

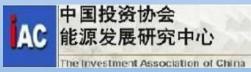
National Energy Research Center of Liquid Bio-fue National Energy R&D Center for Biomass



Technology, Equipment and Policy : Status Quo and Future for Biomass Heat, Power and Ethanol Industrial Development in China

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Background Policy and status quo of biomass resources utilized in industrial scale in China

CleanTech Company

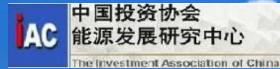
Biomass energy potential is 0.5 billion tons coe, and can reach up to 1 billion tons in the future

China is abundant in biomass resources, and also has relatively low cost labor force and transportation vehicles. However, biomass resources types, plantation structure and distribution differ greatly; geographical, climatic, humanity, economic factors are quite different in south and north, east and west.











Exploration and experience for biomass industrial scale use

CleanTech Company

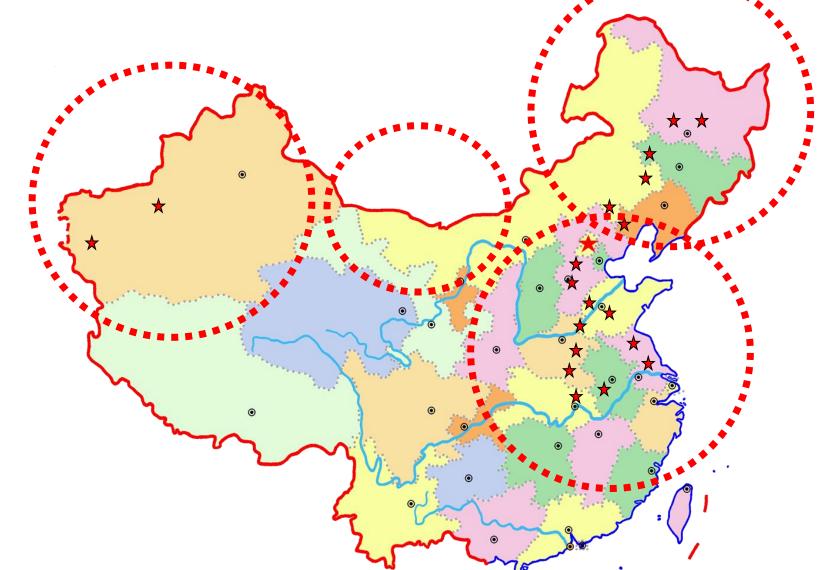
Biomass power generation

NBE Shanxian 1×30 MW biomass power generation project ran 8200 hours in 2007, generated power 220 GWh, and has been running smoothly.





This project is the first national biomass power generation project approved by NDRC, and has been put into operation on Dec. 1, 2006. It has found a new way to utilize renewable energy, and is a milestone in the history of biomass direct-fired power generation in China.



By the end of March 2014, NBE has about 40 biomass direct-fired power generation plants, with the total installed capacity of about 1000 MW. NBE has offered green power about 15000 GWh to our society, and consumed agro-forestry biomass about 20 million tons, and paid 6 billion Yuan for feedstock purchase from farmers, and reduced CO2 emission about 20 million tons. It is quite obvious that NBE has played an important role in environment protection, green energy and solving three problems of agriculture, countryside and farmers.

Biorefinery



Energy plant demonstration





Sandy land restoration-energy plant-cellulosic ethanolbiomass power-green heat and power















周期供水

充足供水↔





2003 年种植图の



2004年生长情况+



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Comprehensive utilization of ash in BPG power plant



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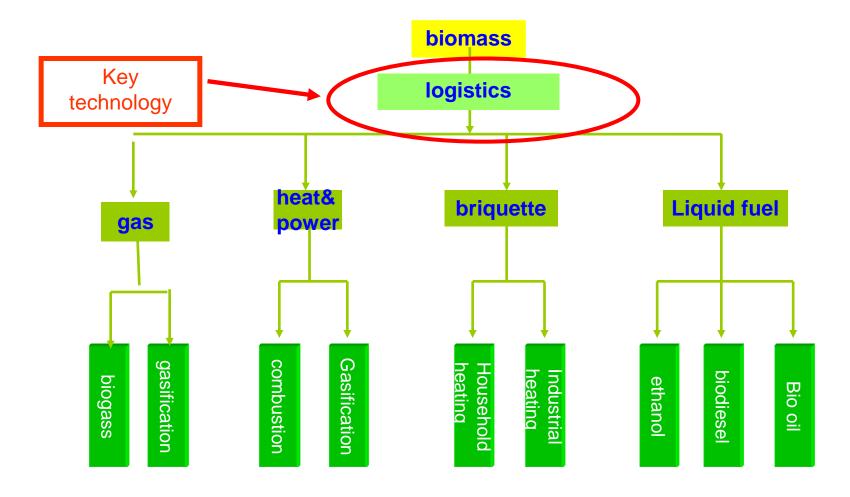
Pellets production machinery and boiler





Key technology and equipments development and application for agricultural and forestry biomass collection, storage and transportation





Key technology for biomass collection, processing and transportation is an important cut-point to low cost, standardized and industrial utilization of biomass

Biomass Collecting in China

>Wood chips and similar biomass resources: cotton straws, soybean straws, branches, wastes of lignum and other high density wood plants, which should be cut into pieces before feeing into combustion hearth.



Biomass Collecting

Yellow straws: maize straws, wheat straws, rice straws and other herbage crop straws, big bulk, light weight and low density, must be baled to the ideal size of bulks with certain weight before feeding in hearth burning in order to meet the need of the combustion heat and feeding quantity within certain period of time.





Biomass gathering and storage

Collecting equipments for gray straws- Cotton Stalk Combine Harvester











We have developed pick-up largesquare-baler and medium-square-baler. Have constructed demonstration base for wheat straw collection technology and equipments in Henan, Hebei and Shandong Province.







Demonstration base for biomass resources collection







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Research and Cooperation Opportunities

- 1、NON-food liquid fuel : technology, investment, feedstock
- 2、 Biomass CHP, Solar energy + biomass
- 3、Energy plant
- 4、 Biomass logistics equipments
- 5. Biomass pellets technology and equipments
- 6、Capability construction





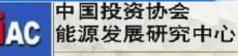
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Thank you !





The Investment Association of China



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