Agenda

- とりまとめ
- 各国レポート
- 参考）ASEAN地域で特に普及が期待されるアイテム
- **参考）インタビュー結果**

ヒアリング実施者

国	分類	組織名
ベトナム	Government Organization	Ministry of Agriculture and Rural Development
	Research Organization	Can Tho University
	Company - Vendor	Rynan Technologies
	Company -User	Vinamilk
インドネシア	Government Organization	Ministry of Agriculture
	Research Institution	National Research and Innovation Agency
	Company-Vendor	Habibi Garden
フィリピン	Government Organization	Department of Agriculture (DA)
	Government Organization	International Rice Research Institute (IRRI)
	Company - Vendor	Skyflix Media
タイ	Government Organization	MOAC, Department of Agriculture, Agricultureal Engineering Research Institute
	Research institutions etc. university	Kasetsart University
	Company - Vendor	ListenField
	Company – Vendor	Hiveground

インタビュー結果　サマリー

Vietnam | Dragon Mekong Institute (DMI) at Can Tho University

組織の概要

- カントー大学は学際的な大学
- Dragon Mekong Institute (DMI)は気候変動に関するトピックに焦点を当てるハブとして機能している

持続可能な農業に関する対象組織の取り組み

(1) キャパシティ・ビルディング

- 青少年（高校生など）に気候変動に関する知識を身につけさせ、イニシアティブと行動を奨励
- Kien Giang, Soc Trangなどの沿岸地域の農家(特に、若年層)を対象としたトレーニングを提供
- それら農家とテクノロジー・ソリューションを導入するためのスタートアップ企業と結びつける

(2) 研究

- メコンデルタにおける農業システムの変化の研究
  - 特に水資源への影響、地下水の汲み上げへの影響、気候変動の短期的・長期的な影響の箔
- 政策立案をサポートするアイデアを提供
- また、農業副産物のマップを作成し、廃棄物の発生源や影響、副産物の有効利用方法などを紹介

持続可能な農業に関する課題

- **気候変動への適応**
  - 農業における最大の課題
  - 気候変動の影響は、深刻な干ばつの年（2015年、そして2019/2020年も）に現れている
- **農業副産物の環境影響の低減**
  - 現在の廃棄物や副産物の管理プロセスは、汚染の原因となっている。
  - 例えば、ジャックフルーツの廃棄物は未処理のまま放置され、稲わらは燃やされている
  - 最近では稲わらをキノコ栽培に利用する等、廃棄物を再利用するケースも増えている
- **小規模農家への普及拡大**
  - 大多数を占める小規模農家は、農業活動を改革し、気候変動の影響に適応することが困難であると感じている
  - また、市場価格の変動によって利益を失う可能性もある。
  - このような農家は、新しい解決策や技術を採用する経済力がないことが多く、政府からの支援も不十分である。
  - さらに、多くの農民は自分の農場で単独で仕事をすることを好み、協同組合に加入する必要性を感じていない。
- **日本への期待**
  - 生産から加工・市場・消費者までバリューチェーン全てでの能力開発支援
  - 日本市場への農産物輸出支援
  - 廃棄物処理と副産物利用に関するソリューション

Dragon Mekong Institute (DMI) at Can Tho University (1/2)

Organization information

- Can Tho University is multi-disciplinary and DMI work as a hub to focus on climate change topics
- DMI have 2 focus pillar

(1) Capacity building

  - To equip the youth (e.g. high school students) on climate change to encourage initiatives & actions
  - To provide training targeting on youngsters, especially the underprivileged in coastal area such as Kien Giang, Soc Trang; and then connect them with startup companies to implement technology solutions

(2) Research

  - To understand the changes in the agriculture system in Mekong Delta, especially on water resources, impact on extraction of ground water, impact of climate change in short and long term
  - To research ideas to support policy development

- DMI is working on a map of agriculture byproducts, to present the sources, impact of wastes and how to make better use of byproducts.

1. Social issues of Sustainable agriculture in Vietnam

- **Climate change** is biggest challenge in agriculture. Climate change impact was shown in severe drought years (2015 and again in 2019/2020)
- The Mekong Delta, including Vietnam is primarily home to small-scale farmers.
- **Environmental impact of agriculture byproducts**
  - The current processes for managing waste and by-products contribute to pollution. For example, jackfruit waste is left unprocessed, rice straw is burned. Recently there is more utilization of rice straw for mushroom cultivation
  - A low application of organic farming practices alongside an overuse of chemical fertilizers and pesticides.
- **Small-scale farmers**
  - They find it challenging to reform agricultural activities and adapt to the impacts of climate change.
  - They are also susceptible to losing benefits due to fluctuations in market prices.
  - These farmers often lack the financial capacity to adopt new solutions and technologies, and they receive insufficient support from the government.
  - Additionally, many prefer to work independently on their own farms and do not see the need to join cooperatives because some new technologies the institute introduce does not meet their specific needs.
  - There is a lack of proper training on the use of chemical fertilizers and pesticides.

Interview result for Vietnam | Research Organization

Dragon Mekong Institute at Can Tho University (2/2)

2. Demand for sustainable agriculture

- **Large-scale training programs** for farmers with supporting staffs, various lessons and courses for reinforcement. Course content should be customized and varied based on regional products and farmers' needs.
- **Capacity development for extensive workers** to promote best practices in the application of fertilizers and pesticides.
- **Financial scheme and support** to help farmers acquire and implement new technology and solutions
- **Waste management** – training and best practices to make use of the by-product

3. Companies in sustainable agriculture

- *Pending for discussion mid June with College of Agriculture*

4. Future prospect for Japanese cooperation

- Support on capacity development of farm-to-table value chain, from production, processing, to market
- Support for the export of agricultural products to Japan market
- Sharing on waste management and utilization of by-product

5. Possible solutions for cooperation

- *Pending for discussion mid June with College of Agriculture*

インタビュー結果　サマリー

Vietnam | Rynan Technologies

組織の概要
- Rynan Technologiesは様々なステークホルダーと協力し、持続可能な農業ソリューションを推進をする農業ソリューションプロバイダー

持続可能な農業に関する対象組織の取り組み
- Rynan Technologiesは様々なステークホルダーと協力し、持続可能な農業ソリューションの提供を推進：
    - 政府（例： Dong Thap 省農業省と協力し、昆虫管理システムなどの技術を導入）、NGO（世界銀行、IFAD、WWFなど）、サステナビリティ部門を持つ企業（アーンスト・アンド・ヤング、VNPTなど）
    - ディストリビューター
    - 農家
- 自社でデバイスを製造し、農家にとって魅力的な製品になるよう、価格を競争力のある水準に設定
- プロモーションでは、農家を説得して自社製品を使用させるために、作物の収量と収入における潜在的な利益を示して営業を実施

持続可能な農業に関する課題

(1)農地に対する塩水浸入と給水量減少への対応
- 気候変動により塩水侵入および土壌塩化が増加
- また、近隣諸国のダム建設により、ベトナムへの淡水の供給が減少

(2)新技術を導入するための資金力と支援の欠如
- 導入のための支援が限られているため、農業技術の導入が少ない。
- 農民には技術を取得し、実施するための資金力がなく、ほとんどが政府やNGOからの支援に依存

(3) GHG削減よりも生産性を優先する農家
- 農家が最も重視するのは、収量や収入の増加など、最終的な生産高
- GHG排出を削減するよう農家を説得するには、金銭的なインセンティブを与えるか、コスト削減や所得向上を直接示す必要がある

(4) 農家の新たな技術へのスイッチングコスト
- 農家は、協同組合や直販業者よりも流通業者から購入する
    - これは、流通業者との契約・支払条件が、農作物の収穫後の後払いに設定されていることが多いから
- また、農家は安いものを使い、安い製品に慣れる傾向があるため、他の製品に変えることには抵抗がある

現地ニーズの高い技術/ソリューション
- 昆虫管理システム ：害虫・益虫の判断ソリューション
- AWD技術
- 省人化につながるスマート農業ソリューション

日本政府・企業への期待
- 日本のソリューション・プロバイダーは品質が高い
- 他方、ほとんどが割高であり、特に小規模農家は購入が難しい
- Rynanは双日の出資を受けており、さらに味の素と住友商事、サプライチェーンにおける農業生産支援プロジェクトを開始

Interview result for Vietnam | Company - Vendor

Rynan Technologies (1/2)

Organization information

- Rynan have worked with various stakeholders to promote sustainable agricultural solutions, including:
  - Government (e.g. Rynan work with Dong Thap Department of Agricultural to implement the technologies e.g insect management system)
  - NGOs (e.g. WB, IFAD, WWF)
  - Companies with sustainability department (e.g. Ernst & Young, VNPT)
  - Private distributors (will share list of names)
  - Farmers
- Rynan benchmark its price at a competitive level to make it attractive to farmers. Rynan also show the potential gain in crop yields and income to persuade the farmers to use their product.
- Unlike most other vendors, Rynan produces their devices in-house

1. Social issues of Sustainable agriculture in Vietnam

(1) Salt water intrusion and decreasing water supply

- Climate change has led to salt water intrusion and soil salination
- Nearby countries are building damps that reduce the supply of fresh water to Vietnam. Other man-made problems in the country also cause the lack of freshwater supply

(2) Lack of financial capacity and support to implement new technology

- There are many technologies, but limited support for implementation, which leads to low adoption of agricultural technology
- Farmers do not have financial capacity to acquire and implement the technologies and depend mostly on support from government and NGOs. There is also lack of coordination among different stakeholders.

(3) Productivity is a priority for farmers, rather than GHG reduction

- Farmers care most on bottom-line output, incl. increasing yields and income. To persuade farmers to reduce gas and carbon emission, there must be financial incentives or direct show of cost reduction/income gain
- Farmers rather buy from distributors than from cooperatives and direct saleperson due to preferential terms they have with the distributors, which allow them to pay later when they have crop yields
- Farmers tend to use cheap things and get used to using cheap products, so there is a lot of resistance to change to other products.

(4) Others

- There is a reduction in agricultural workforce who are willing to go on farm
- Moving toward organic fertilizers is very hard in Vietnam

Interview result for Vietnam | Company - Vendor

Rynan Technologies (2/2)

2. Demand for sustainable agriculture

- **Insect management system** to define which one is bad and which one is harmless/which one is good for the farming
- **Alternate wetting and drying technology**
- Demand for **robotic farming and robotic technology** to replace human manual efforts. For example, using drone to view real-time assessment across the crop/droughts.
- Demands will move forward adopted technology for farming, such as sensors, IOT devices to increase farming efficiency and to help farmers understand the farm better

3. Companies in sustainable agriculture

- Technology in agriculture is growing with double-digit rate. Local government and NGOs investment are also growing. However, farmers' ability to pay is not increasing
- MimosaTek is a long-time player
- Drone companies are mostly from China

4. Future prospect for Japanese cooperation

- Ajinomoto, Sumitomo have started implementing projects to support agriculture production in their supply chain
- Japanese solution providers have high quality, however they are mostly on the more expensive side (e.g. for smart water meters, some providers from Japan have cost 2-3 times higher than other vendors)

5. Possible solutions for cooperation

- Japanese trading companies have strong reputation and network in Vietnam. Solution vendors can collaborate with these companies, leverage their existing connections to broaden sales outreach