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Agtech Investment:

A Case Study on Responsible Investment into RYNAN Technologies

ASEAN Guidelines on Promoting Responsible Investment in Food, Agriculture, and Forestry

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Executive Summary

This case study outlines the journey of a Singapore-based private equity firm in their investment into RYNAN Technologies ("RYNAN"), a tech innovator that focuses on research and development (R&D); production and commercialization of agricultural traceability solutions, Internet of Things (IoT) devices, and advanced agri-inputs. Its main R&D and manufacturing facilities are located in Tra Vinh, Viet Nam.

Despite being an agricultural country with millions of smallholders, Viet Nam's agtech industry is still behind other countries with limited agtech companies and projects in Viet Nam. In other more developed economies, technology has been integrated into agriculture for years. However, agtech is a relatively new concept in Viet Nam's rural areas and challenges remain in integrating modern technologies into Viet Nam's agricultural sector.

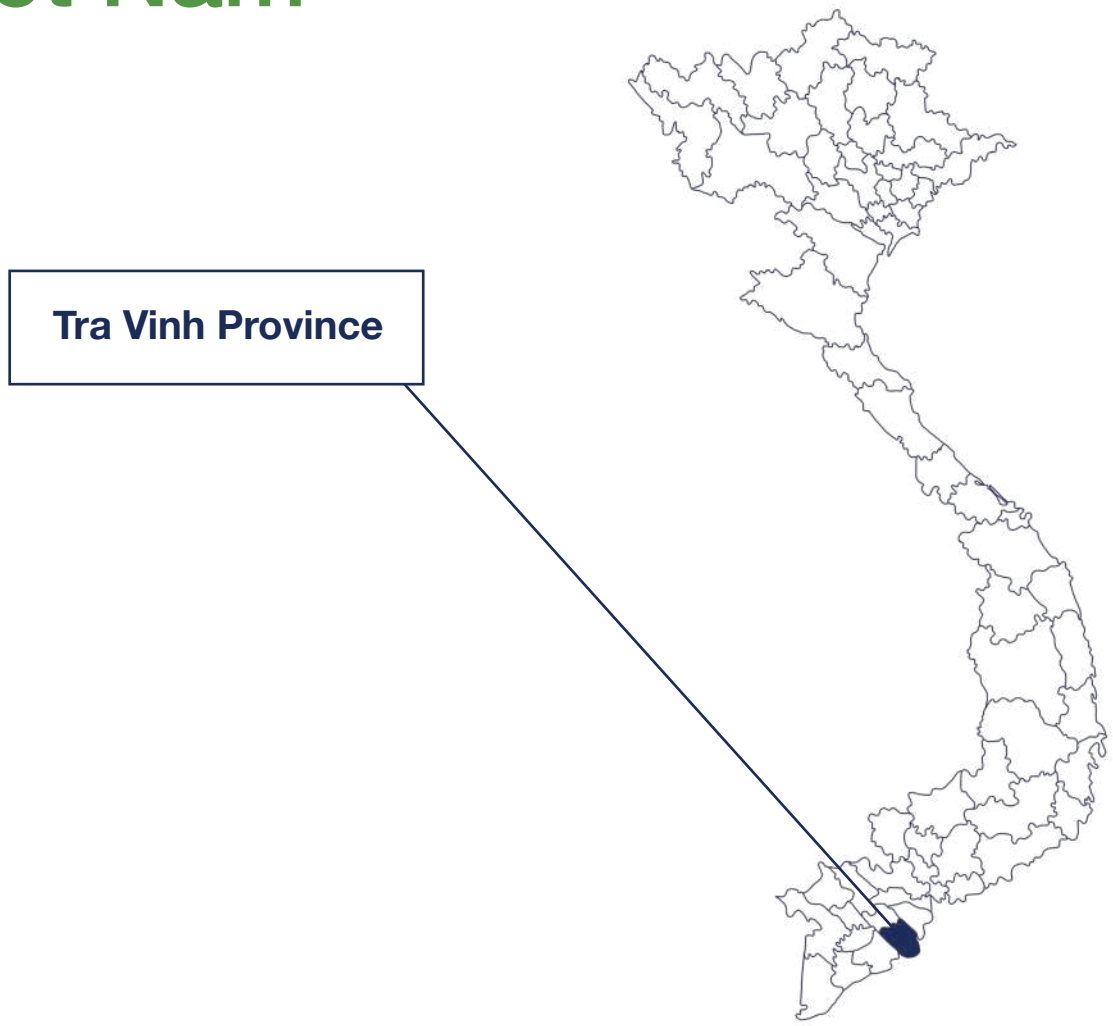
The investor saw agtech as key to sustainable agricultural transformation by helping farmers change practices, increase productivity, and green Viet Nam's economy. The investor aimed to help RYNAN expand its agtech manufacturing arm in Tra Vinh through equity capital, with a longer-term view to revolutionize and modernize Viet Nam's agriculture sector.

Key learnings emerging from their investment include:

- Benefits of global standards in enhancing investments' economic efficiency and improving capital allocation
- The need for patient capital in investing in early-stage agtech solutions due to the adoption period and crop cycles
- The need to engage competent authorities early on to accelerate the endorsement of new technologies
- The need for stronger public-private partnerships in encouraging farmers' adoption of agricultural technologies
- The critical role of long-term strategic investors in supporting a business's ability to sustainably transition to the next level

LOCATION

Tra Vinh Province, Viet Nam



Timeline

Investor's funding horizon: Q2 2017 – present

2014
Investor was introduced to RYNAN founder

RYNAN Technologies Pte Ltd incorporated in Singapore

2015
2016 RYNAN Technologies' subsidiaries and affiliates in Viet Nam were established

2016
RYNAN commences operations in Viet Nam

Investor due diligence begins

2017
Investor invested in 2nd quarter

2018
Factory officially opened in January

Investment Profile

The investor is a venture capital and private equity firm based in Singapore with investment focus in ASEAN and Greater China.

The firm advocates responsible investing through making impact investments and integrating environmental, social, and governance (ESG) considerations into its investment process and is a signatory to the United Nations-supported Principles for Responsible Investment. As of end-2021, the firm has more than USD 1 billion in assets under management.

The firm has a double bottom line focus of achieving financial return and positive social outcomes through investments into small- and medium-sized enterprises across the region that use technology to transform traditional business models for the benefit of low-income communities. Focus sectors include agriculture, education, healthcare, and financial inclusion or companies that focus on improving the accessibility of affordable housing, sanitation, clean water, and energy. To date, more than 15 million low-income individuals have benefited from higher incomes or better access to affordable products and services, financing, and quality through these investments.

Investor Profile

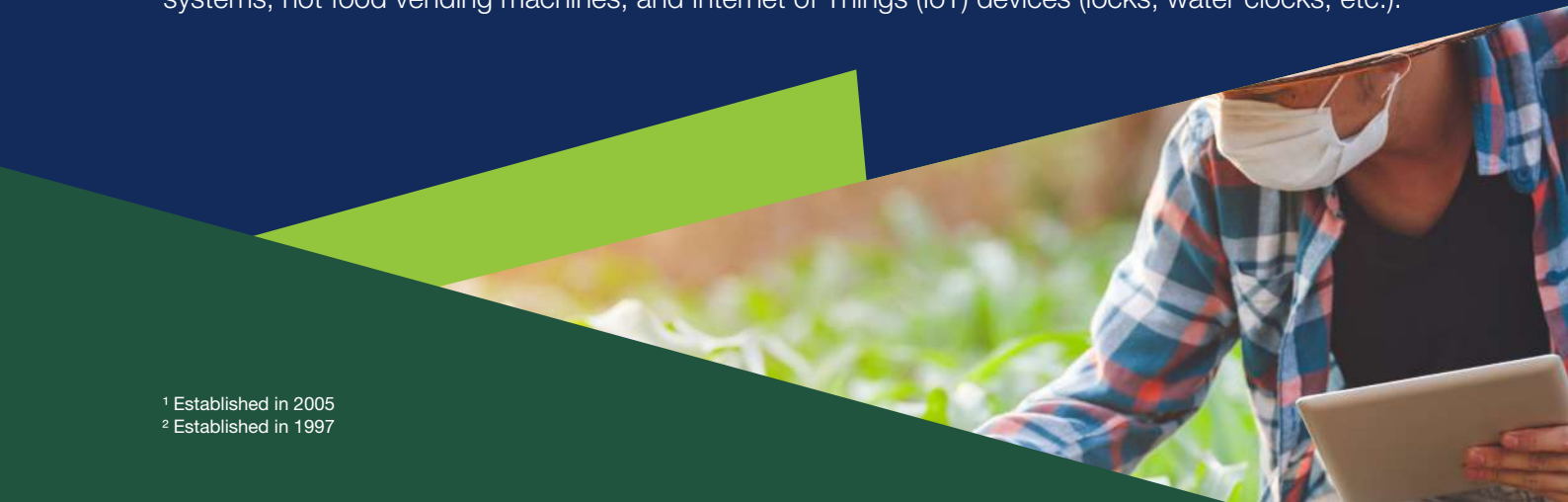
Founded in 2015, **RYNAN Technologies Pte Ltd** is a Singapore-headquartered high-technology start-up developing technology and products for printing applications, packaging, agriculture, aquaculture, and other industries with a focus on sustainability. The company's main R&D and manufacturing arm are located in a high-tech facility in Tra Vinh, Viet Nam.

The RYNAN group of companies was established by Dr. Nguyen Thanh My, a 60-year-old overseas Vietnamese. Apart from RYNAN, Dr. Nguyen has founded and co-founded nine high-tech enterprises (including Mylan Group[1], American Dye Source, Inc.[2]) of which seven operate in Tra Vinh province. He is also Chairman of Businessmen Association of Overseas Vietnamese; Founder and Dean of Applied Chemistry Department of Tra Vinh University.

Before returning to Viet Nam, Dr. Nguyen successflly founded a chemical company and managed it for seven years in Quebec, Canada. In 2004, returning from Canada to Tra Vinh, he built My Lan Chemical Factory, applying modern optoelectronic technology for various packaging applications in a remote and arid land in Thanh My commune, Chau Thanh district.

Over 11 years, Mylan Group built one of the world's most high-tech "optoelectronic valleys" in one of the poorest provinces in Viet Nam. In 2015, Dr. Nguyen retired from his leadership role at Mylan Group and started a greenfield business with RYNAN specializing in high-tech production, processing, packaging, and distribution of agricultural products.

Via the RYNAN companies, Dr. Nguyen has created jobs for hundreds of young technology engineers and promoted applications of high technology in agriculture, including production of smart fertilizers, smart pests monitoring systems utilizing artificial intelligence, saltwater monitoring systems, hot food vending machines, and Internet of Things (IoT) devices (locks, water clocks, etc.).



[1] Established in 2005
[2] Established in 1997

Investment Profile

The investment was structured as a direct minority equity investment into RYNAN's holding company in Singapore. The total deal value was less than USD 5 million.

Following the investment, in February 2020, Sojitz Corporation, a Japanese general trading company, completed an investment in RYNAN Holdings Joint Stock Company.

Traditional intensive agriculture in the Mekong Delta has been an important source of income for Vietnamese people living in the region since the late 1970s. However, due to unsustainable practices and the overuse of conventional fertilizers and pesticides, these farmers are facing the negative impacts of environmental problems such as dead zones, irrigation problems, soil degradation, and climate change. From the investor's perspective, the primary reason for investing in RYNAN was the potential of their "technology solutions' to revolutionize and modernize Viet Nam's agriculture sector". The sector is in need of more investments in sustainable systems and new agricultural technologies that are efficient and environmentally friendly to help farmers improve their farming practices.

The investor typically invests from Series B financing onwards. RYNAN was a special case where the investment was made into a relatively young start-up due to the high potential impact on the industry and the range of pioneering solutions offered by RYNAN.

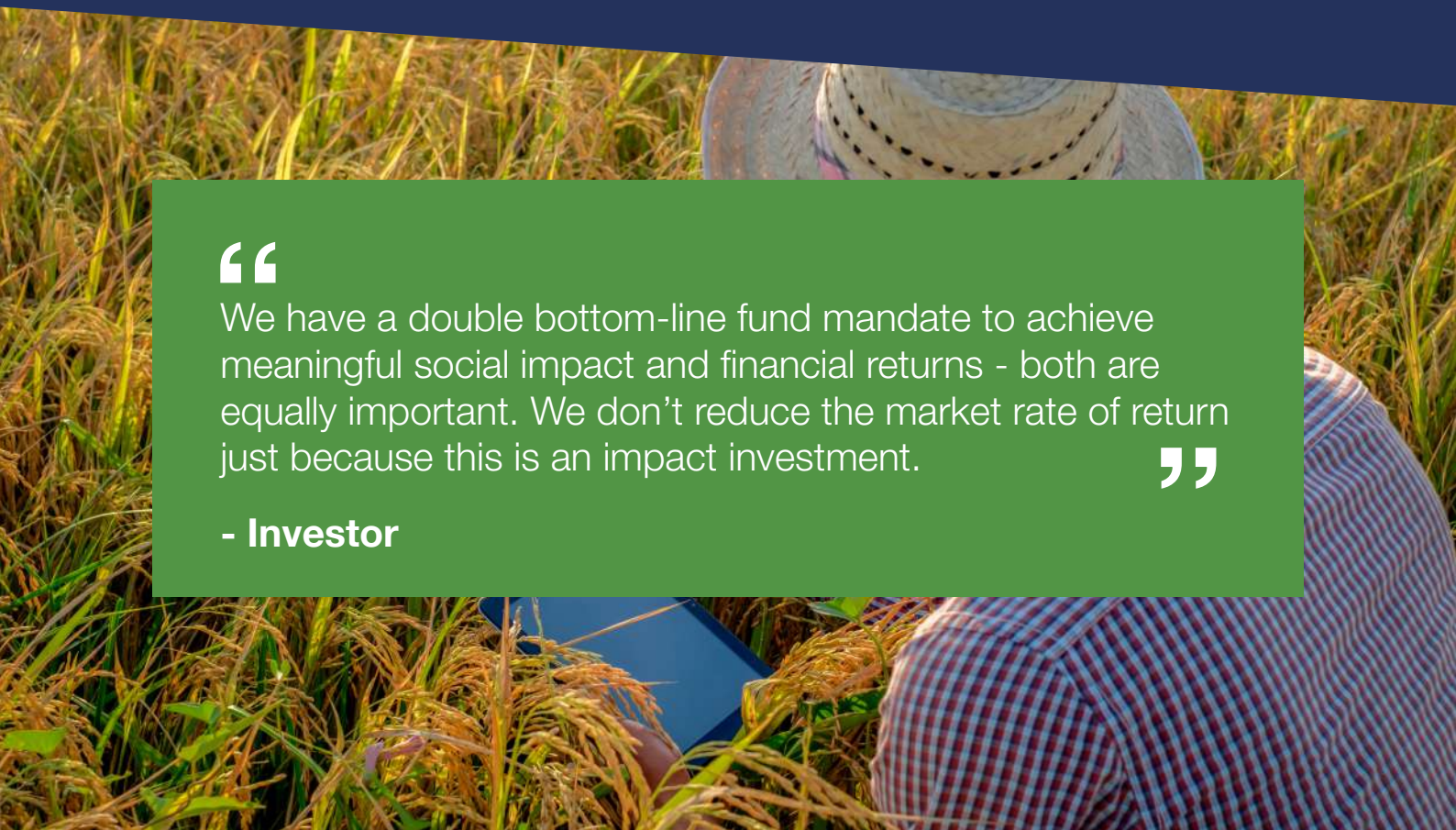
> "Agriculture accounts for a big percentage of employment in Viet Nam. The country is also one of the countries most affected by climate change, particularly the low-lying Mekong Delta. When we look at RYNAN, what interests us was the potential of RYNAN's products to revolutionize and modernize the agriculture sector in Viet Nam. We believe that RYNAN's products and equipment can potentially help farmers improve their farming practices and increase their incomes, which fully aligns with our objectives."
>
> **- Investor**

Investment Objectives

The investor's impact fund has a double bottom-line focus on both financial return and social impact. Investments are made in private companies with the intention of generating both a financial and social return and, where possible, environmental return.

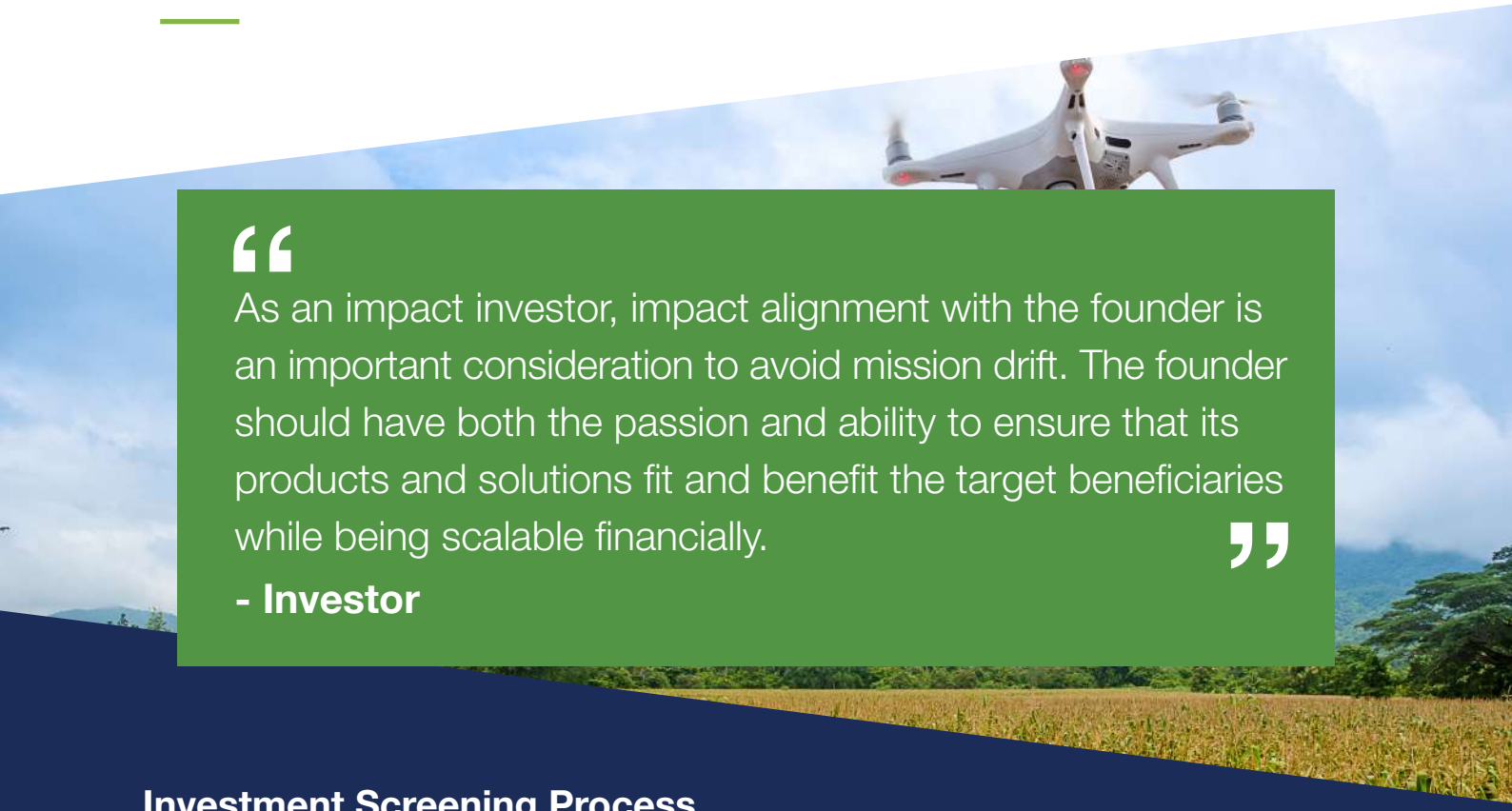
The investor targets fast-growing businesses that have the potential to achieve social impact by improving the well-being and livelihood of the "Base of Pyramid" (BoP) population (who live on less than USD 5.50 a day) in Southeast Asia and China. Akin to other private equity firms, the investor seeks to exit their investments within three to six years and generate a gross internal rate of return (IRR) of 20-25%.

In assessing the potential investment in RYNAN, the investor evaluated the positive impact the company would bring to low-income/BoP communities (number of farmers using the solution, income improvement) and scalability of its solutions. Baseline data were collected at the start of the investment regarding the investment's social and environmental impact, and relevant impact indicators are tracked as the company progresses.



> "We have a double bottom-line fund mandate to achieve meaningful social impact and financial returns - both are equally important. We don't reduce the market rate of return just because this is an impact investment."
>
> **- Investor**

Investment Process



> As an impact investor, impact alignment with the founder is an important consideration to avoid mission drift. The founder should have both the passion and ability to ensure that its products and solutions fit and benefit the target beneficiaries while being scalable financially.
>
> **- Investor**

Investment Screening Process

Dr. Nguyen, founder of RYNAN, is an established Vietnamese scientist and businessman. He founded successful ventures overseas before returning to Vietnam. In Viet Nam, he also founded and managed My Lan Group, the first high-tech company in Tra Vinh, for ten years before expanding his business investment to the agriculture sector. The investor has known the company founder since 2014 and they were impressed by the founder's commitment to bring his expertise and experience back to his hometown to train young promising Vietnamese and set up companies that provide local training and employment. The investor was surprised to find such well-organized manufacturing facilities located in a lesser developed part of Viet Nam (My Lan Group).

During deal screening, the company was assessed for investment suitability on both its growth potential and its ability to achieve positive impact, which is based on a set of pre-defined screening criteria to determine the relevance to the fund from an impact perspective. The investor also has an Impact Policy where all investments made by the fund must follow the impact management principles stated in the policy. Impact metrics are business specific and may incorporate Global Impact Investing Network's (GIIN) Integrated Risk Information System (IRIS+) and/or non-IRIS+ indicators depending on the characteristics of the investee. Some IRIS+ examples include average agricultural yield of farmers using their products (sampling); total employees, female employees, employees trained, etc.

In addition, having known the RYNAN's founder for several years helped to expedite the screening process.

Investment Process

Due Diligence

For due diligence, the investor adopted relevant International Finance Corporation (IFC)'s Environmental and Social (E&S) Performance Standards and risk categorization, which are assessed through internal ESG assessment tools or support from external ESG consultants. Beyond the integration of ESG considerations, the investor's responsible investment activities have progressed from negative impact avoidance to investing in commercially viable companies that provide positive contributions with specific impact intentions.

At the due diligence stage, the investor sought a deeper understanding of the business, assessed the **impact thesis**, and worked with the investee company to expand impact reach and value creation. An **Impact Baseline Report** was prepared to document the impact engagement and potential outcomes, which formed the basis for impact tracking and measurement. The aim of the investor's impact assessment is to ensure the fund is consistent in its deliberate and purposeful approach to investing for impact rather than seeking to minimize negative impacts or externalities of an investment.

The fund's impact due diligence process includes 2 stages:

- Understanding existing condition of the industry segment and target beneficiary group and assessment of risk factors
- Assessing potential impact.

In the first stage, significant risk factors surrounding the investment and the expected impact contribution are screened using an internal toolkit. At this stage, the focus is on identifying (1) Intended impact and (2) Who experiences the intended impact. Sections in the toolkit include relevancy of the sector and how the business model has a clear focus on the beneficiary group. A deeper assessment is undertaken by understanding how the beneficiary group is engaged in the business model and current challenges faced by the beneficiary group – it must be clear that engagement is neither incidental nor a corporate social responsibility strategy. Additional criteria that are assessed include the socioeconomic benefits and impact reach on the individuals and/or community. Potential scalability is noted to understand the multiplier effect of the company's business model and potential for larger social impact.

The second stage of impact assessment is to focus on the 'How'; analysis is performed to understand implications to the beneficiary group resulting from the investees' business operations and products. Results from the internal impact assessment tools help formulate the transaction's impact thesis and are included within the **Investment Memorandum**. Social impact is considered on two levels: livelihoods and commercial-social relationships. Consideration is undertaken to note if a prospective investee may require support in executing its business plan and target return. An **Impact Baseline Report** containing assessments on the challenges being addressed, impact risk factors, impact reach, and expansion potential is compiled for each investee. The report also considers the baseline social, economic, and industry characteristics to establish initial socio-economic status and guides impact engagement priorities for the deal against which progress can be measured and the intended impact metrics to be monitored.

For this process, the investor worked closely in partnership with an Impact Advisor to provide an objective assessment of impact and value addition.

Other than impact assessment, the investor's due diligence process also covered many aspects of the business – from financial forecasts, operational plans, how the products will fit the market, the business model, the revenue model, effectiveness, barrier of entry, management team, financial risks, policy risks, etc.

Investment Process

Investment

Following the assessment captured in the baseline report, impact metrics and measurement requirements were discussed with the investee company at an early stage to understand the investee's views and approaches and ensure alignment between both parties. Timing requirements and measurement methodology was also agreed upon, with the flexibility to allow for change during the holding process should new information come to light.

After due diligence, an Investment Memorandum was developed, with investment recommendation to the Investment Committee, which covers assessment of financial growth and investment return, risks, ESG, and impact, including consideration of exit scenarios.

The investment was concluded with definitive investment agreements and disbursement of investment funds.

Portfolio Company Monitoring

Following the investment, the investor continuously engages with the investee company as part of impact and financial monitoring of the portfolio. The investor does not get involved in the daily operations. Instead, the investor participates actively at the board level in a broad range of major strategic issues, including supporting business growth or expanding its impact objectives. Regular discussions also take place with the investee company to assess their sourcing or product strategy to expand impact reach.

Monitoring

At individual investee company level:
Understanding the usage and adoption of products by farmers, which is the key beneficiary group, is regularly carried out by the company, both to track the extent of impact as well as improve the product or application.

At investor's impact fund management level:
Quarterly reporting is established with both financial and impact information that looks into the fund's contribution to achievement of impact at both the portfolio and individual investee company level. In addition, aggregated key performance indicators at portfolio and fund levels are released in the form of an annual report containing the assessment and overview of impact performance, key drivers of performance, and significant business developments.

Investment Results

The investment by the impact fund has helped strengthen RYNAN's capital base, enabling it to develop new agtech solutions, facilitate better access to agtech for underserved farmers, and rapidly expand the provision of such technologies to other rural regions of Viet Nam.

As a result, new agricultural and aquaculture technologies have been introduced and applied by farmers in more than 50 provinces. Close to 10,000 farmers have registered to use the agriculture application.

For instance, RYNAN smart fertilizer is coated with a layer of hi-tech polymer that is environmentally friendly, when used in crop cultivation, it can help to reduce greenhouse gas emissions by up to 60 percent. After water absorption, the polymer coating enables fertilizers such as nitrogen, phosphorous, potassium, and other minerals to be released over a period of time depending on crop cycles. Depending on the crop, the time for smart fertilizers to release all minerals can vary from one month to more than a year. Farmers only need to apply fertilizer once during the crop cycle (for most crops). Labor costs are therefore lower, while the amount of fertilizers applied may be up to 40-60 percent less and crop yield can potentially increase by over 10 percent.[3]

Though farmers expressed interest in the products, the uptake of the agtech solutions by smallholder farmers was slower than expected. The investor highlighted the lack or delay of financing and government support as the main reasons that caused delays in farmers' adoption. It also took time to educate the farmers to change their farming practices. Smallholder farmers usually lack adequate financial and technical resources that are required for technology adoption. Elsewhere in ASEAN, business-to-government (B2G) models have emerged where national or regional governments finance or subsidize new services/products for farmers. More projects of such nature can help to boost adoption of technology in agriculture in Viet Nam.

> "Even though we are seeing more and more farmers using the company's products, adoption has been slower than expected. Many farmers do not have the money to buy agricultural inputs or devices upfront and the lack of financing for farmers remains a big impediment to new technology adoption."
>
> **- Investor**

[3] Crop, region, and soil dependent

Investment Results

Objective	Results to Date
No. of provinces where RYNAN's products are used	53
# of farmers reached	Close to 10,000 registered users on RYNAN's digital platform/IoT devices
Improvement in farmers' income (before and after using Rynan's agricultural inputs):	Up to 2x*

* Based on sampling of farmers surveyed in 2019 and 2020. Inputs and labor costs, yields, and revenues are tabulated to estimate income increase.

Alignment to ASEAN RAI

The ASEAN Guidelines on Promoting Responsible Investment in Food, Agriculture and Forestry (ASEAN RAI) is a regionally-adopted, voluntary framework to guide investment decision making for both private and public sector actors.

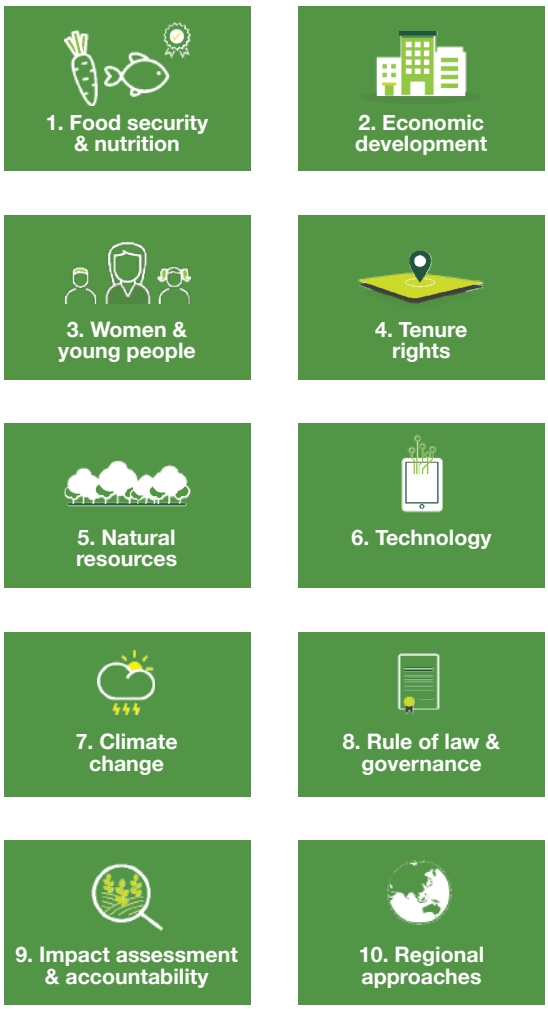
ASEAN Member States have agreed to use these Guidelines to create or update legally-binding policies – which means agribusinesses and investors who demonstrate alignment to the ASEAN RAI are better prepared for these future policy changes.

The 10 principles of the ASEAN RAI describe the impacts those agricultural investments may have at the community, local, or national level.

Figure 1 (right) outlines the alignment between the company's practices and the ASEAN RAI principles. When an organization like the **investor in this case study** makes a pre investment commitment to follow responsible environmental, social and governance practices, they are more likely to be aligned to the ASEAN RAI.

This investment retroactively applies the ASEAN RAI to RYNAN's investment practices and outcomes, which are aligned to (some aspects of) **8 out of 10 Guidelines**. If ASEAN RAI had existed before the investor's investment into their smallholder partnership program, it would have helped them: strategize and integrate additional targeted solutions to address local and regional food nutrition issues, and strengthen regional approach to responsible investments (Guideline 1, Guideline 10), set up better systems to measure change in impact (Guideline 2 and 9).

Figure 1. Principles of the ASEAN RAI



Alignment of RYNAN's Investment to ASEAN RAI

Guideline 2

Sustainable, inclusive economic development and poverty eradication, including: improved producer livelihoods, fair contracts, employment and wages, worker health and

Compared to conventional products, RYNAN's smart fertilizers may reduce fertilizer applications by up to 40-60 percent depending on crop, while increasing crop yields by over 10 percent. These potentially contribute to smallholder farmers' income increase from agriculture. Its agriculture and aquaculture monitoring devices also help to improve efficiency or solve challenges brought about by environmental challenges, for example, salinity monitoring devices which can alert farmers to access river water that is suitable for irrigation.

As more people move to cities to seek employment, sourcing for farming labor will get more challenging, having more efficient farming practices will help farmers overcome this difficulty.

Guideline 3

Equality, engagement and empowerment of women, indigenous communities, youth, marginalized communities

The investor conducts social impact assessment, measurement and tracks meaningful indicators at portfolio companies, such as improvement of income of beneficiaries like farmer groups who have been benefited from RYNAN's technology solutions, number of female leaders and staff at the investee's corporate level.

The founder has the desire to support farmers with advanced technology, to train young qualified engineers/ students to contribute to the scientific and economic development of Tra Vinh in the future, and has hence actively cooperated with Tra Vinh University to organize an internship program for students. RYNAN is also committed to accepting local students from many different majors, such as information technology, mechanics, electronics and automation, agriculture, fisheries, to work for the company upon their graduation, especially when the company is developing in the fields of artificial intelligence and supply chains for agricultural solutions. The companies started by the founder have created hundreds of jobs for young graduates, especially in engineering, research and product development.

Guideline 4

Respect for tenure of land, fisheries and forests

Not applicable, the factory was built on an industrial park set up by the provincial government.

No infringement of land tenure occurred as the farms remained under ownership of the local farmers.

Alignment of RYNAN's Investment to ASEAN RAI

Guideline 6

Sustainable and appropriate use of technologies

RYNAN develops advanced agricultural inputs, Internet of Things (IoT) devices, and cloud computing technology for water quality measurement, distribution, and management in agricultural production, such as smart water meters, salinity monitoring devices, smart fertilizers, etc. These products and solutions help farmers improve agricultural cultivation while saving water, energy, and labor. The products also reduce greenhouse gas emissions and increase farmers' ability to respond to the effects of climate change, such as saltwater intrusion and water shortages for farming.

At the farm level, these new technologies have been applied in more than 50 provinces. Close to 10,000 farmers have registered to use the agriculture monitoring application.

Compared to traditional methods, smart fertilizers reduce water use by up to 30 percent, require less labor, and reduce greenhouse gas emissions and fertilizer usage, hence decreasing the fertilizer runoffs, while increasing crop yields.

At the factory level, from 2019 – 2020, RYNAN has installed approximately 4,500 solar panels on the rooftop of all of its manufacturing facilities. This not only reduces the manufacturing process' carbon footprint but also promotes cost savings.

RYNAN Smart Water Meters have been installed within the facilities to track water consumption and mitigate wastage, ensuring that water is consumed responsibly.

RYNAN facilities are designed with a concentrated wastewater treatment system that treats all domestic and industrial discharges s. A monthly effluent water quality test is conducted to ensure the companyv's sustainability commitment to the Vietnamese government.

Guideline 7

Resilience to climate change, natural disasters and other shocks

These new products and technologies help smallholders adapt to the effects of climate change and revive agriculture in the provinces.

Guideline 8

Respect for the rule of law and incorporation of inclusive and transparent Governance structures, processes and grievance mechanisms

The investment has received the requisite government approvals where relevant.

The investee maintains regular communication with the government both at the provincial and national levels to provide advice and feedback on policy and regulatory reforms.

Guideline 9

Assess and address environmental and social impacts and monitor performance

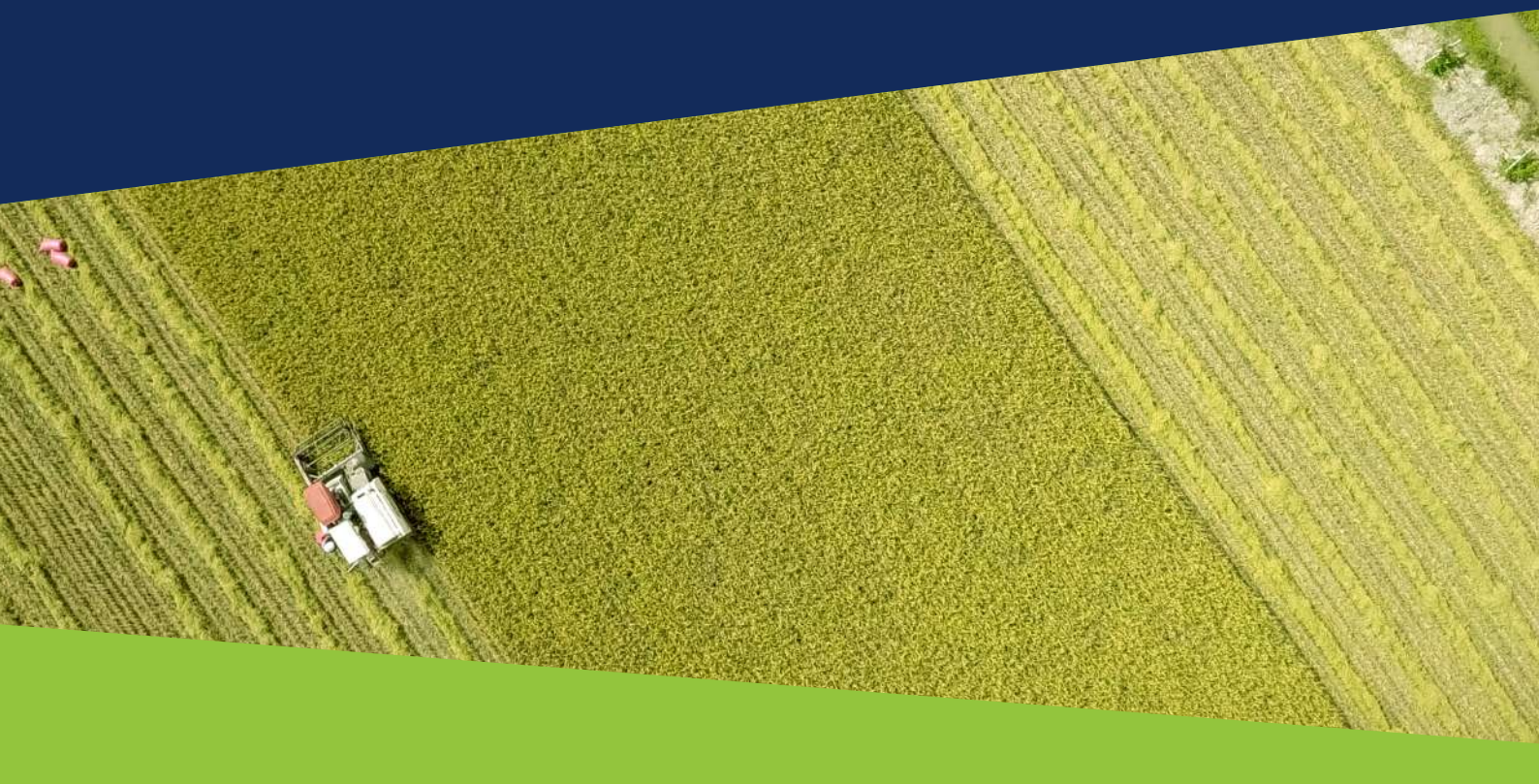
The investor tracks environmental and social impact indicators of the investment, such as the number of beneficiaries, and income improvement of farmers who have benefited from the application of agtech solutions.

The investee also maintains an internal system and has conducted interviews with beneficiary farmers to track how much their yields have improved since using the products.

Public policy recommendations

Impact investing is growing rapidly and the next decade will likely see it become a mainstream strategy for investors. Future growth will depend on an enabling ecosystem for multiple players, which include more than just social enterprises, but also other investors ranging from insurance companies to pension funds.

In addition, the investment experience has clearly demonstrated that agtech solution adoption could be time-consuming and often requires certain enabling policies to accelerate this uptake process. Smallholders usually lack adequate financial and technical resources that are required for technology adoption. The investor highlighted the gaps in government subsidies and public support in Viet Nam. Elsewhere in ASEAN, business-to-government (B2G) models have emerged where national or regional governments finance services on behalf of farmers. More projects of such nature can help to boost the adoption of technology in agriculture in Viet Nam.



Public policy recommendations

From the perspective of the equity investor, they highlighted that existing regulations requiring M&A approvals do require substantial time and effort in terms of documentation. If the process can be simplified, this will be helpful for foreign investors and can encourage more foreign investment in the country. The target company can also receive capital earlier which they can deploy to grow the company.

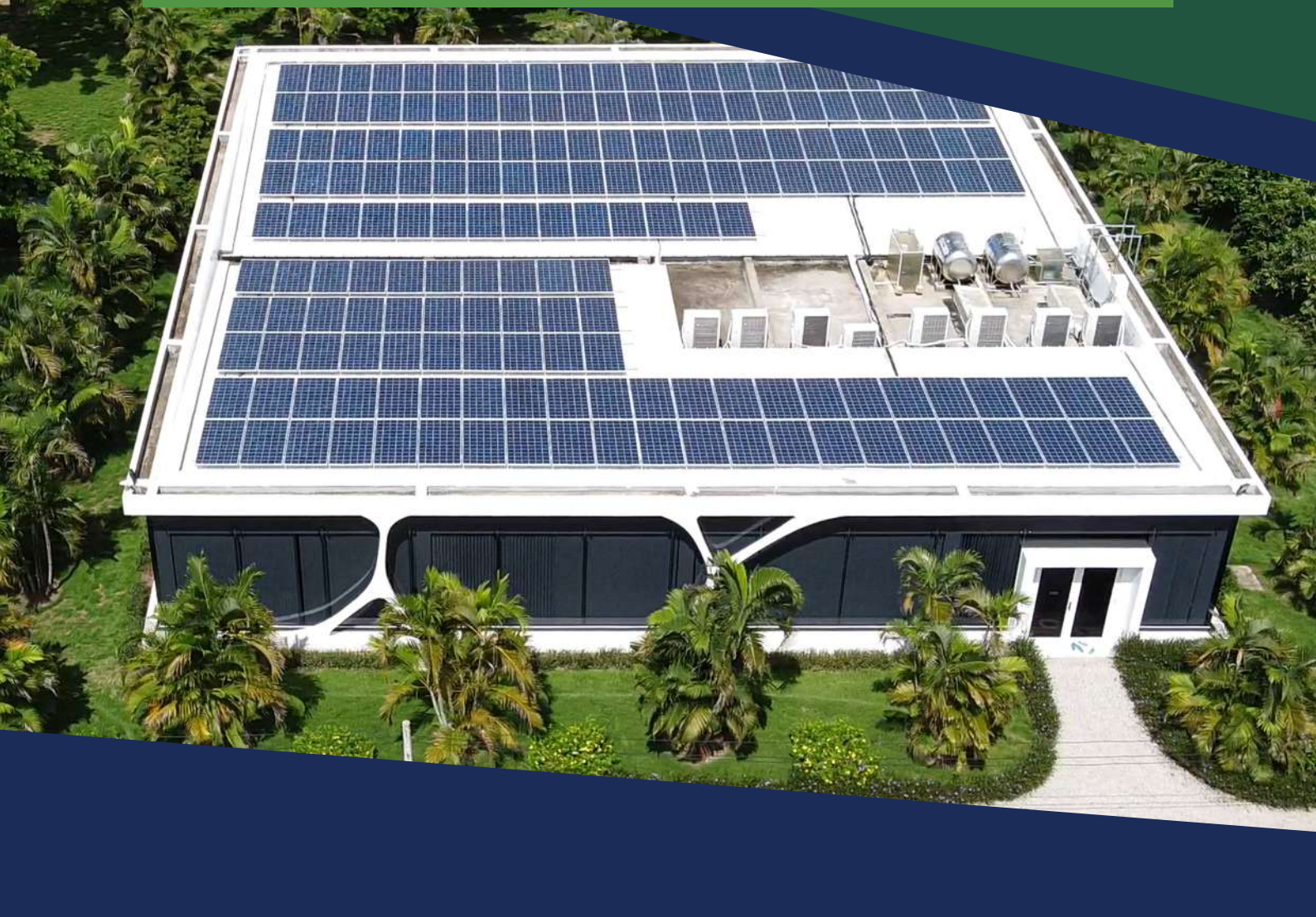
The investor has also highlighted COVID challenges including strict lockdowns that had given rise to operational challenges and high costs for SMEs. Additional government support would have been great to help the SMEs overcome some of these challenges.

More promotion of sustainable farming practices as well as government incentives to help with adoption will improve the use of technology in agriculture. Emphasis on quality of produce, lesser use of pesticides, and more sustainable crop cultivation can help to improve the image and demand for agricultural crops and exports in Vietnam.

Ensuring long-term sustainability

The investor adds value post-investment through active board participation and tracking the impact on target beneficiaries such as smallholder farms. For RYNAN, the investor constantly encourages the investee company to scale up the application of their existing tech solutions in an effort to better assist (and reach) smallholders.

> “Because of climate change, more investors are interested in Agriculture technology to improve farming practices.”
>
> **- Investor**



Learnings for the future

In the face of today's growing climate crisis, more consumers are considering how their purchases can influence big corporations to become greener, reduce their carbon footprint or increase transparency into their manufacturing practices.

"Investors need to become more aware of responsible investment practices and engage their investment companies to create impact and build a better world. In this process, global standards like the UNPRI, UN SDGs could be helpful in offering a menu of possible action and sustainability reporting", the investor affirmed.

From this transaction, the investor also learned that it takes time, commitment, and patience to overcome the challenges in the diffusion and adoption of early-stage agtech solutions. Patient capital is needed due to crop cycles where results might take up to a year to manifest. Long-term non-financial strategic investors are critical partners in supporting a business's sustainable transition to the next level. Start-ups can leverage their commercial experience and network to shorten the learning cycle.

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RYNAN Smart Fertilizers

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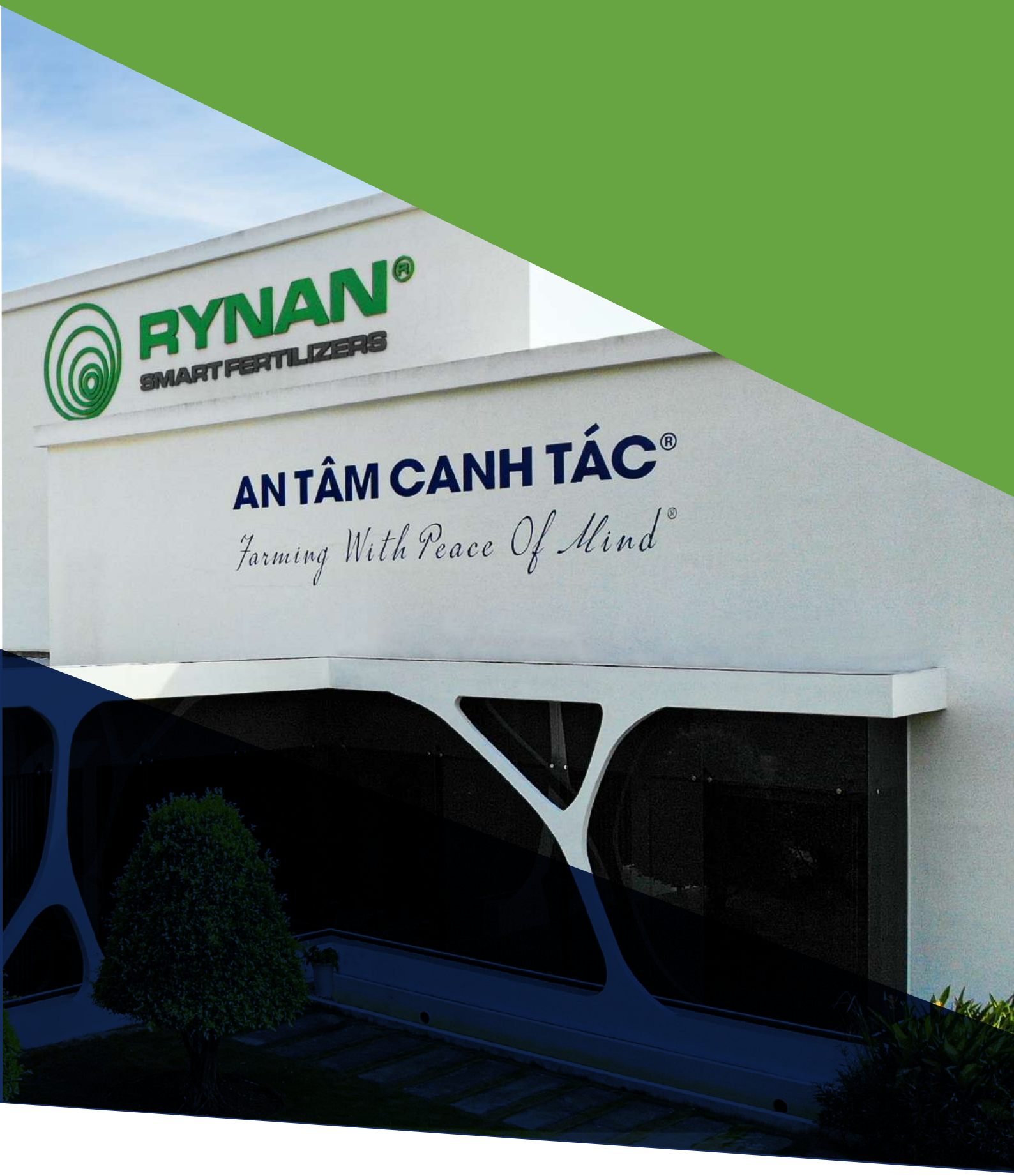
Dr. Nguyen Thanh My, Profile



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