Biomass is a substitute for coal: opportunity in Asia

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For WBA

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Conclusion

Opportunity is there

Coal must be replaced to renewables as soon as possible

Statistics

Japan population – 122million

Japan market – 10million tons of biomass within 2-3years and still growing!

Two serious issues

01

Decarbonizing power generation

02

Decarbonizing heavy industry

Decarbonizing options

Power industry – solar and windmill

Heavy industry – only biomass

Steel maker

The heaviest user of coal in Japan

Non-treated biomass, or white pellet is low in heat value for them

Cokes in blast furnace process needs torrefaction biomass as their replacement

Japan energy mix 2030

Energy source	Ambitious target for 2030 revised in 2021	Previous target for 2030
Renewables	36 – 38%	22 – 24%
Hydrogen-ammonia	1%	None
Nuclear	20 – 22%	20 – 22%
LNG	20%	27%
Coal	19%	26%
Oil	2%	3%

How to reduce coal consumption

Decarbonization – 2050

46% reduction of coal consumption – 2030

The heavy industry is much more serious than the power industry for making themselves renewable!

Torrefaction facility on commercial scale needs to be established soon

None of commercial scaled facility running

Torrefaction technology – discussed for a last ten years

How to make torrefaction facility successful?

Realize commercial scaled production – 100,000tons per year and over

Realize lower cost of production – making torrefied biomass competitive with non-treated biomass

Why does Japan need torrefaction biomass much more seriously than Europe?

46% reduction of coal consumption by 2030 – too soon to come without doing anything

Heavy industry has no other option than biomass for making themselves renewable

Hydrogen and ammonia

They are not tomorrow's renewables – maybe 5 to 7 years later

Torrefaction biomass will be an ideal and intermediate solution before hydrogen and ammonia will come

Torrefaction biomass will continue to share the market even after hydrogen and ammonia will come

Is there biomass feedstock available for future growing demand? – yes!

Biomass source	Feedstock example	Remarks
Wood based	Wood Old olive oil tree Old almond tree	
Agricultural waste	Flax straw Sugarcane bagasse Corn stalk	Issue : How to cope with strong chemicals – sodium, potassium, chlorine and ash
Energy crop	Sorghum Switchgrass Miscanthus Elephant grass	Issue : How to cope with strong chemicals – sodium, potassium, chlorine and ash