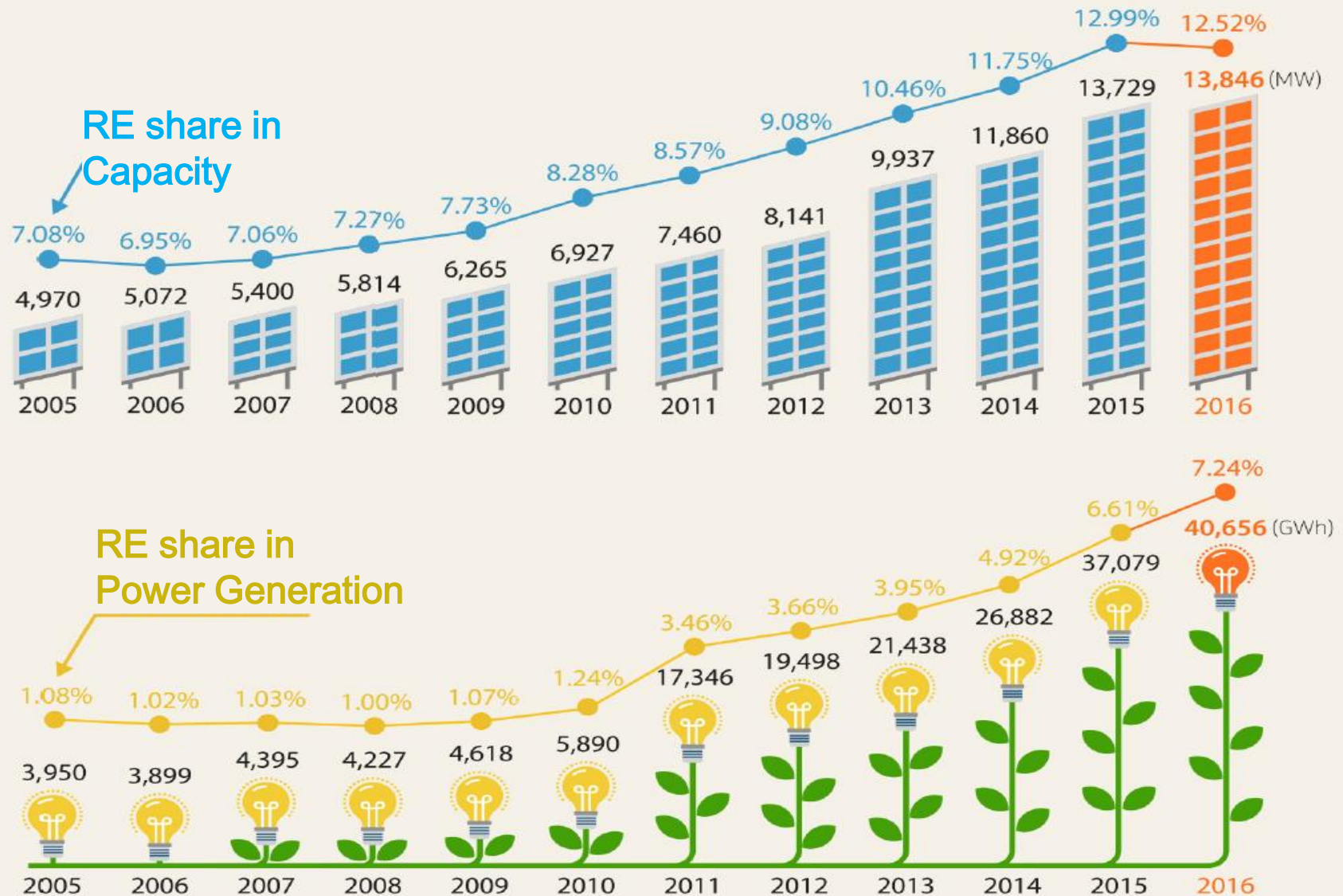


# Green Energy Policy of Korea



## Renewable Energy Capacity & Power Generation



## ■ Status of PV industry in Korea

○ PV export(hundred Million Dollars)



○ Capacity of Korean PV enterprises

Cell

① Hanwha Q Cells(5,200MW/year, World 1st rank)

PERC(Passivated Emitter and Rear Cell)  
Efficiency 19,5%, 1st commercialized for  
Polycrystalline Cell

② LG Electronics(1,100MW/year)

22% efficiency for N-Type Monocrystalline  
Bifacial Cell

③ Hyundai Heavy Industries(600MW/year)

④ Shinsung E&G(600MW/year)

21,7% efficiency of Monocrystalline PERC cell

Polysilicon

① OCI(52,000ton/year, World 3rd rank)

② Hanwha Chemical(15,000ton/year)

③ Hankook Silicon(15,000ton/year)

Module

○ Global production capacity 10GW

○ Domestic production capacity 6.4GW



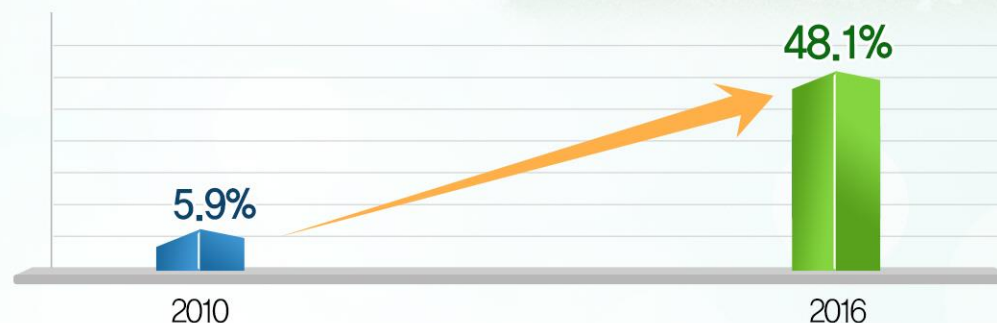
## ■ Status of Wind industry in Korea

### ○ 1,031MW installed by 2016

- Onshore wind : 77 sites, 519 turbines, 996,22MW
- Offshore wind : 3 sites, 12 turbines, 35MW



### ○ Domestic turbine market share



### ○ Capacity of Korean Wind enterprises

Turbine	Doosan Heavy Industries	<ul style="list-style-type: none"> <li>3MW on/offshore turbine, 5.5MW offshore turbine</li> <li>– world 5th rank Offshore turbine supplier in 2016(30MW, 1.5%)</li> </ul>
	Hyosung	<ul style="list-style-type: none"> <li>5.5MW offshore wind turbine certified in Germany (July, 2015)</li> </ul>
	Unison	<ul style="list-style-type: none"> <li>750KW, 2MW, 2.3MW wind turbine</li> </ul>
	Hanjin	<ul style="list-style-type: none"> <li>1.5MW, 2MW wind turbine</li> </ul>
Tower	CS Wind	<ul style="list-style-type: none"> <li>Wind tower global market share 6.5%</li> <li>Manufacturing at Canada, China, Viet Nam and UK</li> </ul>
Forging	Tae-woong	<ul style="list-style-type: none"> <li>400 customers including world turbine top 10 enterprises</li> </ul>

## 4 Korea's Renewable Energy – Industry(Outcome)

### ■ Renewable Energy Industry (2016)

# of  
Manufacturer  
405

# of  
Employment  
14,412

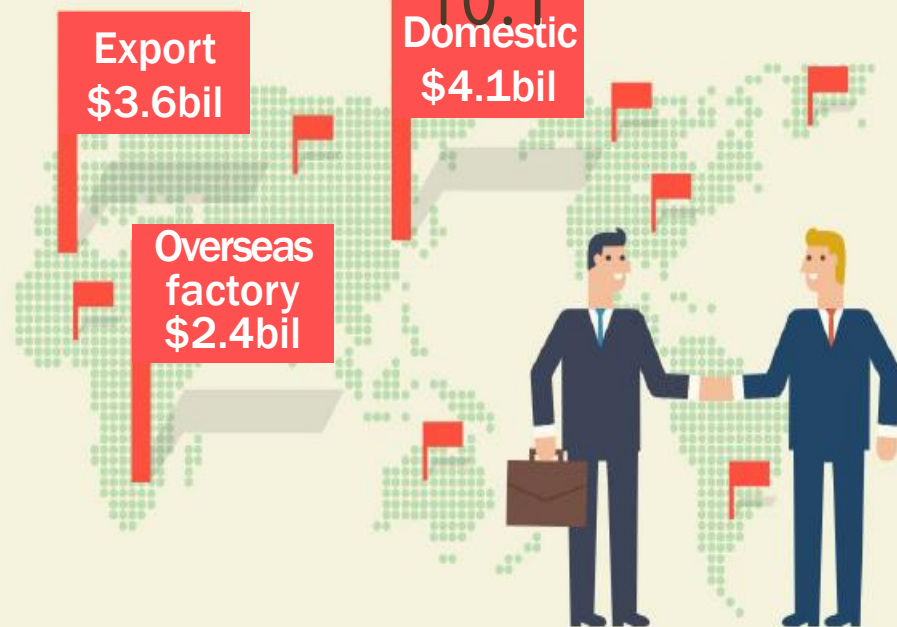
Sales(USD  
billion)

10.1

Domestic  
\$4.1bil

Export  
\$3.6bil

Overseas  
factory  
\$2.4bil



## Vision: Energy transition 「RE3020」

- Everyone's participation & improving the quality of life -

### Target

	2017	2022	2030
RE share in power generation	7.6%	10.5%	20%
Citizen power plant	Urban (# Households) 0.29mil.	0.76mil.	1.56mil.
	Agri. 0.1GW	3.3GW	10GW

### Strategy

#### Sources

Focus on PV & Wind

#### Method

Citizen participation & Sustainable development

#### Enhancing Economic feasibilities

Promoting Large-scale project by deregulation



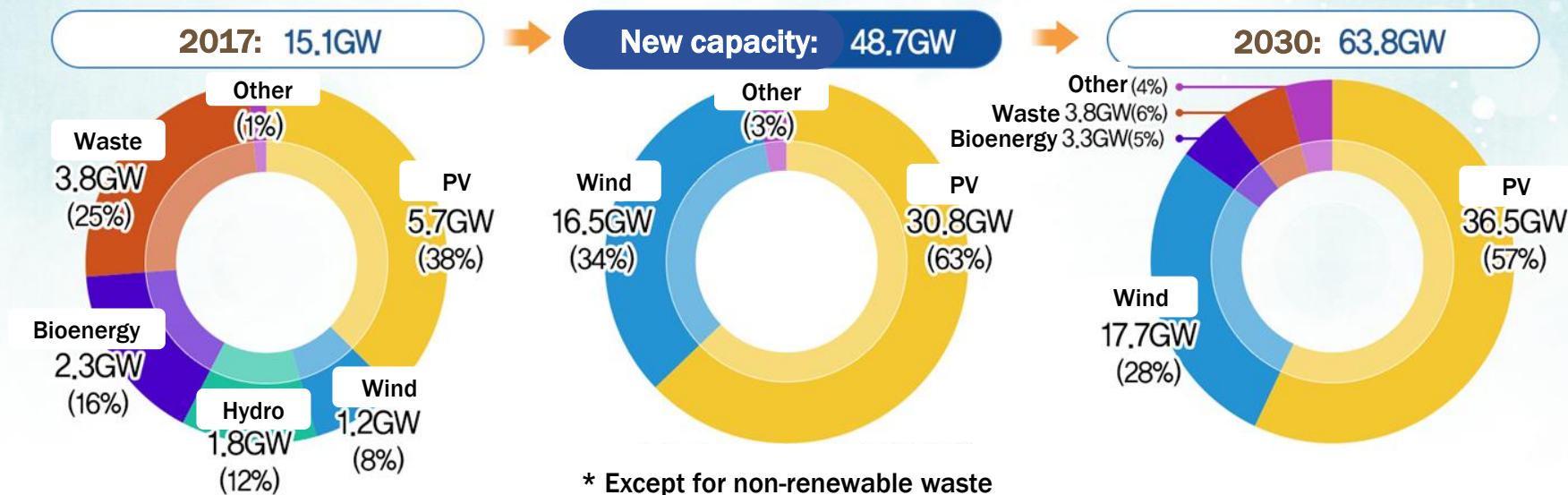
Expanding PV  
in urban area

Expanding  
Agricultural PV

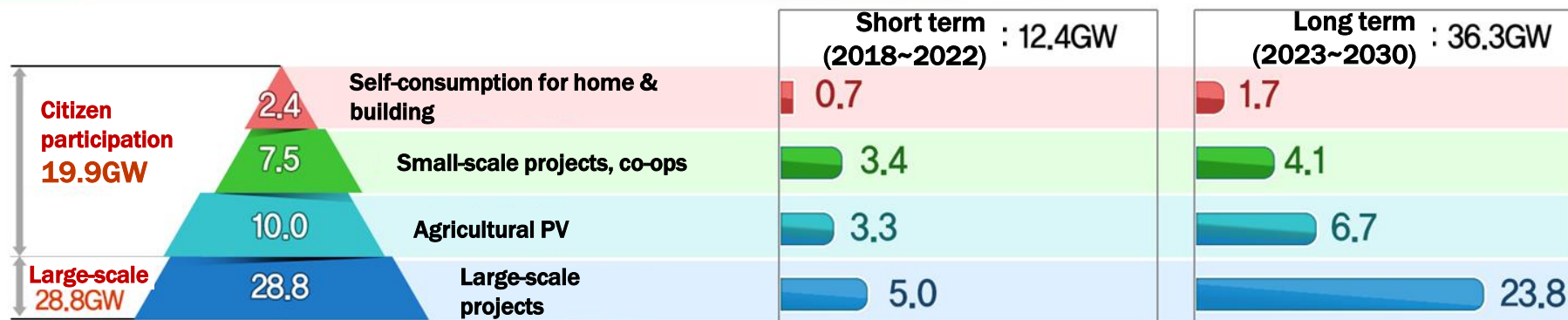
Expanding RE co-ops  
& social enterprises

Large-scale  
project

**RE Target** > 20% of power generation by 2030: More than 95% of new capacity is PV & Wind



**Method** > Achieving target by Citizen participation & Large-scale projects





■ To achieve 20% target by 2030

- 1 Increasing RPS mandatory rate
  - 2 Promoting large scale RE projects : Offshore wind farm, etc
  - 3 Local community participation : Agricultural solar villages, etc
  - 4 Investment for grid stability : T&D improvement, securing backup power
  - 5 Efficient demand side management using smart grid infrastructure
  - 6 R&D investment \$1.4bil including RE(\$1.0bil) (2016–2020)
- 



## Overview

- Enforces 21 power producers to supply certain amount of the total Power generation by NRE (Implemented in 2012)
  - ※ Obligators: power producers with capacity of 500MW or above



## Goal and Current Status

- Goal : ('12) 2.0% → ... → ('16) 3.5% → ('17) 4.0% → ('18) 5.0% → ... → ('20) 7.0% → ... → ('23~) 10.0%
- Current Status : RPS achieved 10.1 times of total FIT installed capacity(proceeded for 10 years) in 7.3 years

RPS('12~ )	FIT('01~'11)	Rate of change
10,546MW	1,042MW	1,312.7%↑

## Best Practice

- Converting rooftop of the factory and parking lot into Solar PV Power Plant (Busan)
  - The largest Solar PV Plant for the single factory utilized existing facilities in the world (20MW, Renault Samsung Motors)
  - Generated electricity(26GWh/yr.) provides 7,300 households
    - \* Ave. usage rate 15%, 1 household uses 300kWh/month



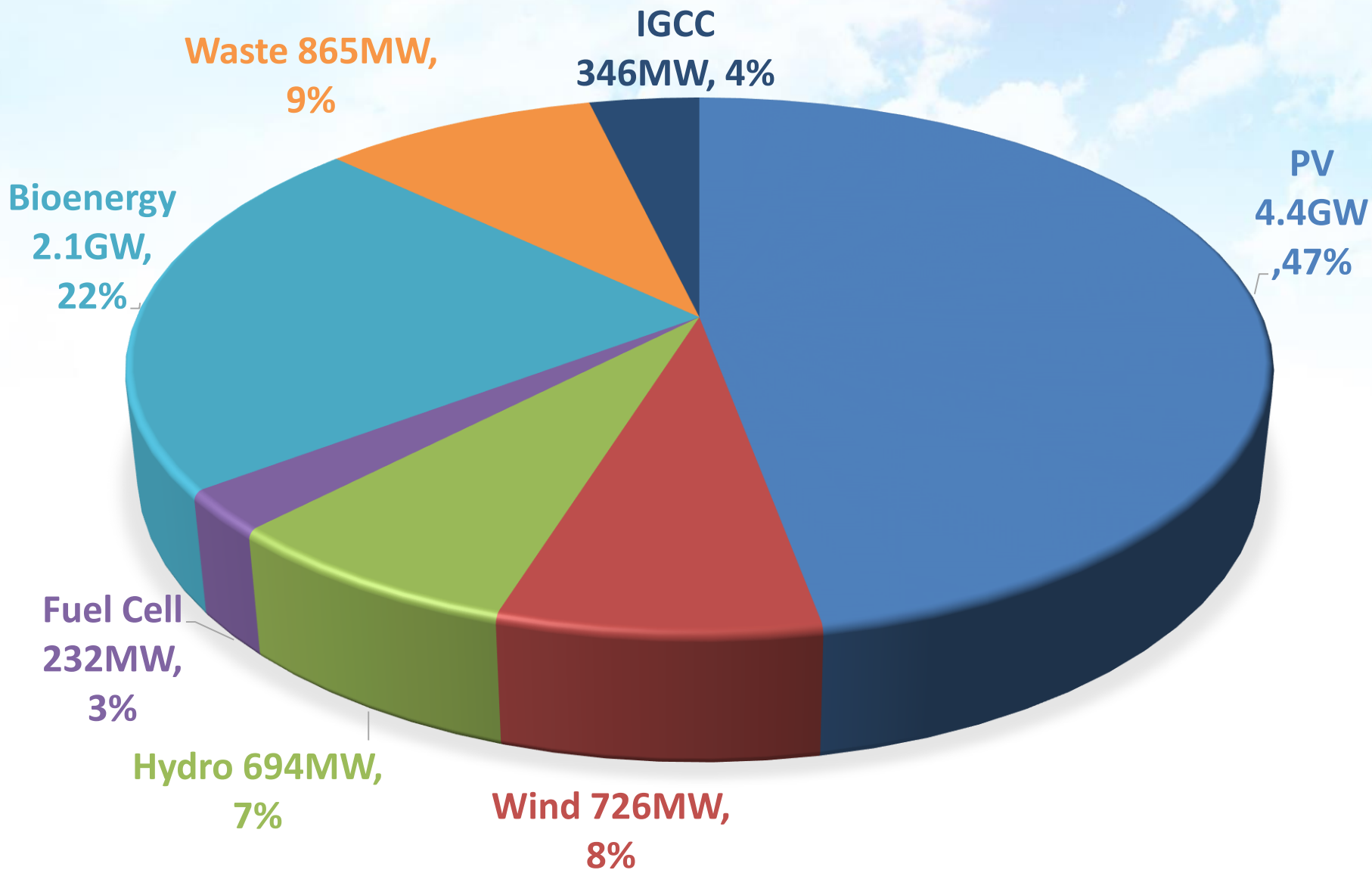
## Evaluation Criterion

- **Economic feasibility, Environmental effect, Potential, Industrial promotion effect, Policy priority**

(Govnt. Revises every 3 years)

Energy Source	Multiplier	Eligible Energy Sources	
		Installation Type	Detail
Solar PV	1.2	On Land	Less than 100kW
	1.0		More than 100kW
	0.7		Exceed 3,000kW
	0.7	On Forest Land	
	1.5	On Building & Existing Facilities	Under 3,000kW
	1.0		Exceed 3,000kW
	1.5	Floating on the Water Surface	
	1.0	Self-generating Facilities	
	5.0	ESS(with Solar PV Facility)	2018, 2019
	4.0		2020
Other REs	0.25	Bio-SRF, IGCC, Byproduct Gas, Waste	
	0.5	LFG, Wood Pellet, Wood Chip	
	1.0	Hydro, Onshore Wind, Other Bioenergy, Tidal(with Embankment)	
	1.5	Unused Forest Biomass(Co-firing), Hydro Thermal	
	2.0	Unused Forest Biomass, Fuel Cell, Tidal(without Embankment), Current Power, Geothermal	
	1.0 ~ 2.5	Geothermal, Tidal(without Embankment)	Variable Type
	2.0~3.5	Offshore Wind(Connection Distance ~5km: 2.0, 5~10km: 2.5, 10~15km: 3.0, 15km~: 3.5)	
	4.5	ESS(with Wind Facility)	2018, 2019
	4.0		2020

TOTAL RPS CAPACITY : 9.4GW (2017)







IREC 2019 in Seoul, Korea – 23<sup>rd</sup> ~ 26<sup>th</sup> Oct 2019



**KOREA,**

the Dramatic Renewable Stories



# Thank you

