

# **Country Report (Korea)**

**2019. 5. 15.**

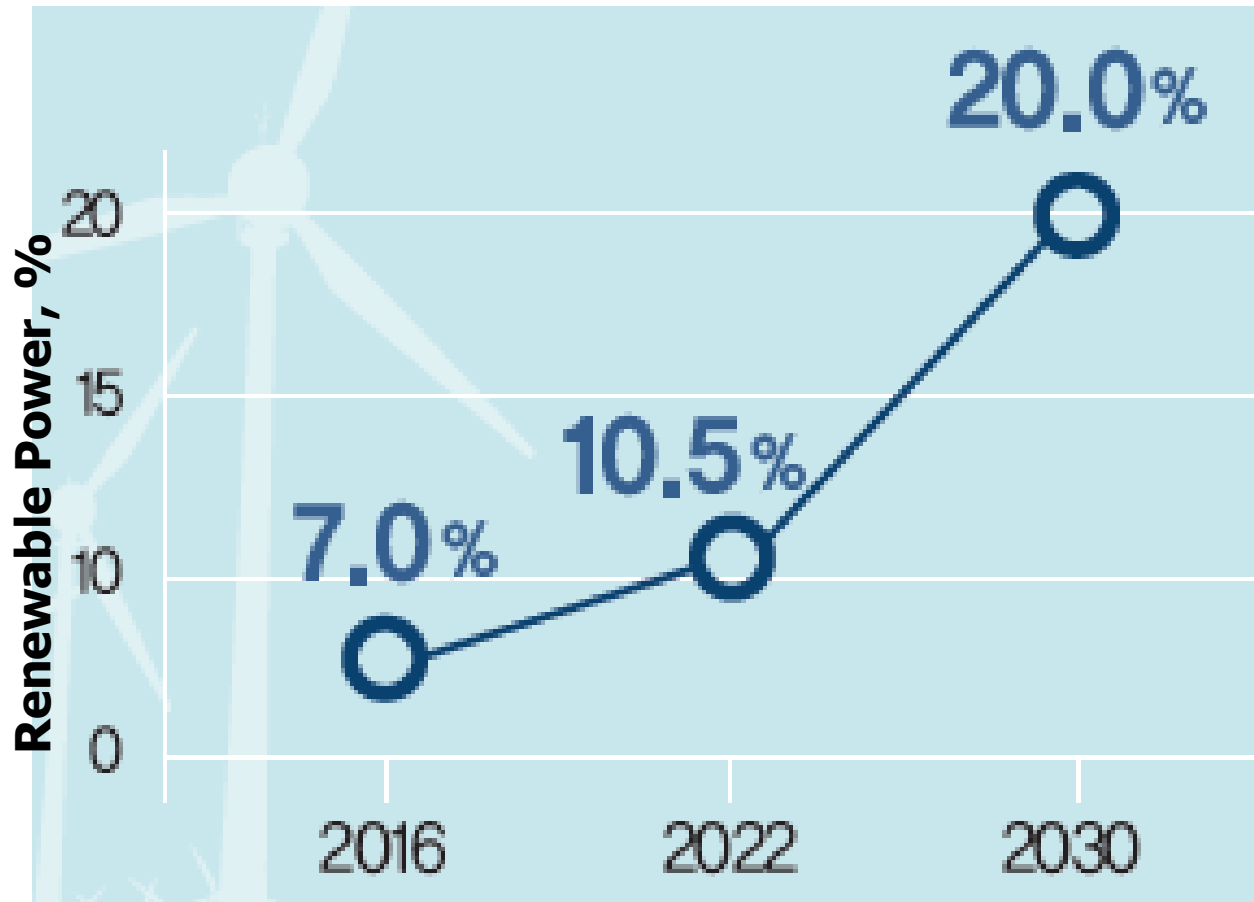
**Jin-Suk Lee**

# Presentation Agenda

- **Implementation Agenda for power**
- **Recent developments on liquid biofuels**
  - **Biodiesel for transport**
  - **Bio-fuel oil for power**

# RE 3020 plan

(MOTIE, 2017)

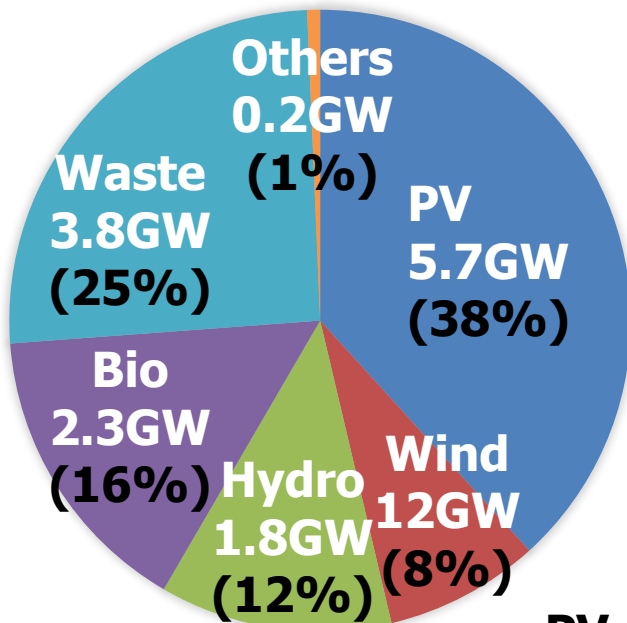


# Action plan of RE 3020

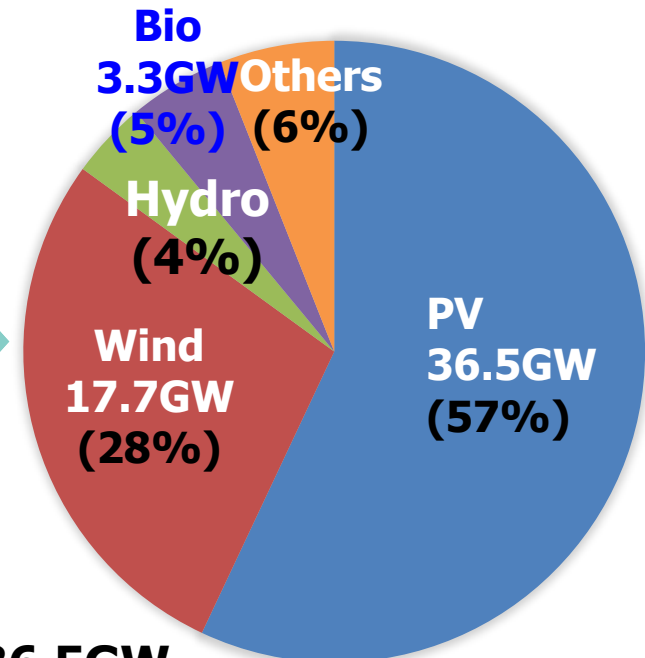
(MOTIE, 2017)

**PV, Wind will be key renewable energies for RE3020**

**2017**



**2030**



PV: 5.7GW  $\xrightarrow{\times 6}$  36.5GW

Wind: 12GW  $\xrightarrow{\times 15}$  17.7GW

Bio: 2.3GW  $\xrightarrow{\times 1.4}$  3.3GW

# RPS Target

## (KNREC, 2018)

**Program participants: Power producers having capacity > 500MW  
(21 power companies)**

| Year                                                          | 2012         | 2013          | 2016             | 2018   | 2020 | 2022 | 2024 |
|---------------------------------------------------------------|--------------|---------------|------------------|--------|------|------|------|
| RPS Target, %                                                 | 2.0          | 2.5           | 3.5              | 5.0    | 7.0  | 9.0  | 10.0 |
| Liability, (No.<br>of certificates)<br>x 10 <sup>3</sup> RECs | 6,420        | 9,210         | 15,081           | 21,999 | -    | -    | -    |
| Bio-power                                                     | 60<br>(0.9%) | 724<br>(7.9%) | 2,081<br>(13.8%) | ?      |      |      |      |

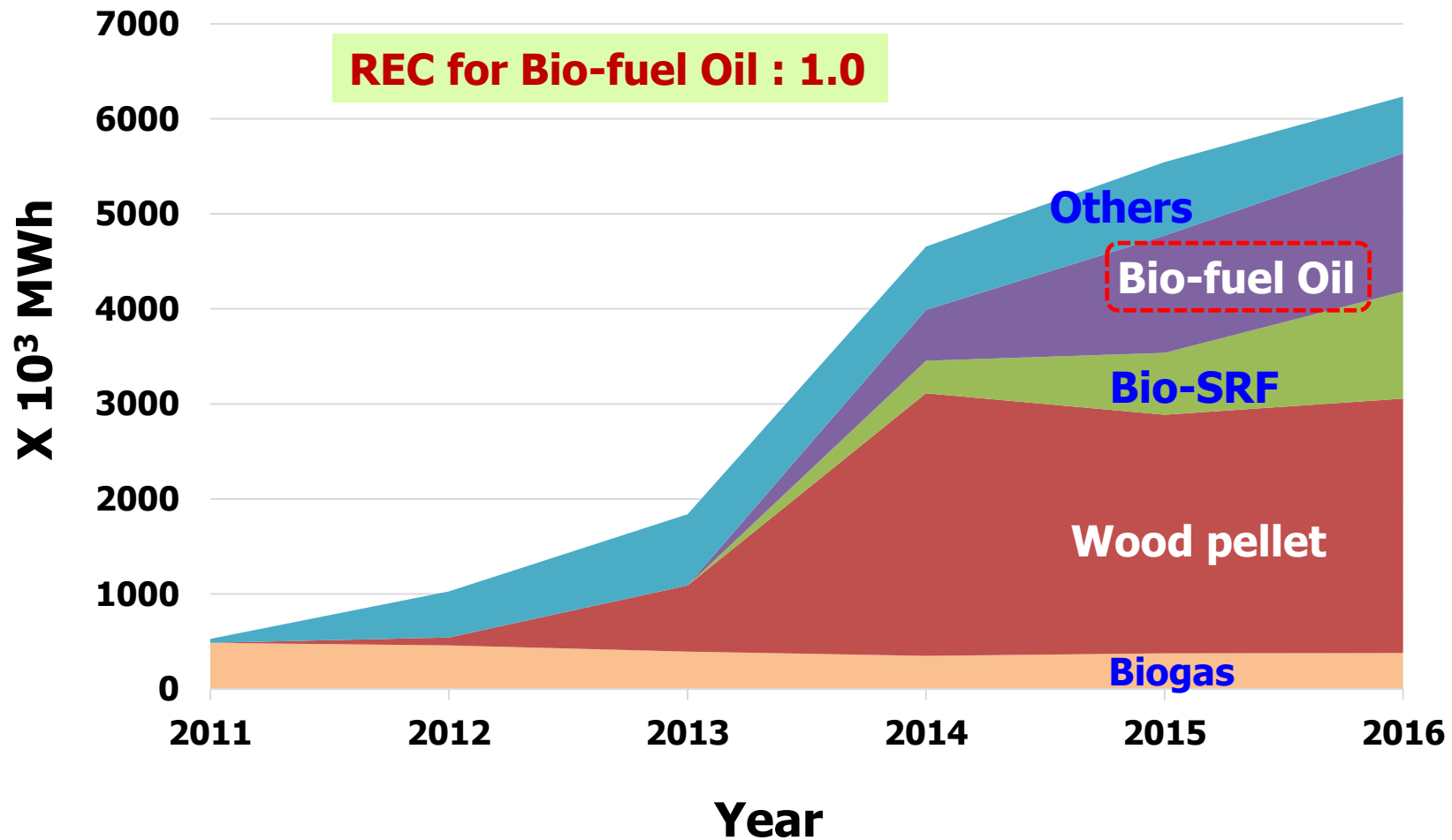


**In 2018, REC prices**

- **Contract** : \$66/REC
- **Spot trading** : \$90/REC

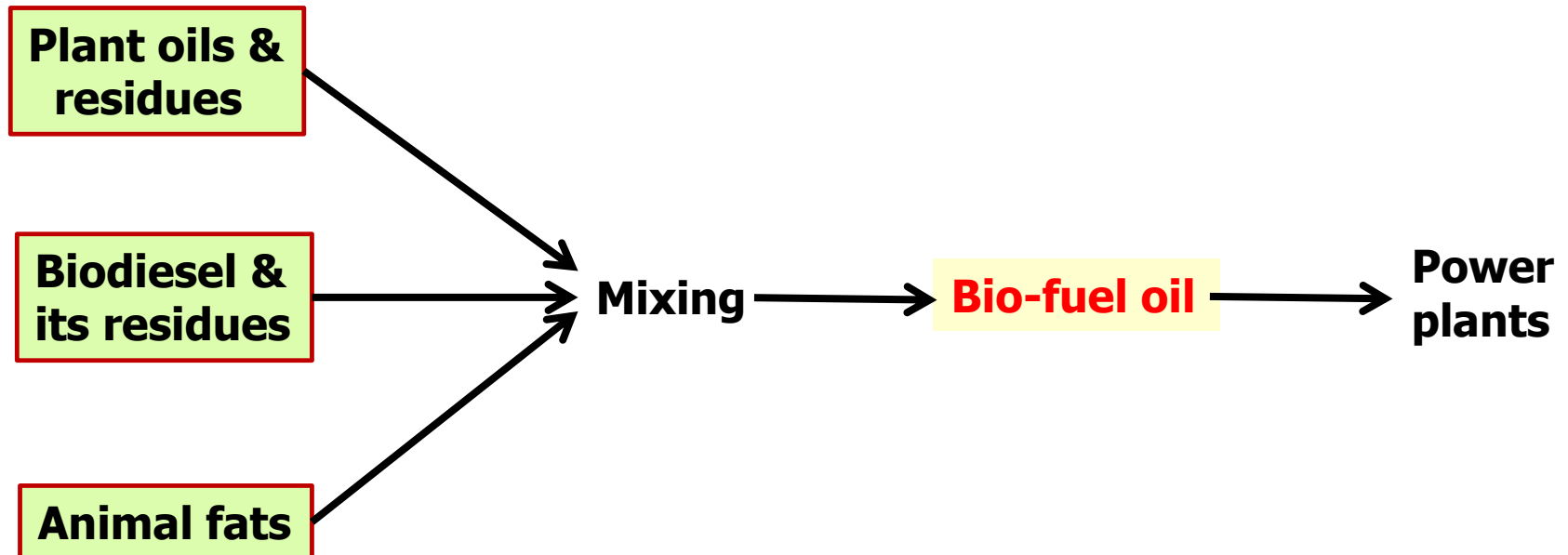
# Bio-Power by Fuel type

(KNREC, 2017)



# Bio-fuel Oil for Power

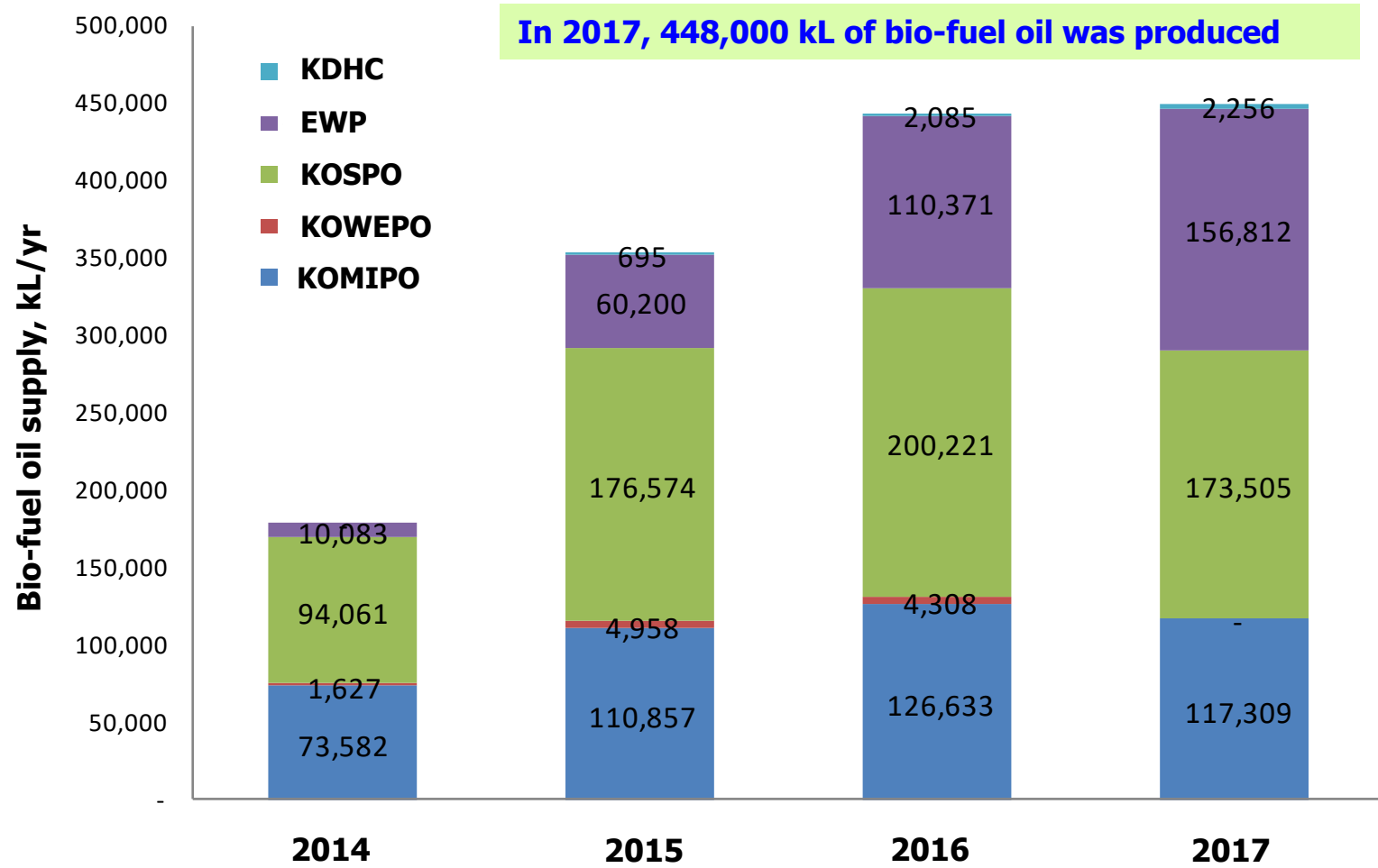
## Major feedstocks



# Standards for Bio-fuel Oil

| Parameter                                     |    | National Standards |
|-----------------------------------------------|----|--------------------|
| Flash point, °C                               |    | $70 \leq$          |
| Kinematic viscosity, 40°C, mm <sup>2</sup> /s |    | 20-100             |
| Residues, wt%                                 |    | $\leq 10$          |
| Sulfur, wt%                                   |    | $\leq 0.1$         |
| Ash, wt%                                      |    | $\leq 0.10$        |
| Copper corrosion, 50°C, 3h                    |    | $\leq 1b$          |
| Pour point, °C                                |    | $\leq 27.5$        |
| Density 15°C, kg/m <sup>3</sup>               |    | $\leq 991$         |
| Water, wt%                                    |    | $\leq 0.20$        |
| TAN, mg KOH/kg                                |    | $\leq 25$          |
| Alkali metal<br>(mg/kg)                       | Na | $\leq 70$          |
|                                               | Ca | $\leq 30$          |
|                                               | K  | $\leq 70$          |
| Iodine value (g/100g)                         |    | $\leq 120$         |
| Nitrogen, wt%                                 |    | $\leq 0.3$         |
| Vanadium, mg/kg                               |    | $\leq 50$          |
| Gross heating value, kcal/kg                  |    | $9,000 \leq$       |
| Net heating value, kcal/kg                    |    | -                  |
| Water+residue, vol %                          |    | $\leq 0.5$         |

# Bio-fuel Oil Use in Korea



# Current Status of Liquid Biofuels in Korea

- **B3 is mandatory effective from 2018**
- **After 5 year demonstration supply of bio-fuel oil, its use in power sector has been effective from March 2019.**

# Thank You!