

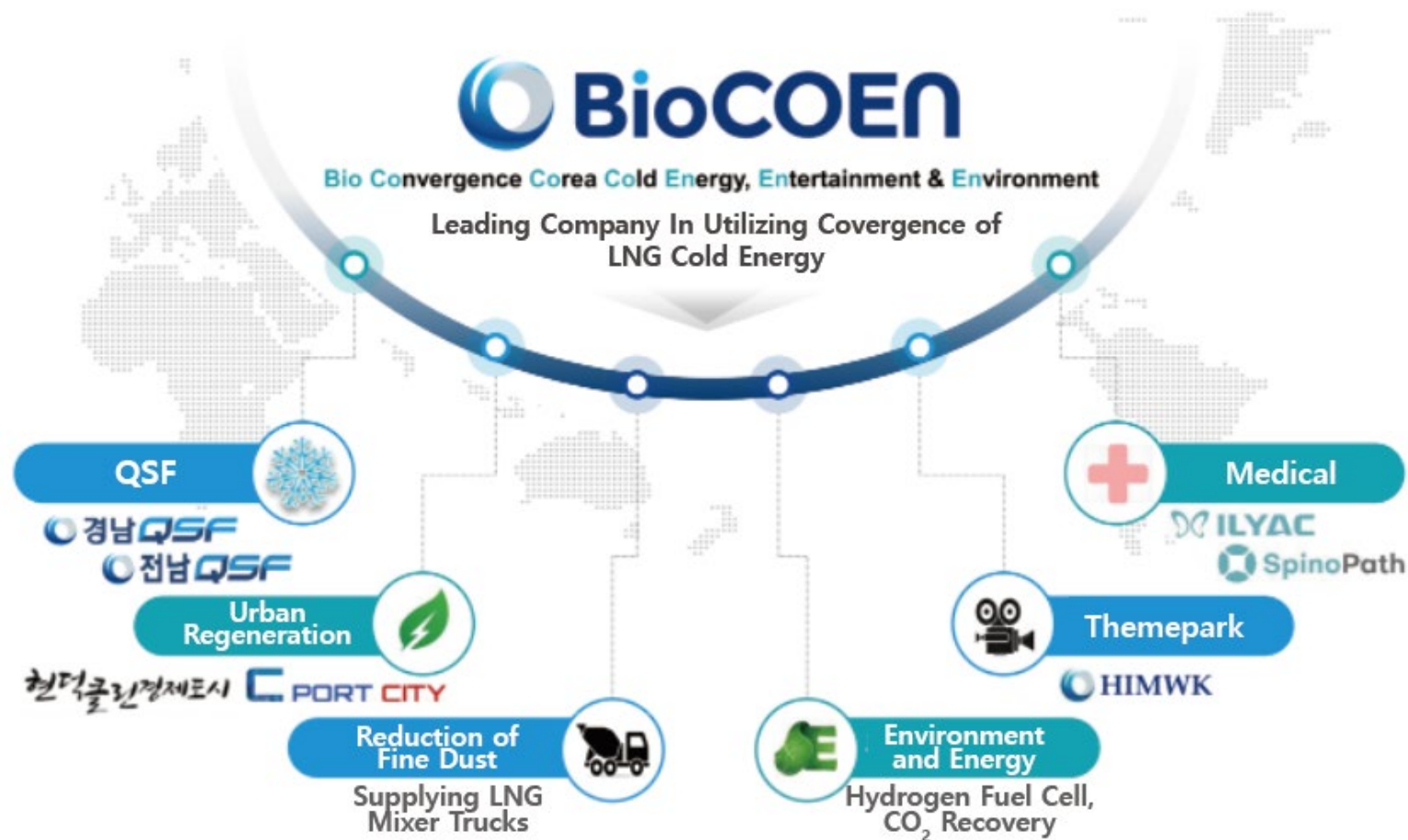


Toward A New Energy Paradigm

Dec 5th 2022

2022 WBG Energy Storage Partnership Seoul Forum

Introduction

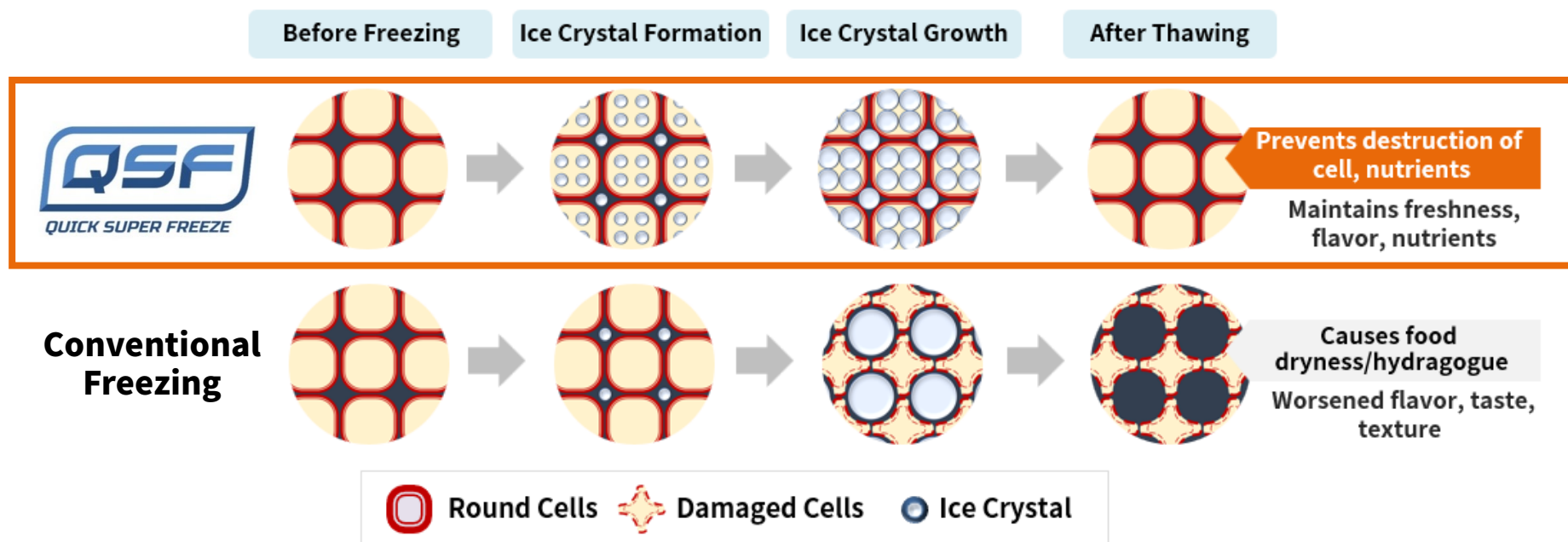


Future Food Business



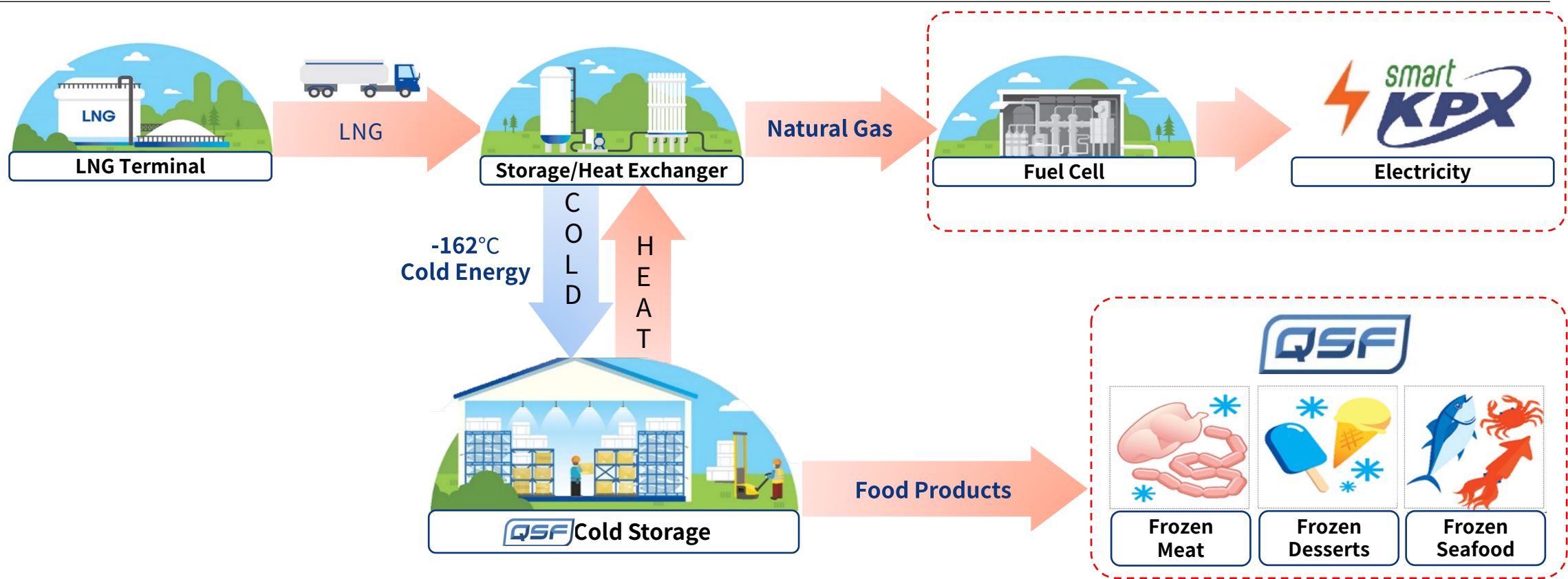
Quick Super Freezing

BioCOEN's core technology that converges new renewable energy and LNG cold energy of -162°C , which is supplied into a cryogenic quick freeze chamber, freezing all fresh food under temperatures of -60 to -80°C



Future Food Business

QSF Model



Future Food Business

QSF Advantage

Utilizing LNG Cold Energy

Reducing Energy Costs by 80%

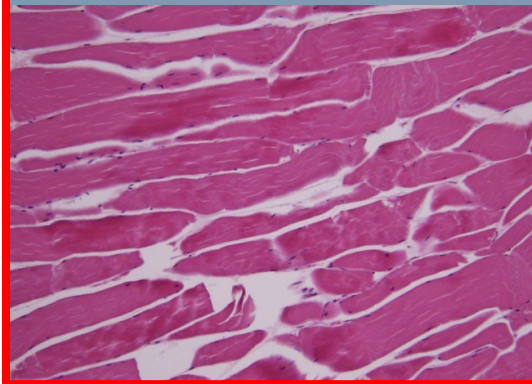
Preventing Cell Damage

Maintaining Taste and Nutrients

Preventing Oxidation
Preventing Dehydration

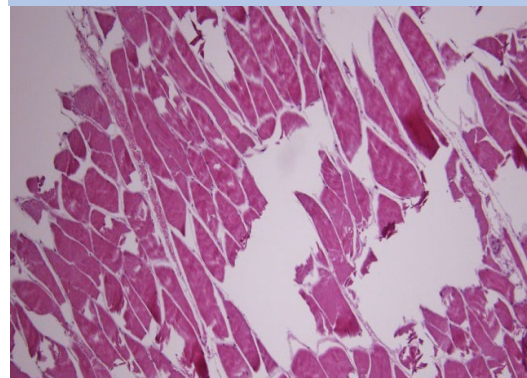
Maintaining Freshness

Fresh



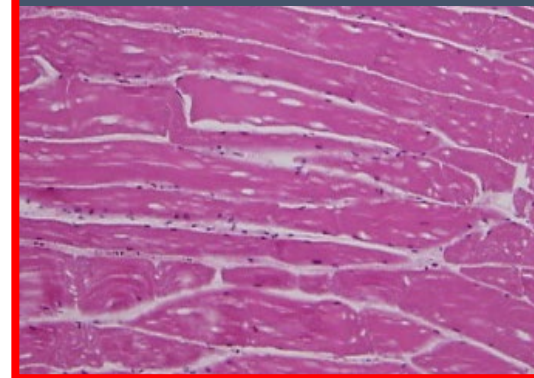
Tissue cells are **healthy and dense**

Conventional Freezing



Tissue cells are **severely damaged**

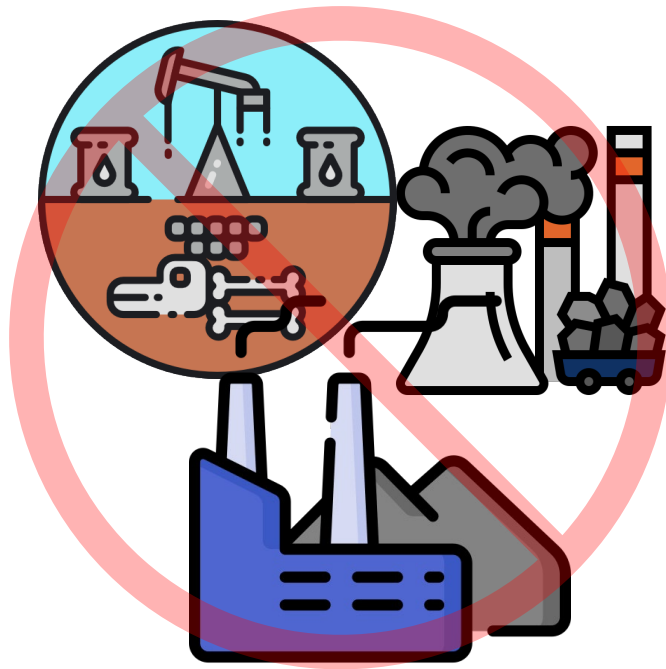
Quick Super Freezing



Tissue cells are **healthy and dense**
comparable to fresh cells

Energy Supply

Conventional Energy Supply Vs. **QSF** Energy Supply

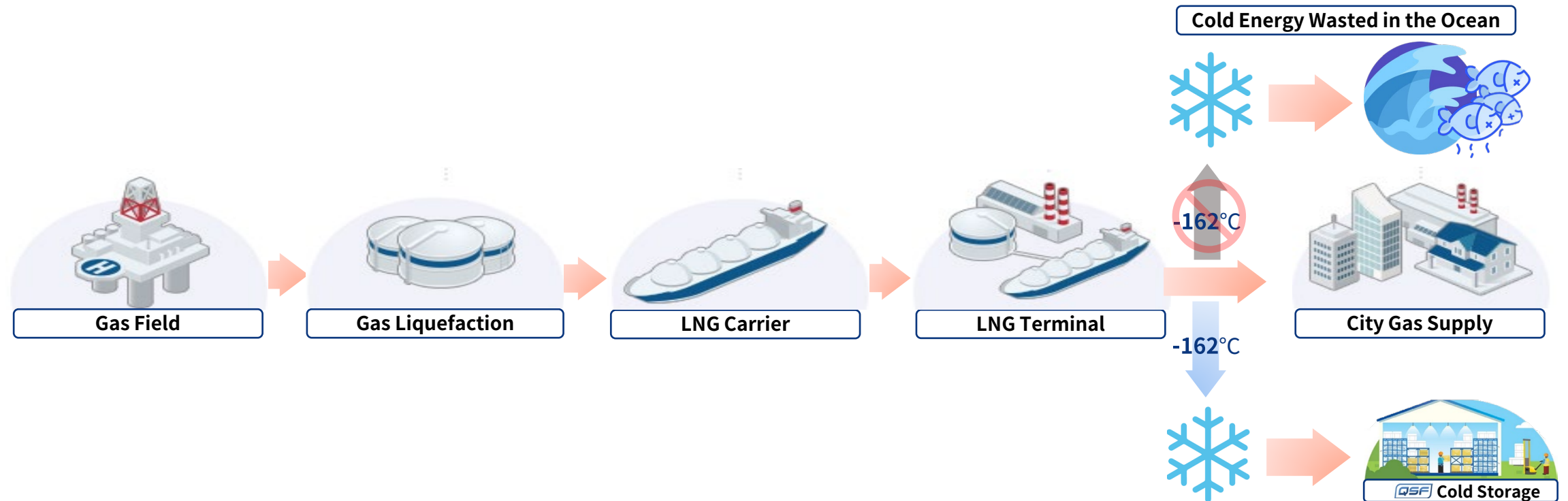


Time for change?



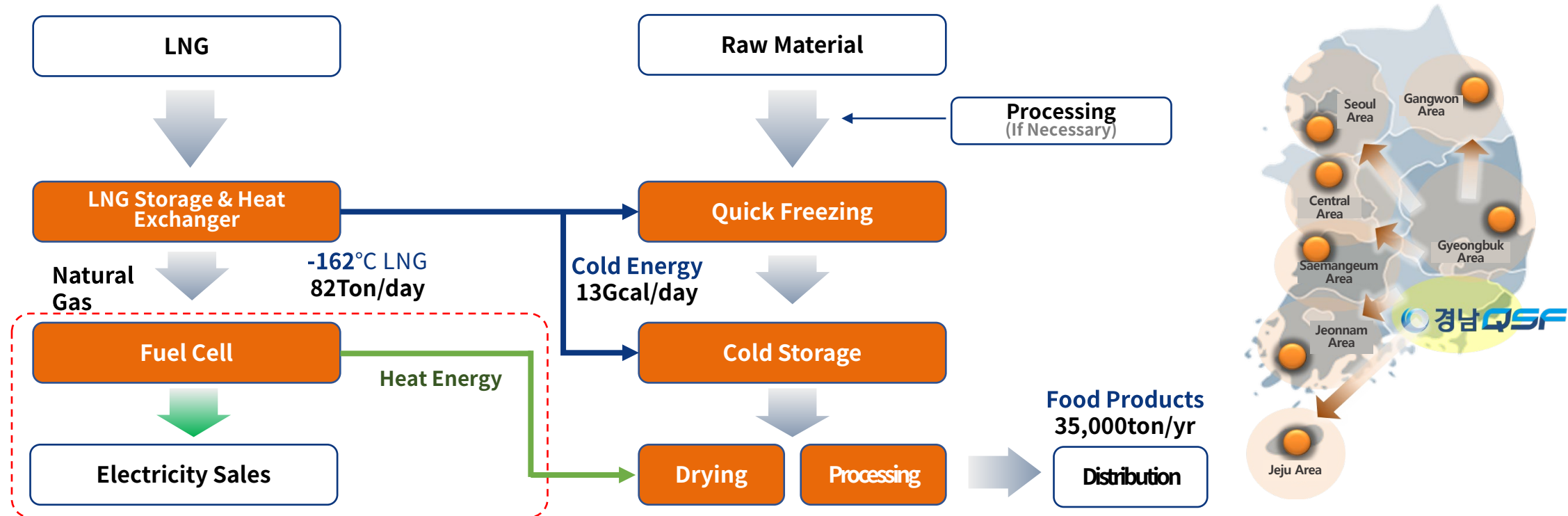
Energy Supply

LNG Supply Procedures



Energy Supply

QSF Model



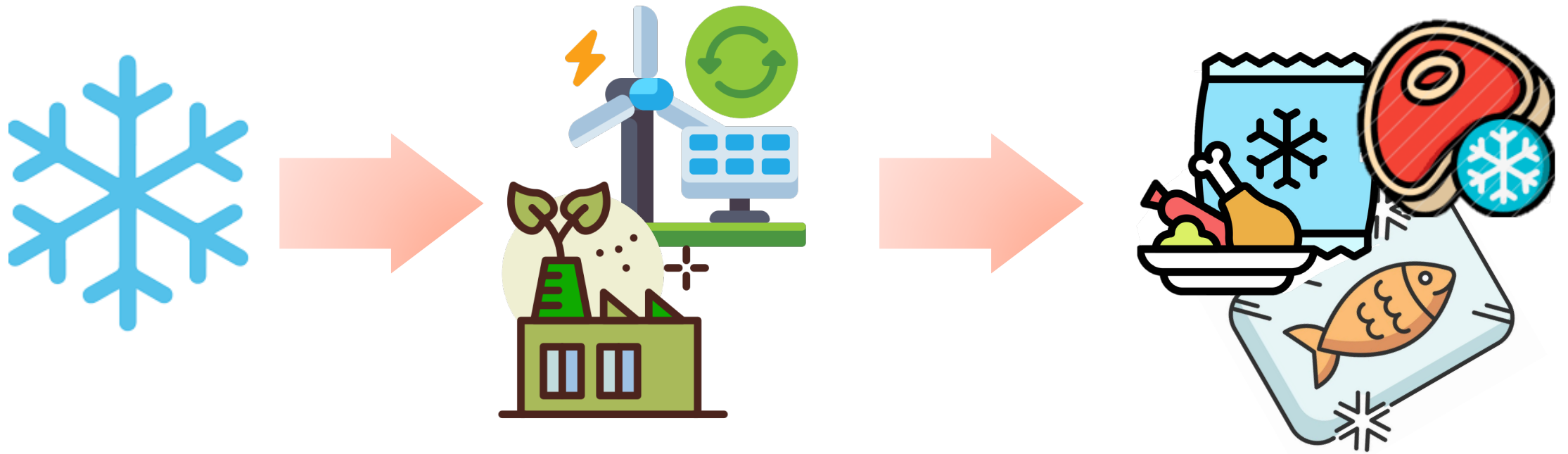
Carbon Neutral Renewable Energy

Future of Energy – “Carbon Neutral Hydrogen”



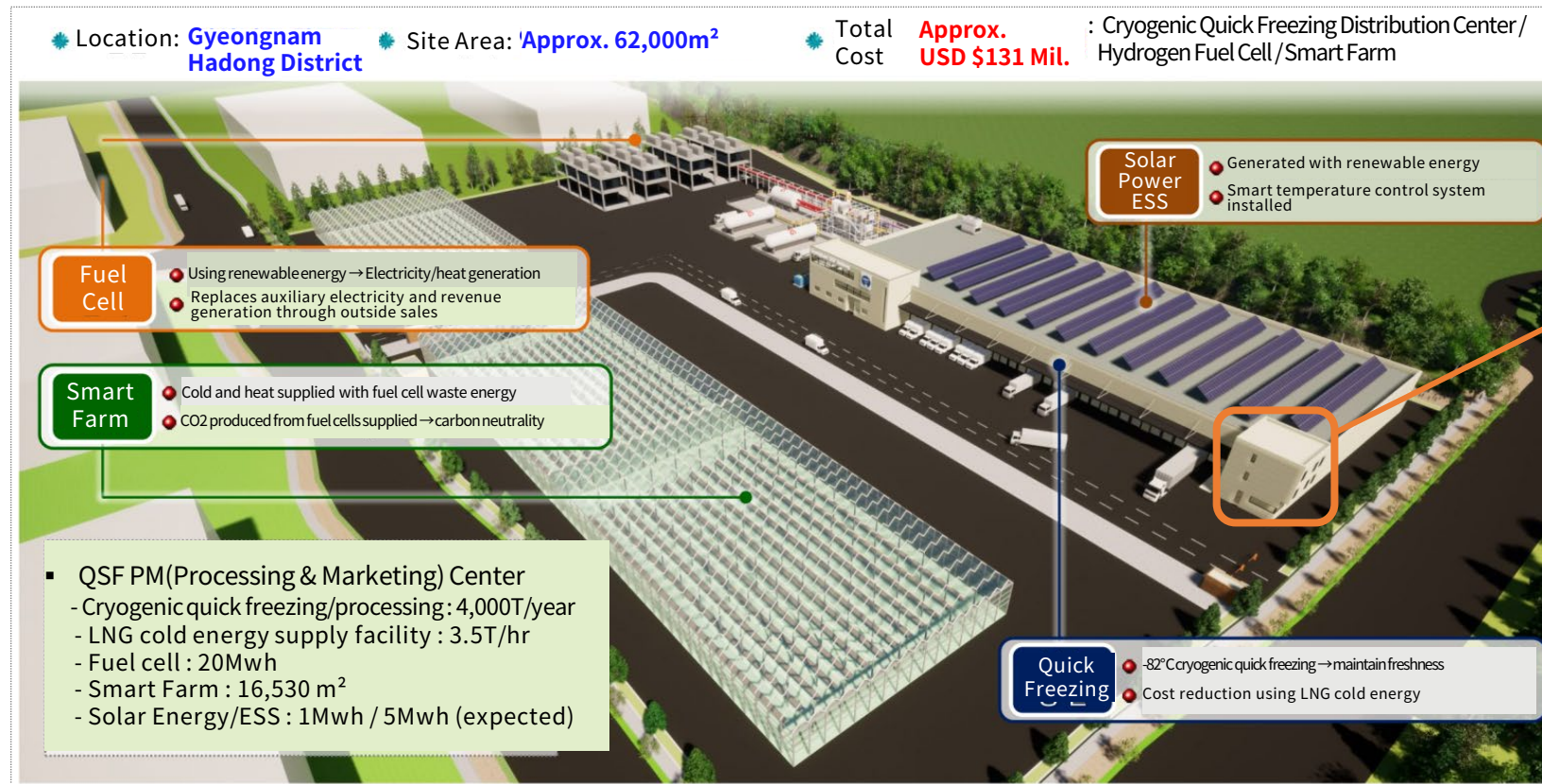
Carbon Neutral Renewable Energy

Future of Cold Storage – “Carbon Neutral”



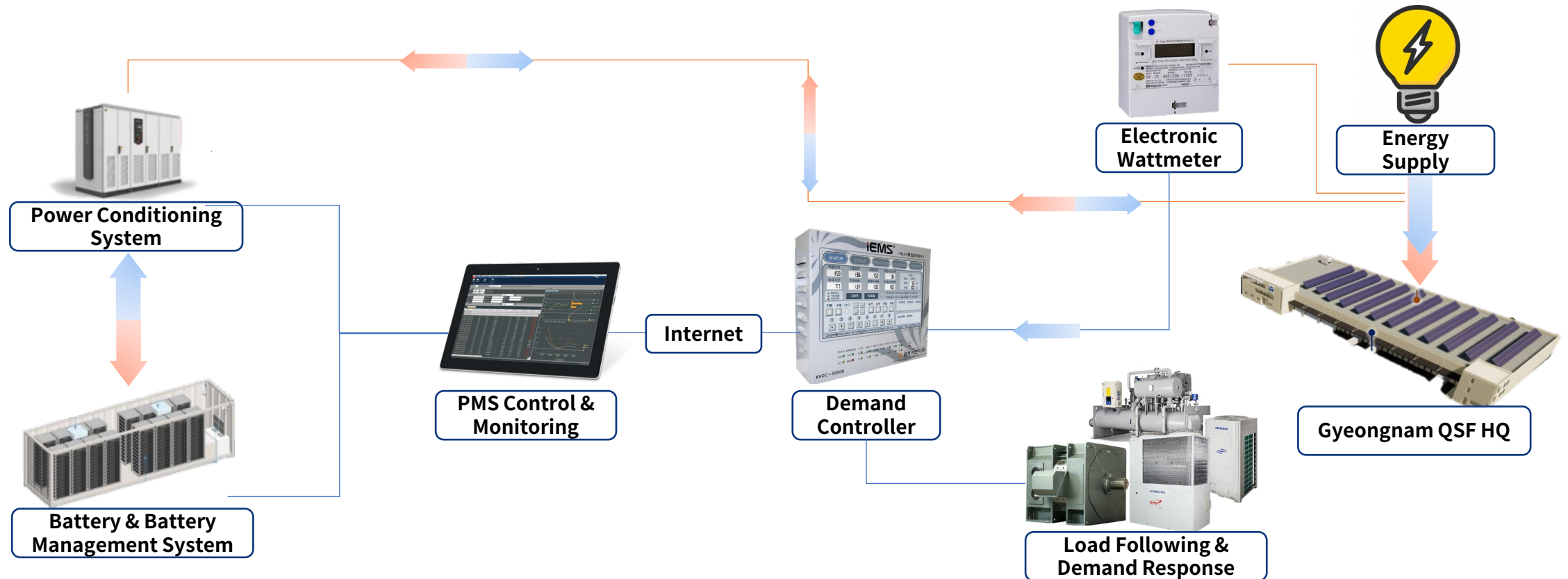
Application as in Gyeongnam HQ

Gyeongnam HQ



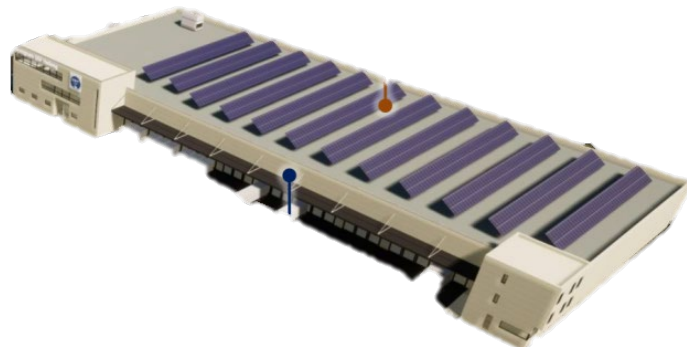
Application as in Gyeongnam HQ

Gyeongnam HQ – FEMS + ESS Model



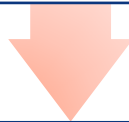
Application as in Gyeongnam HQ

Gyeongnam HQ – FEMS + ESS Project



Gyeongnam HQ ESS Capacity

- Battery: 3MW
- PCS: 1,050KW



US\$ 1 Million ESS Project Cost

70% Government Funded
30% BioCOEN Funded

Project Title	Supply of 3MW FEMS-ESS Energy New Industry Convergence System
Project Goal	<ul style="list-style-type: none">• EMS linkage and emergency power generation functions through ESS are generally established in new energy new industries• Aim to spread success stories by creating a business model that combines energy management technologies• Maximum peak power reduction and maximum load management through ESS and FEMS construction to achieve optimal energy environment and provide a stable and economical power energy environment by controlling the overall power energy in the customer
Project Period	• June 13 th 2022 ~ December 24 th 2022 (6 months)
Department In Charge	• Korea Energy Agency
Host Institution	• BioCOEN
Participating Organizations	• 4 organizations
Project Cost	<ul style="list-style-type: none">• Total Project Cost : 1.38 Billion Won (US\$1.02 Million)• BioCOEN Project Cost: 413 Million Won (US\$0.31 Million)

Increasing Efficiency.

Increasing Efficiency?



All About “Increasing Efficiency”

Increasing Efficiency.

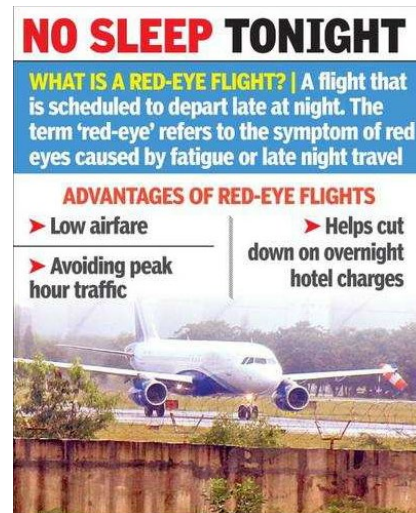
Electricity Tariff – A Korean Primer

1



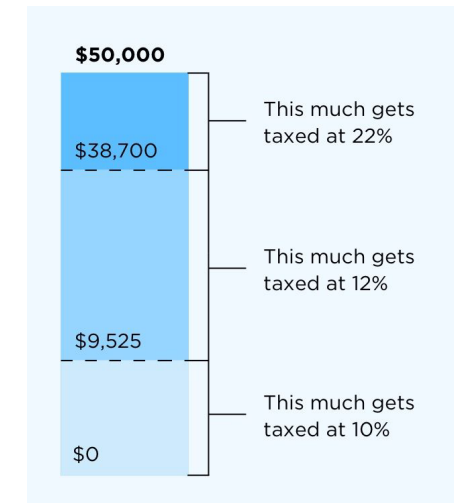
Tesla (EV) Taxi

2



Red-eye Flights

3



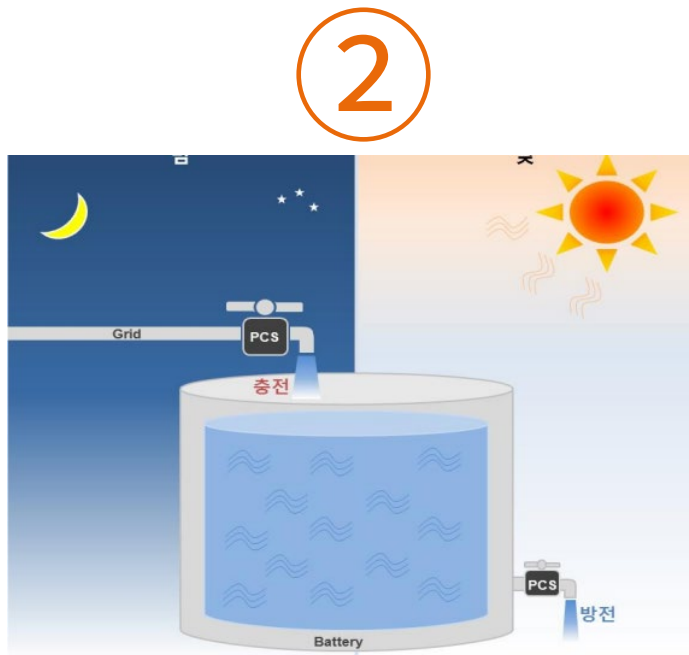
Tax Brackets

Increasing Efficiency.

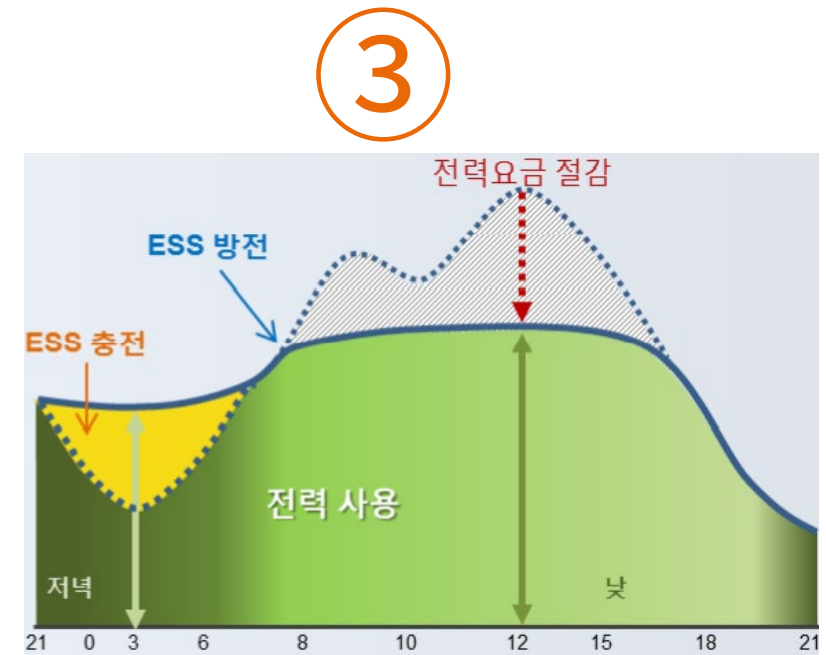
① Cost Efficiency



Base Tariff Discount



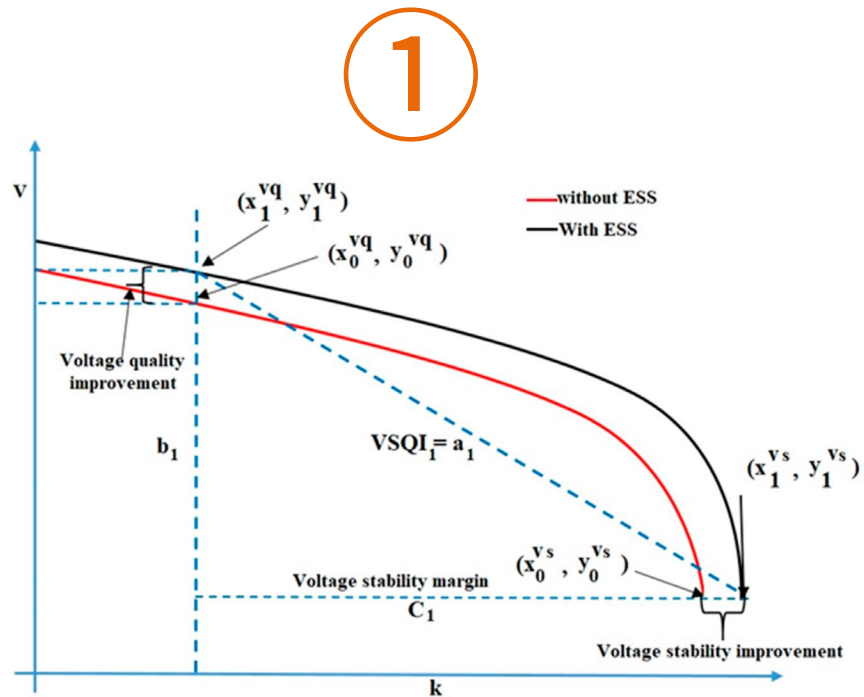
Off-peak Late-night Discounts



Peak Shaving

Increasing Efficiency.

② Energy Efficiency



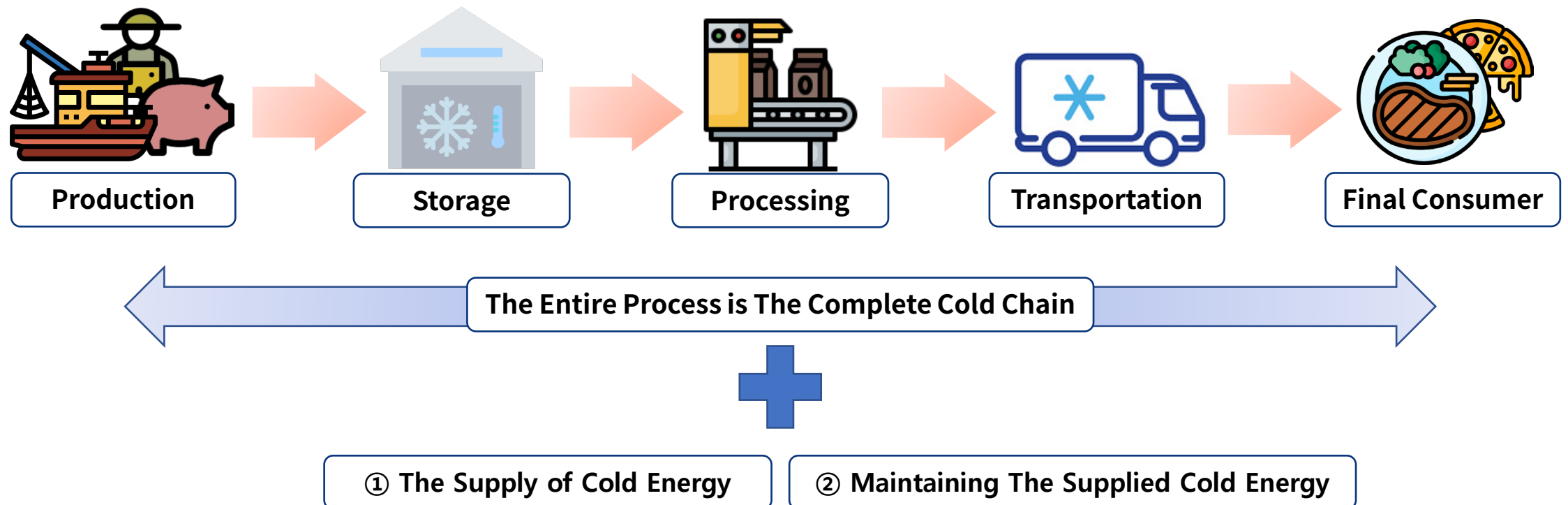
Stable Energy Supply



Securing Highest Efficiency

Energy in a Cold Chain Perspective

Cold Chain?



Energy in a Cold Chain Perspective

The Ultimate Answer



Energy in a Cold Chain Perspective

The Ultimate Answer

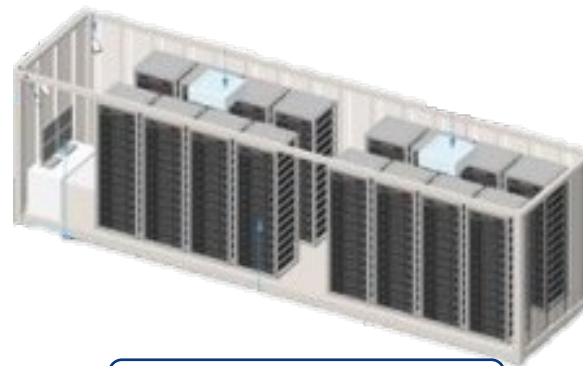


Energy in a Cold Chain Perspective

Synergy, Synergy, Synergy.



Gyeongnam QSF HQ

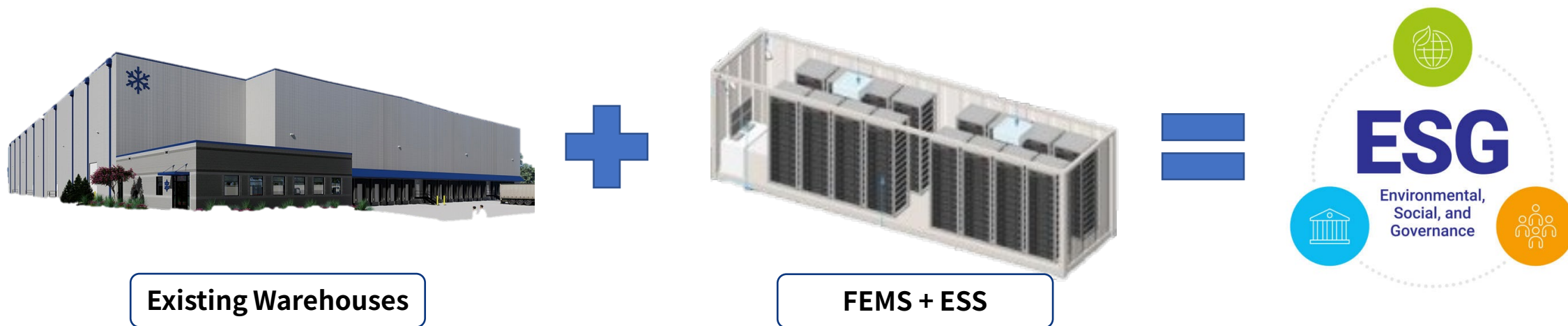


FEMS + ESS



Energy in a Cold Chain Perspective

Next Step?





Thank You!



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RM508 Institute of Advanced Convergence Technology, 70 Dongnae-ro, Dong-gu, Daegu [Daegu]
Future Food Energy Convergence Center, Daesong Industrial Complex,
Geumnam-myeon, Hadong-gun, Gyeongsangnam-do [Gyeongnam]
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