Key issues of land use in China and implications for policy making

Yansui Liu a,b,*, Fang Fang b,c, Yuheng Li a,b

a College of Resources Science and Technology, Beijing Normal University, Beijing 100875, China
b Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, Beijing 100101, China
c University of Chinese Academy of Sciences, Beijing 100049, China

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A B S T R A C T
The paper aims to comprehensively analyze key issues of current land use in China. It identifies the major land-use problems when China is undergoing rapid urbanization. Then, the paper interprets and assesses the related land-use policies: requisition-compensation balance of arable land, increasing vs. decreasing balance of urban-rural built land, reserved land system within land requisition, rural land consolidation and economical and intensive land use. The paper finds that current policies are targeting specific problems while being implemented in parallel. There is lacking a framework that incorporates all the policies. The paper finally indicates the current land-use challenges and proposes strategic land-use policy system to guide sustainable land use in the future.

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Introduction

Urbanization has been the defining global phenomenon during the past century. Particularly in the developing countries, urban population increase has been dramatically fast. In the period 1950–2005, annual urban population growth in Africa, Asia and Latin America have been 3.9%, 2.9% and 4% while that in Europe and North America are 1.2% and 1.9% respectively (UN, 2006). Between 2000 and 2030, the urban population in developing countries is expected to double, and entire built-up areas are projected to triple if current trends continue.1 In this process, various land-use problems emerged like arable land loss, land pollution and erosion, etc.

Generally, the conversion of land from its natural state to human use is the most permanent and often irreversible effect of human interaction with the natural environment (Jolly and Torrey, 1993). Socio-economic factors which captured the human-induced land conditions are dominating land-use change (Mitsuda and Ito, 2011; Gong et al., 2012). Being the largest developing country of major rural population, China has experienced fast transition from centrally-planned economy to market-oriented economy during past three decades ever since the reform and opening-up in 1978. Such transition was accompanied by rapid urbanization which has witnessed massive rural–urban migration and drastic loss of arable land (Gao et al., 2006; Liu et al., 2008, 2010a; Li, 2011; Long et al., 2012). Urbanization level in China has grown to 51.3%, with annual growth rate of 1% in the period 1978–2011, (National Bureau of Statistics of China, 2011). However, the rapid urbanization leads to great land conversion which has further induced serious land-use problems such as arable land loss, increase of landless peasants, abandonment of arable land and emergence of hollowing villages (Yang and Li, 2000; Bao and Wu, 2002; Liu et al., 2010b). These problems have drawn much attention from both the political and academic spheres, to issues of sustainable land use, arable land protection and food security as well as land consolidation in China.

For a long time before 1978, the Chinese government has adopted dual land system in cities and countryside of which urban land was state owned whereas farmland was collectively owned (Yang and Wu, 1996). In this system, land was not considered as commodity in the planned economy and was allocated to Danwei (socio-economic units) free of charge. However, in the countryside, the collectively-owned land was converted to state-owned land through requisition in which peasants only received compensation instead of market-price based payment. This system actually added to the complexity of land-use problems in China because of the different land rights and prices as well as compensation to the land supply and acquisition in cities and countryside.

Since the reform and opening-up, land tenure system in China was changed firstly when land demand from enterprises of various ownerships is increasing rapidly. According to the “Provisional Regulation on the Granting and Transferring of the Land Rights over State-owned Land in Cities and Towns” in 1991, land users can let, transfer, rent and mortgage land-use rights (Valletta,
Thus, land markets emerged and land prices began to rationalize land-use allocation and land use (Ding et al., 2000). In 1994, State Council of China passed the “Basic Farmland Protection Regulations” which tend to prohibit basic farmland conversion to non-agricultural activities and mandated counties and townships to designate the basic farmland protection districts in accordance with provincial farmland preservation plans (Ding, 2003). Then, Land Management Law was revised based on the 1986’s draft in 1998, aiming to protect environmental and agricultural lands. The law requires annual quotas to be set for land conversion from agricultural and unused categories into construction land. In general, the land policy reforms are to improve land-use efficiency, enhance land management, increase government revenues, and to protect farmland.

Basically, land use issues have been highly valued by Chinese central government since the beginning of the twenty-first century. The ‘two systems’ (the strictest arable land protection system and economical land-use system) and ‘two markets’ (rural land transfer market of contractual right and the unconstruction land market of urban and rural) have been included into land management system and institutional innovation system since the ‘decision of a number of key problems on promoting rural reform development of CPC Central Committee’ has been enacted in Seventeen of the Third Plenary Session Committee in 2008. Besides, a series of policies, measures, regulations and methods have also been made continuously and successively, such as ‘requisition-compensation balance of arable land’; ‘increasing vs. decreasing balance of urban-rural built land’; ‘reserved land system within land requisition’, ‘rural land consolidation’ and ‘ecological and intensive land use’.

China has entered in a transformational period of removal of urban-rural dual structure and integrated rural urban socio-economic development. Rapid urbanization has profoundly changed the spatial-temporal pattern of land use in China. This also exerts influential effect on the economic development, food security and ecological security, and on peasants’ livelihoods as well as the rural welfare (Chen et al., 2010; Guo et al., 2012; Liu et al., 2013). Basically, land-use issues in China have typical Chinese characteristics and are interwoven with the dual system between cities and countryside, economic development and land-use policies. Being a country of huge amount of rural population, China will foresee the continuous rural migration to the cities. In this process, new land-use problems in both cities and countryside will emerge. Thus, how to properly deal with the potential problems calls for deep analysis of current land-use issues in China. The paper aims to provide comprehensive investigation of the current land-use problems in China and interpret and assess the related land management and land-use policies. All these endeavors are aimed to propose an innovative policy system for sustainable land use and economic development in China in the future.

Land-use problems in China

Aggravated land conversion for non-agricultural use

Fast land conversion for non-agricultural use has become the main feature of urbanization in China. The infrastructure construction, development of township and rural enterprises and industrial and commercial development all aggravated the land conversion for non-agricultural use. Land-use growth is found in the traffic land, residential land, commercial land and industrial land in the early 2000s (Fig. 1). Generally, industrial land and residential land are the two major sources of non-agricultural land conversion.

To a large extent, land requisition caused arable land reduction of which the amount is approaching the “red line” of 1.8 billion mu (1 mu = 0.067 ha). Fast arable land reduction has aggravated the contradiction of “large population with relatively little arable land” and also has increased the risk of resources and food security in China. As shown in Fig. 2, built land and arable land are changing conversely since late 1990s. Built land increased from $2955 \times 10^4$ ha to $3305 \times 10^4$ ha, an increase of 11.8%, while arable land decreased to $838.8 \times 10^4$ ha, with a reduction of $616.4 \times 10^4$ ha in the period 2001–2005.

The supply of built land has effectively supported rapid economic growth in China. Due to the huge gap of benefits from arable land and construction land, the governments paid more attention to land construction instead of arable land protection. In the period 2005–2010, the Chinese government has approved land requisition of $216.4 \times 10^4$ ha, with an annual land requisition of $36.1 \times 10^4$ ha (Ministry of Land and Resources, 2005–2010).

Fast land conversion for non-agricultural use indicates the shortage of related land policies which may slow down land conversion in China. Even the strict arable land protection system still doesn’t affect the built land supply in China. The reason is that local government is playing an important role in land conversion for non-agricultural use. Local governments are keen to land requisition regardless of the requested legal procedures and their responsibility for people’s livelihood. Thus, such land conversion which is characterized as “inside job” has affected rural collectives’ and peasants’ interests.

Built land vacancy and inefficient use

Land conversion for non-agricultural use has effectively supported the fast urbanization and industrialization in China, however, since Chinese economy relies firmly on land inputs, the utilization of construction land becomes low efficient. In this process, urban space usage tends to be of low density and

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**Fig. 2.** Built land and arable land use change in China, 1996–2008. (The data is compiled according to the detailed land-use survey data at the county level, provided by the ministry of land and resources in each province (city) in the period 1996–2008).
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