EU-Korea Local Energy Transition Conference 1st June 2021

Technology for Local Energy Transition

Daejeon Institute of Science & Technology for Enterprise & People, DISTEP

President Ko, Young-joo



Korea's Energy Technology Policy

CONTENTS



Energy Transition Technologies



Convergence of Technology and Society



Energy Technology Policy in Korea

3rd Energy Basic Plan (2019~2040, 2019.6)

40 years energy basic plan based on ^[Low-carbon Green Growth Bbasic Law]

Sustainable Growth and Quality of Life

by Energy Transition

Innovation of energy consuming structure
 Cleaner and safer energy mix
 Dispersed and participatory energy system
 Global competitiveness of energy industry
 Expansion of energy transition base

3rd Energy Basic Plan(2019.6, 2019~2040)

Agenda 1

Innovation of energy consuming structure

✓ 38% increase of consuming efficiency
 ✓ 18.6% Reduction of Demand('40, BAU)
 ✓ Sectoral demand management



Agenda 2

<u>Cleaner and safer energy mix</u>

 ✓ Incremental reduction of nuclear power and drastic reduction of coal power
 ✓ 30 ~ 35% proportion of renewable energy('40)
 ✓ Reduction roadmap of particulate matter and green house gases



Agenda 3

Dispersed and participatory energy system

✓ Increasing Dispersed Energy

✓ Increasing power prosumer

 \checkmark Increasing role and responsibility of local

government



Agenda 4

<u>Global competitiveness of energy industry</u>

✓ Nurturing future energy industry like renewable energy, hydrogen etc.

✓ High added value of traditional energy industry

Agenda 5

Expansion of energy transition base

✓ Reform of market institutions of power, gas, heat✓ Building energy bigdata platform

4th Energy Technology Development Plan (2019~2028, 2019.12)

Goal and Direction of mid- and long term energy technology

development based on 'Energy Law,

Vision

Energy technology power house for energy transition and new industry

Strong Investment in energy transition tech

Goals

Leading future energy technologies

Market competitiveness of energy industry



4th Energy Technology Development Plan

Four main strategies with 15 agendas

- 1. Strengthening R&D investment for energy transition
- 2. Construction of National R&D system for capacity concentration
- 3. Strengthening R&D base for creation of new industry
- 4. Expanding R&D base for future-driven energy



4th Energy Technology Development Plan

12

Core Agendas

에너지 R&D 투자의 90%를 16대 중점기술에 집중

융복합 단지 조성을 통한 지역에너지 생태계 활성화

리빙랩 등 국민참여형 R&D확대

에너지 벤처 생태계 육성

데이터공유 빅데이터 플랫폼 구축

국제협력, 해외 시장 진출 확대



Energy Transition Technologies

Sixteen technology field for energy transition

16 technology field for energy transition

	Energy new industry growth	Clean and safe energy supply	High efficient & low consuming structure	Dispersed energy proliferlation
		• Nuclear energy	• Industry	
16	 Photovoltaic 	• Clean power	efficiency	 Intellectual power grid Energy storage Cyber safety
	• Wind power	• Energy safety	• Building	
technology	• Hydrogen	• Resource	efficiency	
field	• New energy	development	Transportation	
	materials	• Circular	efficiency	
		Resources	• Big data	

14

1. Four New energy industry

Photovoltaic	Wind power	Hydrogen	New energy
			materials
-Si photovoltaic	-Super big wind	-Reforming tech	
efficiency	turbine	for hydrogen	-Fuel cell
35% up, price $\frac{1}{2}$		charging station	electrode material
down	-Ocean test bed	-Water	-Gas turbine
-Photovoltaic		electrolysis tech	materials
for Ocean,		-Fuel cell low	-Lithium
Agriculture,		cost high	replacement
Building		capacity tech	materials
			-Hydrogen

15

electrolysis

materials

2. Five Clear and safe technology

Nuclear Power	Clean power	Resource	Circular	Energy safety
		Development	resources	-Energy infra
Decommissioning	-Diversification		-Photovoltaic	-Life cycle
Tech	of fuel	-Digital	panel	safety
Radioactive waste	-CO ₂	oilfield	-Fuel cell	management
Safety	Reduction	-Smart	catalyst	tech
management	tech	mining	-Material	
		tech etc	Collection &	
			reuse tech	

Building efficiency

-Plus building beyond zero energy building Industry efficiency

-Higher efficiency for large energy consuming device Transportation efficiency

-Charging efficiency and safety

Big data

-Enlargement of usage of demanding resources

-Advancement of energy transaction through big data

4. Three Dispersed energy proliferation

Intellectual power grid

-Integrated

management

of power

transmission

Energy storage

-Next generation

secondary

battery

-Long life ESS

Cyber safety

-Cyber safety tech for energy infrastructure

Thank you

