

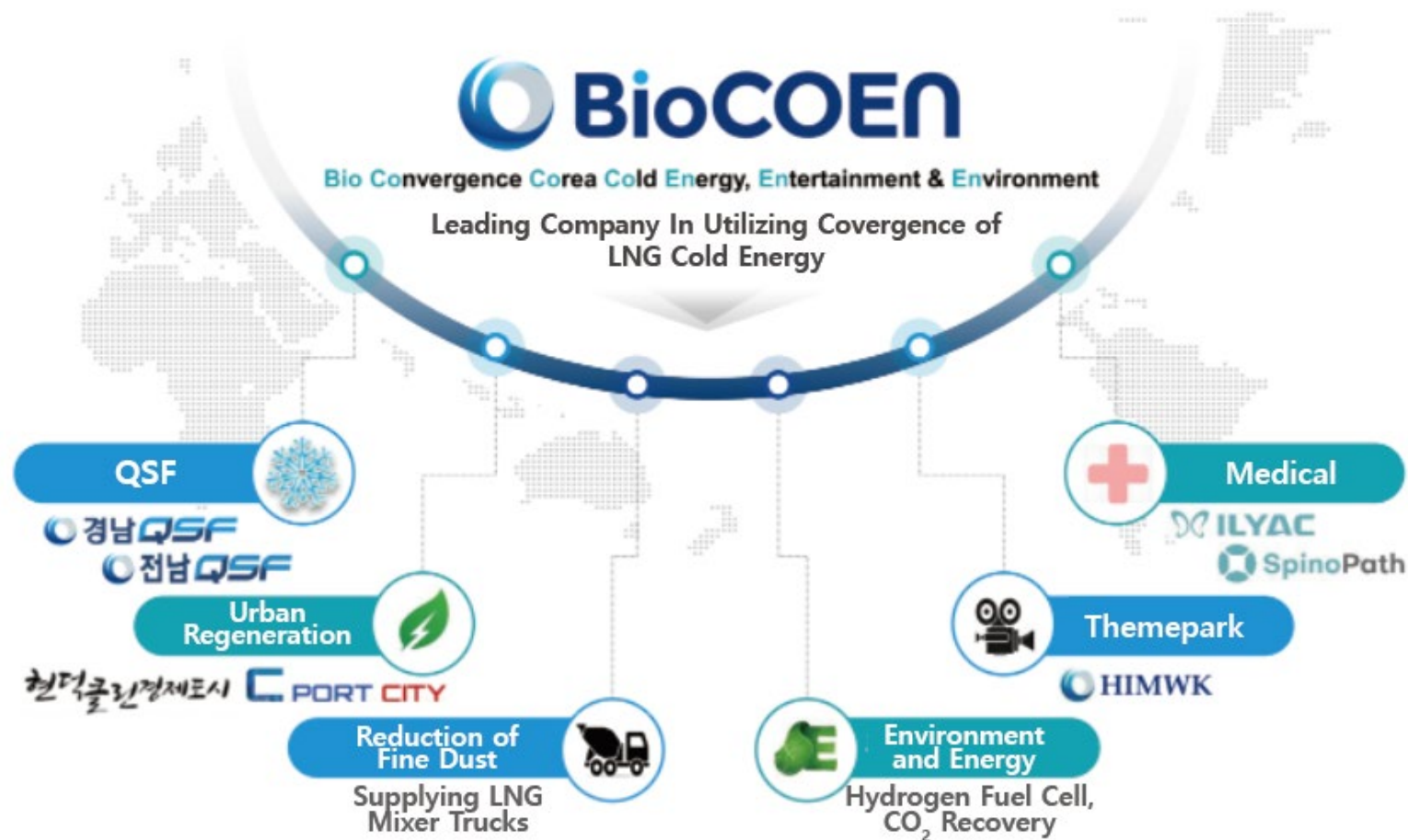


Toward A New Energy Paradigm

Dec 5th 2022

2022 WBG Energy Storage Partnership Seoul Forum

Introduction

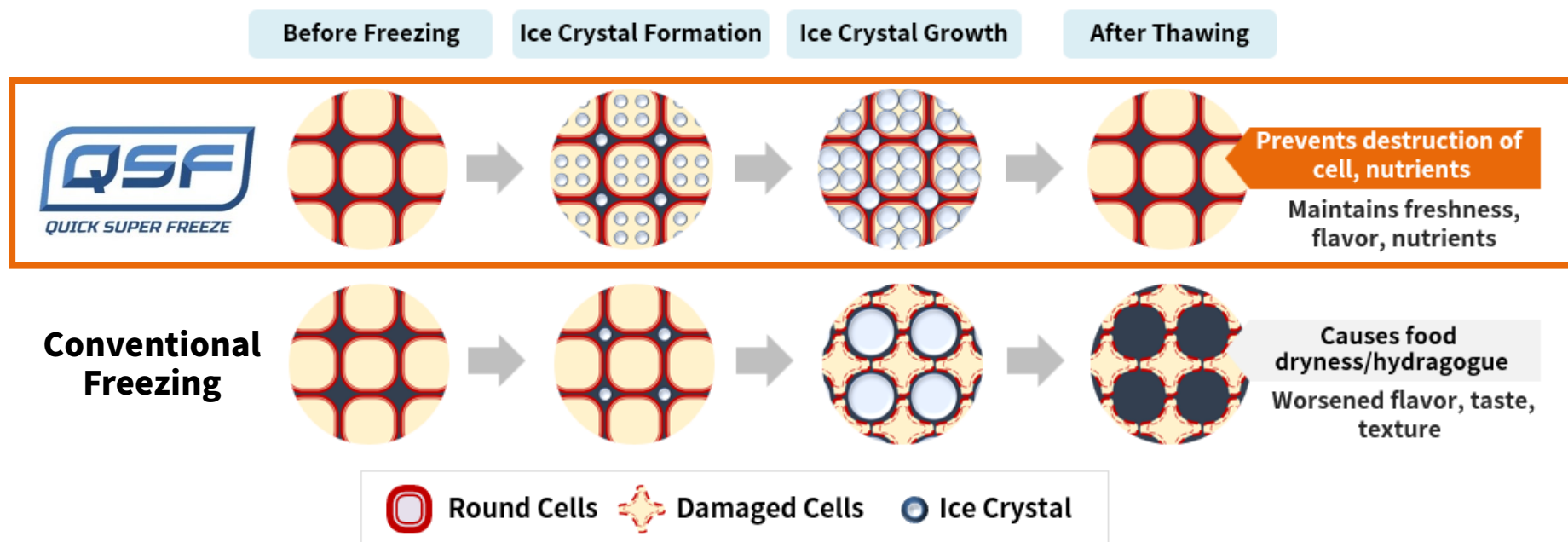


Future Food Business



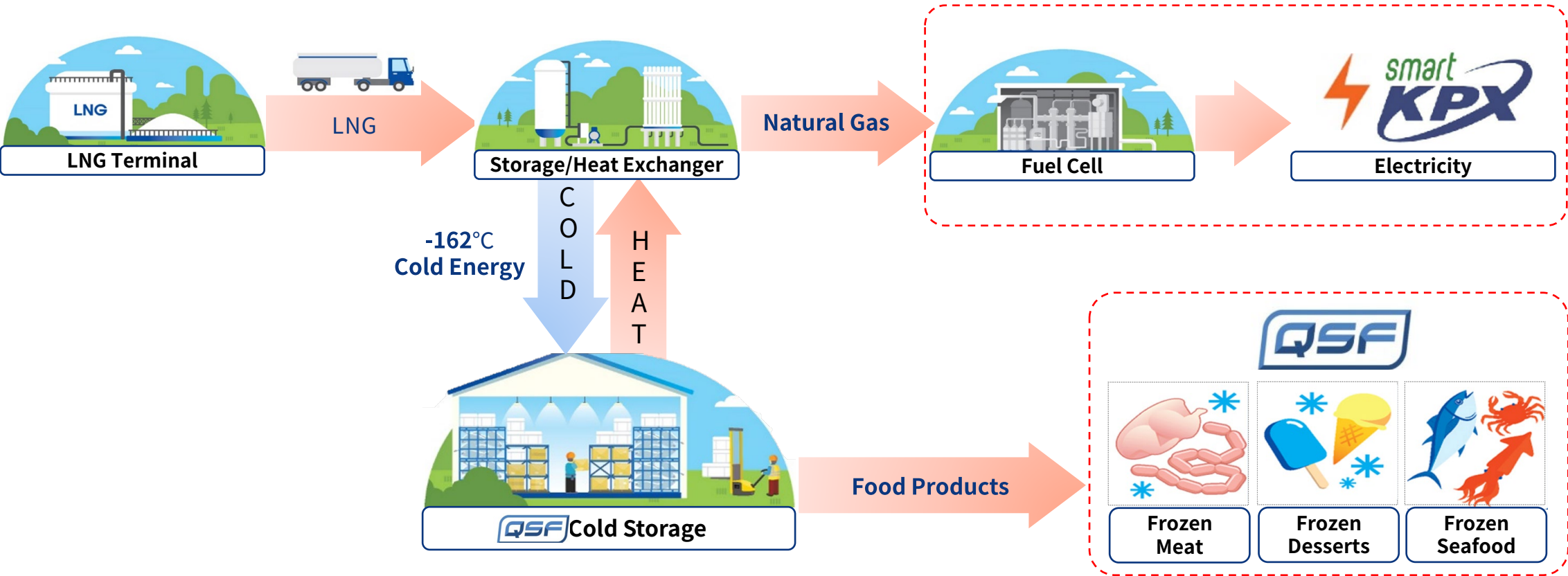
Quick Super Freezing

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%

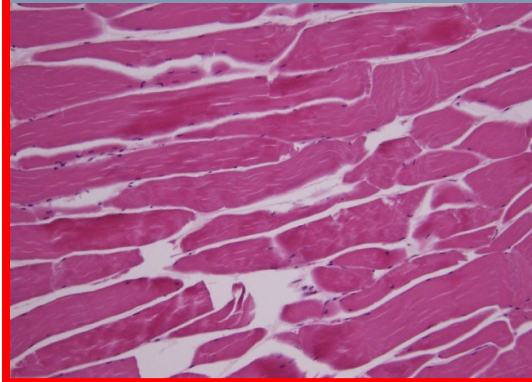
Preventing Cell Damage

Maintaining Taste and Nutrients

Preventing Oxidation
Preventing Dehydration

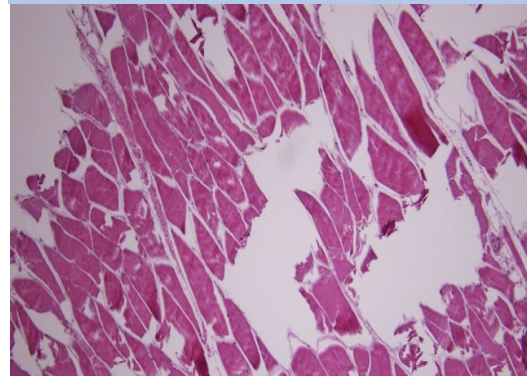
Maintaining Freshness

Fresh



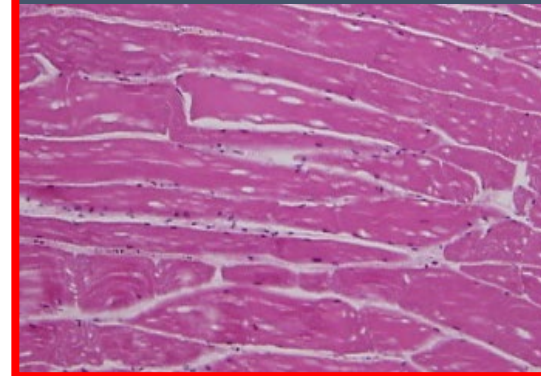
Tissue cells are **healthy and dense**

Conventional Freezing



Tissue cells are **severely damaged**

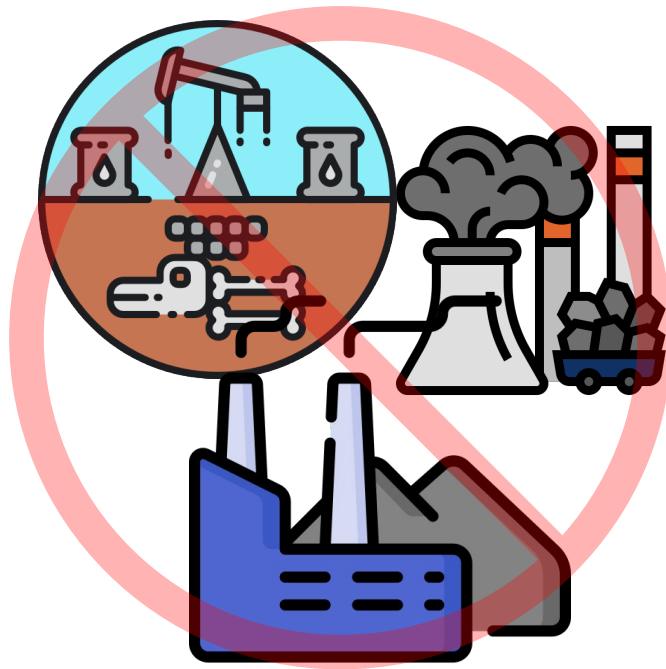
Quick Super Freezing



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

Energy Supply

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

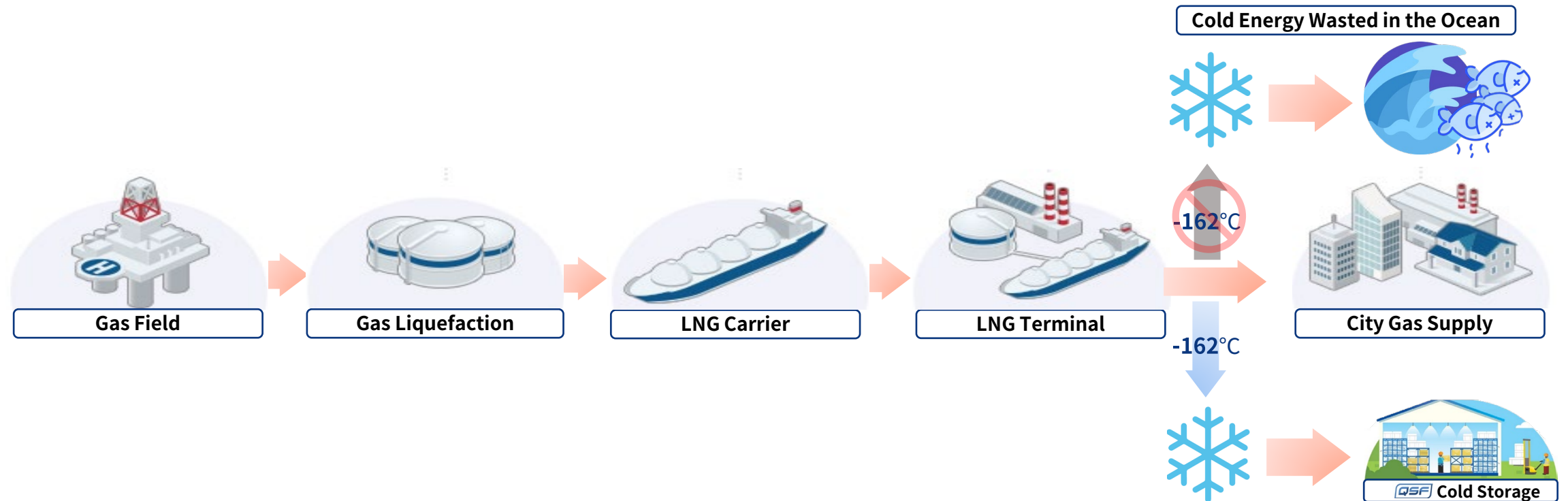


Time for change?



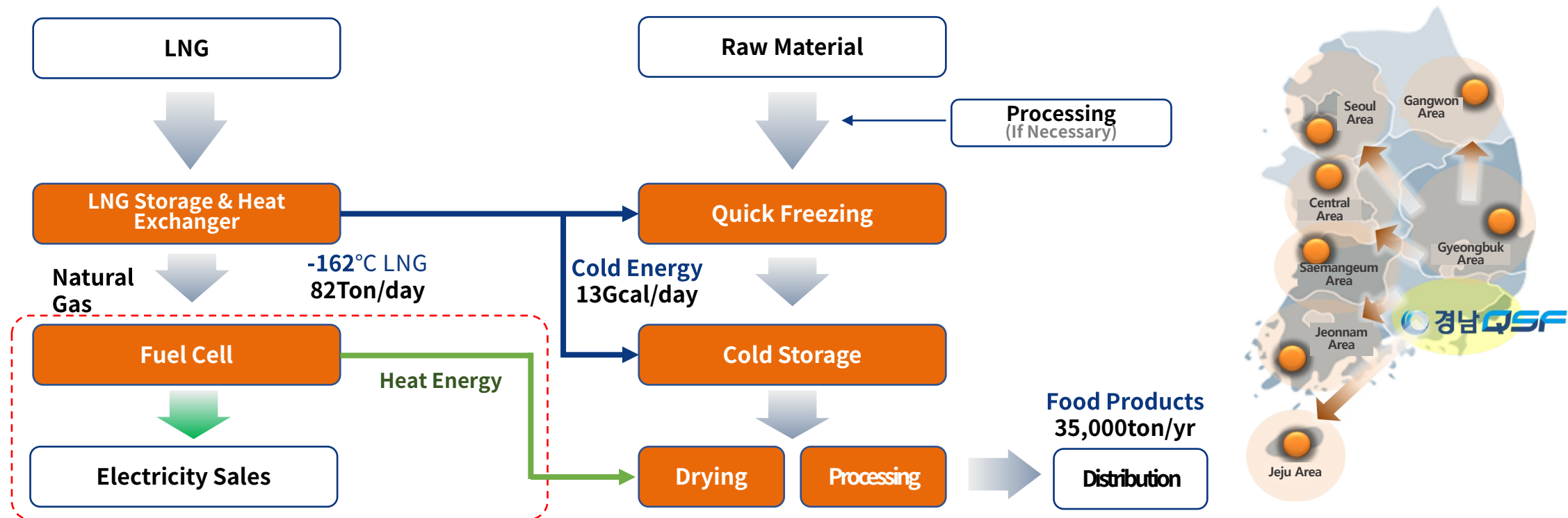
Energy Supply

LNG Supply Procedures



Energy Supply

QSF Model



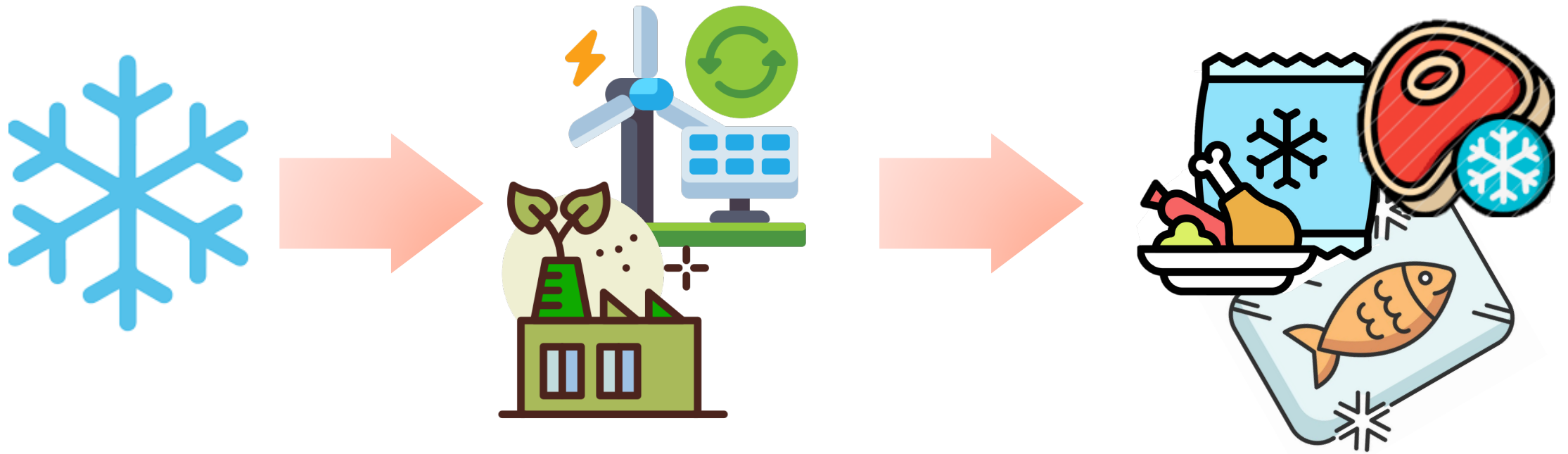
Carbon Neutral Renewable Energy

Future of Energy – “Carbon Neutral Hydrogen”



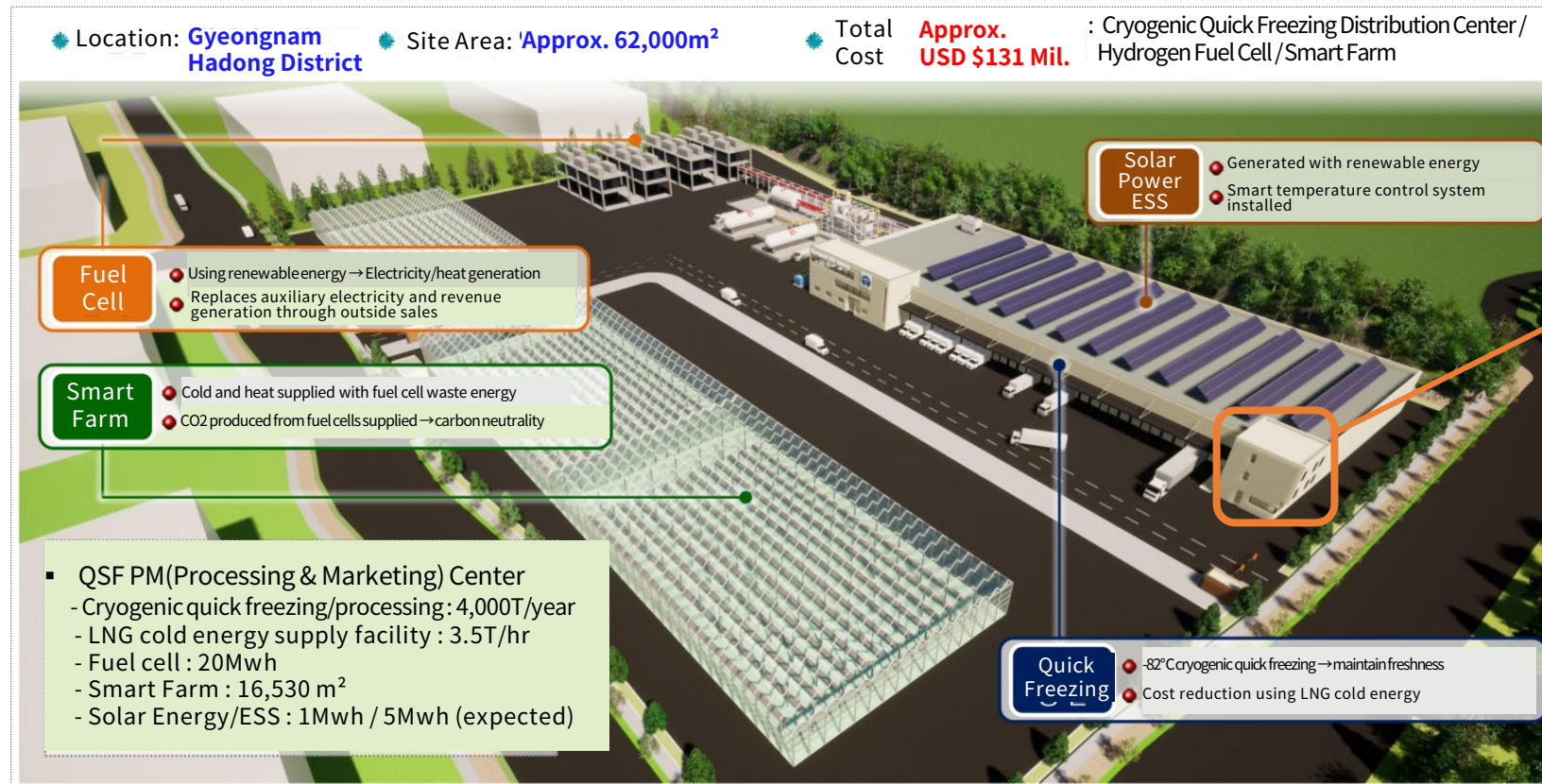
Carbon Neutral Renewable Energy

Future of Cold Storage – “Carbon Neutral”



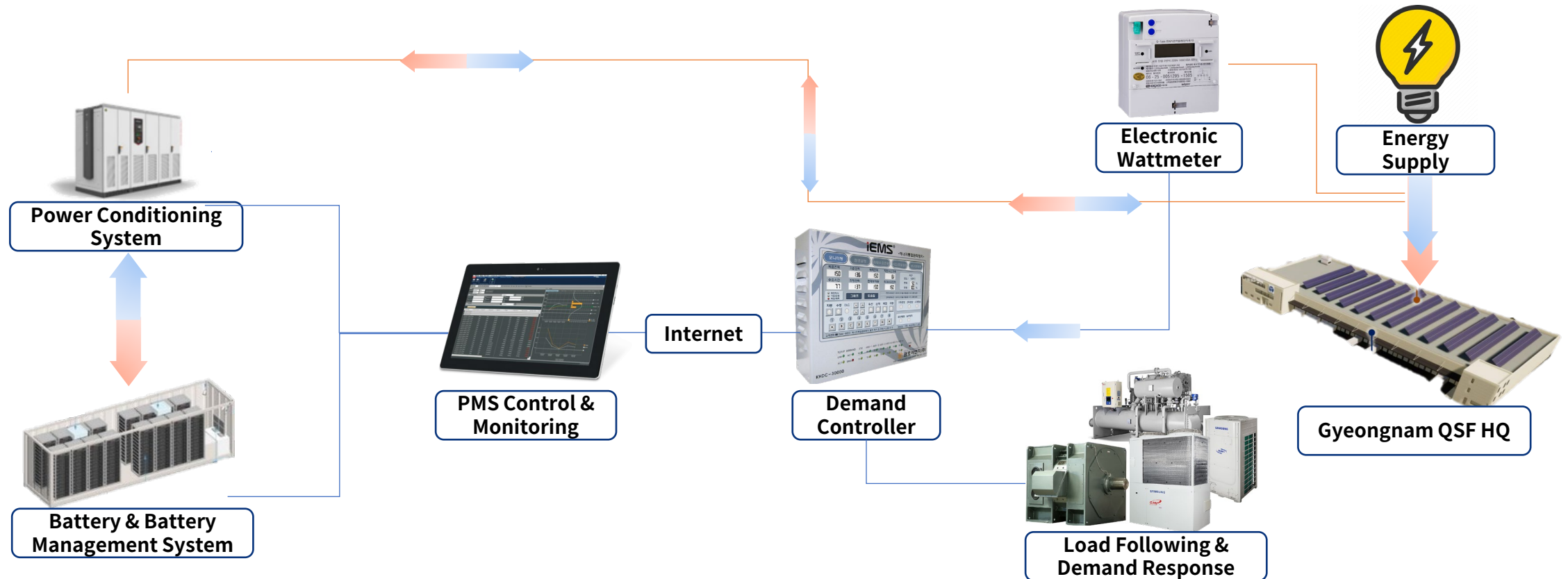
Application as in Gyeongnam HQ

Gyeongnam HQ



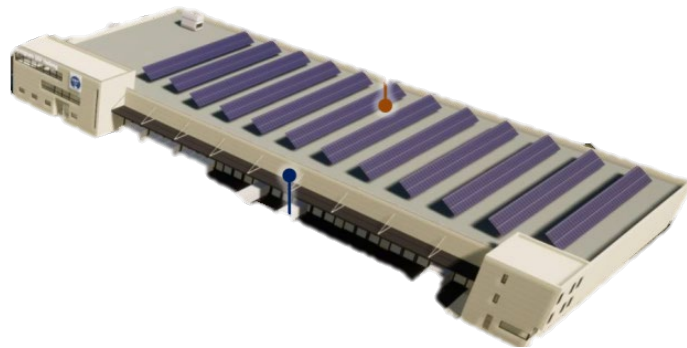
Application as in Gyeongnam HQ

Gyeongnam HQ – FEMS + ESS Model



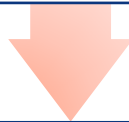
Application as in Gyeongnam HQ

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	• 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	• 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

NO SLEEP TONIGHT

WHAT IS A RED-EYE FLIGHT? | A flight that is scheduled to depart late at night. The term 'red-eye' refers to the symptom of red eyes caused by fatigue or late night travel

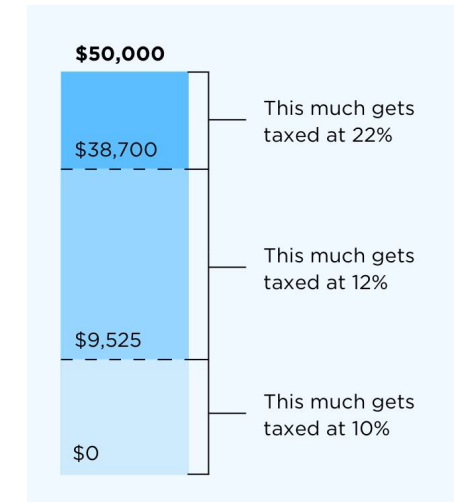
ADVANTAGES OF RED-EYE FLIGHTS

- Low airfare
- Avoiding peak hour traffic
- Helps cut down on overnight hotel charges



Red-eye Flights

3



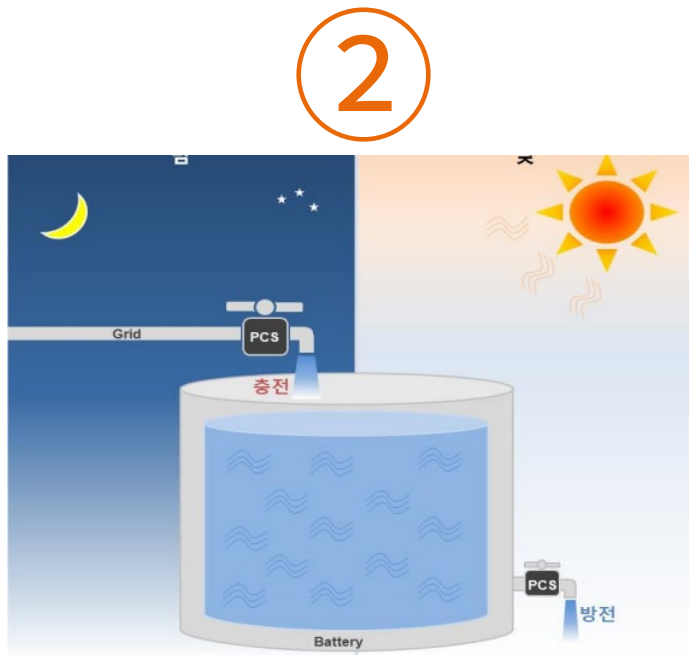
Tax Brackets

Increasing Efficiency.

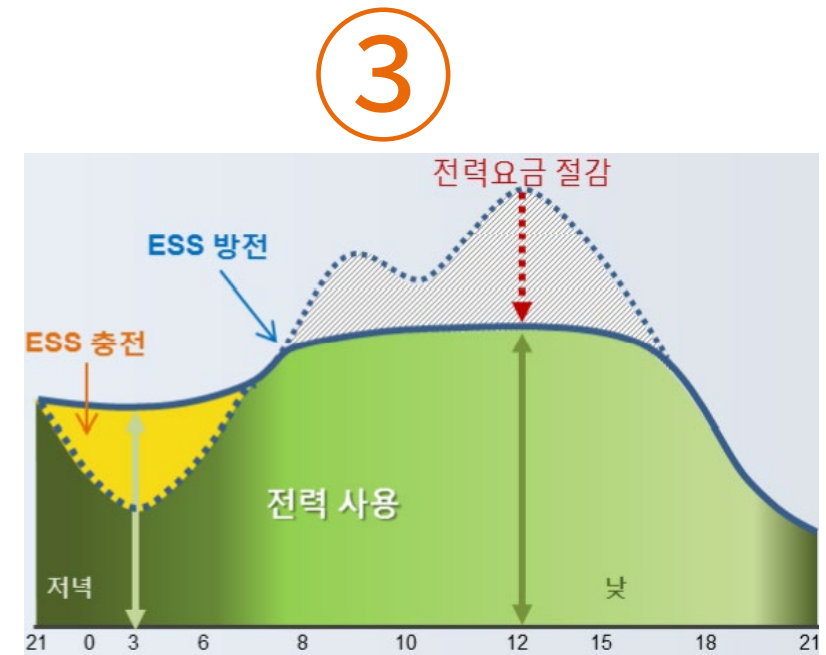
① Cost Efficiency



Base Tariff Discount



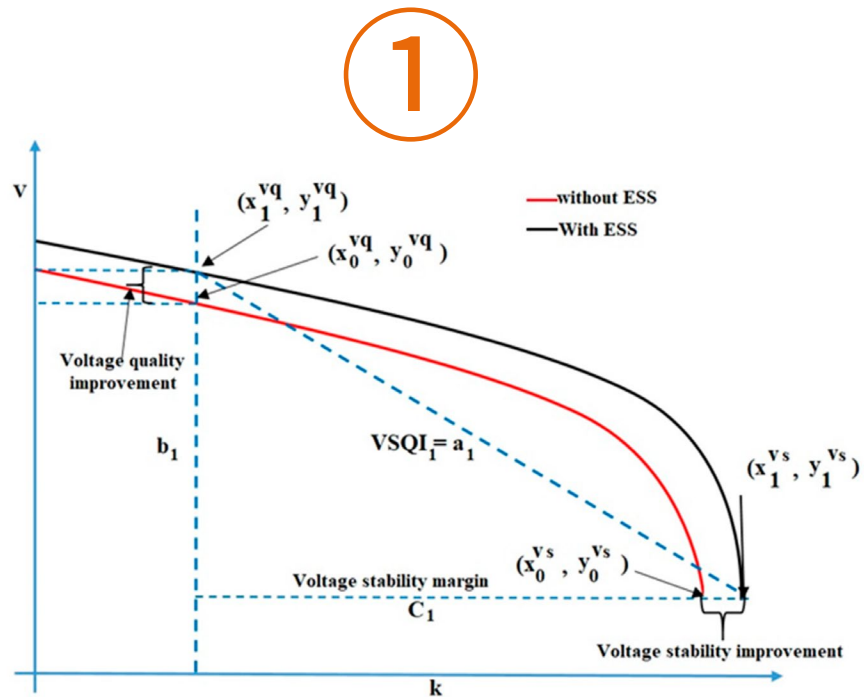
Off-peak Late-night Discounts



Peak Shaving

Increasing Efficiency.

② Energy Efficiency



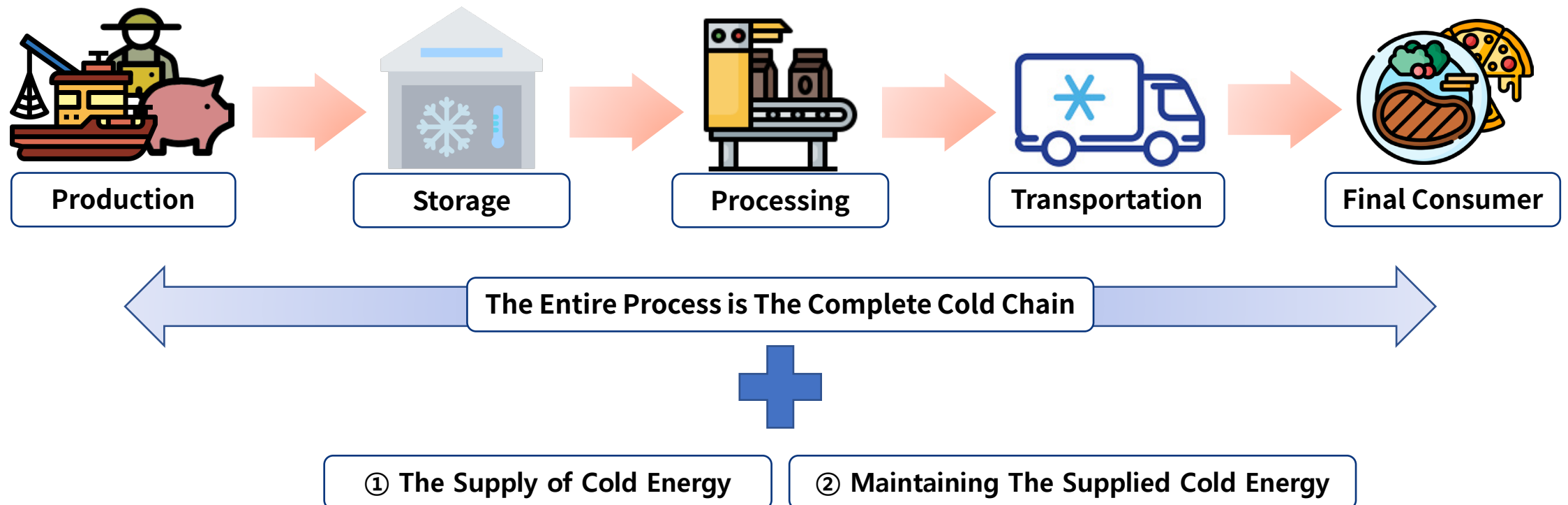
Stable Energy Supply



Securing Highest Efficiency

Energy in a Cold Chain Perspective

Cold Chain?



Energy in a Cold Chain Perspective

The Ultimate Answer



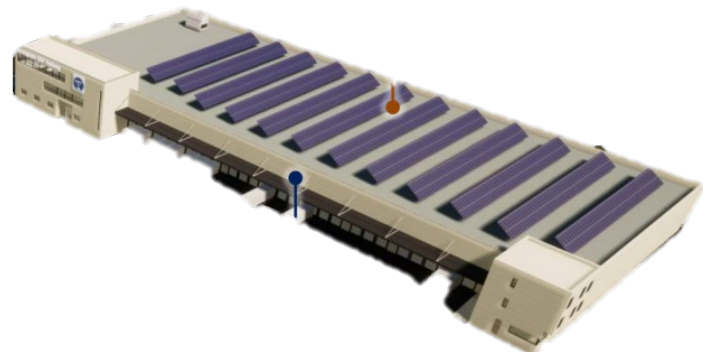
Energy in a Cold Chain Perspective

The Ultimate Answer

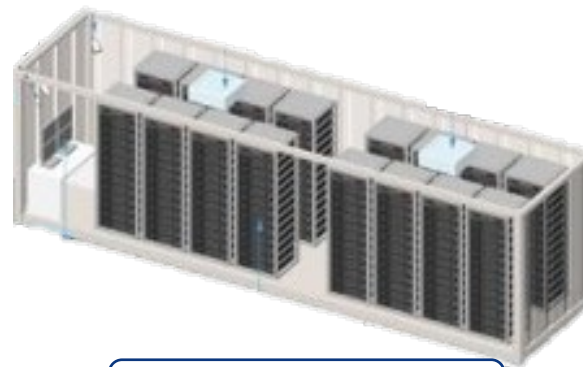


Energy in a Cold Chain Perspective

Synergy, Synergy, Synergy.



Gyeongnam QSF HQ

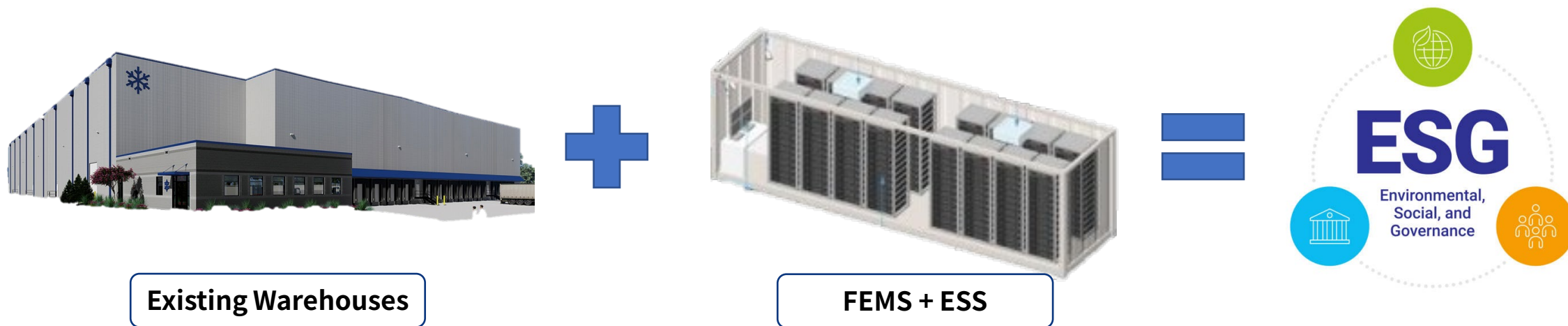


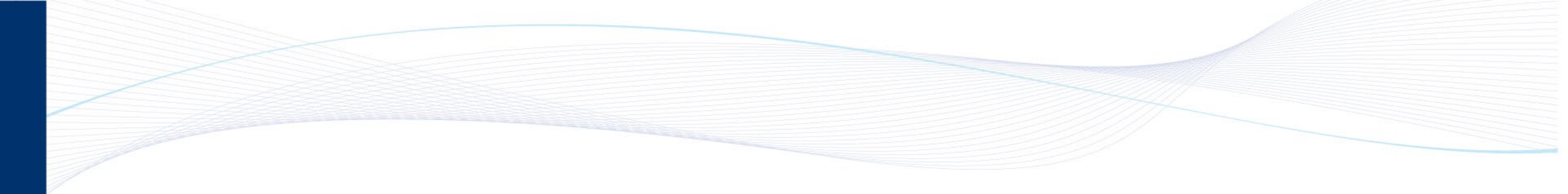
FEMS + ESS



Energy in a Cold Chain Perspective

Next Step?





Thank You!



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Future Food Energy Convergence Center, Daesong Industrial Complex,
Geumnam-myeon, Hadong-gun, Gyeongsangnam-do [Gyeongnam]
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