



China should not massively reclaim new farmland

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ABSTRACT

To protect farmland and ensure national food security and social stability, China implemented the Dynamic Balance of Total Farmland Area (DBTFA) policy in 1998. From 2000–2013, the amount of newly reclaimed land reached 2.47 million hectares. This massive reclaiming of farmland appeared to effectively halt the rapid loss of farmland in China. However, four aspects suggest that the DBTFA policy has become outdated and economically ineffective. First, bumper grain harvests and imports have provided China with an ample domestic food supply, which means it is no longer threatened by grain shortages; second, China does not have much land left suitable for farmland reclamation; third, the cost of land reclamation is very high; fourth, land abandonment is common in China. The massive amounts of newly reclaimed farmland have not been utilized effectively. Therefore, the key goal of the current farmland protection policy should be to protect high-quality farmland instead of reclaiming new farmland.

1. Introduction

As a populous country, China has always attached great importance to agriculture, and the amount of farmland continually increased over the centuries. However, at the end of the 1970s, Deng Xiaoping initiated a policy of reform and opening up, and China entered a new period of rapid industrialization and urbanization. China's urbanization rate increased from 17.6% in 1978–56.1% in 2015 (National Bureau of Statistics of China, 2016). In the meantime, the amount of farmland area decreased rapidly. China lost over 14.5 million hectares of farmland between 1979 and 1995 (Lichtenberg and Ding, 2008) and approximately 8.32 million hectares between 1996 and 2008 (Cheng et al., 2015). Urbanization, industrialization, and infrastructure needs appear to have been the major causes of this loss of farmland, especially in the rapidly industrializing coastal provinces (Lichtenberg and Ding, 2008). For example, Tan found that approximately 74% of all new urban land was converted from farmland in the Beijing-Tianjin-Hebei region between 1990 and 2000 (Tan et al., 2005). The rapid loss of farmland raises concerns for the Chinese government regarding its ability to continue feeding its growing population because land is the most important factor in agricultural production. Although China applied many administrative countermeasures to restrict the excessive conversion of farmland, the effects of these measures were not significant (Lichtenberg and Ding, 2008). In 1998, the well-known

farmland protection policy called the Dynamic Balance of Total Farmland Area (DBTFA) was implemented with the aim of maintaining the total area of farmland at the provincial level, even as rapid industrialization and urbanization continued to occur. The policy calls for farmland reclamations to equal farmland losses caused by industrialization and urbanization. According to official data, from 2000 to 2013, the amount of newly reclaimed land reached 2.47 million hectares (Ministry of Land and Resources of P. R. China (MLRC), 2016), accounting for 1.83 percent of the country's total farmland. It appears that this substantial quantity of reclaimed farmland halted the rapid loss of farmland. The Chinese government also believes that land reclamation is the most effective means to achieve the goal of dynamically balancing the total amount of farmland. However, the authors fear that the situation is not as positive as it seems. We also worry that the large quantity of reclaimed land may create a false sense of security and encourage the increased use of farmland for development and construction. Moreover, we believe that the DBTFA policy is outdated and economically ineffective. We strongly suggest that the Chinese government should stop implementing this policy and look for more innovative approaches to protect its farmland resources.

2. Evolution of the farmland protection system in China

As the farmland losses occurred, the Chinese government began to

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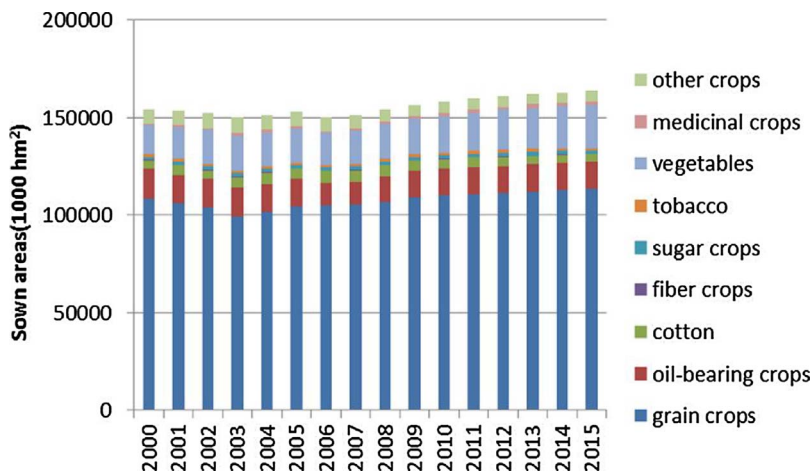


Fig. 1. Sown areas of farm crops in China from 2000 to 2015.

pay more attention to farmland protection. China's No.11 Central Document on Agriculture, the *Circular on Further Strengthening Land Management and Earnestly Protecting Farmland*, issued in 1997, mentioned the DBTFA for the first time. To strengthen its legal support, the government added this policy to the Land Administration Law in 1998, which clearly stipulates that the provincial governments should take measures to ensure that the total amount of farmland remains stable within their administrative areas. However, this policy was soon found to be impractical due to the huge farmland loss from the Grain-for-Green Program. In 1999, the Returning Farmland to Forest Program (RFFP) was implemented in three pilot provinces, Sichuan, Shaanxi, and Gansu, and it was expanded nationwide in 2002. In 2007, however, the Chinese government suspended the RFFP due to rapid farmland losses. Between 1999 and 2007, a total of 139 million mu (9.3 million hectares) of farmland was returned to forest or grassland. The upper reaches of the Yangtze River, the upper and middle reaches of the Yellow River, the region that is the source of Beijing and Tianjin's sandstorms, and other important catchment areas mainly located in the midwest region were the key construction areas under the RFFP. Thus, the rapid farmland losses due to the RFFP made the goals of the DBTFA impossible to achieve. Therefore, the DBTFA was adjusted to focus on balancing farmland losses due to construction with land supplementation (Song and Pijanowskib, 2014). Before 1998, the primary measure to protect farmland mainly relied on controlling the scale of farmland conversion to construction land, which seriously inhibited the demand for construction land, especially in urban areas, and resulted in large-scale illegal construction (Wang et al., 2009). Overall, the Chinese government did not effectively control the rapidly decreasing amount of farmland. To accomplish the goal of the DBTFA, the central and provincial governments strengthened their land reclamation efforts. The establishment of the Ministry of Land and Resources on April 8, 1998, has had great significance for land reclamation. At the beginning of 1999, the Ministry of Land and Resources issued a notice to establish pilot areas for land reclamation and consolidation, thus signifying that the government had systematically begun the process of land reclamation. Since then, the government has replaced farmers as the main force for land reclamation. In 2006, China set a "red line" to guarantee that the amount of farmland would never shrink below 1.8 billion mu (120 million hectares), which became the obligatory target of the DBTFA policy. According to the National Land Reclamation and Consolidation Plan, which was approved in 2003, the Land Consolidation Plan 2011–2015, which was approved in 2012, and the Land Consolidation Plan 2016–2020, which was approved in 2017, the supplemental goals for new farmland were 2.74 million hectares during the period 2000–2010, 1.60 million hectares from 2011 to 2015, and 1.33 million hectares from 2016 to 2020.

In general, the DBTFA policy has become the core of China's

farmland protection system, and at least on the surface, it has made significant progress in slowing the farmland losses. However, twenty years after its implementation, the problems with the policy have become increasingly serious. We believe that the DBTFA policy has become outdated and economically ineffective and that China should no longer engage in large-scale land reclamation to maintain a dynamic balance in the total farmland area.

3. Why should China no longer engage in large-scale land reclamation?

We have four main reasons to strongly object to the large-scale reclamation of farmland.

First, China's bumper grain harvests and imports provide an ample domestic food supply. The country has moved beyond the threat from grain shortages.

Since the founding of New China, especially since the economic reform and opening up to the world, the Chinese government has attached great importance to farmland infrastructure construction and improving the level of agricultural science and technology. Indeed, the country's overall agricultural production capacity has notably increased. China's total grain output reached 621.44 million tons in 2015, marking 12 years in a row that grain production increased. Meanwhile, the international market provides China an enormous amount of agricultural products, especially soybeans (Qiang et al., 2013; Fukase and Martin, 2016). In 2015, grain imports (including soybeans and dried cassava) increased to 123.78 million tons. The sum of domestic production and imports of grain reached 745.22 million tons in 2015, while per capita grain possession reached 542 kg, far above the global average (385 kg per capita) and the internationally accepted safety standard (400 kg per capita).

The country's national grain stocks have remained at high levels due to 12 years of bumper harvests and imports. In 2016, China's corn carryover stock is projected to reach more than 250 million metric tons, which is higher than the annual consumption.

It is expected that China's total grain output will continue to steadily increase. In recent years, the total sown areas of all farm crops have shown a slight growth trend (Fig. 1); meanwhile, the ratio of sown grain area has remained stable at approximately 68%. Stable area of sown grain essentially guarantees a continuous grain harvest. More importantly, the grain yield per unit has continued to increase. Sown grain area and grain yield per unit accounted for 35% and 47% of the grain output growth from 2003 to 2013, respectively (Li et al., 2016). Given China's strong support for grain production, it is expected that the sown grain area will remain stable and the grain yield per unit will continue to increase, which will ensure higher grain output. Cai's research indicates that China's total grain harvest will reach 714 million tons by

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