



THE FOOD INDUSTRY

새로운 식품산업 발전을 위한 규제과학 역할 및 방향

Regulatory Science

Yang Hee Cho

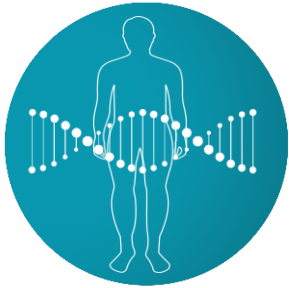
Amway, Vice President
Innovation & Science Korea & Japan

May, 2022

Market overview



Global Market



Personalization

- Bespoke products (3D printing technology)
- Wearable sensors



Convenience & Online shopping

- Instant delivery service
- Meal kit
- Smart cooker/Smart oven
- Smart meal planning based on stuffs in refrigerators



Health Management

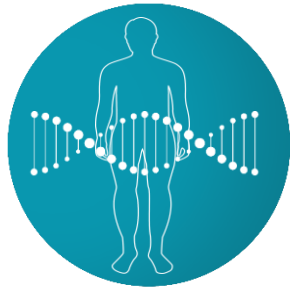
- Immune
- Supplement → My Wellness Routine
- Alternative format & Enjoyable experience (Chewable, Liquid, etc.)



Sustainability

- Wasteless food
- Plant-based meat (meat alternatives)
- Smart packaging to minimize wastes (fresher and longer storage)
- Recipe (nose to tail eating)

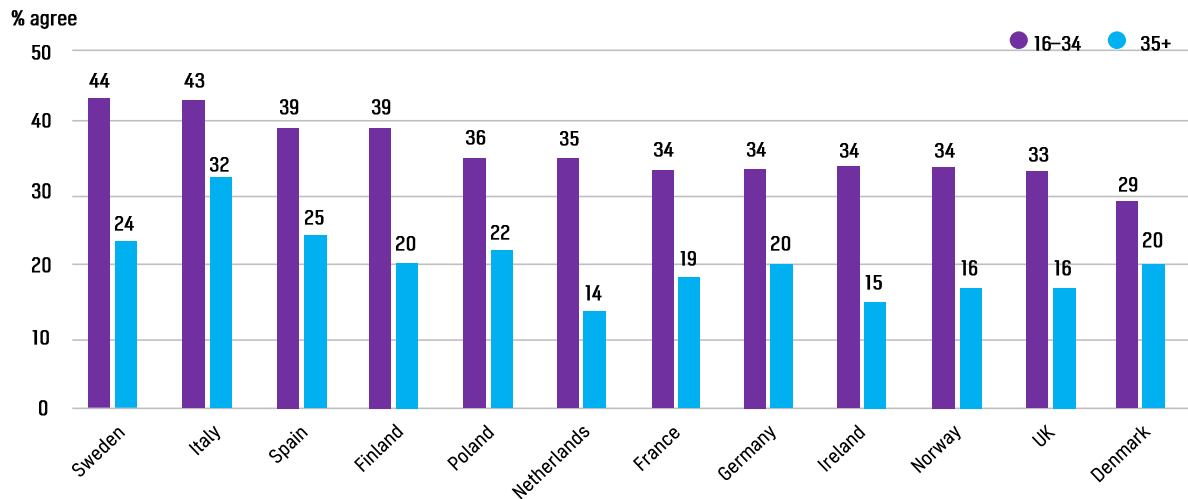
Personalization



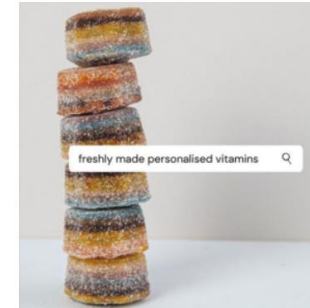
Personalization

- Bespoke products (3D printing technology)
- Wearable sensors

Europe: have tried or would be interested in trying food/drink that 'is personalized to match my needs [eg based on diet or activity data I share]', 16-34 vs 35+*, 2021



*taken from Mintel's Global Consumer Base: 1,000 internet users aged 16+ for each market Source: Kantar Profiles/Mintel, August 2021



Nourished prints bespoke gummy vitamins after users do an online quiz (UK)



Veri uses a wearable sensor to analyse blood glucose levels (Finland)



NGX: At-home DNA kit to design shakes with specific micronutrients



10+ YEARS: Tech makes personalisation more personal



Digital farms tailored to meet dietary needs of over-50s



Vertical gardens to provide personalised nutrients

Convenience & Online shopping



Convenience & Online shopping

- Instant delivery service
- Meal kit
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Lamb & Apricot Koftas with Smoked Aubergine Dip



The Sunday Roast Collection Black

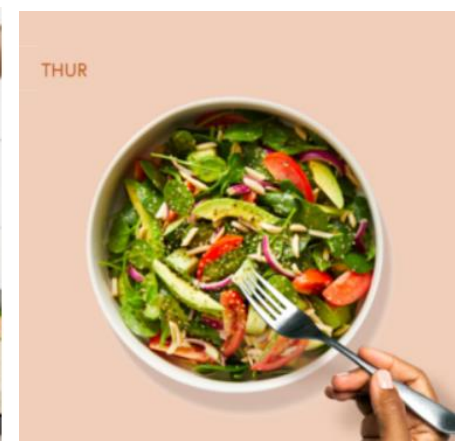
My **Supper Hero** sells restaurateur kits to prepare in less than 10 minutes (UK)



Tovola offers a smart oven and paired meal kit service



Instant Pot offers voice assistance, app- control progress and recipes



Yummly helps to plan meals with existing pantry items

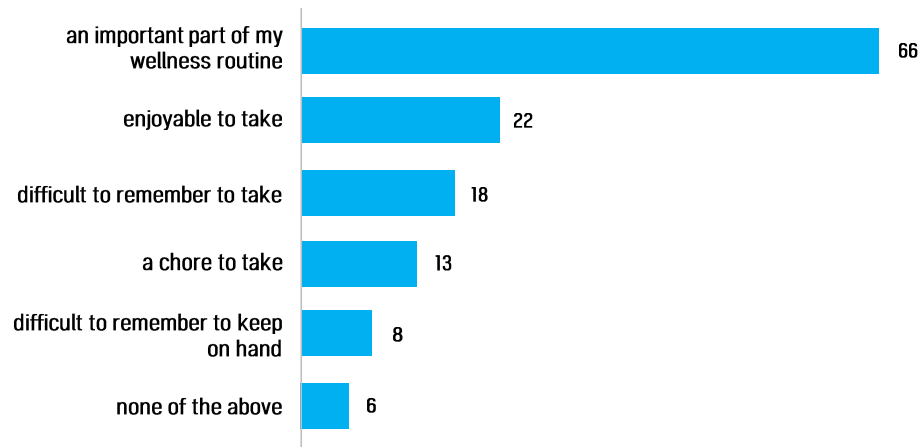
Health Management



Health Management

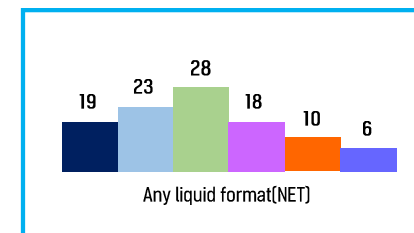
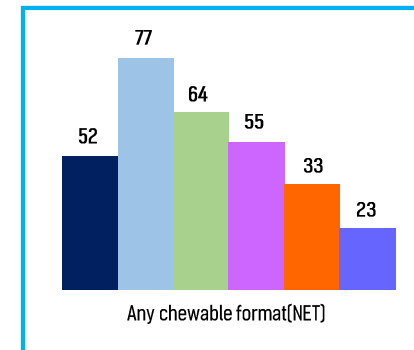
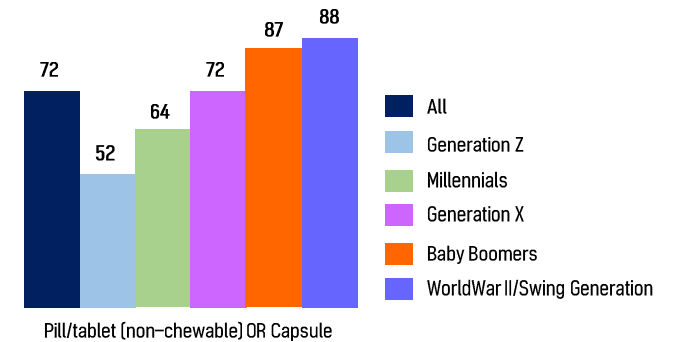
- Immune
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- Alternative format & Enjoyable experience (Chewable, Liquid, etc.)

"Which of the following statements about vitamins, minerals, and supplements do you agree with? Please select all that apply. Vitamins, minerals, and supplements are..."



Base 1,749 internet users aged 18+ who currently take a vitamin, mineral, or supplement
Source: Kantar Profiles/Mintel, June 2021

Format preferences by generation [%]



Nets: Any chewable format: Gummy OR Bite OR Chew/soft chew OR Chewable tablet: Any liquid drink in shot format OR Liquid in spray format OR Liquid in drop format
Source: Kantar Profiles/Mintel, June 2021

Sustainability



Sustainability

- Wasteless food
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TopValu Deboned Salmon cubes
(Japan)

Wasteless food

뼈를 발라낸 큐브 모양 냉동 어패류



Sundial Foods' bone-in chicken legs
made from plants



Flinders + Co. Carbon Neutral Series
Lamb Loin Chops (Australia)

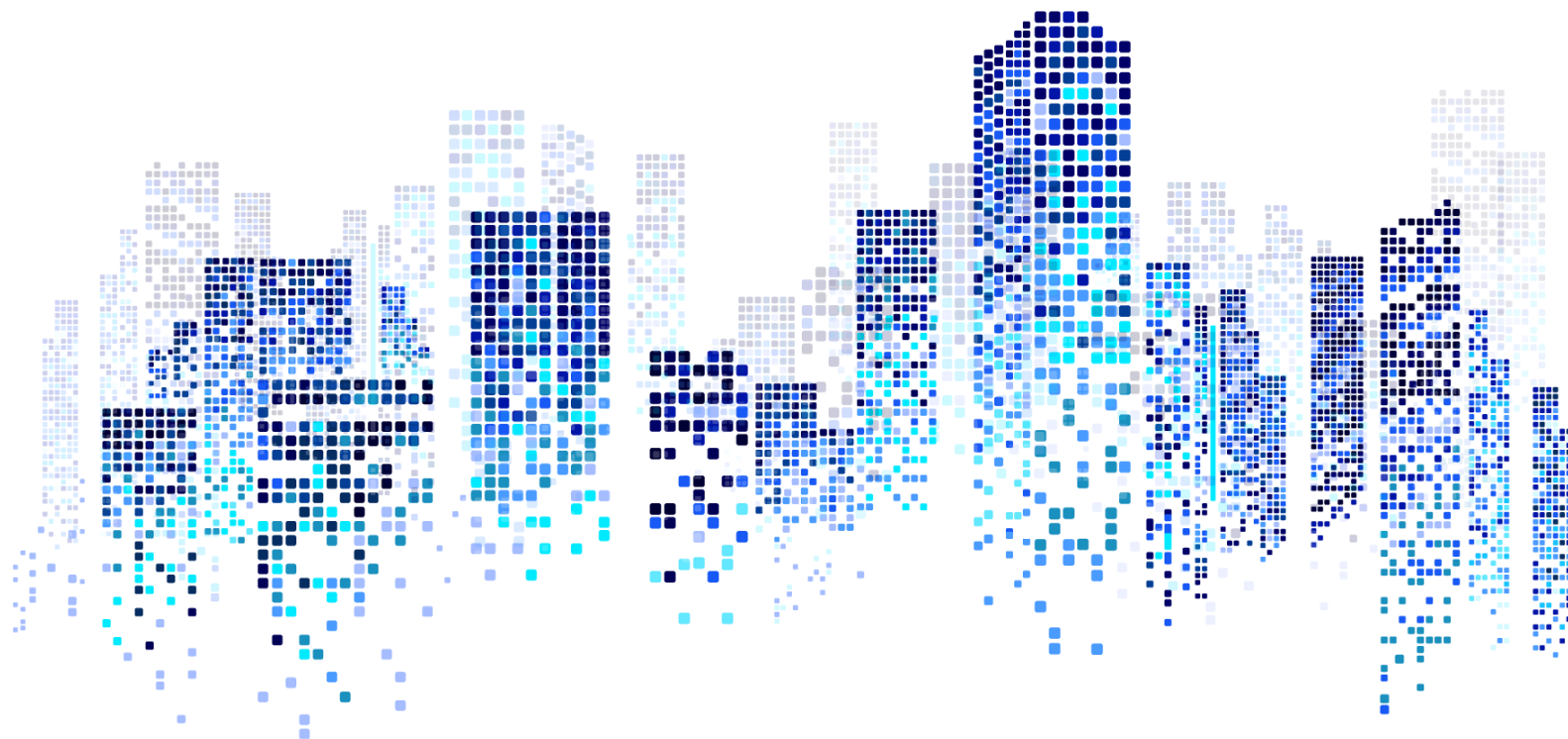


Farmer Focus Organic & Free Range
Toasted Lager Half Chicken (US)



Packaging solutions

Current system & Challenge



규제에도 ROI가 있다

■ Return On Investment 란?

$$\frac{\text{순이익}}{\text{투자액}}$$

▶ 투자가 얼마나 수익성, 효율성이 있는가

■ 규제의 Return On Investment 란?

$$\frac{\text{규제의 효과} \uparrow}{\text{규제의 총 투자} \downarrow}$$

▶ 규제가 얼마나 효과가 있는가?

Questions?



다른 나라보다

1. 더 '안전한 제품' 이 시장에 나와 있나?

2. 더 '다양한 제품' 이 시장에 나와있나?

3. 신제품의 '시장 진입률 및 진입속도' 가 좋은가?

4. '사건·사고' 가 없나?

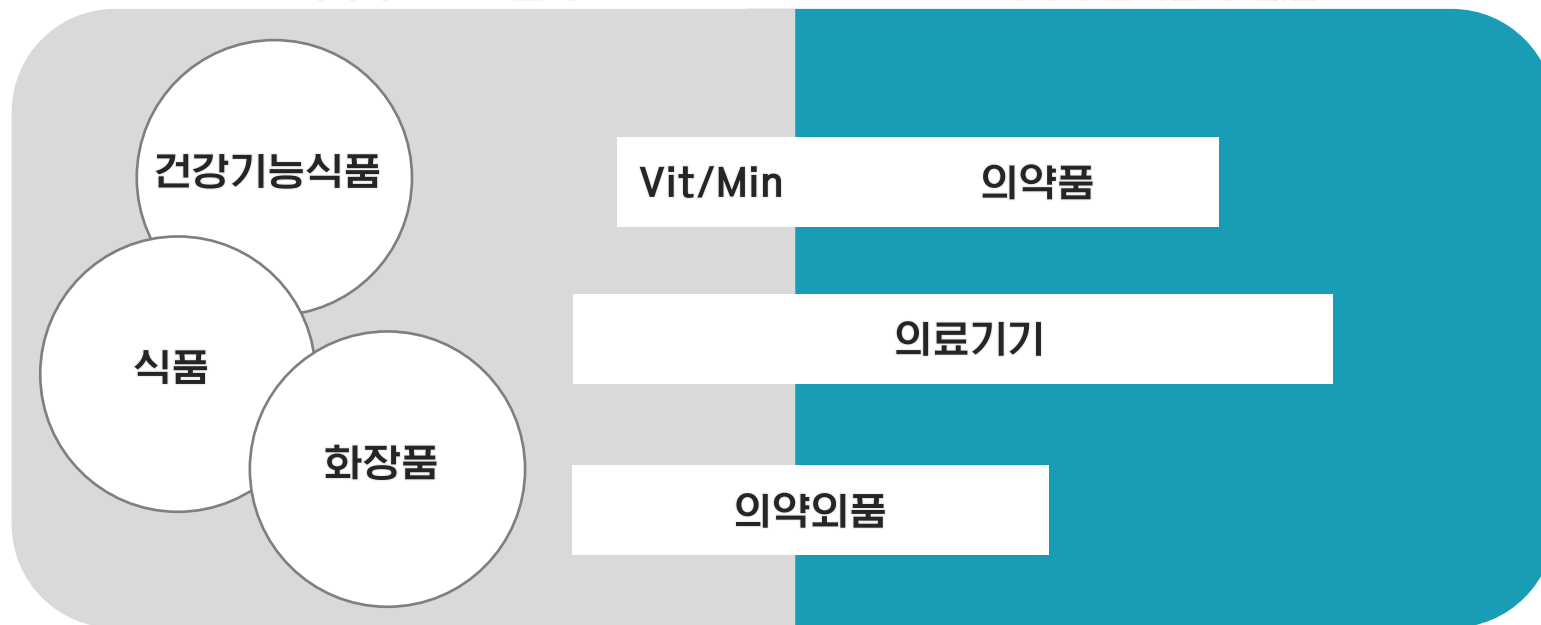
모든 것을 규제해야 할까?

Consumer Choice

소비자가 스스로 선택

Expert Choice

소비자가 선택할 수 없음



Current system & Challenge

대한민국의 규제환경



Science & Technology

Culture

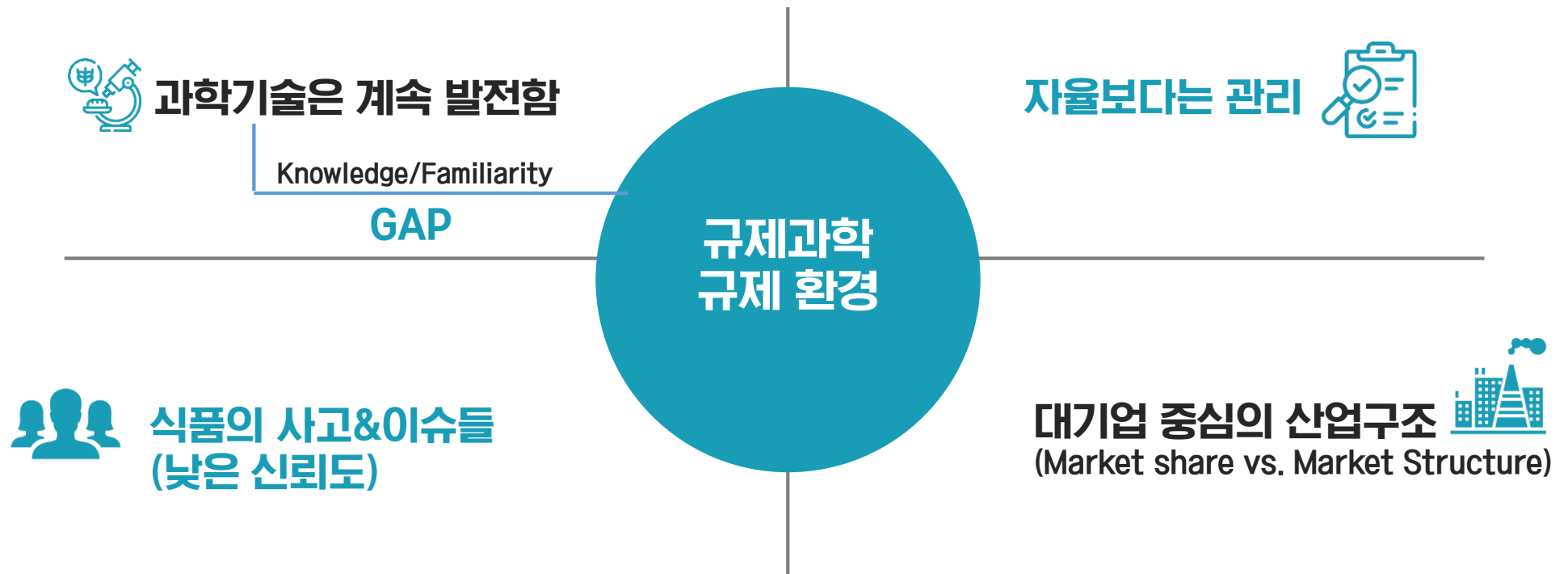


History & Experiences

산업구조



대한민국의 규제환경



Global Agenda in Regulatory Management System

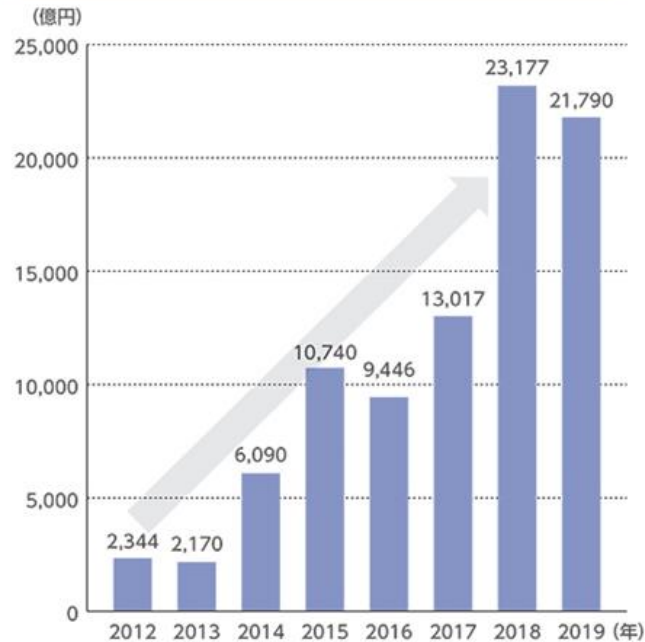


일본 규제환경

Food technology
investment
ranking

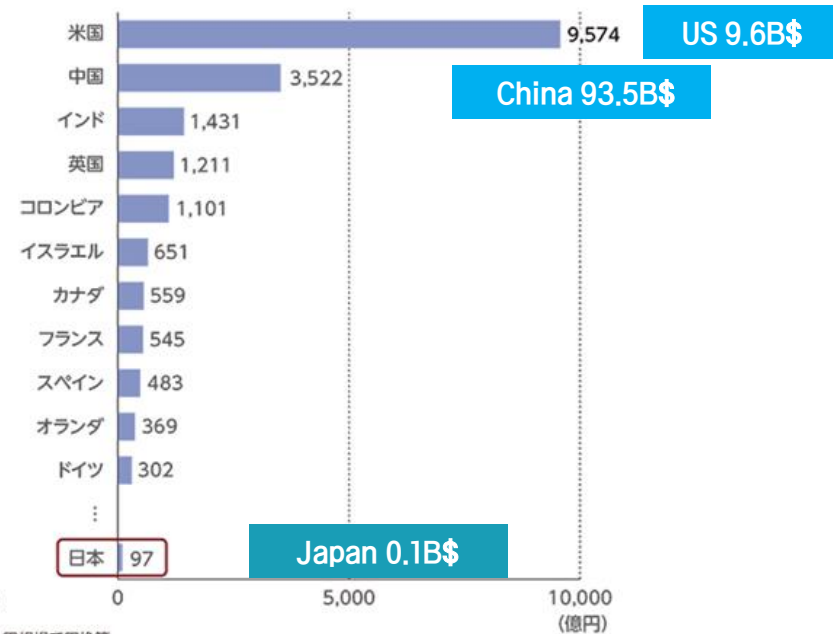
푸드테크への投資の状況

世界のフードテック分野への投資額推移



AgFunder "AgFunder Agri-FoodTech Investing Report - 2019" を基に作成。各年平均のドル円相場で円換算ベンチャーキャピタルからフードテック関連スタートアップ等への投資額

フードテック分野への投資額の各国比較



出所: 農林水産省フードテック研究会中間とりまとめ

일본 규제환경

Activities led
by the newly
established
department

Vitalize food and agriculture
industry and business by
introducing new
technologies

<https://www.maff.go.jp/j/kanbo/foodtech/kenkyukai.html>

<https://foodtech-lab.jp/public-private-council/>

フードテック官民協議会 COUNCIL FOR PUBLIC-PRIVATE PARTNERSHIP IN FOOD TECHNOLOGY

フードテック官民協議会の活動

協調領域の
課題解決の促進

フードテック関連の
新市場の開拓

国内における技術基盤の確保

新興技術を活用した
食・農林水産業の発展

食料安全保障の強化

Ensure food safety

일본 규제환경

8 areas focused in the future

作業部会のテーマ (2021年4月時点)

Food culture in 2050

2050年の
食卓の姿

SPACE FOOD

SPACE FOOD

Smart breeding tech.

スマート育種
産業化

細胞農業

Cell culture tech
for agriculture area

Health food tech.

ヘルス・
フードテック

昆虫ビジネス
研究開発

Edible insect business

New tech. governance


新興技術
ガバナンス

Plant Based Food
普及推進

Plant based FOOD


<https://foodtech-lab.jp/public-private-council/>

US 규제환경



2021
Advancing Regulatory Science at FDA:
FOCUS AREAS OF REGULATORY SCIENCE (FARS)

FOCUS AREAS OF
REGULATORY SCIENCE
Public Health Preparedness and Response



Increasing Choice and Competition
through Innovation

Unleashing the Power of Data

Empowering Patients
and Consumers

Empowering Patients
and Consumers

EU 규제환경

From Farm to Fork: Our food, our health, our planet, our future

The European Green Deal

May 2020
#EUGreenDeal

Moving towards a more healthy and sustainable EU food system,
a corner stone of the European Green Deal



Make sure Europeans get
healthy, affordable and
sustainable food



Tackle climate
change



Protect the environment
and preserve biodiversity



Fair economic
return in the food
chain



Increase organic
farming



European Green Deal deep dive

Climate targets

The EU's climate target plan, which is the basis of all Green Deal proposals, aims to cut GHG emissions by at least 55% by 2030 (compared to 1990 levels) and become climate neutral by 2050. It is in line with the Paris Agreement objective to keep the global temperature increase to well below 2°C and try to keep it to 1.5°C.

Chemicals

A new chemicals strategy aims to reduce the risks associated with producing and using chemicals. In addition to EFSA's continuous assessment, the review of REACH in 2022 will aim to prohibit the most harmful chemicals in consumer products (including cosmetics).

Smart and Sustainable Transport

The transport sector is the EU's primary focus in the efforts to bring down greenhouse gas emissions through a cleaner and modernized system across all transport modes. There are no concrete proposals on 'clean last mile' yet.

New carbon border and plastics taxes

The EU will introduce a new levy on imported goods based on their carbon content as of 2026. The objective of the Carbon Border Adjustment Mechanism (CBAM) is threefold: supporting EU emission reduction measures, preventing 'carbon leakage,' and incentivizing other countries to join the EU's climate action efforts. Another new resource of the EU budget, a plastics tax, entered into force in January 2021.

Farm to Fork Strategy (nutrition)

The Farm to Fork (F2F) Strategy sets the framework for actions to reduce GHG emissions in agriculture and promote sustainable production and supply chains, with the overarching goal of improving human health. It includes an upcoming EU-wide mandatory nutritional labeling for food products.

Due diligence and supply chains

A new initiative on mandatory due diligence, expected later this year, will possibly impact all companies in the EU market and their global supply chains through a sanction mechanism. It will aim to ensure companies make their supply chains sustainable (e.g. avoid deforestation) and do not violate human rights (e.g. forced or child labor).

Circular Economy Action Plan

All packaging in the EU market will need to be reusable or recyclable in an economically viable way by 2030. The EU will pay special attention to reducing microplastics and using bio-based or biodegradable plastics.

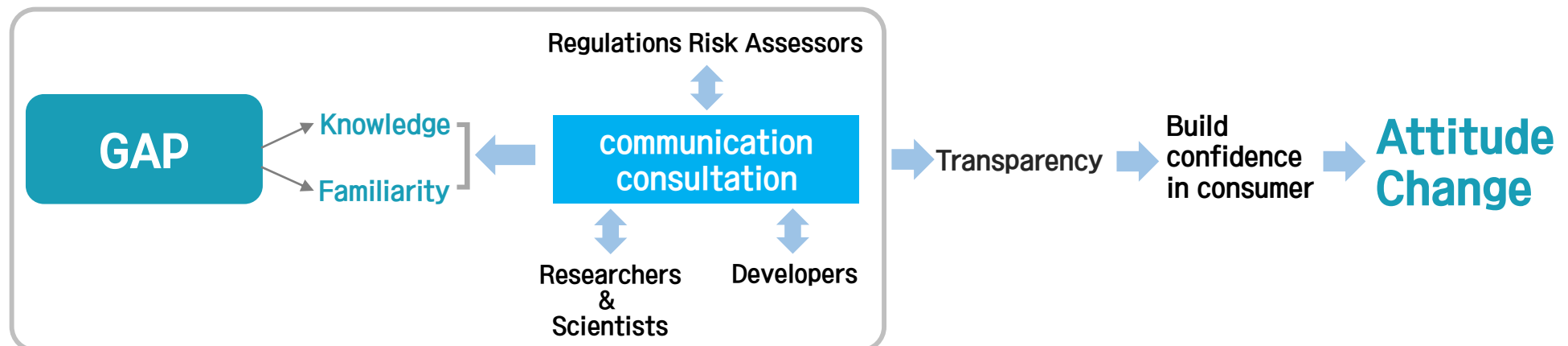
Consumer protection

The new EU Consumer Agenda envisions upcoming rules on substantiating green claims (to reduce 'greenwashing') and a sustainable product policy framework (incl. mandatory sustainability labeling), which are slated for the end of this year.

Key Learnings & Insights



- ▶ 관점과 관습의 변화: Food safety 관점의 관리
- ▶ New Food Technology – safety, misleading, promoting health
- ▶ Understanding of Consumer & Empowerment
- ▶ Communication & Consultation
- ▶ Proactive engagement in development process
- ▶ Scope of Sustainability



글로벌 규제 방향



새로운 기술, 제품, Promotion

- Safety
- Misleading - Efficacy - Label
- More-health
→ more informed choice

“ 안전을 중시하되,
새로움을 막지 않음 ”

Sustainability
Green-Deal

- Sustainable
Social Value
- Broad Range of Topics

정부의 강제적 개입 vs. 소비자 Choice vs. 소비자 Protection

규제에 대한 새로운 전제

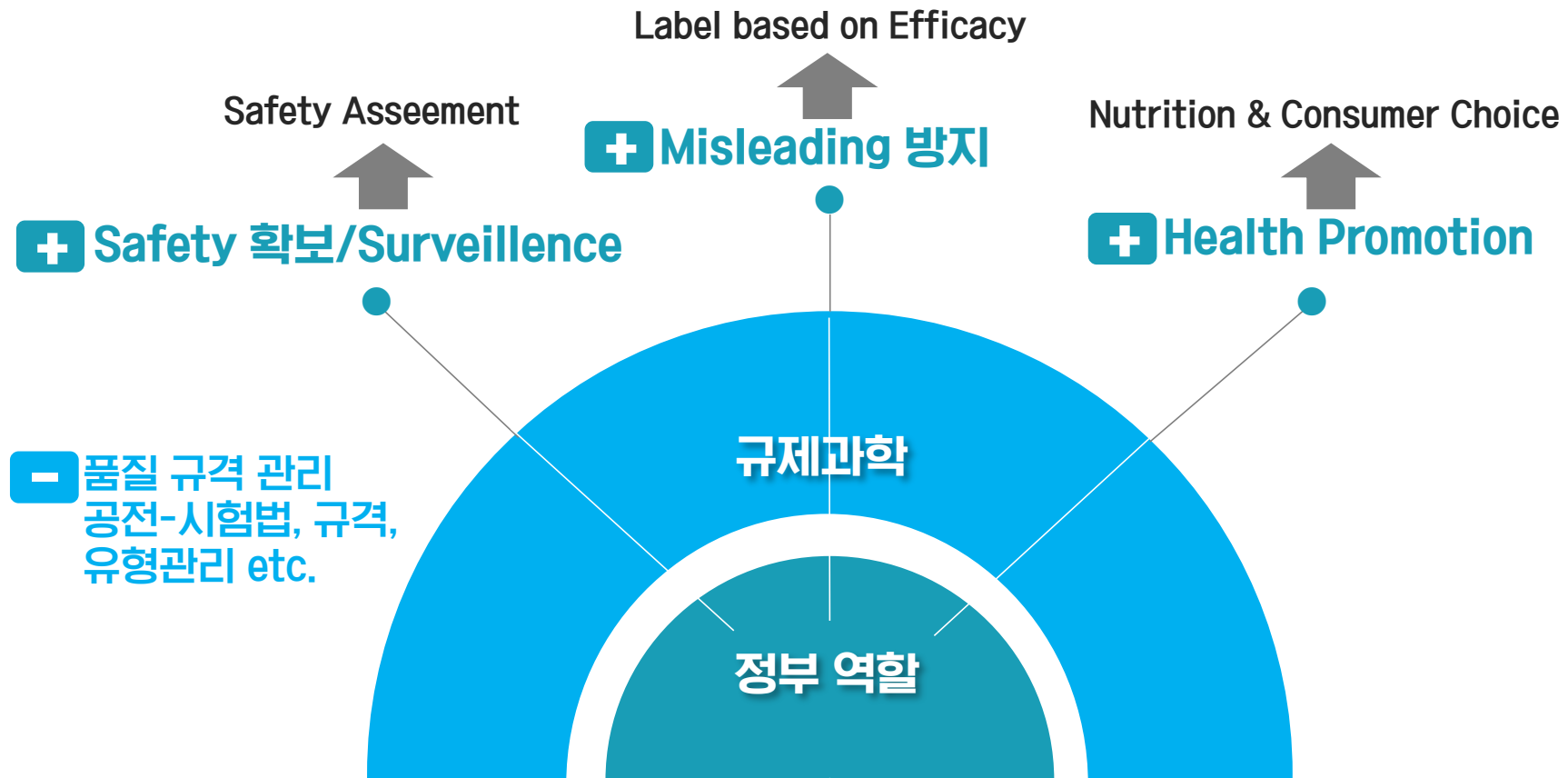
“

Regulatory Science is the science of developing new tools, standards, and approaches to assess the safety, efficacy, quality, and performance of some FDA-regulated products.

”

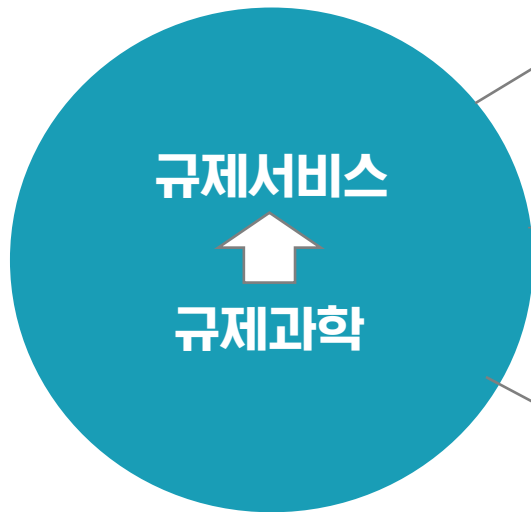
규제는 **과학**이자, **문화**의 관점에서 이해되어야 한다.

정부의 역할과 규제과학



미래의 규제방향 국가의 역할

“Enabler”



1. 정부와 민간의 역할 명확화



- 안전과 관련된 규제 vs 품질과 관련된 규제
- 범부처 과제 (sustainability)
- 중장기적 미래를 대비하기 위한 사업 (sustainability, 신기술 도입을 위한 검토 등)

2. 민간 긍정적 파트너십 정립 및 적극적 소통



- 기술 교류, 규제의 global harmonization을 위한 국내외 협력 지원 (학계, 협회, 해외기관 등)
- 합리적이고 유연한 규제 운영

3. 선제적인 연구 지원



- 합리적 규제 마련 및 관리를 위한 신기술 개발 지원 사업 (신포장재/포장기술 개발 지원 등)
- Cowork 과제 발굴 with industry

FDA

규제과학 전략계획



FDA's Nutrition Initiatives

Conclusion

- Consumers want healthier options.
- America's food industry is ripe for innovation.
- Food producers want to develop healthy options and make claims about these attributes.
- FDA supports these innovations.
- Science-based regulations and transparent labels will make it easier for consumers to understand the impact that day-to-day food choices have on their long-term health. They also make it practical for producers to compete on these features.

Better understand The new Technology

Dr Ben Smith, director at the Future Ready Food Safety Hub (FRESH), said: "A lot of this new technology is being done by the scientists in the lab. But the regulators and risk assessors, they are not scientists and need to be educated **to better understand the new technology**. This is often the bottleneck in regulations."

새로운 **이해**가 새로운 **희망**의 길이다

The background features a hand pointing towards a large, glowing padlock icon in the center. Surrounding this central icon are several smaller hexagonal frames, each containing a different technology-related symbol: a globe with 'WWW', a laptop with a padlock, a cloud with an upward arrow, a lightbulb, a person in a suit, a target, and the letters 'FDA'.

FDA

THANK YOU

Yang Hee Cho

Amway, Vice President
Innovation & Science Korea & Japan

May, 2022