buy or sell any security or to otherwise enter into any type of financial transaction.

Asia Impact Investment Fund I at a glance

Fund size:

USD 54.6 million



Investments to date by country and sector

Indonesia
37%

Education
Ruangguru

Access to Finance
Amartha

Healthcare
HaloDoc

Agriculture
TaniHub

China
30%

Healthcare
Tian Tian Ai

Agriculture
Lanmei
Gladsome

Myanmar
17%

Access to Finance
Alliance

Vietnam
9%

Agriculture
Rynan

Logistics/ Distribution
OkieLa

Philippines
7%

Healthcare
Lifetrack

As at 31 October 2023

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.

Since investment by AIIF,

Over 33,200,000 low-income individuals have been reached[1]

Sector Highlights

Agriculture

98,000

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) | TaniHub

Healthcare

3,261,000

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

Relevant AIIF Companies
TTA | Halodoc | Lifetrack

Access to Finance

1,762,000

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

Relevant AIIF Companies
Alliance | Amartha

Education

26,212,000

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

Relevant AIIF Company
Ruangguru

Contributions to Sustainable Development Goals (SDGs)

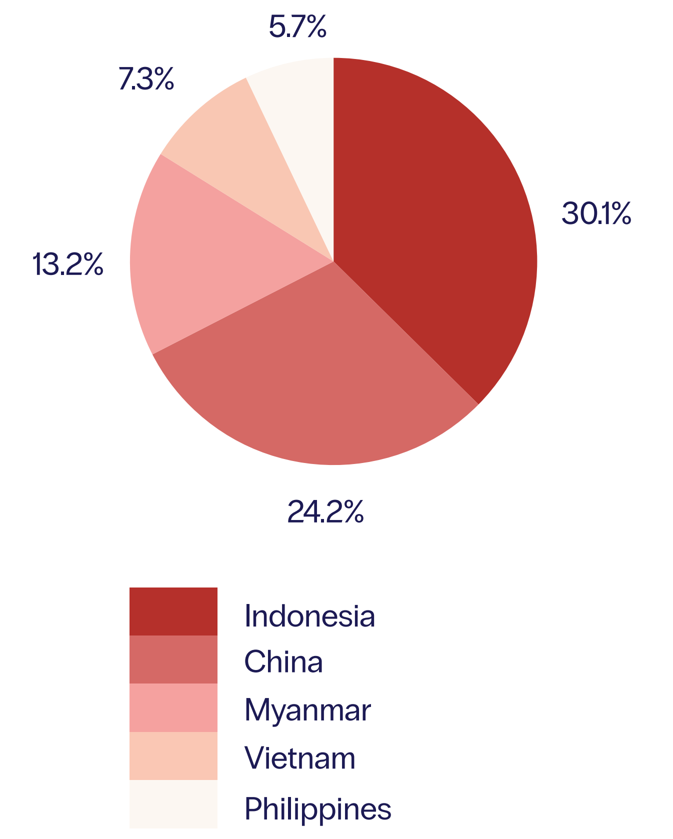
[1] As at end September 2023. This figure is the increase between either the investment date or date of baseline, and the quarter ending September 2023 (with the exception of Tian Tian Ai (Qingdao) Bio Scientific Co. Ltd. and Vietco Internet Pte. Ltd.). Sector-specific figures are calculated on the same basis.

Source: UOB Venture Management and Double Delta.

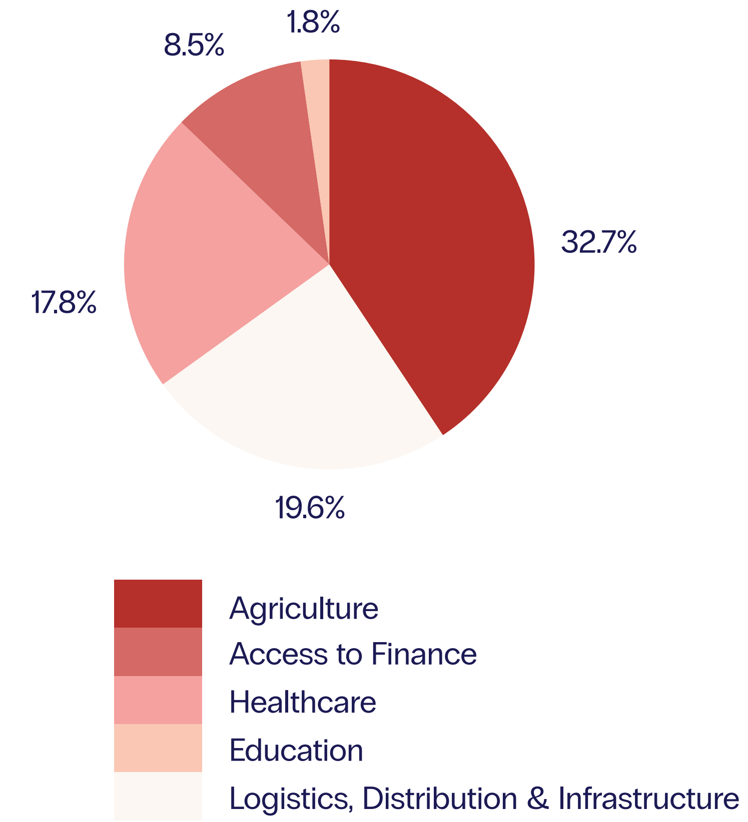
Portfolio Breakdown

	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 2023

Source: UOB Venture Management and Double Delta, as at October 2023.
Asset allocation may change from time to time without notice.

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, providing education content and services that span across the learning spectrum ranging from K12 to adult learning. Starting from Indonesia, its headquarters and where it has the widest array of products and services, Ruangguru leverages technology to democratize the access for the poor to quality education content, improving education outcomes, and lift the employability of youths and working adults through lifelong learning programs.

Ruangguru's products have been accessed by more than 40 million students and learners. The company has a strong focus on high quality content and has continuously upgraded its product offerings to incorporate adaptive learning for better effectiveness. The company uses technology to overcome the geographical challenges of delivering good quality primary and secondary educational content in an archipelago of 18,000 islands spanning over 3,000 km. With a population of over 275 million and the world's fourth-largest education system, Ruangguru is improving Indonesia's educational outcomes and, importantly, democratising access for the poor to educational content and instruction of a high standard. More than 500,000 teachers have accessed the platform, which provides quality learning materials as well as teacher training modules.

Ruangguru's strategic shift to offline education amidst an ever-changing landscape

Ruangguru's mission at inception was bold: to leverage technology in order to transform education delivery by making quality learning accessible to students of any background, anytime and anywhere. The profound impact of the COVID-19 pandemic on education technology (ed-tech) worldwide, which affected 1.7 billion students in 191 countries according to Financial Times, represented an inflection point for Ruangguru. In response to nationwide school closures in Indonesia in March 2020, the company initiated the Ruangguru Online School. This free online school ran for four hours on weekdays catering to students from Grade 1-12. Notably, the platform also introduced live quiz sessions, further enhancing the learning experience. The immediate and overwhelming response from the student (and parent) population, accessed by over 10 million students, underscored Ruangguru's relevance in Indonesia. Indeed, the app became the most downloaded nationwide within days of launch, even surpassing some of the most popular platforms such as WhatsApp and TikTok.

Whilst the pandemic further solidified Ruangguru's reputation nationwide, the post-pandemic landscape has presented new dynamics to navigate. With schools gradually reopening and in-person learning phased back in since August 2021, the pandemic was formally declared at an end by the President, Joko Widodo, in June 2023, enabling the full resumption of face-to-face learning. For Ruangguru, this has meant a focus on its Brain Academy offering. The Brain Academy combines physical learning centers with digital learning capabilities and soft-skills classes. Students are able to choose between offline and online learning formats, with the online platform enabling them to connect with teachers through chats and video calls.

An unexpected development, though perhaps understandable following the months-long isolation required by intermittent lockdowns that lasted more than 18 months, is that attending offline learning centres is proving more popular than online participation, even though it is much more costly. When asked the reason, students respond that in-person learning outcomes, and the overall experience, is more rewarding than online. This dynamic also speaks to the likelihood that technology-enabled delivery models such as Ruangguru's, will likely thrive in conjunction with offline solutions indefinitely, rather than entirely replace them. This in no way undermines the original impact thesis of the company nor the Fund investing in it, rather, it should be viewed as a choice of modality. In terms of affordability, offline Brain Academy centers remain cost-competitive. Though it is not possible to establish Brain Academies throughout the archipelago for obvious economic/logistical reasons, the stable of physical locations is being increased where practical, and the online offering is available to those who cannot reach them.

Outlook for 2024

Ruangguru will focus its commercial strategy on both online and offline learning. Having launched operations in Vietnam two years ago, Ruangguru is also looking to accelerate expansion there, and will focus on strategies to attract learners to online education rather than the traditional offline model, which is very much an *idee fixe* in the minds of Vietnamese parents.

Ruangguru Academy Scholarship Recipient Profile: Shabila, Bandung, West Java, Indonesia

From Bandung in West Java, some four hours from Jakarta, Shabila's life took an unexpected turn in 2020 when she was diagnosed with spinal tuberculosis. This devastating illness left her bedridden and unable to walk, forcing her to drop out of school. Despite the drastic life change, Shabila was determined to complete a secondary education certificate of some kind, and so pursued the so-called 'Paket C programme', an informal national education initiative which focuses on knowledge mastery and practical skills development. A vocational qualification, broadly speaking, the government-supported Packet C certificate at least positioned Shabila to remain on the education ladder.

She was able to reinvigorate her academic pursuits through selection for a Ruangguru Academy Scholarship. The scholarship provided access to the breadth of learning Shabila otherwise would have been able to enjoy had she not fallen ill, and enabled her to effectively 'make up' for the traditional high school qualification she would have graduated with. Happily, on successful completion of the Packet C certificate, she was accepted at her first-choice tertiary institution, Bandung Islamic University, where she enrolled as an undergraduate.

Ruangguru metrics	At investment[1]	As at September 2023
Number of registered student users (cumulative)	2.32 million	35.88 million
Number of low-income students reached (cumulative)	1.98 million[2]	28.20 million[3]

Contributions to Sustainable Development Goals (SDGs)

[1] Source: Company management report, data as at June 2017.
[2] 85.2% of Indonesians live on $8.20 or less a day (2011 PPP based on 2014 survey year, WorldBank ProvCalNet).
[3] 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

In late 2019, AIIF invested USD 3.5 million to PT Amartha Nusantara Raya[1] (Amartha), a fintech micro-lender targeting the under-served rural market in Indonesia. Since 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 which grew exponentially. 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 at end-September 2023, Amartha had disbursed loans to almost 2 million borrowers across Java, Sumatra and Sulawesi. Its network totalled more than 800 branches and the company expected loan disbursements for the year to top USD 500 million. Amartha has also been profitable since the 2nd half of 2021 and has seen improving profit margins quarter-on-quarter.

Amartha positions itself for further strong expansion

Amartha has seen exponential growth as Indonesia has emerged from the pandemic, increasing its borrower base from about 1 million in the first quarter of 2022 to nearly 2 million by the end of the third quarter of 2023. Quarterly loan disbursements over the same period doubled from roughly USD 50 million to over USD 100 million. The buoyant demand for small-scale finance speaks both to the buoyancy of the country's rural economy, and the magnitude of underserved borrowers, especially women. Lessons learned from the pandemic coupled with a sustained focus on loan quality have kept management's attention trained on portfolio risk management in two particular ways:

1. **Steadfast focus on credit quality**

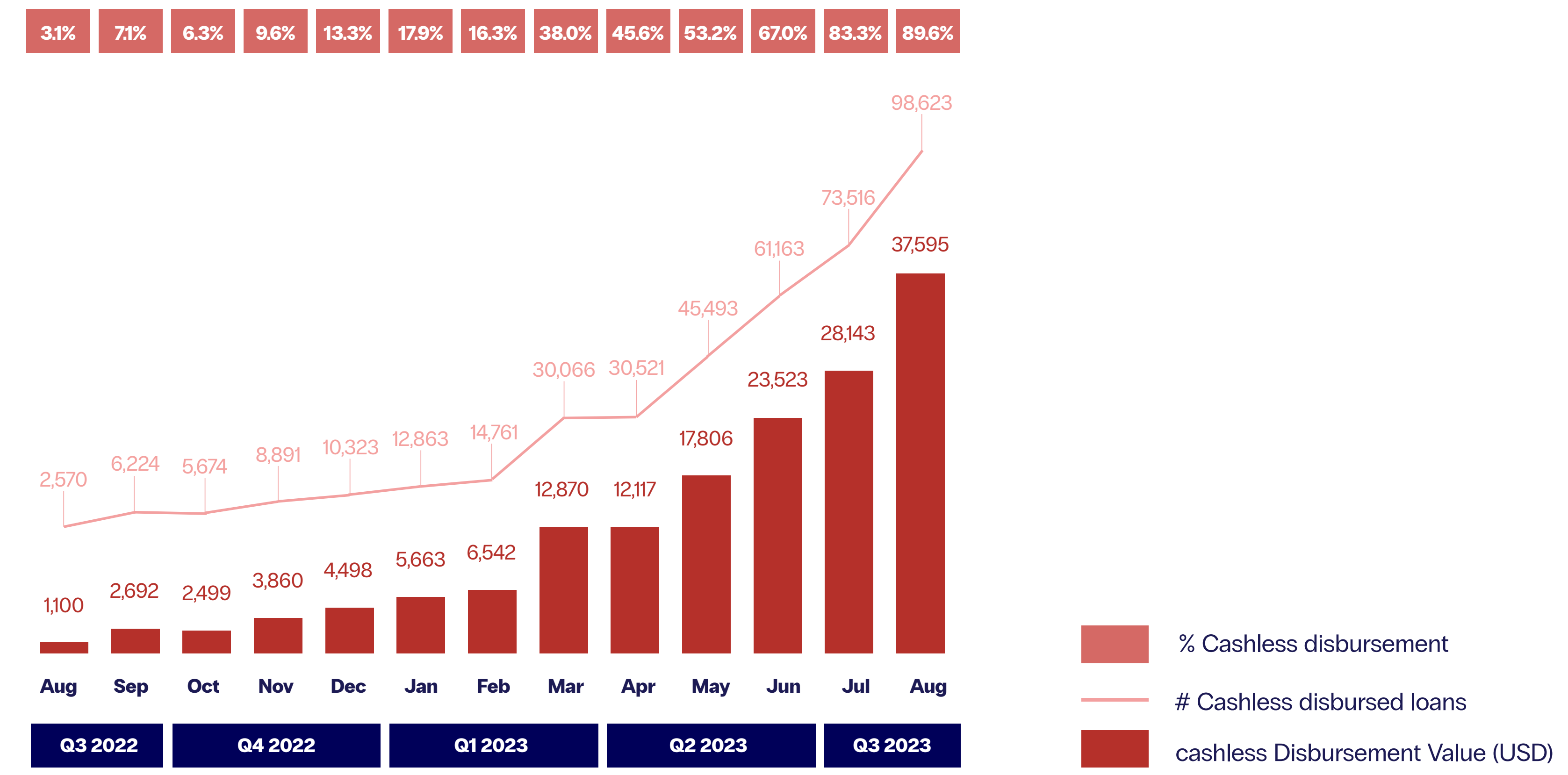
   While the Company has been experiencing high growth with loan disbursement doubling in less than two years, it is cognisant of the fact that credit quality will remain a key focus if it wants to grow sustainably.

   Hence risk management has always been high on its priority list, with the implementation of measures and structure to effectively control risks within acceptable limits. Staff in its large network of 842 operation points across Java, Sumatra, Sulawesi and Nusa Tenggara undergo extensive training, both online and on-the-job, to ensure they are well equipped to source loans responsibly and service their clients. Amartha revisited its remuneration arrangements for its loan officers, also known as business partners, linking part of their earnings with disbursement quality and incentivizing the identification of more credit worthy clients. Its internal audit system serves as another layer of defence. All these measures have resulted in the Company keeing its portfolio-at-risk (>90 days) relatively low at below 2.5% for all of 2023 (to date).

[1] Amartha has undergone a corporate restructuring, following which AIIF's stake in the company is in PT Amartha Nusantara Raya (the holding company for PT Amartha Mikro Fintek).
[2] Defined as 90 days or fewer past due (DPD).

Monthly Cashless Disbursement (USD thousand)

~90% Cashless Disbursement in Aug 2023



2. **Transitioning to cashless loan disbursements**

   Because micro-loan disbursement and collection is such a cash-intensive, cash-focused exercise, Amartha has worked to minimise physical cash in the system in order to reduce leakages, whether from business partner malfeasance or robbery. The move to cashless disbursements requires Amartha borrowers to have bank accounts, though many either do not have accounts, or have only household accounts in the names of other members, usually their husbands. Business partners have therefore actively educated and assisted borrowers in opening personal accounts. Borrowers generally opt to open accounts with Bank Rakyat Indonesia (BRI), which has an extensive network of 7,000 branches and close to 14,000 automated teller machines (ATMs) across the archipelago. In villages without conveniently located BRI branches, Amartha has used other banks, including Bank Negara Indonesia (BNI) or Bank Perkreditan Rakyat (BPR).

   Amartha's dedication to this initiative paid off, with over 90% of its total loan portfolio now being disbursed in a cashless manner by September 2023. This achievement highlights the company's ability to implement innovative solutions to manage risks and enhance operational efficiency.

In order to render still more of the lending/collection cycle cashless, Amartha is also enhancing its network of so-called Amartha One Agents. This is because many borrowers do not have, and are unlikely to acquire (at least in the immediate term) a smart phone, which is necessary for transfers.

The Amartha One initiative: transitioning borrowers to agents

Amartha launched the Amartha One programme in mid-2022 to facilitate access to services and build income-earning opportunities with/through successful borrowers, by transforming them into sales agents. By September 2023, there were more than 25,000 active Amartha One agents in its network, with significant further growth anticipated by year-end.

Agents operate branded Amartha One stations, or payment points where community members can purchase mobile phone credits and/or make social security or electricity payments. Amartha selects agents from borrowers with compelling profiles. They must have been through several loan cycles and have a physical premises such as a warung, or small 'mom-and-pop' shop (slightly larger than a kiosk). The Amartha One agents currently tend to specialise in one or two of the service offerings above.

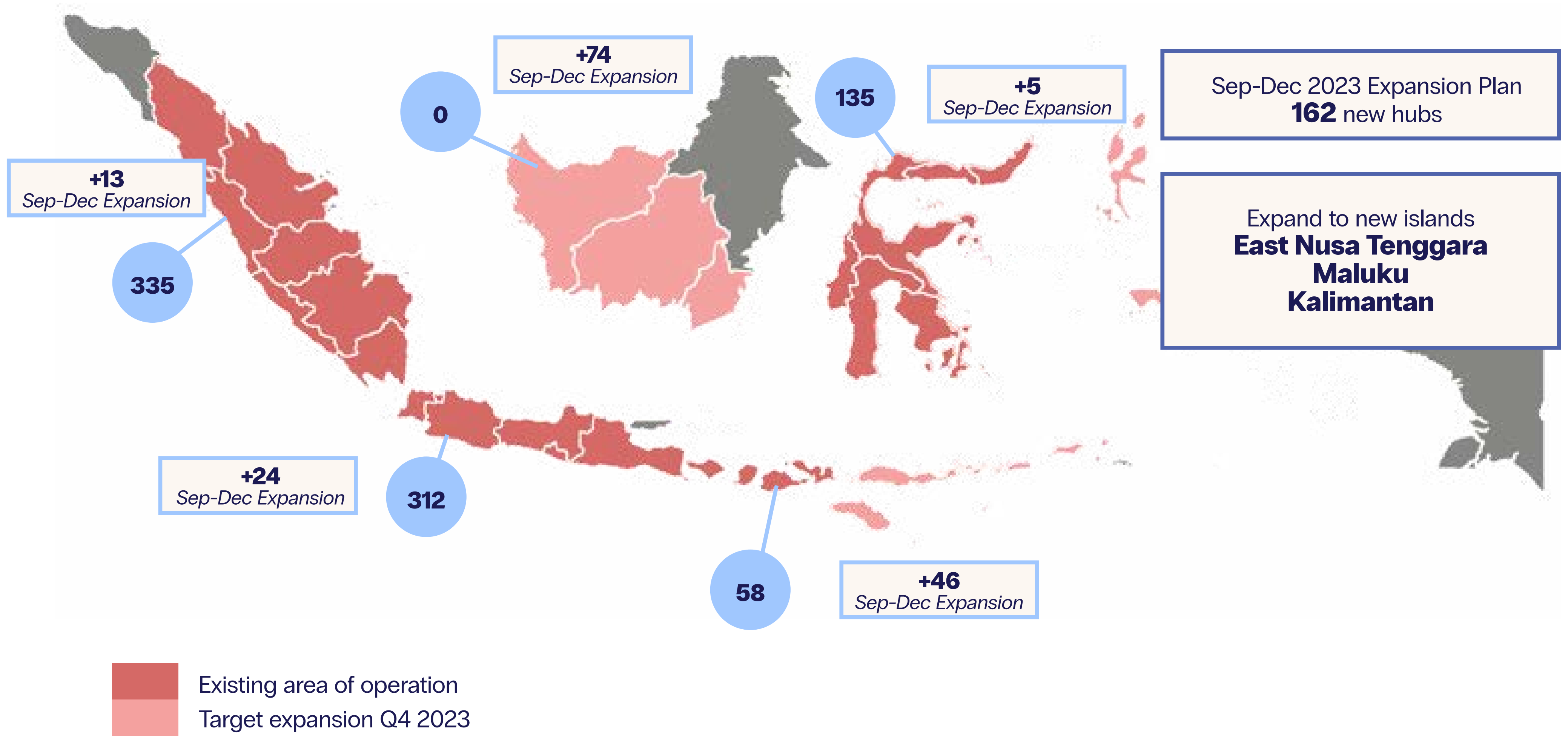
Amartha's vision for the agent network is that the Amartha One stations essentially become proxies for rural bank branches. Establishing such an extensive physical network would traditionally require the opening of hundreds of physical branches. The Amartha One concept averts this punitive outlay.

Through Amartha One, agents will eventually be able to disburse cash, accept deposits, handle remittances and, possibly, even offer other financial services like insurance. If Amartha is able to have a substantial number of agents trained and active, it will have created a semi-virtual banking network that spans its geographical footprint. As digital banking and e-financial services grow in Indonesia, Amartha One agents will be positioned with trust established and relationships in place, as community nodal points for distribution and collection. The focus of field agents, or as Amartha calls them, business partners, will then shift from disbursement and collection of funds to building and deepening cohesion within borrower groups. It should be stressed, however, that the digitalisation of rural finance is incipient in the country. Amartha research indicates that of the 65% of their borrowers who use the internet, only 22% use it for productive (i.e., business-related) activities or financial transactions.

Many women also self-stigmatise, believing that commercial and financial applications are not intended for them. In other cases, the obstacle is unfamiliarity and fear that funds may disappear at the wrong press of a button.

However slowly digitalisation may progress, Amartha is realising that systematic education and training of borrowers and Amartha One agents, along with on-going investment in training of its staff are essential to its success. In partnership with the Mastercard Foundation and the University of India, Amartha is astutely developing a digital training curriculum in video format for distribution to field agents through WhatsApp. The nearly 100 video segments will be used by field agents to educate borrowers and ensure that illiterate borrowers, who account for roughly 1-2% of the portfolio, are not excluded.

Operational hubs (840 active, 149 opened Jan-Aug '23, additional 162 in Sep-Dec '23[1]



Meanwhile, Amartha is continuing to target under-/un-served communities through geographical expansion. Following extensive research on lender and borrower landscape, Amartha is geared up to launch operations in Kalimantan. Thereafter, the company is planning to tackle the even more challenging eastern provinces of East Nusa Tenggara and Maluku islands. Cultural factors, connectivity, reliability of energy, remoteness and borrower sophistication are just some of the many challenges the eastward expansion will encounter, but the company remains committed to reaching the millions of women beyond Java, Sumatra and Sulawesi that remain woefully under-served.

[1] This is only a target expansion plan which may or may not materialize.

Amartha metrics	At investment[1]	As at 30 September 2023[2]
Cumulative number of borrowers[3]	307,772	1,951,094
Average disbursed amount per loan (USD)	254.0	380.0
Number of active borrower groups	15,590	100,363

Contributions to Sustainable Development Goals (SDGs)

[1] Source: Company Management report, data as at 30 September 2019
[2] Based on management information
[3] 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 Technology Co. Ltd. (Lanmei), the leading blueberry seedling nursery 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).

Navigating Lanmei's Entry into China's Anthocyanin Market

In May 2023 Lanmei reached an important milestone by securing approval from China's National Health Commission to label the anthocyanin that it extracts from blueberries as a 'novel food ingredient'. This categorisation is expected to boost the commercial distribution of its anthocyanin extract as food additives. As highlighted in previous reports, for some time now Lanmei has pivoted away from processed blueberry products such as cakes, drinks and snacks, focusing its future commercial strategy on the health and wellness market; specifically, the health benefits anthocyanin is reputed to bring in areas such as eyesight, cognitive function, cardiovascular health and quality of sleep, among others. The company has continued to build partnerships with universities and conduct in-house research, examining key properties of anthocyanin including temperature stability, shelf life, additional medicinal properties, and possible positive effects on hypertension. Research and development (R&D) will remain central to the company's strategy going forward, as it plans to establish an R&D facility in Shanghai in the next five years.

Ensuring supply and building partnerships are key to future growth

In order to penetrate and gain traction in the anthocyanin market in China, increasing blueberry production (upstream) and building partnerships with large industrial players are key. As such, the company has remained focused on increasing cultivation of its proprietary Lanmei No. 1 variety of blueberry, (particularly rich in anthocyanin), by leveraging government support to expand its footprint into regions whose farmers could benefit enormously from the associated income increases. In regions currently lacking large-scale blueberry production, especially those where purchasing power may be lower and market linkages are less developed, farmers are increasingly inclined to sell berries at processed fruit prices, a fraction, typically just one-tenth, of fresh berry prices. One of the challenges for Lanmei in building long-term supplier relationships with new farmers is to see them through the first three years after planting, when one year's fruit must be foregone and left untouched be reabsorbed into the bush and infuse it with requisite nutrition, and the subsequent year output remains low. Thereafter, the combination of reliable offtake from Lanmei and higher prices is what solidifies long-term relationships with them. Meanwhile, downstream Lanmei has been exploring possible relationships with nutrition companies to incorporate Lanmei No.1 anthocyanin in various health food offerings.

Demand for seedlings underpins Lanmei's impact in rural areas

From a revenue perspective, sale of seedlings continues to drive the business. The company has been very much in sync with government policy in this regard, specifically the national rural revitalisation strategy. The strategy calls for the recalibration and revitalisation, where possible, of agriculture led by provincial ministries. Since AIIF invested in 2017, as the

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 within the blueberry sector via its proprietary hybrid breed, "Lanmei No.1". As an alternative to 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.

Working to Introduce Blueberry Cultivation in the Toughest Terrain: The Case of Xinjiang

Given that blueberry bushes tend to thrive in hilly, mountainous, even craggy terrain, production in China has been largely concentrated in southwestern and northeastern provinces. In stark contrast, landlocked Xinjiang, China's westernmost province, has far from ideal conditions for blueberry cultivation: temperatures can reach an extreme 50 degrees Celsius above and below freezing, or more.

Past attempts to start production in Xinjiang have struggled. One private enterprise took a hothouse production approach, erecting greenhouses over a 330 hectare area, but high humidity in the region left berries vulnerable to disease, notably Botrytis blight, a grey mould.

Notwithstanding the daunting challenges, Lanmei accepted the opportunity to introduce production over a 67-hectare area, and so far, there are encouraging signs. First, the Lanmei No. 1 variety thrives in natural, open environments, making greenhouse infrastructure redundant and saving cost for farmers. Second, the Lanmei No. 1 bush is produced in an intrinsically organic manner—it cannot withstand herbicides, pesticides and insecticides. Third, with production for processing rather than direct sales of fresh fruit, shelf-life pressures are not as great.

The project is in its infancy, and Lanmei only recently hired a local agronomist whom it will train in blueberry cultivation. The idea is that he will train farmers in the initial area, and if successful, the project could eventually cover over 650 hectares. Viable blueberry production would be a particularly meaningful development for agriculture in Xinjiang, adding more options of higher value crops that farmers can grow.

benefits of blueberries to health and farmer livelihoods have become more widely known, government contracts have surged and now dominate Lanmei's total revenue from seedling sales. New projects have made particularly important contributions, including in Guizhou province, Szechuan province and Jiangxi province, with future sales cautiously anticipated in Xinjiang.

Lanmei has ambitious future growth plans

According to company data, the Lanmei No. 1 variety is now in cultivation on 14,000 hectares of farmland in numerous parts of China. The founder hopes to quadruple output by 2030. One of the growth-drivers may well be the Agriculture Co-operative Union, an initiative that gathers key stakeholders, including cooperatives, financial institutions, and industry players to provide comprehensive support to farmers. Such support includes technical assistance, finance, access to processing facilities, and downstream sales channels. One pilot project under the scheme is instructive. Located in Wenzhou City, Zhejiang province, Lanmei works with some 50 smallholder farmers to grow Lanmei No. 1 on just over 130 hectares. Very much a grassroots initiative, individual farmers are able to apply to the union for financial assistance, which is ultimately provided by partner banks. Under this scheme, farmers have managed to secure loans to acquire Lanmei No. 1 seedlings, and the company now has three agronomists in Wenzhou supporting the farmers. While still in its infancy – this initiative holds the potential of enabling more smallholder farmers across the country to directly engage in blueberry cultivation. Though operating on a smaller scale compared to government contracts, its agility and potential for rapid growth have the potential to diversify and bolster the Company's revenue streams.

Revitalising Blueberry Production in Huaining County: A Consolidated Approach

For more than a decade, farmers in Huaining county have cultivated blueberries amidst pine and fir trees. However, the approach has been haphazard, the quality variable, and yields meagre, leaving farmers with limited bargaining power and few sales channels. The proliferation of blueberry breeds has not helped, because each requires a different care regimen. In short, farmers have been unable to reap the benefits that blueberry-growing has to offer.

In 2021, a local government-affiliated enterprise forged a strategic partnership with Lanmei to systematise and upgrade blueberry farming in the county. Under Lanmei's direction, an area covering 2,000 hectares of farmland saw the phasing out of all breeds except for Lanmei No. 1. The company provided intensive training to farmers focused on this specific breed, building on their basic knowledge from years of farming.

As ever, the initial growing period is tense because bushes cannot be harvested until the third year. However, there is now a clear runway to vastly increased output of higher-quality fruit, which could deliver as much as a fivefold increase in incomes and crucial job opportunities for more growers.

There are two key groups of farmers. Group 1 refers to farmers with their own land, who can be either individuals who are part of a cooperative or individuals who buy the seedlings directly from the Company. They are farmers who gain access to blueberry as a high value crop and earn an income through the sales of their harvest. Group 2 refers to farmers who are working with enterprises and drawing salaries from these enterprises.

Group 1: Farmers who gain access to blueberry as a high value crop and earn an income through the sales of their harvest.

	Poorer Regions	More well-to-do regions
Estimated increase in income[1]	187% to RMB 32,980[2]	815% to RMB 104,561[3]

Group 2: Farmers who are working with enterprises and drawing salaries from these enterprises.

For these farmers, as the income that they earn are relatively more stable in that it is dependent on the salaries paid by the enterprise, i.e. they are salary workers, hence there is less significant income differential in poorer regions versus more well-to-do areas. Therefore, we do not capture different numbers for this group.

Estimated increase in income[4]: 49% to RMB 17,000

Lanmei metrics	At Investment[5]	Cumulative, as at 30 September 2023
Group 1: Number of farmers reached directly	3,097	37,321
Group 2: Number of farmers reached through the enterprises	2,999	19,858
Total number of farmers reached	**6,096**	**57,179**

1 The average annual income of farmers is about RMB 11,422 , based on 2015 numbers.
2 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
3 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
4 The average annual income of farmers is about RMB 11,422, based on 2015 numbers.
5 As at May 2017

Contributions to Sustainable Development Goals (SDGs)

Gladsome

Gladsome: the investment at a glance	
Country / region	China
Initial investment date	May 2019
Business model	Provider of agricultural support services and high-tech machinery and greenhouses for farming.
Investment	USD 5.0 million
Structure	Ordinary shares

Investment snapshot

In May 2019, AIIF invested USD 5 million in Shanghai Gladsome Modern Agricultural Development Co., Ltd. (Gladsome). The company has two main lines of business. First, it supplies clients—including farmers, cooperatives and agriculture enterprises—with technology-enabled farming machinery and infrastructure such as irrigation systems, water-mixers and 'smart', high-tech greenhouses with remote-controlled covers, humidity and temperature controls. Second, it provides value-added services to clients, such as farmers and co-operatives, in order for them to, (i) successfully join value chains, or strengthen their relationships within them; (ii) link them with purchasers like restaurants and supermarkets in first- and second-tier cities; and (iii) penetrate premium agricultural markets with their produce by building branding and marketing capacity. The company also installs traceability solutions for clients. These help them to attract and retain higher-end customers in a country where concern for food safety abounds.

Inter-provincial expansion to more farmers in rural provinces hampered by budgetary constraints

At the time of investment (before the pandemic, global economic slowdown and particularly acute slowdown in the Chinese economy), Gladsome's stronghold in Shanghai was viewed as a strategic launchpad for expansion into less-developed provinces, particularly those with which Shanghai was twinned. Indeed, central government policy as it related to poverty reduction and food security, along with broader economic development priorities, was to harness the know-how and technology from Shanghai-based players like Gladsome and have it applied to less sophisticated parts of the country. The challenge, however, has been that pandemic-related spending and shrinking fiscal space have squeezed all provincial budgets. The 'partially subsidise-operate-withdraw' model that worked so effectively in Shanghai, whereby the provincial government would cover up to half of the initial outlay for expansion into new counties and new initiatives, has become delayed as resources have been diverted to other priorities.

More generally, modernisation initiatives at co-operatives and agricultural enterprises have often relied on even higher subsidies—up to 90% of initial outlays—and such funding has slowed down. This situation is expected to exacerbate, and funding support from provincial governments across China is expected to tighten further in the coming years.

Undeterred, steady growth in neighbouring provinces along the Yangtze Delta

Despite the challenges of expanding to poorer and rural areas in relevant provinces across China, Gladsome has continued to gain traction, winning bids for projects around the Yangtze River Delta where it currently has 30 projects in operation. In the more well-to-do provinces along the Delta, where state-owned agriculture enterprises spearhead strategic and coordinated agricultural planning and implementation, projects have been rekindled since the hiatus earlier in the year due to the lockdown. Sales have since recovered and are on track to meet the 2023 target. As at end August 2023, the Company had recorded year-on-year growth of 61% in revenues and a 239% increase in its net profit.

Impact Highlights

In the five-year period from investment to June 2023, Gladsome solutions have made tangible differences to the on-farm outcomes of nearly 7,400 farmers in Shanghai, Zhejiang, Beijing, Anhui, Shandong, Jiangsu, Tibet and Xinjian provinces. The interventions have focused on improvements in one or more of the following: (i) technology and/or training that enable crop diversification and/or transition to higher-value crops; (ii) improved quality/safety of produce; and/or (iii) improved access to markets.

Over the holding period the Fund has supported Gladsome through introductions to potential business partners/clients such as a New York-based vertical farming service provider, and with introductions to the regional government in Gansu province. The team has also helped to facilitate introductions to both strategic and financial investment investors.

2024: Continued focus on research and development, and technology

Mirroring the current emphasis within agriculture in the academic and practitioner communities in China, Gladsome has been focused on research and development (R&D) and digitalisation/technology related to agriculture. Research and development (R&D) staff now account for over 50% of its employees, and has registered over 70 patents in relation to farming solutions for high value economic crops, automated farm facilities and related software solutions. During this period, it has continuously invested in R&D, and has since evolved from its first iteration of a fully mechanised production that reduces but does not eliminate the reliance on human intervention, towards its second and current iteration of a fully automatic equipment assembly line. The production and farm management for most leaf vegetables crops is able to achieve the latter version 2.0.

Mushroom farmers in Qingyuan county, Zhejiang Province

In 2023, Gladsome implemented 2 projects in Qingyuan County, Zhejiang Province to install photovoltaic (PV) panels for mushroom growers above production sites. Gladsome provided the infrastructure, including tech-enabled greenhouses covering 800m^2, farm-management platforms which includes both hardware and software, as well as agriculture digital solutions. The farmers benefit from increased efficiencies realised through the digital solutions, as well as additional income driven by sales of electricity generated by the PV panels. The project is expected to be completed before end of the year.

Case Study: Camellia tea oil farmers in Changshan county, Zhejiang Province

Changshan County, housing approximately 320,000 people, was once considered among the less affluent regions in Zhejiang Province. Situated in the mountainous upstream area of Zhejiang's largest river, the county has a rich history of camellia production. In 2019, as an integral component of the local government's rural revitalization strategy, Changshan embarked on a transformative journey to enhance and streamline the entire camellia production and trade supply chain within the county. The primary objectives encompassed standardizing camellia seed varieties, optimizing production processes, and unifying branding, marketing, and sales efforts.

Substantial government investment, totalling RMB 80 million, was channelled into the project, facilitating the construction of state-of-the-art temperature-controlled greenhouses spanning 4,000 square meters for camellia seedling cultivation, boasting an annual capacity of 5 million tea-oil tree seedlings. In 2021, Gladsome was engaged as one of the solution providers, implementing integrated farm management systems and delivering automated seedling nursery beds to Changshan's farmers. To date, the initiative has already benefited 120 farming households by mitigating farming risks.

In line with China's industrial policy to upgrade its manufacturing industries towards the production of high-tech products, while achieving independence from foreign suppliers, the government is seeking to increase the percentage of domestic production of equipment and parts needed for China's agriculture modernisation. Consequently, Gladsome expects an increase in demand for higher-tech agriculture products and services including agriculture data services being fuelled by provincial ministries across China. In addition to its existing agriculture solutions, it has also developed over 50 smart agriculture devices. Gladsome plans to commercialise the sale of many such devices in the coming three to five years.

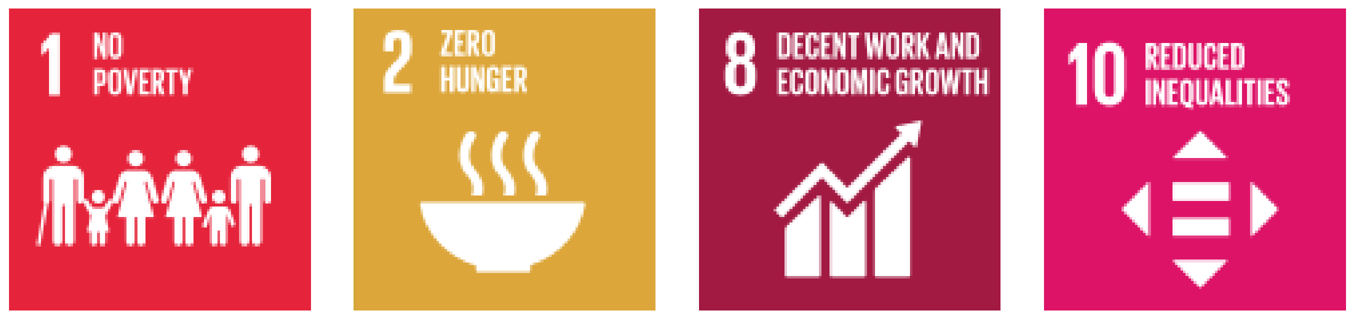
Gladsome is continuing to develop its intelligent equipment system in a third iteration which will enable fully unmanned 'intelligent' digital production. In one pilot project in Shanghai, Gladsome has developed a farming system which requires just two technicians with one tablet to manage over 330 hectares of farmland, increasing efficiency and production capacity by more than 160 times of an average smallholder farmer[1]. Looking forward, Gladsome is seeking to position itself as a data solutions company, using equipment, systems, data and facilities to provide innovative, high-quality hosting services that enable the operation of agriculture zones.

[1] A smallholder farmer in China typically operates less than 1 hectare of land. (Huan, M.; Zhan, S. Agricultural Production Services, Farm Size and Chemical Fertilizer Use in China's Maize Production. Land 2022)

Gladsome metrics	At investment[1]	As at September 2023
Number of farmers reached	6,136	13,537
– Of which cooperative farming	5,556	7,686

Crop diversification – % of clients with 2 crops or more	40.0%
Number of services – % of clients with 2 services or more	20.0%

Contributions to Sustainable Development Goals (SDGs)



[1] Source: Company Impact baseline report & Management report, data as at Jun 2018. This figure only represents about 36% of the total number of clients as there is insufficient information on the others to calculate this figure.

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

First investing in August 2017, with several follow-on tranches (the last in May 2020), AIIF invested USD 7.2 million to Alliance for Microfinance in Myanmar Ltd (Alliance). As one of the larger 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.

Already fragile from two 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. Active conflict between rebels and the military has steadily engulfed more territory, especially in border zones. In the north-eastern state of Sagain, for example, which shares a long border with India, Alliance has had no choice but to close some branches. Central Myanmar and the greater Mandalay area have remained relatively stable in comparison, though like the rest of the country, the incidence of poverty has clearly increased.

The business community is braced for ongoing challenging operating conditions, although more stable electricity supplies, up to 20 hours per day from just 4 hours mid-year, have been a welcome improvement. If major conflagrations and social unrest can be avoided beyond multiple existing conflict zones (where violence is likely to persist) whilst preparations are made next year for elections in 2025, there is cautious optimism that the country could turn a corner.

Despite the challenging operating environment Alliance has faced, the company stands out among its peers, particularly in managing non-performing loans. Macroeconomic and political conditions permitting, the company anticipates a return to profitability by the first half of the upcoming year.

Debt repayment for financial institutions remains burdensome

Chronic shortages of foreign exchange have constricted payments within Myanmar and remittances abroad, and there remains a large backlog of applications for hard currency at the Central Bank of Myanmar from financial institutions and corporates

with liabilities denominated in foreign currency. A tightening regime of international sanctions has further squeezed foreign earnings and the availability of US dollars. Due to the challenging environment for microfinance institutions, numerous microfinance institutions (MFIs) have negotiated so-called 'haircuts' whereby international lenders accept reduced principal repayments on loans at a fixed exchange rate. Hence Alliance has engaged with foreign lenders on similar "haircuts" and conversion of USD borrowing to local currency. It has a particularly strong case, given that it is one of the few MFIs in Myanmar that has been able to keep up repayments abroad. The Central Bank of Myanmar, meanwhile, is seeking to alleviate the situation by allowing local banks to reduce collateral ratios on local currency-denominated loans. By mid-2023, Alliance had negotiated one loan denominated in Myanmar kyat and was close to securing a second one, which will at least enable it to maintain and slowly grow operations.

Relative to competitors, Alliance is in a strong position—albeit in a still highly precarious operating environment—because it set about cleaning up its portfolio at risk (PAR) exposure months earlier. Whereas the PAR-30 average in the industry is at roughly 20-30%, Alliance's is now at just about 5%. In consequence, it is able to generate sufficient cash flow to cover monthly operations, another important point of differentiation.

The demand remains buoyant

Notwithstanding the turmoil, demand for microfinance loans remains robust. The withdrawal of the Pact Global Microfinance Fund (Pact) in September 2023, the largest player in the country, marked a significant milestone for the sector, which Alliance internal analysis suggests has contracted substantially from pre-crisis levels. The departure of Pact and other microfinance institutions has diverted demand to remaining players.

It is most evident in larger cities, peri-urban areas and towns, where business activity has steadily, if cautiously, resumed and the dynamism of a 55 million-strong population impels economic activity in its own right. That said, the frequency and quantum of loans reflect the near-halving of purchasing power in the country since 2020, hollowed out by inflation and exchange-rate depreciation. In such circumstances Alliance has increased its loan exposure to individual borrowers, although group loans still constitute the largest component of its loan portfolio. There is recognition, however, that the agriculture portfolio will take much longer to recover and the share of agricultural loans has contracted, especially as swaths of rice-growing regions in Sagain and Shan states remain mired in conflict.

Volatile conditions have not dissuaded Alliance from actively educating borrowers about the importance of savings, which continue to bounce back as COVID 19 has subsided and portfolio restructuring nears completion. Fully one-quarter of borrowers have resumed regular saving, though there are still significant regulatory restrictions on the acceptance and usage of savings by microfinance institutions.

Investing for a brighter future

Political developments may be beyond Alliance's control, but management has not been deterred from investing for an improved operating landscape. At the beginning of 2023, the board of directors approved funding to migrate to a more sophisticated core banking system. The purpose is to optimise current operations and to smooth Alliance's transition to digital operations. Plans to automate some dimensions of the loan approval process are underway. This will help to boost efficiency and rapidly eliminate prospective borrowers that do not meet lending criteria. Where possible, manual elements of the process will be phased out again in the interests of efficiency and tight financial control.

Alliance metrics	At Investment[1]	As at 30 September 2023
Number of borrowers reached to date; (cumulative, including those without outstanding loans with the Company)[2]	66,105	642,798
Number of active female borrowers [3]	42,753	88,001
Number of active rural borrowers [4]	24,856	71,431

Contributions to Sustainable Development Goals (SDGs)

1 Source: Company Impact baseline report & Management report, data as at May 2017
2 Of the total number of borrowers reached to date, 16% of borrowers have outstanding active loans with the Company as of Sep 2023.
3 This refers to female borrowers who have outstanding loans with the Company as of Sep 2023
4 This refers to rural borrowers who have outstanding loans with the Company as of Sep 2023

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 create flexible, scalable and, above all, affordable platforms 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).

The pandemic continues to inform the evolution of radiology in the Philippines

Urgency and necessity, particularly in the early months of the pandemic, helped to break taboos about distributed diagnostics and healthcare solutions in Philippines. Fear of physical visits to clinics and hospitals impeded readings when they were needed most, though the prevailing view at the time in the academic and practitioner communities remained that radiologists had to be on-site during imaging. Three years on from the outbreak of COVID-19, it seems unthinkable to question the role of technology in extending the reach of high-quality diagnostics. Government investment in fibre-optic cable infrastructure, which is now reaching previously untouched corners of the archipelago, is only accelerating regional penetration. Following the pandemic, numerous radiologists have come to appreciate the advantages of a distributed RIS/PACS system that enables teleradiology. This shift has helped Lifetrack to secure substantial hospital contracts in Philippines.

Lifetrack's global strategy reflects these significant developments

Given the chronic shortage of radiologists worldwide, including the most developed economies, Lifetrack is correctly and strategically placing the Philippines and Indonesia, where its penetration strategy continues (see below), in their global context. Having achieved 4.5 million readings worldwide in mid-2023, Lifetrack believes that its long-term approach to radiology must be geographically fungible, particularly as it relates to increasing access in developing South-East Asia and other such regions. In other words, the locus of readings must be dynamically mobile rather than fixed in place. Such an approach is doubly important owing to the variability of reading quality; but therein lies a significant business opportunity. In addition, Lifetrack's flexible workflow and scheduling features also help to ease the configuration of the platform to suit both large hospitals and small independent clinics. This, in turn, significantly increases the size of the market that Lifetrack could address globally. , which makes it total addressable market globally very significant.

Making inroads in the public sector represents an inflection point for Lifetrack

Lifetrack has worked tirelessly to build trust with government and the public sector, recognising that it must be deeply entrenched there to deepen its reach and impact on Philippines' poorest. Penetration of public sector hospitals has picked up speed since the second half of 2022, with a number of deals signed, including successful installation in a major government hospital with more than 700 beds in southern Philippines. This development, in effect, endorses Lifetrack as an attractive option for public hospitals, vastly increasing the prospects of buy-in from other hospitals. Lifetrack's patented systems enabled its solution to be up and running across multiple buildings in under two weeks, compared to most other systems which take months to operationalise. This has vast implications for district hospitals, of which there are more than 100 nationwide, several on small, remote islands. To date, x-rays could only be taken intermittently by boat in remote areas. Soon it will be possible to manage readings from any location for all 100 district hospitals through a hub-and-spoke system with one software solution. Further, time and cost savings can be made because images no longer need to be developed but can be transmitted digitally. The radiologist reading itself—in other words, the time and expertise—remains the most expensive part of the service, but becomes less burdensome on provincial/district budgets through savings in the above areas. This is not to suggest that there are not still formidable constraints, especially in rural areas.

Engagement with public hospitals and government more generally also positions Lifetrack as a natural solution-providing partner on the preventative as well as curative side. As penetration of provincial, regional and district hospitals increases, the company will be uniquely positioned to provide anonymised data on endemic illnesses such as tuberculosis. In this way, context-specific strategies to reduce the incidence and spread of such conditions can be designed based on concrete numbers. Where future outbreaks or even pandemics are concerned, the combination of systems integration and connectivity means that disease progress could be monitored in near real time, again helping to hone responses. In the words of one member of Lifetrack's senior management team, "whereas in the past medicine has operated as a 'data-null' environment with each patient conceived as a universe of one, Lifetrack radically changes the landscape. Our software enables data from hundreds, even thousands of hospitals to be incorporated into data sets. In time this can vastly improve health outcomes in developing countries like the Philippines and Indonesia, especially for the poorest."

Indonesia is central to Lifetrack's regional growth strategy

Lifetrack is working with a handful of distributors in Indonesia, which presents many of the same challenges as the Philippines: an archipelagic country with thousands of islands dispersed over an even larger geographical area. The regulatory environment in Indonesia is, in many ways, even more challenging. For example, radiologists are only permitted to do readings for a maximum of three institutions. Yet like the Philippines, the Indonesian government has set itself the objective of universal healthcare coverage (UHC) which will be unachievable without distributed healthcare solutions. With concerted engagement in 2023, Lifetrack has developed a promising pipeline of opportunities and sees great potential in the country.

Lifetrack metrics	At investment[1]	Cumulative, to 30 September 2023
Number of unique BoP patients reached in Philippines with Lifetrack's system[2]	81,240	522,912

Contributions to Sustainable Development Goals (SDGs)

[1] 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.

[2] 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 April 2016, Halodoc is a leading healthcare technology company in Indonesia. In January 2019, AIIF invested USD 3 million in Halodoc. Following the Fund's commitment, several strategic investors, including insurance companies Prudential and Allianz, and the Bill and Melinda Gates Foundation (BMGF), invested in the company. Halodoc is a technology-enabled healthcare platform that increases access to affordable healthcare through the provision of various services, including teleconsultations, medication deliveries, appointment booking services, insurance and healthcare plans. The objective is to root out systemic inefficiencies by streamlining patients' entire healthcare trajectories from engagement with providers, to appointments, diagnosis, treatment, medication (when needed) and payment.

In the words of the CEO and founder, Jonathan Sudharta, "*we exist as a technology-driven value partner to doctors, midwives, insurers, hospitals – in short, all stakeholders in the healthcare do- main – to solve pain points and improve service offerings. Without efficiency and transparency, we cannot successfully extend coverage to all*". The vision is being borne out by the company's performance, with more than 20 million monthly active users as of September 2023. Unsurprisingly, Halodoc has been a prominent player on Indonesia's healthcare scene throughout the pandemic. From a business- model perspective, never has the need for efficiency and economies of scale in Indonesian healthcare been greater, especially as the objective of Universal Healthcare Coverage (UHC) remains a distant goal.

New ways to administer patient care

In the wake of the COVID-19 pandemic, healthcare technology (health-tech) companies have undergone, adapted to and in some cases led unprecedented transformations and innovations in the way that healthcare is delivered. Beyond broad-based service expansion, Halodoc is focusing service-provision on specific segments such as paediatrics, dermatology and mental health. Digital technologies focused on healthcare delivery can help to uncover previously untapped opportunities to engage with patients, especially as they relate to episodic conditions. Dermatology is a case in point. With the schedules of the top 20 dermatologists on the Halodoc platform booked solidly for up to two months in advance, there has been an unanticipated surge in demand for consultations for skin complaints. The spike occurred organically, driven by TikTok users—none of whom was incentivised by Halodoc—leaving positive reviews that noted the privacy, convenience and effectiveness of consultations they had had. From a financial perspective, dermatology consultations are also highly lucrative due to their recurring nature. This is a classic case of a condition that is able to be handled as effectively online as they can in person. Users of dermatology services on the Halodoc platform increased 72% year-on-year in September 2023 compared to September 2022.

Partner Pharmacy spotlight: Pak Dirahman's collaboration with Halodoc

Pak Dirahman, the owner of Apotik Baharia in some 50 km outside Jakarta, has seen significant developments in his business since collaborating with Halodoc. While he had been aware of Halodoc since 2019, it was during the peak of the COVID-19 pandemic that he pursued what a partnership might offer, primarily attracted by the more favourable pricing structure. In Indonesia's highly competitive pharmaceuticals market, Halodoc's prices for generic and prescription drugs are considerable cheaper. Halodoc has also been an important source of customers accounting for an impressive 30% of Apotik Baharia's total revenues. Pak Dirahman also believes that the brand awareness and solid reputation of Halodoc can also help to drive business his way.

Another advantage of working with Halodoc cited by Pak Dirahman is the transparency and reliability. Halodoc is very clear about the price range for its medications, whereas competitors are known to alter prices unexpectedly, with knock-on effects for pharmacies and clientele.

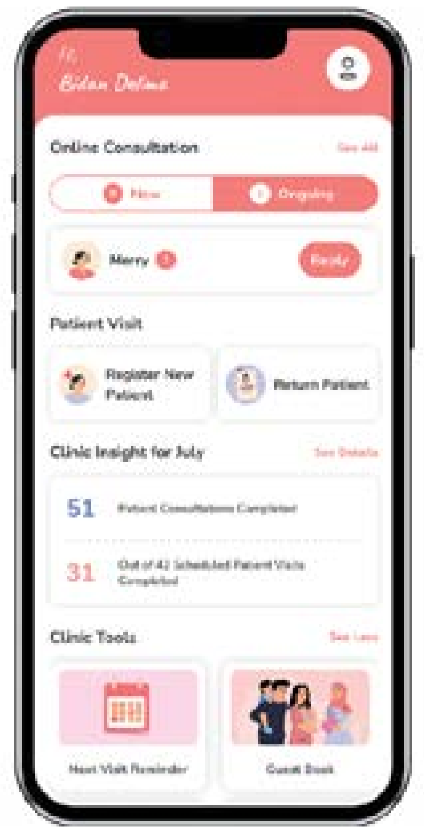
A cough syrup scandal shakes up Indonesia's regulatory environment

In October 2022, Indonesia's National Food and Drug Supervisory Agency (BPOM) imposed a blanket ban on the sale of all medicines in syrup form, regardless of age or product category. The radical measure was prompted by concerns over the presence of potentially lethal ingredients in liquid medications, when 100 people, mostly children, died after taking cough syrup. Investigation of the tragedy revealed contamination of some bottles with two highly toxic substances, ethylene glycol and diethylene glycol (both can cause severe kidney damage when ingested). It emerged that certain loopholes in the regulatory framework had been exploited and that drug manufacturers had failed sufficiently to verify the integrity of raw ingredients used in the compounds. With criminal investigations ongoing, at the policy and regulatory level, the incident has provoked a severe clampdown. Although the government has permitted gradual reintroduction of cough syrups, Halodoc has noted a 25% decline in sales of this category of medicine on its platform.

From Halodoc's perspective, it has been assessing the commercial implications of the BPOM's very stringent position on registration and documentation of medications. Thousands of stock keeping units (SKUs) of healthcare products have already been removed from store shelves. Clearly, there is a delicate balance to be struck between safeguarding public health and ensuring that patients receive the medications they need. The implications for Halodoc are that efficiency and transparency across medical consumables supply chains will remain high on the regulatory agenda. Sourcing pharmaceuticals and medical products from trustworthy suppliers is not merely a matter of preference but a fundamental imperative. Failing so can lead to far-reaching and diverse consequences, ranging from substantial financial burdens to severe reputational damage. The question is how Halodoc can craft a combined online and physical (offline) solution to enable visibility that is commercially meaningful and achieves the critical objectives at hand.

Outlook for 2024

The increasingly conducive policy and regulatory environment, coupled with the sea change in post-pandemic attitudes to health will only strengthen Halodoc's position in the market. The foundational work that was done since inception on digitalisation, automation, process streamlining and simply "connecting the dots", whether in teleconsultation or prescription ordering and delivery, is now paying greater dividends than ever. Jonathan credits serendipity, noting that, "Halodoc was blessed to be in the right place at the right time on digital." The truth is more likely that Halodoc foresaw the change and in fact helped to foster it. With Halodoc's visibility nationwide, the company is well-positioned to be the partner of choice for actors throughout the healthcare ecosystem in Indonesia.



Halodoc metrics	At investment[1]	Cumulative, to 30 September 2023
Number of unique transacting users outside Java	42,674	2.98 million[2]
% of areas/regions in which Halodoc is active that have low penetration of hospitals and/or doctors	≈ 50.0%	≈ 50.0%[3]
% of unique transacting users identified as BoP[4]	32.0%	69.0%[5]

Contributions to Sustainable Development Goals (SDGs)

1 Source: Company Impact baseline report & Management report, data for quarter end December 2018
2 Cumulative from January 2019 to end of stated period
3 Percentage may change depending on regular review update
4 Percentage to be reviewed based on research on a yearly basis
5 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 TECHNOLOGIES

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: (i) proprietary solutions for agriculture, including 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; and, (iii) "smart farming" solutions for aquaculture. 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 meet vastly 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[1].

Government progress and Smart-agriculture systems

Rynan has been developing its relationships with the national and provincial governments to accelerate adoption and increase impact. Arguably far ahead of many developing South-East Asian peers in formulating climate-change (CC) policy and implementing adaptation and resilience strategies, the Vietnamese government sees digitalisation as a cornerstone of CC initiatives going forward. This embrace of technology makes Rynan's digital solutions for insect monitoring, salinity intrusion, and smart farming and aquaculture more appealing than ever. In practice, this means that the national government apportions resources to provincial governments to fund purchases of solutions that help to modernise agriculture. This includes Rynan products and services that can hasten achievements in several key areas: reducing greenhouse gas (GHGs) emissions from agriculture, which account for 22% of Vietnam's total emissions, increasing crop yields, reducing water and pesticide usage and so on.

Rynan's collaboration with the government of Dong Thap Province in the Mekong Delta is an instructive example. Since 2020, as part of the provincial government's five-year development plan, it has been building the internet of things (IoT) network, infrastructure, platform and statistical analysis system (SAS) so that by 2025, an open-source information and data-collection system is available to farmers. The government will be able to collate data from Rynan salinity intrusion and insect-monitoring solutions alongside information on cultivation (total land area and crop types under cultivation) and expected harvest times.

Meteorological data from other applications can also be incorporated into the platform, which will be critical for emergency preparedness as adverse weather events, flooding and drought become more frequent and severe. In short, Rynan's steadfast relationship-building at the provincial level over the past decade is bearing fruit by positioning it as a provider of choice of bundled agricultural technology (ag-tech) solutions to government; and with the focus on digitalisation of agriculture, provincial procurement budgets now include allocations for such devices.

In the context of Vietnam's nascent foray into agricultural digitalization, the past three years of collaboration between Rynan and the Dong Thap government stand as a valuable learning experience, not only for the involved parties but also for the relevant ministries. This collaborative journey necessitated the meticulous formulation of strategies encompassing the approach, implementation methods, stakeholder engagement, and procedural intricacies, all from the ground up.

Presently, Rynan's Smart Agri-Monitoring solution, VDAPES, has been nearly fully deployed throughout the province of Dong Thap. Engagements with the provincial ministries of agriculture and information, communication, and technology are underway in other regions, with the objective of evaluating the potential replication of a similar agricultural digitalization strategy.

Insect-monitoring systems gain traction in southern Vietnam and beyond

Beyond installing more than 60 proprietary insect-monitoring systems in 15 provinces across Vietnam, Rynan has begun to export the product to Japan as part of its strategic partnership with Sojitz[1], a Japanese conglomerate. The geographical expansion is central to Dr Nguyen's ambitious objective of working up a comprehensive insect monitoring map. The purpose is to enable surveillance of natural insect predators such that pesticide use can be radically reduced and, when used, more precisely targeted to the pest in question. Rynan's proprietary algorithm which, when combined with data derived from satellites and the insect monitoring system, enables forward projection of insect activity in advance. The effectiveness of the solution

[1] The Paris Climate Agreement enshrined each signatory's NDCs into the United Nations Framework Convention on Climate Change (UNFCCC)

[1] As of 20 October 2023

is already evident from usage of the Rynan Mekong App, which is monitoring pests and natural predators in the Mekong River Delta. The preliminary indications are that farmers in many riparian provinces have significantly curtailed reliance on pesticides, specifically to tackle brown plant hopper. The benefits in terms of cost savings, environmental impact and health are clear.

Going forward, Rynan will be putting significant resources into further research on natural predator detection for targeted pest control. In both agricultural and aquaculture, Dr My T. is working to create a holistic pest-focused system that combines insect monitoring, strategic deployment of 'beneficial bacteria' and insect predators in the appropriate contexts. He is also working on pheromone production for insect attraction and selective elimination, offering a precise alternative to conventional lighting methods. His ambitious goal is to eliminate pesticide usage in agriculture entirely.

Rynan's sustainable shrimp farming solution gains traction

Rynan has been an active player in expanding the brackish water shrimp farming industry in the Mekong Delta, which is currently pivoting from black-tiger shrimp farming to intensive vannamei (so-called white-leg shrimp) farming in high density polyethylene-lined floating ponds. The transition is in pursuit of the ambitious objective of increasing shrimp exports to USD 8.4 billion by 2025[3]. The downside is the projected environmental impact: a significant increase in energy consumption and estimated 13 tonnes of greenhouse gas emissions for every tonne of commercial *vannamei* produced[4]; removal of ecologically-significant mangrove forests; and increased effluent discharge into rivers.

To address these negative environmental impacts, Rynan has developed an intensive shrimp farming solution patented as TOMGOXY™, based on several key principles including (i) general efficient resource usage, especially land, water and energy; (ii) circular shrimp cultivation, using algae and fish to maintain water cleanliness and purity; and (iii) use of renewables to meet energy needs. Rynan is also working to further reduce the carbon footprint of TOMGOXY™. In collaboration with Dutch mangrove experts, planting strategies are being modified to enhance carbon capture. The TOMGOXY™ approach has gained traction in 2023, with several shrimp farms in advanced planning stages of implementation and interest from other producers in the region, such as Indonesia and Thailand.

Rynan's sales strategy evolves with market dynamics

When the Fund first invested in Rynan, the impact was to be generated via sales of control-release fertilisers to low-income rice farmers, enabling them to improve crop quality, yields and efficiencies, all whilst reducing pollution due to leaching and run-off. After extensive engagement with rice farmers over more than two years, it was clear that direct sales were never likely to achieve scale, largely due to affordability and cash flow issues. Since then, Rynan has target sales toward farmers of other fruits and vegetables), enterprises and local government agencies.

As at end September 2023, more than 5,000 farmers in 55 provinces were using Rynan smart release fertilizers, mainly for flowers and vegetables. The number of monthly active users of Rynan's Mekong app which enable them access to these services (such as the monitoring of salinity levels) have also grown steadily, and there are now about 1,500 monthly active users.

Founder Dr. Nguyen remains resolute in his mission to alleviate poverty and combat environmental degradation in Vietnam. Rynan perseveres in its quest to revolutionize agriculture and aquaculture in the Mekong Delta through continuous innovation. Dr. Nguyen isn't content with partial carbon emissions reduction; his ambition is to forge comprehensive solutions that redefine traditional farming practices. The aim is to produce clean food for communities while safeguarding farmers' well-being and preserving the environment. This unwavering commitment underscores Rynan's dedication to sustainable progress in the agricultural landscape.

[3] Source: Government of Vietnam, Decision 79/QD-TTg, issued by the Office of the Prime Minister, 18 January, 2018.
[4] Source: The Nature Conservancy, April 2022.
[5] SRF refers to Smart Release Fertilizers. Figures refer to the stated reporting period.

Rynan metrics	Quarter ended 31 March 2018 (Start of SRF sales)	Quarter ended 30 September 2023
Farmers using SRF[1]	49	5,619
Provinces where SRF is in use	9	58

	Quarter ended 30 September 2023
Average monthly active users on the Mekong App[2]	1,300

Contributions to Sustainable Development Goals (SDGs)

[1] SRF refers to Smart Release Fertilizers. Figures refer to the stated reporting period.
[2] 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.

Tanihub

Tanihub: the investment at a glance	
Country / region	Indonesia
Initial investment date	March 2020
Business model	Sourcing and distribution of agricultural produce from small farmers, including provision of agricultural loans and technical assistance.
Investment	USD 5.3 million
Structure	Preferred shares

Investment snapshot

AIIF I invested USD 5.3 million in Tani Nusantara Pte Ltd (TaniHub), an agricultural technology company in Indonesia that connected farmers with buyers in urban centres, such as hotels and restaurants. Its business model was centred on intermediation and efficiency-gains to smooth the sourcing and distribution of agricultural products.

Central to TaniHub's strategy was resolving systemic inefficiencies that disadvantage farmers. Traditionally, produce buyers in Indonesia source from offline suppliers who, in turn, work through layers of intermediaries. In this way, market information and price discovery are kept opaque for farmers, while the needs of the end-buyer fail to be communicated. By contrast, the TaniHub platform enabled buyers to signal their needs and specifications so that Tanihub can source directly from the producers/farmers, hence streamlining the supply chain.

A turbulent year leading to a write-off

2022 proved a challenging chapter in TaniHub's evolution. Although Indonesia pulled out of the pandemic throughout the year, the virus had inflicted extensive damage on the business and undermined the creditworthiness of SMEs and hence the gross margins of the business.

As collection of accounts receivable deteriorated, tensions in the management team became more pronounced, prompting a change in senior leadership and the appointment of a new CEO with a strong track record in venture capital and turn-arounds. A new finance director was also contracted. By the third quarter of 2022, the company was struggling under its mounting debt burden and cash shortages, and the resignation of the new CEO by the end of the year was a significant further blow, rendering further finance all but impossible to raise. Unfortunately, business activity was suspended in 2023 and the Fund has written off its investment.

Tanihub: Key Impact data	At investment[1]	As at 30 June 2022
Active number of farmer groups with whom TaniHub has transacted[2] (cumulative)	291	689
Active number of individual farmers with whom TaniHub has transacted (cumulative)[3]	13,190	28,310

Tanifund metrics	At investment[4]	As at 30 June 2022
Total amount disbursed since June 2017 (IDRm, cumulative)	107,508	510,666

Contributions to Sustainable Development Goals (SDGs)

[1] As at end December 2020
[2] Data from May 2018
[3] Data from May 2018
[4] As of end December 2020

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Double Delta

Double Delta Pte. Ltd.
Level 10, 1 George Street
049145 Singapore
doubledelta.com