

**“First” Seafood R&BD Complex &  
“One & Only” K-Seaweed [K-Gim] Industry Research Center**  
assigned by Ministry of Oceans and Fisheries in Korea [MOF]

**Mokpo Marine Food Industry Research Center [MMFIRC]**



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# I.

## Introduction\_History

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**2007. 03.** • Designated as 1<sup>st</sup> Seafood Hub Complex by Ministry of Oceans & Fisheries

**2015. 06.** • Opened Mokpo Marine Food Industry Research Center

**2016. 09.** • Held Korean Seaweed Industry Development Conference

➔ Organized Grand Seminar & Pitch Session of Korean Seaweed Industry Innovation and Globalization

**2018. 01.** • Conducted Oceans & Fisheries Investment Support business

**2020. 05.** • Registered as Official Food Analysis Center by KFDA

**2021. 01. ~ 2022. 12.** • Conducted Seafood Hub Complex Business  
• Awarded as Supreme model by Presidential Committee for Balanced National Development

**2022. 04.** • Supported Quality Test for Jeonnam Seaweeds Quality Contest

**2022. 04.** • Conducted Project of QM & Specialized Industrial area of K-Gim

**2022. 10.** • Presented Center activities & K-Gim's Superiority in Global market

**2022.12.** • One & Only K-Seaweed [K-Gim] Industry Research Center Assigned by Ministry of Oceans and Fisheries in Korea

**2023.04.** • Received Achievement Award of K-seaweed industry development

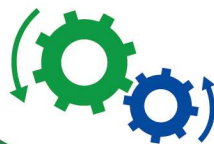




## VISION

Value-Added Seafood Business by Clean & Safe Ocean Resources Upcycling on Southwest Coast, Largest Production Amounted area in South Korea

R&D 혁신



### Branded Local Seafood Commercialization

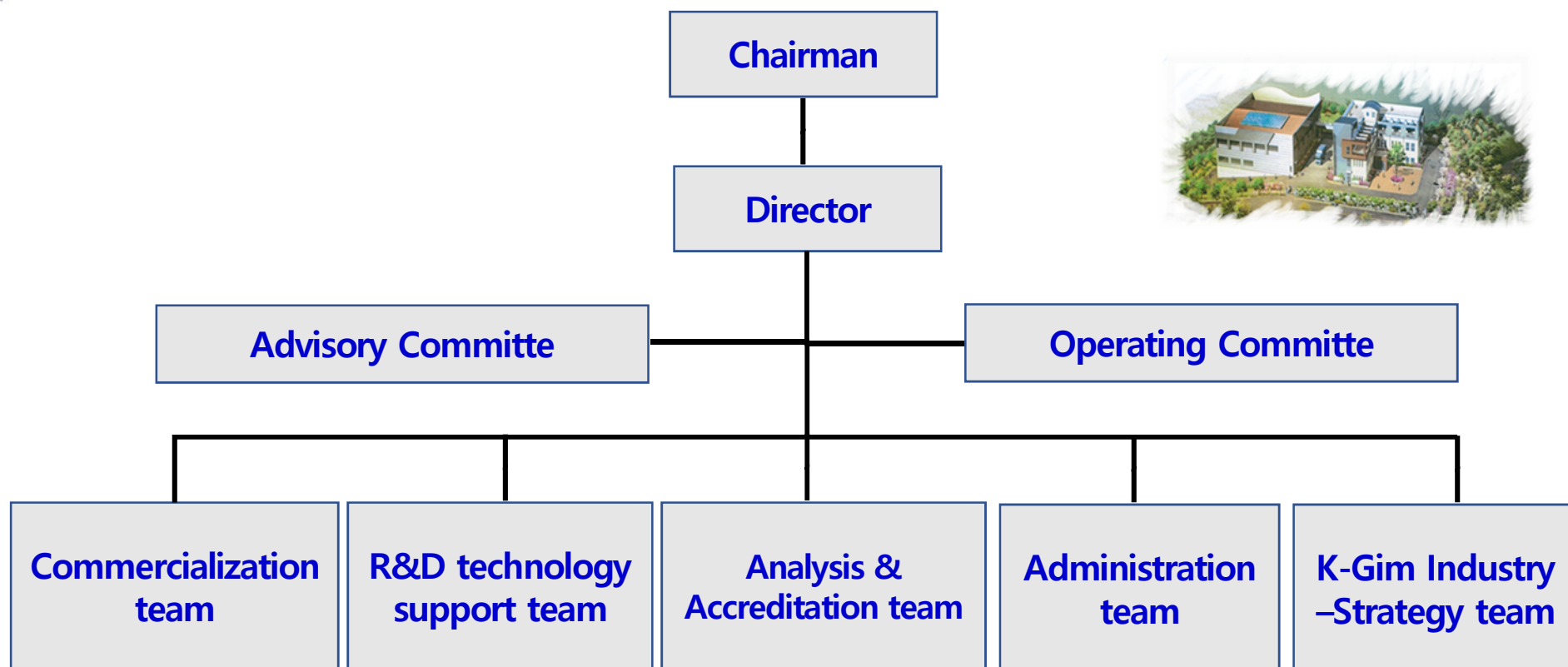
- Traditional Seafood Innovation
- Total Solution Provision of Fish protein [Amook], Sea vegetable [K-Gim], Dried Fish, Sauce & Seasoning

## MISSION

### Development & Application of Locally Unused Ocean Resources

- Seaweed for Bio-health and Pharma
- Ingredient Specialty Food business

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➤ **Total quota 23 persons / current 21 persons**

- Chairman (Mayor of Mokpo city), Director and 17 committee members
- 5 Ph.D degrees, 7 Master's degrees, 9 Bachelors' degrees (1 senior staff from Mokpo city)

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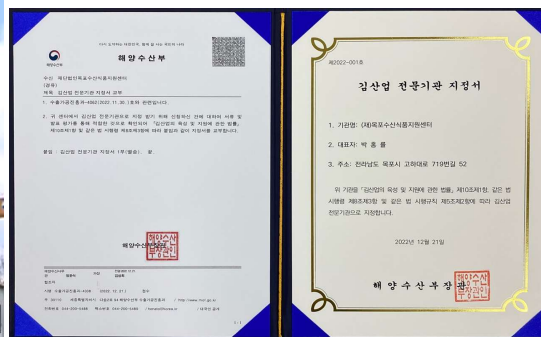
# I.

## Introduction\_Core Competence

- Food technology innovation using unutilized seafoodstuffs like seaweed and fish.
- Quality standardization and safety evaluation of raw material and final product.
- Exploring & upscaling of in-land demonstration plant for seaweed seed cultivation.
- In-situ monitoring and control of residual hazardous components and microorganisms during cultivating, harvesting and processing of seaweed.
- Supporting new product development and commercialization of seafood.
- Business incubation of Local seafood SMEs and Start-Ups



The Ministry of Oceans and Fisheries(MOF) announced that Mokpo Marine Food Industry Research Center is designated as "No.1 Nation-wide & professional K-seaweed (K-Gim) industry organization" for the first time in Korea on 18 Dec. 2022.



Mokpo Marine Food Industry Center will conduct major projects such as quality improvement, safety evaluation and NPD(new product development) for K-seaweed(K-Gim) globalization under the support of MOF. (source : Mokpo MBC 22.12.21)

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Item	Construction status	Main equipment
Production equipment	51 types 66 units	Low temperature vacuum dryer drying machine, Freeze dryer, Spray dryer, Fermenter, Sterilizer, Extraction concentration system etc.
Production facility	18 types	Refrigeration & Freezer facility, Storage, Process development room, Drying room etc.
Research equipment	120 types 290 units	Electronic nose / eye / tongue, HPLC, LC-MS, Subcritical water extraction facility, GC, GC-MS, HR-GCMS, GC-MS/MS, ICP-MS, FT/IR-Microscope, Shaking incubator etc.



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## Ongoing Activities (2022)

### Seafood Hub Complex Business (Supporting Seafood SMEs & Start-Ups )

Performance index	Target	Performance	Achievement rate
No. of Beneficiary Companies	12	<b>12</b>	<b>100%</b>
No. of New Market Creation	5	<b>20</b>	<b>400%</b>
No. of New Product Development	12	<b>17</b>	<b>141%</b>
No. of newly Hired Employees	12	<b>99</b>	<b>825%</b>
Beneficiary Companies' Total sales amount (USD)	1 million (Export 0.4 million)	<b>52 million</b> <b>(Export 39 million)</b>	<b>5,625%</b>



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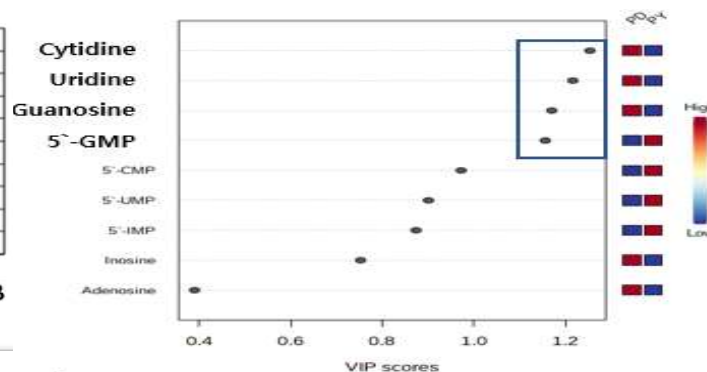
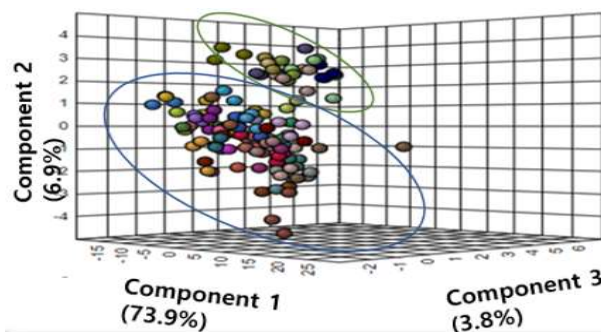
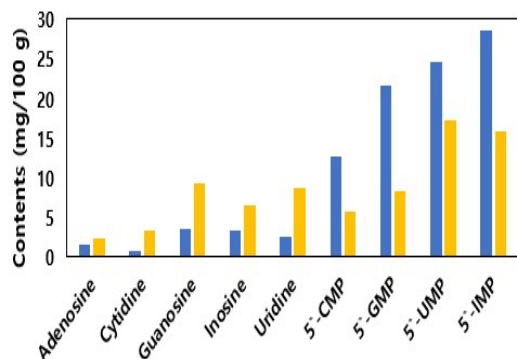




## Seafood Hub Complex Business

## (Quality standardization &amp; Safety evaluation of K-Gim(K-seaweeds))

Performance index	Target	Performance	Achievement rate
Product No. of Quality DB accumulation of K-Gim	1,260	<b>4,960</b>	<b>394%</b>
No. of pigment components of K-Gim	360	<b>576</b>	<b>160%</b>
Full system no. of metabolites DB extension of K-Gim	1	<b>1</b>	<b>100%</b>
No. of taste components of K-Gim	180	<b>4,992</b>	<b>2,773%</b>
No. of microplastics analysis	30	<b>30</b>	<b>100%</b>
Estimating safety evaluation index of microplastics	1	<b>1</b>	<b>100%</b>
Development of As detecting Biosensor	1	<b>1</b>	<b>100%</b>
Set-up of Cd analysis system	1	<b>1</b>	<b>100%</b>
Set-up of microbiome detection method	1	<b>1</b>	<b>100%</b>

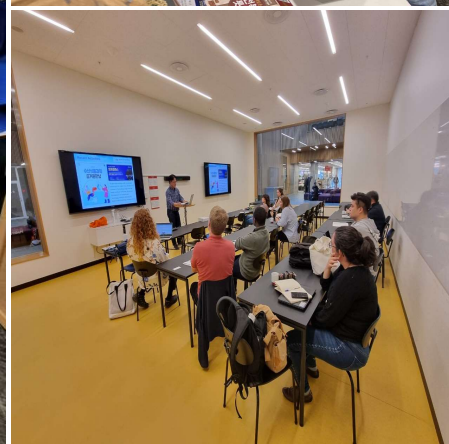


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## Seafood Hub Complex Projects

(K-Seafood Showcase Promotion & Global R&BD infra build-up on Nordic Seaweed Conference 2022 sponsored by Innovation Center Denmark Korea)



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## Ongoing Activities (2022)

### Local Creation Business Strategy (Amook industry business by K-fish)



Dedicates to Local Economy Activation by incubating local Amook business from MMFIRC and by producing local high-quality Amook & Amook paste(frozen) from smart HACCP factory in Mokpo industrial complex.



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## Ongoing Activities (2022)

### Oceans & Fisheries Investment Support Center Operation Project

Performance index	Target	Performance	Achievement rate
Total sales amount increase	8.7%	<b>9.6%</b>	<b>110%</b>
No. of newly hired employees	167	<b>360</b>	<b>216%</b>
No. of new Start-Ups	4	<b>6</b>	<b>150%</b>
Satisfaction degree of beneficiaries	5 points	<b>5 points</b>	<b>100%</b>
Participation rate of female	12%	<b>31%</b>	<b>258%</b>
No. of New Market Creation	13	<b>83</b>	<b>638%</b>
No. of New Product Development	13	<b>67</b>	<b>515%</b>
Improvement degree of production innovation	11	<b>32</b>	<b>236%</b>
Improvement degree of product innovation	11	<b>129</b>	<b>1,173%</b>
No. of investment relation	2	<b>3</b>	<b>150%</b>
Activation degree of the related support	12	<b>41</b>	<b>342%</b>
Improvement degree of export	5%	<b>19.4%</b>	<b>387%</b>



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## Ongoing Activities (2022)

### Official Food Analysis Center Operation registered by KFDA

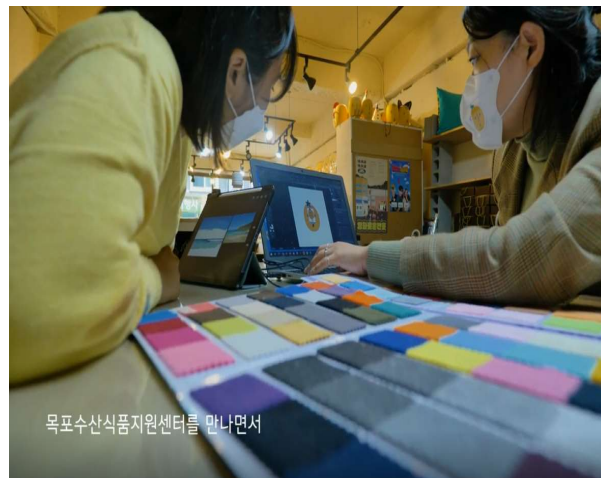
Performance index	Total amount	No. of Samples	No. of Items
Product Quality Analysis	3,000 USD (1,800 USD in 2021, 70% ↑)	69 (24 in 2021, 65% ↑)	153 (48 in 2021, 220% ↑)
Reference Sample Analysis	25,000 USD (5,200 USD in 2021, 380% ↑)	303 (46 in 2021, 559% ↑)	734 (200 in 2021, 267% ↑)
Total	28,000 USD (7,000 USD in 2021, 300% ↑)	372 (70 in 2021, 431% ↑)	887 (248 in 2021, 258% ↑)



## Local Job Creation & Technical Education Project

Performance index	Performance
Total no. of Companies hired young residents in 2022	<b>20</b>
No. of Participating Companies got sales increase in 2022	<b>14</b>
No. of Participating Companies got employee increase in 2022	<b>12</b>

In order to overcome local population decrease and hiring issue, MMFIRC is trying to educate potential young & middle aged people and matching to local SMEs and Start-Ups in connection with local industry policy.



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### Pilot Plant Utilization Project for Local Seafood SMEs and Start-Ups



**[Extraction/ Concentration]**



**[Bioreactor system]**



**[Ceramic filter system]**



**[Filter press system]**



**[Reverse Osmosis(R/O) system]**

The MMFIRC's up-to-date pilot plant is helping SMEs and Start-Ups which pursue a test bed suitable for food processing technology development & scale-up.

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# Ongoing Activities

➤ Major Papers(122)\_ ※ Published 6 Scientific paper within JCR(Journal Citation Reports) upper 5%

➤ 주요 논문 목록 ※ 식품 관련 분야 JCR(Journal Citation Reports) 상위 5% 이내 논문 6편 보유



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# Ongoing Activities

## Major Patents(34) and Marine Food Technology Transfer(8)

### 주요 특허 목록



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## Full Cycle Management of K-Gim (K-Seaweed) Industry

### UPSTREAM SECTORS [SYSTEM DEVELOPMENT]

- SEAWEED SPECIES DEVELOPMENT
- SEAWEED CULTIVATION DEVELOPMENT
- SEAWEED PRE-TREATMENT DEVELOPMENT



### MID-STREAM SECTORS [QUALITY CONTROL SYSTEM]

### DOWNSTREAM SECTORS [TECHNOLOGICAL CONVERGENCE]

- INGREDIENT SPECIALTY DEVELOPMENT [UPCYCLING]
- PRODUCT INNOVATION [NPD PROCESS]
- SENSORY CHARACTERIZATION [TASTE STANDARDIZATION]

*"In order to develop high-value added seafoods, we should have a differentiated technology from raw material to final product based on quality standardization and safety."*  
 - YC, Lee, Director of MMFIRC

- DEVELOPMENT OF SEAWEED FOOD QUALITY & SAFETY PROGRAM [QUALITY & FUNCTIONAL DATA ACCUMULATION]
- REGULATORY CONSISTENCY OF SEAWEED FOOD STANDARD [ESG]

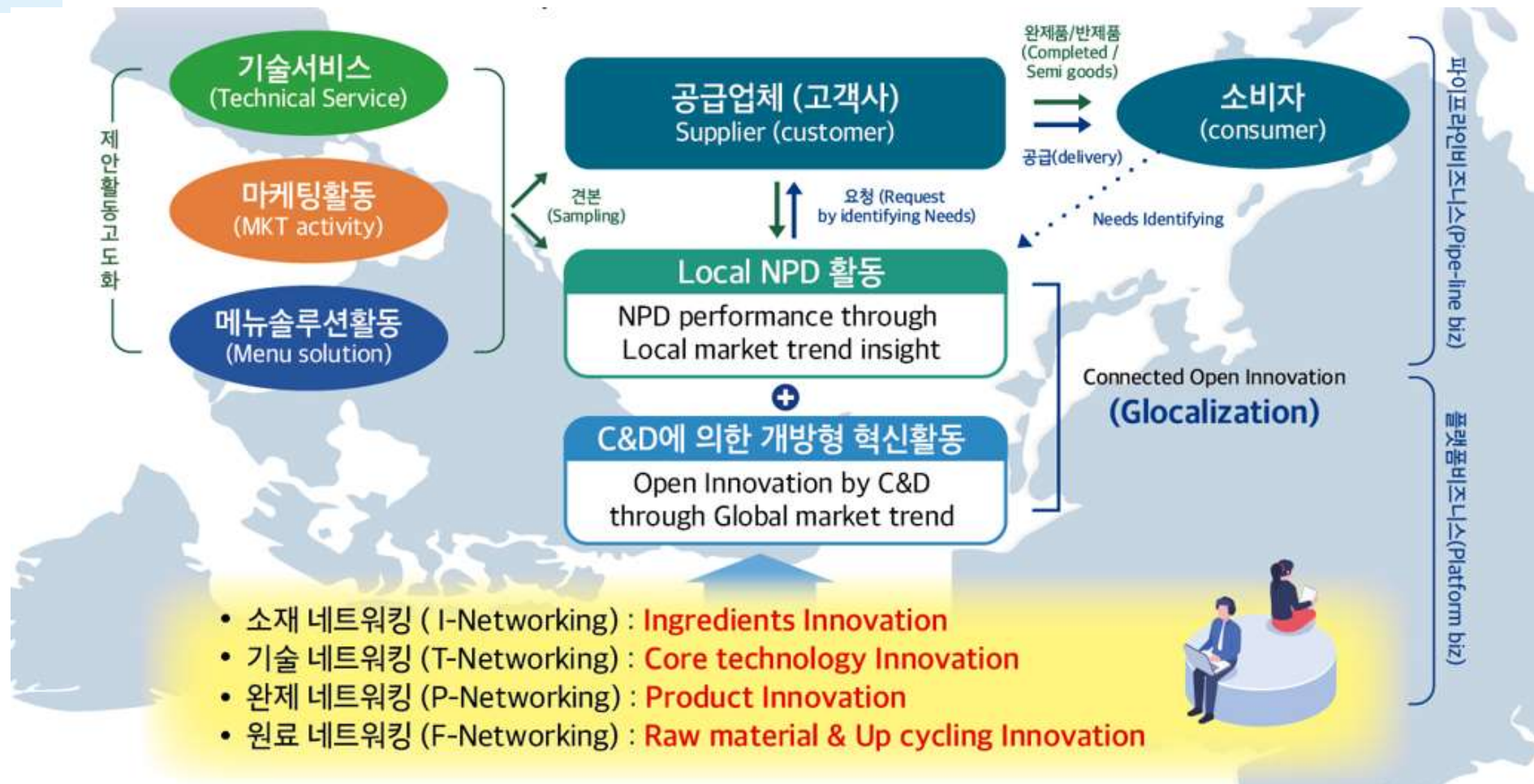


Source : Internal data

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## Glocalized New Product Development [NPD] process



Source : Internal data

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# Thank You



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