TOWARDS AGRICULTURAL CHANGE?

A Planet for Life 2012 focuses on agriculture and its relation to development, food and the environment. At the end of the 2000s, a consensus has emerged and points to the urgent need for massive investment in the agricultural sector, which is (once again) viewed as one of the prime engines for development and food security, as well as for poverty reduction. But what exactly does this consensus cover? While the idea of investing in agriculture is gaining ground and although several countries or regions appear to be offering opportunities for investment in agricultural land, debates are going on as to which agricultural models to choose and how agricultural policies should be implemented.

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During the last three decades, China has continued to develop at a fast pace. Between 1981 and 2001, the number of individuals living on less than one dollar per day decreased by 400 million (Chen and Ravallion, 2004). A major part of this success is due to rural reform. While the country was experiencing rapid growth, agricultural production and land rights underwent deep changes. At the same time, rural outmigration was strictly regulated, a policy which confers on rural-urban migrants a very peculiar economic and social role, and shapes the pattern of Chinese development, contributing to the low labour cost of unskilled workers, and therefore to the attractiveness of export oriented industry. However, many rural challenges are left unsolved due to such constraints on rural-urban migration, which can reduce remittance flows and limit the modernization of rural areas; while at the same time agriculture is required to feed a growing and increasingly wealthy population.

In this chapter we describe agriculture and rural land in China, and investigate their links with China’s development path. In the first section we highlight the main characteristics of agriculture and rural areas throughout China’s history. The second section examines rural outmigration, which is of crucial importance for urbanization, industrialization and agricultural development, and the relevant regulatory institutions. The third section addresses the rising land tensions that are caused by the conflict between productivity requirements and ecological concerns. The fourth section focuses on the challenges faced by agricultural policies, such as dramatic pollution levels, water shortage and food safety.
CHINA’S AGRICULTURE: GEOGRAPHY, HISTORY AND INSTITUTIONS

After hundreds of years of progressive evolution, Chinese agriculture was subjected to a radical experiment in collectivism from 1949. Partial decollectivization began in 1978, which created a unique institutional system.

THE TRADITIONAL CHINESE COUNTRYSIDE Ever since the Han dynasty (206 BC to AD 220), imperial China seemed to fit quite well with Wittfogel’s concept of “Oriental despotism” (Wittfogel, 1957): an agricultural society organized by a bureaucratic state.

This could appear paradoxical, as China’s geographical and climatic features are not especially favourable to agriculture. Only 15% of the total area is arable (Naughton, 2007), most of which is in the East where the land is relatively low and exposed to the moist “monsoon” air from Asian seas. Despite these difficult conditions, China has remained one of the most densely populated regions in the world. In the East, today’s population density reaches 260 people per square metre, six times the world average (Naughton, 2007). An agricultural worker farms only five mu on average, equivalent to one third of a hectare (Maddison, 2007). This astonishingly intensive exploitation of a scarce amount of farmland necessitates massive investment in infrastructure and the use of highly labour-intensive techniques (Naughton, 2007).

Chinese agriculture is generally considered to have benefited from the early emergence of a centralized bureaucracy (Maddison, 2007). Indeed, as agriculture constituted the main basis for taxation, it was strongly supported by officials through, for example, hydraulic projects and the diffusion of new seeds and new techniques. China’s overall trade integration also led to a highly commercialized form of agriculture (Maddison, 2007).

However, Chinese farmers were not significantly richer than their counterparts in other regions of the world (Maddison, 2007) and they achieved subsistence incomes at the cost of strenuous labour. In a situation of widespread misery, peasants were often indebted to local landlords and, as a result, land ownership tended to be concentrated (Naughton, 2007).

THE MAOIST EXPERIENCE It is in this context, and after decades of foreign and civil wars, that the Chinese Communist Party (CCP) founded the People’s Republic in 1949, with rural rather than urban support strategies.

The first policies were quite favourable to rural citizens. An extensive land reform redistributed half of the total land area (Lardy, 1987) from landlords to 300 million poor peasants, and farmers were given extended private rights over their plots. Political stabilization also allowed agricultural production to rise significantly (Lardy, 1987).

But this increase was short-lived and the CCP, under the impulse of Mao Zedong, then decided to radically accelerate the collectivization of agriculture and the
establishment of a soviet-style economic plan, to transfer a maximum amount of resources from agriculture into industrial sectors (Lardy, 1987). The apex of this policy was reached during the Great Leap Forward (1958-1961). China’s entire society and economy were organized into People’s Communes, gathering on average 5,500 households. In rural areas, commune regulations covered the minutiae of the daily lives of citizens, to the point where even the ownership of private kitchen utensils was forbidden. The results were catastrophic, and the consequent famine killed between 25 and 30 million people (Naughton, 2007).

Major adjustments to the system were then decided. Thus, the “60 articles on Agriculture”, approved by the CCP in 1961 and which prevailed up to 1978, established small-scale collectivization centred around production brigades of 45-50 households, with additional private plots and private markets tolerated (Lardy, 1987).

These reforms stabilized the situation in rural areas, but maintained the general bias in favour of industry and urban areas. In 1978, heavy industry, with very high capital investment but relatively low employment, was then significantly more developed than other sectors including light industry, services and, above all, agriculture. Workers in state-owned plants and urban companies had a disproportionately favourable status. At the beginning of the reform era, the dual structure of China’s economy and society was quite pronounced.

REFORMS AND THE “HOUSEHOLD RESPONSIBILITY SYSTEM” In 1978, when Deng Xiaoping became the head of state, China was still an overwhelmingly rural (82% of the population) and agricultural (70% of the workforce) country (Naughton, 2007). But rural real incomes were very low, especially compared to urban ones.

Policies to increase rural incomes were therefore adopted (Vendryes, 2010): state prices for agricultural products and the supply of agricultural inputs were raised, while the scope of the tolerated private economy was extended.

The main evolution, however, came from local experimentation: some localities granted land use rights to rural households for specific plots, thus conceiving the “Household responsibility system” (Vendryes, 2010) which rapidly spread across China and continues to prevail today. This system was officially acknowledged in the 1982 Constitution, in the 1986 Land Management Law and in a series of No.1 Documents from 1982 to 1986. A second wave of laws and regulations on this issue began with the revision of the Land Management Law in 1998, followed by the 2002 Law on Land Contract in Rural Areas and the 2007 Property Law, and paralleled by a series of No.1 Documents from 2004 to 2011.

The system’s principle is simple: agricultural land remains the property of local collective authorities and rural households are granted land use rights. Officially, these individual land use rights are extremely long-term and secure. Their duration,
which was initially set at 15 years, was extended to 30 years in 1997 and, since the 2007 Property Law, has now become perpetual. The only official limitation is that farmers cannot use their plots for non-agricultural purposes.

Two related institutional reforms also took place in the late 1990s and early 2000s (Vendryes, 2010). First, the 1998 revised Organic Law on Villagers’ Committees organized village-level voting, with elected authorities put in charge of local affairs, especially local land management. Second, between 1998 and 2002 agricultural taxation was put under strict control through the “Tax-for-fee reform”, before being completely suppressed in 2005 to 2006. These reforms were meant to reduce the power of local cadres and their incentive to manipulate land allocation.

However, despite these improvements, administrative plot seizures and the collective reallocation of land take place frequently, while land markets have remained very limited. Thus, individual land use rights are much less secure and long-term than the central government intended.

At the same time, since the beginning of the reforms in 1978, agro-industry policies were modified significantly to support agricultural development, giving a renewed and dramatic drive to the “green revolution” that began in the mid-1970s (Naughton, 2007): irrigation works were significantly extended, the use of chemicals and fertilizers considerably developed, while mechanization and the use of new hybrid high-yielding seeds spread throughout China. By the end of the 1990s, the foundations for the modernization of Chinese agriculture, i.e. its insertion into a comprehensive agro-industrial sector, had been deeply laid.

“LEAVING AGRICULTURE BUT NOT THE COUNTRYSIDE”: THE CONSTRAINTS ON CHINESE RURAL CITIZENS

From 1978, China promoted rural industrialization, encouraging peasants to “leave the soil, but not the countryside” and applying strict limitations on rural outmigration to large cities. However, the development of township and village enterprises in rural areas slackened sharply after the mid 1990s, putting migration policies into question.

CONSTRAINTS ON RURAL MIGRATION The dismantling of the rural People’s Communes lifted the constraints on the labour allocation of rural citizens, allowing the emergence of rural outmigration. In 1989 the number of migrant workers stood at 30 million, by 2009 this figure had risen to 145 million (Chan, forthcoming) – a quarter of the rural labour force2. Predictably, most of these migration flows were directed towards urban areas in China’s more industrialized and developed Eastern regions (Chan, forthcoming).

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2. Migrants mainly travel towards the Eastern region, Guangdong being the province that receives the largest number of migrants. As migration flows are triggered by unbalanced development, most originate from poor Western areas and head for the urban and developed East. However, significant rural-urban migration also occurs within regions.
However, most migrations have not implied permanent settlement. First, within a year, many migrants change location or return home to participate in household business. Second, they usually return to their village of origin after a few years of migration. Indeed, a set of policies was put in place to prevent rural people from definitively settling in urban areas, constraining urbanization in a unique way. While the Chinese urbanization rate has risen from 29% in 1978 to 49.7% in 2010 (National Bureau of Statistics of China, 2010), it remains far lower than other developing countries at the same development level (Chang and Brada, 2006). This “paradox of China’s growing under-urbanization” (Chang and Brada, 2006), owes much to the Chinese household registration system, or hukou. Since the 1950s, the hukou has classified the Chinese population according to two dimensions: activity and residence (Naughton, 2007). Regarding activity, households can have either agricultural or non-agricultural status. Agricultural households are entitled to usage rights on plots of land while non-agricultural households have subsidized access to urban benefits regarding education, healthcare, employment and housing. The place of residence defines where these benefits can be obtained. In the 1960s and 1970s, the hukou was a cornerstone of collectivization and economic planning, and it made individual migration impossible. After 1978, the dismantling of rural People’s Communes (1984), along with the implementation of a temporary residence permit and an identity card, conferred a legal status on rural workers in cities (1984-1985), while the end of grain rationing in 1992 progressively alleviated constraints on migration. Yet, the remaining rights and duties associated with the hukou render urban life extremely difficult and costly for rural workers. In addition, it is still extremely difficult for an agricultural worker to obtain an urban hukou and applications are subject to quotas at the municipal level.

Besides hukou, the land rights further limit rural outmigration. Since farmers cannot sell their land or use it as collateral, it is hard for those without capital to leave agriculture and start an off-farm activity. Furthermore, outmigrants are at risk of losing some of their plots because collective authorities have the right to redistribute the land allocations of absent farmers to the villagers currently present, or even to seize it for their own benefit. This insecurity over land rights hinders migration, as migrant workers fear the loss of their land and thus tend to shorten their time away (de la Rupelle, Deng, Li and Vendryes, 2009).

**DEVELOPMENT CONSEQUENCES** China’s regulatory institutions for land and migration shape its development: rural people tend to migrate less and for shorter periods, households are deterred from leaving agriculture, and the pace of urbanization is relatively slow. The transfer of the labour force from the agricultural sector to modern urban activities is allowed to take place without uncontrolled urbanization...
or a sudden drop in agricultural production. The hukou also segments the labour market, as agricultural hukou holders working in cities do not have the same rights as their urban counterparts. This has contributed to limiting wage growth and to maintaining the competitiveness of export-orientated sectors (Chan, forthcoming).

Regarding rural issues, the system of collective land ownership, with periodic redistributions, plays an insurance role for migrant workers who only have limited access to formal social insurance or credit markets (Murphy, 2002). Although agriculture is not very profitable, access to land guarantees at least a subsistence income for rural households. For example, in the aftermath of the financial crisis, many redundant migrant workers simply went back to their rural homes (Kong, Meng and Zhang, 2009).

These institutions, through restricting outmigration and the rights of rural migrants, also have negative consequences on rural development. First, as rural industrialization has slowed since the mid-1990s and also because rural credit markets remain underdeveloped, migration constitutes a crucial route to enable access to off-farm jobs and capital (Murphy, 2002). Second, returning migrants become key agents for rural development, bringing not only money but also skills and networks (Murphy, 2002). Third, because rural outmigrants are limited to “3-D” jobs (dirty, dangerous and difficult) and cannot access urban public schooling, existing and potential migrants tend to reduce their investment in children’s education (Chan, forthcoming). Fourth, insecurity over land rights hinders productive investment in agriculture (Vendryes, 2010). Finally, and perhaps most importantly, conflicts over agricultural land and the “second-class” status of rural populations have aroused deep feelings of injustice and social unrest (Ding, 2007; Chan, forthcoming). Such tensions relate to a much larger problem faced by agriculture: the multifaceted pressure on land.

TENSIONS OVER AGRICULTURAL LAND
China’s very rapid development has dramatically raised the stakes regarding land usage. Industrial and commercial pressures, as well as ecological concerns, are challenging agricultural development, even though agricultural production is a key political objective.

PRESSURE FROM BOTH SIDES: INDUSTRIAL DEVELOPMENT AND ECOLOGICAL CONCERNS
It is well known that for the last 30 years China has experienced extremely rapid economic development and that a huge proportion of the workforce has moved out of agriculture (70% of workers were engaged in the primary sector in 1978, compared to significantly less than 50% since 2004 (Naughton, 2007).

This industrial and urban development has generated a huge demand for land, constituting an important pressure on agricultural land, especially on the fringes of the most developed urban areas. The development of satellite imagery in the 1990s has allowed land use changes to be closely monitored, unsurprisingly revealing that the built-up area has significantly increased. Estimates are that China’s total area
of built-up land has grown by a quarter between 1986 and 2000 (Deng, Huang, Rozelle and Uchida, 2006).

This trend has tended to reduce the arable land area and has created intense social tensions because farmers do not have the right to change the land use of their allocated agricultural plots themselves. Only the state has the formal right to own non-agricultural land, and so a change in land use implies a change in land ownership (Ding, 2007). At the root of the issue is the fact that the compensation offered to farmers whose plots are seized is often far below the benefits associated with the land use change (Ding, 2007), a phenomenon that is responsible for the recent multiplication of conflicts in rural areas.

The legal response to the conflicts over land seizures and fair compensation has so far been quite insufficient. The 1998 Land Management Law requires such seizures to be in the “public interest” (article 2), and the 2002 Law on Land Contract in Rural Areas compels authorities to give a “fair compensation” to expropriated farmers (article 16). Yet, both laws are not sufficiently specific, leaving the door wide open for many types of local misuse. This is today probably the single most important problem for the social and economic sustainability of China’s agricultural development.

On the opposite side, growing ecological concerns have encouraged authorities to take measures to protect soils, especially to mitigate agricultural land loss due to erosion and desertification. Data show that such concerns have a very real basis, for example, over the period 1991-2002, it is estimated that land resources degradation led to a net loss in agricultural land of 19.66 million hectares (Qu, Kuyvenhoven, Shi, Heerink, forthcoming).

From the beginning of the 1990s onwards, important policies have been implemented to address this phenomenon. The Water and Soil Conservation Law of 1991 prohibited the exploitation of land with a slope above 25 degrees. This was followed in 1998 and 1999 by two extremely ambitious programmes: the Natural Forest Protection Programme (NFPP) and the Sloped Land Conversion Programme (SLCP) (Qu et al., forthcoming). The NFPP has led to an increase of 1.72 million hectares of forest, while the SLCP aims to reconvert all sloping lands3 and help farmers move to more sustainable production processes (Qu et al., forthcoming). Contrary to the NFPP, household participation in the SLCP is voluntary, and farmers who convert plots to forest or grassland receive significant compensation. State compensation offered for the conversion of agricultural land to forest or farmland, mainly through the SLCP, is also significant, high enough to attract the voluntary consent of over 32 million households between the years 1999 to 2006 (Qu et al., forthcoming). Results have been satisfying: nine million hectares had been converted under the SLCP by the end of 2006. The ecological results have also been encouraging, erosion has been reduced, soil quality has increased and water resources have been protected.

However, this success comes at the cost of an increasing pressure on agricultural soils, as plots are reconverted to forest and grassland.

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DECREASING FARMLAND AND STATE REACTION Industrial and urban development, along with programmes motivated by ecological concerns, are together significantly increasing the pressure on land availability. As land availability decreases, the value of land for non-agricultural, commercial or industrial use rises.

Studies based on the aforementioned satellite imagery concur with the notion that agricultural land is facing strong pressures. Even though the overall area of farmland may not have decreased, this is only because agricultural areas have been shifted away from urban activities and moved onto less productive soils. In fact, studies (Deng et al., 2006) estimate that losses in the quality of agricultural land have almost been offset by increases in quantity during the period between 1986 and 2000. However, many of the more recent studies (Vendryes, 2010) show that the decrease in agricultural land area has accelerated since the beginning of the 21st century, despite the exploitation of new resources in marginal agricultural regions. It is therefore likely that future losses in land quality will no longer be compensated by increases in quantity.

Due to concerns regarding this issue, in the mid-1990s Chinese authorities initiated a policy of farmland protection to limit the decrease in exploited arable land acreage (Vendryes, 2010). In 1994, the Regulations on the Protection of Basic Farmland aimed to identify “basic farmland”, i.e. land that was of above average quality, and to protect it by making land-use changes subject to the approval of provincial or national authorities. In 1998, the scope of these regulations was extended to include all farmland under the revised Land Management Law, which set a compulsory objective of no net decrease in farmland. Finally, in 2008 the Ministry of Land and Resources set a minimum limit for arable land in China of 1.8 billion mu (120 million hectares)⁴. However, in terms of actual land resources, China is already edging dangerously close to this “red line”.

CURRENT AGRICULTURAL PRODUCTION AND THE CHALLENGES AHEAD

AGRICULTURAL PRODUCTION TODAY During the nineteenth century, China experienced famines and food crises at such a regular frequency that geographers in the 1920s named it the “land of famine” (Mallory, 1926). One century later, China seems far removed from such a description. Nevertheless, food provision and grain self-sufficiency in particular remain national priorities. The Chinese government has constantly stressed that the country should be independent of world markets as regards feeding its population, an intention that was underlined once again in March 2011, when China’s Vice Premier Hui Liangyu stated that China was to uphold its policy of food self-sufficiency⁵. As a result, there is still much emphasis on grain production, as illustrated in the following graph.

⁵ Xinhua, “China upholds policy of food self-sufficiency”, China Daily, 26 March 2011
With this political willpower, China has just about been able to achieve a limited degree of self-sufficiency (United States International Trade Commission, 2011). However, following WTO accession in 2001, China was obliged to open up its agricultural market to a certain extent (United States International Trade Commission, 2011), and since then the level of liberalization has increased significantly. Trading has, unsurprisingly, followed the law of comparative advantage: the two following graphs show that China, which has plenty of labour but limited land resources, has imported land-intensive products (e.g. soybean) and exported labour-intensive ones (e.g. prepared food, fruits and vegetables). The only exception to this general pattern is grain, the trade of which is strictly controlled due to the political pressure for self-sufficiency. Grain imports therefore remain highly dependent on government policies. For instance, in 2010 China imported an unprecedented two million tons of US maize and wheat and then a further 116,000 metric tons of maize in March 2011, causing an 11% increase in world prices. This rise in imports may be partially explained by low international prices, but other factors such as China’s growing hog industry are also responsible.

**CHALLENGES AHEAD** Agriculture has to address the conflicting objectives of productivity increase and environmental protection. As China’s income per capita continues to grow, food consumption patterns are changing and the demand for meat and fish is rising. In 1980, average meat consumption per capita was 20 kg per year (Fuller, Tuan and Wailes, 2002), by the early 2000s this figure had reached 52.4 kg per capita. This shift in demand also increases the need for grain and water for livestock, challenging the goal of food self-sufficiency and increasing the already intense pressure on water resources (Naughton, 2007).

Raising agricultural productivity is also problematic since a heavy reliance on fertilizers already exists: China uses 35% of the world’s nitrogen fertilizers (Greenpeace, 2010), contributing towards worrying levels of pollution. This was illustrated by the first national pollution census in 2010, which took agricultural effluents and landfill discharges into account for the first time, thus revealing that rural

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7. In 2002, the meat consumption per capita was 13 kg in Sub-Saharan Africa, 27.8 kg in Asia (excluding Middle East), 82 kg in Brazil, and 124.8 kg in the US (Source: FAO).
contamination\(^8\) was much higher than previously estimated. For example, the census showed that water pollution had more than doubled and that agriculture was responsible for 67% of phosphorus and 57% of nitrogen discharges nationally\(^9\). Water shortages and pollution incidents raise questions about the enforcement of environmental regulations, the tensions between different government levels and, more generally, the fight against corruption.

Similar issues arise in the food industry, which in recent years has seen a multiplication of contamination scandals (Ni and Zeng, 2009). The most dramatic example occurred in 2008 when melamine added to milk caused 300,000 children to be taken ill, resulting in six deaths. Stricter policies were adopted in the aftermath: in May 2011 a directive from the Supreme Court sanctioned the use of the death penalty in contaminated food cases involving fatalities\(^\text{10}\). Nevertheless, more efficient quality checks are called for, especially as official restrictions on media coverage further complicate the disclosure of health scandals\(^\text{11}\).

China’s increased demand for land and water is certain to raise many geopolitical questions, with worldwide implications for the future. There are at least three main issues that are likely to feature on the global agenda: China’s extension of its land area by buying agricultural land abroad, particularly in Africa; the potential impact on world water resources due to China’s increasing meat consumption (in 2008 China was already the number one importer of virtual water (Chenoweth, 2008), i.e. water used in the production of imported food and goods); and finally, China’s growing demand for grain, if translated into imports, may cause world prices to increase, with knock-on effects on the socio-economic equilibrium worldwide.

\(^8\) “China says water pollution doubles official figures”, China Daily, 10 February 2010
\(^\text{10}\) Barbara Demick, “China wrestles with food safety problems”, Los Angeles Times, 26 June 2011
\(^\text{11}\) Bei Fangshuo, “Food won’t be safe unless journalists are”, The Economic Observer, 22 June 2011, reports about plans of the Ministry of Health to “blacklist journalists who mislead the public about health concerns”, as the Department of Food Safety and the Ministry of Health were organizing a conference on food additives.
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