

Title: Food security and the protection of arable land in view of future demographic growth in China

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Abstract:

Studies have shown that the total surface area of arable land and the average surface area per person are decreasing steadily. Because of the effect of the policy that ensures the requisition-compensation that favours construction projects on arable land, the principal cause of the reduction of arable land will be the abandonment of cultivated land for ecological reasons. This surface area could be reduced to as little as 120 million acres, or an average surface area of 813 square metres per person in 2035. Moreover, food consumption per person and total demand will continue to grow in line with the growth of the population and increasing consumption. Food demand per person (fodder and corn included) will reach 400 to 410 kg in 2010, 420 to 435 kg in 2020 and 450 to 470 kg in 2033 when the population peaks. At the same time, total food demand for these years will reach 541 to 555 metric tonnes, 603 to 625 tonnes and 663 to 692 tonnes respectively. In 2020, the food production capacity based on the availability of 120 million acres of arable land should cover the needs of a population of 1,436 billion. In 2033, based on food consumption of 450 kg per person, the productivity of arable land in China available in the future should satisfy the needs of a record population of 1,473 billion. Limited arable land resources are an obstacle to a new increase in the available per capita quantity. If a surface area of 120 million acres of arable land cannot be guaranteed in the future, food security will be severely threatened.

Taking into account the existing relationship between arable land, food production and population, China's future food security must develop in the same way as food safety, meaning at both ends of the supply chain: food production capacity, which is limited by available arable land resources, and food consumption, which increases in line with population growth. At food demand level, the food security strategy for the medium to long-term development of the Chinese population must be based on the promotion of a reasonable level of consumption and the nutritional content of a meal that balances servings of meat and vegetables. As far as the nutritional value and the composition of meals are concerned, meat consumption is still too low in China and the daily servings of protein have not yet reached the standard set by the government. China should follow the Japanese model, which consists of developing both meat and vegetable food products in a balanced way. At food production capacity level, the implementation of measures known as "count on arable land to store up grain" (in other words, improve the general productivity of Chinese land resources as a whole) must become the strategy for arable land and food security to prepare for the medium to and long-term growth of the Chinese population. It is therefore necessary to: (1) apply the arable land preservation policy strictly, create national arable land protection areas; reinforce the "dynamic balance of all arable land", establish a "balanced requisition-compensation system for arable land", reinforce the control of land use, set up an "arable land reserve" policy if necessary; (2) make rational use of fallow land and continue making future plans for the land in order to optimise the use of land resources; (3) develop the construction of basic infrastructures for fields as well as the construction of basic fields in order to increase the output of land resources per square kilometre; (4) improve the organization of production by region and specialty in order to increase the efficiency of the general distribution of regional land resources; (5) consider the territory in its entirety, expand the origins of food products in order to increase the total productivity of all land

resources: farms in the mountains or hills, prairies, forest areas and their food and oil producing resources as well as fishing resources in all aquatic areas (sea and fresh water).