The social and environmental implications of urbanization strategies and domestic land grabbing in China

The case of Chongming Island

Giuseppina Siciliano

LDPI Working Paper 14

The social and environmental implications of urbanization strategies and domestic land grabbing in China: The case of Chongming Island

by Giuseppina Siciliano

Published by:
The Land Deal Politics Initiative
www.iss.nl/ldpi
landpolitics@gmail.com

in collaboration with:
Institute for Development Studies (IDS)
University of Sussex
Library Road
Brighton, BN1 9RE
United Kingdom
Tel: +44 1273 606261 Fax: +44 1273 621202 E-mail: ids@ids.ac.uk Website: www.ids.ac.uk

Initiatives in Critical Agrarian Studies (ICAS)
International Institute of Social Studies (ISS)
P.O. Box 29776
2502 LT The Hague
The Netherlands
Tel: +31 70 426 0664 Fax: +31 70 426 0799 E-mail: iss.icas@gmail.com Website: www.iss.nl/icas

The Institute for Poverty, Land and Agrarian Studies (PLAAS)
School of Government, Faculty of Economic and Management Sciences
University of the Western Cape, Private Bag X17
Bellville 7535, Cape Town
South Africa
Tel: +27 21 959 3733 Fax: +27 21 959 3732 E-mail: plaas@uwc.ac.za Website: www.plaas.org.za

The Polson Institute for Global Development
Department of Development Sociology
Cornell University
133 Warren Hall
Ithaca NY 14853
United States of America
Tel: +1 607 255-3163 Fax: +1 607 254-2896 E-mail: ta12@cornell.edu Website: polson.cals.cornell.edu

Published with support from the UK Department for International Development (DfID), Atlantic Philanthropies, Inter-Church Organization for Development Cooperation (ICCO), Ford Foundation and Miserior.

Abstract

Domestic land grabbing is defined as the process of land expropriation and displacement put in place by governments within their country borders to supposedly enhance development. While development-induced displacement occurs all over the world, China is responsible for a large fraction of such type of displacement and resettlement projects. Urban sprawl and land commodification for food security and agricultural modernization are the main consequences of domestic land grabbing in the country. Although attention towards the implications of land grabbing and urbanization on the social stability of China has recently increased, studies which try to identify the main drivers of domestic land grabbing and urbanization, as well as to look at the impacts, trade-offs and migrant views, are still rare. These aspects need further study in order to provide better insights into the relationship between rural development, urbanization and land expropriation. Drawing on a case study from a rural island in east China, this paper analyses the impacts of displacement and resettlement projects in relation to: (i) land tenure rights and compensation measures; (ii) rural workers' livelihoods and the *hukou* registration system; (iii) environmental degradation. Results reveal that landless people and rural areas in general are facing the risk of unemployment, food self-sufficiency problems, the mismanagement of resettlements, and environmental degradation. Under such circumstances, it is very difficult to view the urbanization strategy and resettlement policy of China as a good opportunity to improve development.

About the author

Giuseppina Siciliano is a post-doctoral researcher within the Faculty of Regional Planning at University IUAV of Venice. She holds a Ph.D. in Analysis and Governance of Sustainable Development from Universita' Ca' Foscari, Venice and an MSc in Ecological Economics at the Universitat Autonoma de Barcelona. She works in the fields of public policy evaluation, environmental management and sustainability with research experiences and fieldwork in rural areas of China, Mexico and Italy. She is lecturer in Political Economy of the Environment (University of Siena, Department of PoliticalEconomy) and in Planning and Evaluation Techniques (University IUAV of Venice).

Acknowledgements

This paper is based on research funded by the Land Deal Politics Initiative (LDPI) 2012 Small Grants Recipients to carry out research on land grabbing. I thank Shen Jiaqi from the UNEP–Tongji Institute of Environment for Sustainable Development of Shanghai and Zhang Yingchun bachelor student of Tongji University for their help in organizing the 2012 field trip to Chongming island, as well as for translations, data collection and interviews with local people.

Table of contents

1 Introduction

In China, rapid economic growth, socio-economic inequality and environmental degradation are undermining social stability and sustainable urbanization (McGranahan and Tacoli, 2006). Urbanization, referring to population growth in urban areas, is usually one of the major social changes that occur in transition countries, moving toward market-based economies. In China, rural-urban migration is the main factor contributing to urban population growth (Goldstain, 1990; Chan, 2011) and the literature identifies economic opportunity as the major driver of rapid urbanization (see for instance Fan, 1996). Industrialization and urbanization have resulted in forced displacement and the conversion of agricultural land into land allocated for industrial projects and urban real estate development. It is estimated that some 50 million people have been internally displaced from rural to urban areas by urban sprawl and infrastructure development (Stanley, 2009). In contrast, no estimate exists on the extent of internally displaced people from rural development, food security concerns and agricultural modernization. In this case, the government is supporting migration as a formal rural development strategy to boost agricultural intensification and to reduce rural-urban inequalities (China's 12th Five-Year Plan, 2010). In both cases, domestic land grabbing can be identified.

The term land grabbing is generally used to describe the processes of acquisitions or leasing of large portions of land that are conducted by foreigner states, transnational corporations or investors, especially in developing countries. These processes are also often referred to as "foreignization" of space or land (Cotula, 2009; Zoomers, 2010; World Bank, 2010). Land grab processes are commonly accompanied by land expropriation and population displacement to make room for infrastructure projects, agricultural intensification for biofuel and food exports, or mineral extraction projects (GRAIN, 2008). Although foreign land grabs have been widely analyzed in the literature within the last few years all over the world (Cotula, 2009; World Bank, 2010; Borras et al., 2010, 2011; von Braun and Meinzen-Dick, 2009), domestic land grabbing has received little attention in terms of categorization and estimation, despite the evidence that in some countries domestic land investors have been more important than foreigner ones (Deininger, 2011; Scheidel and Sorman, 2012). Generally, China is identified in the literature as a foreign land grabber and a major investor, mostly in biofuel and food production, in Latin America, Asia and Africa (von Braun and Meinzen-Dick, 2009; Grain, 2010; World Bank, 2010; Hofman, 2011; Hofman and Ho, 2012; Borras et al., 2012).

Domestic land grabbing is defined in the literature as the processes of land expropriation by governments within their own country's borders intended to enhance development (Deininger, 2011), and it is usually accompanied by land dispossession, displacement and resettlement projects. Although large scale displacement and resettlement have a long history in China, for instance through forced collectivization in agriculture, what is new in contemporary land grabbing in the country is the speed and dimension of the land dispossession and resettlement phenomenon, its main driving forces and the emerging social discontent of migrants and displaced people. As Levien (2012) and other authors have argued, the Chinese state is one of the largest drivers of Harvey's concept of "accumulation by dispossession" (Harvey, 2003) in the development process, leading to land dispossession for hundreds of millions of people from urbanization, infrastructural projects and agricultural intensification (Levien, 2012; Li, 2011; Walker, 2008). Moreover, despite other cases in which the categorization of land dispossession as a "grab" by the state is ambiguous, China's extent of state-owned property and unclear definitions of property rights result in a situation where "land is expropriated with the backing of the state using means other than voluntary market purchase" (defined by Harvey as the appropriation of value in the form of land). This, according to Levien, can be properly defined as a "land grab" (for a critical and detailed discussion of the use of the term "land grab," see Levien, 2012). This phenomenon in China leads to new implications for agrarian

labor regimes, the establishment of new production patterns (and land uses), changes to local communities and social instability. Mobilizing labor through large land dispossession and organizing it into new production patterns, as well as capital accumulation associated with land use change (from small scale agriculture to agricultural intensification or urbanization), create consequences for development, which need to be analyzed empirically and from a local and integrated perspective (White et al., 2012).

Taking into consideration all the above, this paper tries to identify the main drivers of domestic land grabbing in China and explores, through the empirical example of the Chongming Island master plan, the consequences of displacement practices on rural communities and rural areas. As of 2005, the island has been included in the Shanghai Development Plan, and various urban and rural development projects have been started since then, leading to the displacement of a large segment of the population. By using empirical data derived from surveys and in-depth interviews for two different time periods (2008-2009 and 2012) in Chongming, the paper examines both (i) the socio-economic and environmental implications of domestic land grabbing using a social metabolism approach and (ii) the views of migrant people before and after displacement using in-depth interviews. The application of social metabolism to the analysis of rural systems, land grabbing and agrarian change has received increasing attention from a diverse range of disciplines, focusing on farming practices and agriculture as a whole set of ecological and social relationships (e.g., Schneider et al., 2010; Giampietro, 2003; McMichael, 2008). For instance, McMichael analyzes the link between the interruption of natural cycles of regeneration of soil and water in rural areas and the dispossession of small-farming culture that is responsible for local ecological and social renewal. He defines the shift from traditional to industrial practices as a “metabolic rift” in which there is a separation of agriculture from its biological and cultural base. Industrialized agriculture is deepening the rift by increasing the use of fossil fuels and its use of inorganic fertilizers, pesticides and herbicides (McMichael, 2008). These concepts are applied in this paper by using socio-economic and biophysical variables, such as time, energy, capital and land to evaluate appropriate indicators of performance of alternative land use scenarios “with” and “without” displacement (Giampietro, 2003). Results obtained by the empirical study are discussed to highlight pathways of rural change in China associated with urbanization, land grabbing and the establishment of new production, new land use patterns and new labor regimes.

With respect to the drivers of land grabs, while literature on rural-urban migration highlights economic opportunity as the only ultimate driver of urbanization in China, the paper discusses how city expansion and demand for workers in the industrial and services sectors, as well as the presence of rural-urban disparities and food security struggles, are triggering urbanization, land dispossession and resettlement processes.

The rest of the paper is organized as follows. Sections 2 and 3 discuss the main facts and figures related to the urbanization process and the rural development strategy of China. Thereafter, section 4 presents a conceptualization of the link between rural-urban migration and domestic land grabbing in China and it analyzes, from a qualitative perspective, the main drivers, causes and impacts. Section 5 presents the case study and the survey findings. Closing remarks follow in section 6.

2 Rural-urban migration in China: facts and figures

China is one of the fastest urbanizing countries in the world.

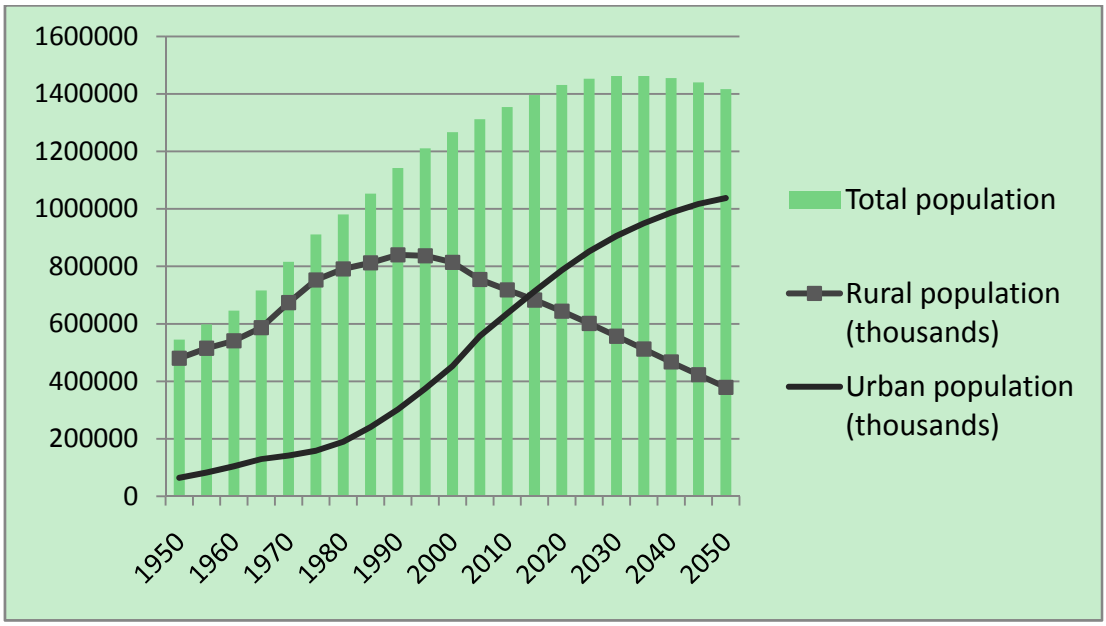

Figure 1 Rural-Urban population in China (United nations data and projections, 2012)

According to United Nations data, China's urban population has grown at a rate of approximately 3.44 percent from 2005-2010 (United Nations, 2012). Since 2011, China has been more urban than rural, with a projected urban population of 77 percent in 2050 (Figure 1).

Rural-urban migration is the main factor explaining the increase of the urban population; also included is the reclassification of rural localities into urban centers (Goldstain, 1990; Chan, 2011). The number of cities has steadily increased from 1990-2010 and it is estimated that it will continue to increase from 2010 onward, corresponding to urban population growth projections (Table 1).

Table 1 Urban population (in million) and number of cities (1990-2025 projected), China

Size class of cities	1990	1995	2000	2005	2010	2015	2020	2025
10 million or more								
Number of agglomerations	0	1	2	2	4	6	7	7
Population	0	10,450	24,121	28,939	55,262	87,075	110,325	120,344
5 to 10 million								
Number of agglomerations	2	2	5	7	10	9	11	17
Population	14,611	13,818	34,624	51,611	68,756	64,332	78,761	117,768
1 to 5 million								
Number of agglomerations	32	45	57	67	80	97	121	139
Population	60,024	88,116	111,756	137,060	152,186	193,162	236,440	257,270
500,000 to 1 million								
Number of agglomerations	38	54	90	117	141	173	198	218
Population	26,734	35,612	59,912	79,407	96,121	120,502	139,051	153,799
Fewer than 500,000								
Population	201,447	227,870	224,912	259,001	287,962	296,508	281,786	262,622

Source: United nations data and projections, 2012

The literature has identified the fast growth of wage disparities between rural and urban populations and between regions, as well as the increasing demand for workers in the industrial and service sectors of cities, as the major migration drivers in China; this indicates that economic opportunities are the driving force behind internal migration (Fan, 1996; Chan, 2011).
Historically, migration policy in China was based on a household registration (*hukou*)

system that has been a major obstacle to migration (Chan, 2011; Chan, 2010a; United Nations, 2011). However, in the last 25 years, as a result of economic growth and the relaxation of migration controls, non-planned migrations, referred to as *non-hukou* migrations involving "temporary" migrants, have comprised a large share of the total rural-urban migrations (Zhang and Song, 2003; McGranahan and Tacoli, 2006; Fan, 1996). According to Chan et al. (2011), rural migrant workers increased from 53 million to 115 million from 1992-2006. Most of the migrants moved from their villages to nearby towns, and approximately a quarter to one-third moved to big cities located mainly on the coast. Development-induced displacement, which refers to displacement of people as a result of policies and projects intended to enhance development (Stanley, 2009; Robinson, 2003), is also an important aspect of Chinese urbanization. The most significant causes of displacement from development include large-scale infrastructure projects, such as dams, roads, ports, airports, mining and deforestation, nature conservation projects, and rural development initiatives. While development-induced displacement occurs all over the world, China and India are responsible for a large portion of these displacement and resettlement projects. Development-induced migration has been significant in combination with rapid urbanization in China. In the past two decades, urban sprawl, due to infrastructural projects and urban construction, has consumed some 4 million hectares (ha) of land; approximately 50 million farmers were displaced and lost their farmland (Li, 2011). These numbers are expected to grow in the near future in line with increasing numbers of cities and growing urban populations, as shown in Table 1.

3 China's rural development and the urbanization strategy

Increasing urbanization in China is one of the official objectives of the 12th Five-Year Plan for National Economic and Social Development (FYP) (2011-2015), approved in March 2011 by the Communist Party of China's (CPC) Central Committee. The main objective of this strategy is to reduce the rural-urban divide, thereby decreasing social instability. For example, the average income of urban residents in Shanghai was 1.3 times that of rural residents in 1990, and the gap expanded to a disparity of 2.3 times greater in 2010 (Shanghai Statistical Yearbook, 2011). Due to increasing rural-urban inequality, the government has started to increase rural development projects. China's rural development strategy is comprised of two interrelated goals: to increase urbanization and to modernize and intensify agriculture (China's 12th Five-Year Plan, 2010).

The urbanization strategy will ensure income-level improvements for rural populations by employing them in the industrial and service sectors of cities; it is estimated that 45 million new urban jobs will be created by 2015 (Casey and Koleski, 2011). Achieving agricultural modernization and increasing productivity requires improving farming techniques through mechanization and better irrigation systems, as well as increasing the size of agricultural plots compared with those currently prevailing in rural areas of China (van Westen, 2011; Lohmar et al., 2009; Tan et al., 2006). Agricultural modernization is also linked to food security. Agricultural productivity in China has slowed in recent years (Lohmar et al., 2009). Cultivated land per-capita is far below the world average; this could create a big challenge to ensuring food security for the increasing urban population (Chen, 2007). Therefore, agriculture is an important issue for China in terms of productivity as well as the availability of arable land. Hence, the primary official reasons for the Chinese government to promote urbanization are: (i) to reduce the growing rural-urban gap and to support economic growth by increasing wage-workers in the industrial sector and (ii) to boost agricultural productivity by combining fragmented plots into ones suitable for mechanization and agricultural intensification with the purpose of guaranteeing food security for urban populations.

4 Rural migration and domestic land grabbing: drivers, causes and impacts

From the discussions above, it follows that land resources are a fundamental asset for supporting economic growth and urbanization in China. Figure 2 provides a schematization of the main drivers and secondary causes of internal migration, as well as how they lead to land use changes and land displacement practices. Two different land use changes are happening in conjunction with urbanization: either the expansion of cities (urban sprawl), which usually refers to the conversion of agricultural land into land used for urban construction, industrial development or infrastructural projects in the rural-urban fringe, or land-use changes in rural areas from traditional (self-sufficiency) uses to intensive methods. Moreover, referring to the existing literature on rural-urban migration and to China's rural development strategy (explained in the previous section), while the ultimate drivers of migration are mainly economic growth (see for instance Fan, 1996, 2005) and food security, its secondary causes can be acknowledged as both the increasing demand for wage-workers in the industrial and service sectors and rural-urban disparities (Fan, 1996), along with the modernization of the agricultural sector (van Westen, 2011; Lohmar et al., 2009)[1].

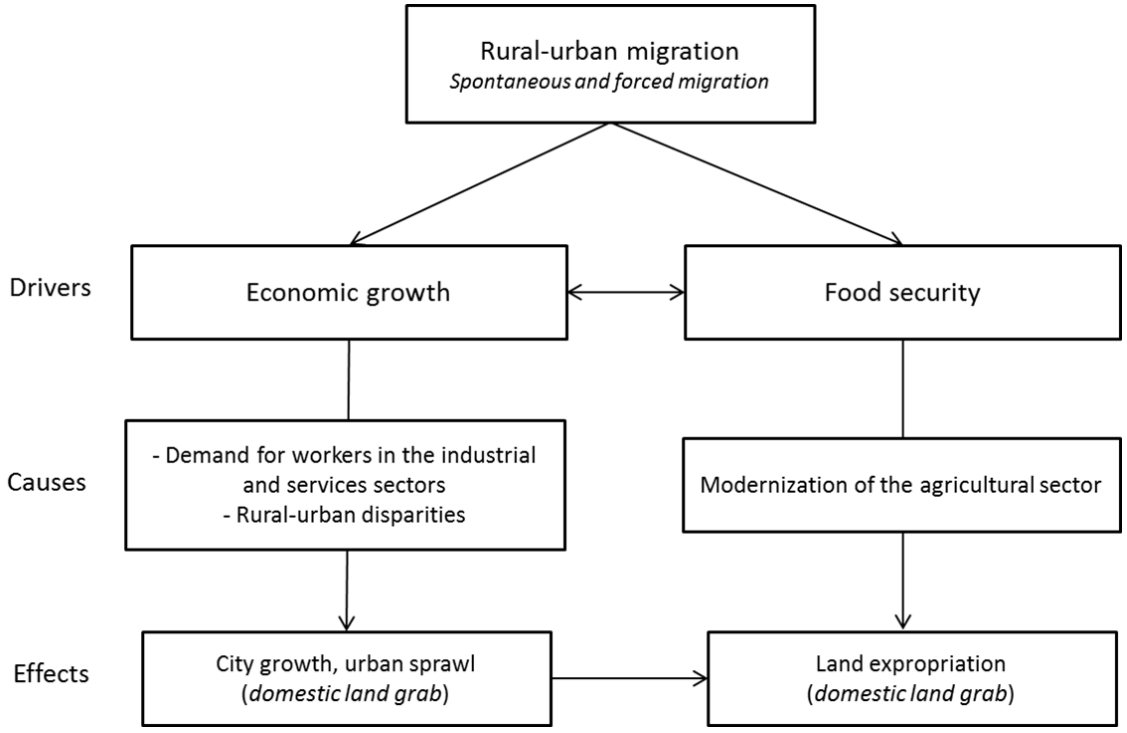

Figure 2 Rural-urban migration and domestic land grabbing in China

In the last few years, the link between rural-urban migration and land grabbing, as shown in Figure 2, are increasingly associated with social instability and conflicts primarily due to aspects of internal migration in China. These aspects can be summarized as (i) land tenure rights and compensation measures, (ii) rural workers' livelihood and the *hukou* registration system, and (iii) environmental degradation.

In China, rural land is regulated under the Household Responsibility System (HRS). Through this system, the land officially remains under the control of collective ownership which allocates land-use

[1] However, the modernization of the agricultural sector can be interpreted also as a primary Chinese strategy leading to secondary effects on food security (indicated in the graph with a double arrow).

rights to each individual household, which, according to the Rural Land Contracting Law (RLCL), have fixed-term contracts to cultivate the land (30-year land-use contracts). Land-use rights are, in general, separated from the title (Xu et al., 2009), and they can be reallocated among villagers at any moment, depending on demographic changes across families or on specific governmental land-use needs (Tao et al., 2008). This practice leads to ambiguity and insecurity and to undervalued land assets (Zhu, 2002). According to the Chinese Land Administration Law (LAL), land can be expropriated at any moment in the "public interest" in exchange for compensation that is estimated based on the annual productivity of the land. Because the law does not allow for the private sale of farmland, compensation results in a lower value than the corresponding market value (Chan, 2003). Therefore, compensation is usually insufficient, and there is evidence that sometimes no compensation is provided at all (Li, 2011, Mullan et al., 2011). Furthermore, there is evidence that most of the time, expropriated land is used for non-public urban usage, such as industrial, commercial and residential projects, instead of urban infrastructural development (Cao et al., 2008). Moreover, dispossessed people generally do not have access to official mechanisms that might give them the right to claim compensation from the government (Chan, 2003). A study of a sample of landless peasants has also shown that due to the *hukou* registration system, most of them did not receive social security after land dispossession and 3.5 percent experienced joblessness after dispossession (Li, 2011; Guo, 2001; Chan, 2003). In such circumstances, rural migrants are at risk due to vulnerability to unemployment and food insecurity (Chan, 2011, 2010; Matuschke, 2009). According to Chan (2010b), in conjunction with the global financial crisis of 2008-2009, total unemployment of rural migrant workers is estimated to have been 23 million in early 2009, or approximately 16.4 percent. Only 2 million out of the 14 million workers that returned to their home villages were able to find a new job (Chan, 2010b; Wang, 2010; Hsu et al., 2010).

Finally, along with rapid urbanization and urban sprawl in China, various environmental impacts have been identified in the literature, such as resource scarcity, habitat loss, air pollution and land degradation (see as an example Chen, 2003; Ren, 2003; Tan et al., 2005; Xiao, 2006; Chen, 2007; Deng et al., 2009; Liu et al., 2010).

These side effects of economic growth and urbanization are seriously undermining social stability in China (Christiansen, 2009); various sources have reported a substantial increase in the number of conflicts related to land grabs in different regions of the country, where people have started to complain about the ongoing land expropriation in their communities (e.g., Heurlin C. and Whiting S., 2007; Guo, 2003; Cao et al., 2008; Channel New Asia, 2011; The Diplomat, 2012).

Although a recently emerging body of literature analyzes land conflicts in China due to displacement, land dispossession and resettlement practices, empirical and quantitative investigations of the potential economic, environmental and social implications are still poor. To fill this gap, the following sections provide an analysis of the main tradeoffs between different developmental objectives, as well as the migrants' point-of-view of ongoing land dispossession and displacement processes through the example of the Chongming Island development plan.

5 The case of Chongming Island

5.1 Case study description

Chongming is the third largest island in China, with an area of 1,185 km^2 and a total population of 703,400 inhabitants (Shanghai Statistical Yearbook, 2011). It is situated in the Yangtze Estuary and governed by Shanghai's Municipal Government. The economic structure of Chongming is dominated by the agricultural sector, which led the economy of the island with more than 50 percent of the total gross income produced. The rural population constitutes 74 percent of the total population, with 233,762 rural households and 223 rural villages (Statistical Yearbook, 2007). Agricultural land

comprised 82 percent of the total area, with only 4 percent covered by forests. Land tenure is characterized by the presence of collective ownership, but a process of privatization through land expropriation, agricultural intensification and urban construction is taking place on the island. As shown in Table 2, in 2007 there were 202 ha of farmland expropriated and new private plots created, mainly for agricultural and industrial parks, reforestation programs and residential construction.

Table 2 Change in Farmland area in hectares in Chongming (2007)

	farmland beginning of year	reduced area	expropriation	collective plots	private plots
total	50,080	202.8	202.8	43,125	3,686

Source: Statistical Yearbook, 2007

From a socio-economic point-of-view, Chongming is currently the poorest district of Shanghai. According to the Statistical Bureau of the Shanghai Municipality (Statistical Yearbook, 2007), the average net income of the rural population is very low in comparison with the urban population and the urban-rural gap is increasing over time (Figure 3).

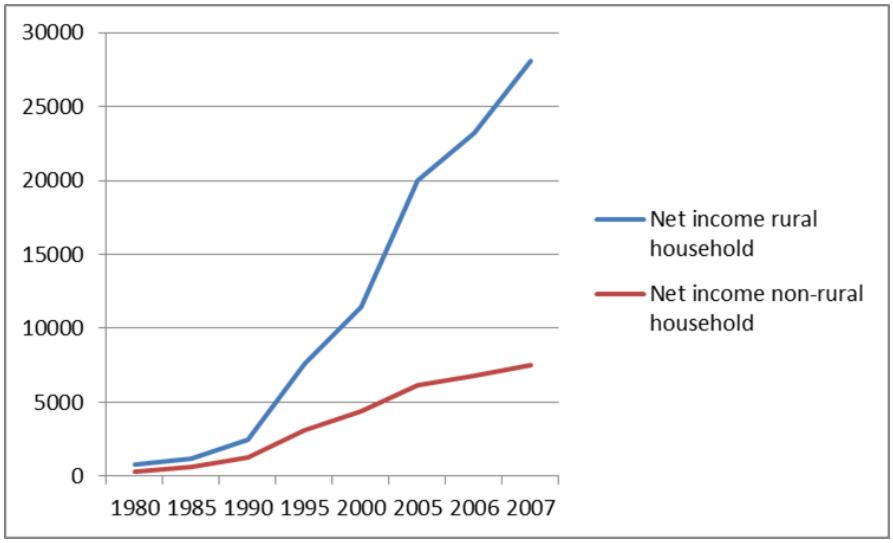

Figure 3 Rural-Urban income gap, Chongming island (Statistical Yearbook, 2007)

From an environmental point of view, the use of a considerable amount of fertilizers and pesticides in agricultural production has put significant pressure on natural resources, with worsening soil salinization and degradation in the last few years (Sino-Italian Cooperation Project, 2008).

The government of Shanghai has developed a comprehensive master plan for the development of the island by 2020. The main purpose of the master plan is to reduce the rural-urban income gap by increasing urbanization and agricultural intensification (The Master Plan of Development of Chongming, 2005-2020) (State Council of China, 2004). This process identifies large agricultural areas for modernization, especially on the eastern part of the island. Moreover, the master plan predicts a concentration of the rural population, currently living in dispersed rural villages, into towns located along the coast. The Chongming Island development master plan follows the Chinese government guidelines, which promote urbanization as a strategic priority of China's economic development to facilitate economic restructuring and rapid economic growth. They theorize that promoting urbanization is needed to encourage rural surplus labor to seek employment in non-agricultural activities and in cities and towns, thereby reducing the agricultural population, improving agricultural productivity and increasing farmers' incomes (Liu, 2003).

5.2 Using metabolic profiles to analyze pathways of rural change

5.2.1 Societal metabolism of rural systems: methodological aspects

The societal metabolism concept has been extensively used to analyze the links between social activities and resource use and has become a key concept in sustainability science (Kuskova et al., 2008; Ramos-Martìn et al., 2009; Adriaanse et al. 1997; Fischer-Kowalski, 1998; Matthews et al. 2000; Scheidel and Sorman, 2012; Iorgulescu and Polimeni, 2009; Recalde and Ramos-Martìn, 2011). In rural studies research, this approach has commonly been used to analyze rural systems, moving from conventional approaches centered mainly on economic variables, toward an integrated perspective (Grunbuhel and Schandl, 2005; Gomiero, 2001; Giampietro, 2003; McMichael, 2008). In this paper, the societal metabolism application considers land, time, energy and money as the basic elements of households' decisions (Giampietro, 2003; Grunbuhel and Schandl, 2005; Pastore, 1999). This focus on land use and human activity (formalized as time use) is the basis for the integrated assessment of societal metabolism for rural systems, where human activity represents the identity of the social system and land use identifies the biophysical system (Giampietro, 2003). For rural households, sustainability has both biophysical and socioeconomic elements; one element cannot be sustainable without the other (Eckman, 1994).

Following this approach, the paper analyzes development trade-offs linked to land dispossession by using time, monetary and land use information to calculate specific indicators of performance for different household typologies and land-use scenarios. The time-use variable was used to evaluate labor patterns within the two scenarios, "with" and "without" land dispossession and displacement in the village, as well as to compare different household typologies (off-farm, on-farm and partially off-farm typologies). The monetary variable was used to evaluate rural-urban disparities in income and household social vulnerability to unemployment and to compare labor productivity of the different land-use scenarios. Information on alternative land uses (current use of the land by the villagers compared with the shift to intensive agriculture) was used to analyze food self-sufficiency of the household types, as well as environmental degradation, in terms of fertilizers and pesticides used by different cultivation practices, and to estimate energy consumption. Land-use scenarios and household typologies are therefore analyzed based on the comparison of their different metabolic profiles, represented by energy, monetary and time variables.

Data collection and definition of household typologies

Multivariate statistical techniques (Köbrich et al., 2003; Usai et al., 2006) were used to typify data based on information organized into a database. The information used for the household classification was collected over four months of fieldwork from October 2008 to January 2009, in collaboration with local Chinese institutions and the help of local translators. During the fieldwork, 104 rural households from Hongxing village, located in southeastern Chongming were selected by random sampling and interviewed[2]. Table 3 shows the 8 household typologies obtained using the clustering procedure[3] and classified, based on income generation and time dedicated to different activities, in off-farm, on-farm and partially off-farm typologies (Table 4).

Table 3 Information on household typologies

Clusters	C1	C2	C3	C4	C5	C6	C7	C8

[2] The households interviewed correspond approximately at 10% of the total households of the village. Due to the lack of information in some of the questionnaires, only 86 questionnaires out of 104 were finally used. Households have been selected by random sampling with the help of the head of the village and Chinese local institutions. People interviewed were mainly men (88% of the total), and the classification for age classes is the following: 0 between 0 and 14, 4 between 15 and 34, 74 between 35 and 60 and 26 over 60.

[3] For more information on the clustering procedure, see Siciliano, 2010.

No. of observations	10	26	11	8	15	6	9	1
HH size (average No. of members)	2.9	2.9	2.0	2.3	1.7	2.3	3.0	3.0
THA - Total Human Activity (h/year)	25,404	25,269	17,520	19,710	15,184	20,440	26,280	26,280
Working hours (%)								
Agriculture	13	0	16	8	18	12	0	7
Industry	6	23	0	4	0	0	7	0
Trade & Services	0	0	0	0	0	0	16	15
Aquaculture	0	0	0	0	0	0	0	4
Husbandry	0	0	0	0	0	5	0	0
Others	0	0	5	7	0	0	0	0
Households' chores	9	9	7	13	8	9	9	6
Non-working hours (%)								
Physiological overhead	44	46	45	45	48	47	45	42
Leisure & education	28	22	26	23	26	26	22	26
Total income (RMB[a]/year) comprising virtual income[b]	18,647	31,607	17,424	15,806	8,296	13,532	42,400	51,916
On farm (%)								
Agriculture	57	0	82	27	88	75	0	15
Aquaculture	0	0	0	0	0	0	0	36
Husbandry	0	0	0	1	0	20	0	0
Off-farm (%)								
Industry	43	100	0	30	0	0	48	0
Trade & Services	0	0	0	0	0	0	52	49
Others[c] (%)	0	0	18	43	12	5	0	0
Expenditures (RMB/year)	8,835	14,198	8,400	8,162	3,567	6,443	17,500	22,400
Total Available Land (ha)	1.237	0.027	1.683	0.635	0.763	0.931	0.024	1.654
Land use (ha)								
House area	0.009	0.010	0.007	0.008	0.008	0.008	0.008	0.009
Homestead area	0.018	0.017	0.015	0.016	0.016	0.013	0.016	0.018
Agricultural area	0.605	0.000	0.830	0.306	0.369	0.455	0.000	0.813
Wheat	0.023	0.000	0.091	0.073	0.012	0.067	0.000	0.067
Rice	0.031	0.000	0.094	0.073	0.021	0.056	0.000	0.133
Corn	0.273	0.000	0.297	0.074	0.151	0.128	0.000	0.080
Vegetable	0.277	0.000	0.342	0.082	0.184	0.203	0.000	0.133
Fruit	0.000	0.000	0.006	0.005	0.000	0.000	0.000	0.000
Pond	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.400
Pasture	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000
Livestock number								
Sheep	0.20	0.00	0.27	0.63	0.00	4.17	0.00	0.00
Poultry	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

***Source*: own elaboration on data from Hongxing village in Chongming island, 2008.**

[a] RMB-Renminbi (people's money) is the Chinese currency.

[b] The "virtual income" entry has been evaluated based on the information collected at the household level related to the fraction of the various agricultural products auto-consumed by the household and their average market prices.

c Others: pension and military subsidies, cleaner, accounting.

This information has been integrated with data on the use of mechanization, fertilizers, pesticides and time required for intensive agricultural production; this was obtained using questionnaires submitted to agricultural technicians from "Dongtan modern agricultural park" located in southeastern Chongming Island[4], where intensive agriculture is performed. This information was

[4] By using questionnaires, agricultural technicians provided us with information per hectare about different land uses and cultivation practices of the agricultural park (Dongtan agricultural area) where intensive agriculture is performed, such as:

used to evaluate the metabolic patterns at the village level using land, time, energy, and monetary variables, as indicated in Table 5. In Table 5, the "current situation" refers to the current land use in the village, based on how collective plots are allocated by the Household Responsibility System (HRS) to each individual household (in the paper also referred to as "without" displacement scenario)[5]. In contrast, the "intensive agricultural system" refers to the shift of the land use toward intensive practices through land expropriation and displacement in accordance with the Chongming master plan (i.e., "with" displacement scenario)[6].

Table 4 Qualitative classification of household types based on the main working activities

Clusters	Classification
C1	Partially off-farm Agriculture
C2	Off-farm Industry
C3	Partially off-farm agriculture and other incomes
C4	Partially off-farm other incomes
C5	On-farm crops
C6	On-farm livestock
C7	Off-farm trade and services
C8	Partially off-farm aquaculture

Table 5 Metabolic patterns at the level of the village

	Energy flow (MJ /ha/year)	Total Human time (h/ha/year)	Working time (h/ha/year)	Non-working time (h/ha/year)	Monetary flow (t.RMB/ha/year)
Current situation village	28,947	47,680	11,269	36,411	57
Intensive agricultural system	166,515	321	321	0	15

***Source*: own elaboration on data from Hongxing village in Chongming island, 2008.**

Assessing the impacts of urbanization policies and domestic land grabbing at the household and village levels

Information collected at the household and village levels is shown in Tables 3 and 5; this section analyzes (i) the household typologies with respect to two main aspects which are relevant in the discourse on urbanization, rural livelihoods and rural change (see section 4), such as social vulnerability and the rural-urban income gap, and (ii) the consequence of agricultural intensification in the village in terms of energy consumption and environmental degradation. Social vulnerability refers to the "minimization of risk" related to food security, i.e., the level of self-sufficiency in food production (Pastore et al., 1999), as well as the risk of unemployment due to economic crises and labor market instability (as explained in detail in section 4, these aspects have been identified in the literature as critical for rural migrants in China, due to the hukou registration system as well as low-wage jobs in the industrial sector). Specifically, in terms of food self-sufficiency, it is assumed that the greater the household food self-sufficiency, the lower the risk of food insecurity due to food price instability and economic crises (Matuschke, 2009; Pastore et al., 1999). Likewise, with reference to vulnerability to unemployment, the higher the income diversification between on-farm and off-farm work, the lower the risk of unemployment (Ellis, 1998a). In the literature, labor activity

yields, fertilizers and pesticides used, seeds information, labor costs, hours of labor per each cultivation per month, use of tractors, market price of different agricultural products, costs of production and number of workers per year (for details on the information obtained see Siciliano, 2010; 2012). This information has been used to calculate the performance of the scenario "intensive agriculture".

[5] Data in Table 5 regarding the "current situation" scenario have been evaluated as an aggregation of the information collected at the household level based on the distribution of the different household typologies over the sample and the total number of households in the village (detailed information of the estimation procedure used to scale up data from the household to the village level will be given by the author upon request).

[6] The scenarios are hypothetical in the sense that it is supposed here that the whole land of the village will be converted to intensive agricultural production by displacing people from villages to new towns, which is what the Chongming master plan will be about.

diversification is widely understood as a form of self-insurance against risks and shocks (Barrett et al., 2001b; Scoones, 1998; Ellis, 1998a, 1998b). Therefore, it is assumed that diversification between off-farm and on-farm activities[7] will have a positive effect on minimizing the risk associated with economic crises and structural adjustment policies, which have a disproportionate impact on the urban poor due to rising food prices, declining real wages and a contraction of industrial and public sector employment (Wratten, 1995). Finally, the rural-urban income gap is evaluated based on the net income of the different household typologies. This indicator shows, comparing off-farm, on-farm and partially off-farm households, how urbanization could reduce the rural-urban income gap. To analyze the efficiency of the household typologies in producing income, the labor productivity (LP) indicator is calculated, which is the net income generated per hour of work (Pastore et al., 1999). Table 6 shows the performances of the different household typologies with respect to the aspects explained above.

Table 6 Performances of the household types in terms of food security, income generation and productivity

HH typologies	Food self-sufficiency (%)	Income diversification	Net income (RMB/year)	Labor productivity (RMB/hour)
C1	89	very high	9,812	3.89
C2	0	very low	17,409	5.63
C3	89	low	9,024	4.58
C4	89	medium	7,644	4.30
C5	89	very low	4,729	3.12
C6	95	very low	7,089	3.77
C7	0	very low	24,900	6.84
C8	89	very high	29,516	7.74

***Source*: own elaboration on data from Hongxing village in Chongming island, 2008.**

At the village level, the environmental and economic consequences of agricultural intensification are analyzed by the energy used8 per ha, the use of fertilizers and pesticides and the labor productivity indicator (Table 7). From an environmental point-of-view, the indicators chosen reflect the impact of mechanized agricultural methods on fossil fuel consumption, as well as the use of fertilizers and pesticides, which is the main cause of soil degradation on Chongming Island (for an explanation of the link between soil degradation and the use of fertilizers and pesticides on the island, see Gullino et al., 2006; Sino-Italian Cooperation Project, 2008; Huang et al., 2008). In both cases, an increase in the indicators reflects a worsening of environmental degradation. The economic aspect is analyzed according to labor productivity, which is the monetary flow generated per hour of work. An increase in this indicator reflects better economic performance of the system.

Table 7 Performances of the different land use systems in terms of environmental degradation, energy consumption and economic productivity

Indicators	Current situation village	Intensive agricultural system
Energy use (Mj/ha/year)	28,947	166,515
Labor productivity (RMB/hour/year)	5.05	47
Use of pesticides (kg ha^{-1} $year^{-1}$)	5.4	7.8

[7] The indicator "diversification of risk" was evaluated based on the analysis of the fractions of the income generated by aggregated off-farm (industry, trade and services and others) and on-farm activities (agriculture, aquaculture and husbandry). The higher the balance between the two percentage values obtained (and therefore lower their numerical difference), the higher the diversification of risk attached to the household typologies. This indicator is the only one evaluated using a qualitative scale based on the following categories: very high, high, medium, low and very low. Each category is associated to a range determined on a numerical scale going from 0 to 100 and according to the numerical difference of the percentage value calculated for aggregated off-farm and on-farm activities.

[8] Energy consumption was calculated based on the following energy inputs: the use of fertilizers, pesticides and tractors, electricity use for housing and the fuel consumption for private purposes. The conversion factors used to evaluate the primary energy (fossil fuels) contents per unit of inputs are those indicated in Giampietro, 2002.

Use of nitrogen (kg ha^{-1} year^{-1})	219	291

***Source*: own elaboration on data from Hongxing village in Chongming island, 2008.**

According to the data presented in Tables 6 and 7, urbanization of the rural population at the household level is associated with a trade-off between different development objectives. It has a positive impact on household income and labor productivity; in fact, off-farm typologies show the most improved economic indicators compared with on-farm and partially off-farm, with the exception of partially off-farm aquaculture types. However, it also has a negative impact on social vulnerability, in terms of food security and income diversification (in the case of income diversification, only with reference to partially off-farm households). Likewise, at the level of the village, agricultural intensification, while increasing labor productivity, is also associated with an increase in fossil fuel consumption and fertilizer and pesticide use, which, according to the literature, could possibly lead to higher soil pollution and environmental degradation.

5.2.2 Compensation measures, hukou registration, and migrant opinions about relocation

To complete the examination of the effects of relocation projects in Chongming Island, this section provides an analysis of resettlement due to urban sprawl (for both residential and industrial urban construction), taking into consideration compensation measures, the *hokou* registration system, as well as the perceptions and future expectations of migrants before and after relocation.
The analysis was performed during fieldwork in 2012 in collaboration with Chinese local institutions and the help of local translators and included 45 household interviews, selected by random sampling in two different places on Chongming Island: (1) 25 households were from a rural village in which people are about to be displaced due to urban development, and (2) 20 households were selected from a residential area located in the town of Chengqiao, in which people from 5 different rural villages have already been displaced between 2005 and 2010, either due to the construction of new residential areas or to industrial development purposes. Table 8 shows a synthesis of the information collected and the results obtained from interviews with people from the residential area. These results highlight the main conflicting aspects of the displacement process.

The first one is related to the method of compensation; 70% of the people interviewed were not satisfied with the compensation they received from the government. The main reasons for complaint are based on the following aspects:

- delay in the provision of the compensation;
- disproportionate compensation between government revenues obtained from the alternative use of the land and the compensation provided to villagers;
- the rules about compensation for demolition and land requisition are not open to the public and lack transparency. The way the amount of compensation is calculated is unknown to villagers and considered arbitrary because there is evidence that different compensation rules have been applied to different people depending on their authority (people that work for the government or their relatives usually receive better compensation than others);
- and compensation is inadequate because the prices of commodities have risen sharply, especially for food.

The second aspect refers to improved living standards and service provisions after displacement. According to the results, 50% of people interviewed declared an improvement of their living standards and service provisions after displacement, in particular in relation to better mobility due to public transport facilities, the presence of sports facilities, gas provisions, the presence of recreation facilities, the provision of TV cables and the opportunity to earn higher incomes. On the contrary, 50% complained about the poor government management of property, the lack of

governmental intervention to resolve conflicts between residents, as well as the worsening of living conditions due to the insufficient compensation that was received. For instance, most of the unsatisfied people complained about the presence of power asymmetries between residents, as well as about the use of the public green space for growing vegetables. At the same time, retired and unemployed people who were accustomed to growing their own vegetables before displacement complained about being unable to afford the increasing prices of commodities, especially food, as a result of subsisting only on their pensions and due to the poor compensation received by the government. For that reason, they grow vegetables in the public green space of the residential area. Moreover, displacement has resulted in significant unemployment for displaced people. Interview results show that in addition to the 10% of people already retired before displacement, approximately 50% of the villagers (either men or women) that were working in agriculture or industry before displacement became unemployed and are now receiving a pension from the government[9]. In contrast, 40% were able to maintain their work in the industry or services sectors. The majority of people also stated that they were not informed early enough about displacement; therefore, they were forced to move. There were also complaints about the lack of any rights or participation of those displaced in the transition process. Finally, in terms of the *hukou* registration, interviews showed that 80% of villagers were provided with a new *hukou* by the government, passing from rural to small-town *hukou* registration. Thanks to *hukou* reform in towns and county-level cities, in fact, the state decided to open the urban *hukou* registration and eliminated quota-control, making *hukou* registration changes easier, especially in county-level cities and designated towns (Liu et al., 2003) – this is the case for the town of Chengqiao on Chongming Island. Therefore, in spite of documented cases in the literature of the difficulty for rural migrant workers to have access to social benefits due to their rural *hukou* registration, in this case, displaced people were provided with an urban *hukou* and, therefore, with all of the benefits of urban residents, such as housing, education, social and medical services.

Table 8 Information on land displacement. Residential area in Chengqiao Town, Chongming Island

Number of households interviewed	20
Age	between 36 and 69
Place of provenience and destination	From five different rural villages: Minxi, Yunliang, Mindong, Maoqiao, Xinzha to a residential area in Chenqiao Town
Year of migration	Between 2005-2010
Reasons of migration	Land requisition and house demolition
Type of migration	Forced migration, governmental decision
Projects implemented in the area expropriated	Residential areas (apartments); Industrial areas
Type of land tenure before expropriation	Private housing and land use contracts for agricultural plots
Type of compensation	
Monetary compensation	For land expropriation: between 800-12.000 RMB/mu (on average 5.123 RMB/mu)
Other type of compensations	Contribution for the rent of the apartment in the residential area; pensions for unemployed people; small-town *hukou*
Satisfaction about compensation	30% of the interviewees declared they were satisfied with the compensation received; 70% declared dissatisfaction
Job before and after moving	10% Already retired before moving; 50% Changed from jobs in agriculture (especially older people) or industry to retirement or unemployment; 40% Changed from only agriculture or a mix of agriculture and industry to only industry and services or remained in the industrial sector after moving

[9] The government provides people without job a 15-year pension for people over 18 years of age, and a permanent pension for women over 55 and men over 60. The average amount of the pension is 960 RMB/month.

Livelihood improvement and services provision	50% of the interviewed declared not improvement after moving; 50% of the interviewed declared improvement after moving
Apartment size	Between 61 and 120 m^2
***Hukou* registration**	80% changed their *hukou* registration form rural *hukou* to small-town *hukou*; 20% did not change their rural *hukou* (they are waiting to change their *hukou*)

***Source*:** own elaboration on data from Chengqiao town residential area in Chongming island, 2012

Table 9 shows the data and information collected from 25 household interviews in Wannan village. The information collected shows the main occupation of the villagers, the use of agricultural plots, as well as their perceptions and future expectations with regard to displacement to urban areas. The interviews showed a lack of communication by the government to the villagers about the projects that will be implemented in the displaced area. The villagers know that they will have to move soon, but they do not know exactly when, where and what type of alternative projects will be realized in the village. Moreover, for the majority of the villagers, approximately 52%, the perfect living location in the future would be where they are currently living. Nevertheless, 80% of the people interviewed think that displacement will improve their standard of living, in terms of access to better services and higher economic revenues. Furthermore, 60% would like to work in the industrial and services sectors, only 12% as farmers and 28% would like to work partially in agriculture and partially in industry or trade and services, which corresponds approximately to the percentage of current occupations.

Table 9 Information on Wannan rural village and land displacement projects. Perceptions and future expectations, Chongming island

Number of households interviewed	25
Age of the households members	Between 26 and 80
Place of provenience	Wannan rural village
Homestead area (house and farm)	Between 90 and 480 m^2 (average of agricultural plot 0.1 hectares)
Job information	15% Off-farm industry; 40% Off-farm trade and services; 13% On-farm; 21% Partially off-farm; 11% others (retirement and unemployment)
Use of the plot	63% agriculture for self-consumption; 25% without agricultural plot; 13% agriculture for cash
Perceptions about displacement	
Perceptions of future changes	The majority of the interviewees are aware of the future change of the village, but they do not know exactly what it will be. They think that the area will be used for either reforestation programs or urban constructions
Opinion about displacement	20% of interviewees think that displacement is not good, 80% think that displacement will improve their standard of living in terms of better services and higher economic revenues
Future expectations about job and location	
job	60% to work in industrial and services sectors; 12% to be farmers; 28% to work partially in agriculture and industry or services
place of living	52% in the village where they are currently living; 48% in a town in Chongming island

***Source*:** own elaboration on data from Wannan rural village in Chongming island, 2012

In summary, people who are about to be displaced perceive displacement positively because they think that the government will provide them with fair compensation for the expropriation of their land, a nicer apartment than the one in which they are currently living and better jobs. However, the

majority of people already displaced were unsatisfied with the government's behavior and the measures adopted. In general terms, if given the opportunity to choose, both the people who were already displaced and those who were about to be displaced, would prefer to remain in their village, work in the industrial and service sectors while maintaining their agricultural plots for self-sufficiency and would welcome the improvement of services and living conditions as provided by the government.

6 Concluding remarks

The environmental and socio-economic effects of land grabbing have received a great deal of attention recently, and China has been reported as one of the main actors in land deals in various countries, such as Africa, Russia and East and Central Asia, Southeast Asia and South America (World Bank, 2010; Hofman and Ho, 2012). However, little is known about the phenomenon of domestic land grabbing induced by development and linked to urbanization strategies within the country. While there is evidence of the consequences of land use changes due to the expansion of cities, e.g. urban sprawl, more systematic evaluations are needed to better understand to what extent urbanization policies, land dispossession and resettlements have the potential to pace the rural change of the migrants' home areas and affect rural livelihoods. On this matter, this paper has looked at urbanization policy, the modernization of the agricultural sector, and the urban expansion of China as a development-induced land grab. In this process, rural people are forced to move from their farmland to urban areas to make room either for intensive agricultural practices to assure cities' food security, or for the realization of urban development projects. Problems of social instability are common to rural migrant workers in China, who are often vulnerable to food security and unemployment due to a poor definition of land tenure rights and compensation measures, as well as the restrictiveness of the household registration system (Chan, 2011, 2010a; Matuschke, 2009).

The displacement of the rural population is generally associated with rural land use change mediated by one of the following mechanisms. Either small peasant farms organized in small collective plots are pushed toward big agricultural areas managed by large enterprises, or agricultural land is converted in sites for urban construction. This change is linked to a new emerging rurality in China (with fewer social functions than it had before), in which rural areas are no longer functional to the reproduction of rural communities, but serve as either specialized production areas to feed the increasing urban population, or land to support the rapid growth of the industrial and tertiary sectors of cities.

Put differently, the new Chinese rurality emerges from a process of rural change that relies upon development-induced urbanization and land grabbing, in which economic growth and food security play a fundamental role as the ultimate drivers. In this paper, these aspects have been analyzed empirically and from a local perspective, investigating the socio-economic and environmental implications at the household and village levels. Looking at the metabolic patterns of off-farm, on-farm and partially off-farm household typologies, as well as at the modernization of the agricultural sector in a rural island located in eastern China, results demonstrate that a trade-off exists between different development objectives. Specifically, even though the aforementioned emerging rurality could have a positive impact on the income of households and land productivity, it also leads to higher social vulnerability, larger fossil fuel consumption and greater environmental degradation.
Furthermore, taking the point of view of resettled people, the paper showed that displacement practices in China are associated with various critical aspects, which can be summarized as: (i) the presence of arbitrary, ad hoc and inadequate compensations; (ii) the lack of support by the government, especially in relation to conflicts between resettled people; (iii) the lack of transparency, the ambiguity of the rules either before or after displacement; (iv) the lack of any rights or participation of those displaced in the transition process; and (v) an unequal distribution of the

capital generated by alternative uses of the land. These results are not surprising, since other studies have raised similar concerns about displacement practices in China (see for instance Cao et al., 2008; Li and Rees, 2000). However, the combination of these results together with the evaluation of the potential impacts of displacement practices, including economic, environmental and social concerns, have provided in this paper a broader view of the link between the pathways of rural change in China and the ongoing land grab.

In sum, results reveal that land-dispossessed farmers in China face the risk of unemployment, food self-sufficiency, mismanagement of resettlements and environmental degradation. Based on these findings, I argue that to deal with the environmental and social implications of rapid urbanization and economic growth in rural areas, Chinese policy-makers should reconsider the current rural development strategy, with the objective of multi-functionality rather than specialization. This would foster a move toward land management in which the social and environmental functions are not completely replaced by economic productivity and food security needs.

References

1. Adriaanse A., Bringezu S., Moriguchi Y., Rodenburg E., Rogich D., Schultz, H. 1997. Resource Flows: The Material Basis of Industrial Economies. World Resources Institute, Washington, DC.
2. Ayres R.U. Simonis, U.E. 1994. *Industrial Metabolism: Restructuring for Sustainable Development*. United Nations University Press: Tokyo.
3. Barrett C.B, Bezuneh M, Aboud A. 2001a. Income Diversification, Poverty Traps and Policy Shocks in Côte d'Ivoire and Kenya. *Food Policy* 26: 367-384.
4. Borras S.M, Hall R, Scoones I, White B, Wolford W. 2011. Towards a better understanding of global land grabbing: an editorial introduction. *Journal of Peasant Studies* 38: 209–216.
5. Borras S.M, McMichael P, Scoones I. 2011. The politics of biofuels, land and agrarian change: editors' introduction. *Journal of Peasant Studies* 37: 575–592.
6. Borras S.M, Franco J.C, Gomez S., Kay C., Spoor M. 2012. Land Grabbing in Latin America and the Caribbean. *Journal of Peasant Studies* 39: 845–872.
7. Cao G, Feng C, Tao R. 2008. Local "Land Finance" in China's Urban Expansion: Challenges and Solutions. *China and World Economy* 2 (16): 19-30.
8. Casey J, Koleski K. 2011. Backgrounder: China's 12th Five-Year Plan U.S.-China Economic and Security Review commission Available online: http://www.uscc.gov/researchpapers/2011/12th-FiveYearPlan_062811.pdf (07/03/2012).
9. Chan KW. 2011. Internal Migration in China: trends, geography and policies. In United Nations, Population Distribution, Urbanization, internal migration and development, an internal perspective, Population Division 81-109.
10. Chan KW. 2010a. The household registration system and migrant labor in China: notes on a debate. *Population and Development Review* 36 (2): 357-364.
11. Chan KW. 2010b. The global financial crisis and migrant workers in China: "there is no future as a labourer; returning to the village has no meaning". *International Journal of Urban and Regional Research* 34 (3): 659-677.
12. Chan N. 2003. Land Acquisition Compensation in China – Problems and Answers. *International Real estate Review* 6 (1): 136-152.
13. Channel new Asia 2011. Thousands rally in China land grab village, Asia Pacific News, 15 December 2011 Available online:

http://www.channelnewsasia.com/stories/afp_asiapacific/view/1171565/1/.html (08/03/2012).

14. Chen J. 2007. Rapid Urbanization in China: A real challenge to soil protection and food security. *Catena* 69: 1-15.
15. China's 12th Five-Year Plan 2010. How it actually works and what's in store for the next five years, APCO Worldwide, Available online:

    http://www.apcoworldwide.com/content/pdfs/chinas_12th_five-year_plan.pdf (07/03/2012).
16. Christiansen F. 2009. Food Security, urbanization and Social Stability in China. *Journal of Agrarian Change* 9 (4): 548-575.
17. Cotula L, Vermeulen S, Leonard R, Keeley J. 2009. Land Grab or Development Opportunity? Agricultural Investment and International Land Deals in Africa. Available online: http://www.ifad.org/pub/land/land_grab.pdf (07/03/2012).
18. Deininger k. 2011. Challenges posed by the new wave of farmland investment. *Journal of Peasant Studies* 38 (2): 217-247.
19. Deng JS, Wang K, Hong Y, Jia GQi. 2009. Spatio-temporal dynamics and evolution of land use change and landscape pattern in response to rapid urbanization. *Landscape and Urban Planning* 92 (3-4): 187-198.
20. Eckman K. 1994. Rural households and sustainability: integrating environmental and gender concerns into home economics curricula, Food and Agriculture Organization of the United Nations (FAO), Working Document, Rome. Available online:

    http://www.fao.org/docrep/V5406e/v5406e00.HTM (07/03/2012).
21. Ellis F. 1998a. Household Strategies and Rural Livelihood Diversification. *The Journal of Development Studies* 35 (1): 1-38.
22. Ellis F. 1998b. Livelihood Diversification and Sustainable Rural Livelihoods. In *Sustainable Livelihoods. What contribution can we make?* Carney, D. (eds.); Papers presented at the Department for International Development's Natural Resources Advisors' Conference. Russell Press: Nottingham.
23. Fan CC. 1996. Economic opportunities and internal migration: a case study of Guangdong province, China. *Professional Geographer* 48 (1): 28-45.
24. Fan CC. 2005. Modeling interprovincial migration in China, 1985-2000. *Eurasian Geography and Economics* 46 (3): 165-184.
25. Fischer-Kowalski M. 1998. Society's metabolism. The intellectual history of material flow analysis, part I: 1860–1970. *Journal of Industrial Ecology* 2: 61–78.
26. Fischer-Kowalski M, Haberl H. 2007. *Socio-ecological Transitions and Global Change: Trajectories of Social Metabolism and Land Use*. Edward Elgar: Cheltenham, UK.
27. Giampietro, M. (2002) Energy use in agriculture, Encyclopedia of Life Sciences, Macmillan Publishers, Nature Publishing Group.
28. Giampietro, M. (2003) Multi-Scale Integrated Analysis of Agro Ecosystems (CRC Press: New York).
29. Giampietro, M. Mayumi, K. (2000a) Multiple-scale integrated assessment of societal metabolism: introducing the approach. Population and Environment 22 (2) pp. 109–153.
30. Giampietro, M. Mayumi, K. (2000b). Multiple-scale integrated assessment of societal metabolism: integrating biophysical and economic representations across scales. Population and Environment 22 (2) pp. 155–210.
31. Goldstein S., (1990), Urbanization in China, 1982-87: Effects of Migration and Reclassification, Population and Development Review, Vol. 16, No. 4, pp. 673-701.

32. Gomiero, T. (2001) Multiple-scale integrated analysis of farming systems: the Thuong Lo Commune (Vietnamese Uplands) case study. Population and Environment: A Journal of Interdisciplinary Studies 22 (3) pp. 315–352.
33. GRAIN SEIZED!, 2008. The 2008 land grab for food and financial security. GRAIN Briefing. Available online: http://www.grain.org/briefings/?id=212 (07.03.2012).
34. Grain (2010) Unpacking a Chinese company's land grab in Cameroon Available online: http://farmlandgrab.org/16485 (07.03.2012).
35. Grünbühel, C.M. Shandl, H. (2005) Using land-time-budgets to analyse farming systems and poverty alleviation policies in Lao PDR International Journal of Environmental Issues 5 (3/4), pp. 142–180.
36. Gullino, M.L. Camponogara, A. Capodagli, N, Xiaoling, Y. Clini, C. (2006) Sustainable agriculture for environment protection: cooperation between China and Italy *Journal of Food, Agriculture & Environment* 4 (2) pp. 265–273.
37. Guo, X. 2001. Land expropriation and rural conflicts in China. *The China Quarterly* 166 pp. 422-439.
38. Harvey D. 2003. The new imperialism. Oxford: Oxford University Press.
39. Heurlin C. and Whiting S. (2007) Villagers Against the State: The Politics of Land Disputes," paper presented at the Annual Meeting of the American Political Science Association, August 30, 2007.
40. Hofman, I. (2011) Rethinking China's "land grabs": Chinese land investments in Central Asia International Institute for Asian Studies Newsletter 58 Autumn/Winter 2011 Available online: http://www.iias.nl/sites/default/files/IIAS_NL58_21.pdf.
41. Hofman, I. Ho, P. (2012) China's "Developmental Outsourcing": a critical examination of Chinese global "land grabs" discourse *Journal of Peasant Studies* 39 (1) 1-48.
42. Hsu, S. Shiyin J. and Halcott H. (2010), The Global Crisis' Impact upon China's Rural Migrants, in: Journal of Current Chinese Affairs, 39 (2) pp. 167-185.
43. Huang, B. Ouyang, Z. Zheng, H, Zhang, H. Wang, X. (2008) Construction of an ecoisland: a case study of Chongming Island, China Ocean and Coastal Management 51 pp. 575–588.
44. Iorgulescu R. I., Polimeni J. M. 2009. A multi-scale integrated analysis of the Energy use in Romania, Bulgaria, Poland and Hungary. *Energy* 34, 341–347.
45. Köbrich C, Rehman T, Khanc M. 2003. Typification of farming systems for constructing representative farm models: two illustration of the application of multi-variate analyses in Chile and Pakistan. *Agricultural Systems* 76: 141–157.
46. Kuskova P, Gingrich S, Krausmann F. 2008. Long term changes in social metabolism and land use in Czechoslovakia, 1830–2000: an energy transition under changing political regimes. *Ecological Economics* 68: 394–407.
47. Levien M. 2012. The land question: special economic zones and the political economy of dispossession in India. *Journal of Peasant Studies* 39 (3-4) 933-969.
48. Li H, Rees P. 2000. Population Displacement in the three gorges Reservoir Area of the Yangtze River, Central China: Relocation Policies and migrant views. *International Journal of Population Geography* 6: 439-462.
49. Li X. 2011. Farmland grabs by urban sprawl and their impacts on peasants' livelihood in China: An overview. Paper presented at the Global Land Grabbing Conference. Brighton 6-8 April 2011.
50. Liu Y, He S, Wu F, Webster C. 2010. Urban villages under China's rapid urbanization: Unregulated assets and transitional neighborhoods. *Habitat International* 34: 135–144.

51. Liu S, Li X, Zhang M. 2003. Scenario Analysis on Urbanization and Rural-Urban Migration in China, Interim Report IR-03-036, Institute of Geographic Sciences and Natural Resources Research. *Chinese Academy of Sciences*, Beijing.
52. Lohmar B, Gale F, Tuan F, Hansen J. 2009. China's Ongoing Agricultural Modernization Challenges Remain After 30 Years of Reform. Economic information bulletin, no. 51 U.S. Department of Agriculture, Economic Research Service.
53. Matthews E, Amann C, Bringezu S, Fischer-Kowalski M, Huttler W, Kleijn R, Moriguchi Y, Rodenburg E, Rogich D, Schandl H, Schutz H, van der Voet E, Weisz H. 2000. *The Weight of Nations: Material Out flows from Industrial Economies*. World Resources Institute (WRI): Washington DC.
54. Matuschke I. 2009. Rapid urbanization and food security: using food density maps to identify future food security hotspots Paper presented at the International Association of Agricultural Economists Conference, Beijing China August 16-22. Available online: http://www.fao.org/fileadmin/user_upload/esag/docs/RapidUrbanizationFoodSecurity.pdf (07-03-2012).
55. McGranahan G, Tacoli C. 2006. Rural–urban migration in China: policy options for economic growth, environmental sustainability and equity. In: Human Settlements Working Paper Series Rural–Urban Interactions and Livelihood Strategies. IIED 12, London.
56. McMichael P. 2008. Agro-fuels, food security, and the metabolic rift. Kurswechsel 3: 14-22. Available online: http://www.beigewum.at/wordpress/wp-content/uploads/2008_3_014-023.pdf (29-11-2012).
57. Mullan K, Grosjean P. Kontoleon A. 2011. Land Tenure Arrangements and Rural-Urban Migration in China. *World Development* 39 (1): 123-133.
58. Pastore G, Giampietro M, Ji L. 1999. Conventional and land-time budget analysis of rural villages in Hubei province, China. *Plant Sciences* 18 (3): 331–358.
59. Ramos-Martín J. Canellas-Boltà S, Giampietro M, Gamboa G. 2009. Catalonia's energy metabolism: using the MuSIASEM approach at different scales. *Energy Policy* 37: 4658–4671.
60. Recalde M, Ramos-Martin J. 2011. Going beyond energy intensity to understand the energy metabolism of nations: The case of Argentina. *Energy* 37: 122-132.
61. Ren W, Zhong Y, Meligrana J, Anderson B, Watt WE, Chen Ji, Leung H. 2003. Urbanization, land use, and water quality in Shanghai: 1947-1996. *Environment International* 29(5): 649-659.
62. Robinson WC. 2003. Risks and Rights: The Causes, Consequences, and Challenges of Development-Induced Displacement The Brookings Institution-SAIS Project on Internal Displacement Available online: http://www.brookings.edu/fp/projects/idp/articles/didreport.pdf (07-03-2012).
63. Scheidel A, Sorman AH. 2012. Energy transitions and the global land rush: Ultimate drivers and persistent consequences. *Global Environmental Change*, article in press.
64. Schneider M, McMichael P. 2010. Deepening, and repairing, the metabolic rift Journal of Peasant Studies, 37(3): 461-484.
65. Scoones I. 1998. Sustainable Rural Livelihoods. A framework for analysis, IDS Working Paper, 72, Brighton.
66. Siciliano G. 2012. Urbanization strategies, rural development and land use changes in China: A multiple-level integrated assessment. *Land Use Policy* 29: 165-178.
67. Siciliano G. 2010. Integrated approaches for evaluating development strategies in rural areas: case studies from Italy and China PhD Thesis Università Cà Foscari Venezia. Available online: http://dspace.unive.it/handle/10579/933.

68. Sino-Italian Cooperation Project 2008. Organic Farming Systems and Techniques for the Promotion of 'green' Agriculture in Dongtan Chongming Island, Internal Report, February 2008.
69. Stanley J. 2009. FMO Research guide: development induced displacement and resettlement, Available online: http://repository.forcedmigration.org/show_metadata.jsp?pid=fmo:5135 (07-03-2012).
70. State Council of China 2004. The Master Plan of Development of Chongming. English version. Available online: http://www.cmx.gov.cn/gb/node2/node21/node22/index.html (08-03-2012).
71. Statistical Yearbook 2007. Shanghai Statistical Yearbook 2007, Shanghai, China. English version. Available online: http://www.stats-sh.gov.cn/2004shtj/tjnj/tjnj2007e.htm (08-03-2012).
72. Statistical Yearbook 2011. Shanghai Statistical Yearbook 2011, Shanghai, China. English version.
73. Tan R, Qu F, Heerink N, Mettepenningen E. 2005. Urban land expansion and arable land loss in China—a case study of Beijing–Tianjin–Hebei region. *Land Use Policy* 22 (3): 187-196.
74. Tan S, Heerink N, Qu F. 2006. Land Fragmentation and its driving forces in China. *Land Use Policy* 23: 272-285.
75. Tao R, Xu Z. 2008. Urbanization, rural land system and social security for migrants in China. *Journal of Development Studies* 43(7): 1301-1320.
76. The Diplomat 2012. China's Land Grab Alchemy 20 of January 2012 Available online: http://the-diplomat.com/china-power/2012/01/20/chinas-land-grab-alchemy/ (08-03-2012).
77. Tian G, Zhou Q, Zhao X, Zhang ZTW. 2002. Monitoring urban encroachment on cultivated land with TM images in China. *Journal of Natural Resources* 17(4): 476-480.
78. United Nations 2011. Population Distribution, Urbanization, internal migration and development, an internal perspective, Population Division, United Nations publication. Available online: http://www.un.org/esa/population/publications/PopDistribUrbanization/PopulationDistributionUrbanization.pdf (07/03/2012).
79. United Nations 2012. World Urbanization Prospects: The 2011 Revision, Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, Retrieved from: http://esa.un.org/unpd/wup/CD-ROM/Urban-Rural-Population.htm (24/07/2012).
80. Usai MG, Casu S, Molle G, Decandia M, Ligios S, Carta A. 2006. Using cluster analysis to characterize the goat framing system in Sardinia. *Livestock Science* 104: 63–76.
81. Van Westen ACM. 2011. Land in China: Struggle and reform. *Development* 54: 55-58.
82. von Braun J, Meinzen-Dick R. 2009. Land grabbing by foreign investors in developing countries: risks and opportunities, IFPRI Policy Brief 13, April 2009. International Food Policy Research Institute. Available online: http:// www.ifpri.org/sites/default/files/publications/bp013all.pdf (04.03.2012).
83. Walker K. 2008. From covert to overt: everyday peasant politics in China and the implications for transnational agrarian movements. *Journal of Agrarian Change* 8 (2-3): 462-488.
84. Wang M. 2010. Impact of the global economic crisis on China's migrant workers: a survey of 2,700 in 2009 *Eurasian Geography and Economics* 51 (2): 218-235.
85. White B, Borras S.M, Hall R, Scoones I, Wolford W. 2012. The new enclosures: critical perspectives on corporate land deals. *Journal of Peasant Studies* 39 (3-4): 429–447.
86. World Bank 2010. Rising Global Interest in Farmland: Can it Yield Sustainable and Equitable Benefits? Available online: http://www.donorplatform.org/content/ view/457/2687 (07.03.2012).
87. Wratten E. 1995 Conceptualizing urban poverty. *In Environment and Urbanization* Satterthwaite D (eds.). IIED: London.

88. Xiao J, Shen Y, Ge J, Tateishi R, Tang C, Liang Y, Huang Z. 2006. Evaluating urban expansion and land use change in Shijiazhuang, China, by using GIS and remote sensing. *Landscape and Urban Planning* 75 (1-2): 69-80.

89. Zhang KH, Song S. 2003. Rural–urban migration and urbanization in China: Evidence from time-series and cross-section analyses. *China Economic Review* 12: 386–400.

90. Zhu J. 2002. Urban development under ambiguous property rights. A case of China's transition economy. *International Journal of Urban and Regional Research* 26 (1): 41-57.

91. Zoomers A. 2010. Globalisation and the foreignisation of space: seven processes driving the current global land grab. *Journal of Peasant Studies* 37: 429–447.

LDPI Working Paper Series

A convergence of factors has been driving a revaluation of land by powerful economic and political actors. This is occurring across the world, but especially in the global South. As a result, we see unfolding worldwide a dramatic rise in the extent of cross-border, transnational corporation-driven and, in some cases, foreign government-driven, large-scale land deals. The phrase 'global land grab' has become a catch-all phrase to describe this explosion of (trans)national commercial land transactions revolving around the production and sale of food and biofuels, conservation and mining activities.

The Land Deal Politics Initiative launched in 2010 as an 'engaged research' initiative, taking the side of the rural poor, but based on solid evidence and detailed, field-based research. The LDPI promotes in-depth and systematic enquiry to inform deeper, meaningful and productive debates about the global trends and local manifestations. The LDPI aims for a broad framework encompassing the political economy, political ecology and political sociology of land deals centred on food, biofuels, minerals and conservation. Working within the broad analytical lenses of these three fields, the LDPI uses as a general framework the four key questions in agrarian political economy: (i) who owns what? (ii) who does what? (iii) who gets what? and (iv) what do they do with the surplus wealth created? Two additional key questions highlight political dynamics between groups and social classes: 'what do they do to each other?', and 'how do changes in politics get shaped by dynamic ecologies, and vice versa?' The LDPI network explores a range of big picture questions through detailed in-depth case studies in several sites globally, focusing on the politics of land deals.

Government and land corruption in Benin

This contribution tries to explain the land problem in terms of the corruption of the urban elites, the policy brokers and, more generally, the players in the political arena. Indeed, in the context of democratising African States such as Benin, corruption has become a social phenomenon, as has the exercise of political power. There is almost no political system that is free from corruption scandals, where the economy in general and the rural economy in particular has not been pillaged. Land corruption is equally well organised in the corridors of power at local, intermediate and central level. Indeed we could talk about a 'chain of corruption' for land.

From the viewpoint of public action, this contribution offers an empirical definition of land corruption and a typology of players. It studies the major trends and the critical uncertainties surrounding this phenomenon, i.e. using land as an object of political clientelism. It also explores the future prospects for land in the face of land corruption, and the possible mechanisms for escaping the crisis.

Land Deal Politics Initiative LDPI

landpolitics@gmail.com

www.iss.nl/ldpi