

Policy driving and financing demand of waste resource recovery and biomass energy project

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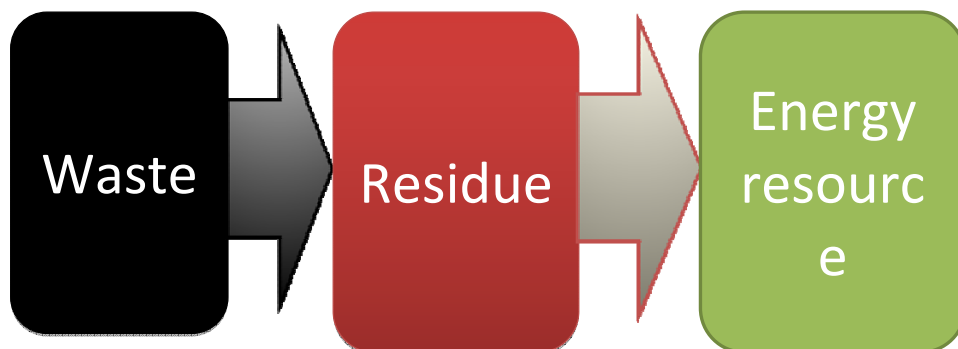
Content

- **Overview of waste resource**
- **Incentive policy in China**
- **Effect of incentive policy**
- **Development trend and financing demand**

Energy type of waste recovery

- Agriculture and forest residue
- Agriculture and forest processing residue
- Livestock excrement
- Industry organic waste water
- MSW
- Municipal waste water

Conception transformation of waste



Without waste resource, the resource is misplaced.
----saying from one MSW power plant

Incentive policy of agriculture and forest residue generation power

- The electricity grid should purchase all electricity from biomass power plant
- Implementing the added tariff for renewable energy (2Yuan/MWh)
- Feed-in tariff: the electricity price of coal power plant adds to 250 Yuan/MWh, which is added 100 Yuan/MWh as the temporary subsidy

Incentive policy of agriculture and forest residue energy utilization

- Supported type: biomass gasification, carbonization, and biomass pellet
- Incentive policy: the government will give bonus of 100-150 Yuan/ton for the product or feedstock from biomass energy utilization
- Supported scale: about 1 billion Yuan every year

Incentive policy of biogas utilization

- The electricity purchased with feed-in tariff
- The central and provincial government provided national fund for household biogas digester.
- The central and provincial government provided national fund for biogas project of livestock husbandry.
- There was special local fund for biogas project in some province

Incentive policy of MSW power generation

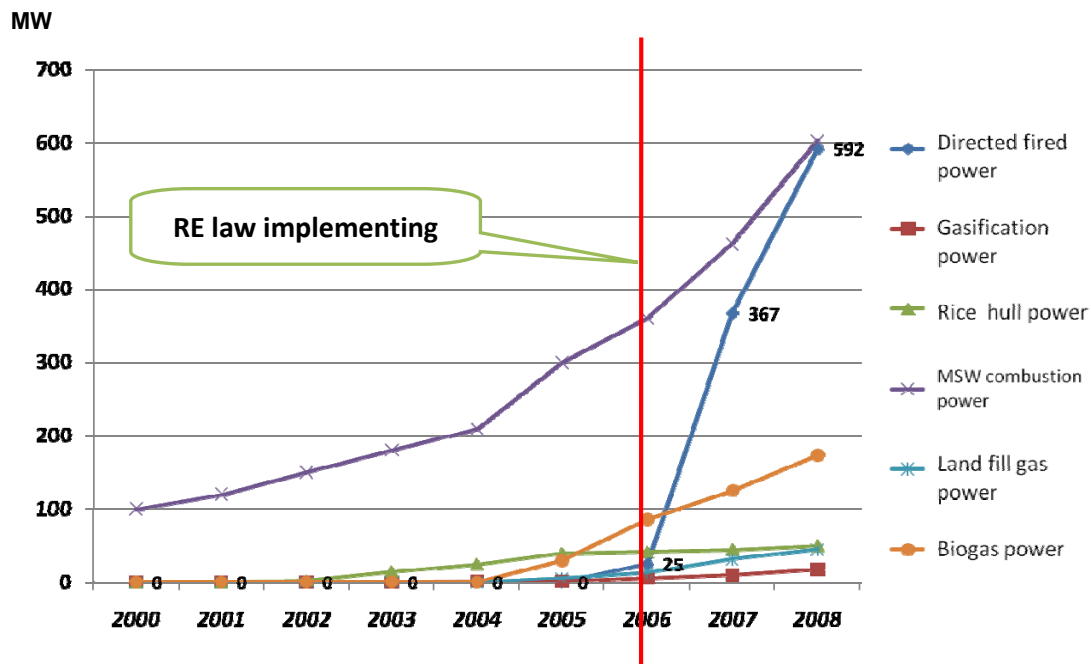
- All electricity purchased in grid
- Feed-in tariff
- Obstacle :the project of MSW power plant using fluidized-bed boilers cannot attain the subsidy because lacking of supervision for co-fired coal quantity

Renewable energy feed-in tariff

From 1 Jan 2006 to 31 March 2008

- Accumulation amount of fund is 3.748 billion Yuan
- Accumulation amount of providing subsidy is 2.934 billion Yuan
- Subsidy for biomass tariff is 831 million Yuan

Policy driving effect



Disproof of policy driving

- Biomass co-fired generation power was a major power technology in developed country
- Because existing the measure problem for biomass co-fired, the incentive policy cannot support this technology, which limited the technology development.

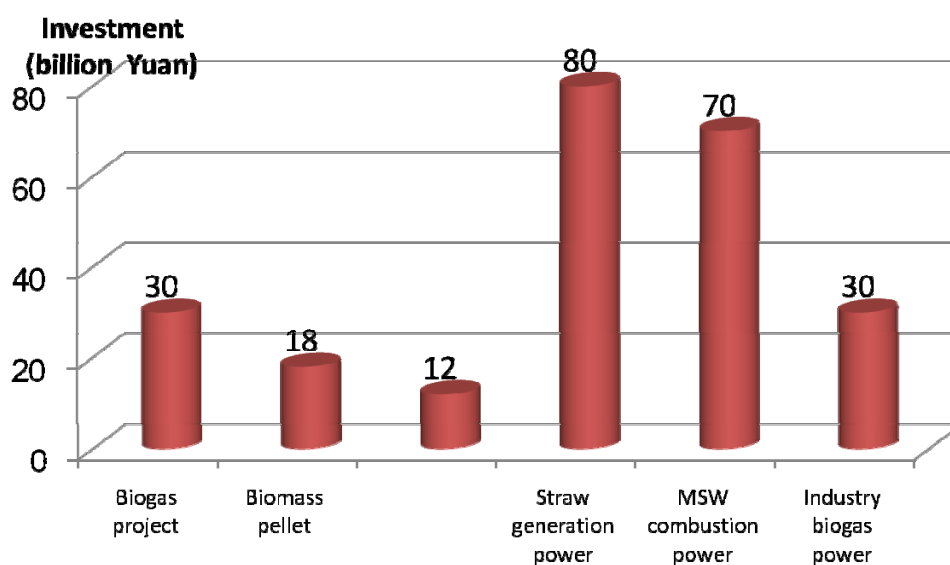
Financing

- Based condition: invest benefit
- Incentive principle: Renewable Energy Law
- Principle 1:national duty and obligation
- Principle 2: national promoting and market driving
- Virtual meaning of incentive policy: Incentive policy essence

Industry capacity development in 2020

Project type	Unit	Capacity
Biogas project	Set	10000
Straw gasification for supply gas	Set	10000
Biomass pellet	Mt	45
Straw generation power	GW	10
MSW combustion power	GW	8
Industry biogas power	GW	3
Bagasse power	GW	1.7

Financing demand in the future



Total investment: 240 billion Yuan

Investment key point

---Straw generation power

1. Construction capacity in 2020:
10 GW installed capacity
2. Investment:80 billion Yuan
3. Possible policy enacted: RPS

Investment key point

----livestock husbandry biogas

1. Construction capacity in 2020: 10000 project
2. Investment demand: 30 billion Yuan
3. Possible policy enacted :
Encourage establishing special investment company and operation with BOT mode
Feed-in tariff for generation power(in grid)
Investment subsidy(independence power or supply gas)

Investment key point ----MSW power

- 1. Construction capacity in 2020:
disposing 100 Mt MSW**
- 2. Investment demand: 70 billion Yuan**
- 3. Possible policy enacted :**

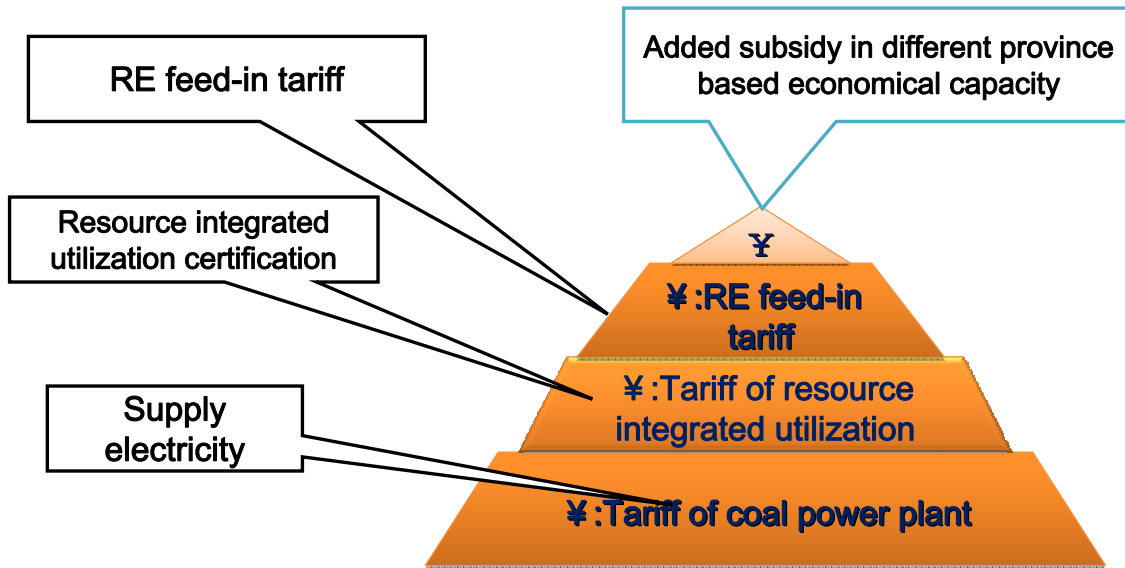
feed-in tariff

strictly pollution control regulation

Solving scheme of tariff for MSW power using fluidized-bed boilers

- Utilizing the certification system of existing resource
integrated utilization**
- Tariff will include tariff from coal power plant, tariff from
resource integrated utilization and RE feed-in tariff**
- In some economic developed region, added tariff can
be implemented through added tariff shared with whole
provincial grid**

Suggestion of tariff of MSW power



Thanks !