

## Trading Land Development Rights under a Planned Land Use System: The “Zhejiang Model” and Its National Implications

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### Abstract

*China's state planned land use system, including regulations such as setting planned quotas for land use, basic cropland preservation, and pursuing a balance between the conversion of arable land into non-agricultural use and the supplement of new agricultural land, has substantially constrained the economic growth of industrial provinces in China. This article explores the innovative reforms adopted by Zhejiang Province through land development rights (LDR) transfer within a locality and LDR trading across localities. We argue that there is a “Zhejiang model of LDR transferring and trading,” which, we believe, has significant implications not only for fostering an efficiency-enhancing market for land development rights and agricultural land preservation, but also for optimal use of land and a more balanced regional development. One important policy issue relating to China's rural land system is that under China's land requisition system, farmers are usually under compensated for urban land-taking.*

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**Key words:** land development rights trading, transferable land development rights, Zhejiang model

**JEL code:** Q15, Q24, R52, R58

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## I. Introduction

Externalities arise when the action of an agent affects others without any compensation or reward. The concept of externality applies to issues such as air pollution, interstate water use, agricultural land preservation, surface transportation and corresponding license distribution. Pigou (1932) advocates government intervention in addressing externalities. For example, government can tax economic agents who generate negative externalities for others. In contrast, Coase (1960) contends that, with clearly defined property rights and in the absence of transaction costs, economic agents involved should be able to negotiate between themselves and achieve a consensus through market transaction of property (or development) rights. This solution might help to save government regulatory costs and realize a Pareto improvement in resource allocation, without changing the pre-defined arrangement of property rights. In other words, Coase differs with Pigou in that addressing externalities does not necessarily require direct government intervention either by regulation or by taxation.

Since the 1970s, Coase's insight has been widely applied in various practices of development rights trading. For instance, emission trading was experimented in the 1970s and is now a very important component of environmental policy in many countries (Helfand *et al.*, 2003). In the past decade, the Emission Trading Scheme adopted in the European Union, in which CO<sub>2</sub> emissions are a tradable commodity has become the largest market for transferable development rights (TDR). In the USA, a market for TDR has emerged in the field of land use and city development (Johnston and Madison, 1997).

Interestingly, the practices of land development rights (LDR) transferring and trading have been booming in China over the past decade. As a reaction to the constraints imposed by China's state-planned land use system on local urban and industrial development, some coastal provinces in the country have carried out a series of innovative reforms in the area of LDR transferring and trading. These practices, we believe, are important for China, to provoke consideration regarding its policy dilemma in relation to preserving its limited agricultural land versus promoting urbanization. Zhejiang Province is facing such conflicting policy agendas.<sup>1</sup> This article aims to introduce the innovative mechanisms adopted by Zhejiang Provincial Government in transferring and trading LDR. We argue that the practices in Zhejiang have significant implications for the country as a whole and that there is a need

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<sup>1</sup> Agricultural land includes arable land, forested land, grassland, and other land used for agricultural production or irrigation.

to establish a national market for LDR, drawing on the experiences of the “Zhejiang model of LDR transferring and trading.”

This paper proceeds as follows. Section II introduces the key elements of China’s planned land use system and its implementation in Zhejiang, followed by a brief discussion of the constraints of these national land use regulations on Zhejiang’s economic growth. Section III characterizes the various policies adopted by the Zhejiang Provincial Government in transferring LDR within a locality and trading LDR across localities and further argues that there is a “Zhejiang model” of LDR transferring and trading. The concluding section explores the implications of the “Zhejiang model” in terms of designing a better land use policy package and promoting more balanced regional development in China.

## **II. Planned Land Use System and Its Implementation in Zhejiang**

### **1. Overview of China’s Planned Land Use System**

China has a planned land use system, which is carried out through the Master Land Use Plan (*tudi liyong zongti guihua*) and the annual land use plans (*niandu tudi liyong jihua*). The Master Land Use Plan sets long-term (usually 10–15 year) regulations relating to both the area and the location of agricultural land in a region that are allowed to be converted into (non-agricultural) construction land (*jianshe yongdi*). Allowing for minor amendments every 5–7 years, the first National Master Land Use Plan was carried out in 1997 when the Chinese Central Government was highly concerned with fast urban expansion and rapid farmland loss. The main goals of the 1997–2010 National Master Land Use Plan were to preserve cultivated land and to restrain non-agricultural use of land. For the very first time in China’s history, the Plan requires the provinces to realize a balance between agricultural land conversion (to non-agricultural use) and new farmland supplement.<sup>2</sup>

Given that most of the construction land used for non-agricultural purposes is converted from agricultural land, the size of converted agricultural land in a locality is largely determined by the land conversion (from agricultural usage to non-agricultural usage) quotas a locality can acquire. These include both the “planning quota of land conversion” (*nongyongdi zhuanrong guihua zhibiao*) defined by the Master Land Use Plan and the “annual plan

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<sup>2</sup>“Notice of the Ministry of Land and Resources on the Amendment and Promulgation of Land Use” [No. 100 (1997) of the Ministry of Land Resources].

quota of land conversion” (*nongyongdi zhuanrong jiihua zhibiao*) defined by the annual land use plans in a locality.<sup>3,4</sup> In principle, the size and spatial distribution of construction land in a locality during the Master Land Use Plan period of time must be consistent with the Master Land Use Plan, while the annual assignment of land use quotas must conform to the annual land use plans.<sup>5</sup> For agricultural land, especially arable land, to be legally converted into non-agricultural use, a locality must acquire both the planning quota and the annual plan quota of land conversion.

In addition to the “planning quota” set by the Master Plan and the “annual plan quota” from the annual land use plans, the conversion of agricultural land is constrained by two further regulations: the preservation rate of basic cropland (*jiben nongtian baohulv*) and the agricultural land supplement (*buchong gengdi liang*). The convertible agricultural land approved by the Master Plan has to be outside the delineated area of the preserved basic cropland. Therefore, the assigned area of preserved basic cropland sets an implicit upper limit for the size of convertible agricultural land, as well as the size of new construction land in a locality. Similar to the quotas set by the Master Plan and the annual land use plans, the preservation rate of basic cropland is assigned one-level-down starting from the Central Government. For example, the National Outline of Land use Master Plan promulgated in 1999 requires 83.48 percent of national arable land as the preserved basic cropland. Article 34 of the Land Administration Law enacted in 1999 stipulates that provinces, autonomous regions and municipalities directly under the Central Government need to preserve more than 80 percent (mostly around 85 percent) of the total arable land within their administration as basic cropland. In the case of Zhejiang Province, the area of preserved basic cropland accounts for 85.05 percent of the total arable land in the province. Converting preserved basic cropland into construction land is very difficult, if not virtually impossible. According to Article 15 of the Basic Cropland Preservation Regulation passed in 1998, only for key projects such as energy, transportation, irrigation and military infrastructure, can the basic cropland be converted into construction land, with the approval of the State Council.

The regulation on agricultural land supplement aims to pursue a “dynamic balance”

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<sup>2</sup> The “planning quota” of agricultural land occupation for industrial and residential use referred in this essay is narrowly defined.

<sup>4</sup> In the case of Zhejiang, 76.2 percent of newly developed construction land between 1997 and 2004 was transferred from agricultural land.

<sup>5</sup> The annual plan for land use is based upon the “Measures for the Administration of Annual Plans on the Utilization of Land” passed in 1999. Measures were amended twice in 2004 and 2006. Before 2006, the planned quota for land use was only set for the conversion of agricultural land for industrial and residential use. The final amendment in 2006 added a quota for the conversion of uncultivated land for industrial and residential use. In so doing, the overall use of new construction land was regulated more strictly.

(no net loss) in terms of agricultural land quantity. More specifically, the policy is in place to ensure that the total amount of agricultural land within a specific administration remains unreduced during the Master Plan period. In 1997, the Chinese Central Government stressed that provinces, autonomous regions and municipalities need to keep the nation’s total area of agricultural land unreduced, if not increased during the 1997–2010 period.<sup>6</sup> Therefore, for a locality with limited potential to develop new arable land, the potential to convert agricultural land into construction land would be limited and, hence, industrial development in the locality would be seriously constrained.

As the above discussion indicates, the Master Land Use Plan of 1997–2010 attempts to regulate the conversion of agricultural land for non-agricultural purposes mainly using three constraints: (i) quota-setting for construction land use; (ii) the preserved rate of basic cropland; and (iii) the agricultural land supplement after conversion. Once these targets are set and assigned to individual localities, the total size of new construction land for a locality and its spatial distribution are more or less defined.

## **2. Regional Decomposition of Plan Quotas within Zhejiang during 1997–2010**

Similar to anywhere else in China, the Master Land Use Plan in Zhejiang between 1997 and 2010 was passed by the State Council in 1999 and enacted in the same year. The total planning quota for construction land for Zhejiang is 66 667 ha (or 1 million mu, with 1 ha representing 15 mu). After reserving a quota of 6667 ha at the discretion of the provincial government, Zhejiang distributed the remaining quota of 60 000 ha to its 11 prefectural-level cities. This was done in three steps. First, some land quotas were allocated to individual prefectural-level cities according to the land needs of the national and provincial key projects of transportation, irrigation, water conservancy and energy generation.<sup>7</sup> Second, construction land for regular transportation, irrigation, water conservancy and rural residential purposes was distributed to each city using the city’s share of that land category in the province as the weight. Finally, construction land quotas for urban development purposes are allocated to each city using the city-level urban land area, the GDP of city level secondary and tertiary sectors, and the predicted city-level land needs as three

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<sup>6</sup>“Circular of the Central Party Committee and the State Council on Strengthening Land Management and Preserving Farmland” [No.11 (1997) of Central Party Committee].

<sup>7</sup>There are similar ways in which land quotas can get distributed to the city, county and township levels of government.

**Table 1. Decomposition of Master Land Use Planning Quotas within Zhejiang (1997–2010)**

City	Area of arable land in 1996 (10 000 ha)	Planning quota (10 000 ha)	Agricultural land supplement mandate (10 000 ha)	Preserved basic cropland (10 000 ha)	Preservation rate of basic cropland (%)
Hangzhou	25.33	0.99	1.25	21.28	84.00
Ningbo	25.58	0.84	1.12	21.75	85.00
Wenzhou	26.00	0.99	1.36	22.10	85.00
Jiaxing	21.94	0.37	0.45	18.87	86.00
Huzhou	14.67	0.27	0.34	12.62	86.00
Shaoxing	21.16	0.71	0.88	17.99	85.00
Jinhua	24.12	0.47	0.63	20.50	85.00
Quzhou	14.21	0.33	0.41	12.08	85.00
Zhoushan	2.88	0.08	0.11	2.44	85.00
Taizhou	20.73	0.64	0.83	17.62	85.00
Lishui	15.91	0.29	0.35	13.52	85.00
Reserved quota by the province		0.67			
Zhejiang	212.53	6.67	7.73	180.77	85.05

**Source:** Zhejiang Master Land Use Plan (1997–2010).

weighting factors.<sup>8</sup> The decomposition of the planning quotas into different cities is shown in Table 1.<sup>9</sup>

Second, the preserved area of basic cropland assigned to Zhejiang is 180 733 ha (27.11 million mu) according to the National Master Land Use Plan. Similarly, the provincial government mandated the city-level arable land preservation rates to be roughly similar across cities. Therefore, the preservation rates for every prefectural-level city were mostly set at a level close to 85 percent of its arable land. This implies that approximately 85 percent of arable land in each city shall be preserved as the basic cropland, with a variation no more than 2 percent across cities (see Table 1). This pattern is more or less consistent with the national distribution of arable land preservation rates across provinces set by the National Master Land Use Plan. In fact, although drastic differences exist in arable land endowment

<sup>8</sup> See “Reports on the Major Controlling Criteria of Master Planning in Land Use in Zhejiang Province (1997-2010),” [Appendix 3, No. 64 (1997) of the Zhejiang Department of Land Resources].

<sup>9</sup> In addition, the Zhejiang Department of Land Resources required that construction land during the Ninth Five-Year Plan could not exceed 30 percent of the quota set by the Master Plan. “Circular on the Major Controlling Criteria of Master Land Use Plan (1997–2010),” [No. 136 (1997), Zhejiang Department of Land Resources].

and potential needs of non-agricultural land across localities, defining similar arable land preservation rates across localities turns out to be technically simple and politically least resistant.

Finally, the agricultural land supplement mandate stipulates that the area of newly developed arable land must be at least as high as the area of arable land that is to be converted into non-agricultural use in a locality. Between 1997 and 2010, the Central Government requires Zhejiang to develop an area of 77 333 ha (1.16 million mu) of new arable land, which is 10 667 ha (160 000 mu) higher than the province’s planning quota allocated by the Ministry of Land Resources during the 1997–2010 period. Similarly, with the mandate on the agricultural land supplement after conversion, a dynamic balance between the converted arable land and the newly increased arable land must be maintained for each prefectural-level city in Zhejiang Province (see Table 1).<sup>10</sup>

### **3. Incongruity between the Planned Land Use System and Zhejiang’s Land Use Needs**

Zhejiang is one of China’s most dynamic provinces and has been among the highest achievers in the country in terms of growth over the past three decades. However, the planning quotas for construction land for Zhejiang have imposed substantial constraints on the province’s urban and industrial development. In October 1998, the former General Party Secretary of the Chinese Communist Party, Jiang Zemin, visited Zhejiang and called for Zhejiang to be set as a modernization development model for other provinces in the country. As a result, the Tenth Congress of Zhejiang Party Representatives held in December the same year passed a strategic plan to speed up Zhejiang’s development with an ambitious goal of modernization by 2020 (i.e. 30 years ahead of the country as a whole). The overall development plans relating to industrial zones, transportation, irrigation and energy projects in Zhejiang were then adjusted accordingly. Consequently, the Master Land Use Plan (1997–2010) for Zhejiang was approved in 1999 and the provincial government’s new development policies were at conflict. More specifically, the national land use regulations incorporated obstacles to economic growth in Zhejiang in the following three major areas.

First, the limited quotas of construction land cannot meet the needs of Zhejiang’s industrial development. As mentioned above, the total planning quota of construction land assigned to Zhejiang Province during the 1997–2010 periods is 66 667 ha (or 1 million mu). However, even a conservative projection of Zhejiang’s needs for construction land is as

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<sup>10</sup> Regulations on the balance between occupation and supplement of farmland only apply to the occupied land for industrial and residential purposes. Reduced agricultural land resulting from disaster and returning to forestry does not require such a balance.

high as 93 333 ha (1.4 million mu).<sup>11</sup> Distributing the very limited land use quota to 11 prefectural-level cities, as shown in Table 1, and then further to the county and the township level, actually implies that all the cities in Zhejiang are facing constraints in non-agricultural land supply. The relatively developed cities, in particular, face harder constraints in non-agricultural land use quotas as compared to the less developed ones. To make things worse, the impacts of economic cycles on land use were not adequately taken into account in setting the annual land use plan quotas. Because the annual plan quotas are allocated more or less evenly across years while land development needs may vary substantially across years, the annual plan quotas cannot serve local economic development effectively.

Second, in terms of the spatial distribution of non-agricultural land quotas, the specific location of construction land approved by the Master Plan might not be consistent with actual project needs. The Master Land Use Plan only provides a rough estimate of non-agricultural land use and urban expansion in the following 10–15 years. However, such a rough estimate might result in conflicts with actual project progress. This implies that some development projects cannot be effectively carried out unless they violate the Master Plan. Once the land use quota and the specific location of preserved basic cropland are determined, the flexibility of changing the sites of construction land is limited. In many cases, the preparation of the annual land use plan can only roughly select the location and the area of land used by the projects. This is particularly true for projects in transportation, irrigation and water conservancy. The details of project routes and land need can only be decided after project planning. If the final details of project implementation are inconsistent with the rough estimates in annual land use plans, during project implementation, a developer might find that for a project to continue, they have to occupy some preserved basic cropland. Moreover, in the more developed cities of Zhejiang, such as Hangzhou, Ningbo, Jinhua, Shaoxin and Wenzhou, rapid industrialization and urban expansion have created strong demand for construction land. In the early 2000s, local governments in these cities already found that the development of urban cores and industrial parks was seriously constrained by the range of preserved basic cropland.

Finally, with a limited amount of agricultural land but strong demand for construction land, Zhejiang Province has found the central mandate of agricultural land supplement

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<sup>11</sup> This is in fact an underestimated amount, when the demands for construction land by townships are based upon the projected population according to the Township Development Plans in Zhejiang Province (1996–2010). This population projection underestimates Zhejiang's population because it does not fully account for the migrants from other provinces during the period. See "the Request for Adjusting Major Criteria of Agricultural Land Preservation in the Zhejiang Master Land use Plan (1997–2010)" [No. 53 (1997) of Zhejiang Department of Land Resources].



very difficult to fulfill. This is particularly true for the more developed cities, which cannot be expected to supplement an equal area of agricultural land to match the converted land used for urban and industrial development. Major sources of new arable land are land consolidation (*tudi zhengli*) and reclamation of construction land (*jianshe yongdi fuken*). The requirement that each locality fulfill the agricultural land supplement mandate does not take into account the differences in land endowment and the differences in land reclamation and consolidation costs across localities.

From the perspective of the Central Government, China’s rigorous rules and regulations on land use through land quotas, preserved rates of basic cropland, and the agricultural land supplement mandate are necessary for realizing the targets of agricultural land protection and food security. However, without valid monitoring and a certain degree of flexibility that takes into account local endowment and development needs, these regulations are very difficult to implement in practice. Abuse of land use entitlement and arbitrary policy implementations tend to result.

In February 2000, 8 months after the State Council passed the Zhejiang Master Land Use Plan, the Zhejiang Department of Land Resources submitted a report to the provincial government emphasizing that first, the administrative district of townships had changed tremendously, and planning for residential zones was inconsistent with the actual development in cities. Second, Zhejiang Province needed at least a further 33 333 ha (500 000 mu) construction land quota than that had been allocated by the State Council. Third, technical problems lead to difficulties in defining the spatial location and the area of basic cropland and construction land. Fourth, modifications of the annual land use plan and projects might be inconsistent with the Master Plan.<sup>12</sup> In 2002, the Zhejiang Department of Land Resources pleaded to the Ministry of Land Resources for a higher construction land quota. According to this report, the actual agricultural land being used for non-agricultural purposes and already reached 6613 ha (99 200 mu) by 2001 in Zhejiang. This implies that the province basically had used up the total quota set in the provincial Master Plan (1997–2010). In addition, at the city level, all localities except for Quzhou, Lishui, Zhoushan and Wenzhou, had used more construction land quotas than they had been assigned. As a result, the Provincial Department of Land and Resources requested an additional 47 800 ha (718 000 mu) of construction land during the Tenth Five-Year Plan Period (2001–2005).<sup>13</sup>

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<sup>12</sup> See “Request for Opinions Concerning Issues of Implementing Master Planning of Land Use” [No. 42 (2000) of the Zhejiang Department of Land Resources].

<sup>13</sup> See “Request for Additional Construction Land” [No.7 (2002) of the Zhejiang Department of Land Resources].

### III. The “Zhejiang Model” of Land Development Rights Transferring and Trading

The contradiction between construction land supply and its spatial distribution across localities on the one hand, and construction land demand for industrial and urban development purposes on the other, makes local practices and implementation of the central policies highly problematic. In addition, the distribution of quotas within a province tends to be highly political and can be met with significant resistance from lower levels of government, especially those in the more developed cities. These problems arise not only across provinces but also across cities within Zhejiang. The main difficulty faced by the upper level government in assigning the land quota, preservation rate of basic crop land and agricultural land supplement tasks across localities is that the upper level government has only limited information about the differences in the marginal products of non-agricultural land across localities. It would be very difficult for the upper level government to distribute land quotas, land preservation guidelines and supplement mandates relative to actual local developmental needs. Any assignment carried out according to objective indicators (such as local GDP base and growth rate projections) would be politically controversial. This results in a situation in which a technically manageable and politically balanced approach is adopted. However, such an approach in distributing land use quotas, and preservation and supplement mandates is not economically efficient. As a response, the Zhejiang provincial government promulgated a series of innovative policies relating to the transfer and trading of LDR within and across localities, which we refer to as the “Zhejiang model of LDR transferring and trading.”

#### 1. Transfer of Land Development Rights within a Locality

Suppose that in a locality the preservation rate for basic cropland is 85 percent, and the remaining 15 percent of land is potentially allowed to be used as construction land. The 15 percent cropland can be divided into two categories: those land plots that have been specified in the Master Plan and will be assigned with annual plan quotas as construction land, and those that are assigned as “regular arable land” (*yiban nongtian*) that can potentially be converted to non-agricultural use. However, if a city wants to increase the size of construction land by converting the “regular arable land,” it is still very difficult because under the Master Plan such land is still to be used as arable land. Therefore, the Zhejiang provincial government adopted the following two policies of: (i) acquiring construction land quotas through land consolidation and through land reclamation (*tudi zhedi zhibiao* and *tudi fukun zhibiao* respectively); and (ii) delineation of “potentially convertible land area” (*dai zhihuan yong diqu*).

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Besides the planned quota assigned by the Master Plan and the annual land use plan, construction land quotas can also be acquired through land consolidation or land reclamation. The policy of acquiring a “construction land quota through land consolidation” enacted in June 1998 was originally aimed to encourage the consolidation of unused land or arable land that is not fully utilized in rural areas.<sup>14</sup> Between 1986 and 1996, only 8000 ha (12 093 mu) of land made up newly increased arable land through land consolidation, which accounted for 17.3 percent of the total newly increased arable land. This was way off the target set by the Zhejiang Master Land Use Plan between 1997–2010 that requires new arable land to be increased by 49 300 ha (740 000 mu). Therefore, Zhejiang Province initiated a series of policies to encourage local governments to speed up their land consolidation action. One such policy adopted allowed local governments to convert 70 percent of the newly increased arable land area through consolidation into land for construction use. Suppose that for every 100 ha of land to be consolidated, there will be 10 ha of newly increased arable land. Then, 7 ha of a construction land quota could be acquired. If we further assume that the average investment in land consolidation is 300 000 yuan per hectare, the cost of acquiring a 1 additional hectare construction land quota for land consolidation is approximately 4 285 700 yuan per hectare. This is a reasonable cost, and, therefore, the policy was strongly supported by many cities, especially those with limited land use quotas but a strong need for land quotas for industrial and urban development.

The policy of acquiring a “construction land quota through reclamation” was introduced in 1999 when the “*Outline of Urbanization Development in Zhejiang Province*” stipulated that an area of land could be used for non-agricultural purposes if an equal area of old construction land was reclaimed as arable land.<sup>15</sup> In 2000, Zhejiang further legalized this policy.<sup>16</sup> China’s national government, in fact, accepts such practice in China’s Land Administrative Law and encourages its extension nationwide.<sup>17</sup>

<sup>14</sup> See “Circular on Issues of Encouraging Rural Land Consolidation” [No. 91 (1998) of the Zhejiang Provincial Government].

<sup>15</sup> See “Circular on Development Outline for Urbanization” [No. 41 (1999) of Zhejiang Party Committee].

<sup>16</sup> See “Circular on Opinions of the Department of Land Resources Concerning Further Land Development and Consolidation” [No. 77(2000) of Zhejiang Government Office]. The same year, Article 15 of the China’s Land Administrative Law further legalized this policy.

<sup>17</sup> Article 18 of China’s Land Administrative Law states that 60 percent of newly cultivated land can be exchanged for construction land. In 1999, the Ministry of Land Resources promulgated that “under permitted condition, when residential or industrial reallocation do need to occupy agricultural land outside of planned construction land, urban planning, previous residential or industrial land may be cleaned up and substitute occupied agricultural land. New construction land needed for reallocation with substitution of newly cultivated land does not account for annual construction land quota.” See the “Circular on Land Development and Consolidation” [No. 358 (1999) of the Ministry of Land Resources].

The policy of acquiring “construction land quota through land consolidation or reclamation” has complemented greatly the planned quota provided by the Master Plan and the annual land use plans. Existing research has shown that, by 2004, the newly increased arable land through land consolidation was as high as 121 380 ha (1 820 700 mu). This implies that the new construction land use quota through land consolidation was as high as 87 386 ha (1 310 800 mu), of which a quota of 69 507 ha (1 042 600 mu) has been used, accounting for 58 percent of the new construction land converted in Zhejiang (Wang 2005).<sup>18</sup>

Although the construction land use quotas through land consolidation and reclamation work in a similar way to planned quotas, they are more favored by local governments. One major reason is that the planned annual quota has an annual time limit. The planned annual quota expires if a locality does not use the planned quota for the planned year. Instead, quotas through land consolidation and reclamation can be accumulated over time and can be used for later years, which, as will be shown later in this paper, facilitates the trading of LDR across localities.

The second mechanism in transferring the LDR within a locality is through the so-called “potentially transferrable land area” policy. As mentioned above, even when a locality obtains a construction land quota through land consolidation and reclamation, it can only use its quota in a pre-defined area that is allowed to be converted for construction purpose under the Master Land Use Plan (*jianshe liuyong diqu*). Since 2000, the Ministry of Land Resources has mandated that local governments must define clearly the specific locations of their basic cropland. According to the “Land Administration Law of the People’s Republic of China” (1998) and the “Circular on Land Development and Reclamation” (1999) promulgated by the Ministry of Land Resources,<sup>19</sup> Zhejiang Province introduced the concept of “potentially transferrable land area” in land use planning. Such potentially transferrable land area can be used for construction purposes with quotas either from land consolidation or from land reclamation under three conditions. First, the locality must fulfill the requirement of preserving basic cropland. Second, the locality must have the potential to increase agricultural land by reclamation and consolidation. Third, the locality must meet the requirements relating to the total area of construction land under the Urban Plan. By meeting these conditions, both the “potentially transferrable land area” and the “reserved area for construction” can be used if corresponding land use quotas are in place. The main distinction

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<sup>18</sup> In the early period of this policy implementation, the costs of land consolidation are much lower than that of land reclamation. Therefore, local governments were motivated to consolidate rather than reclaim land.

<sup>19</sup> See the “Circular on Land Development and Consolidation” [ No. 358 (1999) of the Ministry of Land and Resources].

is that the “potentially convertible land area” cannot be part of the planned quota set by the Master Land Use Plan and the annual land use plans, but only part of the quotas acquired through reclamation and consolidations. Therefore, since 2000, most townships in Zhejiang have assigned some land within the Urban Plan Area and some land that might potentially be used for non-agricultural purposes as the “potentially convertible land area.”

The widespread practice of “potentially transferrable land area,” however, still does not fully guarantee that the land needed for non-agricultural use can be used when the quota is ready. If an area has been assigned as basic cropland, it will be unavailable for use as construction land. As a result, Zhejiang Province adopted another policy: collective transfer of basic cropland (*jiben nongtian jizhong zhihuan*). This policy was implemented in 1999 when Zhejiang Province decided to build a commodity grain base (*shangpin liang jidi*) of 666 667 ha (10 million mu) through land consolidation.<sup>20</sup> To motivate city governments to cooperate, the provincial government promised that, if the newly increased arable land qualified as basic cropland, it could be used as an equal substitute for basic cropland in urban suburb areas.<sup>21</sup> This policy changed the planned location of basic cropland under the Master Land Use Plan and reduced geographical obstacles of urban expansion and development.

## 2. Trading Land Development Rights across Localities

The above measures of acquiring quotas and transferring LDR have loosened the rigid regulation on non-agricultural land use. However, there still exists significant regional disparity in terms of land quota and real needs in construction land. Some developed localities in Zhejiang, such as Hangzhou, Ningbo and even counties such as Yiwu, Yueqing, Rui’an and Shaoxing, have much higher demand for construction land quotas than other less-developed localities, and yet lower potential in acquiring construction land quotas through land consolidation and land reclamation. In addition, with the mandate of preserved rates of basic cropland set in 1999 and limited potential in supplementing arable land, these localities are unable to utilize the policy of “collective substitute of basic cropland” to

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<sup>20</sup> See the “Circular on Building 10 million mu Commodity Grain Base” [No. 190 (1999) the Zhejiang Provincial Government].

<sup>21</sup> See the “Circular of Office of Zhejiang Provincial Government on Speeding Up the Building of 10 million mu standard agricultural land” [No. 12 (2001) of the Office of the Zhejiang Provincial Government]. Later, Zhejiang Department of Land Resources announced detailed measures in collective substitute of basic cropland. See “Opinions of Establishing Experimental Areas of Collective Substitute of Basic Cropland Newly Added through Establishment of Standard Agricultural Land” [No. 271 (2001) of the Zhejiang Department of Land Resources].

provide room for urban development.

Because the abovementioned policies in place for increasing construction land for more developed localities are insufficient, Zhejiang Province introduced market mechanisms into land use policy and allowed the trading of LDR across localities. These market mechanisms include land use quota trading across localities (*zhedi zhibiao youchang tiaoji*), compensatory preservation of basic cropland by others (*jiben nongtian yidi daibao*) and compensatory arable land supplement by other (*yidi buchong gengdi*).

Land use quotas that are acquired by land consolidation or reclamation are traded to reduce regional imbalances in land use quota demand and supply. In 2000, Zhejiang Province opened markets for land use quota trading.<sup>22</sup> This policy allows the less developed localities in Zhejiang to make a choice between using the quotas for their own development purposes or trading the quotas out to other localities for fiscal revenue. More developed localities can choose between reducing investment and lowering demands for construction land, and buying quotas from other localities that could supply such quotas. Regional gaps in land quota supply and quota demands resulted in the development of such land use quota trading. By the end of 2004, the total trading volume of land use quotas had reached 20 000 ha (300 000 mu), with an average price of 600 000 per hectare.

The second policy that helps in trading LDR across localities is the compensatory preservation of basic cropland by others (CPBO). In March 2001, the Zhejiang Department of Land and Resources started to allow CPBO across localities,<sup>23</sup> which was stated in the “Regulations on Preserving Basic Cropland in Zhejiang” (*zhejiang sheng jiben nongtian baohu tiaoli*) in 2002. Since then, there have been 85 cases of CPBO, accounting for a total of 44 527 ha (667 911 mu) of cropland, with prices rising from 22 500 yuan to 30 000 yuan per hectare. The localities that request preservation from others are mainly the more developed regions, such as Hangzhou, Ningbo, Wenzhou, Taizhou, Yiwu county and Dongyang county in Jinhua, as well as Yuecheng and Shaoxing in Shaoxing city. The localities that provide preservation for others are mainly the less developed regions, such as Quzhou and Lishui, as well as some localities with rich arable land resources, such as Huzhou. Compatible with the policy of “collective transfer of basic cropland” discussed earlier, the CPBO provides

<sup>22</sup> See the “Circular of the Zhejiang Provincial Government on Strengthening the Administration of CPBO” [No. 132 (1999), the Zhejiang Provincial Government]; “Circular on Development Outline for Urbanization” [No. 41 (1999) of the Zhejiang Party Committee]; “Circular of the Office of the Zhejiang Provincial Government on Speeding Up Urbanization in Zhejiang” [No. 7 (2000) of the Zhejiang Provincial Government] and “Circular on Opinions of the Department of Land and Resources Concerning Further Land Development and Consolidation” [No. 77 (2000) of the Zhejiang Government Office].

<sup>23</sup> See “Opinions on Implementing Master Plans of Land use” [No. 114 (2001) of the Department of Land and Resources, Zhejiang province].  
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**Table 2. Compensatory Preservation of Basic Cropland by Others (CPBO) (Unit: 10 000 ha)**

City	Size of basic cropland, pre-CPBO	Preservation rate, pre-CPBO (%)	Size of basic cropland, post-CPBO	Preservation rate post-CPBO (%)	Increase in basic cropland
Hangzhou	21.28	84.00	19.81	78.23	-1.46
Ningbo	21.75	85.00	21.10	82.47	-0.65
Wenzhou	22.10	85.00	21.90	84.20	-0.21
Jiaxing	18.87	86.00	18.86	85.96	-0.01
Huzhou	12.62	86.00	13.49	91.99	0.88
Shaoxing	17.99	85.00	18.06	85.36	0.08
Jinhua	20.50	85.00	20.22	83.84	-0.28
Quzhou	12.08	85.00	13.53	95.21	1.45
Zhoushan	2.44	85.00	2.42	84.06	-0.03
Tai zhou	17.62	85.00	17.46	84.24	-0.16
Lishui	13.52	85.00	14.04	88.28	0.52

Source: Zhejiang Department of Land Resources

developmental space for the more developed regions in Zhejiang in terms of construction land supply. As shown in Table 2, the area of basic cropland that Hangzhou and Ningbo have asked others to preserve is already over 20 000 ha (300 000 mu).

The third and final policy is the “compensatory arable land supplement by others” (CALMO). In 1999, Hangzhou authorized Shangyu city to increase new arable land for 2000 ha (30 000 mu), which was to be completed step by step. In exchange, Hangzhou city paid Shangyu city 99 million yuan over 4 years, with an average of 3300 yuan per mu. The same year, Zhejiang Province passed the policy of CALMO and later started to charge fees to localities that request others to supplement the arable land converted to construction use.<sup>24</sup>

#### IV. Conclusions

This paper introduces and analyzes the innovative practices of the transfer and trading of LDR in Zhejiang Province. It is worth noting that some practices in Zhejiang, such as delineating potentially convertible land areas and acquiring construction land quotas through land consolidation and reclamation, have also been applied in other eastern coastal

<sup>24</sup> See the “Circular of the Zhejiang Provincial Government on Strengthening the Administration of CPBO” [No. 132 (1999), Zhejiang Provincial Government].

areas provinces, such as Guangdong, Fujian and Jiangsu. We emphasize here that there is a “Zhejiang model of LDR transferring and trading” because it is only in Zhejiang that the provincial government introduced a systematic approach of trading LDR across regions. This policy, on the one hand, is crucial in helping the more developed localities with limited agricultural land (such as Hangzhou, Ningbo and Wenzhou) to acquire more construction land quotas for industrialization and urbanization. On the other hand, the trade in LDR has increased the fiscal revenue for the less developed localities. The cross-locality trading of LDR not only guarantees the total size of basic cropland to be preserved effectively for the whole province, but also effectively redistributes the quotas of LDR across regions. Through market mechanisms, these systematic practices strike a good balance between preservation of agricultural land and economic development and realize a Pareto improvement for all localities involved.

We believe a nationwide extension of the “Zhejiang model of LDR trading” is justified not only for the development of other provinces, but also would further contribute to Zhejiang’s own growth. This is because the remaining room for further LDR trading and transfer within the province is becoming increasingly slim.<sup>25</sup> The practices in Zhejiang offer a new perspective in the evaluation of China’s agricultural land preservation and construction land use system in China. There exist great regional disparities in terms of land quota supply and construction land needs given the huge regional heterogeneities in arable land endowment and economic development. Without compromising agricultural land preservation and overhauling the planned land management system, the Chinese Government can improve land use efficiency and reduce regional disparity simultaneously by allowing LDR trading across provinces. From this perspective, the practice in Zhejiang has significant national implications in land use policy reforms. Similar to the trade of emission rights, trading LDR across provinces would not only help to increase the amount of construction land for the more developed regions and raise fiscal revenue for the poorer regions, but would also help to preserve China’s agricultural land more effectively and allocate construction land more efficiently across localities.

One important policy issue in China’s rural land system is that under China’s land requisition system, farmers are usually undercompensated for urban land-taking. The most

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<sup>25</sup> For a variety of reasons, some land reforms adopted by Zhejiang Province have been prohibited. For example, measures such as the “collective substitute of basic crop land” and the CPBO are no longer effective (since 2003). See the “Circular on Taking Further Measures to Preserve Arable Land Institutions” [No. 388 (2003) of the Ministry of Land Resources]. Also see the “Urgent Notice for Immediate Action in Deepening Administrative Rectification of Land Market” [No. 20 (2004) of the General Office of the State Council]. Trading of construction land quota was also stopped in 2008.



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recent rural reform policy document released by the Third Plenary Session of the Seventeenth Central Committee of the Communist Party of China promises to gradually raise the compensation for farmers whose land is converted from agricultural use to urban use (Xinhua News Agency, 2008). We believe by allowing to-be-dispossessed farmers to directly negotiate with urban land users, the government can realize this goal. More importantly, if this policy reform can be coordinated to allow LDR trading across provinces, not only would farmers in the more developed regions enjoy more benefits in land value appreciation through conversion, because there would be more land development activities in these localities, but also farmers in the less developed regions could benefit because local governments in these localities would be able to gain fiscally by selling LDR. The financial resources thus collected could be used to help farmers in their jurisdictions.

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