

## RESOURCE CONFLICTS ENERGY vs. FOOD: The case of China

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China has begun to test ethanol as bio-fuel and developed this fast since 2002. The technology has been mature, so that Heilongjiang, Jilin, Liaoning, Henan, Anhui etc. provinces have basically achieved that normal non-lead petro is replaced by ethanol fuel (Li, 2008:139). So far, China has become the third largest producer country of bio-fuel ethanol after Brazil, USA in terms of production and application (Fen *et al.*, 2010:8). In 2007, the cultivated areas of China used for bio-energy production occupied 0.5% of its total (Chen *et al.*, 2010:1498). The quantity of supply for ethanol fuel increased gradually from 2007 to 2009, the main materials used being old grains of reservation (Li, 2008). However, using these traditional food crops (corn and soybean) or cash crops (cane) for bio-energy will definitely exacerbate the food security.

The impact of bio-fuels on food security can be attributed to many dimensions. I will mainly discuss food security of China into two different levels: (1) land issues and (2) price issues between bio-fuels and food production.

About the price issues, wheat is one of China's three major varieties of grains, and its yield is third, only to rice and corn. In the late 90s, China had coped with an excess of wheat, thus, it had many old grains of reservation for using in the production of ethanol (Liu, 2006); and even now considerable stock of old grains of reservation remain (Grainnews, 2010). Hence, some scholars and researchers have confidence that the price of food grains of China will not increase above expectation (People's daily, 2008a). Nevertheless, from the long-term perspective, the development of wheat supply and demand is relatively in balance, but it tends to an eventual gap. Besides that, wheat is the basic food for Chinese urban residents, thus, the government has to keep the balance of quantity of wheat supply between food and bio-energy. For this concern, some scholars considered that it may be a temporary option to use old grains of reservation for development of bio-ethanol. (Liu, 2006)

Additionally, China has forbidden the use of food grains as resource for expanding production of ethanol fuel, and commenced strict control of food grains usage for industrial (non-food) use since 2007(Sinopec weekly,2011). Nevertheless, according to statistics of the National Food Authority, at the end of 2007, China's wheat prices had increased by 1.3%, corn prices increased by 12.7% from the previous year. However, compared with price increase rate of international markets, the price increase of food grains' in China is not significantly higher than in other countries (People's daily,2008a). For this reason, some scholars mentioned that it is hard to say that the price rising of food grains in China is directly impacted by production of bio-energy (Zhang, 2010).

From the land issues' perspective, "The Twelfth Five-Year Plan for National Economic and Social Development of the People's Republic China" proposed to "vigorously develop renewable energy and accelerate the development of biomass energy.....". According to the statistics, the percentage of total land for ethanol fuel and biodiesel has been enlarged progressively on the one hand(Chen *et al.*, 2010); the percentage of cultivated land on the other hand has been shrinking since 1997 (Zhang, 2007).

Guangxi Zhuang Autonomous Region of China is an example. It is the key site for producing ethanol. Sugar cane and cassava is the main plants for ethanol production. Its area of occupied land has increased significantly in 2007 as compared with 2000. The proportion of sugar cane and cassava plants of total cultivated lands is increased continuously (Chen *et al.*, 2010). Therefore, some scholars noticed that land use should take the sustainability of natural resources into account, due to the scarcity of land resources and limitation of agriculture and forestry land. (Wei, *et al.*, 2009)

Besides conflicts of price and land, the balance of nutritional elements is also a very important issue. Along with the rise of the second generation bio-energy, crop residues and other biomass are extracted from the soil, thus with improper fertilization that could easily result in imbalances of nutrient levels of soils and lead to the deterioration of the environment. In addition, some ecological problems also are caused by it, including loss of biodiversity. (Deng & Zhang, 2008)

About these issues mentioned above, China implemented several policies and plans for protecting cultivated land from expansion of bio-energy production: this to speed up the pace of reform of rural land resource allocation; to optimize agricultural land property rights system; and to effectively allocate land resources in rural areas (People's daily, 2013). The unsound property rights of China's cultivated land, and unclearly and instable contractual right of land, and so on, which are not conducive to the protection of cultivated land (Wang & Zhang, 2009). Cultivated

land is the basis for bio-energy plants and food plants, if it is ineffectively managed that would threaten both of them.

China tries to implement the development of marginal land and land reclamation policy, meanwhile, China has to manage and improve ecological environmental and quality of land as well (Ibid). For enhancing the feasible marginal land for developing bio-energy production, especially in China, government proposed that 'do not fight with people for food, do not fight with grains for land.....' (People's daily, 2008b). In terms of this, using marginal land is one of the main opinions. For example, the grass land is the typical case for using marginal land, China has 4.32km<sup>2</sup> grass land in which there has 3.24km<sup>2</sup> could be used(Chen *et al.*, 2009:843). Besides, China has considerable potentiality of non-food raw material resources for bio-energy every year, a large number of produced straw and scraps of agricultural and forest crops, agro-processing waste (liquid), animal manure are readily available non-food feedstock bio-energy.

Furthermore, government improves the subsidies in agriculture policy for improving the peasants' enthusiasm for growing grain (China's news, 2012). China's agricultural subsidies were relatively low for a long time, and some flaws remain in the specific operation. However, government raises the prices of agricultural products as well as to effectively control the prices of means of production for reducing the marginal cost of peasants (Wang & Zhang, 2009).

All in all, conflicts between of bio-energy and agricultural food in China are not that significant as compare to other counties; moreover, many Chinese scholars have faith in development of bio-energy in China, because they believe China at least has numerous non-food raw material resources and marginal lands / resources which could be used. In my opinion, with to the development of urbanization is accelerating continuously in these years, fewer peasants want to do cultivation, hence, the development of producing bio-energy productions could stimulate government to implement several welfare policies for peasants, which could motivate the peasants' enthusiasm as well as using the cultivated lands properly.

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