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Asia's Top 20 FINANCIAL TIMES FT EMBA 2025 RANKING FT GLOBAL MBA 2026 RANKING

Global Reputation. Regional Expertise

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WELCOME CLASS OF 2026

Asia's Top 20 FINANCIAL TIMES
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AgriTech

Challenges and Opportunities in the Region

Harry Jay Cavite, PhD
Lecturer,
Sasin School of Management

Setting the Tone

"We are not here to learn how to farm.

We are here to understand the science, economics, and technology driving the future of food."

It may look complex, but as future business leaders,

this is exactly the kind of massive system you need to know how to navigate.

Introductions

Your Name

One Fun Fact

"Why are you here?"

"Agri-Tech is…" or "Agri-Tech is like…"

- The Big AgriTech Lens
- Opportunities and Trends in AgriTech
- Challenges Facing Southeast Asian Agriculture
- ESG and AgriTech

What comes to mind when you think of AgriTech?

ESG

Why business now cares?

Environmental, **social**, and **governance** factors shaping risk, value, & legitimacy.

Firms are judged not only by profit, but also by impact, resilience, & accountability.

In agri-food, ESG is especially viable because agriculture touches:

- *climate, water,*
- *land, labor,*
- *food security, and rural livelihoods*

…and is increasingly exposed to regulation, buyer pressure, and climate risk (e.g., rubber industry)

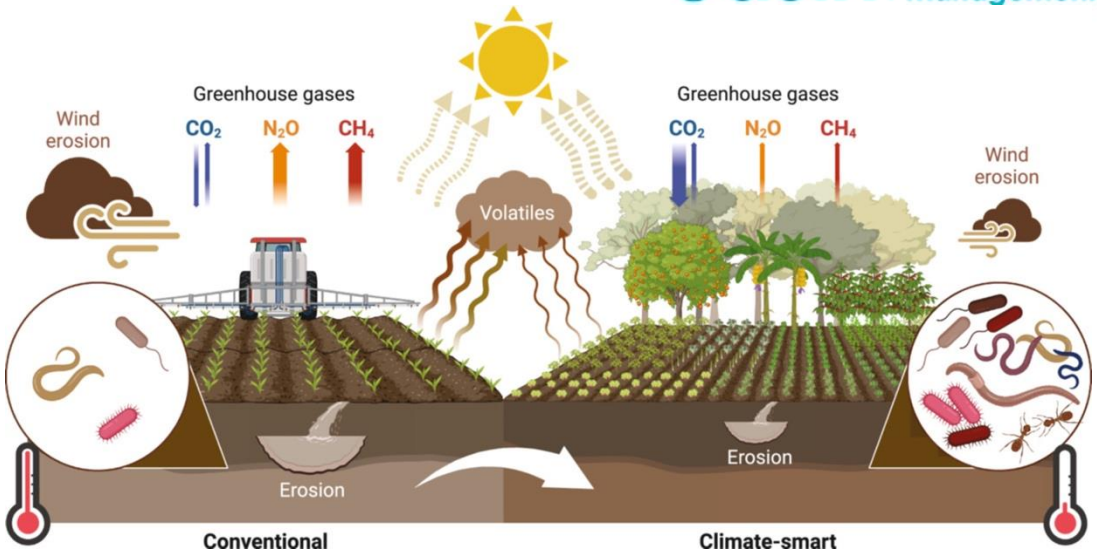
Narrowing to the "E"

...in agriculture context

The "E" matters in agriculture; farming is both dependent on & disruptive to natural systems *(e.g. rice industry)*

Key issues: *emissions, water use, soil health, biodiversity, waste, & climate vulnerability*.

Agriculture is where environmental risk becomes operational risk.



climate/ water/ soil/ biodiversity pressures

Why "AgriTech" enters the picture

Technology for agric'l systems

Use of technology to make agricultural systems more productive, resilient, traceable, & sustainable.

Responds to real regional problems:

- *climate risk, fragmented supply chains,*
- *labor constraints, post-harvest loss, and*
- *compliance pressure.*

In SEA, opportunity is not just invention; it is adaptation to local crops, value chains, & farmer realities.



REGIONAL CHALLENGES



AGRITECH OPPORTUNITIES


BUSINESS & ENVIRONMENTAL IMPACT

Let's take a step back:

Why the world's oldest industry is now its most innovative

Roughly 12,000 years ago

Global economic perspective

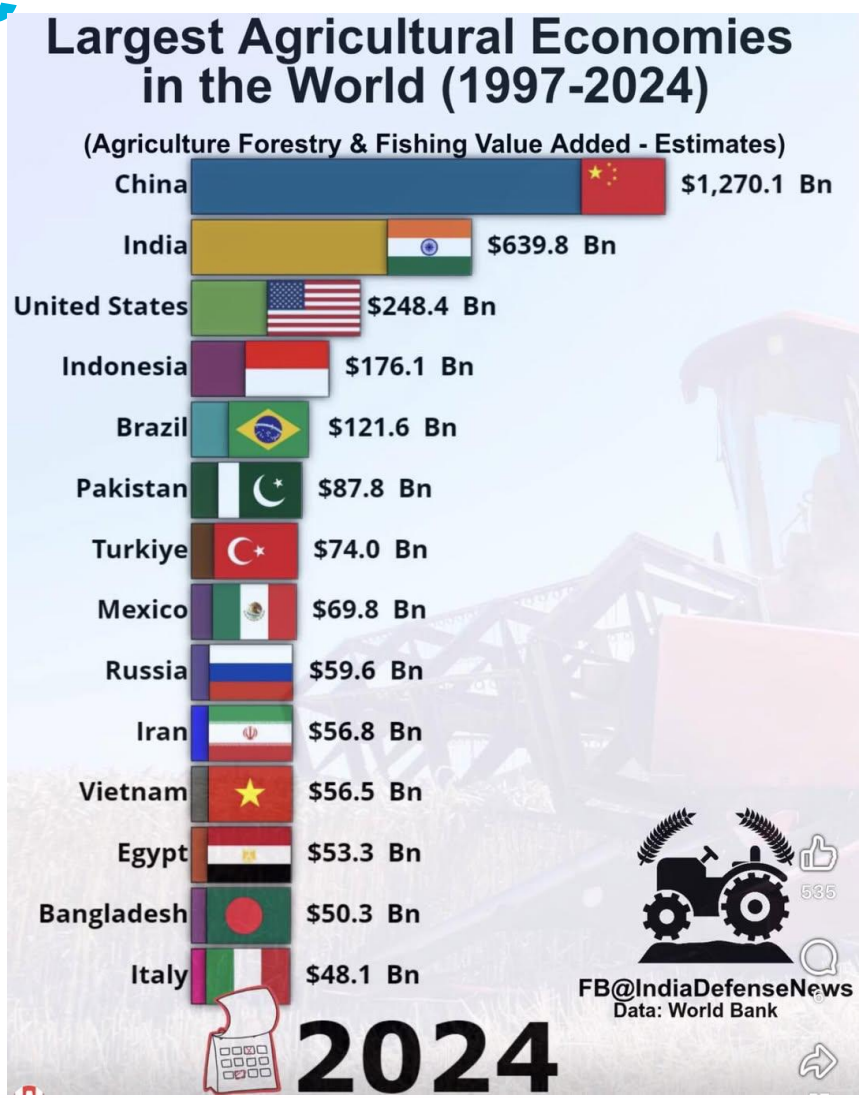
Why agriculture matters

Foundation of Global Prosperity

- Feeds **>8 billion** people & counting, no industry is more mission-critical.
- Contributes **$3+ trillion** annually to global GDP
  - China: $1.2T, India: $639B, USA: $248B

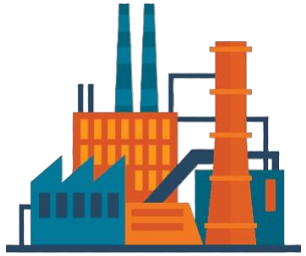
- Employs **>1B people** worldwide, largest employment sector in developing economies
- Drives **60+ downstream in**dustries: *food processing, logistics, retail, biotech, fintech*

Beyond farming,
it's a multi-trillion-dollar ecosystem



The Food Value Chain






Input	Farm	Processing	Distribution	Retail	Consumer
Seeds Pesticides Agbiotech Traits Fertilizers	Farmers Ranchers Fishermen	Aggregators Processors Manufacturers	Distributors Importers Exporters	Retailers Supermarkets Restaurants	Consumers

What other industry feeds everyone, employs a billion people, and is being disrupted by AI, IoT, and biotech simultaneously?

SUSTAINABILITY

SASIN

Agriculture in Southeast Asia

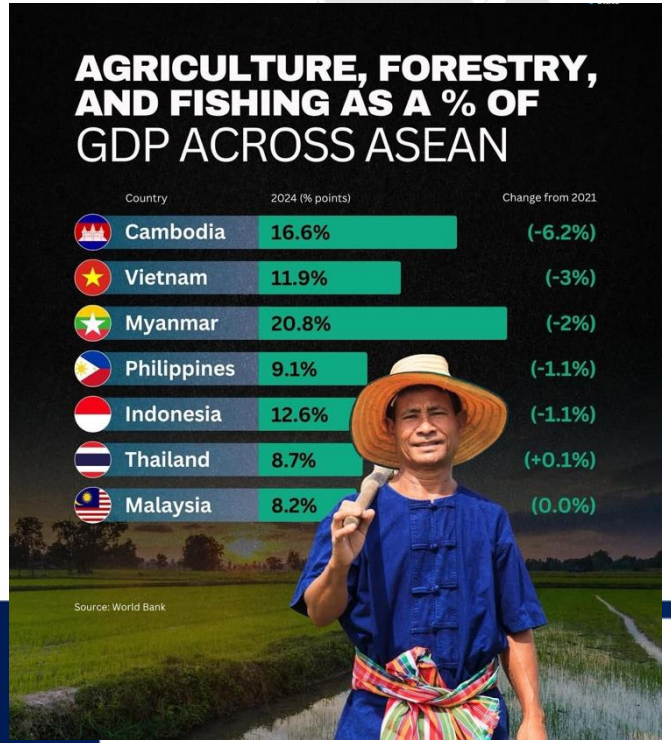
Regional significance

Agriculture meets opportunity

- 11% of ASEAN GDP ($400B+) and rising
- 30% of global rice production—*Thailand, Vietnam top exporters*

- 35% of regional employment :
  - *(Myanmar 70%, Cambodia 35%, Laos 70% agri jobs)*
- Strategic crops:
  - Palm oil *(Indonesia, Malaysia)*, natural rubber *(Thailand, Vietnam)*, coffee *(Vietnam #2 globally)*

The region that feeds itself,
and the WORLD.



Agriculture in Southeast Asia

AGRICULTURE MARKET OVERVIEW IN SOUTHEAST ASIA

As Southeast Asia advances on its path of economic growth and regional integration, agriculture remains a foundational sector shaping both livelihoods and long-term sustainability. While rapid urbanization and industrial expansion redefine the region's landscape, agriculture continues to evolve, driven by rising food demand, increasing investment, and a growing push for modernization.

Import value in 2025(f)

US$55.2B

An annual growth rate of **4.74%** is expected *(CAGR 2025-2029)*

Export value in 2025(f)

US$40.6B

An annual growth rate of **3.92%** is expected *(CAGR 2025-2029)*

(Source: Statista)

GROSS PRODUCTION VALUE IN AGRICULTURE MARKET IN 2020-2025

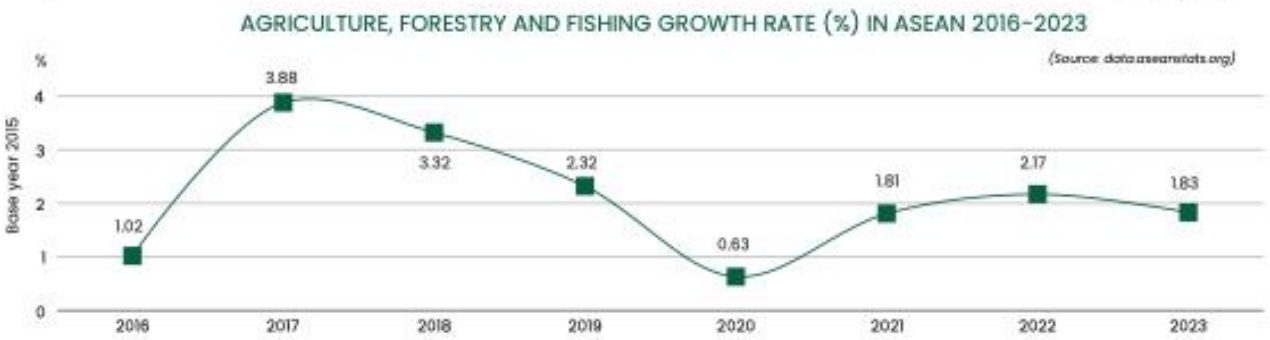
US$110.71B in 2020 → **US$153.21B** in 2025f

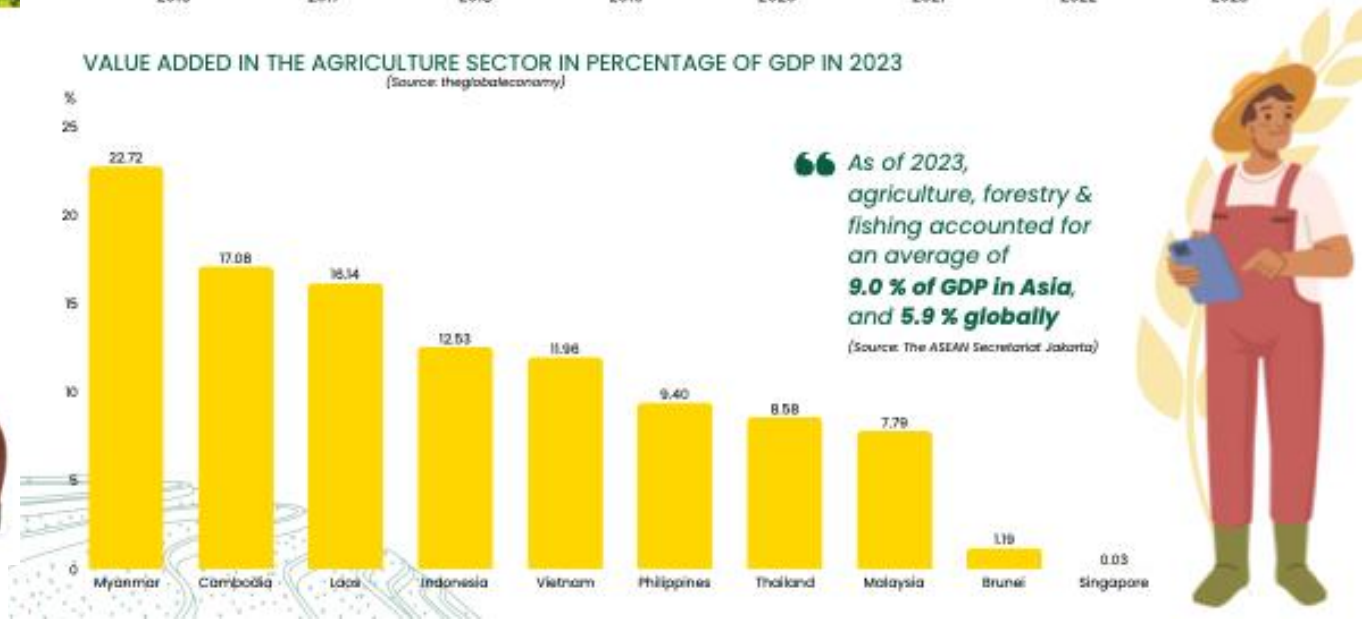
(Source: Statista)

RECENT GROWTH

In the **first quarter** of **2025**, **Southeast Asia's agricultural GDP** grew by **10.5% year-over-year,** a surge largely fueled by robust rice and corn harvests across key producing countries.

(Source: Statista)





*As of 2023, agriculture, forestry & fishing accounted for an average of **9.0 % of GDP in Asia**, and **5.9 % globally***

(Source: The ASEAN Secretariat Jakarta)

Source: sourceofasia.com

Challenges Facing SEA Agriculture

Why business-as-usual won't work

Climate shocks

Ageing workforce

Stagnant productivity

Resource constraints

Market access barriers

Challenges Facing SEA Agriculture

Why business-as-usual won't work

Climate shocks

Unpredictable floods, droughts, rising temperatures threatening yields

Stagnant productivity

Rice yields plateauing despite rising demand

Ageing workforce

Declining rural labor, young people leaving farms

Challenges Facing SEA Agriculture

Why business-as-usual won't work

Resource constraints

Water scarcity, soil degradation, pest resistance

Market access barriers

Smallholders disconnected from value chains

The region's food security and economic stability are at risk.

What challenge are you most concerned of?

Agri-Tech

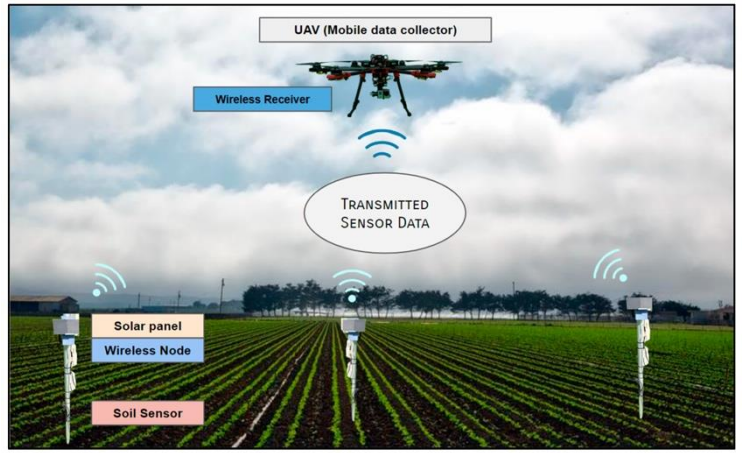
The innovation wave

Transforming agriculture into a high-tech industry

- $58.79B global market by 2030 (11.1% CAGR): one of fastest-growing tech sectors
  - *Source: https://www.thebusinessresearchcompany.com/*
- Key technologies reshaping SEA farms:
  - *Can you name some of them?*

- *Impact*: i.e., 40% reduction in chemical fertilizer use, 22.86% growth in vertical farming, among others.

From tractors to algorithms, Agriculture's digital revolution



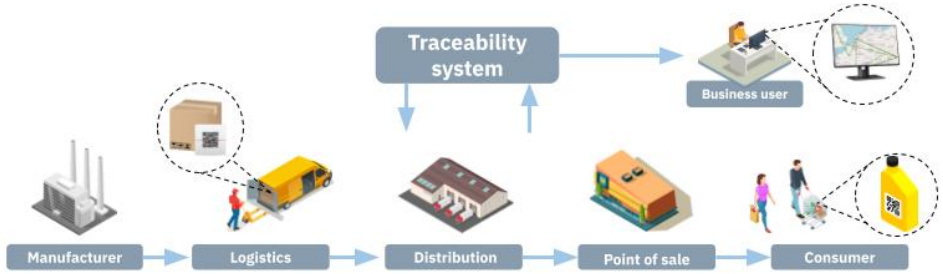
Agri-Tech

Key technologies reshaping SEA farms

Precision agriculture
(IoT sensors, GPS, drones)

AI & predictive analytics
(yield forecasting, pest detection)

Bioengineering
(drought-resistant crops, biofertilizers)



Digital platforms
(supply chain traceability, farm management software)

Smart Farming and Thailand

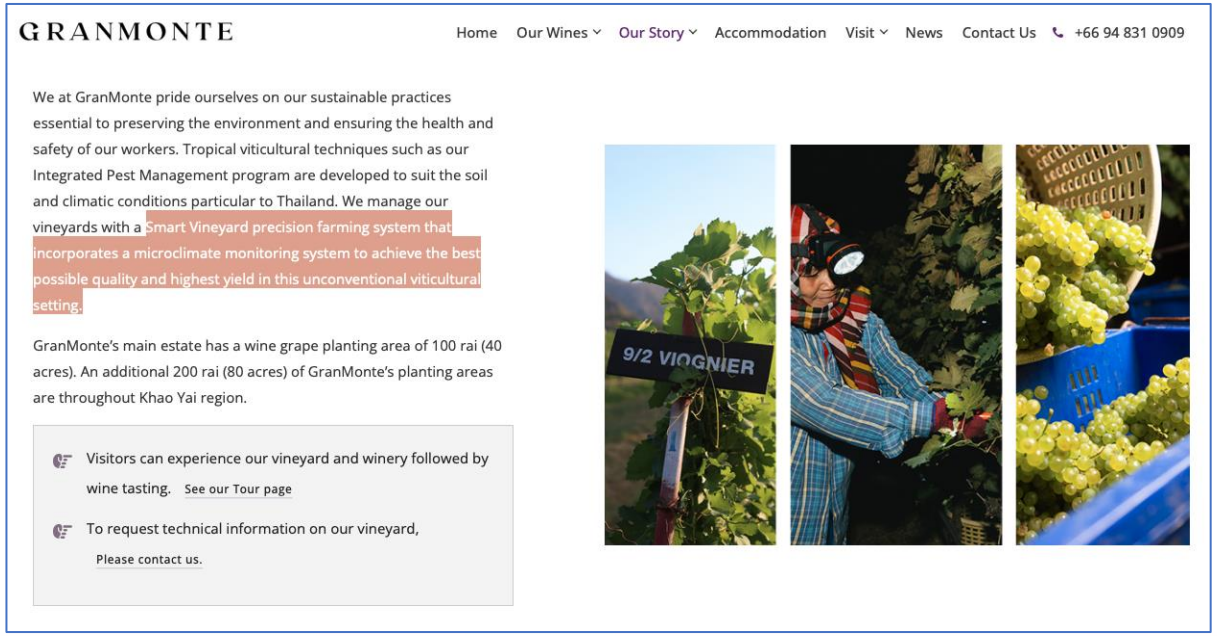
If you could develop a technology in support of agriculture to address a pressing sustainability issue, what would it be and why?

GranMonte AgriTech

Smart Vineyard Precision Farming

- Their core AgriTech platform, developed in collaboration with Mahidol University and NECTEC.
- Integrates technologies i.e., microclimate monitoring & decision-support software to optimize resource use.

1. *Bi-annual pruning*
2. *Smart vineyard IoT infra*
3. *Night harvesting*
4. *Molecular e-nose monitoring*



GRANMONTE

Home | Our Wines | Our Story | Accommodation | Visit | News | Contact Us | +66 94 831 0909

We at GranMonte pride ourselves on our sustainable practices essential to preserving the environment and ensuring the health and safety of our workers. Tropical viticultural techniques such as our Integrated Pest Management program are developed to suit the soil and climatic conditions particular to Thailand. We manage our vineyards with a Smart Vineyard precision farming system that incorporates a microclimate monitoring system to achieve the best possible quality and highest yield in this unconventional viticultural setting.

GranMonte's main estate has a wine grape planting area of 100 rai (40 acres). An additional 200 rai (80 acres) of GranMonte's planting areas are throughout Khao Yai region.

Visitors can experience our vineyard and winery followed by wine tasting. See our Tour page

To request technical information on our vineyard, Please contact us.

GranMonte AgriTech

Remote Monitoring & Electronic Nose (e-Nose)

- The entire Smart Vineyard system is accessible via the internet or mobile phones.
- Allows viticulturist to monitor vineyard health & climate conditions in real-time from any location.
- "e-nose" technology to track specific aroma molecules in the grapevines & the wine;
- Helps identify how different sunlight exposure affects grape development; harvest & ferment grapes separately based on their specific chemical profiles.

BREAK

Please come back after 15 mins


WELCOME BACK

Opportunities and Trends in Agri-Tech

Deep dive into emerging Agri-Tech opportunities

Smart farming

- Use of sensors, satellites, & farm management software to make input decisions *(water, fertilizer, labor)* based on data rather than intuition.

Drones & automation

- Drones for crop scouting, spraying, & yield estimation; robots for weeding & harvesting in labor-scarce contexts.

Opportunities and Trends in Agri-Tech

Deep dive into emerging Agri-Tech opportunities

Biotech & biologicals

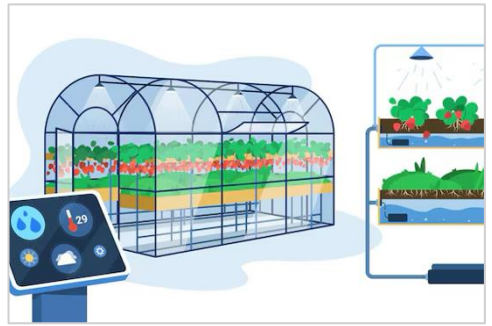
- Stress-tolerant seeds, bio-fertilizers, & bio-pesticides that reduce chemical dependence & improve resilience.

Digital marketplaces & fintech

- Platforms connecting farmers to buyers, inputs, credit, or insurance, often via mobile.

The Big AgriTech Lanes

Each lane serves its purpose

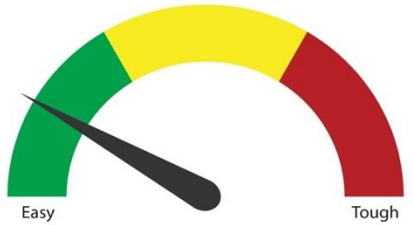
Digital Value Chains	Embedded Fintech	Climate-smart Decision Tools	Urban & Controlled Env Ag	Agrifood Life Sciences
				
Traceability, optimization & market connectivity	*Financial inclusion & risk mitigation for producers*	*Predictive analytics & sustainable management*	*Year-round production & resource-efficient systems*	*Biotechnology, nutrition, & crop resilience*

A better approach is to ask: *which lane is this, what user does it serve, what value-chain pain does it remove, and what business metric changes if it works ?*

Which lane offers more opportunities in addressing agrifood industry problems in SEA?

Mini Workshop (15-20 mins)

Decode the Challenges & Opportunities



Level of difficulty

Teamwork Required

- **Instructions (15 mins prep)**:
  - Read & discuss assigned agrifood sector.
  - Apply the two frameworks in decoding challenges & opportunities.
    - **PESTLE**: *Scan macro environment.*
    - **SWOT**: *Assess specific capabilities and vulnerabilities*.
  - Workshop Template (fill this out) →
  - **The first team to finish will get a reward.**

- **Output (2 mins/team presentation):**
  - Share 1 PESTLE + 1 SWOT insight/reflection most relevant to sector.
  - Which lane AgriTech opportunities lie?

Workshop: Opportunity Mapping for Southeast Asia Agri-Tech

S W O T

S	W	O	T

P E S T L E

P	E	S	T	L	E

SWOT Analysis

Specific internal strengths and weaknesses

Strengths: What unique assets or capabilities does the solution have *(data, tech, partnerships)*?

Weaknesses: Adoption barriers *(digital literacy, trust, connectivity, cost).*

Opportunities: Macro trends it rides on *(climate finance, government subsidies, consumer demand for traceability).*

Threats: Competing solutions, regulation, copycats, dependence on a single crop or region.

PESTLE Framework

Scans the macro-environmental landscape

Political: Farm subsidies, trade policy, government digital-ag programs.

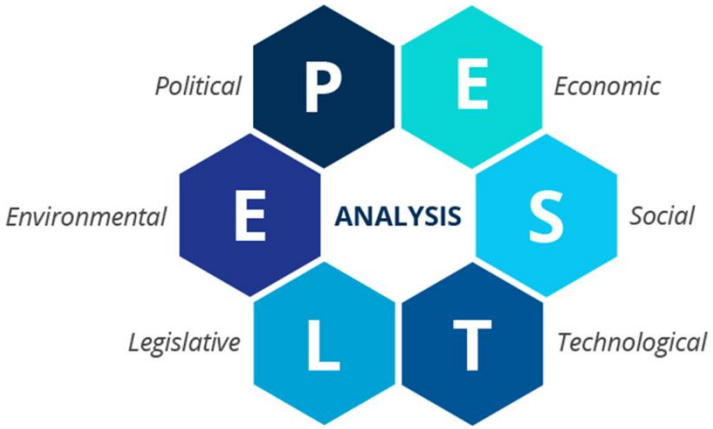
Economic: Food price volatility, input cost inflation, rural income gaps.

Social: Aging farmers, youth out-migration, health and nutrition concerns.

Technological: Smartphone penetration, AI, cheap sensors, connectivity (4G/5G).

Legal: Land-tenure issues, data privacy, environmental regulations.

Environmental: Climate risk, water scarcity, soil degradation—also drivers of climate-finance opportunities.



Sector Assessments

Your assigned industry

Workshop: Opportunity Mapping for Southeast Asia Agri-Tech

S W O T

S	W	O	T

P E S T L E

P	E	S	T	L	E

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Let us hear from you!

The AgriTech Landscape

In Southeast Asia

- AgriTech in SEA is driven by real value-chain bottlenecks. Biggest lanes →
- Region is large, but adoption is **highly market-specific** *(untapped agritech opportunities, easiest to simplify); GDP and workforce contributions, yet fragmented.*
- What works in Thailand may not scale directly in Vietnam or Indonesia. *Not one market, specific to crop, customer & local bottleneck.*
- Key lens: ***problem*** → technology → ***user*** → measurable impact.

Digital value chains

Fintech

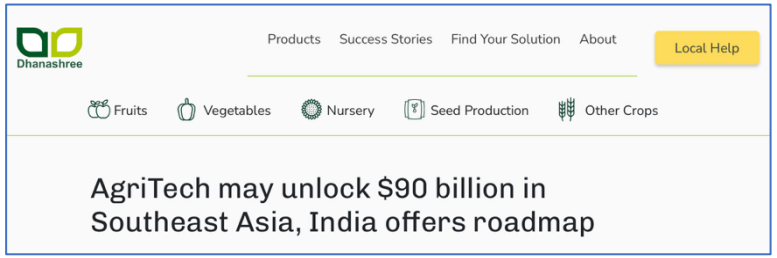
Climate-smart tools

Urban farming / CEA

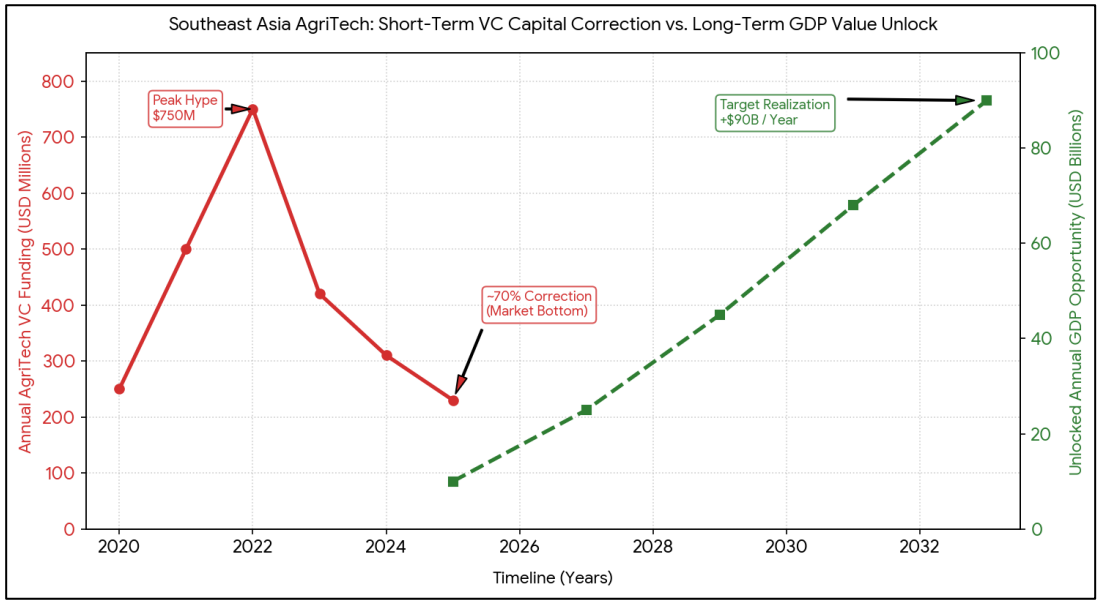
Biotech / Life sciences

Market outlook: Demand, investment

And regional agritech momentum



- SEA is large agritech opportunity, but funding has become more selective
  - *Fragmented markets, infra gaps, push for profit.*
- Agritech adoption could add over USD 90 billion to regional GDP by 2033.
  - *Investment peaked above USD 750 million in 2022, then fell sharply by 2025.*
- Export-linked, compliance-driven, & value-chain-integrated models gaining traction.
  - *Most resilient demand comes from real business pain, not "tech for tech's sake."*

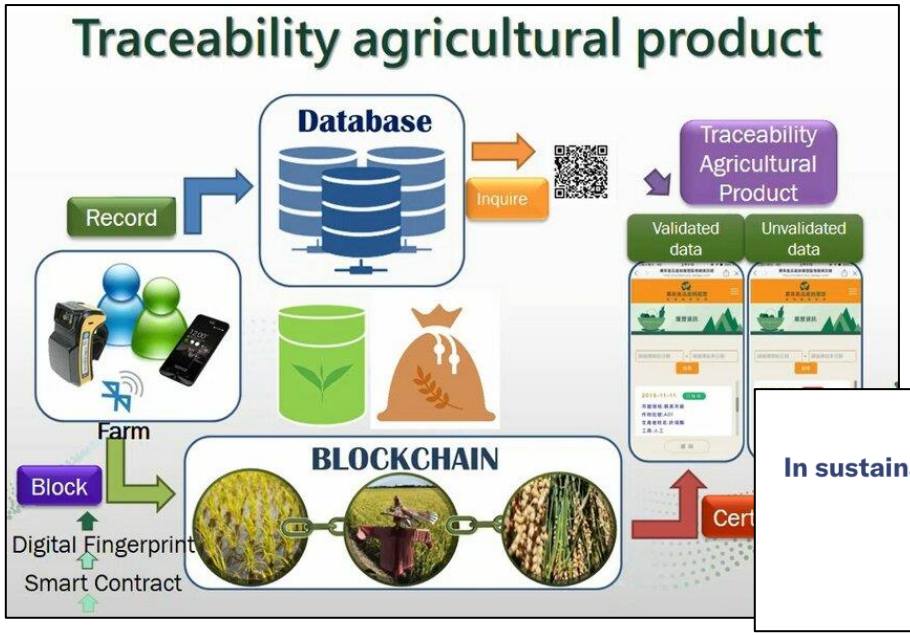


Most attractive categories now: tied to clear value-chain demand: digital compliance, embedded agri-fintech, aquaculture monitoring, and climate-smart tools that lower cost or protect market access.

Digital value chains

And traceability as export infrastructures

- Digital value chains solve visibility, verification, coordination problems.
- Traceability, MRV, & digital logistics becoming core ***export tools*** *(strongest in compliance-sensitive sectors).*
- Users: processors, exporters, cooperatives, large buyers.
- Business value:
  - *lower risk, faster verification, & stronger buyer trust.*



see agritech as coordination technology, not only production technology

KOLTIVA
BEYOND TRACEABILITY


ECOSYSTEM

In sustainable agritech and traceability, emerging markets will lead, not follow

Written by AC Ventures
Published on 8 Dec 2023 6 mins read

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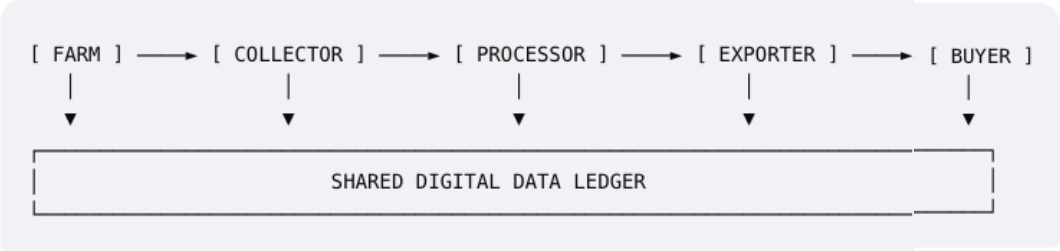

Climate-smart agriculture

As a technology bundle

- Climate-smart agriculture in SEA is not one tool; it is a bundle.
  - *Combines advisory, water control, monitoring, mechanization, & emissions logic.*
- **GOAL**: resilience, lower input waste, better decision quality.
- TH increasingly using digital tools, IoT, AI in this lane. *(e.g., HandySense B-Farm by NECTEC).*
- Value: **more predictable production** under climate stress.

CSA is not a vague sustainability concept, it is a bundle of technologies

AI Solutions in AgriTech are revolutionizing farming

Embedded agri-fintech

And inclusive finance (one of most credible areas)

***Initially**: smart farming app*
***Transformed into**: climate-smart decision tool + agri-fintech lane*

- Standalone agricultural lending is hard
  - *in fragmented smallholder systems.*
- Embedded finance works better when tied to real procurement or production data.
- Digital platforms can improve credit scoring, repayment visibility;
  - *Users: farmers, cooperatives, buyers, lenders.*

⚠ *Smallholders often lack formal collateral, & lenders lack visibility into production & cash flow*

Finance works best when it is built into value chain, not added later.

Granular farm data capture

AI-driven agri-risk scoring

Lender (bank/cooperative)

Targeted input and working capital

Repayment through buyer systems

Urban farming

…and controlled environment agriculture

- Urban farming is strongest where freshness & reliability matter > bulk volume.
  - *Controlled environments reduce seasonality; create year-round supply.*
- Users: *urban growers, restaurants, retailers, & hospitality buyers.*
- TH's urban & vertical farming activity is growing with IoT & automation.
  - *Works best in premium, high-turnover markets.*

Works when high-value crops, urban proximity, & consistent demand justify extra cost of lights, climate control, infrastructure.

Attractive in cities but ***not a universal solution to regional food supply***

Indoor farm

Restaurant/ hotel/ retail

consumer

Agrifood life sciences

…and deep tech future

- Slower-moving but potentially transformative.
  - *Genetics, crop biology, inputs, & food science.*
- Matters for resilience, nutrition, crop quality, & future productivity.
- Commercial timeline is longer than digital platforms or service tech.
  - *This is the "**deep future**" layer of agritech in the region.*

Agrifood life sciences: one of region's most credible long-term verticals

Plant science

Genetics

Biological inputs

Crop improvement

The Big AgriTech Lanes

Each lane serves its purpose

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			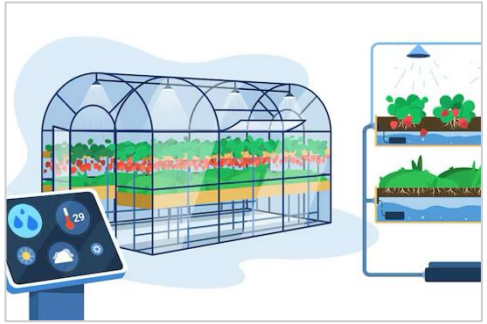	
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A better approach is to ask: ***which lane is this, what user does it serve, what value-chain pain does it remove, and what business metric changes if it works ?***

AGAIN:

If you could develop a technology in support of agriculture to address a pressing sustainability issue, what would it be and why?


Any Questions?

Wrap Up & Reflection

3 things (5 mins)

Each student completes a "3 things" card:

Wrap Up & Reflection

FIVE-LANE STRATEGIC VALUE FRAMEWORK

Digital Value Chains

Traceability, optimization & market connectivity

Embedded Fintech

Financial inclusion & risk mitigation for producers

Climate-smart Decision Tools

Predictive analytics & sustainable management

Urban & Controlled EnvAg

Year-round production & resource-efficient systems

Agrifood Life Sciences

Biotechnology, nutrition, & crop resilience

THANK YOU SO MUCH

For session evaluation:

I'd be happy to take your feedback –
both positive and areas for improvement.

Harry Jay Cavite, PhD

Lecturer in Marketing
Sasin School of Management

Academic & Researcher

Expertise: *Agribusiness, Marketing, Consumer behavior*

Teaching:

Module 5, *Market Research (MBA elective)*
Module 9, *AgriTech (MBA elective)*

Line

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AgriTech

Challenges and Opportunities in the Region

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