

SDG Investor Map Thailand 2022

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Foreword



The Securities and Exchange Commission, Thailand (“SEC”) is very pleased and honored to be working with the United Nations Development Programme (“UNDP”) to implement the SDG Investor Map for Thailand 2022. This report is a source of open information for government agencies and private sectors looking to create a positive social and environmental impact to meet the Sustainable Development Goals (SDGs). The data and cases mentioned have been studied and analyzed according to international standards and will be published on the UNDP’s SDG Investor Platform in conjunction with similar projects from all over the world so that interested investors can easily access and study the information thoroughly.

This report has compiled 15 Investment Opportunity Areas (IOAs) from 9 sub-industries along with supporting data for making investment decisions. The diverse industries mentioned play a large part in creating positive social impacts and help address gaps created from the need of fundraising from governmental or business sectors by focusing on the affected sectors. This allows for greater access to rural areas, communities, and marginalized groups, reducing inequality and making it one of the mechanisms to support a country in achieving the Sustainable Development Goals.

The SDG Investor Map is therefore a useful resource for fundraisers, including listed companies, small and medium-sized businesses, startups, and various companies along the supply chain, along with related stakeholders, investors, and the public at large. Due to its accessibility and the availability of information on the platforms, the map will help create investment opportunities for those investors who are interested in creating a positive impact for society and the possibility to provide sustainable returns, while also making financial gains. At the same time, doing so will drive more businesses to focus on operations that take into account the environment, society and good governance, ultimately resulting in a sustainable ecosystem for the Thai economy.

The SEC believes that having a policy with set goals and implementations will lead to more positive reports on the ESG/SDGs sustainability performance of listed companies. In addition to helping strengthen the private sector’s role in driving the development of good governance, society and the environment and reducing inequality, the SDG Investor Map also helps shape a more sustainable capital market. It is thus one of the important mechanisms that will help drive the country towards achieving the 20-year National Strategy, the National Action Plan on Business with Human Rights (NAP) and the Thai Capital Market Development Plan, while achieving the SDGs by 2030.

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MS. RUENVADEE SUWANMONGKOL
Secretary-General,
Securities and Exchange Commission, Thailand



The 2030 Agenda and the Sustainable Development Goals (SDGs) articulate the United Nations’ universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity. To achieve the Goals, the 2030 Agenda needs to become a global framework not only for Governments but also for private actors to capture the benefits and trade-offs of sustainable development. This means encouraging greater SDG-aligned investments from institutional investors and corporations, using the 2030 Agenda as a proactive roadmap for capital deployment, rather than only as a framework for public finance focused assessment of impact.

Given the above, the United Nations Development Programme (UNDP) has developed at global level the SDG Investor Maps, an innovative tool that provides market intelligence for stakeholders to translate country level SDG gaps and priorities into private sector investment opportunities. The SDG Investor Maps provide investors with insights into local market conditions, local SDG investment opportunities, highlighting the business opportunity as well as the expected development impact of such investments. Within the Integrated National Financing Framework (INFF)’s financing strategy, the SDG Investor Maps can inform the resource mobilization efforts for a country’s national development plan. Furthermore, the tool’s market intelligence provides evidence, data and concrete recommendations on viable business models enhancing the INFF processes. UNDP has applied this approach in several countries such as Brazil, Colombia, Armenia, India, China, and is now launching an SDG Investor Map in Thailand.

UNDP is partnering with the Securities and Exchange Commission of Thailand to develop the Thailand SDG Investor Map. This work has been possible due to the support received from UNDP SDG Impact’s anchor partner in the region- the Center for Impact Investing and Practices [CIIP], Temasek Trust. The SDG Investor Map complements our work to formulate and operationalize an Integrated National Financing Framework undertaken under the leadership of the Ministry of Finance to establish a more holistic, public and private, approach to financing national sustainable development. The lessons and results of the initiative in Thailand will also contribute to the continued refinement of the SDG Investor Mapping process globally.

The SDG Investor Map report makes a concerted effort to identify sectoral opportunities that are responsive to key development challenges, while being economically viable and scalable. The Map has been developed by deploying UNDP SDG Impact’s robust research methodology and a highly consultative approach that involved over 30 structured interviews, highlights investor sentiment in subsectors and broad opportunity areas, while also suggesting viable business models that can be supported. 15 Investment Opportunity Areas (IOAs) across eight sectors, namely Food & Beverages, Renewable Resources & Alternative Energy, Health Services, Transportation, Financials, Infrastructure, Services and Education, have been identified.

We hope that this results-oriented, data-driven approach that highlights high impact and innovative business opportunities will translate in a greater flow of capital and pathways for collaboration. We are grateful to the Securities and Exchange Commission of Thailand for their collaboration on this important initiative and we hope that the partnership will further advance sustainable finance and sustainable investment in Thailand.

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MR. RENAUD MEYER
Resident Representative,
UNDP in Thailand

Executive Summary



The Sustainable Development Goals (SDGs) are a global commitment adopted by countries around the world, including Thailand, to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030. The SDGs consist of 17 goals covering sustainability issues in all dimensions, namely economic, social and environmental. In achieving the SDGs, the private sector plays a significant role in driving sustainable development through innovations and disruptive solutions to drive how business is done using the sustainability lens. The private sector holds the potential to create an economic value of up to USD 12 trillion per annum¹ from investments in key sectors like agriculture and food production systems, urban infrastructure, energy, resource processing and healthcare. Current investment gap in sustainable development around the world is USD 2.5 trillion, which may increase to USD 4.2 trillion due to the contraction of private sector investment and costs resulting from the COVID-19 pandemic.²

In order to incentivize private investment in sustainable development, the United Nations Development Programme (UNDP) has collaborated with partners in multiple countries, including the Securities and Exchange Commission (SEC) of Thailand on the “SDG Investor Map” project and developed the SDG Investor Platform as the primary tool in illustrating investment opportunity areas (IOAs) to global investors around the world. The SDG Investor Maps present market intelligence to support investment decision-making, such as market opportunities, return on investment, potential sustainability benefits and relevant risks. In the ASEAN region, the map development process is supported by UNDP SDG Impact’s anchor partner, Temasek Trust.

The process for developing this SDG Investor Maps included collection of background information on the current status of sustainable development and public policies in Thailand from academic studies and reports to establish development needs in Thailand. Then meetings were organized with stakeholders, including government agencies, private investors, international organizations and academics to collect expert opinions on key development opportunities in Thailand.

¹ Business and Sustainable Development Commission. (2017). Valuing the SDG Prize: Unlocking Business Opportunities to Accelerate Sustainable and Inclusive Growth.

² OECD. (2020). Global Outlook on Financing for Sustainable Development 2021.

Thailand’s development opportunities and supporting policies were analyzed to identify priority sectors, subsectors and subregions where additional private sector investment or financing have the potential to create positive impact and business growth. In-depth interviews were also conducted with stakeholders and investors, such as government representatives, Small and Medium business entrepreneurs, startup founders, asset managers, private sector investors and academics, to gather insights on investment and market data, business models, relevant policies and regulations, expected impact, and relevant risks. These inputs from the in-depth interviews contributed to the screening and validation of the final list of IOAs for Thailand.

Table 1 Key Investment Opportunity Area (IOA) in Thailand	
Subsector	Investment Opportunities
Food & Beverages	<ul style="list-style-type: none">Smart Farming and Precision AgricultureValue Chain Development for Sustainable/Organic ProductsSustainable Packaging from Agricultural Byproducts and WastesAlternative Proteins as Food for the Future
Renewable & Alternative Energy	<ul style="list-style-type: none">Decentralized Electricity Generation from Solar PVCommunity Biomass and Biogas Power Plant
Health Care Providers	<ul style="list-style-type: none">Telemedicine to Enhance Medical Access in Remote Areas
Land Transportation	<ul style="list-style-type: none">Smart Mobility Platform for Passengers and Freight Logistics
Financials for Corporate & Retail Banking	<ul style="list-style-type: none">Microcredit for Business Purposes
Insurance	<ul style="list-style-type: none">Microinsurance for Enhanced Financial Security of Low Income Groups
Waste Management	<ul style="list-style-type: none">Waste Management Systems and PlatformWaste Management Infrastructure
Hospitality & Recreation	<ul style="list-style-type: none">Medical and Wellness TourismEco & Community-Based Tourism
Education Technology	<ul style="list-style-type: none">Decentralized Online Learning Platform for STEM and Digital Skills, and Financial Literacy



As a result of this highly consultative process, Thailand’s SDG Investor Map has identified 15 IOAs from 8 priority subsectors along with investment data to support investors with market intelligence (Table 1), such as investment size forecast, payback period and returns.

This report and the IOAs are produced as a public good and are available online to serve as a source of open information for government agencies and private sector investors. They also contain details on policy recommendations and white spaces in need of further policy considerations. We sincerely hope that the Thailand SDG Investor Map will play its part in stimulating investments that will eventually accelerate Thailand’s SDG commitments while also strengthening Public-Private Partnership for the goals.

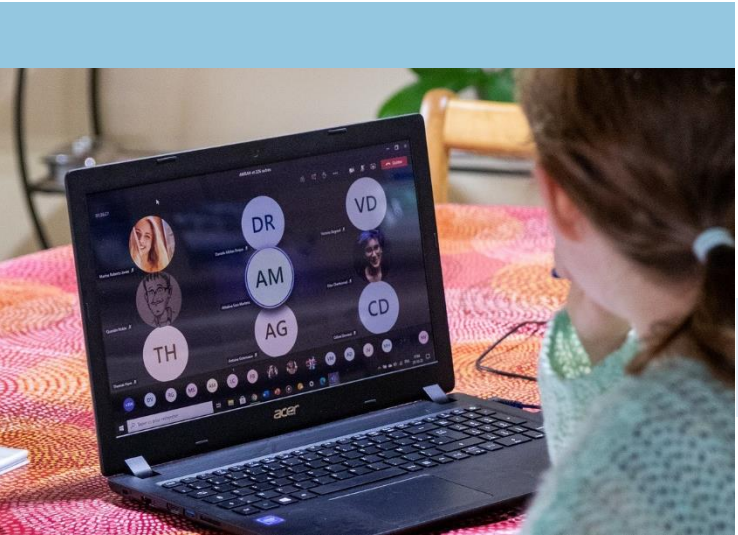


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Glossary

Terms	Definitions
Investment Opportunity Area: (IOA)	Describes the space where new capital can facilitate scale of existing impactful business models or where new business models can achieve significant impact, e.g. "grain value chain storage infrastructure".
White Space	White spaces are Investment Opportunity Areas (IOAs) that have potential for high development impact and have high growth potential, but face certain obstacles from having insufficient policy momentum, limited private sector participation, or are currently hindered by certain types of risks such as business risk, market risk, capital risk, etc.
Market Size	The amount of sales or customers in a given industry over a given period of time for the potential addressable market to investors.
Payback Period	The amount of time it takes to recover the cost of an investment
Investment Size	The amount of fund needed for investment
Priority Sector and Priority Subsector	Priority sectors and priority subsectors are classified by SASB’s Sustainable Industry Classification System (SASB SICS) ¹ which, through the research and stakeholder engagement, have been recognized as important for the sustainable development in Thailand and could be driven by capital flows from the private sector.
Target Location	Describes locations of relevance within a country for each IOA that has high readiness in terms of market, value chain, supporting policy or exhibit alignment with the local development plan. There are 3 characteristics of Target Location based on the classification by the Tourism Authority of Thailand. <ul style="list-style-type: none">• Second-Tier Provinces: 55 provinces that attract tourists less than 4 million people per year• Top-Tier Provinces: 22 provinces that attract tourists more than 4 million people per year representing as high population densities• Nationwide: All provinces across Thailand
Return on Investment (ROI)	Describes a financial metric that measures the return from an investment over its lifetime. To establish the ROI, ratio comparing the gain or loss from an investment relative to its cost is calculated. $ROI = \frac{(\text{Gain from Investment} - \text{Cost of Investment})}{\text{Cost of Investment}}$
Internal Rate of Return (IRR)	Describes the annual rate of growth an investment is expected to generate. To calculate Internal Rate of Return (IRR), the Net Present Value (NPV) formula is used, setting NPV equal to zero and solving for the discount rate, which is the IRR. Mainstream investors usually seek IRR rates of above 20% in markets like Thailand, depending on risks and investment thesis. $NPV = 0 = CF_0 + \frac{CF_1}{(1+IRR)^1} + \frac{CF_2}{(1+IRR)^2} + \frac{CF_n}{(1+IRR)^n}$ <p>CF₀ = Initial investment CF₁ = Cash flow year 1 or income/investment expense year 1 CF_n = Cash flow year n or income/investment expense year n n = Time period</p>
Gross Profit Margin	Describes a company's net sales minus the Cost Of Goods Sold (COGS). The gross profit margin is a metric expressed in percentage that shows the amount of gross profit generated relative to a company's sales. Good gross profit margins vary significantly across industries. $\text{Gross Profit Margin} = \frac{\text{Gross Profit}}{\text{Revenue}} = \frac{(\text{Revenue} - \text{Cost of Goods Sold})}{\text{Revenue}}$
Business to Business (B2B)	Refers to commerce between businesses where a business engages in services or products with other businesses.
Business to Consumer (B2C)	Refers to commerce between businesses and consumers where a business sells products and services directly to an individual consumer.
STEM Education (Science, Technology, Engineering and Mathematics)	Stands for four academic subjects which are Science, Technology, Engineering, and Mathematics.

¹ Sustainability Accounting Standards Board. <https://www.sasb.org/find-your-industry/>.

Terms	Definitions
Sustainable Development Goals (SDGs)	The Global Goals were adopted by 193 Member States at the historic United Nations General Assembly Summit in 2015 in Addis Ababa. They are a universal call to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030. The Sustainable Development Goals (SDGs) consist of 17 goals that are inclusive of sustainability spots in economic, social and environmental dimensions.
Goal 1 No Poverty	End poverty in all its forms everywhere
Goal 2 Zero Hunger	End hunger, achieve food security and improved nutrition and promote sustainable agriculture
Goal 3 Good Health and Well-Being	Ensure healthy lives and promote well-being for all at all ages
Goal 4 Quality Education	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
Goal 5 Gender Equality	Achieve gender equality and empower all women and girls
Goal 6 Clean Water and Sanitation	Ensure availability and sustainable management of water and sanitation for all
Goal 7 Affordable and Clean Energy	Ensure access to affordable and modern energy for all
Goal 8 Decent Work and Economic Growth	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
Goal 9 Industry, Innovation and Infrastructure	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
Goal 10 Reduced Inequalities	Reduce inequality within and among countries
Goal 11 Sustainable Cities and Communities	Make cities and human settlements inclusive, safe, resilient and sustainable
Goal 12 Responsible Consumption and Production	Ensure sustainable consumption and production patterns
Goal 13 Climate Action	Take urgent action to combat climate change and its impacts
Goal 14 Life Below Water	Conserve and sustainably use the oceans, seas and marine resources for sustainable development
Goal 15 Life on Land	Protect, restore and promote sustainable use terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
Goal 16 Peace, Justice and Strong Institutions	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
Goal 17 Partnerships for the Goals	Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development



Overview of Thailand's SDG Investor Map

What is an SDG Investor Map?

An **SDG Investor Map** is a market intelligence tool that helps the private sector identify investment themes in emerging markets that have a significant potential to advance the SDGs that are aligned to government policies and sustainable national development needs. The main objective of the SDG Investor Map is to present information that can aid investment decision-making process, and support fundraising activities for businesses and policymakers, thus channeling finance into sustainable development.

Who is an SDG Investor Map useful for?



Investors seeking to invest in bankable businesses by embedding sustainability in their business as usual practices.

Business organizations looking to adjust business strategy, create new businesses or attract investment in response to sustainable development.

Policymakers wishing to craft progressive and enabling frameworks to support businesses with the potential to resolve development challenges and support sustainable development.

SDG Investor Map Development

Process

1 Identify Priority Sectors

Priority sectors are identified based on an analysis of Thailand's sustainable development needs using the SDG framework and reported at the national level including the Sustainable Development Report 2021, Thailand's SDG Report, and the Voluntary National Review, among others. Priority sectors identification is also based on **development issues promoted by public policies** that have been incorporated into the 20-Year National Strategy and the 12th National Economic and Social Development Plan as well as the draft of the latter's 13th volume, etc.

2 Identify Priority Subsectors

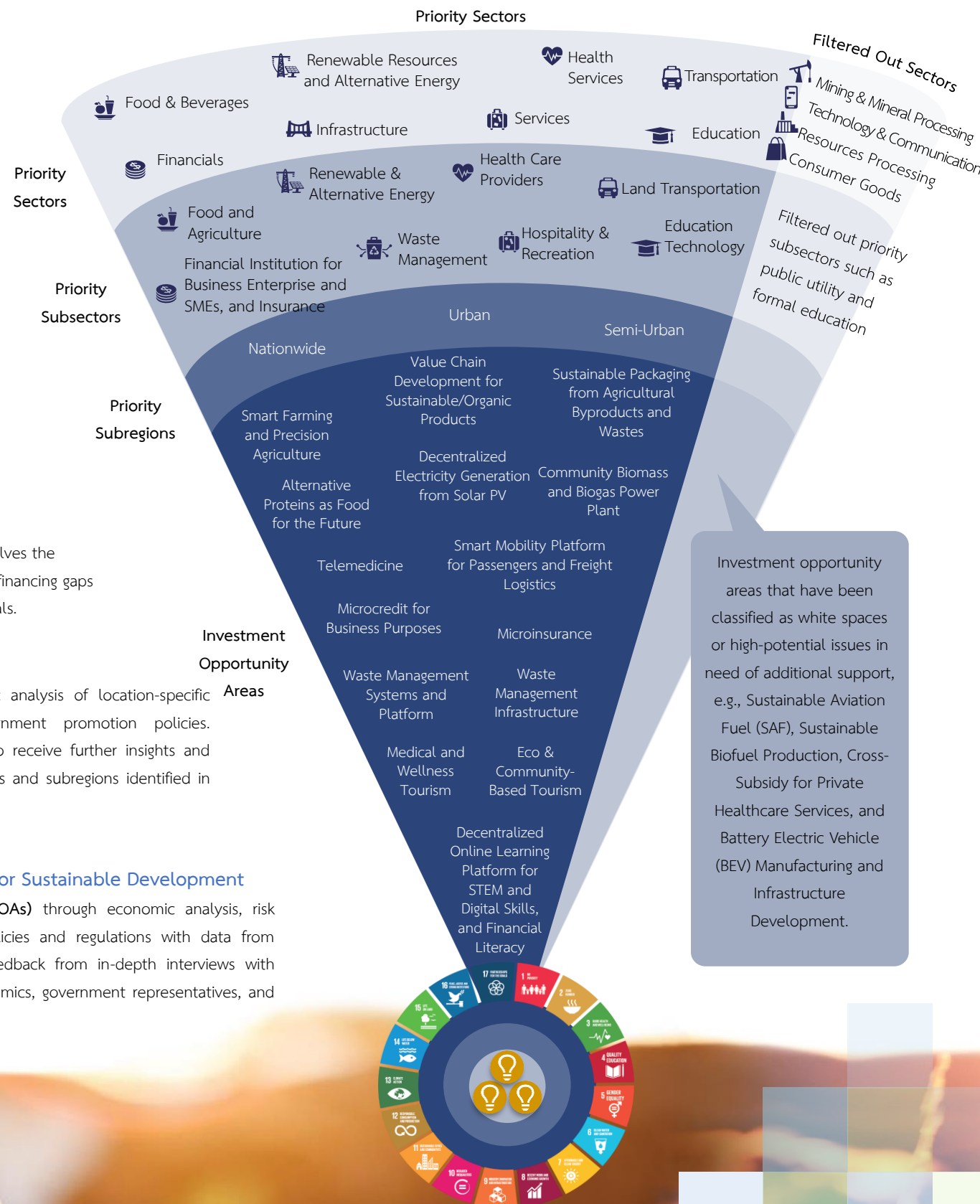
The process of identifying priority subsectors involves the analysis of areas within a sector where there are financing gaps that hinder the achievement of development goals.

3 Identify Priority Subregions

Defining **priority subregions** entails geographic analysis of location-specific sustainable development needs and government promotion policies. Additionally, expert meetings were organized to receive further insights and consensus to validate priority sectors, subsectors and subregions identified in steps 1-3.

4 Present Investment Opportunity Areas for Sustainable Development

Determining **investment opportunity areas (IOAs)** through economic analysis, risk factors, potential for impact, IOA relevant policies and regulations with data from published reports and research as well as feedback from in-depth interviews with stakeholders including business operators, academics, government representatives, and domestic and overseas private sector investors.



Outcome 15 Key Investment Opportunity Areas in Thailand

Investment Opportunity	Priority Sector	Investment Size (MB)	Payback Period (Year)	Return on Investment	Example of Businesses
1. Smart Farming and Precision Agriculture	Food & Beverages	< USD 500,000	< 5	IRR > 25%	Gaorai (Start-Up) SMARTFARM DIY (Start-Up)
2. Value Chain Development for Sustainable/Organic Products		< USD 500,000	< 5	ROI 5 - 10%	Farmto (Start-Up) Sookjai Organic (Social Enterprise)
3. Sustainable Packaging from Agricultural Byproducts and Wastes		USD 1 - 10 million	< 5	Gross Profit Margin > 25%	Gracz (Medium-sized) Fang Thai (Social Enterprise)
4. Alternative Proteins as Food for the Future		USD 1 - 10 million	< 5	Gross Profit Margin > 25%	Malang Ruay (Small-sized) Lallalit Agri Foods (Small-sized)
5. Decentralized Electricity Generation from Solar PV	Renewable Resources and Alternative Energy	< USD 500,000	5 - 10	Gross Profit Margin 5 - 10%	Leonics (Medium-sized) Gunkul (Large-sized)
6. Community Biomass and Biogas Power Plant		> USD 10 million	> 10	IRR 5 - 10%	UAC Global (Large-sized) Khon Kaen Sugar (KSL) (Large-sized)
7. Telemedicine to Enhance Medical Access in Remote Areas	Health Services	USD 500,000 - 1 million	5 - 10	ROI 15 - 20%	Ooca (Start-Up) Doctor Raksa (Start-Up)
8. Smart Mobility Platform for Passengers and Freight Logistics	Transportation	USD 500,000 - 1 million	< 5	ROI 10 - 15%	We Move (Start-Up) MuvMi (Start-Up) KKTT (City Development Company)
9. Microcredit for Business Purposes	Financials	< USD 500,000	< 5	ROI 5 - 10%	Ngern Tid Lor (Large-sized) Noburo (Start-Up)
10. Microinsurance for Enhanced Financial Security of Low Income Groups		USD 500,000 - 1 million	5 - 10	ROI 10 - 15%	AIA (Large-sized) Igloo (Start-Up)
11. Waste Management Systems and Platform	Infrastructure	USD 1 - 10 million	5 - 10	IRR 15 - 20%	GEPP Sa-Ard (Start-Up) Yindii (Start-Up)
12. Waste Management Infrastructure		< USD 500,000	< 5	Gross Profit Margin > 25%	Zero Waste YOLO (Start-Up) Wongpanit (Medium-sized)
13. Medical and Wellness Tourism	Services	< USD 500,000	5 - 10	ROI > 25%	Chiva-Som (Medium-sized) Munkong Life (Small-sized)
14. Eco & Community-Based Tourism		< USD 500,000	< 5	ROI > 25%	Local Alike (Start-Up) Find Folk (Start-Up)
15. Decentralized Online Learning Platform for STEM and Digital Skills, and Financial Literacy	Education	< USD 500,000	< 5	ROI 10 - 15%	Learn Corporation (Medium-sized) Skooldio (Medium-sized)

*** Investments contain risks. Please study relevant information carefully before making any investment decision***
Business size presented is based on the website of Department of Business Development, Ministry of Commerce

Importance of Thailand's SDG Investor Map

SDG Investor Maps have been developed in 20 countries worldwide with several others in pipeline. The published maps cover 400+IOAs covering countries from Asia, Africa, Middle East and Latin America. Thailand's first SDG Investor Map was developed in 2022 to help raise awareness on investment opportunities and stimulate interests from the private sector on businesses that offer competitive financial returns and non-financial benefits to the people and the planet.

SDG Investor Maps for other countries have demonstrated accomplishments that are expected to be replicated in Thailand. For example, earlier this year, an event was hosted by UNDP Turkey to connect investors and enterprises in the Technology and Communications sector, a priority sector identified by the SDG Investor Maps.¹ As a result, a participating company was able to sign an engagement letter with an impact investor from Singapore to begin a due-diligence process to start this SDG-anchored partnership.

The information contained in this SDG Investor Map report is expected to be regularly reviewed and updated in line with changing contexts in the future, including changes in government promotion policies and market and investment trends, in order to continue providing the most relevant information to attract investment from the private sector.

Case Study: Turkish Producer of Smart Canes for Visually Impaired Individuals, WeWALK, was identified by the SDG Investor Map and connected to investors through an UNDP hosted event.

More Information



Assistive technology tools for students or employees with disabilities

TECHNOLOGY AND COMMUNICATIONS
Software and IT Services

Turkey

EXPECTED IMPACT
This IOA will promote access to inclusive education, develop the human resources of the country and increase the value-added from education technology

INDICATIVE RETURN
> 25% (in IRR)

TIMEFRAME
Short Term

ESTIMATED MARKET
> USD 1 billion

Key Investment Opportunity Areas for Private Sector Investment in Thailand Identified and Analyzed through Stakeholder Engagement Process Towards the Fulfilment of Sustainable Development Goals



¹ UNDP. (2022). Connecting tech enterprises with private sector investors to spur sustainable development in Turkey.

Smart Farming and Precision Agriculture

Development Needs

The agricultural sector is intrinsic to Thailand’s economic and social development; however, Thai farmers have been struggling with an average income that is lower than that of other professions. This is mainly due to low productivity, high labor costs leading to high production costs, and lack of planning and management leading to inefficient use of resources, such as water, fertilizer, and chemicals. Moreover, excessive use of chemicals leaves high levels of residue in the environment and contaminants in crops, affecting the health of farmers and consumers as well as the ecosystem.

Business Description

Smart farming and precision agriculture feature the integration of technologies into agricultural practices to enhance production efficiency, overcome agricultural land limitations and cut costs for farmers; for example, sensing technology that automatically control inputs (temperature, humidity, light and nutrients, etc.), Internet of Things (IoT), satellite imaging technology, or aerial drones, among others

Expected Development Outcome

- Enhance production efficiency to generate more income for farmers
- Utilize water, fertilizer and chemicals efficiently to reduce resource consumption, lower production costs and reduce the likelihood of chemical contamination
- Minimize health risks for farmers by reducing exposure to pesticides
- Female farmers often have more labor-intensive roles in agriculture can be empowered through higher productivity and income.

Enabling Environment

- Government support in accordance with Thailand 4.0 Policy, 20-Year Agriculture and Cooperative Strategy (2017-2036), and Digital Economy Promotion Master Plan (2018-2022).
- Tax benefit and other incentives are provided by the Board of Investment and promotion of tech companies from the Digital Economy Promotion Agency.

Impact Risks and Obstacles

- There may be challenges regarding access to the internet and digital technology, especially for elderly farmers and those living in remote areas or in low resource settings.
- Many farmers have limited exposure to digital technology and may lack essential skills to engage meaningfully with such platforms.
- Large-scale farms and the private sector are better equipped to invest in smart farming and precision agriculture than smallholder farmers with low income, causing further income disparity in the agricultural sector.

Case Studies

- Gaorai is an agri-tech startup and developer of a platform that connects freelance drone pilots to farmers for chemical spraying services. Farmers benefit from lower labor costs and lower pesticide use. Furthermore, farmers can increase productivity without having large upfront costs needed in the investment, and also have lower health risks from less exposure to pesticides.

Market Size: More than USD 1 million
Indicative Return: IRR >25%
Payback Period: Less than 5 years
Investment Size: Less than USD 500,000
Target Area: Nationwide
Business Model: B2B and B2C
Sustainable Development Goals

1 NO POVERTY

2 ZERO HUNGER

3 GOOD HEALTH AND WELL-BEING

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

More Information



Increasing income for farmers with smart farm technology that is accessible to all

Value Chain Development for Sustainable/Organic Products

Development Needs

Sustainable agriculture and organic farming are some of the key approaches in reducing the use of fertilizers and pesticides, which contribute to damage to the ecosystem, affecting the health of farmers and consumers from chemical exposure and consumption of contaminated food. Nevertheless, practice of sustainable agriculture and organic farming is low in Thailand due to low crop productivity when compared to industrial agriculture, and also due to the high production costs involved. Consequently, small volumes of organic products are available in the market at high prices, limiting access to organic products for most consumers.

Business Description

The value chain development and enhancement can make sustainable/organic agriculture more prevalent. Such farming systems involve limiting the use of agricultural chemicals, reducing forest encroachment, encouraging the use of biofertilizer and agroforestry farming. At the same time, direct connections at the input side as well as with consumers should be established, for example through online platforms, markets. These systems incentivize farmers to practice sustainable/organic agriculture by encouraging economies of scale, increasing competitiveness in terms of prices and reducing the price- manipulation by middlemen.

Expected Development Outcome

- Reduce negative impact on the environment in the agricultural sector by reducing use of chemicals
- Raise production efficiency and income, improve the livelihood of farmers by preventing price manipulation by middlemen and business operators in the downstream industry
- Increase production capacity to make sustainable/organic products more affordable to consumers, which ultimately will contribute to the growth in market size for such products.
- Reduce health risks for farmers, especially for reproductive health of female farmers

Enabling Environment

- Government support in accordance with the draft 13th National Economic and Social Development Plan (2023-2027), 20-Year Agriculture and Cooperative Strategy (2017-2036), and Digital Economy Promotion Master Plan (2018-2022).
- Building confidence of consumers with Good Agricultural Practices (GAP) and the Organic Agriculture Standard issued by the Organic Agriculture Certification Thailand.

Impact Risks and Obstacles

- Organic certification can be costly for small and low-income farmers.
- Data from the National Statistical Office (2020) shows that around 50% of people age 50 years and above use the internet¹. Thus, gaining access and using the online platform may present a challenge for many senior farmers.
- Difficulty in accessing sustainable/organic products by consumers due to limited production capacity, which may cause prices to become unaffordable for most consumers.

Case Studies

- Farm-To is a startup and developer of an online marketplace platform for agricultural products where farmers can post online content to create their own narrative to attract consumers. Farmers can also accept pre-order reservations from consumers to guarantee a minimum demand for their products. Furthermore, the platform selects quality produce certified with various standards to build confidence for consumers. Farm-To also provides education and training on sustainable/organic agriculture, and entrepreneurial skills for farmers.

¹ National Statistical Office. (2021). Household use of Information and Communications Technology Survey 2020.

More Information



Consumers eat well, farmers live well by developing the value chain

Market Size: More than USD 1 million
Indicative Return: ROI 5-10%
Payback Period: Less than 5 years
Investment Size: Less than USD 500,000
Target Area: Nationwide
Business Model: B2B and B2C
Sustainable Development Goals

1 NO POVERTY

2 ZERO HUNGER

3 GOOD HEALTH AND WELL-BEING

15 LIFE ON LAND

Sustainable Packaging from Agricultural Byproducts and Wastes

Development Needs

Marine plastic pollution is a global problem that does not only impact the environment, but also affects the health of consumers worldwide from the consumption of seafood contaminated with toxins from microplastics. Furthermore, open burning of agricultural and solid waste remains one of the major sources of air pollution in Thailand.

Business Description

Sustainable packaging can be produced from agricultural byproducts and waste, such as rice husk, bagasse, or pineapple husk that can decompose naturally under specific conditions. Sustainable packaging contributes to lower dependence on single-use plastics, contributes to circular economy in agriculture, and reduces air pollution from open burning of waste.

Expected Development Outcome

- Decrease the volume of plastic waste that contributes to marine plastic pollution that in turn threatens the marine ecosystems
- Reduce health risks from leakage of chemicals from plastic packaging, and intake of chemicals from microplastics contained in seafood
- Reduce air pollution from burning of agricultural waste and generate income for farmers from sales of processed agricultural waste, especially women that are mostly responsible for post-harvesting and processing activities
- Reduce healthcare expenditures for both the government and citizens by reducing health risks from lower air pollution

Enabling Environment

- Government support in accordance with Thailand 4.0 Policy, BCG (Bio Circular Green) Model which promotes biotechnology development, and Thailand’s Roadmap on Plastic Waste Management (2018-2030) which sets a timeframe to eliminate use of plastics.
- Agricultural byproducts and waste are abundant in Thailand. In addition, the Board of Investment offers tax benefits and other incentives for agro-industry and bio-based technology.

Impact Risks and Obstacles

- Thailand lacks regulations to address information asymmetries arising from misleading information passed on by producers to consumers about packaging properties. As a result, responsible producers have to acquire international certifications and standards to demonstrate credibility of their packaging products, which can be very costly.
- The price of most sustainable packaging is relatively high due to the high costs of raw material. Consequently, the majority of consumers still opt for conventional plastic packaging.

Case Studies

- Gracz manufactures sustainable packaging from a variety of agricultural waste, such as bagasse and water hyacinth, etc. These non-toxic packaging can decompose within 42 days of landfill. Furthermore, Gracz engages in community development by supporting the initial processing of agricultural waste to increase value-added for the community and then purchases the agricultural waste as raw materials to generate additional income for the community.

Alternative Proteins as Food for the Future

Development Needs

Protein is an essential nutrient for all humans, and our major source of protein comes from consumption of meat. However, raising livestock and growing crops used for animal feed require large volumes of water and extensive land areas, and yet they yield relatively lower amount of protein output when compared to producing other types of non-meat proteins. Furthermore, the livestock industry is a key source of Green House Gas (GHG) emissions, constituting at least 14% of the total global emissions¹. At the same time, consuming meat contaminated with chemicals and antibiotics may affect consumer health.

Business Description

Alternative proteins are proteins that are not obtained by traditional livestock animals, but from other sources, including plant-based meat, lab-grown meat, and other animal protein sources, e.g., insects, etc. The key advantage of alternative proteins is the low environmental and health impact, making them a preferred diet option among environmentally and health-conscious consumers, and vegans.

Expected Development Outcome

- Reduce greenhouse gas emissions and natural resource consumption and wastes.
- Reduce health risks for farmers from low chemical exposure and for consumers who ingest chemical residue and antibiotics in meat.
- Increase income for farmers as alternative proteins are high value-added products compared to traditional agricultural products
- Increase income for women as certain type of alternative proteins, such as insect require little manual labor and can be done at home.

Enabling Environment

- Government support through the Food Innopolis, such as laboratory services, and networking with universities for R&D, private sector and leading businesses.
- Food quality and safety certified with Good Agricultural Practices (GAP) and HACCP standard.
- Tax benefits and other incentives from the Board of Investment.

Impact Risks and Obstacles

- The consumption of alternative proteins is still low due to the high price when compared to conventional meat proteins. Furthermore, consumers may be unfamiliar with protein derived from alternative sources, such as insects.
- High investment and production costs are hindering small farmers and businesses from investing in alternative protein production. Consequently, large businesses dominate alternative protein industry while small farmers, who are the main suppliers of raw materials, receive only a small share of profit.

Case Studies

Malang Ruay is a producer and distributor of insect protein products, such as insect whey protein, protein powders and insect snack food, with exports to overseas. All insects used for raw materials have GAP certification. Malang Ruay also encourages farmers to shift from growing commodity crops to raise insects, which requires low investment and have short payback period. Farmers are also urged to feed insects with local agricultural feed to reduce dependence on processed insect food.

More Information



Replacing plastic packaging with healthy and eco-friendly alternatives

Market Size: USD 50-100 million
Indicative Return: Gross Profit Margin >25%
Payback Period: Less than 5 years
Investment Size: USD 1 – 10 million
Target Area: Nationwide
Business Model: B2B and B2C
Sustainable Development Goals



More Information



Alternative proteins that are good for the Earth and you.

Market Size: More than USD 1 billion
Indicative Return: Gross Profit Margin >25%
Payback Period: Less than 5 years
Investment Size: USD 1 – 10 million
Target Area: Nationwide
Business Model: B2B and B2C
Sustainable Development Goals



Decentralized Electricity Generation from Solar PV

Development Needs

Electricity generation industry is Thailand’s top GHG emission polluter, accounting for 30% of the total GHG emissions¹ in the country. Due to the declining price of solar technology, decentralized electricity generation from solar PV has become the key approach to reducing GHG emissions in the energy sector, serving as a source of income for the homeowners, and strengthening energy security.

Business Description

Solar PV can be installed on household rooftops or even on water surfaces in reservoirs to generate solar energy. As a result, households and businesses are able to generate electricity that can be stored for nighttime usage or sold to utility companies. This electricity generation via solar PV corresponds to future expansion of smart grid technology and peer-to-peer energy trading. According to a study by Krungthai Bank, 2.36 million households have the potential to install 2kWh solar PV to receive the most benefit just self-consumption of solar energy.²

Expected Development Outcome

- Such alternative means of electricity generation reduces GHG emissions otherwise generated by fossil fuel dependent technologies and safeguards the environment and community health.
- Increased access to clean energy for remote communities and businesses located beyond urban and semi-urban areas.
- Reduce energy-related costs and possible secondary source of income for households when surplus electricity is sold to the utility company.
- Strengthen Thailand’s energy security from the expansion of power generation capacity and the distribution of electricity sources.

Enabling Environment

- Government support in accordance with Thailand’s Power Development Plan (2018-2037), Alternative Energy Development Plan (2018-2037), and Thailand Smart Grid Development Master Plan (2015-2036).
- Tax benefits and other incentives from the Board of Investment and financial support from the Thailand Energy Conservation Fund (ENCON Fund).
- The government’s Feed-in-Tariffs (FiT) policy.

Impact Risks and Obstacles

- The price for installation of solar PV remains an obstacle for low-income households despite its steady decline.
- Government policies and regulations pertaining to the purchase of electricity as well as other relevant requirements are subject to change. This factor can affect returns on solar PV installation and hinder private sector confidence to invest in this sector
- Solutions for the disposal of used or damaged solar PV and energy storage systems should be considered as they will become electronic waste in the future.

Case Studies

Leonics is a private company providing technical services and installation of microgrid power generation systems using integrated solar energy. Two system configurations are available, i.e., an “off-grid” system which can self-sustain itself with power supply and energy storage systems, and an “on-grid” system that is connected to the power grid. Customer groups include households, villages and businesses. In addition, blockchain technology has been implemented to support energy trading through peer-to-peer energy trading platform as well as IoT and AI to control and forecast electricity generation and consumption.

Market Size: More than USD 1 billion
Indicative Return: Gross Profit Margin 5%-10%
Payback Period: 5-10 years
Investment Size: Less than USD 500,000
Target Area: Nationwide
Business Model: B2B and B2C
Sustainable Development Goals



More Information



Transforming sunlight on any rooftop into clean energy

Community Biomass and Biogas Power Plant

Development Needs

The improper management of agricultural waste and wastewater from livestock are major sources of Thailand’s air pollution and GHG emissions. Therefore, utilizing agricultural waste and wastewater from livestock as fuel for electricity generation is an efficient solution to such problem.

However, there may be challenges regarding the high transportation costs of the agricultural waste used as raw materials in generating electricity from biomass or biogas. Therefore, the construction of small or community power plants near raw material sources can help lower transportation costs, and act as an additional source of income for the communities.

Business Description

Community biomass and biogas power plants have the potential to help reduce GHG emissions in the energy sector. Thailand has large quantity of agricultural waste from farming and wastewater from livestock, and also high production capacity to grow energy crops such as bamboo, acacia and napier grass³. Furthermore, biomass and biogas power plants can be located throughout various communities to reduce transportation costs for raw materials, and provide income to communities selling agricultural waste and energy crops.

Expected Development Outcome

- Reduce GHG emissions from electricity generation
- Reduce open burning that causes air pollution by using agricultural waste as fuel for power generation.
- Create income for the community by purchasing energy crops and agricultural waste.
- As a partner of the power plant, the community will earn a share of the profit from sale of generated electricity.

Enabling Environment

- Government support in accordance with Thailand’s Power Development Plan (2018-2037), Alternative Energy Development Plan (2018-2037), and Community Power Plant for Local Economy Project.
- Tax benefits and other incentives from the Board of Investment.
- The government’s Feed-in-Tariffs (FiT) policy.

Impact Risks and Obstacles

- Air pollution from fuel combustion may affect the health of surrounding communities without proper management that meets environmental standards.
- Without community buy-in, the project may face opposition. Hence, investments in capacity building and information services will need to be made.
- Climatic factors will have a direct bearing upon the quantity of raw materials available leading to unpredictability in the supply of such materials.
- Government policies and conditions pertaining to the purchase of electricity may change in the future, thus affecting the cost-effectiveness of the project.

Case Studies

- UAC Global PCL invested in community biomass and biogas power plant project in Chiang Mai province and purchases energy crop from farmers for fuel in electricity generation, such as corn stalks leftover from harvest and napier grass which can be grown year-round in land with degraded soil unsuitable for forage or cash crop cultivation. This contributes to the reduction of open burning and air pollution.

² National Statistical Office. Energy crops are low-cost and low-maintenance crops grown solely for energy production and can be processed into solid, liquid or gaseous fuels that can later be burned to generate electricity or heat. (2564). Household use of Information and Communications Technology Survey 2563.

More Information



Creating added value for waste and wastewater through electricity generation

Market Size: USD 100 million – USD 1 billion
Indicative Return: IRR 5%-10%
Payback Period: More than 10 years
Investment Size: More USD 10 million
Target Area: Nationwide
Business Model: B2B
Sustainable Development Goals



¹ Working Group on the Implementation of the 2030 Agenda for Sustainable Development. (2021). Thailand’s Voluntary National Review on the Implementation of the 2030 Agenda 2021 for Sustainable Development.
² Krungthai Bank. (2021). Residential Solar Rooftop: Additional Income for Real Estate Developers.

³ Energy crops are low cost and low maintenance crops grown solely for energy production and can be processed into solid, liquid or gaseous fuels that can later be burned to generate electricity or heat.

Telemedicine to Enhance Medical Access in Remote Areas

Development Needs

Penetration of medical personnel per unit of population is limited in many areas of Thailand when compared to World Health Organization (WHO) recommendations of 2.8 doctors per 1,000 population. Meanwhile, available, skilled medical personnel are concentrated in large metropolitan areas, leading to inequalities between urban and rural areas with regards to access to public health services. As a result, patients living in rural and remote areas, especially those that suffer from chronic illness or are bed-ridden, elderly, handicapped, and low-income patients, can face difficulties in regularly accessing essential medical services.

Business Description

Telemedicine takes advantage of online technology, enabling patients to gain access to diagnosis, treatments and follow-up monitoring without the need to travel, thereby easing access related challenges. This system can be developed by public and private healthcare providers themselves or by service provider companies. There exists various forms of telemedicine, such as online medical consultation and diagnostics or remote robotic surgery, etc., which all have similar business models of remotely connecting patients to doctors from different locations.

Expected Development Outcome

- Expand access to professional healthcare services for patients with travel restrictions and enhance the efficiency of healthcare providers in servicing such demand
- Save time and lower costs in traveling to access healthcare services
- Contribute to reducing the burden on public healthcare systems by providing remote care leveraging technology.
- Increase access to health care for elderly, women, and those residing in rural areas

Enabling Environment

- Government support in accordance with Thailand 4.0 Policy which targets to promote Thailand as the regional medical hub, and Digital Economy Promotion Master Plan (2018-2022) which promotes digital innovation and telemedicine.
- Tax benefit and other incentives from the Board of Investment.

Impact Risks and Obstacles

- Some patients, such as low-income individuals, the elderly, etc., do not have access to the internet or smartphones that may obstruct them from accessing telemedicine.
- Telemedicine may not be suitable for the treatment of certain diseases and should not therefore be marketed as an alternative to brick and mortar healthcare institutions
- Patients may be more accustomed to conventional treatment methods, which involves in-person, private consultations, than telemedicine.
- Even with the scaling of Telemedicine, challenges in other areas such as unequal access to healthcare services in terms of medical equipment, quality of treatments, and the difference between medical fees of public and private hospitals will need to be addressed for a holistic improvement in healthcare indices for Thailand.

Case Studies

- AorSorMor Online application serves as a communication tool for Village Health Volunteers (VHV) and healthcare staff of Tambon Health Promoting Hospital. The application’s highlight features its ability to connect VHV in communities to doctors in distant hospitals for diagnosis, treatments and follow-ups while the VHV can make in-person visits to patients in their homes. In addition, the application contributes to tracking and containing the pandemics in rural areas.

Smart Mobility Platform for Passengers and Freight Logistics

Development Needs

At present, many areas are still not covered by the public transportation system. Meanwhile, many people prefer to travel by private vehicles due to inconveniences of public transportation. In addition, e-commerce, logistics and last mile deliveries have been growing continually in recent years. As a result, road transport has increased, causing traffic congestions, road accidents, air pollution directly contributing to GHG emissions.

Business Description

The smart mobility platform for passengers and freight logistics applies technology to develop a transportation system with more connectivity and efficiency. Examples of smart mobility include an online platform that connects various public transport services to expand service areas and provide ease of use, ride-sharing or car rental sharing platform, and freight planning platform to reduce empty runs by connecting passengers, drivers, and warehouses. Smart mobility platform manages data and records transport statistics, making it possible for applying such solutions in urban planning, traffic management, research and development of new services in the future.

Expected Development Outcome

- More efficient and convenient passenger and freight logistics covering more service areas.
- Reduce traffic congestions, road accidents, air pollution and GHG emissions.
- Transportation system with higher performance, reducing costs and unequal access to public transportation for low-income individuals.

Enabling Environment

- Government support in accordance with Thailand 4.0 Policy, 20-Year Transportation System Development Strategy (2017-2036), Third Thailand Logistics Development Strategy (2017-2021) and Digital Economy Promotion Master Plan (2018-2022).
- Tax benefits and other incentives from the Board of Investment for smart distribution centers and intelligent transportation systems and services.

Impact Risks and Obstacles

- Smart mobility solutions, unless aligned with the emergence of electric vehicles and application of universal design principle that focuses on an accessible transportation system, may remain a fragmented initiative..
- Unless adequate marketing efforts are made to improve consumer awareness and willingness to uptake such solutions, such solutions may lose out to more traditional competition.

Case Studies

- We Move is a platform that connects consumers seeking freight logistics service and freelance truck drivers. The highlight feature of We Move is resolving the problem of empty runs after completing the delivery of goods. We Move enhances transportation management, maximizes resource consumption, and reduces transportation costs, such as fuel, vehicle wear and tear, and labor. The platform also increases income for truck drivers.

More Information



No matter how far ...
a doctor is always near



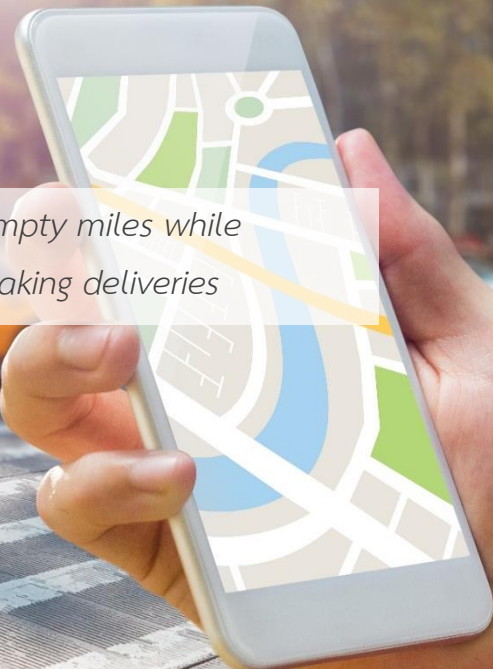
Market Size: USD 100 million – USD 1 billion
Indicative Return: ROI 15%–20%
Payback Period: 5 – 10 years
Investment Size: USD 500,000 – USD 1 million
Target Area: Sub-Urban
Business Model: B2B, B2C
Sustainable Development Goals



More Information



Don't waste empty miles while
travelling or making deliveries



Market Size: More than USD 1 billion
Indicative Return: ROI 10%–15%
Payback Period: Less than 5 years
Investment Size: USD 500,000 – USD 1 million
Target Area: Urban
Business Model: B2B and B2C
Sustainable Development Goals



Microcredit for Business Purposes

Development Needs

Despite high coverage of loan services offered by the formal banking sector in Thailand, the usage is very low, especially among low-income individuals and small businesses in Thailand. This is because they mostly have unpredictable cash flows and no demonstrable financial credit history nor collaterals. Moreover, they are the most affected by the pandemic. For example, according to a report by the Bank of Thailand, it was estimated that there were 1.9 million street food vendors³. Many had to close their business, and had to borrow from informal lenders despite very high interest rate due to existing debt burden and lack of access to formal loans. Therefore, increasing access to formal credit services for low-income individuals and small businesses owners will enable them to support their jobs and businesses in times of emergency, create jobs and improve the livelihoods while also contributing to the overall economic development, reducing effects of economic shock like the pandemic, and economic recovery.

Business Description

Microcredit for business purposes is primarily intended to increase access to finance for low-income individuals to help stabilize their cashflows and provide working capital to either start or expand existing businesses. Microcredit may be provided with a limited credit limit and a short repayment period but may have higher interest rates than general loans as the risk profile of such transactions are generally high. However, such financial mechanisms are intended solely for business purposes to generate income from businesses and create repayment opportunities, thus the loans are not typically issued for personal expenditures. Importantly, microcredit lenders can utilize online application and platforms to leverage the increase access to smartphones and the internet by the general population in order to increase penetration of the business model.

Expected Development Outcome

- Reduce unequal access to finance and increase income generating opportunities for low-income individual.

³ Bank of Thailand, et al. (2021) เข้าถึงผู้ประกอบการ เข้าใจหนทางอยู่ร่วมกับโควิด-19
² Bank of Thailand. Loans to Household classified by Purpose 1.

- Create jobs, spur growth of domestic economy and reduce business/household debt and negative coping mechanisms during financial stress .
- Build financial security for small businesses, enabling them to set long-term business plans and subsequently contributing to their upward economic and social mobility.
- Reduce informal borrowing from usurious sources and related consequences, such as threats, use of violence, and seizure of properties

Enabling Environment

- Government support in accordance with the draft 13th National Economic and Social Development Plan (2023-2027), Financial Sector Master Plan Phase III (2016-2020), and Bank of Thailand Strategic Plan (2017-2019).
- Sustainable Finance Initiatives for Thailand (2021) aims to promote sustainable finance targeting low income individuals.
- Interest rate for microcredit is limited 28%, maximum loan amount of USD 6,666.7 (THB 200,000), and has no collateral or minimum income requirement.

Impact Risks and Obstacles

- Microcredit institutions may have a large clientele but small amount of funds leads to high management costs.
- Close engagement with the community can help to ensure that loans are not used for personal consumption and used for business purposes only. In Q1 of 2021, household debts amount to 90.6% of Thailand's GDP with personal consumption accounting for 76.6% and business purposes accounting for only 18.1%.²
- Borrowers may have limited financial knowledge and limited access from lack of financial record.

Case Studies

- Ngern Tid Lor PCL is Thailand's first non-banking financial institution to receive a USD 100 million loan from the International Finance Corporation (IFC) to increase its lending to micro, small, and medium enterprises (MSMEs) to help revive the economy from the COVID-19 pandemic. In addition, Ngern Tid Lor PCL offer digital services via an online application to increase convenience and coverage to its customers.

Microinsurance for Enhanced Financial Security of Low Income Groups

Development Needs

A large number of low-income individuals in Thailand are small business owners or informal workers who are not eligible to benefit from the government's social security system nor can avail health insurance from private employers. Therefore, they lack financial stability, especially in the face of crises such as the recent COVID-19 pandemic that lay bare the high risk of income loss and debt for such population segments, leading to the need to resort to negative coping mechanisms such as informal borrowing at high interest rates, further leading to financial stress.. Farmers are another specific group that bear high income risks due to natural hazards and disasters induced by climate change. Therefore, access to protection and risk mitigation via microinsurance is crucial.

Business Description

Microinsurance can protect low-income individuals and farmers from risks, such as accident insurance, non-life insurance, crop insurance. These types of insurance may have low insurance premiums, short duration, and lower payout to facilitate affordability and access for the targeted groups. Furthermore, the microinsurances should be simple and easy to understand with easy insurance procedures in order to help further increase opt-in of the microinsurances. Insurers should focus on developing new microinsurance products via B2C models targeted at low-income individuals and farmers, while also administering them through digital technology to increase penetration and better efficiency.

Expected Development Outcome

- Increase financial stability for low-income individuals.
- Reduce loss of income and savings in the event of unforeseen circumstances as well as reduce debt for low-income individuals, informal workers and farmers.
- Reduce informal borrowing and the risk of debt induced poverty.

- Increase access to insurance for women who often perform domestic work at home or in informal sectors, which are not covered by social security or insurance provided by employers.

Enabling Environment

- Government support in accordance with the draft 13th National Economic and Social Development Plan (2023-2027), Insurance Development Plan Vol. 4 (2021-2025), remedial measures for affected farmers, and Crop Insurance Scheme.
- The Office of Insurance Commission (OIC) promotes microinsurance by adjusting relevant regulations, launching microinsurance products in partnership with private insurance companies and initiating projects to impart knowledge on insurance for consumers.

Impact Risks and Obstacles

- Assessing impacts from natural disasters in the case of crop insurance are mainly done manually, which can take long time before payment, have high administration costs and limit immediate support to farmers. This can be addressed by using satellite imaging technology.
- Unless the price points and design of insurance products are adjusted to the appetites of populations segments that need it the most, the insurance providers will continue to service the middle and high income markets that already have options available.

Case Studies

- Bank of Agriculture and Agricultural Cooperatives and Office of Insurance Commission partnered to offer crop insurance for rice. The crop insurance covers crop damage from natural disaster and pest with highest payout of USD 231.46 per hectare (THB 1,111 per rai). Crop insurance for other types of crop are also provided under different set of conditions.

More Information



Strengthening local economies with microcredit for business purposes

Market Size: More than USD 1 billion
Indicative Return: ROI 5%-10%
Payback Period: Less than 5 years
Investment Size: Less than USD 500,000
Target Area: Nationwide
Business Model: B2B
Sustainable Development Goals



Managing and preventing risks from crises with insurance that is accessible for all.

More Information



Market Size: USD 100 million – USD 1 billion
Indicative Return: ROI 10%-15%
Payback Period : 5 – 10 years
Investment Size: USD 1 – 10 million
Target Area: Nationwide
Business Model: B2C
Sustainable Development Goals



Waste Management Systems and Platform

Development Needs

Thailand is one of top global contributors to ocean plastic waste with the main reason being improperly managed wastes in landfills leaking into the environment and waterways. In 2019, only 36 percent of waste was properly managed of which only 33 percent was recycled¹, reflecting the inefficiencies in the waste management systems in many areas. This is partly due to the lack of waste separation at the source, inconsistency in waste management methods in each locality and the inability to reduce costs relating to recyclable waste transportation and collection.

Business Description

Waste management systems and platforms deploy digital technology and data analysis to enhance efficiencies in waste separation, storage, transportation and recycling. This serves as an incentive for waste separation, recyclable waste routing, creating an online waste bank account, etc. According to the World Bank (2018), unrecycled waste was worth USD 3.6 billion², strongly suggesting new business opportunities and added value for existing business. Furthermore, it is also a factor that attracts users to benefit from lower waste management expenses and income from sales of recycled waste.

Expected Development Outcome

- Higher efficiency in recyclable waste management can save costs which increases the cost-effectiveness of low-value waste recycling, such as plastic bags, wrappers, and foam boxes, etc.
- Lower waste volume leads to lower waste management costs. It also serves as another means of income generation from sale of recyclable waste.
- Reduction in marine pollution from plastic debris, air pollution from open burning and health problems within the community.
- Increase income for informal waste pickers. Especially women are the most vulnerable as they often get paid less than men, exposed to higher degree of social stigma and health risks.

Enabling Environment

- Government support in accordance with the National Solid Waste Management Master Plan (2016-2021), Thailand’s Roadmap on Plastic Waste Management (2018-2030) and Digital Economy Promotion Master Plan (2018-2022).
- Tax benefits and other incentives from the Board of Investment for digital services and smart environment.

Impact Risks and Obstacles

- Improper waste separation at the source is the key factor for high waste management costs.
- Low plastic production costs may outweigh the cost-effectiveness of plastic waste recycling making it difficult for behavior change to occur both for suppliers and consumers
- Scaling up of business models may impact the livelihoods and role of the informal sector active in this space, particularly the “Saleng” (tricycles that buy recyclable waste). It would be important for business models to be include this segment as part of their operations.

Case Studies

- GEPP application is a waste data management platform for B2B customers that helps companies to efficiently manage waste and easily track the progress of waste reduction. Furthermore, it also offers trainings on waste sorting and creates a connection between companies, waste buyers and recycling plants, enabling end-to-end tracking of waste management.

Market Size: More than USD 1 billion
Indicative Return: IRR 15%–20%
Payback Period: 5–10 years
Investment Size: USD 1 – 10 million
Target Area: Urban
Business Model: B2B and B2C
Sustainable Development Goals



More Information



Enhancing waste management efficiency with technology

¹ Pollution Control Department, Ministry of Natural Resources and Environment. (2019). รายงานสถานการณ์สถานที่กำจัดขยะมูลฝอยชุมชน ของประเทศไทย ปี พ.ศ. 2563.

² World Bank Group. (2021). Market Study for Thailand: Plastics Circularity Opportunities and Barriers.

Waste Management Infrastructure

Development Needs

According to the Pollution Control Department (2019), there were 2,274 waste disposal sites in Thailand, but only 16 percent of waste was properly managed¹. Residual waste left in the environment become a source of germ accumulation and affect community health and contribute to environment degradation. Therefore, the waste management infrastructure, including small and large waste separation and recycling plants must be further enhanced to accommodate the quantity of generated waste and maximize their use.

Business Description

Meanwhile, data from 2018 indicated that disposed plastic waste was worth up to USD 3.6 billion². Most of this plastic waste is of low value, such as plastic bags, wrappers and foam boxes, among others. Therefore, investing in efficient waste management infrastructure will promote the efficient utilization of these waste, such as conversion into fuel for energy production or high-value products. Investing in small-scale waste management infrastructure requires low funding, contributes to promoting an integrated waste management system covering all areas, increases waste value, and creates income for households, communities, recyclable waste buyers and “saleng” waste buyers.

Expected Development Outcome

- Support Circular Economy by recycling, upcycling waste.
- Encourage economies of scale for waste management infrastructure businesses to increase cost-effectiveness in recycling low-value waste and distribute income to households, communities, recyclable waste buyers and “saleng” waste buyers.
- Reduce the problem of residual waste in the environment, air pollution, and sanitation within the community resulting from improper waste management.
- Employment targeted at women can help increase employment opportunities for women in the waste management sector.

Enabling Environment

- Government support in accordance with BCG Model which supports community waste management infrastructure, National Solid Waste Management Master Plan (2016-2021) and Thailand’s Roadmap on Plastic Waste Management (2018-2030).
- Tax benefits and other incentives from the Board of Investment and funding for communities under the Village Fund Program.

Impact Risks and Obstacles

- Unless waste management related business models process and utilize low-value waste, such as plastic bags, wrappers, and foam boxes, as part of their business model, the expected impact on community health and the planet will be limited
- Unless the engagement of the community members that are traditionally part of the waste management sector are accounted for as key actors within newer business innovations in this space, there might be unintended, negative impact on livelihoods of such people.
- Unless waste management infrastructure also extends to rural areas, significant volumes of waste may remain unattended and unprocessed, compromising the intended impact of such business models.

Case Studies

- Zero Waste YOLO is a small enterprise that produces and distributes small plastic waste processing machines, such as shredder, injection and extruder machines. Services cover installation and training on how to operate machines to transform plastics into value added products. Zero Waste YOLO also offers trainings on waste separation to the community, providing an incentive for waste separation while creating income for the community.

Market Size: More than USD 1 billion
Indicative Return: Gross Profit Margin > 25%
Payback Period: Less than 5 years
Investment Size: Less than USD 500,000
Target Area: Nationwide
Business Model: B2B
Sustainable Development Goals



More Information



Waste or valuable resource lies in the eyes of the beholder.

¹ Pollution Control Department, Ministry of Natural Resources and Environment. (2019). รายงานสถานการณ์สถานที่กำจัดขยะมูลฝอยชุมชน ของประเทศไทย ปี พ.ศ. 2563.

² World Bank Group. (2021). Market Study for Thailand: Plastics Circularity Opportunities and Barriers.

Medical and Wellness Tourism

Development Needs

Many countries around the world, including Thailand, are advancing into an aging society. Meanwhile, the COVID-19 pandemic has urged people to become more health conscious. Therefore, medical and wellness tourism has emerged as a potential business opportunity for Thailand which is home to quality and international standard medical services. This business holds the capacity to attract health-conscious tourists from both domestically as well as from outside the country.

Business Description

Developing and distributing quality and standardized medical and health service sources to secondary cities across the country to accommodate health-conscious tourists seeking to restore both physical and mental health. Medical and wellness tourism can include different types of health care facilities depending on the scale, such as large hospital chains, specialized healthcare institutions, or even small scale guest house facilities. Accordingly, focus should be aimed at long-stay visitors with high spending capacity. A unique selling point for services should also be established alongside local eco-tourism destinations and sustainable value chain in culinary, services, and wellness that is derived from local wisdom.

Expected Development Outcome

- Medical tourism are often offered by private hospitals mostly concentrated in major urban areas like Bangkok. By distributing medical tourism to other areas, it can also help increase access to healthcare for people in secondary cities.
- Expand eco-tourism market and sustainable value chain at the local level which creates income distribution and jobs for the locals through sustainable economic activities.
- Promoting income for women who constitute a large employment group in the tourism and services industry.

Enabling Environment

- Thailand has one of highest number of JCI accredited healthcare facilities in the world (59 facilities in 2021).
- Government support in accordance with BCG Model, Master Plan under the National Strategy on Tourism (2018-2037), and Strategic Plans of Developing Thailand as an International Medical Hub (2017-2026).

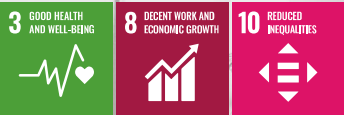
Impact Risks and Obstacles

- Medical tourism may compete with health care services in terms of attracting medical personnel leading to shortage of medical personnel for healthcare.
- Thailand’s remedial measures for medical malpractice/negligence should be upgraded to align with international standards to attract foreigners.
- Development without connecting to local sustainable value chain may cause the loss of opportunity to spread income to communities.

Case studies

- Chiva-Som is a world-class award-winning wellness resort in Hua Hin district, Prachuap Khiri Khan province. The resort combines western medicine and eastern wisdom in its services and takes into account sustainability along the value chain. It also creates sustainable jobs for surrounding communities, such as organic food production by workers in the community.

Market Size: More than USD 1 billion
Indicative Return: ROI >25%
Payback Period: 5 - 10 years
Ticket Size: Less than USD 500,000
Target Area: Sub-Urban
Business Model: B2C
Sustainable Development Goals



Uplifting physical and mental health along with creating the well-being of the community.

More Information



Eco & Community-Based Tourism

Development Needs

Most activities in the tourism sector takes limited cognizance of its material impact on nature and local communities. The economic value created by tourism comes at the cost of ecological degradation as well as irrevocable changes to community lifestyles. Moreover, the concentration of tourism in major cities has augmented income inequality because of improper income distribution. Consequently, secondary cities lack the opportunity to present their unique local cultures to tourists.

Business Description

Eco & community-based tourism takes into account the sustainability of the environment, society and culture of the community. Its highlight lies in the community’s engagement in sustainable tourism activities, such as converting homes into tourist accommodations, ecotourism guided tours to experience natural attractions, and offering an experience of community lifestyle to tourists, etc. Accordingly, the community can generate income from tourism activities and become more conscious of preserving environmental abundance to attract tourists. B2B model can target corporate trips, while B2C model can exist as digital platforms for individual tourists.

Expected Development Outcome

- Reduce inequality in development, distribute income from tourism and stimulate other relevant economic activities for the community, such as sale of local products and food businesses.
- Promote the conservation of the environment, culture, local way of life and wisdom.
- Help empower and increase income for women who often led community-based tourism initiatives, which also provide respectable livelihood alternatives

Enabling Environment

- Government support in accordance with BCG Model and Second National Tourism Development Plan (2017-2021) which focuses on supporting sustainable tourism in secondary cities through marketing, developing utilities and safety standards, implementing technology and developing human resource in the tourism sector.
- Tax benefits and other incentives from the Board of Investment, financial support from the Thailand’s Tourism Promotion Fund, and promoting cooperation between the government and business operators, especially in secondary cities.

Impact Risks and Obstacles

- Overcrowded during peak season may lead to negative environmental and social impact, which must be managed to not exceed capacity. In contrast, tourists may be scarce during off-seasons, leading to low income.
- Certain regulations, such as the qualifications for obtaining tour guide license, may not be conducive to community-based tourism operations.
- Eco & community-based tourism is still currently confined to a niche market by not being engaged by the majority of tourists, but they are likely to grow in the future.

Case Studies

- Local Alike is a social enterprise which targets to use community-based tourism as a tool to develop communities. It offers knowledge and directly strengthens the community’s capacity as well as connects tourists to communities through an online platform that tells a story to create a unique selling point for tourist attraction.

Market Size: More than USD 1 billion
Indicative Return: ROI >25%
Payback Period: Less than 5 years
Investment Size: Less than USD 500,000
Target Area: Sub-Urban
Business Model: B2B and B2C
Sustainable Development Goals



More Information



Travelling through a new perspective that leaves lasting impression, creates sustainability and revitalizes the community.

Decentralized Online Learning Platform

For STEM and Digital Skills, and Financial Literacy

Development Needs

COVID-19 has affected 60.5 per cent of total enrolled learners globally and over 15 million in Thailand alone¹. In addition, the Thailand education sector needs to improve its standards and curriculum to be at par with the demands of 21st century skill requirements and to the dynamic nature of the labor market. These market gaps are reflected through the Programme for International Student Assessment (PISA) scores and the growing unemployment rate among new graduates. There is also the issue of possible future replacement of Thai workers with artificial intelligence especially as most of the current initiatives are not in commensurate with the global digital aspirations. Nevertheless, one of the outcomes of the COVID-19 pandemic has been a demonstrated role of online platforms in promoting education, developing digital STEM skills and improving financial capabilities which are essential skills to be encouraged. Analysis of connectivity in schools under the jurisdiction of the Office of the Basic Education Commission (78.65 per cent of academic institutions) shows that 97.47 per cent (28 889 schools) were connected to the internet² showing the opportunities for business models in offering online education services to schools through B2B models. In addition 78% of Thai population were using the internet as of 2020, showcasing a real opportunity for business models offering B2C educational services³.

Business Description

The online development of quality education enables people of all genders and ages to access education with convenience and efficiency. The target group consists of both individuals and entities. STEM and digital skills, which are necessary for innovation and assist with the adaptation to the modern industry, are specific knowledge areas that have gained interest and traction. Moreover, demand for such skillsets are likely to increase in the future. Also, with a significant middle class segment, financial skills are essential to help people stay financially healthy and enable them to diversify their portfolios by managing their finances. These key needs remain a significant gap within the education system, which can be addressed with decentralized online learning platform. Decentralization allows for students to acquire skills that are not taught by the formal education system.

¹ Kenan Foundation Asia. (2020). 3 Consequences of COVID-19 on Thai Education.
² International Telecommunication Union. (2021). E-learning in Thailand: Mapping the digital divide; International Telecommunication Union.
³ World Bank. Individuals using the Internet (% of population).

More Information



Quality online education to complement everyone's capacity.

Note: STEM is an acronym for four academic disciplines, namely Science, Technology, Engineering, and Mathematics.

Expected Development Outcome

- Increase access to education for low-income students and students in rural and remote areas.
- Promote education for people of all ages to develop skills necessary for the labor market and modern industry.
- Reduce financial problems and household debts at the national level.

Enabling Environment

- Government support in accordance with National Education Plan (201-2036), Policy and Strategy of Higher Education, Science, Research and Innovation (2020-2027), 20-Year National Human Resource Development Strategy (2017-2036), Bank of Thailand Strategy (2020-2022) and Digital Economy Promotion Master Plan (2018-2113).
- In addition to the Ministry of Education, 14 other public bodies oversee their own institutions. Information about Internet connectivity in schools is available only for schools under the jurisdiction of the Office of the Basic Education Commission, which accounts for 79 per cent of educational institutions and 52 per cent of students.
- Tax and other benefits from the Board of Investment for digital services and products.

Impact Risks and Obstacles

- The price of online learning may still be too high for low-income individuals. Furthermore, online learning requires access to the internet and basic devices such as computers and smart phones which may be obstacles for some groups.
- Online learning transcends borders and therefore faces high competition from overseas, but Thai-based content still have great potential.
- The difference between each online learning operator nowadays is still slight, thus leading to high competition. This urges operators to create outstanding and unique selling points to attract more learners.
- Increase access to education for women and people with disabilities

Case Studies

- Money Class offers online financial education services with a commitment to provide accurate knowledge on finance with the skills to use money wisely and adequately to suit one's lifestyle, helping users to have better financial behaviors and prevent financial problems. Money Class offers classes to individuals, corporate employees as well as finance courses for students.

Market Size: USD 100 million – USD 1 billion
Indicative Return: 10%-15% (in ROI)
Payback Period: Less than 5 years
Investment Size: Less than USD 500,000
Target Area: Nationwide
Business Model: B2B and B2C
Sustainable Development Goals



Businesses to Watch

Smart Farming and Precision Agriculture

SMARTFARMDIY

SMARTFARMDIY provides services such as design, system installation, and supply of smart agricultural equipment for indoor and outdoor cultivation of crops and animal farming by using sensor technology and other devices that connect to IoT (Internet of Things) to automatically control the environment at an affordable price. This contributes to cutting costs in agricultural expenses, reducing diseases, and enhancing production efficiency.



Electricity Generation from Solar PV

GRoof

Gunkul was founded in 1982 to produce and distribute medium to high voltage electrical equipment. In 2010, Gunkul shifted to energy business with focus on generating power from alternative energy, such as solar and wind energy. The total electricity generated in Thailand, Malaysia, Japan and Vietnam is 642 megawatts. "GRoof" is Gunkul Group's innovation to support the Residential Solar Rooftop Scheme under the government's future promotion plan. GRoof focuses on facilitating residential customers with easy.



Telemedicine

Ooca

Ooca is a provider of telepsychiatry, or online psychiatrist consultations, where users can connect with psychiatrists and psychologists through videocalls. Users can make appointments to hold private and safe discussions anywhere, anytime via computer or smartphone. Ooca was founded in 2017 and provides services to both individual and corporate clients. The company achieved double to triple growth rate in 2019.

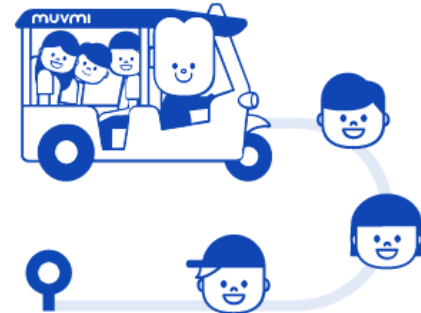


Smart Mobility for Passengers

Muvmi

MuvMi is a service platform to help users get around the city in an easier, safer and greener mode of transportation with electrical tuk-tuks. It uses an on-demand ride sharing system where users can request for a ride when needed. The system will group commuters travelling in the same direction to share a ride. MuvMi has provided more than 1 million passenger trips in 6 service areas across Bangkok.

muvmi



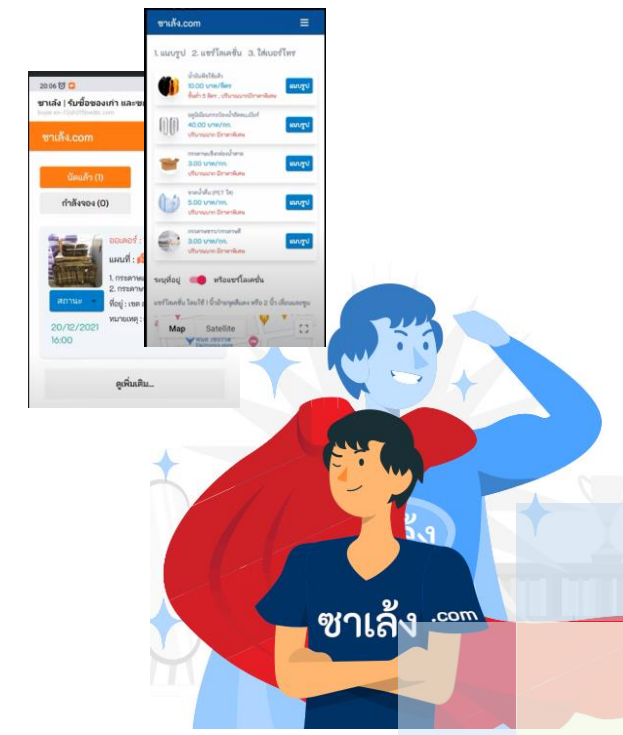
Waste Management Systems and Platform

ชาเล้ง.com

saleng.com is a platform that promotes recyclable waste trading where users can post recyclable waste for sale and the system will connect to buyers for onsite pick-up. This helps to increase income for households, enhance operational efficiency of recyclable waste buyers and, most importantly, decrease costs relating to waste collection and transportation in the entire waste management system.

ชาเล้ง.com

รักโลกเรียก "ชาเล้ง"



Microfinance

Noburo

Noburo is a social startup that develops a financial service platform to help low-income employees of its corporate clients in planning debt repayment while creating sustainable financial discipline through the provision of emergency loans, financial planning service and education to enhance financial intelligence through individual and corporate clients. The company achieved double to triple growth rate in 2019.

noburo



Eco & Community-Based Tourism

Find Folk

Find Folk provides end-to-end sustainable tourism activities, including guided tours, consultations on tourism development by communities and design of CSR activities for corporate clients. Find Folk's key feature highlights the development of eco-friendly tourist destinations and generate income for communities. Thus far, Find Folk has collaborated with more than 50 communities and generated over 20-million-bath revenue



Microinsurance

Igloo

Igloo is a startup and provider of insurance through digital channels from Singapore with a funding of over USD 16 million (Series A) in 2020. Its mission is to utilize data and technology to make insurance accessible and affordable. In 2020, Igloo joined efforts with its partner in Thailand, HDmall.co.th, to launch affordable health insurance products for microinsurance and individual accident insurance provided by Muang Thai Insurance (MTI).

igloo

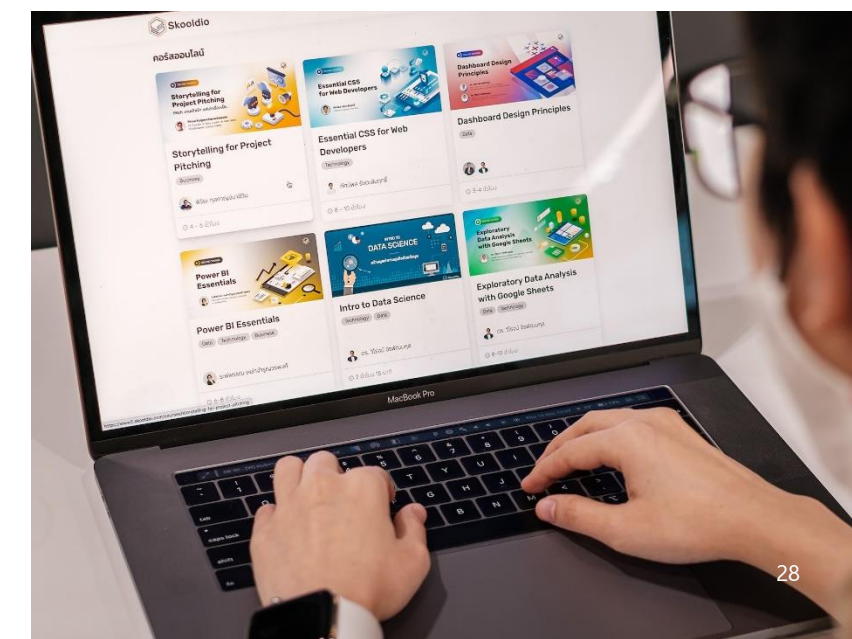


Education Technology

Skoodio

Skoodio was established in 2017 as an online learning platform. It provides online courses and workshops to impart skills necessary for the modern world, especially technology and digital skills, such as programming, data science, design thinking and digital business, for corporate clients

Skoodio



Future Prospects for the application of Thailand SDG Investor Map

The development of Thailand's SDG Investor Map is an opportunity for UNDP and SEC to stimulate investment in sectors with the potential to drive sustainable development and encourage stakeholders, such as public Investment Promotion Agency, private investors and entrepreneurs, to utilize the market intelligence presented in the SDG Investor Map to raise funds.

UNDP will work with public and private sector stakeholders to put together a plan to disseminate the market intelligence gathered through the map development process and to stimulate deal flows into the identified IOAs.

White Spaces

Besides identifying 15 attractive investment opportunity areas (IOAs), this SDG Investor Map has also defined white spaces or IOAs that have high potential to create at-market returns and deep impact, but still face policy or market induced challenges that hinder investments. These white spaces include:

(1) Sustainable Aviation Fuel (SAF) can help reduce GHG emissions in the aviation sector and reduce air pollution. However, investment in SAF still lacks clear supporting policy, and faces risks from fluctuations in prices of raw materials and high costs for transporting the raw materials. Investment in SAF is also exposed to long-term (more than 10 years) risk of being overtaken by electric or hydrogen fuel technology that are currently under development.

(2) Sustainable Biofuel Production can help reduce greenhouse gas emissions in the transportation sector and help provide additional market demand for agricultural products. Nevertheless, biofuels face sustainability challenges as growing crops to be used for fuel can compete for water resources with food production, increase open burning of agricultural wastes, excessive use of agrochemicals, etc. Meanwhile, investment in biofuel production also faces medium-term (5-10 years) risk of being replaced with electric vehicles.

(3) Cross-Subsidy for Private Healthcare Services is where private healthcare services charge premium fees for patients with higher spending power to subsidize for the medical fees of lower income patients. This can contribute to increasing equal access to healthcare services for all groups of people. However, private healthcare services still lack incentives for cross-subsidization as they mainly focus only on high-income patients to generate profit.

(4) Battery Electric Vehicle (BEV) Manufacturing and Infrastructure Development can help reduce

greenhouse gas emissions and air pollution generated by the transportation sector. Currently, existing policies and interests from the private sector are supporting factors for BEV manufacturing and infrastructure development. However, investment in BEV manufacturing and infrastructure development has the potential to grow more rapidly from additional incentives, and clearly established timeframe for supporting policy.

Investment Opportunity Area Promotion Measures

Stakeholder interviews have identified measures to help promote IOAs such as:

(1) Expanding government support for small and medium-sized entrepreneurs (SMEs) e.g., reducing complicated and redundant paperwork when applying for public funding, extending duration of support programs for SMEs to match SMEs' need for long-term continuous support, and cooperating between different agencies to create synergies between public support programs.

(2) Adjusting investment criteria to be more conducive to sustainable development e.g., encouraging investors to include social and environmental impact as one of the investment criteria, and revising expectations with regards to returns and investment timeframe for small and medium businesses with sustainable development goals. Moreover, tax incentives should become more conducive to SMEs and startup companies, which often experience losses early on but have potential to generate profits when they become more matured.

(3) Encouraging widespread practice of public green procurement policy and shifting public procurement to include more services rather than products, which can help improve efficiency in managing complex systems.

(4) Realign policy and regulatory environment with sustainable development and present contexts e.g., laws on waste management, etc.

(5) Promote public-private partnership to increasing successful scale-up and commercialization of innovation.

If these white spaces and IOA promotion measures are taken into consideration, more investments can be channeled to further support sustainable development in Thailand. Furthermore, the SDG Investor Map should be further developed and reviewed on a regular basis to reflect the changing contexts

Acknowledgement

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Investment and International Affairs Group, Eastern Economic Corridor Office (EECO)
Smart City Division, Digital Economy Promotion Agency (DEPA)
Office of Insurance Commission
Policy and Planning, Thailand Tourism Authority

Investors

Government Pension Fund
Association of Investment Management Companies (AIMC)
Kasikorn Asset Management
SEED Thailand
InnoSpace (Thailand) Company Limited
Mr. Amarit Charoenphan, Angel Investor

Incubators & Accelerators

Aspen Network of Development Entrepreneurs
ChangeFusion Group
AIS the Start Up, Advanced Info Services Public Limited Company

Research Institutes and Think Tank

Thailand Development Research Institute (TDRI)
Energy Research Institute, Chulalongkorn University
Thailand Institute of Packaging and Recycling Management for Sustainable Environment (TIPMSE)
Yunus Thailand
Food Innopolis Thailand
Dr. Poon Thiengburanatham Associate Professor, Department of Civil Engineering, Chiang Mai University

Non-Profit Organization

World Wildlife Foundation (WWF) Thailand

Business Enterprise

Gracz, Biodegradable Packaging for Environment Company Limited
Gaorai Business Solution Company Limited
Farmto (Thailand) Company Limited
Malang Ruay Limited Partnership
Community Relations, Advanced Info Service Public Company Limited (AIS)
We Move Platform Company Limited
Wongpanit International Company Limited
G.E.P.P. SA-ARD Company Limited
Zero Waste YOLO Company Limited
Local Alike Company Limited
Chiva-Som International Health Resorts Company Limited
Money Class, Learn Corporation Company Limited

Associations and Clubs

Rural Doctors Society
Renewable Energy Industry Club, Federation of Thai Industries
Thai Transportation and Logistics Association





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