



## Building new countryside in China: A geographical perspective

Hualou Long, Yansui Liu\*, Xiubin Li, Yufu Chen

*Institute of Geographic Sciences and Natural Resources Research (IGSNRR), Chinese Academy of Sciences, 11A Datun Road, Anwai, Beijing 100101, China*

### ARTICLE INFO

#### Article history:

Received 17 March 2009

Received in revised form 20 June 2009

Accepted 22 June 2009

#### Keywords:

Countryside

Rural restructuring

Geographical perspective

Development strategy

Rural–urban relationships

China

### ABSTRACT

The central government of China recently mapped out an important strategy on “building a new countryside” to overall coordinate urban and rural development and gear up national economic growth. This paper analyzes the potential factors influencing the building of a new countryside in China, and provides a critical discussion of the problems and implications concerning carrying out this campaign, from a geographical perspective. To some extent, regional discrepancies, rural poverty, rural land-use issues and the present international environment are four major potential factors. Our analyses indicated that land consolidation, praised highly by the governments, is not a panacea for China’s rural land-use issues concerning building a new countryside, and the key problem is how to reemploy the surplus rural labors and resettle the land-loss farmers. More attentions should be paid to caring for farmers’ future livelihoods in the process of implementing the strategy. The regional measures and policies concerning building a new countryside need to take the obvious regional discrepancies both in physical and socio-economic conditions into account. In a World Trade Organization (WTO) membership environment, efficient land use for non-agricultural economic development, to some extent, needs to be a priority in the eastern region instead of blindly conserving land to maintain food security, part task of which can be shifted to the central region and the northeastern region. More preferential policies should be formulated to reverse the rural brain–drain phenomenon. Based on the analyses and the complexity of China’s rural problems, the authors argue that building new countryside in China will be an arduous task and a long road, the target of which is hard to achieve successfully in this century.

© 2009 Elsevier Ltd. All rights reserved.

### Introduction

At present, rural development and urban development in China are experiencing a transition period of both society and economy (Long et al., 2007a; Unger, 2002). In the process of industrialization and urbanization since the economic reforms of 1978, agriculture and the countryside have made a big contribution to, to some extent, the huge sacrifices for the development of industries and the cities in China, which has resulted in a series of problems that hamper the social and economic development of China (Long et al., 2009). Under these circumstances, the central government of China recently mapped out an important long-term development strategy on “building a new countryside,” which is expected to solve above problems through coordinating urban and rural development.

To some extent, China’s building a new countryside is a kind of policy concerning countryside planning. Countryside planning first started to appear in the literature around the end of the 1960s, with a strong emphasis on village form and expansion, but with a growing recognition of the role of rural area or community in

regional development (Robinson, 1997; Selman, 2006). Rural development and urbanization are closely inter-related in the aspects of migration, employment, land use and natural environments. With the process of urbanization, the rural population is increasingly marginalized and natural environments are increasingly destroyed. A new rural–urban compact needs to arise where cities acknowledge and pay for environmental sustainability (Gutman, 2007). How to perceive the rural world in its divergence and convergence with the urban world is a new paradigm of the concept of sustainable development (Hudeckova, 1995). A new paradigm of multi-dimensional rural development has emerged which advocates a broader conception of the rurality where the rural is no longer the monopoly of the farmer (Cloke, 2006; Korf and Oughton, 2006; Woods, 1998, 2005).

We can easily find some meta-themes concerning new countryside in western literatures, e.g. globalization/modernization, restructuring/reshaping, post-productivism/environmentalism, and political economy (Beesley et al., 2003; Cloke et al., 1995; Edwards et al., 2003; Hoggart and Paniagua, 2001; Johnsen, 2004; McCarthy, 2008; Pierce et al., 2000; Woods, 2008). Actually, the rural areas are being produced through increasingly globalized forms and relationships (McCarthy, 2008). Agriculture is at the heart of rural development (UMOD, 1969). However, agricultural

\* Corresponding author. Tel.: +86 10 64889037; fax: +86 10 64857065.

E-mail addresses: [longhl@igsnr.ac.cn](mailto:longhl@igsnr.ac.cn) (H. Long), [liuys@igsnr.ac.cn](mailto:liuys@igsnr.ac.cn) (Y. Liu).

restructuring is a challenging issue, which can be testified by the not simple story of UK's farming pendulum swinging from depression to prosperity (Robinson, 1988, 2004). In addition, New Zealand farmers were affected in significant ways by agricultural restructuring during the mid-1980s, resulted from financial hardship for farm families (Johnsen, 2003). In Mexico, the government played an important role in economic restructuring aimed at privatization and global competitiveness through revitalizing select agricultural sectors (McDonald, 2001). The French farmers will face major challenges with the rapid modernization and the enlargement of the EU (Clout, 2006). Woods (2007) argued for more place-based studies of globalization as experienced in rural localities, e.g. the reconstitution of rural places under globalization.

Globalization has brought about significant impact on the countryside through affecting national macroeconomic development strategies (Peemans, 1995). To a great degree, building a new countryside in China is a kind of macroeconomic development strategy aiming at rural restructuring under globalization. Woods (2007) argued that the impact of globalization in rural localities is highly geographically uneven, and requires a closer understanding of how globalization remakes rural places. The rural restructuring under globalization needs to highlight the interaction of local and global actors, and of human and non-human actants, to produce new hybrid forms and relations (Woods, 2007). Accordingly, the objectives of this paper are to analyze the potential factors influencing the building of a new countryside, and to provide a critical discussion of the problems and implications concerning carrying out this campaign and solving problems related to farmers, agriculture and rural areas (so called "San Nong Wen Ti" in Chinese) in China, from a geographical perspective. It can also provide some references for other developing countries.

### Historical perspective of China's rural development

China is a nation with a huge population of 1.3 billion. In order to feed them, China built its national economy on the agriculture foundation since early time. The development of agriculture and industry was very much unbalanced and a "dual track" structure was formalized in the national economy, and industrialization was pushed forward somehow under the sacrifice of agriculture and the peasants (Wu, 1997). Since the rural population made up almost 80% of China's total population in 1950s, the production and development in the rural sector was not only crucial from economic perspective but also important from political perspective and social stability in particular (Wu, 1997). For this, the central government took the improvement of land ownership and agricultural management as its priority task. China had completed land reform by the end of 1952, and 96% of the peasant families had been organized into advanced cooperatives under which land and other means of production ceased to be privately owned before 1957. Before 1978, traditional central planning economic policy had been carried out in China. At that time, the rural population in China had no choice but to work in collective farming (with weak incentives for work), and all members shared the output more-or-less equally (Long et al., 2007a).

China has experienced rapid transitions since Deng Xiaoping launched economic reforms in 1978. The traditional central planning economy was changed into a market based one and the primarily agricultural economy is being transformed into an urban, industrial economy. The early 1980s saw high growth in primary sector output in the wake of de-collectivization and the privatization of land-use rights under the "household responsibility system", which was introduced and adopted throughout China in the mid-1980s, and to a great extent stimulate rural economic growth at the

early stages of China's transition (Chow, 2002; Heilig, 2003; Lin, 1992).

The implementation of the responsibility system has aroused Chinese peasant's enthusiasm, liberated Chinese countryside from the self-sufficient status to open up a new prospect with the emerging of the township and village enterprises (TVEs), which are widely regarded as one of the major successes of the country's reforming socialist economy (Jefferson, 1993; Unger and Chan, 1999; Weitzman and Xu, 1994). It contributes significantly to the increase in rural income levels and employment by making full use of the local resources, utilizing the capital scattered in the peasant's hands, developing the wisdom of the skilled craftsmen, and rising up the peasant's income. However, the rapid development of TVEs also brings about some problems. On the one hand, as rural enterprises are growing too fast, in some places, material, energy and capital are in short supply. On the other hand, the allocation of most industries is disorderly mixed up with residential buildings, and as most of the factories are simply equipped and with a low level of management, have absolutely no treatment for disposal of polluted water, poisonous gas and wastes, the environmental quality is getting worse (Wu, 1997).

The TVEs and rural non-agricultural sector were widely regarded as the most dynamic sector in the Chinese economy during the reform era. However, such a successful story and optimistic view had changed tone since 1997, seemingly from the robust boom to a deep recession (Zhao and Wong, 2002). Zhao and Wong (2002) argue that the recession is inevitable due to the dysfunctional nature created by TVEs in the rural sector. That is, farmers simultaneously perform two different functions: agriculture and industry, both of which should be functionally and spatially separated. To a great extent, the implementation of the household responsibility system has also liberated the rural productive force. While 430 million of agricultural labors were tilling 133 million hectares of land, it is estimated that 1/3 of the labors became surplus (Wu, 1997). Most of them shifted from farming to diversified productions run by households, villages or townships, or moved to the cities trying to find a new living (Zhang et al., 2001, 2002). China's rural labor migration is directly linked to rural development through remittances, as well as through physical and human capital brought back by return migrants (Ma, 1999).

Before 1978, the regional development philosophy in China was to wipe out regional disparities through an even distribution of productive materials and activities. There was no obvious difference in the degree of development in the regional rural economy in China, despite the enormous regional diversity in climate, terrain, natural and human resources. However, since the adoption of economic reforms and open policies in the late 1970s, China has acknowledged uneven regional development as an inevitable stage of development, which can be proved by Deng Xiaoping's theory on development—allowing some people and regions to get rich before others, so that those becoming affluent first should help those not yet getting rich and finally follow the road to common prosperity. The reform-induced industrialization and urbanization have rapidly altered the physical and human landscapes in China's rural areas, as evidenced by the substantial rate of rural housing development, rural to urban migration, agricultural to non-agricultural land conversion, widening rural–urban income gap, and regional rural inequalities.

### An overview of the "building a new countryside" strategy

With the progress of social and economic restructuring, a more integrated rural policy needs to be developed because of the diverse character of the contemporary countryside (Woods, 2005,

p. 131). In 2003, China's per capita gross domestic product (GDP) reached 1090 US dollars, which implies China's economic and social development entered an important, brand-new period. China's fast-growing economy and its stronger position in the global community make itself be ready for providing an atmosphere in which industries support agriculture and cities support the countryside. Furthermore, under the pressures of both the recently widening income gap between the rural and urban population and the problems related to farmers, agriculture and rural areas, an epoch-making strategy on "building a new countryside" was put forward. In the integrated rural policy, a 'new countryside' means advanced production, improved livelihood, clean and tidy villages, a civilized social atmosphere and efficient management (Long et al., 2009; SCPRC, 2006).

The goals of 'advanced production' focus on developing modern agriculture and strengthening the productive forces of the countryside, and the corresponding measures include: (1) to improve traditional cultivation techniques and popularize agricultural standardization; (2) to promote the strategic adjustment of agriculture structure by optimizing the industrial structure, the product structure and regional distribution of agriculture; and (3) to improve rural (agricultural products) circulation system and strengthen the building of agricultural service system (Long et al., 2009).

The task of 'clean and tidy villages' is related to the general impression of "dirty, disorderly and bad" to the visitors in most China's current villages. The objectives of building clean and tidy villages involve: (1) to expand the use of clean fuels such as marsh gas and solar energy in rural areas; (2) to change the status quo of more than 60% of rural households do not have access to flush toilets; and (3) to gradually improve the rural houses according to scientific village plan (Long et al., 2009).

The current livelihood in most China's rural areas is urgently needed to be improved. In 2005, the disposable income of urban dwellers was 10,493 RMB¥ (US\$ to RMB¥: 1–8.1), which is 3.22 times over the per capita net income of Chinese farmers (3255 RMB¥). In 2005, 80% of the medical resources are distributed in cities; only 22.5% of rural people are covered by rural cooperative medical care system; about 150 million rural households face problems in fuel supply; and 6% of villages are still beyond the reach of highways; 2% of villages (about 20 million people) have no electricity supply; 6% of villages do not have telephones. Accordingly, three measures were put forward to increase the income of farmers and finally improve the inferior situation: (1) developing more profitable agricultural products with improved breeds and individual characteristics, and prolonging the industrial chains, such as storage and process, fresh-keeping, transportation, and so on; (2) increasing farmers' non-agricultural income by promoting the structural adjustment and institutional innovation of TVEs; and (3) improving subsidiary policy and lessening farmers' burdens (Long et al., 2009).

Building a more civilized and harmonious society is helpful for realizing sustainable rural socio-economic development. One of the important ways to building a civilized social atmosphere is to propose and carry out "the principles for citizens' virtue construction", e.g. the principal virtue of "to love one's country, obey the law, be honest, be friendly, work hard and make contribution to the society", that is to focus on the construction of social virtue, professional virtue and family virtue. Another important way is to let rural residents have more access to 'culture', by way of developing television and radio, establishing village libraries and fixing physical exercise facilities, and in return to promote cultural and ethical progress of countryside.

Inefficient management is one of the major obstacles for building a new countryside. In the new strategy, the rural management efficiency will be promoted through the following ways: (1) to

strengthen the management and training of rural labors, which is necessary for the transfer of rural excess labors; (2) to promote the construction of primary organizations and strengthen their service function; and (3) to improve the mechanism for the rural management by carrying out democratic management and an open government affairs.

Many cases showed that the development of countryside will be paid more attention to when the industrialization and urbanization of a country attain a certain phase, in the form of laying out a series of favorable policies. For example, the policies and funds associated with the basic agricultural laws of 1960 and 1962 have transformed many aspects of the French countryside over the past half-century (Clout, 2006). South Korea's remarkable economic performance in recent decades has benefited much from strong community-based rural development. In the 1970s, South Korea carried out the "Saemaul Undong" or "New Village Movement" to modernize its rural villages, by improving living conditions of rural communities through self-help and cooperation, supported by community and external resources, ultimately for community members themselves to build a stronger community.<sup>1</sup> What can be learned from South Korea's "New Village Movement" for building new countryside in China is advancing rural areas based on community-level mechanisms, along with government-initiated measures to encourage popular participation. Japan implemented similar campaign in the 1960s, and established corresponding laws and regulations, which were in favor of rural development.<sup>2</sup>

The strategy of building new countryside in China could be labelled 'post-productivism' (Evans et al., 2002; Mather et al., 2006). Not only agricultural production, social and environmental objectives were also now explicitly included within it. With the implementing of building new countryside strategy, China's agricultural policy and practice will shift the emphasis away from production towards the creation of a more sustainable agriculture. To some extent, a multifunctional agricultural regime, put forward by Wilson (2001), is forming in China. The implementation of this strategy is absolutely not an easy thing, which is determined by some both endogenetic and exogenetic factors. China's accession to the World Trade Organization (WTO) determined that Chinese agriculture will be exposed to the intensified competition of global market forces (Lin and Ho, 2003). That turning China's existing administration management model to a new one, active participation of the farmers in the management of public affairs and the implementation of democracy at grassroots level, will be a long road. In addition, other influencing factors include obvious regional discrepancies in both socio-economic development and geographical and bio-geo-physical conditions (Long et al., 2007a).

### Potential factors influencing the building of a new countryside in China

In rural China, there are many physical, socio-economic and political problems or constraints that need to be solved or taken into account in building new countryside. More or less, regional discrepancies in both socio-economic development and geographical and bio-geo-physical conditions will affect reaching these building goals. The goal of 'improved livelihood' cannot be achieved without alleviating rural poverty. However, one of the most important factors is land use. On the one hand, land supply is a bottleneck constraining the spatial development of advanced agricultural

<sup>1</sup> Improving community-driven development (CDD) strategy: the case of new village movement in Korea. (<http://go.worldbank.org/CJ47JQBEC0>).

<sup>2</sup> "New Village Movement" of South Korea and "55 years system" of Japan. (<http://dycj.yinet.com/article.jsp?oid=7520089&pageno=3>).

production. On the other hand, unrestrained urban fringe land development driven by the financial benefits to be gained by developers and local governments, and the expansion of rural housing caused the massive agricultural to construction land conversion. It also brings about the problem concerning land-loss farmer's making a living. The decrease of farmland and the modernization of agriculture will result in the excess of rural labor. In addition, international environment, such as WTO-membership and global climate change, will affect the agricultural production and its mar-

ket, and the government's decision on agricultural prices and food security, which in turn will influence the farmers' enthusiasm for pursuing grain production and the trend of rural-urban labor migration. Therefore, regional discrepancies, rural poverty, rural land-use issues and the present international environment are the major factors influencing the building of a new countryside (Fig. 1). Sustainable rural development in China is impractical, if these factors are not taken into account in the concepts of building a new countryside.

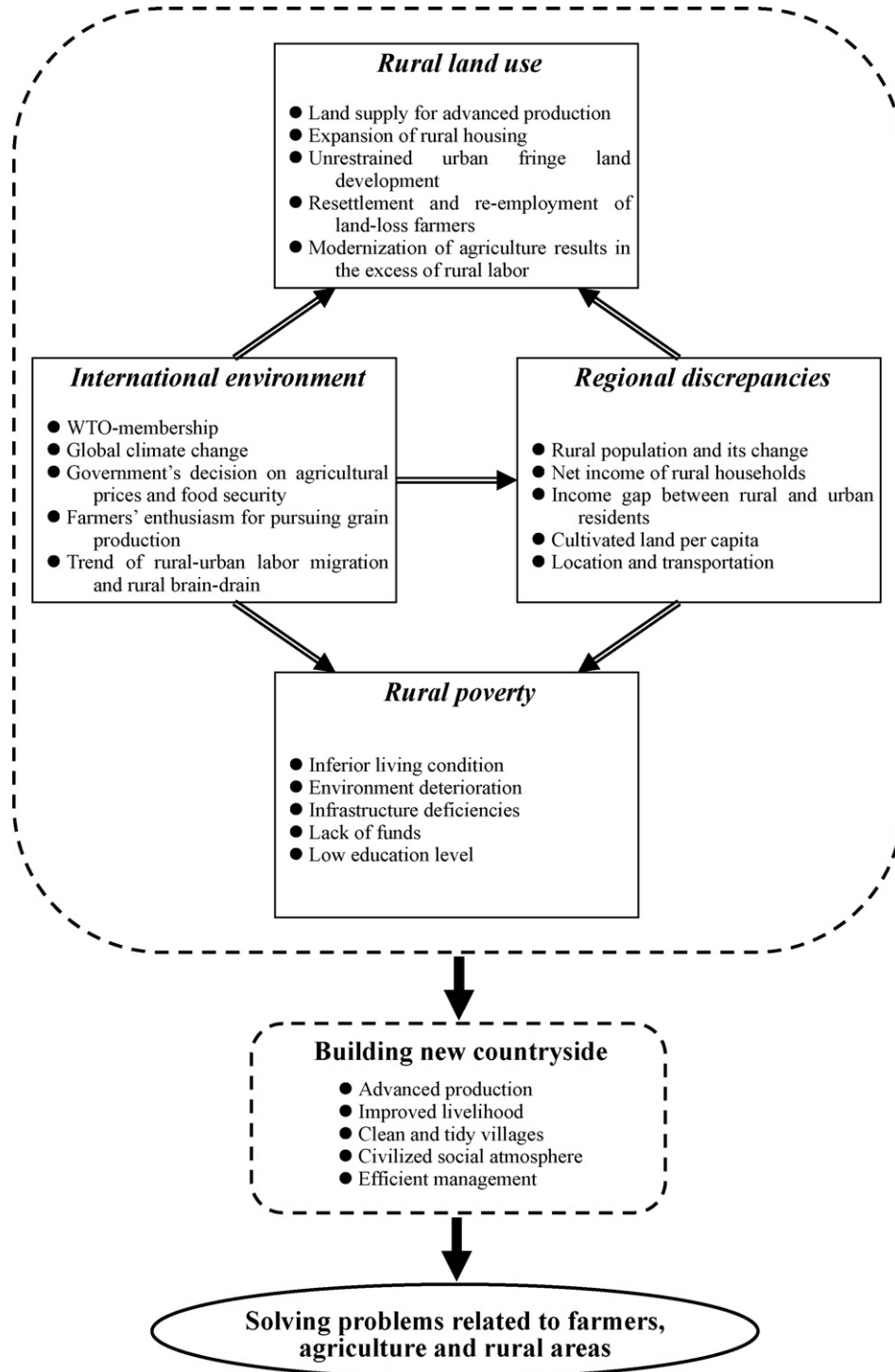


Fig. 1. Potential factors influencing the building of a new countryside in China.

**Table 1**  
Comparison of selected socio-economic indicators in the four regions.

Indicator	National total	Eastern region		Central region		Western region		Northeastern region	
		Absolute figures	% of national total	Absolute figures	% of national total	Absolute figures	% of national total	Absolute figures	% of national total
<b>Land resources</b>									
Area of land (10,000 km <sup>2</sup> )	960.0	91.6	9.5	102.8	10.7	686.7	71.5	78.79	8.2
Area of cultivated land (km <sup>2</sup> )	1,220,667	266,644	21.8	290,916	23.8	449,940	36.9	212,972	17.5
Per capita cultivated land (ha)	0.0934	0.0575		0.0826		0.1251		0.198	
<b>Population and employment</b>									
Population at the year-end (10,000 persons)	130,756	46,388	36	35,202	27.4	35,976	28.0	10,757	8.4
Rural population (10,000 persons)	74,544	21,854	30.1	22,321	30.8	23,522	32.4	4823	6.7
Employment at the year-end (10,000 persons)	75,825	24,810	36	19,065	28.0	19,448	28.6	4704	6.9
Rural area	48,494	16,814	33.4	15,274	30.3	15,552	30.9	2748	5.4
Township and village enterprises	14,272	7521	49.2	3883	25.4	2881	18.9	991	6.5
The proportion of illiterate population <sup>a</sup>	11.04	9.20		11.24		15.21		5.54	
Population density (persons/km <sup>2</sup> )	136.2	506.2		342.6		52.4		136.5	
<b>National accounting</b>									
Gross domestic product (GDP) (100 million RMB¥)	183,084.8	109,924.6	55.6	37,230.3	18.8	33,493.3	16.9	17,140.8	8.7
Primary industry	23,070.4	8681.8	37.7	6204.6	27.0	5924.6	25.8	2192.6	9.5
Secondary industry	87,046.7	56,673.2	58.5	17,412.7	18.0	14,331.6	14.8	8505.8	8.8
Tertiary industry	72,967.7	44,569.7	57.2	13,613.1	17.5	13,237.1	17.0	6442.4	8.3
The ratio of primary, secondary and tertiary industries <sup>b</sup>	13:47:40	8:52:40		17:47:36		18:43:39		13:50:37	
Per capita GDP (RMB¥)	14,040	23,768		10,608		9338		15,982	
Economic density (10,000 RMB¥/km <sup>2</sup> ) <sup>c</sup>	191	1200		362		49		218	
<b>Agriculture</b>									
Grain output (10,000 tons)	48,402.2	12,766.2	26.4	14,778.3	30.5	13,438.7	27.8	7419.0	15.3
Cotton output (10,000 tons)	571.4	185.5	32.5	176.4	30.9	209.1	36.6	0.4	0.1
Oil-bearing crops output (10,000 tons)	3077.1	906.4	29.5	1252.5	40.7	766.3	24.9	151.9	4.9
<b>Transportation</b>									
Length of railways in operation (km)	75,437.6	16,998	23	17,457	23.1	27,594	36.6	13,388	17.7
Length of highways (km)	1,930,543	515,791	27	463,507	24.0	780,339	40.4	170,906	8.9
Expressways	41,005	16,724	41	10,476	25.5	10,530.0	25.7	3273.0	8.0
Highways density (km/10,000 km <sup>2</sup> )	2011	5628		4511		1136		2169	
Railways density (km/10,000 km <sup>2</sup> )	78.6	185		170		40.2		169.9	
<b>Health care</b>									
Number of hospitals (unit)	298,997	98,780	33.0	68,317	22.8	99,894	33.4	32,006	10.7
Medical technical personnel (10,000 persons)	446.0	172.2	38.6	113.9	25.5	111.4	25.0	49	10.9
Number of hospital beds (10,000 beds)	335.1	126.7	37.8	82.2	24.5	87.7	26.2	38	11.5
<b>People's livelihood</b>									
Per capita disposable income of urban households (RMB¥)	10,493	13,375		8809		8783		8730	
Per capita net income of rural households (RMB¥)	3255	4720		2957		2379		3379	

Notes: (1) As the sum of some indicators by region is different to the national total, while calculating the percentage of eastern, central, western and northeastern provinces to all country, the denominator is the sum of 31 provinces; (2) all the data are the value of 2005, the data of cultivated land are from the Ministry of Land and Resources of China (MLRC, 2006), and other data are from National Bureau of Statistics of China (NBSC, 2006); and (3) exchange rate US\$ to RMB¥: 1–8.3.

<sup>a</sup> Illiterate population in this table refers to the population aged 15 and over, who are unable or very difficult to read. Here means the proportion of illiterate population in total aged 15 and over.

<sup>b</sup> The Chinese statistical definition of primary industry includes farming, forestry, animal husbandry and fishery; secondary industry includes mining and quarrying, manufacturing, production and supply of electricity, water and gas, and construction; and tertiary industry refers to all other industries not included in primary or secondary industry.

<sup>c</sup> Economic density was calculated by dividing the gross domestic product (GDP) of country or each region by the total area of country or the region.

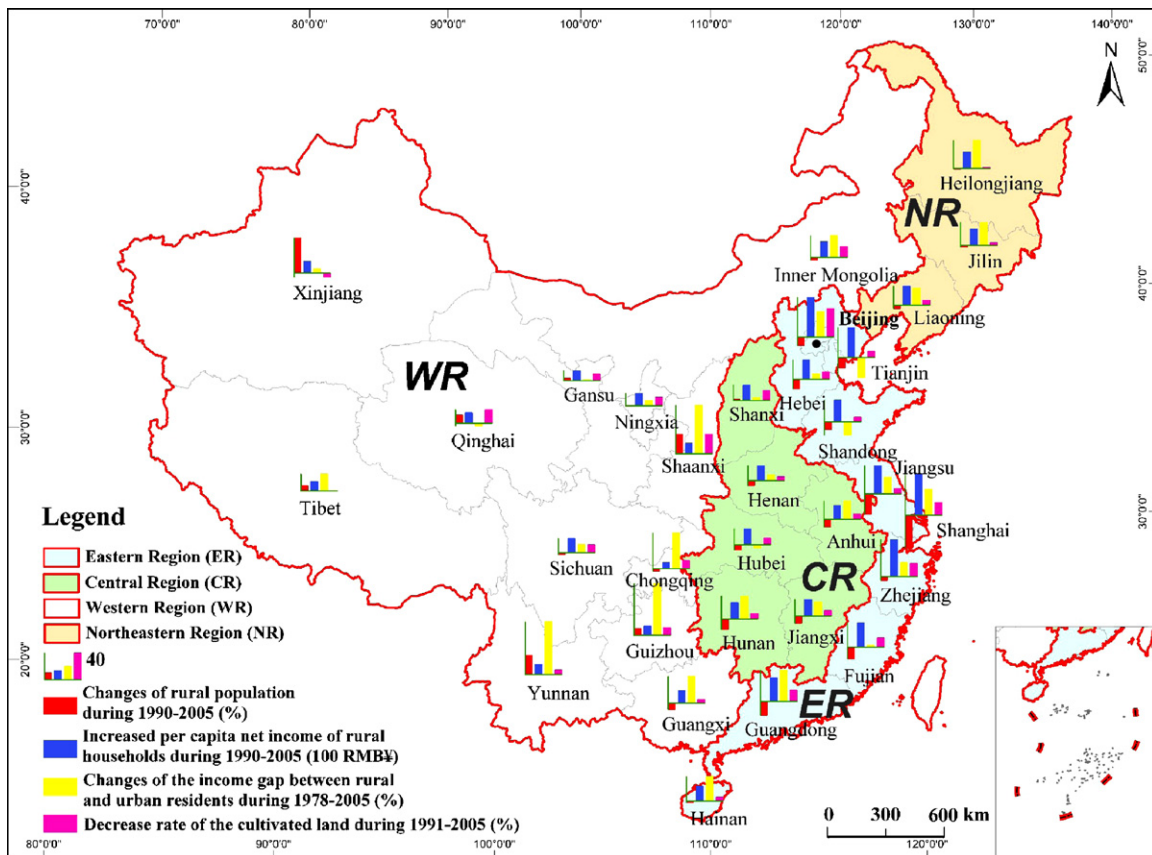
### Regional discrepancies

There are obvious regional discrepancies in China, which were studied from different aspects, e.g. society and economy transition, regional development, economic policy, diversity and sources of economic growth (Arayama and Miyoshi, 2004; Cai, 1999; Heilig, 2006; Lin et al., 1998; Liu, 2006; Lu et al., 2003). According to Chinese statistical definition, there are four regions, i.e. eastern region, central region, western region and northeastern region (Fig. 2). Table 1 shows obvious regional disparities of some indicators closely relating to rural socio-economic development. Per capita cultivated land of northeastern region was 0.198 ha, which is double more of national level and three times more that of eastern region. Western region has the highest proportion of illiterate population, which amounted to 15.21%, almost three times that of northeastern region. Eastern region has the highest share (52%) of secondary industry (also called industry) in GDP, and the lowest proportion (8%) of primary industry (also called agriculture) in GDP. On the contrary, western region has the lowest share (43%) of secondary industry in GDP and the highest proportion (18%) of primary industry in GDP. The highways/railways density of eastern region was nearly five times that of western region. As a result, the economic density of eastern region amounted to 12 million RMB¥/km<sup>2</sup>, more than 24 times that of western region; and per

capita net income of rural households of eastern region was twice of western region.

It can be seen from Fig. 2 that there are distinct provincial disparities in the aspects of rural socio-economic conditions. During the period 1990–2005, the rural population decreased sharply due to the progress of urbanization by 49.6% and 30.3% in Shanghai and Jiangsu, respectively. On the contrary, the rural population increased rapidly in Xinjiang, Yunnan and Shaanxi by 52.9%, 29.6% and 28.7%, respectively. There exists a sharp contrast on the increased per capita net income of rural households between the provinces of eastern region and that of western region, during the period 1990–2005. The income gap between rural and urban residents has enlarged by more than 70% in Guizhou, Yunnan and Shaanxi since 1978. In contrast, the gap in Tianjin and Shandong was decreased by 30.5% and 20% from 1978 to 2005, respectively. The cultivated land in Beijing was decreased by 42.8% from 1991 through 2005. However, there was a little increase in Tibet and Xinjiang in the same period.

Regional discrepancies, and in particular the gap between rural and urban areas, are primarily seen as an economic problem, while other dimensions such as geographical and bio-geo-physical conditions are often ignored or underestimated (Heilig, 2003). China has all possible extremes in climate (from the desert to the hot tropics) and terrain (from the Himalaya to the North China Plain).



**Fig. 2.** Provincial disparities of rural socio-economic conditions in the four statistical regions of China. The Chinese statistical definition of Eastern Region includes Beijing, Tianjin, Hebei, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong, and Hainan; Central Region includes Shanxi, Anhui, Jiangxi, Henan, Hubei, and Hunan; Western Region includes Guangxi, Inner Mongolia, Chongqing, Sichuan, Guizhou, Yunnan, Tibet, Shaanxi, Gansu, Ningxia, Qinghai and Xinjiang; and Northeastern Region includes Liaoning, Jilin and Heilongjiang (NBSC, 2006, preface). The data of cultivated land are from the Ministry of Land and Resources of China (MLRC, 2006), and other data are from National Bureau of Statistics of China (NBSC, 2006). Since Chongqing was set-up as a municipality directly under the Central Government in 1997, including Qianjiang prefecture and three cities in the rank of prefecture, i.e. Chongqing, Wanxian and Fuling, in Sichuan province formerly, the data of increased per capita net income of rural households of Chongqing is during the period 2000–2005, but the data of other indicators of Chongqing and Sichuan were calculated according to existing extent. The income gap was calculated by dividing the per capita disposable income of urban households by the per capita net income of rural households; the income gap in 1978 of Guangdong and Hainan was calculated according to their present extent, although Hainan belonged to Guangdong province before 1988.

**Table 2**  
Comparison of some indicators between poverty counties and non-poverty counties in China.

Indicators	Poverty counties (592 key counties and Tibet)	Non-poverty counties
Total population (in million)	210.79	1057.45
Population density (persons/km <sup>2</sup> )	144.6	787.6
The proportion of illiterate population (%)	20.7	9.6
The proportion of rural population (%)	85.26	65.67
The proportion of ethnic minority population (%)	39.31	10.67
Total fertility rate from 9.5% sample survey	1.71	1.27
Population with no school (in % of population age 6+)	16.4	7.5
Population with college degree (in % of population age 6+)	0.19	0.75
Per capita GDP (RMB¥)	2689.5	5050.1
Employment in tertiary industry (in % of all employed)	11.07	19.78
Employment in secondary industry (in % of all employed)	4.94	15.77
Hospital beds (per county)	451	737
Hospital beds (per km <sup>2</sup> of land area)	0.20	0.71
Households with telephone (in % of all households)	16.54	28.40
Households without tap water (in % of all households)	7.41	5.29
Households with bath facilities (in % of all households)	0.79	2.34
Average grain yield (kg/ha)	3398.6	4895.8
Cultivated land (in % of total land area)	20.68	40.07
Average altitude (m)	1633	566

Notes: (1) Calculation was conducted using GIS spatial analyst module (Heilig et al., 2006); (2) the data of cultivated land are from the Ministry of Land and Resources of China, altitude data are from the U.S. Geological Survey (USGS), and the socio-economic data are from National Bureau of Statistics of China (NBSC, 2001); and (3) exchange rate US\$ to RMB¥: 1–8.3.

The annual precipitation in China is decreased gradually from more than 3000 mm per year in southeastern coastal area to almost no rainfall in northwestern inner land. Consequently, large areas of China are arid or semi-arid, which not only severely restricts possibilities for agriculture or livestock production, but also affects water availability for industry and settlements (Chen and Tang, 2005; Fang et al., 2007; Huang and Rozelle, 1995; Liu et al., 2003, 2005a; Smit and Cai, 1996). Many (economic) disadvantages in western China are simply related to the lack or extreme scarcity of rainfall. Yet another natural factor of diversity is the topography: much of China is covered by steep mountains and hills – which not only hamper or prevent agriculture (terracing), but also increase the costs of infrastructure construction and maintenance – in particular roads, as it shown by the low railways and highways density of western region (only 40.2 km/10,000 km<sup>2</sup> and 1136 km/10,000 km<sup>2</sup>, respectively, which is about one-fifth of that in eastern region) (Table 1). These natural conditions are also reflected in regional population density (52.4 persons/km<sup>2</sup> in western region and 506.2 persons/km<sup>2</sup> in eastern region form a sharp contrast; see Table 1), which clearly mirrors the country's terrain and climate conditions. All these physical and socio-economic factors will directly affect the building of a new countryside, which needs understanding the specific development constraints and options of various regions.

#### Rural poverty

In 2001, the central government adopted its new 10-year (2001–2010) poverty strategy (SCPRC, 2001). The pockets of rural poverty that remained at the end of 2000, as defined by the on-going national poverty line adjusted for inflation (625 RMB¥ per capita net rural income in 2000 prices) amounted to 32.1 million people. Under the new strategy, the government has designated key counties for national poverty alleviation and development work. At the end of 2002, 592 key counties had been selected, most of which were national poverty counties under the previous system but some were new. Most of the poverty counties have become more concentrated in the remote, minority, and border areas especially in the central and western regions.

Many of these poverty areas suffer from difficult environmental conditions, either due to high altitude, poor soils (as in Karst

counties of Guizhou and Yunnan provinces), degraded grasslands, desertification or terrain given to landslides and large-scale erosion. The areas most affected by environmental degradation and consequential rural poverty are the northwestern and southwestern provinces, followed by the central mountainous regions (ADB, 2004; Feng et al., 2005; Liu et al., 2003, 2006, 2008a; Long et al., 2006; Rozelle et al., 1997). Except for the environmental disadvantages, these remaining poverty areas suffer from infrastructure deficiencies, particularly a shortage of roads and water storage facilities, poor health and education services, low agricultural productivity, and under-developed non-agricultural industries, in contrast with non-poverty areas (Table 2). The proportions of illiterate population, rural population and ethnic minority population of poverty counties are 20.7%, 85.3% and 39.3%, respectively; however, that of non-poverty counties are only 9.6%, 65.7% and 10.7%, respectively. The GDP per capita of poverty counties is 2690 RMB¥, which is only half or so that of non-poverty counties. How to mitigate existing gaps between poverty areas and non-poverty areas and alleviate rural poverty will be one of the most important tasks of building new countryside in China.

#### Rural land-use issues

Obvious land-use change has occurred, since China initiated economic reforms and an open-door policy in 1978. Urban-related industrialization is well known to be one of the most important driving forces of land-use changes in China (Lin and Ho, 2003; Liu et al., 2008b; Long et al., 2007b; Qu et al., 1995; Xie et al., 2005), and it plays an important role in reducing the quantity of arable land (Cai, 1990; Chen, 1999; Li et al., 2009; Liu et al., 2005b; Tan et al., 2005). Land-use changes can be mainly characterized by the changes of cultivated land and construction land, which are tightly inter-related with human production activities. In China's rural areas, cultivated land and rural settlements are the two most important land-use types depicting rural development (Long et al., 2009).

According to the statistical data of the Ministry of Land and Resources of China (MLRC), during the period 1991–2001, total cultivated land decreased by approximately 7.32 Mha, or about 5.42%. During this period, eastern region, central region, western region and northeastern region contributed 28.79%, 22.60%, 41.31%, and

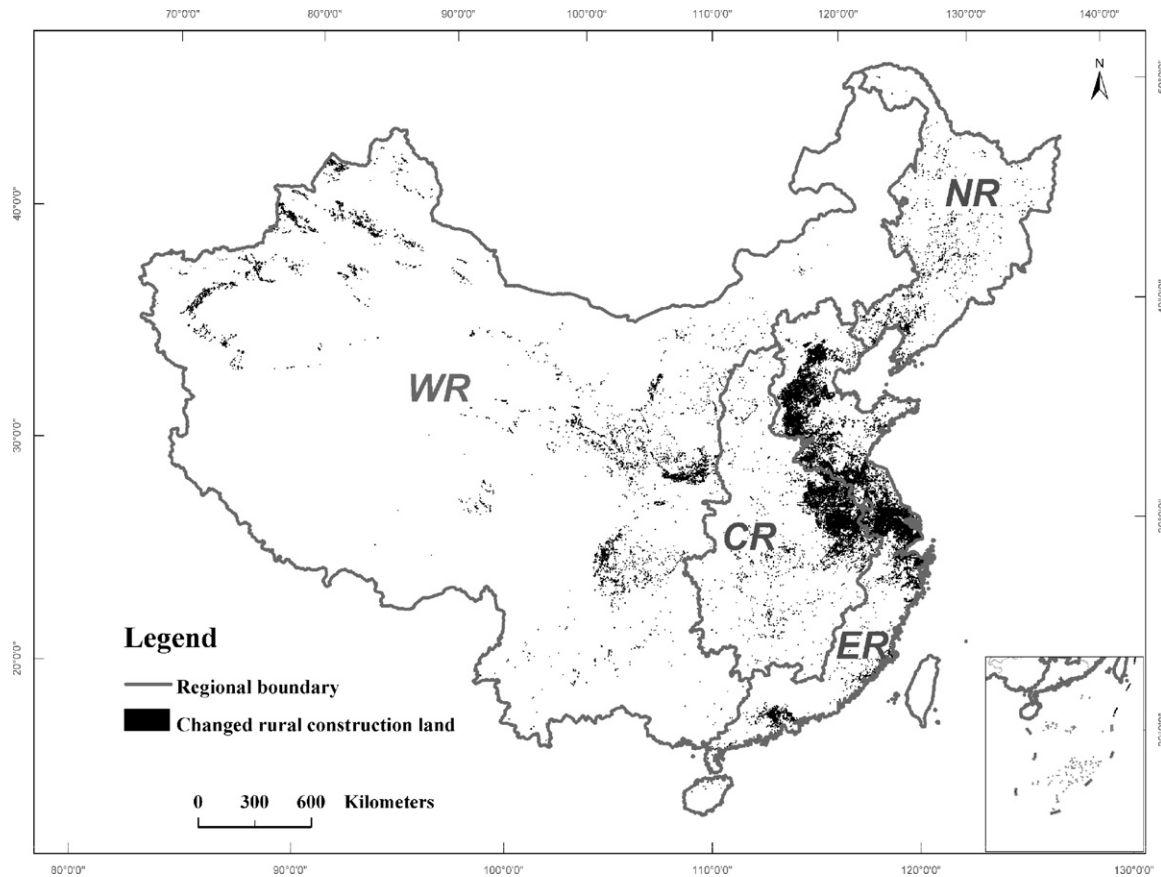


Fig. 3. Change patterns of rural construction land across China from 1990 to 2000. ER—eastern region, CR—central region, WR—western region, and NR—northeastern region.

7.30% of the loss of cultivated land, respectively. China is a country with vast population and scarce land per capita. This basic characteristic has determined the preciousness of cultivated land to its people. The drastic loss of valuable agricultural land has caught the attention of the central government. In the beginning of the 10th 5-year plan (2001–2005), The State Council claimed to carry out strict cultivated land protection policies. However, the cultivated land decreased 6.16 Mha during the period 2001–2005, with a speed of 1.23 Mha per year, which was speeded up comparing with that during the period 1991–2001 (MLRC, 2006). In addition, the environmental impacts of cultivated land changes will threaten the sustainability of food production. The studies showed that food production capacity has continuously been reduced by the loss of cultivated land (Li and Wang, 2003; Yang and Li, 2000). Given the rapid decline trend in cultivated land not be halted, Lester Brown's 'Who Will Feed China?' will no longer be shocking (Brown, 1995).

Rural construction land in China amounted to 16.55 Mha, which accounted for 65.95% of China's total construction land in 2002. While the rural population is decreasing, the rural construction land is still increasing in China. It is very difficult for the Chinese government to control housing construction in the countryside (Sargeson, 2002). We used Landsat TM/ETM data at a spatial resolution of 30 m to reconstruct spatial and temporal patterns of rural construction land across China over the period from 1990 to 2000 (Fig. 3); data source and processing, see Liu et al. (2005c) and Tian (2003). The results indicated that rural construction increased 0.79 Mha during the period 1990–2000, 93.2% of these changes occurred at the expense of cultivated land; eastern region, central region, western region and northeastern region shared 39.4%, 29.1%, 25.5%, and 6.0% of the loss of cultivated land, respectively (Fig. 3). Currently, rural housing has been one of the major rural land-use issues, while it

has been overlooked. On the one hand, rural housing is the principal part (nearly 66%) of China's construction land and increased very fast in last three decades. On the other hand, the increased rural housing paid little attention to cherishing the scarce land resources and lacked scientific village plan, which caused serious waste of land resources. In current rural areas of China, it is not difficult to find that large amounts of cultivated land are occupied by new rural housing, which borders a mass of idle rural housing land and vacant rural housing (Fig. 4).

The accelerating urbanization and industrialization process increased the degree of fragmentation and structural complexity of land use in the last two decades (Long et al., 2007b, 2009). This situation is unfavorable for mechanized/efficient agriculture. According to the viewpoint of Simons (1987), land fragmentation often results in a serious of problems including the increased labor time, land loss, need for fencing, transportation costs and restrictions to human, machinery, and irrigation access, and the resulting operational difficulties such as those associated with pest control and land supervision. Unrestrained urban fringe land development caused the massive agricultural to non-agricultural land conversion, and the resettlement and reemployment of the land-loss farmers is a big problem posed to the developers and local governments. In addition, the creation of the excess of rural labor will be inevitable due to the modernization of agriculture and the decline of farmland. It is estimated by the Ministry of Agriculture of China that there were 150 million rural excess labors in 2006.

#### International environment

In the backdrop of soaring food prices worldwide and the warnings by the United Nations and the World Bank against a looming



**Fig. 4.** A large amount of cultivated land were occupied by new rural housing, which bordered a mass of idle rural housing land and vacant rural housing in a village of Xingguo county, Jiangxi province. (Photos taken by the first author.)

food crisis, the stability of food supply and agricultural production in China is of particular significance to the food security of the entire world. At present, the central government has attached unprecedented importance to agriculture development and grain production, and has regarded food security as a central concern and set the rate of grain self-sufficiency at 95%. However, China's WTO-membership will bring about obvious impacts on the agricultural production and its market (Huang et al., 2001). Trade liberalization will influence domestic grain production and farmer's income. In China, although the administered prices that farmers received for their output were increased, the combination of the fall in the real price of output and the rise in the real price of inputs led to a crisis in the agricultural sector, which shrank farmer's enthusiasm on grain production. In 2007, the central government continued to increase direct subsidies to grain farmers for producing grain and subsidies for growing superior seed varieties and purchasing agricultural machinery and tools, and followed a policy of granting general subsidies for agricultural production supplies. Authorized by the State Department, the fund for the direct subsidies to grain farmers amounts to 63.3 billion RMB¥, 615 RMB¥ per ha. However, farmer's enthusiasm on grain production is still not increased.

China's agriculture was labor intensive. With agricultural modernization and a contraction of the agricultural sector due to further trade liberalization, a large percentage of the rural labor force will no longer be needed in this sector. These people will inevitably migrate to urban areas and find jobs in manufacturing industries, construction and household service sectors. In the long run, however, these rural migrants will not go back to the rural areas, but will try to stay in the towns and cities, where incomes are higher

and living conditions better. Since most of these migrants are young and better educated than the remaining rural population, there is a significant rural–urban brain–drain. The countryside is losing its most active population segment.

Another important influencing factor is global climate change. A report by six government departments in China said "Climate change will increase the instability of agricultural production. If no measures are taken, in the latter half of the century, production of wheat, corn and rice in China will drop by as much as 37%."<sup>3</sup> China will need an extra 10 million hectares of arable land to feed its people in 2030 because global warming will reduce the country's grain harvest.<sup>4</sup>

## Discussion

### *Is land consolidation an effective prescription for rural land-use issues?*

Fragmentation of landholdings is commonly regarded as a major obstacle to agricultural production growth in China (Tan et al., 2006; Wu et al., 2005). China's accession to WTO makes Chinese agriculture have to face the intensified competition of global market forces. Considering the impacts of global climate change on agricul-

<sup>3</sup> China climate report says food security at risk. (<http://www.chinadialogue.net/blog/show/single/en/665-China-climate-report-says-food-security-at-risk>).

<sup>4</sup> Climate change 'will threaten China food security'. (<http://www.chinadialogue.net/blog/show/single/en/1270-Climate-change-will-threaten-China-food-security->).

tural production, the limitation of the potentially reclaimable cultivated land resources and the fact that China is in the process of fast industrialization and urbanization, the decline in cultivated land is almost inevitable. One of the principal constraints for China's rural development will come from the land supply, the enough or not of which depends on how to deal with above rural land-use issues.

To some extent, land consolidation praised highly by the governments seems to be an effective prescription for China's rural land-use issues (Yu et al., 2009). Land consolidation is a spatial problem-solving technique that attempts to eliminate certain types of land fragmentation and to improve land productivity through a process of concentration of plots, which is usually accompanied by the construction of new roads, irrigation facilities and other auxiliary services (Coelho et al., 1996; LCRC, 2000; Yu et al., 2009). Land Consolidation and Rehabilitation Center (LCRC) of MLRC was established in 1998, and some land consolidation projects were initiated in national level in the same year. During the period 1998–2005, the national objective of land consolidation emphasized on increasing the quantity of cultivated land by land (e.g. unused land, pasture land and wetland) reclamation and consolidation, to compensate the decrease of that due to urbanization and industrialization.

Frankly, cultivated land consolidation actually may contribute to developing modern agriculture and strengthening the productive forces of the countryside (Long et al., 2009). But its functions on increasing cultivated land quantity to compensate the decrease of that due to urbanization and industrialization and keeping a high quality of newly increased cultivated land are doubted. During the period 2001–2005, 1.43 Mha of cultivated land were supplied by carrying out land consolidation (Fan, 2006), but 2.19 Mha of that were lost due to construction activities<sup>5</sup> at the same time. However, most of the increased cultivated land is the newly reclaimed land, which is poor in quality and is located in the areas where the ecosystem is fragile, and their yield and multiple cropping are inferior to the fertile land lost in economically advanced regions. In addition, the potential for increasing cultivated land by carrying out land consolidation is limited after all.

At present, the central government expands the connotation of land consolidation from early focusing on arable land consolidation to simultaneously paying attention to curbing excessive and idle rural housing and consolidating rural construction land. It is taken for granted that consolidating rural construction land in China is an effective prescription for solving present rural land-use issues. Rural construction land consolidation may play an important role in protecting the farmland and building "clean and tidy villages" (Long et al., 2009). However, in China, rural construction land consolidation will confront many obstacles (Ding, 2007; Long et al., 2009). For example, most peasants are not willing to move to live in another unacquainted area; China's land legal and managerial system is somewhat problematic involving rural construction land consolidation; and the benefit allocation system of stakeholders concerning rural construction land consolidation needs to be established, which cannot come to an agreement in a short time.

Hence, land consolidation cannot be regarded as a panacea for China's rural land-use issues concerning building a new countryside. With the progress of land consolidation and modernization agriculture, the key problem is how to reemploy the surplus rural labors and resettle the land-loss farmers, i.e. the farmers' livelihoods issues in building a new countryside.

### *Who cares for farmers' future livelihoods?*

In 2007, the Chinese government decided to spend 14% more in building new countryside, and spent 339.7 billion RMB¥ (US\$ to RMB¥: 1–7.5) in agriculture, rural areas and farmers.<sup>6</sup> The fund will be mainly used for strengthening basic development of farmland, accelerating construction of infrastructure projects such as roads, drinking water supplies, methane facilities, power grids and communications. While it is a big number, it is not enough for the whole country's implementation of this strategy, to say nothing of the loopholes in management. Xu Kuangdi, the vice chairman of the Chinese People's Political Consultative Conference, said, 'I made a quick calculation: If 300 billion RMB¥ were divided up among China's 800 million peasants, each would only get 424 RMB¥ (57 US\$). What worries me the most is that they won't even get 24 RMB¥. In constructing rural irrigation, as the funding travels from the ministries down through the provinces, counties, and townships, it's certain that each level will grab the lion's share of the funds; and there will be areas where local cadres waste the funds on cheaply-built vanity projects, or just embezzle it, so what will be left over for the peasants?' (Smith, 2007). Our survey<sup>7</sup> more or less testified Xu's saying. Currently, in the process of implementing building new countryside strategy, a great number of local cadres engage in superficial work. They usually pay more attention to building a new community in suburb or a new village, mainly including new roads and new apartments, but they forgot that advanced (agricultural) production is the first objective of this strategy.

Building new countryside needs a lot of funds, most of which need to be provided by local finance. Therefore, building new countryside carried out with physical progress takes place mainly in the coastal areas with a strong economic base. Local further development in the coastal China needs land, which is very scarce. However, local government grasped the opportunity of an innovative land management policy called "linking up increased urban construction land with decreased rural construction land", and land displacement and centralized settle-down is taken as a principal and successful model, local government thought, of building new countryside in coastal China (Long et al., 2009). However, this so-called successful model is somewhat problematic. To some extent, the village and township governments are selling off land to developers in a disguised form just to feed their staff, but they did not care of the peasants' future livelihoods (Long et al., 2009).

"In recent years, local governments have made a lot of money charging industry developers land-use fees but that revenue has been used mostly for urban construction; however, rural areas have seldom benefited. To spend part of the revenues from land-use fees on agriculture is a practical way to increase investment in the countryside," said Han Jun, an expert on rural affairs. What's the farmers' really wanted compensation? According to our household interview, we suggest that it is feasible to change the mode from one-off compensation to annual salary compensation and insurance compensation. Some farmers, lacked long-term plan, expended their one-off compensation in several years, which will result in having difficulties in making a living in the future. Annual salary compensation can resolve this matter. Furthermore, drawing part of

<sup>6</sup> China to spend 14% more in building new countryside. ([http://www.gwy8.com/JAZJ/YTYD/HYYY/list363/200708/JAZJ\\_188796.html](http://www.gwy8.com/JAZJ/YTYD/HYYY/list363/200708/JAZJ_188796.html)).

<sup>7</sup> Although large amounts of funds for building new countryside are earmarked for grain subsidies, rural roads and irrigation, our survey in several villages in northern Jiangsu province, showed that the only improvement was a rural road after implementing the strategy of building new countryside for almost 2 years, and the peasants grumbled for local cadres' corruption and told us that they have benefited nothing from the policy of building new countryside, even the grain subsidies have not been sent to their hands.

<sup>5</sup> How to hold China's ground of 1.8 billion mu cultivated land (1 mu = 0.067 ha). (<http://gb.chinareviewnews.com/crn-webapp/doc/docDetailCreate.jsp?coluid=7&kindid=0&docid=100152984>).

the revenues from land-use fees to spend on farmers' basic old-age insurance is a practical way to provide farmers with future guarantee of basic cost of living allowances.

#### *Rational regional development models*

As is typical for a large and rapidly developing country, regional development is highly unbalanced in China (Fig. 2 and Table 1). Different regions have diverse development advantages, and also are confronted with different development problems. They will be at different stages of development and, therefore, should be characterized by different models for building a new countryside. Considering the obvious regional discrepancies both in physical and socio-economic conditions, it will be unfeasible to carry out building a new countryside by applying an incorporated policy. Regional measures and policies<sup>8</sup> tailored to the different socio-economic conditions are especially important. Therefore, regional discrepancies should be the soul of the measures and policies contributing to building a new countryside. That is to say, adopted measures and policies should be suited to regional physical and socio-economic conditions as well as different stages of development.

The eastern region is unique because of its high population density and economic density in the four regions (Table 1). The rapid industrialization and urbanization in this region increased the demand for construction land, which diminished cultivated land (Fig. 2). The industrialization pushed forward the development of TVEs, which led the expansion of rural housing areas and the pollution of local environment. Hence, the focus of building a new countryside in eastern region should concentrated on building "clean and tidy villages". The eastern region has the advantages and should also take the lead in basically realizing the objectives of building a new countryside. However, lean policy deployment is needed.

Since most areas of the central region are agriculture-dominated region and constitute China's grain bases, developing modern agriculture and improving agriculture productivity is the primary task of building a new countryside in this region. The central region is also undergoing industrialization and urbanization, however, the pace of which is relatively slower than that of eastern region. The employment of local surplus rural labors is one of the major issues of building a new countryside in this region, according to authors' surveying in the central region. In addition, environmental pollution and disorderly expansion of rural housing areas need to be paid more attentions to in the process of industrialization and urbanization. Therefore, building a new countryside in central region should not follow the same disastrous road as the eastern region went.

There are large quantities of fertile cultivated land in the northeastern region, which has long been one of China's the most important producing bases of commercial grain. Boosting the capacities of innovation and transformation of agricultural science and technologies so as to enhance the integrated capacity of grain production, promoting the strategic adjustment of agriculture structure, improving agricultural products circulation system and strengthening the building of agricultural service system are the primary tasks of building a new countryside in this region. All in all, developing modern agriculture and strengthening the productive forces of the countryside, i.e. "advanced production," is the overwhelming objective of building a new countryside in northeastern region.

Fragile eco-environment and lagging behind rural livelihood are the major characteristics of China's western region. At the turn

of the century, the Chinese government launched the Western China Development Program, aiming to reorient the growth vigor towards the western region (Wang and Wei, 2004). Till now, China's development strategy for its western region has mainly focused on infrastructure construction and protection of the ecological environment and obtained great progress. However, development of agricultural production and other industries has not got substantial progress. Considering the lowest per capita net income of rural households in the western region (Table 1), policies concerning "advanced production" and "improved livelihood" will be particularly important. Increasing farmers' incomes and poverty alleviation should be given more attention. Nevertheless, other objectives of building a new countryside also cannot be overlooked, since there are problems with multi-dimensions in the rural areas of western region.

China's agriculture is developing into a new stage and the great change is taking place in the relation between demand and supply. The development of agriculture should be tailored to the market demand and agricultural production structure needs to be readjusted and optimized. In order to abide by the commitments of China's accession to WTO and promote the strategic readjustment in agricultural structure, the comparative advantages should be paid more attention to in the process of designing local development model. That is to say—needs deploying agricultural products at a holistic level and designing development models suited to local socio-economic conditions. However, it will rely on the means of enhancing the macroeconomic control, carrying out priority policies, and deploying the key elements (land, capital, materials, etc.) of agricultural production reasonably and effectively. As for local socio-economic development, some models need to be developed according to its advantages in resources, technologies, capitals, or production tradition, so as to form a rational structure of primary, secondary and tertiary industries.

#### *Land for efficient usage or food security?*

The central government of China treated food security as a central concern and set the rate of grain self-sufficiency at 95%, the objective of which was taken for granted to be achieved by keeping the cultivated land from decreasing any more. However, the low incentive for raising agricultural land-use intensity may more seriously threaten food security than the shrinking cultivated land area and the low technological potential in China (Li and Wang, 2003). At present, domestic grain production and farmers' income were influenced greatly by trade liberalization, which frustrated their enthusiasm for pursuing grain production. Our household interview carried out in 2006 in Dongjing village of Jinhua city, Zhejiang province, showed that a farmer can only obtain yearly profit of 580 RMB¥ (US\$ to RMB¥: 1–7.8), but he can earn 40 RMB¥ per day if he pursues other labor activities on building site (Long et al., 2009). Although the government's fund for the direct subsidies to grain farmers increased from 20 RMB¥ per mu in 2006 to 41 RMB¥ per mu in 2008, the situation will not change any more, because the farmers cannot get their expected profit from grain production.

In a WTO-membership environment, since the government cannot manipulate agricultural prices in such a way as to reward farmers adequately for their efforts, setting a little lower rate of grain self-sufficiency may be a better solution. The rate of grain self-sufficiency may be a little lower than 95% in the near future. The study of Piek (2005) showed that, in highly commercialized coastal China such as Taicang, proscribing land use for non-agricultural purposes is helpful for maintaining food security forfeit of efficient land usage, but it hamstrings the local development. Hence, efficient land use for economic development should be a priority in the eastern region instead of blindly conserving land

<sup>8</sup> How to implement these measures and policies is beyond the scope of this article.

to maintain food security, the task of which can be shifted to the central region and the northeastern region. In return, they can get financial transfer payment from the eastern region.

#### *De facto needs of the poor and the brain–drain countryside*

Although Chinese Government took several nation-wide measures to support poverty areas, such as subsidized loans for poor people, “Food for work” programme, agricultural tax reform and subsidies (Heilig et al., 2006), China still has 26.1 million people who live in dire need and who it is believed will be “the hardest nut to crack” during the poverty reduction program, by the end of 2005. Many poverty-stricken villages still suffered from low family incomes, poor transportation conditions and a shortage of clean drinking water. In 2005, the central government allocated 13 billion RMB¥ (about 1.6 billion US\$) to its poverty reduction program, 13 times that in 1980 and 37.2% of which was poured into the autonomous regions of Inner Mongolia, Xinjiang, Ningxia, Guangxi and Tibet, and provinces with large ethnic populations, such as Guizhou, Yunnan and Qinghai. In 2006, some heart-stirring policies are carried out: the most important thing is the agricultural tax, which has had a history of 2600 years, was rescinded completely; an increasing number of children in rural areas gained access to free compulsory education; and the country began to lower the price of medical services by instituting a rural cooperative medical service system.

The central government allocated large amounts of funds to poverty alleviation, but the effect is not very obvious. The real problem involved the utilization and management of the allocated money. Some of the money was misappropriated, and some was allocated in the form of “projects”, which cannot ensure that the allocated money is really spent on the needy. Aiming at poverty alleviation, the following ways may be feasible and effective: (1) the government pours money to improve the infrastructure of poverty areas, focusing on drinking water, living conditions, transport and telecommunication infrastructure; (2) the government organizes special skill training and encourages poor villagers to find jobs in cities, which will help to transfer the surplus rural labors; and (3) the government should turn more attention on its rural poor by reducing various taxes, promoting free compulsory education, and leading the poor village to develop industries making full use the advantages of local distinguished resources.

With agricultural modernization and a contraction of the agricultural sector, the young and better educated excess rural labor force will inevitably migrate to urban areas and find job, which forms brain–drain countryside for losing its most active population segment. This is a fundamental problem of every rural area in China during the specific transition period. At present, the phenomenon of brain–drain countryside has been paid more attention by central government. Selecting and dispatching undergraduate village officers has been popularized by every province, since the preferential policies was formulated by central government to encourage college student to work at rural areas in 2005. In addition, some local governments set up fund for university students’ innovative undertaking in rural areas. More preferential policies should be formulated to absorb talents to work at the countryside so as to reverse the rural brain–drain phenomenon.

#### **Conclusion**

“Building a new countryside” with advanced production, improved livelihood, a civilized social atmosphere, clean and tidy villages and efficient management, will be great helpful to practically resolve current China’s problems related to farmers, agricul-

ture and rural areas. There are four major potential factors influencing the building process. That is the regional disparities both in physical conditions and economic development, rural poverty, rural land-use issues and the present international environment.

Land consolidation is not a panacea for China’s rural land-use issues concerning building a new countryside, and the key problem is how to reemploy the surplus rural labors and resettle the land-loss farmers. More attentions should be paid to caring for farmers’ future livelihoods in the process of implementing the strategy. Considering the obvious regional discrepancies both in physical and socio-economic conditions, building a new countryside in China cannot adopt an incorporated policy, and the regional measures and policies should be tailored to the different socio-economic conditions. In a WTO-membership environment, since the government cannot manipulate agricultural prices so as to reward farmers adequately for their efforts, setting a little lower rate of grain self-sufficiency may be a better solution. Correspondingly, efficient land use for economic development should be a priority in the eastern region instead of blindly conserving land to maintain food security, the task of which can be shifted to the central region and the northeastern region. With agricultural modernization and a contraction of the agricultural sector, the young and better educated excess rural labor force will inevitably migrate to urban areas, which forms brain–drain countryside for losing its most active population segment. More preferential policies should be formulated to absorb talents to work at the countryside so as to reverse the rural brain–drain phenomenon.

The dysfunction of local administrations is one of the main causes of the peasant burden in China, and any solution should imply active participation of the farmers in the management of public affairs and the implementation of democracy at grassroots level (Li, 2003). In the process of building new countryside, it should be clear that the principal part of implementing the strategy is peasants themselves instead of governments or social organizations. The governments have the responsibility to lay out plan and provide infrastructure and public services, and the social organizations may act as a cooperator. But the peasants should participate in working out the building plan themselves, make the decisions and carry out them.

About the timetable for achieving the objectives of building China’s new countryside, there are different viewpoints. Lin (2006) put forward that it could be finished by the end of 2020, along with the accomplishment of building fairly well-off society. Ye and Na (2007) made a conclusion based on the interviews with farmers that it can be realized in two decades (80% of the interviewers thought so). Hua (2006) thought that it will take 40–60 years; at that time, China’s modernization will be finished, and the gaps of income and modernization level between rural and urban areas will almost disappeared. Based on above analyses and rural investigations, the authors argue that building new countryside in China will be an arduous task and a long road, the target of which is hard to achieve successfully in this century.

#### **Acknowledgements**

This work was supported by the National Natural Science Foundation of China (grant nos. 40635029 and 40771014), and the Ministry of Science and Technology of China (grant no. 2007BAC03A11-01). The insightful and constructive comments of the anonymous reviewers are appreciated.

#### **References**

- Arayama, Y., Miyoshi, K., 2004. Regional diversity and sources of economic growth in China. *World Economy* 27, 1583–1607.

- Asian Development Bank (ADB), 2004. Poverty Profile of the People's Republic of China. Asian Development Bank (ADB).
- Beesley, K., Millward, H., Ilbery, B., Harrington, L. (Eds.), 2003. *The New Countryside: Geographic Perspectives on Rural Change*. Brandon University and Saint Mary's University, Canada.
- Brown, L., 1995. *Who Will Feed China: Wake up Call for a Small Planet*. W.W. Norton and Company, New York.
- Cai, Y.L., 1990. Land use and management in PR China: problems and strategies. *Land Use Policy* 7 (4), 337–350.
- Cai, Y.L., 1999. Geographical study on sustainable agriculture and rural development. *Advance in Earth Sciences* 14 (6), 602–606 (in Chinese).
- Chen, B.M., 1999. The existing state, future change trends in land-use and food production capacities in China. *Ambio* 28, 682–686.
- Chen, Y.F., Tang, H.P., 2005. Desertification in north China: background, anthropogenic impacts and failures in combating. *Land Degradation & Development* 16, 367–376.
- Chow, G.C., 2002. *China's Economic Transformation*. Blackwell Publishers, Oxford.
- Cloke, P., 2006. Conceptualizing rurality. In: Cloke, P., Marsden, T., Mooney, P. (Eds.), *Handbook of Rural Studies*. Sage, London, pp. 18–28.
- Cloke, P., Goodwin, M., Milbourne, P., Thomas, C., 1995. Deprivation, poverty and marginalization in rural lifestyles in England and Wales. *Journal of Rural Studies* 11, 351–365.
- Clout, H., 2006. Rural France in the new millennium: change and challenge. *Geography* 91, 205–217.
- Coelho, J.C., Portela, J., Pinto, P.A., 1996. A social approach to land consolidation schemes. A Portuguese case study: the Valença Project. *Land Use Policy* 13, 129–147.
- Ding, C.R., 2007. Policy and praxis of land acquisition in China. *Land Use Policy* 24, 1–13.
- Edwards, B., Goodwin, M., Woods, M., 2003. Citizenship, community and participation in small towns: a case study of regeneration partnerships. In: Imrie, R., Raco, M. (Eds.), *Urban Renaissance? New Labour, Community and Urban Policy*. The Policy Press, pp. 181–204.
- Evans, N., Morris, C., Winter, M., 2002. Conceptualizing agriculture: a critique of post-productivism as the new orthodoxy. *Progress in Human Geography* 26, 313–332.
- Fan, M., 2006. Review and prospect of land consolidation in China. *Transactions of the CSAE* 22, 246–251 (in Chinese).
- Fang, C.L., Bao, C., Huang, J.C., 2007. Management implications to water resources constraint force on socio-economic system in rapid urbanization: a case study of the hexi corridor, NW China. *Water Resources Management* 21, 1613–1633.
- Feng, Z.M., Yang, Y.Z., Zhang, Y.Q., Zhang, P.T., Li, Y.Q., 2005. Grain-for-green policy and its impacts on grain supply in West China. *Land Use Policy* 22, 301–312.
- Gutman, P., 2007. Ecosystem services: foundations for a new rural–urban compact. *Ecological Economics* 62, 383–387.
- Heilig, G.K., 2003. Sustainable regional and rural development in China: where do we stand? IIASA Interim Report IR-03-026, Laxenburg.
- Heilig, G.K., 2006. Many Chinas? The economic diversity of China's provinces. *Population and Development Review* 32, 147–161.
- Heilig, G.K., Zhang, M., Long, H.L., Li, X.B., Wu, X.Q., 2006. Poverty alleviation in China: a lesson for the developing world? *Geographische Rundschau International Edition* 2, 4–13.
- Hoggart, K., Paniagua, A., 2001. What rural restructuring? *Journal of Rural Studies* 17, 41–62.
- Hua, S., 2006. Three core issues on building a new countryside in China. *Guide to Chinese Poultry* 23 (6), 3 (in Chinese).
- Huang, J.K., Rozelle, S., 1995. Environmental stress and grain yields in China. *American Journal of Agricultural Economics* 77, 853–864.
- Huang, J.K., Rozelle, S., Zhang, L.X., 2001. WTO and agriculture: radical reforms or the continuation of gradual transition. *China Economic Review* 11, 397–401.
- Hudeckova, H., 1995. Privatization in agriculture and rural regeneration. *Sociologicky Casopis* 31, 449–462.
- Jefferson, G., 1993. Are China's Rural Enterprises Out-performing State-owned Enterprises? Research Paper No. CH-RPS#24. The World Bank, Washington, DC.
- Johnsen, S., 2003. Contingency revealed: New Zealand farmers' experiences of agricultural restructuring. *Sociologia Ruralis* 43, 128–153.
- Johnsen, S., 2004. The redefinition of family farming: agricultural restructuring and farm adjustment in Waihemo, New Zealand. *Journal of Rural Studies* 20, 419–432.
- Korf, B., Oughton, E., 2006. Rethinking the European countryside—can we learn from the South? *Journal of Rural Studies* 22, 278–289.
- Land Consolidation and Rehabilitation Center of MLRC (LCRC), 2000. *Criterion of Land Reclamation and Consolidation*. Chinese Plan Press, Beijing.
- Li, W., Feng, T.T., Hao, J.M., 2009. The evolving concepts of land administration in China: cultivated land protection perspective. *Land Use Policy* 26, 262–272.
- Li, X.B., Wang, X.H., 2003. Changes in agricultural land use in China: 1981–2000. *Asian Geographer* 22, 27–42.
- Li, X.D., 2003. Rethinking the peasant burden: evidence from a Chinese village. *Journal of Peasant Studies* 30, 45–74.
- Lin, G.C.S., Ho, S.P.S., 2003. China's land resources and land-use change: insights from the 1996 land survey. *Land Use Policy* 20, 87–107.
- Lin, J.Y., 1992. Rural reforms and agricultural growth in China. *American Economic Review* 82, 34–51.
- Lin, J.Y., 2006. Some suggestions on building a new socialist countryside in China. *Northern Economy* 3, 5–6 (in Chinese).
- Lin, J.Y., Cai, F., Li, Z., 1998. Analysis of China's regional disparities in the period of economy transition. *Economic Research* 6, 3–10 (in Chinese).
- Liu, H., 2006. Changing regional rural inequality in China 1980–2002. *Area* 38, 377–389.
- Liu, Y.S., Wang, D.W., Gao, J., Deng, W., 2005a. Land use/cover changes, the environment and water resources in northeast China. *Environmental Management* 36, 691–701.
- Liu, J.Y., Zhan, J.Y., Deng, X.Z., 2005b. Spatio-temporal patterns and driving forces of urban land expansion in China during the economic reform era. *Ambio* 34, 450–455.
- Liu, J.Y., Liu, M.L., Tian, H.Q., Zhuang, D.F., Zhang, Z.X., Zhang, W., Tang, X.M., Deng, X.Z., 2005c. Spatial and temporal patterns of China's cropland during 1990–2000: an analysis based on Landsat TM data. *Remote Sensing of Environment* 98, 442–456.
- Liu, Y.S., Wang, J.Y., Deng, X.Z., 2008a. Rocky land desertification and its driving forces in the karst areas of rural Guangxi, Southwest China. *Journal of Mountain Science* 5, 681–699.
- Liu, Y.S., Wang, L.J., Long, H.L., 2008b. Spatio-temporal analysis of land-use conversion in the eastern coastal China during 1996–2005. *Journal of Geographical Sciences* 18, 274–282.
- Liu, Y.S., Wang, J.Y., Guo, L.Y., 2006. GIS-based assessment of land suitability for optimal allocation in the Qinling Mountains, China. *Pedosphere* 16, 579–586.
- Liu, Y.S., Gao, J., Yang, Y.F., 2003. A holistic approach towards assessment of severity of land degradation along the Great Wall in northern Shaanxi province, China. *Environmental Monitoring and Assessment* 82, 187–202.
- Long, H.L., Heilig, G.K., Li, X.B., Zhang, M., 2007a. Socio-economic development and land-use change: analysis of rural housing land transition in the Transect of the Yangtze River, China. *Land Use Policy* 24, 141–153.
- Long, H.L., Tang, G.P., Li, X.B., Heilig, G.K., 2007b. Socio-economic driving forces of land-use change in Kunshan, the Yangtze River Delta Economic Area of China. *Journal of Environmental Management* 83 (3), 351–364.
- Long, H.L., Heilig, G.K., Wang, J., Li, X.B., Luo, M., Wu, X.Q., Zhang, M., 2006. Land use and soil erosion in the upper reaches of the Yangtze River: some socio-economic considerations on China's Grain-for-green Programme. *Land Degradation & Development* 17, 589–603.
- Long, H.L., Liu, Y.S., Wu, X.Q., Dong, G.H., 2009. Spatio-temporal dynamic patterns of farmland and rural settlements in Su-Xi-Chang region: implications for building a new countryside in coastal China. *Land Use Policy* 26, 322–333.
- Lu, D.D., Fan, J., Liu, Y., et al., 2003. *China Regional Development Report 2002*. Commercial Press, Beijing.
- Ma, Z., 1999. Temporary migration and regional development in China. *Environment and Planning A* 31, 783–802.
- Mather, A.S., Hill, G., Nijnik, M., 2006. Post-productivism and rural land use: cul de sac or challenge for theorization? *Journal of Rural Studies* 22, 441–455.
- McCarthy, J., 2008. Rural geography: globalizing the countryside. *Progress in Human Geography* 32, 129–137.
- McDonald, J.H., 2001. Reconfiguring the countryside: power, control, and the (re)organization of farmers in west Mexico. *Human Organization* 60, 247–258.
- National Bureau of Statistics of China (NBSC), 2001. *China Statistical Yearbook*. China Statistics Press, Beijing.
- National Bureau of Statistics of China (NBSC), 2006. *China Statistical Yearbook*. China Statistics Press, Beijing.
- Peemans, J.P., 1995. Modernization, globalization and territories: evolution of views on the articulation of urban and rural spaces in the development processes. *Tiers Monde* 36, 17–39.
- Pieke, F.N., 2005. The politics of rural land use planning in China. In: Ho, P. (Ed.), *Developmental Dilemmas: Land Reform and Institutional Change in China*. Routledge, Curzon, London, pp. 89–117.
- Pierce, J.T., Prager, S.D., Smith, R.A. (Eds.), 2000. *Reshaping of Rural Ecologies, Economies and Communities*. Department of Geography, Simon Fraser University, Vancouver, British Columbia.
- Qu, F.T., Heerink, N., Wang, W.M., 1995. Land administration reform in China: its impact on land allocation and economic development. *Land Use Policy* 12, 193–203.
- Robinson, G.M., 1988. *Agricultural Change: Geographical Studies of British Agriculture*. North British Publishing, Edinburgh.
- Robinson, G.M., 1997. Community-based planning: Canada's Atlantic Coastal Action Program (ACAP). *Geographical Journal* 163, 25–37.
- Robinson, G.M., 2004. *Geographies of Agriculture: Globalisation, Restructuring and Sustainability*. Pearson, Harlow.
- Rozelle, S., Huang, J.K., Zhang, L.X., 1997. Poverty, population and environmental degradation in China. *Food Policy* 22, 229–251.
- Sargeson, S., 2002. Subduing “the rural house-building craze”: attitudes towards housing construction and land-use controls in four Zhejiang villages. *China Quarterly* 172, 927–955.
- Selman, P., 2006. Book review. *Journal of Rural Studies* 22, 244–245.
- Simons, S., 1987. Land fragmentation and consolidation: a theoretical model of land configuration with an empirical analysis of fragmentation in Thailand. Ph.D. Thesis. University of Maryland.
- Smit, B., Cai, Y.L., 1996. Climate change and agriculture in China. *Global Environmental Change* 6 (3), 205–214.
- Smith, G., 2007. The new socialist countryside: feeding the poor or feeding the beast? In: Nelson, B., Jeffrey, R. (Eds.), *Capturing the Year 2006: Writings from the ANU College of Asia and the Pacific ANU. College of Asia and the Pacific*, pp. 47–50.

- Tan, M.H., Li, X.B., Xie, H., Lu, C.H., 2005. Urban land expansion and arable land loss in China—a case study of Beijing–Tianjin–Hebei region. *Land Use Policy* 22, 187–196.
- Tan, S.H., Heerink, N., Qu, F.T., 2006. Land fragmentation and its driving forces in China. *Land Use Policy* 23, 272–285.
- The Ministry of Land and Resources of China (MLRC), 2006. Reports on China's Land-use Survey and Update in 2005. China Land Press, Beijing.
- The State Council of the People's Republic of China (SCPRC), 2001. Guidelines of Poverty Alleviation and Development for Rural China (2001–2010). The State Council of the People's Republic of China (SCPRC), Beijing.
- The State Council of the People's Republic of China (SCPRC), 2006. Guidelines of PRC's 11th Five-Year Plan for National Economic and Social Development. People's Press, Beijing (in Chinese).
- Tian, G.J., 2003. The spatial distribution of rural settlements and their dynamic change in China using GIS. *Remote Sensing Information* 2, 32–35 (in Chinese).
- U.K. Ministry of Overseas Development (UMOD), 1969. Rural Development Report of a Working Group. U.K. Ministry of Overseas Development.
- Unger, J., 2002. The Transformation of Rural China. M.E. Sharpe, Armonk.
- Unger, J., Chan, A., 1999. Inheritors of the boom: private enterprise and the role of local government in a rural south China township. *The China Journal* 42, 45–74.
- Wang, L.L., Wei, H.K., 2004. Progress of Western China development drive, and evaluation of the results. *China & World Economy* 12 (2), 20–33.
- Weitzman, M., Xu, C., 1994. Chinese township-village enterprises as vaguely defined cooperatives. *Journal of Comparative Economics* 18, 121–145.
- Wilson, G.A., 2001. From productivism to post-productivism and back again? Exploring the (un)changed natural and mental landscapes of European agriculture. *Transactions of the Institute of British Geographers* 26, 77–102.
- Woods, M., 1998. Advocating rurality? The repositioning of rural local government. *Journal of Rural Studies* 14, 13–26.
- Woods, M., 2005. *Rural Geography: Processes, Responses and Experiences in Rural Restructuring*. Sage, London.
- Woods, M., 2007. Engaging the global countryside: globalization, hybridity and the reconstitution of rural place. *Progress in Human Geography* 31, 485–507.
- Woods, M., 2008. Social movements and rural politics. *Journal of Rural Studies* 24, 129–137.
- Wu, C.J., 1997. The new development of rural China. *BEVAS-SOBEG* 1, 101–105.
- Wu, Z.P., Liu, M.Q., Davis, J., 2005. Land consolidation and productivity in Chinese household crop production. *China Economic Review* 16, 28–49.
- Xie, Y.C., Yu, M., Tian, G.J., Xing, X.R., 2005. Socio-economic driving forces of arable land conversion: a case study of Wuxian City, China. *Global Environmental Change* 15, 238–252.
- Yang, H., Li, X.B., 2000. Cultivated land and food supply in China. *Land Use Policy* 17, 73–88.
- Ye, J.Z., Na, K.P., 2007. The timetable for building a new countryside in China. *Chinese Rural Economy* 1, 12–19 (in Chinese).
- Yu, G.M., Feng, J., Che, Y., Lin, X.W., Hu, L.M., Yang, S., 2010. The identification and assessment of ecological risks for land consolidation based on the anticipation of ecosystem stabilization: a case study in Hubei Province, China. *Land Use Policy* 27, 293–303.
- Zhang, L.X., Huang, J.K., Rozelle, S., 2002. Employment, emerging labor markets, and the role of education in rural China. *China Economic Review* 13, 313–328.
- Zhang, L.X., Rozelle, S., Huang, J.K., 2001. Off-farm jobs and on-farm work in periods of boom and bust in rural China. *Journal of Comparative Economics* 29, 505–526.
- Zhao, S.X.B., Wong, K.K.K., 2002. The sustainability dilemma of China's township and village enterprises: an analysis from spatial and functional perspectives. *Journal of Rural Studies* 18, 257–273.