

Recommendations for green development of motor biofuel industry in China: A review

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Abstract: Motor biofuel is one kind of clean and sustainable fuel extracted from living organisms or obtained by the transformation of organisms, which can be used to replace fossil fuels. Nowadays, motor biofuel is an important direction for the development and utilization of renewable energy. More attention has been given to the development and promotion of motor biofuel and relative technologies all over the world. This research introduced the history of motor biofuel, the classification of motor biofuel as well as the strategies and policies made domestically and internationally in order to promote the development of motor biofuel, and also pointed out some of the urgent problems faced during the development of motor biofuels and put forward some suggestions for the future development of motor biofuel in China.

Keywords: green development, motor biofuel, biodiesel, bioethanol, emission, renewable energy replacement

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1 Introduction

The automotive industry is the driving force to promote economic development and is also the benchmark of the national economy and scientific research strength. The automotive industry of China has developed rapidly in the past few decades. The automobile production and sales of China were 25.72 million and 25.77 million in 2019, which decreased by 7.50% and 8.20% respectively when compared with 2018 (the date from Automobile Industry Association). Many social problems occurred due to the rapid development of the automobile industry, such as the shortage of energy, air pollution, noise pollution, traffic congestion, and public security. Fog and haze weather occurred frequently in large and medium cities since 2013 as a result of air pollution^[1].

Green, renewable alternative fuels for automobile have become more and more important as the shortage of fossil resources has increased, the crude oil price increased, and serious environmental pollution^[2]. The automobile using renewable energy sources as fuel is one of the most vital direction for the future development of

automobile technology and also the best way to solve the above societal problem.

Fuel as the power source of the automobile is the most basic part of the entire automobile industry. Motor biofuel can replace gasoline and diesel as vehicle fuel, which is helpful for controlling the greenhouse effect, alleviating air pollution, and solving the energy crisis. The development cycle, cost, conversion rate, technology stability, and economic application of motor biofuel will affect the promotion of biofuel vehicles^[3].

The motor biofuel is in the early stages of industrial development as there are countless problems such as difficulty in collecting raw material, the immaturity of the technology, imperfect subsidy policy and immature market environment. This article comprehensively analyzed the development status and existing problem of motor biofuel and the measures taken globally to promote the development of motor biofuel, as well as putting forward some recommendations for the development of the motor biofuel and the industry in China.

2 Motor biofuel

2.1 Conception of motor biofuel

Motor biofuel was one type of sustainable and renewable fuel that can be extracted from organisms or obtained by transforming organisms, which can be used as an alternative fuel instead of fossil fuels^[3]. Nowadays, bioethanol and biodiesel are the main motor biofuel used^[4-6].

2.2 Histories of motor biofuel

Motor biofuel production began in the late 19th century when bioethanol was extracted from corn. Motor biofuel was regarded as a viable fuel for automobiles until the 1940s. However, the reduction of petroleum and other fossil fuel price hampered the

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development of motor biofuel^[3,7]. Renewable energy was actively developed globally due to the energy crisis and worldwide environmental pollution since the 1970s when the production of biofuel for transport increased. Motor biofuel caused widespread concern by the automotive consumers and agricultural countries as motor biofuels can be obtained by the utilization of agricultural and forestry waste. Motor biofuel is one of the most ideal alternative fuels for fossil fuel. Brazil, the United States of America (USA), and the European Union (EU) are at the forefront of the development of motor biofuel, providing abundant experience for the development of motor biofuel. The fastest growth of motor biofuel production occurred over the last 10 years, supported by the government and driven by energy security concerns^[8].

2.3 Significance of motor biofuel

Motor biofuel was the cornerstone energy for future vehicles as it can be used to replace fossil fuel. The combustion of ethanol and diesel (20% ethanol and 80% diesel) reduced 62% of CO emissions and 24% of NO_x emissions^[9]. Particulate matter (PM) emissions can be reduced by 20%-40% with the combustion of diesel and ethanol blend^[10,11]. The combustion of biodiesel and diesel reduced up to 20%-50% of CO emissions, 50%-60% HC emissions, but increased NO_x emissions by 13%^[12]. When using biodiesel in a heavy-duty diesel engine, PM emissions were decreased by 27%-43% and polycyclic aromatic hydrocarbons (PAHs) emissions were reduced by 47%^[13]. Therefore, the utilization of motor biofuel could reduce greenhouse gas emissions, alleviate environmental pollution, and achieve great environmental benefits. The development of motor biofuel can reduce the country's dependence on fossil energy, protect national energy security, and fossil fuel could be used for the national strategic demand. The development of motor biofuel will improve the energy structure and reach the purpose of energy-savings and emissions reduction.

The utilization of ethanol-gasoline can replace four million tons of gasoline every year in China, which was an ideal way to solve the energy crisis and the air pollution problem. The promotion of ethanol gasoline in China has not only partially replaced petroleum, but also solved the problem of straw treatment^[14,15]. Furthermore, as motor biofuel used agricultural, forestry, and industrial waste as raw materials, it is helpful in the management of urban waste and improving the health status of the town. Experts have evaluated that biofuel produced from the conversion of conventional agricultural waste resources would be able to supplement and eventually replace the need for combustion engine.

The safety and economic development of the motor biofuel industry has a significant influence on national energy consumption and the price of petroleum and other fossil fuel. It can also bring social benefits through the progress of the motor biofuel industry. Planting energy crops can promote the development and utilization of idle land, saline alkali soil, and improve the soil texture. Motor biofuel is being paid more attention as it can decrease the requirement for fossil fuel, alleviate environmental pollution, and promote the upgrading of the rural industry.

3 Classification of motor biofuel

3.1 Motor biofuel classified by fuel type

There are varieties of alternative fuels for automotive and considerable debate on how to classify them. Biodiesel, bioethanol, bio-based chemicals, and biogas were the four main kinds of motor biofuels^[16-18]. The classification of alternative fuels for vehicles according to fuel type was given in Table 1^[19-21].

Table 1 Classification of motor biofuel, status and bottleneck during the development of motor biofuel

Classification	Vehicle	Stage and bottleneck
Traditional biodiesel	Diesel automobile	BD20 has been achieved commercialization; raw material collection and production cost was high.
Coal based two methyl ether	Modified diesel automobile	Demonstration application stage; storage and transportation cost was high.
Traditional crop bioethanol	Gasoline automobile	E10 has been achieved commercialization; it was difficult for raw material collection, storage and transportation; the production cost was high.
Gas (liquefied petroleum gas and liquefied natural gas)	Gas vehicle, oil and gas mixed fuel vehicle	Commercialized; Less fuel supply network and storage difficulty.
Coal based methanol	Modified gasoline vehicle	Some areas were in application demonstration stage, such as Shanxi province; toxicity and corrosion.

3.1.1 Biodiesel

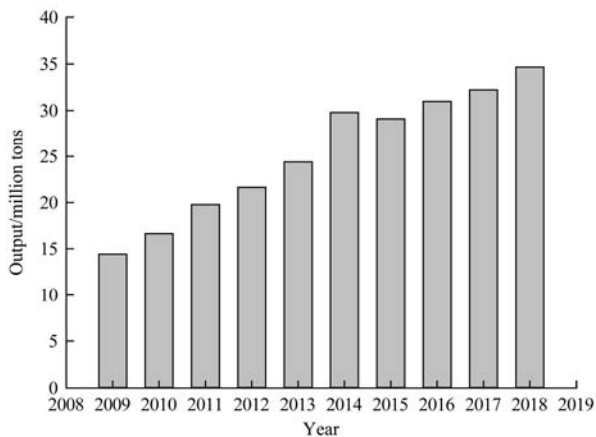
Biodiesel was composed of fatty acid methyl esters (or fatty acid ethyl esters) and glycerin, which were the production of transesterification (called methyl esterification). The raw materials used for biodiesel production were vegetable oil, waste edible oil, and methanol. Biodiesel was a type of liquid biofuel that was produced by transesterification removed glycerin and unreacted oil^[22,23]. The biodiesel industry developed quickly, and the output of biodiesel worldwide was shown linear growth during 2008-2018, as presented in Figure 1. Figure 2 showed the annual output and consumption of biodiesel from 2011-2017 in China, which indicated that biodiesel industry in China developed rapidly and biodiesel consumption was much more than that of output, meaning that there was still space and opportunity to develop the biodiesel industry in China.

The main raw materials for biodiesel production are soybean, peanut, rapeseed, yellow mustard and other herbal oil crops such as palm oil, olive oil, sunflower oil, and algae^[24]. The cost of biodiesel production was dependent on the cost during the collection of raw material.

3.1.2 Bioethanol

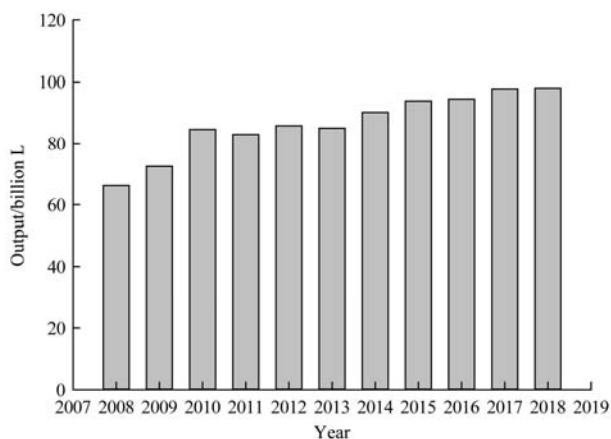
Bioethanol can be made from energy crops through chemical treatment, distillation, and dehydration. Adding bioethanol into gasoline can be used as engine fuel^[25]. The use of bioethanol was extremely important as it helps extend the supply of gasoline fuel. Bioethanol can be used to increase the oxygen content, as high-octane adjustable components, and also can be used to replace methyl tert butyl ether (MTBE) and ethyl tert butyl ether^[26,27]. The annual output of bioethanol globally from 2008-2018 was shown in Figure 3. The output of bioethanol was shown to be slightly decreased during 2010-2011 and 2012-2013, however, it increased from 2014. The bioethanol production of China from 2008-2018 was shown in Figure 4, where it was observed that production increased rapidly in the past few years.

The raw material used for bioethanol production is grain crops such as corn (in the USA), sugarcane (Brazil), sugar beet, wheat and non-grain biomass (such as cassava, sweet potato, sweet sorghum, and plant straw)^[28]. The United States Department of Energy pointed out that bioethanol from cellulose was a focused research project in the future. Using cellulose for bioethanol production has been actively explored globally^[29]. Bioethanol produced from cellulose faced some problems, such as cellulose was difficult to decompose. However, it is still the direction of the development of the world's biofuel industry to use cellulose for bioethanol production^[30-32].



Source: Datacenter of the Earth Policy Institute.

Figure 1 Biodiesel output of the world from 2008 to 2018



Source: Renewable fuels association analysis of public and private data sources

Figure 3 Annual output of bioethanol globally from 2008 to 2018

3.1.3 Bio-based chemicals

The raw materials used for ethyl tertiary butyl ether (ETBE) production were ethanol and isobutene. ETBE gasoline was produced by adding ethanol and isobutene into gasoline^[33,34]. M-ETBE was obtained by adding ethanol and isobutene into gasoline. M-ETBE was a type of mixture where the main components were ETBE. Bio-oil can be made from the decomposition of wood and straw splitting without oxygen and then rapid condensation at the temperature of 500-600°C^[35,36]. Adding a certain volume ratio or mass ratio of industrial bio-oil into diesel can use as engine fuel^[37].

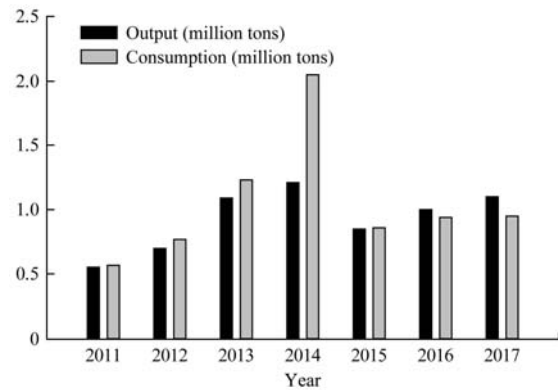
3.1.4 Biogas

Biogas was the mixture of different gases, composed primarily of methane (CH₄), carbon dioxide (CO₂) and small amounts of hydrogen sulfide (H₂S), moisture and siloxanes, which can be produced through the anaerobic digestion include food waste, animal manure and sewage sludge, dedicated green energy crops such as maize, grass, and crop wheat^[40]. Biogas was used for heating, cooking, and generating electricity. Biogas can be upgraded to biomethane by removing CO₂ and H₂S. Biomethane can also be used as fuel for the natural gas engine.

With the exception of the above biofuels, there were a number of liquid biofuels, but these have not yet reached the practical stage.

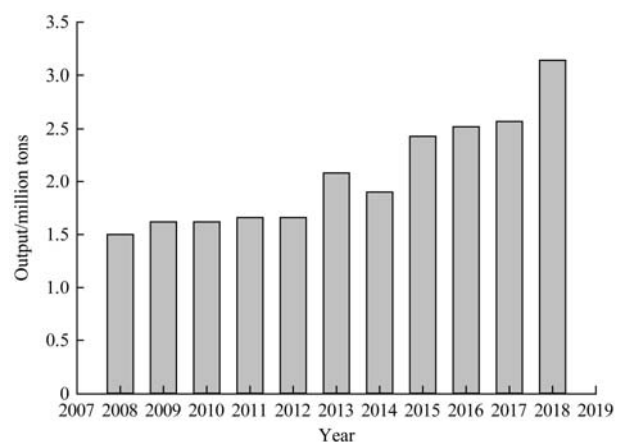
3.2 Motor biofuel classified by the development stage

Motor biofuels were commonly divided into first-generation, second-generation and third-generation biofuel depending on the



Source: Research and development prospects status and market forecast analysis of biodiesel in China (2018), China industry research network.

Figure 2 Annual output and consumption of biodiesel in China from 2011 to 2017



Source: Renewable fuels association analysis of public and private data sources.

Figure 4 Bioethanol production of China from 2008 to 2018

maturity of the technologies. Bioethanol, as a representative of the first-generation biofuel, has been developed to maturity and achieved commercialization. However, the first-generation motor biofuel faced with the problem of fighting for food with people, fighting for land with grain, and difficulties in large-scale development^[3,41].

The raw materials of the second-generation motor biofuel were non-grain crop and waste after pretreatment, enzymatic degradation, scarification, and the fermentation process. The main representatives of the second-generation motor biofuels were biosynthesis diesel, non-grain crop bioethanol, Fischer-Tropsch synthesis biofuel, cellulosic bioethanol, dimethyl ether, butanol, and methanol. The second-generation motor biofuel was the principal direction for motor biofuel nowadays. However, the second-generation motor biofuel technologies faced some issues in the large-scale application^[3,41].

The third-generation motor biofuel regards algae as the raw material and extracts the accumulated oil during the process of growth. Algae has many varieties, a wide distribution, strong adaptability, short growth period, high oil content, and do not compete for food with people, or fight for land with grain, which has led the third-generation motor biofuel to attract much more attention. The third-generation motor biofuels have not been commercialized and were still in the laboratory research stage. The main technical issues that the third-generation motor biofuel face was as follows: species selection from thousands of algae, quantity control during the

process of algae culturing, algae harvesting, oil extraction technology, and the high cost of extraction (which costs about

5.75 \$/L). The motor biofuel conversion technology roadmap is shown in Figure 5^[3,41].

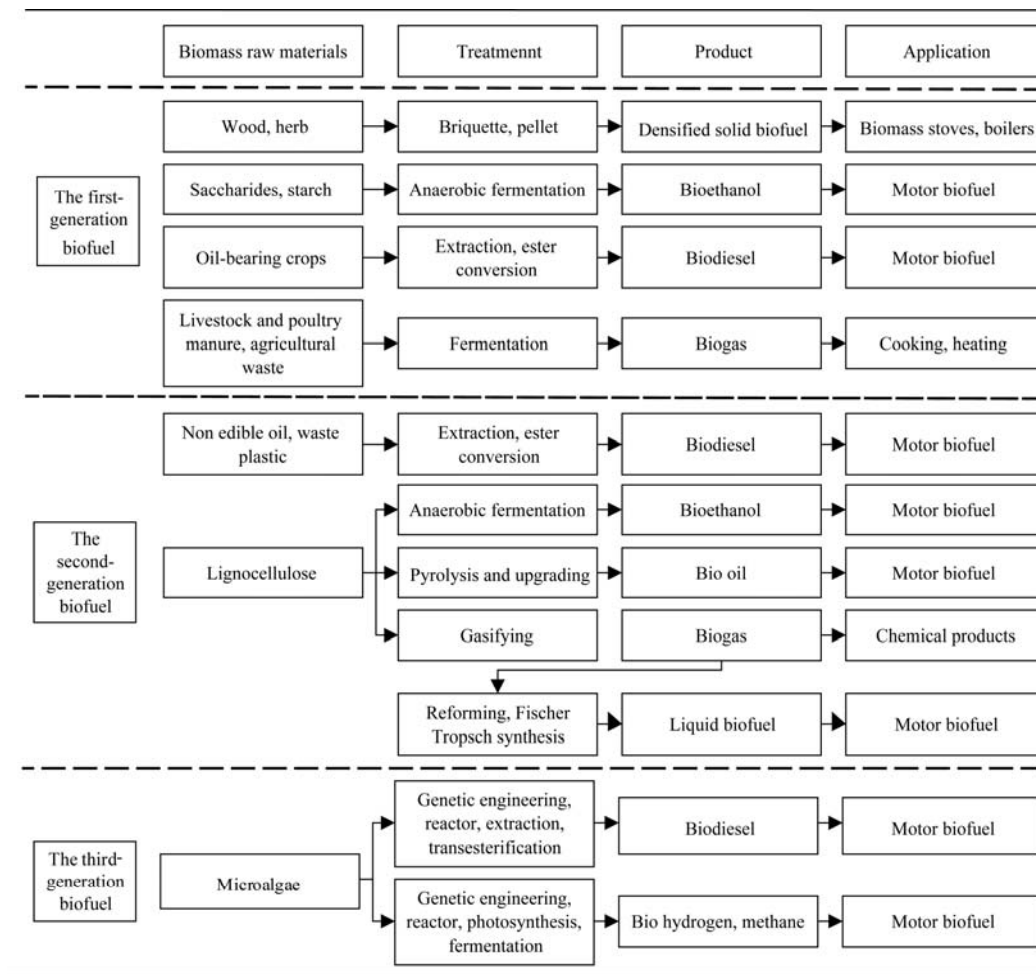


Figure 5 Roadmap for the conversion and utilization of moto biofuel

4 Policies and measures taken globally to promote the development of motor biofuel

Motor biofuel as one type of renewable and sustainable energy has been attracted wide interest all over the world, and various policies and measures have been taken with the intention to promote the development of motor biofuel.

In the USA, as the largest bioethanol production country, the raw material used for bioethanol production was corn. The USA was also the second-largest biodiesel producer in the world, mainly using soybeans as the unprocessed material. The consumption of renewable energy will reach 36 billion gallons until 2022 as stipulated in Energy Independence and Security Act of 2007, which accounts for 22% of the total vehicle fuel consumption^[42]. The government provided corresponding subsidies in order to encourage using corn for bioethanol production as stipulated by New Energy Bill promulgated in 2007. The United States Federal Government and the States have introduced corresponding policies and measures to promote the development of motor biofuel including the reduction of fuel tax, providing appropriate subsidy for motor biofuel production unit and individual, tax breaks for users who purchase motor biofuel vehicle, and vehicles that belong to state governments must use a certain proportion of motor biofuel^[43,44].

The development and utilization of bioethanol in Brazil were the most characteristic in the world. Bioethanol Project was

implemented in Brazil since 1975. Brazil was the second-largest bioethanol production country. Sugarcane was the main raw material used for bioethanol production in Brazil^[45]. The Brazilian government required that fuel used for diesel engines must be blending with 2% biodiesel (volume ratio)^[46-48]. The annual production capacity of bioethanol in Brazil was about 25.69 million t (Date from Renewable Fuels Association of the USA).

The EU needed to import large quantities of diesel every year due to the shortage of diesel. Therefore, the EU has paid great attention to the development of biodiesel technology, and the EU was one of the earliest regions to promote biodiesel. The biodiesel output and consumption of the EU ranked first in the world. In order to decrease the reliance on energy importation, the EU had taken some measures to promote the development of biodiesel in the late 1980s and early 1990s, such as providing subsidy for the cultivation of energy crops and preferential treatment for bioenergy product^[44].

Since the 1990s, France has taken measures to encourage the development of biofuels such as reducing consumption tax and pollution tax for biofuel products^[41,49].

The main biofuel used in Germany is biodiesel. Measures had been taken by the German government to promote the development of motor biofuel was to reduce the mineral oil tax and environmental tax. Since 2002, biodiesel fuel production in Germany has become greater than in France. The biodiesel fuel

production of Germany was ranked number one in 2008, followed by France and Italy^[45,46].

Sweden introduced CO emission tax and ultra-low sulfur diesel in the 1990s. The government of Sweden tried to reduce their dependence on fossil energy and looked forward to environmentally friendly products according to their energy characteristics^[44,50].

The EU converted ethanol into ethyl tert butyl ether (as a component of blended gasoline)^[51]. The European Commission proposed that promoting the development of the second-generation motor biofuel and bio-hybrid technology in the European Strategic Energy Technology Plan, which was published in 2007. The main raw materials used for biodiesel production in the EU were rapeseed oil, soybean oil, palm oil, and recycling plant/animal oil. Member states of the EU should increase their proportion of biodiesel year by year and reach 20% in 2020^[52]. The EU has taken measures to make the price of biodiesel lower than that of diesel by reducing fuel tax and commodity tax. In addition, the EU has encouraged the planting of non-edible oil crops and awarded the appropriate subsidy. Large scale automobile manufacturer was also cooperating to promote the development of biodiesel industry.

India published its National Biofuel Policy, which provided that 10% of bioethanol (volume ratio) should be added in the fuel for transport vehicles^[53].

In order to promote the development of producing bioethanol from cellulose, the Japanese government issued a New National Energy Strategy and the Strategy of Comprehensive Approach^[54].

South Korea has implemented CO₂ emission trading since 2013 through the use of M-ETBE for CO₂ emission right^[55].

The Australians used butter, palm oil, and recovered oil for biodiesel production. The price of raw material was relatively low, which can bring considerable economic benefit^[56,57].

Canadian decomposed cellulose from corn straw to surge treated by enzyme and then produced bioethanol through the fermentation process. In addition, the Philippines, Mexico, and other countries were also actively promoting the development of their own motor biofuel industry^[58].

In order to encourage the development of biofuel, the Chinese government has promulgated the Financial Management of Flexibility Subsidy for bioethanol and Notice on the Adjustment of Tax policy for Modified Bioethanol Production Enterprises^[59]. China developed a national standard for biofuel in 2010, which was known as the Chinese National Standard (GB18351-2001, Ethanol Gasoline for Motor Vehicles)^[60]. Unleaded gasoline was disabled and gasoline with 10% ethanol (volume ratio) was promoted in 27 provinces such as Heilongjiang, Jilin, Liaoning, Henan, Anhui, Hebei, Shandong, Jiangsu, and Hubei^[61]. The National Development and Reform Commission pointed out that China had already achieved a production capacity of 10 million t of ethanol-gasoline each year and ethanol-gasoline consumption accounted for 20% of the domestic gasoline consumption. China became the third-largest ethanol-gasoline production country^[62]. In order to promote the development of biodiesel, the Chinese government released nationwide standards for biodiesel such as the Biodiesel Blend Stock (BD100) for Diesel Engine Fuels in 2007 and Biodiesel Fuel Blend (B5) in 2014^[63]. Biodiesel fuel used in China were a mixture of diesel and 5%-20% biodiesel. Another policy taken in China to promote the development of biodiesel was value-added tax rebate.

5 Problems faced during the development of motor biofuel

There are few problems faced with the development of motor biofuel, which affect the large-scale application of motor biofuels.

(1) It fights for food with humans and fights land with food. Data from the Food and Agriculture Organization of the United Nation have shown that the increasing rate of world grain output was lower than the grain demand growth rate. Therefore, world grain stocks have declined year by year. World grain stock was 405 million t in 2008, which can only maintain a cancellation fee for 57 d^[64]. The reason was the growth in the global population, the waste of food, and another very important reason was that part of the grain used for biofuel production. Converting food to energy will affect food security, causing food prices to rise, famine, riot and conflict between regions and nations.

(2) Technology using grain to produce motor biofuel was not mature. There has been no breakthrough in key technologies for motor biofuel production. The development of motor biofuel still faced lots of problems such as the collection and transportation of biomass raw material, purification, transportation, and storage of biofuel production.

(3) The development of biofuel will affect the ecological environment, bringing irreversible change that will cause the over development and utilization of resources, and affect the sustainable development of the ecology and environment.

Smith concluded that N₂O emissions during the planting process of rapeseed and corn were three times greater than that of estimated. This N₂O was mainly caused by the utilization of nitrogen fertilizer. The atmosphere destroying the capacity of N₂O was about 300 times greater than that of CO₂^[65]. The destruction of the atmosphere caused by burning corn bioethanol was 1.5 times greater than that caused by gasoline and the destruction of the atmosphere caused by burning rapeseed biodiesel was 1.7 times greater than that caused by diesel^[65].

The development of motor biofuel had increased greenhouse gas emissions in other ways. The production of the biofuel raw materials occupied a large amount of land, which will destroy the Amazon rainforest, the Atlantic tropical rainforest, grasslands, and woodland. The rapidly expanding palm tree planting areas in Southeast Asia have led to tropical rainforest destruction. Palm tree planting areas in Malaysia have increased from 64.2 thousand hm² in 1975 to 400 hm². Eighty percent of the cut rainforest land was used to grow palm trees^[66]. The reduction of tropical rain forest not only destroyed the biodiversity but also accelerated the pace of global warming and brought disastrous consequences. In Brazil, using sugarcane as the raw material to produce bioethanol has resulted in the sugarcane planting area being increased year by year, and a large number of grasslands and forest land have been destroyed to plant sugarcane.

Destroying forest, wetland, grassland and other natural ecological regions to plant motor biofuel raw materials has led to the change of the carbon content in soil, which was sufficient to offset the reduction of greenhouse gas emissions by burning biofuel. Scientists discovered that, if all the factors of raw material cultivation and production were fully considered, CO₂ emissions from biofuel burning was 2-8 times higher than that of fossil fuel burning. It cost 319 years to repay the debt of CO₂ if the Amazon rainforest is deforested to plant soybean or sugarcane for motor biofuel production^[67]. Furthermore, the motor biofuel production process required a large amount of water, so will place greater

pressure on the shortage of water resources.

According to the above views, much more researches should be done with motor biofuel, especially the Life Cycle Assessment of motor biofuel.

(4) The cost of motor biofuel production was high, and the cost of the input-output ratio was not ideal. Motor biofuel cannot completely replace fossil fuel due to the high cost and disadvantage in quality and technology. Additionally, the scale and market still need to be strengthened. David and Tad^[68] found that the energy input and output ratio of soybean biodiesel fuel was 1.27: 1, and the energy input and output ratio of sunflower biodiesel fuel was 2.18:1. The same situation was also found in bioethanol production using corn as the raw material.

(5) Motor biofuel production capacity was restricted. Traditional motor biofuel production was difficult in having a magnitude breakthrough due to the raw material sources. Bioethanol production in the USA was about 57 billion L/a, even if fully liberalized, the bioethanol production capacity of the USA can meet only 6% of the transportation fuel demand. However, it consumed 139 million t of corn, almost half of the total corn production of the USA in 2008^[69]. The USA government planned the annual output of bioethanol reached 132.5 billion L until 2017. If only using corn as the raw material, it needs 318 million t^[70]. This meant that in order to meet the bioethanol demand for corn, the annual yield of corn must continue to increase. In order to consume the stale grain that could not be utilized as a food staple, the Chinese government launched several bioethanol projects. However, the stale grain could not meet the demand for bioethanol production as the scale of the bioethanol production enterprise increased. Bioethanol production enterprises started to use new grain for bioethanol production.

(6) The acceptability of motor biofuel was not high despite the fact that motor biofuels are promoted globally. Motor biofuel production enterprises, employees, and researchers should seriously consider the issue of whether the motor biofuel industry will move into fluctuation development after rapid development.

6 Recommendations for motor biofuel development in China

The motor biofuel industry was a huge industrial system with a broad market and prospects for its development. In order to promote the development of biofuel, a long-term development plan for renewable energy pointed out that biofuel will replace 10 million t of fossil fuels by 2020. The key factors that influence motor biofuel achieving large-scale development were ways to deal with problems introduced by production, market, and sales, especially the development of technical standards. The government should take steps to encourage investment, make, price, write tax policies, and provide sale channels for motor biofuel. Large energy companies should play a lead role in promoting the development of motor biofuel.

6.1 Survey and evaluation of land resources

The basis of motor biofuel was adequate biomass resources. The government should survey and assess the land resources that are appropriate for planting sweet sorghum, cassava, jatropha, and other energy crops, then make plans for energy crops and oil plants.

6.2 Construction of non-grain motor biofuels demonstration projects

On the basis of analyzing the resources situation in China, it was necessary to construct bioethanol production demonstration projects using corn as the raw material in different provinces

including Shandong, Heilongjiang, Inner Mongolia, and Xinjiang, and construct Jatropha oil biodiesel fuel production demonstration projects in Sichuan, Guizhou, and Yunnan Provinces in China.

6.3 Completing the acquisition, circulation and standard system

PetroChina and Sinopec should establish non-grain biofuel acquisition, distribution, and sales networks. Non-grain biofuels that meet the quality standard can purchase by the network. Technical indicators and production lines for motor biofuel production are different due to the difference of raw material, therefore standards suited for these were faced with some problems, such as imperfect technical index system, not having a uniform standard for the process of design, and production control requirements.

6.4 Enhancing the research on motor biofuel production technology

There was still a considerable gap between the production system and the scale of energy crop planting, even though China became the third-largest bioethanol production country following the USA and Brazil. The government should take measures to support research on motor biofuel production technology and the industrialization of motor biofuel, such as the selection of biological resources, biofuel processing technology, and research on technology using cellulose to produce liquid fuel^[66,71,72]. The Ministry of Agriculture and Rural Affairs of the People's Republic of China and the State Forestry Administration of the People's Republic of China should encourage the breeding and promotion of energy crops and oil plants.

6.5 Improving the tax policy

It can be summarized that tax policies were helpful in promoting the development of the motor biofuel industry from the experience of the countries outside of China. Therefore, the following suggestions can be obtained:

- (1) Reduce and exempt different proportions of tax for biofuel production according to the proportion of biofuel fuel used.
- (2) Reduce and exempt motor biofuel production enterprises and vehicle production enterprises using motor biofuel.
- (3) Provide appropriate subsidies for farmers who plant oil crops and energy crops.
- (4) Improve the motor biofuel service industry and increase the investment in infrastructure.

6.6 Improving the market environment

The development of the motor biofuel industry requires a quality market environment. The government should take measures to initiate, encourage, and support enterprises to actively participate in the production of motor biofuels and to form a stable, open and fair market environment.

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