

# **On the Optimization of Policy and Legal Environment Promoting the Development and Utilization of Biomass Energy: China's Present Situation and Path Choice**

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# 1、 The present situation of the development and utilization of biomass energy in China

(1) the biomass power generation technologies are becoming mature generally.

Industrialization of biomass direct-fired power generation and gasified power generation has been realized preliminarily.

By the end of 2010, total installed capacity of a wide variety of biomass power generation is approx. 5.50 million KW;

(2) with the constant perfection of biogas technology, the biogas is more widely used in rural area, 2010's biogas utilization is approx. 14 billion m<sup>3</sup>;

(3) the technology of making liquid fuel with biomass has made a breakthrough.

- The fuel ethanol technology using cassava and other non-food crops as raw material has been initially applied and a demonstration plant producing 200,000-ton fuel ethanol annually has been established;
- biodiesel technology has accessed to a demonstration stage of industrialization.
- In 2010 utilization of well-developed fuel is approx. 3 million tons; utilization of bio-fuel ethanol is approx. 1.8 million tons; utilization of biodiesel is approx. 500,000 tons.

- Chart 1 is prepared on the basis of related data in *Eleventh Five-Year Plan of Renewable Energy Development* and *Twelfth Five-Year Plan of Renewable Energy Development*.

Item <sup>↗</sup>	2000 <sup>↗</sup>	2005 <sup>↗</sup>	2010 <sup>↗</sup>
Biomass power generated (10,000 kW) <sup>↗</sup>	170 <sup>↗</sup>	200 <sup>↗</sup>	550 <sup>↗</sup>
Biogas (100 million m <sup>3</sup> ) <sup>↗</sup>	35 <sup>↗</sup>	80 <sup>↗</sup>	140 <sup>↗</sup>
Including number of rural household using biogas (10,000) <sup>↗</sup>	850 <sup>↗</sup>	1800 <sup>↗</sup>	4000 <sup>↗</sup>
Fuel ethanol (10,000-ton) <sup>↗</sup>	↗	102 <sup>↗</sup>	180 <sup>↗</sup>
Biodiesel (10,000-ton) <sup>↗</sup>	↗	5 <sup>↗</sup>	50 <sup>↗</sup>
Total utilization (10,000-ton standard coal per annual) <sup>↗</sup>	12000 <sup>↗</sup>	16600 <sup>↗</sup>	28600 <sup>↗</sup>

Chart 1: Actual Utilization of Biomass Energy in China<sup>↗</sup>



- according to the estimate of China Energy Medium and Long-Term Development Strategy Research Mission, 2010's potential of biomass energy in total is 360-million-ton standard coal

(Unit: 10,000-ton standard coal)

Item	2010	2020	2030	2050
Existing potential of biomass resource available	29000	29000	29000	29000
New potential of biomass resource available	7000	23000	39000	61000
A wide variety of organic wastes newly increased	6000	17000	22000	2700
Yield increase of existing low-yield woodland	500	3000	7000	13700
Yield of marginal land newly developed	500	3000	10000	20000
Total potential of biomass energy	36000	52000	68000	89000

Chart 2: Estimate of China's Potential in Biomass Energy

## 2. The Influencing Factors of the Development and Utilization of China's Biomass Energy

### (1) Biomass Energy's Inherent Feature

- ★ the energy density is very low while their regionality and seasonality are very strong
- ★ it is hard to preprocess such biomass resource as straws or stalks due to their fiber structure, the gasification or liquefaction of biomass resource is a complicated process.

### (2) Shortage of Independent Innovation

### (3) Unperfected Motivation System

Item <sup>↵</sup>	Description and Technical Indexes <sup>↵</sup>	Departmental Status <sup>↵</sup>
Biomass direct-fired boiler <sup>↵</sup>	Used for supporting biomass direct-firing power-generating system, their technical characteristic and specification shall be applicable for biomass direct-fired boiler. <sup>↵</sup>	Technical Improvement <sup>↵</sup>
Biomass gas engine <sup>↵</sup>	Used for supporting biomass gasification power generation, their technical characteristic and specifications shall be applicable for biomass gasification power generation system. <sup>↵</sup>	R&D <sup>↵</sup>
Biomass gasification oil tar catalytic cracker <sup>↵</sup>	Used for cracking the oil tar produced in the process of biomass gasification to disposable gas available. <sup>↵</sup>	R&D <sup>↵</sup>
Complete equipment for producing biomass liquid fuel <sup>↵</sup>	Used for producing a wide variety of biomass liquid fuel. <sup>↵</sup>	R&D and project demonstration <sup>↵</sup>
Growing of energy plant <sup>↵</sup>	Used for providing non-food biomass raw material for production of various bio-fuels, including sugar sorghum, cassava, <u>Jatropha Curcas</u> , sugarcane, etc. <sup>↵</sup>	Project demonstration, application and dissemination <sup>↵</sup>
Breeding of energy plant <sup>↵</sup>	Used for breeding and fostering energy crops of high and stable yields suitable for being planted in desolated sands, deserts or saline-alkali soils and harmless to ecological environment. <sup>↵</sup>	R&D and project demonstration <sup>↵</sup>
High-efficient, wide temperature range biogas strain breeding <sup>↵</sup>	Used for improving the yield of biogas project and at the cryogenic temperature of biogas digester. <sup>↵</sup>	R&D <sup>↵</sup>

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Chart 3: Technology Development in the Field of Biomass <sup>↵</sup>



### 3. The Policy and Legal Environment Promoting the Development and Utilization of Biomass Energy in China

Policies and Legislations ↕	The Authorities and Time of Issuance↕	↕
<i>Twelfth Five-Year Plan for Developing Renewable Energy</i> ↕	National Energy Administration↕	↕
<i>Opinions on Encouraging and Guiding Nongovernmental Capital to Further Expand the Investment in Energy Field</i> ↕	National Energy Administration↕	↕
Shrub Energy Forest Fostering and Utilizing Guide and Chinese Soapberry Fruit Sustainable Fostering Guide ↕	State Forestry Administration ↕	↕
<i>Administrative Measures on Major Demonstration Project of National Energy Science and Technology</i> ↕	National Energy Administration↕	↕
Notification on Further Strengthening the Work Energy Technology and Equipment Quality Management↕	National Energy Administration↕	↕



<i>Interim Procedures for Managing Additional Subsidy Fund for Electrovalence of Power Generated with Renewable Energy</i> <sup>↵</sup>	The Ministry of Finance, National Commission of Development and Reform, and National Energy Administration <sup>↵</sup>	↵
<i>National Twelfth Five-Year (2011-2015) Plan for Energy Science and Technology</i> <sup>↵</sup>	National Energy Administration <sup>↵</sup>	↵
<i>Interim Procedure on Collecting, Using and Managing Renewable Energy Development Fund</i> <sup>↵</sup>	The Ministry of Finance, National Commission of Development and Reform, and National Energy Administration <sup>↵</sup>	↵
<i>Interim Procedures for Managing Technologies of Green Energy Source Pilot Counties Construction</i> <sup>↵</sup>	The Ministry of Finance, National Energy Administration and the Ministry of Agriculture (2011-11-21) <sup>↵</sup>	↵
<i>Check and Acceptance Measure on Forest Bio-Energy Material Base</i> <sup>↵</sup>	State Forestry Administration <sup>↵</sup>	↵
<i>Interim Procedures for Managing Subsidy Fund for Green Energy Source Pilot Counties Construction</i> <sup>↵</sup>	The Ministry of Finance, National Energy Administration and the Ministry of Agriculture <sup>↵</sup>	↵
<i>Renewable Energy Law of the People's Republic of China (Amendment)</i> <sup>↵</sup>	Standing Committee of the National People's Congress (2009-12-26) <sup>↵</sup>	↵

Chart: The polices related to biomass energy enacted by China National Energy Administration and other authorities since the amendment of *Renewable Energy Law of the People's Republic of China* in December 2009<sup>↵</sup>

## 4. The Path to Optimizing the Policy and Legal Environment Promoting China's Biomass Energy Development and Utilization

- (1) Establishing the Developmental Mode of Driving by Technological Innovation
- (2) Taking the Policy Demand of Biomass Energy Industrial Chain into Full Account
  - Giving full play to incentive of intellectual property system and maintaining technical supply of biomass energy industrialization.
  - Expediting standardization of biomass energy and promoting market access of biomass energy.
  - Establishing and perfecting biomass energy product procuring, allocating and distributing system.

### (3) Building and Perfecting Multichannel Input Mechanism and Multilevel Financial and Tax Support Mechanism

- Guiding social capital into biomass energy industry, building special fund for industrial growth and multichannel mechanism of governmental financial input, social capital and business capital input.
- tax incentive
- guiding financial institutions to establish a financing control system suitable for the characteristic of biomass energy industry



**Thank You !**