

# Nomura Sustainability Day

## Nomura Agri Planning & Advisory's Food and Agriculture Sustainability Initiatives

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President

Nomura Agri Planning & Advisory Co., Ltd.

October 5, 2021



**NAPA**  
NOMURA Agri Planning & Advisory

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- 1. Why is Nomura engaged in food and agriculture sustainability?**
  - 2. Food and agricultural innovation toward sustainable development**
  - 3. NAPA solutions**

## **1. Why is Nomura engaged in food and agriculture sustainability?**

# 1. Why is Nomura engaged in food and agriculture sustainability?

## Long history of involvement in agriculture

- Nomura has contributed to the growth and development of food and agriculture since its founding in 1925
- In September 2010, Nomura Agri Planning & Advisory (NAPA) was established to provide solutions to challenges in agriculture

### Nomura Brazil Farm



1925	Nomura Securities established
	Investment in Brazil Farm
1965	Nomura Research Institute (NRI) established
1975	Nomura Agriculture and Livestock Research Institute (Nomurabras) established
2010	Nomura Agri Planning & Advisory (NAPA) established
2011	Nomura Wago Farm (currently Nomura Wago Sakaki Farm) established Nomura Farm Hokkaido established

### Nomurabras



Nomura Agri Planning & Advisory Co., Ltd.



**Founding philosophy**

Contribute to the revitalization of local communities and the growth of the Japanese economy through the agribusiness

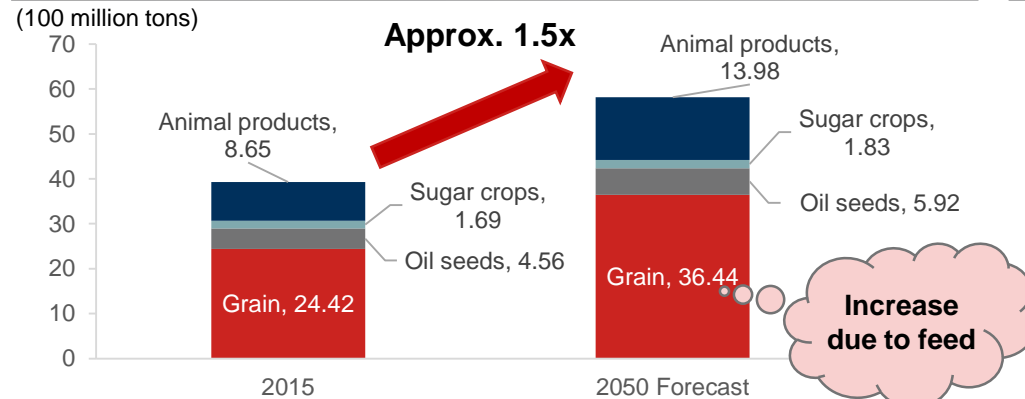


# 1. Why is Nomura engaged in food and agriculture sustainability?

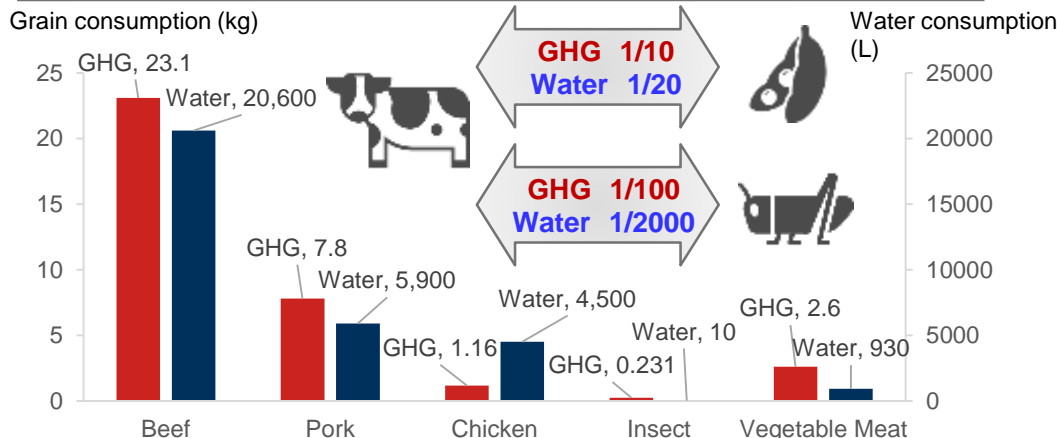
## Responding to increasing global food demand and environmental impact

- Increase in global food demand (particularly meat) driven by population growth and development of emerging economies; Environmental impact remains a challenge (Protein crisis)
- To reduce environmental impact, alternative proteins are attracting attention

### Food supply outlook for 2050

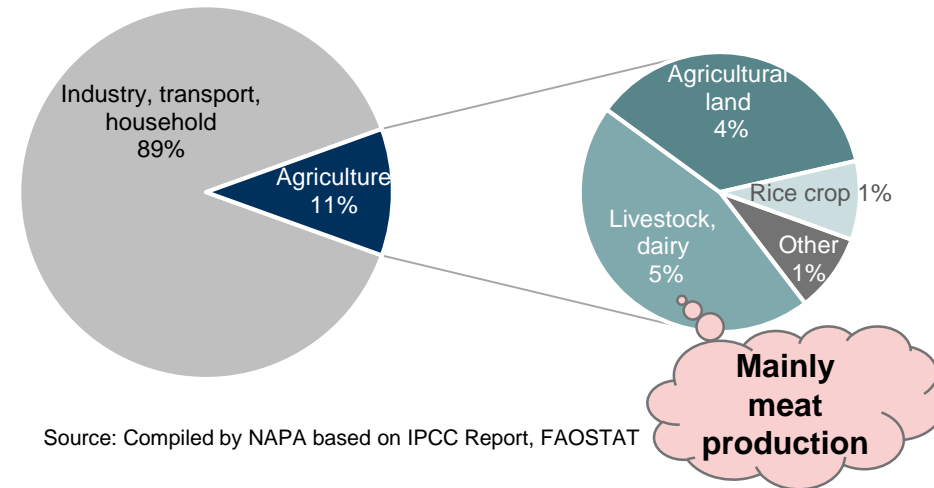


### Environmental impact per kilogram for each protein source



Source: NAPA estimate based on "Plant-based meat raw materials and production process", Utsunomiya University, National Agriculture and Food Research Organization

### Agriculture GHGs account for over 10 percent of total industrial emissions



**Stronger demand for meat driven by population growth and development of emerging economies**

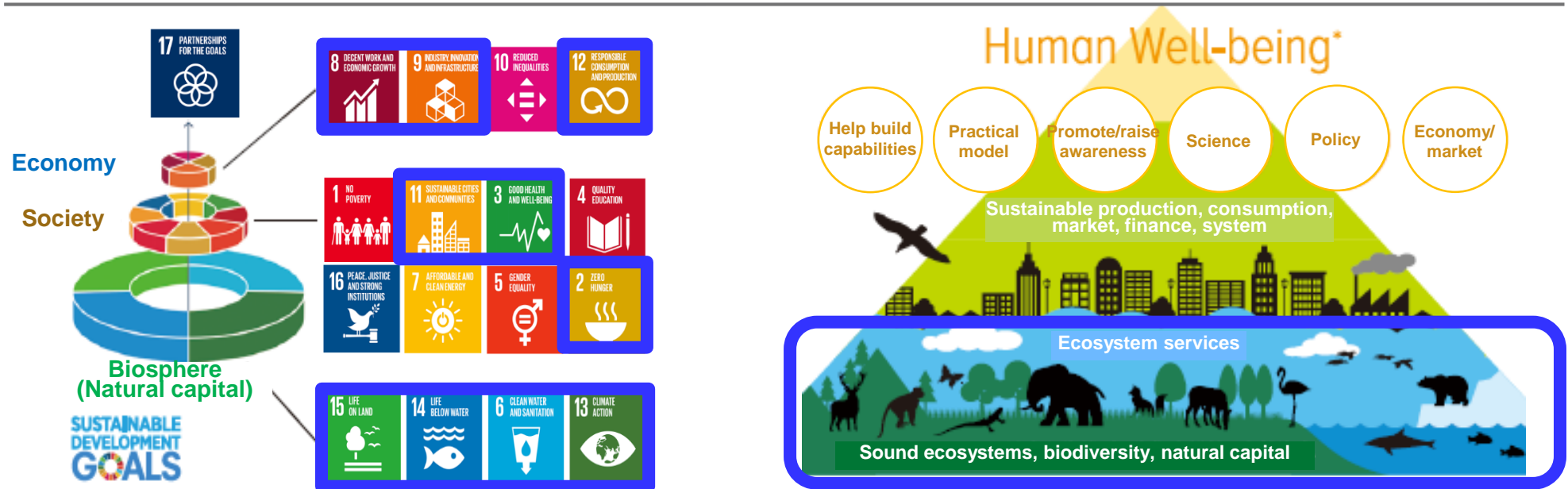
**Higher demand for grain and water (Needed for meat production)**  
**Increased GHGs from livestock production**  
**Forest destruction**  
**Extensive use of chemical fertilizers**

# 1. Why is Nomura engaged in food and agriculture sustainability?

## Food and agriculture is a fundamental theme for global sustainable growth

### ■ Increasingly complex supply chains and diversified needs of consumers impact various industry sectors

The 17 SDG goals can be broadly divided into three themes: natural capital, society and economy. Social issues related to food, agriculture, the environment and natural resources have become more severe



Source: Compiled by NAPA based on CONSERVATION INTERNATIONAL JAPAN ANNUAL REPORT

### Deepening crisis related to food, agriculture, the environment and natural resources



## **2. Food and agricultural innovation toward sustainable development**



- Hosted Nomura Global Food & Agri Forum 2020 with guest speakers from global food and agribusiness companies

Large-scale greenhouse agriculture in Almeria, Spain



Cooperative Agrícola San Isidro (CASI) CEO  
Antonio Domene



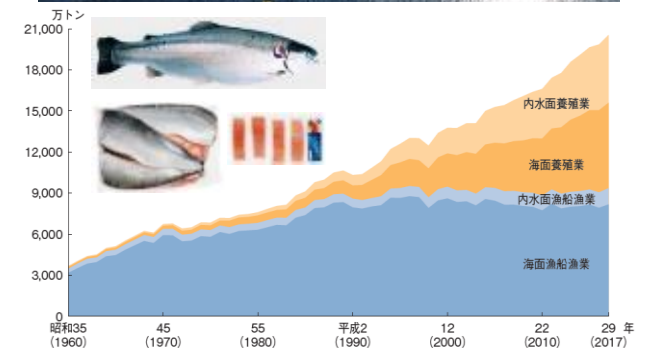
New Zealand's global kiwi strategy



ZESPRI international Limited  
Asia Regional Manager  
Nick Kirton



Salmon farming and global marketing in Norway



Norwegian Seafood Council  
Director Japan & Korea  
Gunvar L. Wie





## 2. Food and agricultural innovation toward sustainable development

### Evolution of global food and agribusiness

NOMURA  
「NOMURA GLOBAL  
FOOD & AGRI FORUM 2020」

#### Automation of livestock farming in the Netherlands



Lely Holding  
Business  
Development  
Processing  
Director  
Guus van  
Roessel



#### Transformation of food distribution in China



Hema Fresh  
(Alibaba's Hema  
Fresh) CEO  
Vice President of  
Alibaba Group  
Yi Hou



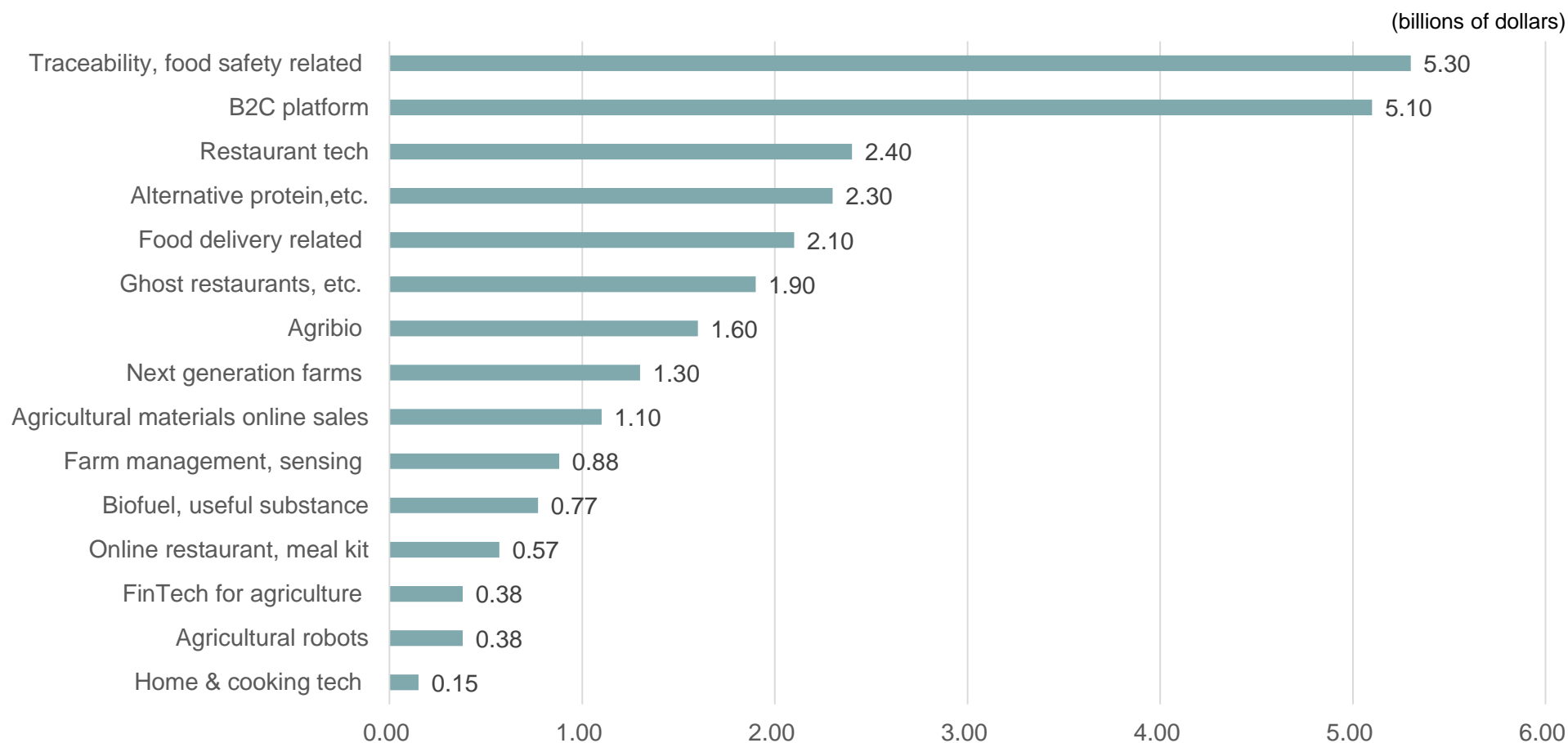
#### Creation of startups in the US, Israel, Japan



## Global investment in food and agritech is accelerating

- Financing of up and coming food and agritech startups has accelerated
- In 2020, total investments in startups was **\$26.1bn** compared to Y6.4bn in 2014, an **average annual increase of 26%**

Funding amounts for international food and agri startups (2020)<sup>1</sup>



1. Source: AgFunder report

## 2. Food and agricultural innovation toward sustainable development

# Research and publication on global cutting-edge businesses changing food and agriculture



### Next generation farm (Plant factory, land-based/cutting edge aquaculture)

(1) Plant factory	
1. Spread	Japan
2. Farmship	Japan
3. Kidaya	Japan
4. Farm & Factory Wakasa	Japan
5. Seiden Kogyo	Japan
6. Fujian Sanan Sino-Science Photobiotech	China
7. Crop One HD	US
8. Aero Farms	US
9. Bowery Farming	US
10. Freight Farms	US
11. Infarm	Europe
12. Growing Underground	Europe
13. Seedo Corp	Israel
(2) Land-based, cutting edge aquaculture	
1. FRD Japan	Japan
2. Soul of Japan	Japan
3. SalMar	Europe

### Agriculture robot (Drones, automated harvesting robots, robot tractor)

(1) Drone	
1. Nileworks	Japan
2. DJI	China
3. XAG	China
(2) Harvesting robots	
1. inaho	Japan
2. Abundant Robotics	US
3. Octinion	Europe
4. Lely	Europe
5. Tevel Aerobotics Technologies	Israel
6. Meshek {76};	Israel
(3) Robot tractor	
1. Kubota	Japan
2. Yanmar Agri	Japan

### Agribio (Protein alternatives such as plant-based meat, victimless meat, insect food, genome editing)

(1) Alternative proteins	
1. IntegriCulture	Japan
2. BugMo	Japan
3. Taberumo	Japan
4. Musca	Japan
5. Ainan Liberacio	Japan
6. Gryllus	Japan
7. Ellie	Japan
8. Beyond Meat	US
9. Kite Hill	US
10. Memphis Meat	US
11. Finless Foods	US
12. Calysta Energy	US
13. Mosa Meat	Europe
14. NovaMeat	Europe
15. Hargol FoodTech	Israel
(2) Genome editing	
1. EditForce	Japan
2. Platinum Bio	Japan
3. Calyxt	US
4. Ginkgo Bioworks	US
5. Inari	US

### Production platform (IoT-ICT system)

1. Optim	Japan
2. SkymatiX	Japan
3. Vegetalia	Japan
4. Fujitsu	Japan
5. Farmnote	Japan
6. Farmer's Business Network	Japan
7. The Climate Corporation	US
8. Hispatec	Europe
9. Priva	Europe
10. Connecterra	Europe
11. Nofence AS	Europe
12. Afimilk	Israel
13. A.A.A Taranis	Israel

### Distribution platform (Direct delivery EC, cutting edge wholesale market)

1. Pocket Marche	Japan
2. My Farm	Japan
3. Tokyo Haneda Market	Japan
4. Meicai	China
5. Hangzhou Xiaonong Network Technology	China
6. Shenzhen Agricultural Products	China
7. Shanghai Hema Network Technology	China
8. Aggrigator	US
9. Pan European Fish Auctions	Europe
10. SEMMARIS	Europe



## Food & agritech market size

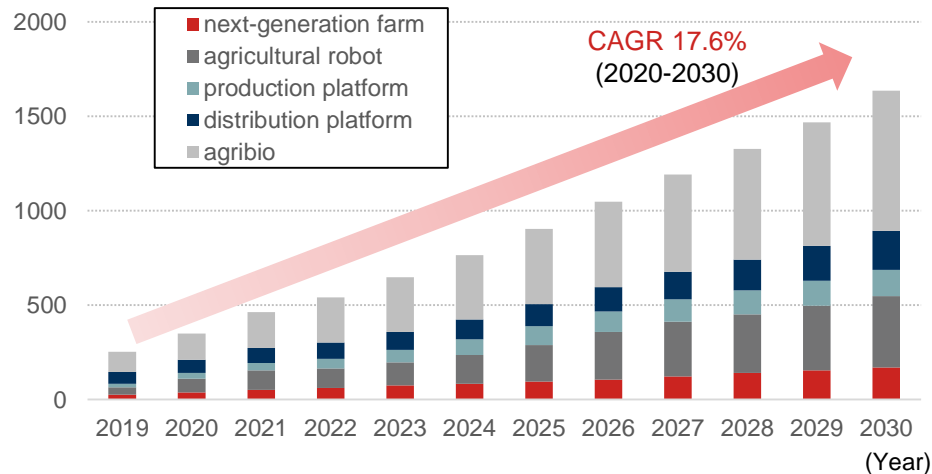
- Food and agritech is projected to grow in several sectors including production technology, distribution, and the alternative proteins market



Projected size of domestic market in five food & agritech sectors

(billions of yen)

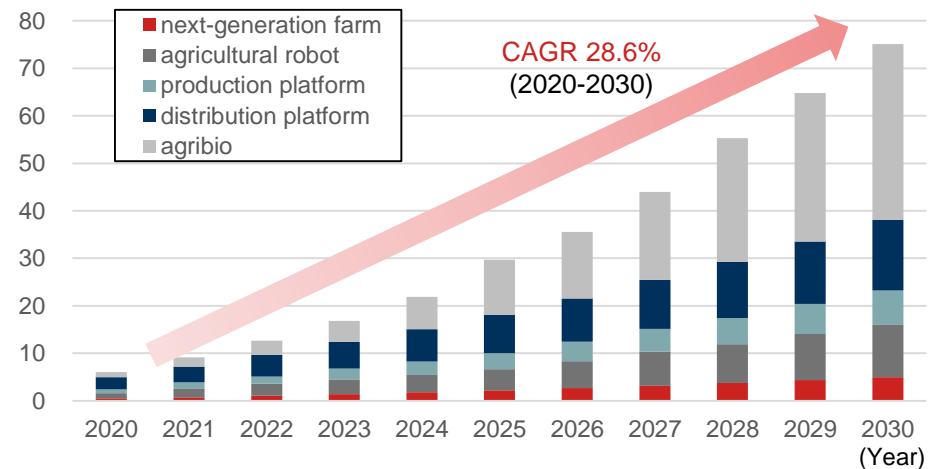
(105 yen = 1 US dollar)



Projected size of global market in five food & agritech sectors

(trillions of yen)

(105 yen = 1 US dollar)

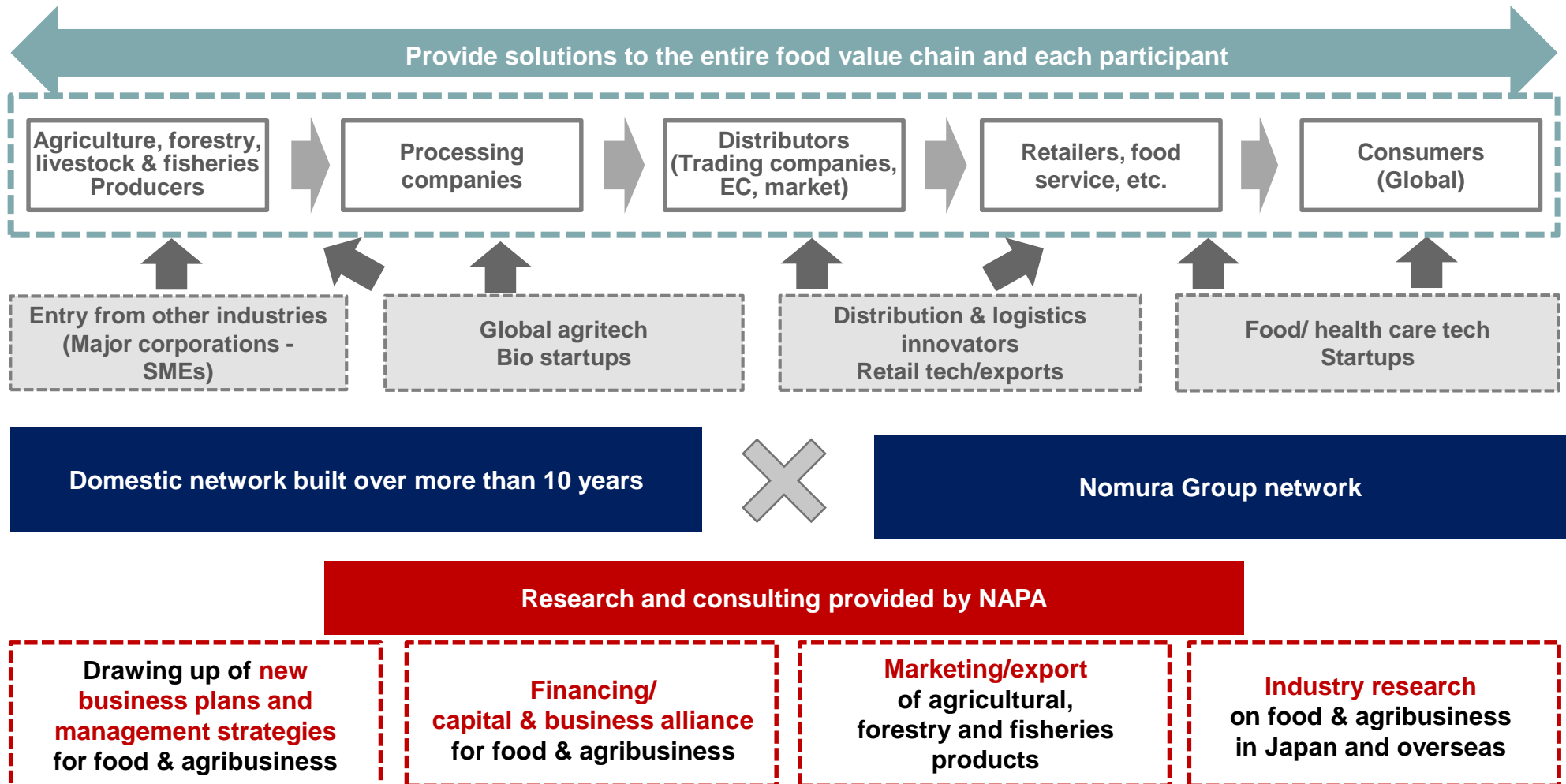


(Source) Nomura Agri Planning & Advisory

### **3. NAPA solutions**

## Features of NAPA's consulting services

- Deliver business strategy consulting across the entire food and agriculture value chain
- Expand operations leveraging synergies with Nomura Group's client network

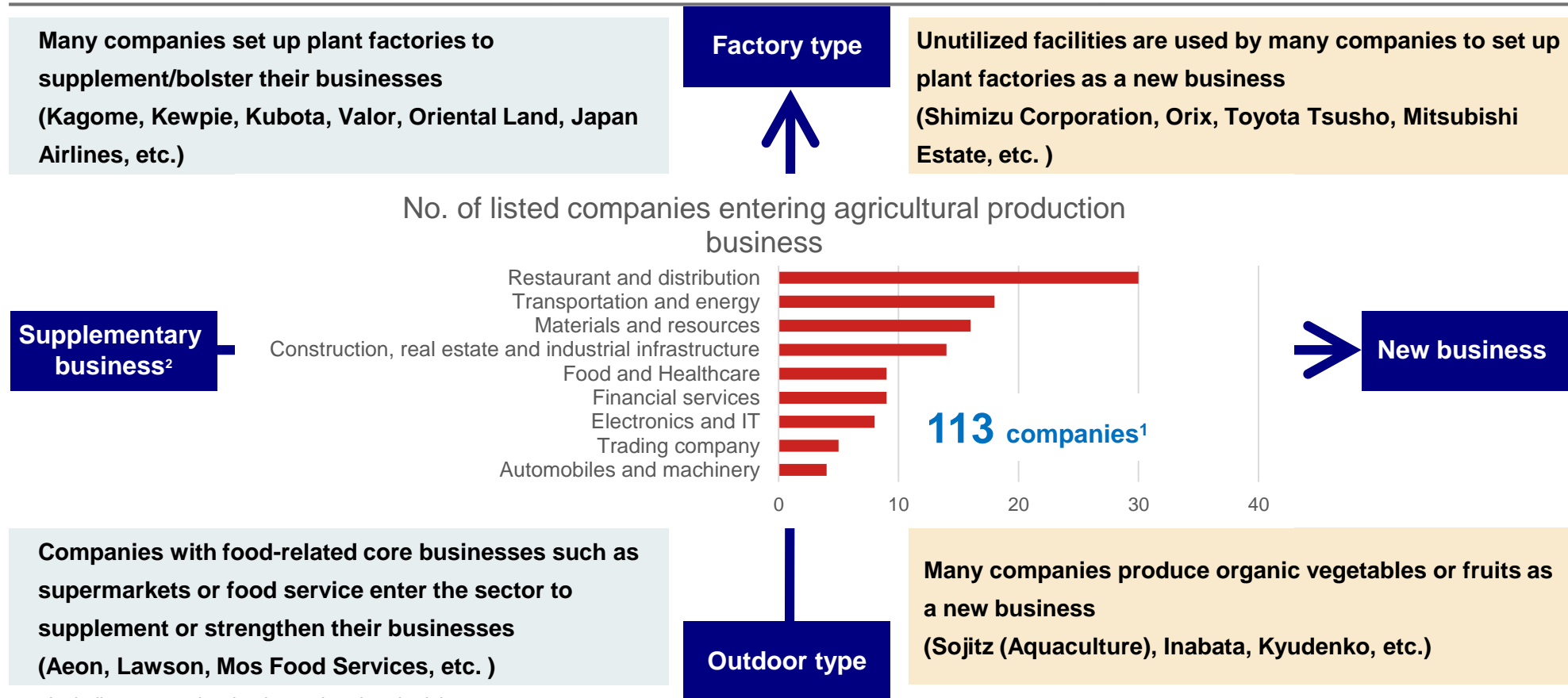




## Strong interest from corporates as a new area of business

- Corporates have a wide range of food and agriculture needs, and over 100 listed companies alone have entered the sector

### Classification matrix of companies entering the agriculture sector



1. Including companies that have already exited the sector.

2. Supplementary business: Businesses that supplement the core business, including direct procurement of food raw materials or products, or improving the value of the core business.

3. Note: This classification is based on NAPA's subjective perspective and actual reasons for entering the sector may differ.

Source: NAPA, based on public information.

## Support business expansion

## ■ Support companies entering the food and agri sector through market research and help with technology

## Examples of private company needs

Considering entry into agriculture and want to create a business vision/plan  
Developing a new area of business by applying in-house technology and resources to food and agri

Conducting research and verification to pursue food and agri as a new business strategy

Finding business partners expected to expand food and agribusiness, create synergies

## Major manufacturers

## Issues

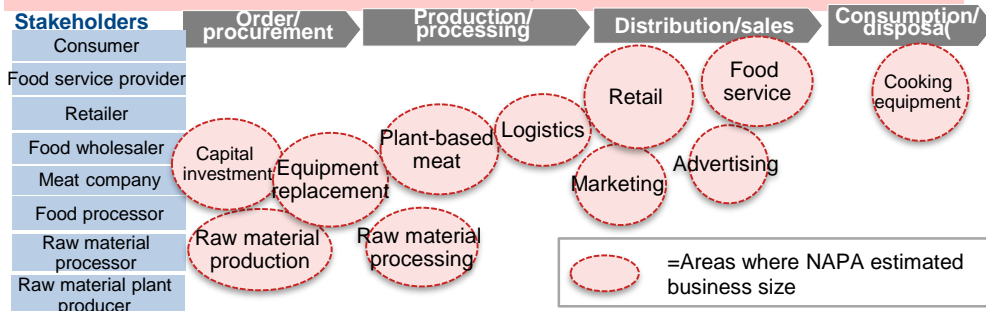
- ✓ Basic research toward the development of new food and agri businesses
- ✓ Target promising areas based on latest business models and market assumptions



## NAPA value

- Analysis/proposal of latest business models
- Estimate project size for each alternative protein value chain

## Alternative protein (plant-based meat, cultured meat, insect food, etc.) value chain business opportunity (NAPA estimate)



## Major material manufacturers, trading firms, energy companies

## Issues

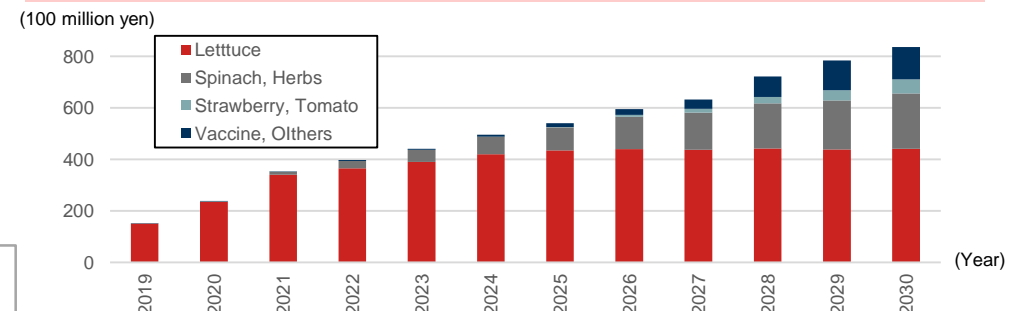
- ✓ Create concept for fully enclosed plant factory model
- ✓ Identify promising areas where in-house technologies can be used based on the latest business models, technological trends, and market assumptions



## NAPA value

- Analysis/proposal of promising enclosed plant factory models
- Estimate domestic and global plant factory size by product

## Plant factory market size projection (NAPA estimate)



# Support the sustainable growth of local communities /economy

- Support multiple projects that contribute to the growth of local economies, including strategies to expand export of farm and marine products, attracting companies and promoting collaboration with local companies

Relocation of local market, redevelopment into export hub (Narita City)



## Issues

Deterioration of Narita Wholesale Market  
Decline in distribution  
Revitalization of local wholesale markets

Sixth Sector Industrialization Company Attraction Project (Himeji City)



## Issues

Expansion of abandoned farmland  
Shortage and aging of the workforce  
Development of tourism resources  
Revitalization of the northern region

### NAPA commissioned for wholesale market redevelopment

## NAPA value

Help promote project by meeting with existing market players, new players and buyers in Japan and overseas  
Promote new strategy based on vision to relocate the wholesale market close to the Narita Airport, expand exports

### NAPA commissioned for Sixth Sector Industrialization Company Attraction Project

## NAPA value

(Matching event with sixth sector industrialization companies, local companies and large enterprises, business launch follow-up)  
Attract cutting edge sixth sector industrialization companies to Himeji City, promote collaboration with local community/companies

New market to open Feb. 2022, signed agreement with Rungis, France



Emergence of agriculture startups, multiple collaboration agreements  
Long-term partnerships with local companies entering agriculture business

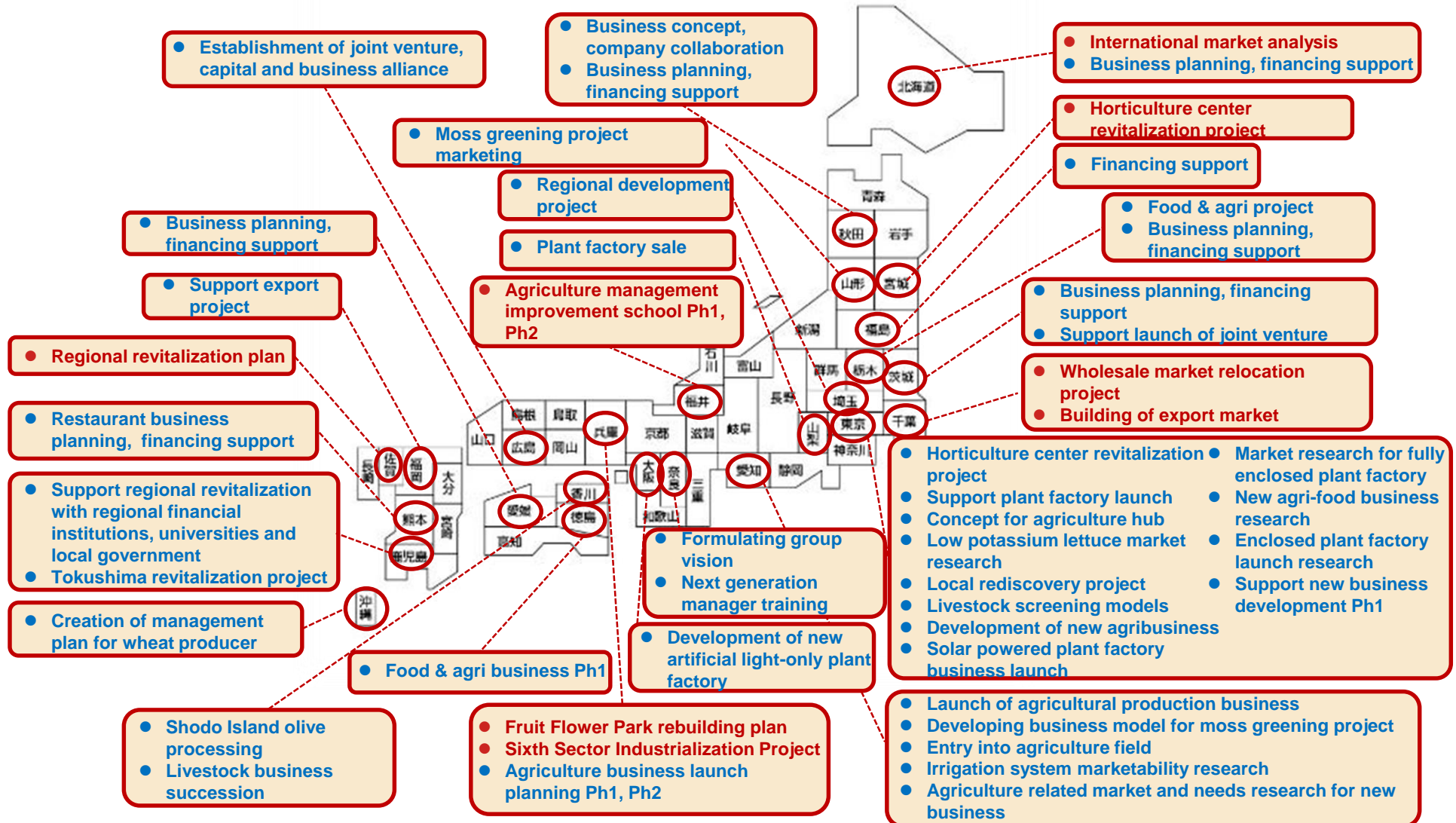




### 3. NAPA solutions 10 years of consulting (Japan)

#### Consulting projects up to 2020

● Public ● Private



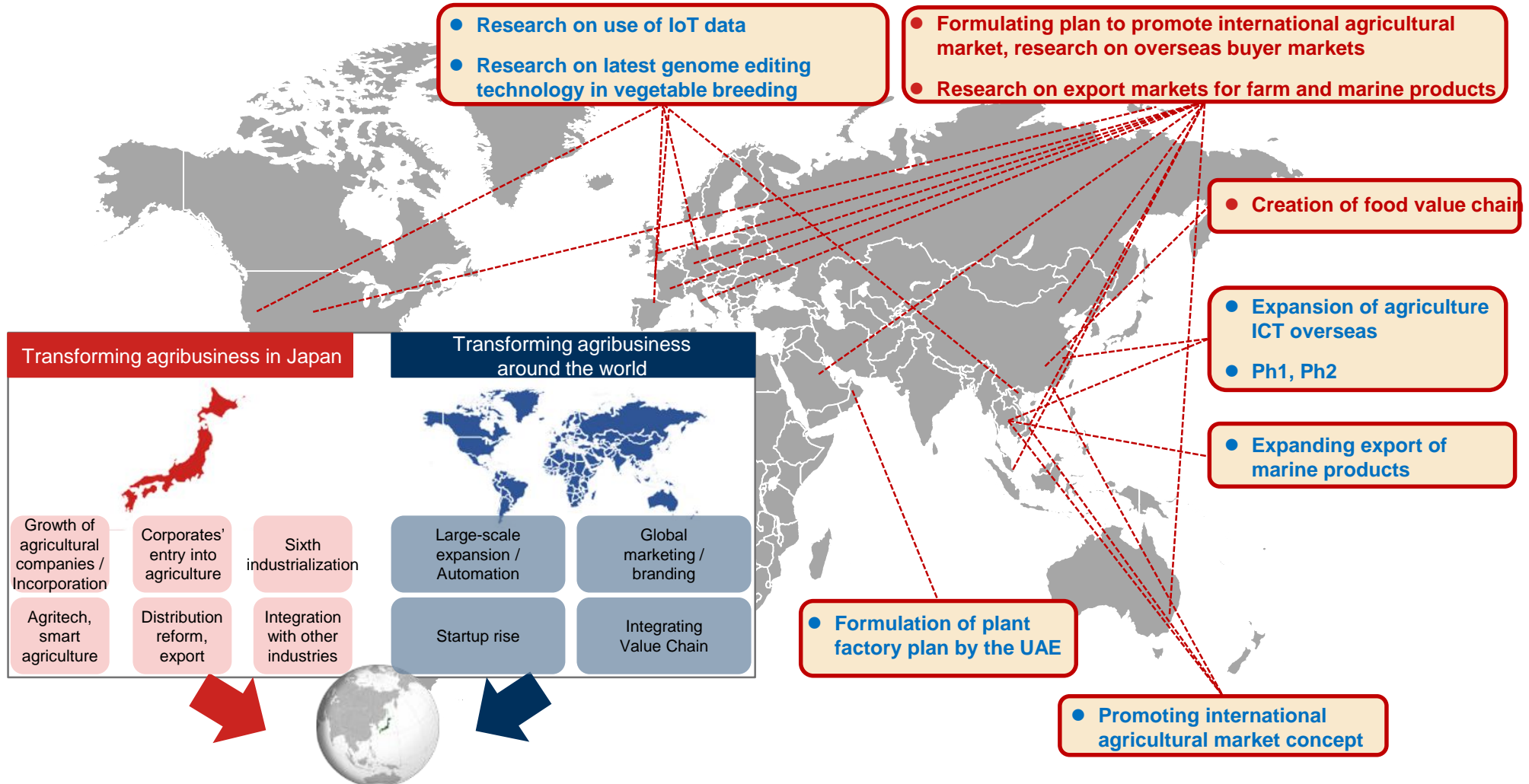
Note: Excluding national research project by central government; not all projects

### 3. NAPA solutions

## 10 years of consulting (Overseas)

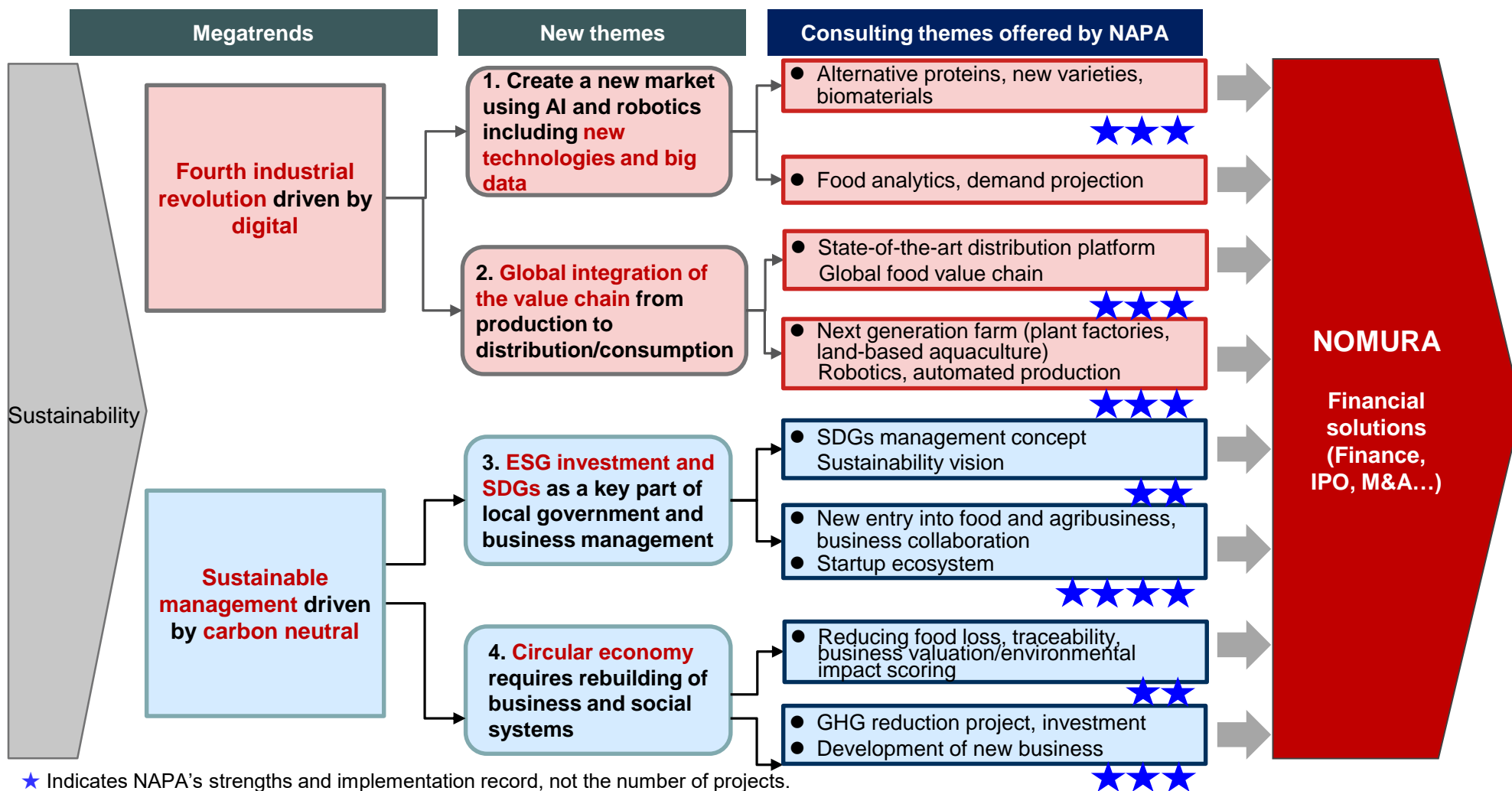
### Research and consulting projects in Asia, global (up to 2020)

● Public ● Private



**Global expansion of the food and agribusiness as a sustainable industry reaching the next level**

- Deliver a wide range of solutions to business management issues in the food and agriculture sector by combining NAPA's expertise and Nomura Group's financial solutions





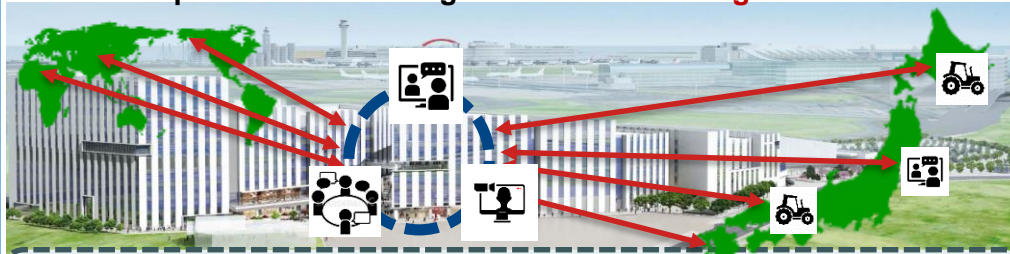
### 3. NAPA solutions

## New initiatives to support sustainable growth industries

**NOMURA**



**Ecosystem hub** to consolidate and share information on global expertise and challenges **in the food and agri sector**



Innovation/  
Cultural  
exchange

Hub for  
business  
creation/  
growth

Ota City  
manufacturing  
companies  
trial  
collaboration

Verification  
tests across  
Japan

Ota market

Collaboration with companies, local government, universities, financial institutions, etc.



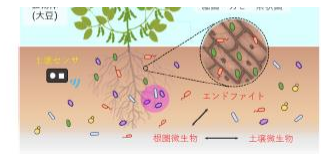
Goal 5 program director  
Professor Kazuhiro Chiba,  
Tokyo University of Agriculture and  
Industry

R&D on food supply industry toward opening up new market 10 projects

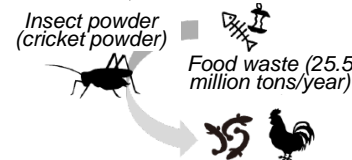
- Cultivation of new crop varieties by genome editing technology  
Ryo Osawa,  
Professor, University of Tsukuba



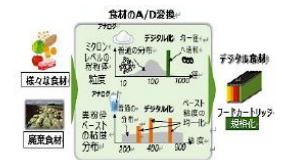
- Elucidation and utilization of soil microbial functions  
Haruko Takeyama,  
Professor, Waseda University



- Food and feed production using insects fed by food and feed waste  
Kei Yura,  
Professor, Ochanomizu University



- 3D food cartridge  
Mitsutoshi Nakajima,  
Professor, University of Tsukuba



New food brand 'Agrichano' and sale of digital membership



**Agriculture X Food X FinTech**  
= Solutions to 'regional revitalization,' 'social issues' and 'private domain'

Content Company



Future Innovation Company



Raise producers' income (higher added value)

Create new business model for food-service industry (not store-visit model)

Online capital markets using blockchain technology

Digitalization of rights

Improvement of consumer's food literacy (dietary education)

Creation of digital asset market and formation of ecosystem

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