Study on Rural Land Consolidation of Anhui Province Based on Consolidation Potential

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Abstract Starting from status quo of land use in Anhui Province, consolidation potential of rural land in Anhui Province is measured and analyzed, and benefit analysis of land consolidation is conducted. It is pointed out that land consolidation is essential condition of realizing beautiful countryside construction. By combining its own characteristics and shortages, the countermeasures and suggestions on rural land consolidation of Anhui Province are proposed, such as scientific consolidation plan, innovating incentive mechanism and guiding public participation.

Key words Consolidation potential, Countryside, Land consolidation, Anhui Province

1 Introduction

It is decisive period of Anhui Province building a moderately well-off society in all aspects and creating innovative "three-strong-province" in the 13th five-year period, and economy development shows three features: speed shifting, structure adjustment and power conversion. Macroeconomic control of land resources allocation joining in economic society is further shown, which needs active action of land consolidation. Seen from the situation of Anhui Province, a series of development advantages formed by land consolidation in the 12th five-year period will be further released, with solid development basis, which could create very favorable condition and atmosphere for development of the 13th five-year period[1]. Meanwhile, the contradiction between farmland protection and economy growth will be more prominent under the background of resource and environment constraints tightening and social need continuously developing, and land consolidation also faces new challenge.

2 General situation of research region and data source

2.1 Natural conditions Anhui Province is at southeast China, and geographic coordinate is 114°54′ - 119°37′ E, 29°41′ - 34°38′ N. Its east borders Jiangsu and Zhejiang, south is near Jiangxi, west is close to Hubei and Henan, north borders Shandong. Its total land area is about 0.1401 million km^2, which accounts for 1.45% of total land area in China and is ranked the 22nd in whole country. There is Yangtze River and Huaihe River in the province, which naturally divides whole province into three regions: north of Huaihe River, Jianghuai and south of Yangtze River. The terrain of Anhui Province is complex, and there are various kinds of soil parent materials. Its farming history is long, and there are rich and varied soil types, with obvious south-north transition characteristics. There is not only the difference of horizontal belt distribution but also the difference of vertical belt spectra of mountain on soil space. Moreover, there are also various regional, moderate-region and micro-region soil distribution characteristics.

2.2 Socioeconomic conditions Anhui Province administers 16 prefecture-level cities, 6 county-level cities, 44 districts and 55 counties. In 2015, there were 69.491 million people in whole province, which increased by 0.133 million than last year; there were 61.436 million permanent people, which increased by 0.607 million than last year. The urbanization rate was 50.5%, which was 1.35 percentage points higher than the previous year. Total output value in whole year was 2200.56 billion yuan, which increased by 8.7% than last year. Added value of the first industry was 245.67 billion yuan, which increased by 4.2%; added value of the secondary industry was 1134.23 billion yuan, which increased by 8.5%; added value of the tertiary industry was 820.66 billion yuan, which increased by 10.6%. The industrial structure was adjusted from 11.5 ∶ 53.1 ∶ 35.4 in last year to 11.2 ∶ 51.5 ∶ 37.3, and the proportion of industrial added value was 43.9%.

2.3 Status quo of land use Total land area of Anhui Province is 0.1401 million km^2. To 2015, cultivated area was 5.88×10^6 ha, accounting for 41.93% of total land area in whole province; garden area was 3.51×10^5 ha, accounting for 2.51% of total land area in whole province; woodland area was 3.75×10^6 ha, accounting for 26.76% of total land area in whole province; grassland area was 7.36×10^4 ha, accounting for 0.53% of total land area in whole province; the area of town, village and industrial land was 1.63×10^6 ha, accounting for 11.64% of total land area in whole province; traffic transportation land area was 3.36×10^5 ha, accounting for 2.40% of total land area in whole province; the area of waters and water conservancy facilities land was 1.82×10^6 ha, accounting for 12.98% of total land area in whole province; other land area was 1.76×10^5 ha, accounting for 1.25% of total land area in whole province(Table 1).

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2.4 Data source Data were mainly from land change survey of Anhui Province in 2015, and annual update evaluation and analysis report of cultivated land quality grade of Anhui Province in 2013, aided by Anhui statistical yearbook of 2015.

Table 1 Land use structure of Anhui Province

Land use type	Area//ha	Proportion//%
Cultivated land	5876384.74	41.93
Garden	351242.18	2.51
Woodland	3750666.58	26.76
Grassland	73582.99	0.53
Town, village and industrial land	1631374.92	11.64
Traffic transportation land	336086.18	2.40
Waters and water conservancy facilities land	1818881.43	12.98
Other land	175765.66	1.25
Total	14013984.68	100.00

Note: Data were from land change survey of Anhui Province in 2015.

3 Analysis on land consolidation potential of Anhui Province

3.1 Evaluation system construction of rural land consolidation potential Starting from status quo of land use in Anhui Province, based on the perspective of overall analysis, evaluation system of rural land consolidation potential in Anhui Province is established by following the principle of science, integrity, hierarchy and feasibility (Fig. 1).

3.2 Analysis on rural land consolidation potential

3.2.1 Consolidation potential of agricultural land. (i) Calculation method and result. Quantity potential formula of agricultural land consolidation is as below: consolidation potential of agricultural land = area of agricultural land to be remedied × coefficient of added arable land. Here, coefficient of added arable land is determined by actual investigation of Anhui Province, survey of typical project, last land development and consolidation plan of Anhui Province, socioeconomic conditions, science and technology level, and possible input fund. By investigating newly added arable land situation of typical project of the agricultural land consolidation, according to current actual situation, coefficient of newly added arable land is adjusted, and coefficient of newly added arable land in the region is determined finally. After that, the scale of agricultural land to be controlled is calculated[2]. When determining the scale of agricultural land to be controlled, one is deducting area of sloping farmland over 25°, and the other is deducting the area of non-basic farmland and the area of sloping farmland over 15°. The former shows theoretic potential, while the latter shows actual potential(Table 2).

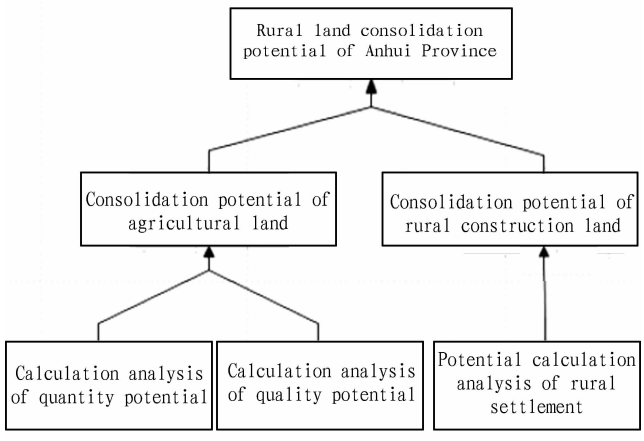

Fig. 1 Evaluation model of rural land consolidation potential

Table 2 Calculation result of quantity potential of agricultural land in Anhui Province

Area	The area of agricultural land to be controlled (≤25°)//ha	The area of agricultural land to be controlled (≤15°)//ha	Coefficient of newly added arable land	Actual quantity potential//ha	Theoretical quantity potential//ha
Hefei City	561521.80	419193.17	0.0165	6961.69	9265.11
Wuhu City	268051.56	196192.85	0.0575	11281.09	15412.96
Bengbu City	378144.59	290870.67	0.0275	7998.94	10398.98
Huainan City	144506.01	81692.31	0.0574	4689.14	8294.64
Maanshan City	175329.64	125169.70	0.0327	4093.05	5733.28
Huaibei City	168500.73	125695.53	0.0333	4185.66	5611.07
Tongling City	25946.48	16549.66	0.0851	1408.38	2208.05
Anqing City	443535.04	266285.46	0.0606	16136.90	26878.22
Huangshan City	66402.96	39904.57	0.0482	1923.40	3200.62
Chuzhou City	717995.88	550562.05	0.0197	10846.07	14144.52
Fuyang City	651328.09	470894.97	0.0094	4426.41	6122.48
Suzhou City	571463.46	410432.87	0.0116	4761.02	6628.98
Lu'an City	716803.02	505019.38	0.0214	10807.41	15339.58
Bozhou City	599421.42	446469.64	0.0281	12545.80	16843.74
Chizhou City	138079.34	89142.30	0.0565	5036.54	7801.48
Xuancheng City	246846.58	164508.74	0.0428	7040.97	10565.03
Whole province	5873876.60	4198583.96	–	114097.48	164468.54

Note: Data were from land change survey of Anhui Province in 2015.

Quality potential formula of agricultural land consolidation is as below: the improved grain productivity = (the highest use

grade of cultivated land Grade-two district - average use grade of cultivated land in the county) × 1428.57 kg/ha (standard grain yield of one grade) × consolidation scale of cultivated land in the administrative region. Here, production capacity can be realized is productivity when quality grade of cultivated land is improved by one level. According to the requirement that 0.3 - 1.0 level of cultivated land is improved and promotion grade result of farmland quality during 2010 - 2013 obtained by annual update evaluation and analysis report of cultivated land quality grade of Anhui Province in 2013, quality promotion grade of cultivated land in whole province during the 13th five-year period is determined based on its annual average promotion value. The area of agricultural land to be controlled in quantity potential of actual agricultural land consolidation is used to calculate quality potential (Table 3).

Table 3 Calculation result of quality potential of agricultural land in Anhui Province

Area	Improvement grade during 2010 - 2013	Improvement grade during the 13th five-year period	Yield increase per ha//kg/ha	Area of agricultural land to be controlled//ha	Quality potential//t
Whole province	0.34	0.41	809.57	4198583.96	3568796.37
Hefei City	0.18	0.22	428.57	419193.17	188636.93
Wuhu City	0.21	0.25	500.00	196192.85	103001.25
Bengbu City	0.46	0.55	1095.29	290870.67	334501.27
Huainan City	0.50	0.60	1190.43	81692.31	102115.39
Maanshan City	0.59	0.71	1404.71	125169.70	184625.31
Huaibei City	0.58	0.70	1381.00	125695.53	182258.52
Tongling City	0.31	0.37	738.14	16549.66	12825.99
Anqing City	0.45	0.54	1071.43	266285.46	299571.14
Huangshan City	0.15	0.18	357.14	39904.57	14964.24
Chuzhou City	0.26	0.31	619.00	550562.05	357865.33
Fuyang City	0.36	0.43	857.14	470894.97	423805.47
Suhzou City	0.38	0.46	904.71	410432.87	389911.23
Lu'an City	0.27	0.32	642.86	505019.38	340888.08
Bozhou City	0.32	0.38	761.86	446469.64	357175.71
Chizhou City	0.35	0.42	833.29	89142.30	77999.51
Xuancheng City	0.40	0.48	952.43	164508.74	164508.74

Note: Data was from annual update evaluation and analysis report of cultivated land quality grade of Anhui Province in 2013.

Table 4 Quantity potential grade of agricultural land consolidation in Anhui Province

Potential grade	Grading standard//ha	City	Actual potential//ha	Total//ha
Grade-one potential district	> 13000	Anqing City	16137.81	16137.81
Grade-two potential district	10000 - 13000	Bozhou City	12535.42	45489.81
		Wuhu City	11285.54	
		Chuzhou City	10860.53	
		Lu'an City	10808.33	
Grade-three potential district	6000 - 10000	Bengbu City	7994.88	21959.31
		Xuancheng City	7048.89	
		Hefei City	6915.54	
Grade-four potential district	4000 - 6000	Chizhou City	5040.91	27190.95
		Suzhou City	4744.03	
		Huainan City	4688.25	
		Fuyang City	4441.42	
		Huaibei City	4181.91	
		Maanshan City	4094.43	
Grade-five potential district	< 4000	Huangshan City	1921.54	3330.38
		Tongling City	1408.84	

(ii) Results and analyses. Seen from above calculation result of quantity potential, 114097.48 ha of arable land could be remedied in whole province by consolidation of agricultural land during the 13th five-year period. Seen from whole province, consolidation potential of agricultural land in Anqing City reaches 16136.90 ha, which is the maximum. Seen from calculation result of quality potential, quality grade of cultivated land in whole province is improved by 0.41 point during the 13th five-year period, and grain yield per ha could reach 809.57 kg. Seen from whole province, quality potential of Maanshan City is 1404.71 kg/ha, which is the maximum. But the country implements the strategy of hiding grain into land, which puts forward strict requirement on quantity and quality of arable land. Continuous propulsion of urbanization and industrialization will inevitably occupy some high-quality farm-

land. Reserve land resource which could be developed into arable land in a large scale in whole province is less, and development difficulty gradually increases. Due to ecological protection and returning farmland, arable land resources which could be developed decrease, and requisition-compensation balance is larger. Arable land with middle and low yields in whole province accounts for 65%, and effective use coefficient of farmland irrigation water is 0.02 lower than national average level, with very severe farmland protection situation.

(iii) Dividing of potential grade. According to calculation result of quantity potential of agricultural land, combining with economic and social conditions of the region, evaluation index of potential grade is firstly established. Here, quantity potential takes coefficient of newly added arable land as main considering factor, and quantity potential of agricultural land consolidation in whole province is divided into 5 grades (Table 4).

According to calculation result of quality potential of agricultural land, combining with actual situation of the region, quality potential of agricultural land in Anhui Province is divided into 5 grades by clustering analysis (Table 5).

Table 5 Grading of quality potential of agricultural land consolidation in Anhui Province

Potential grade	Grading standard//t	City	Quality potential//t	Total//t
Grade-one potential district	> 360000	Fuyang City	423805.47	813716.70
		Suzhou City	389911.23	
Grade-two potential district	220000 – 360000	Chuzhou City	357865.33	1690001.53
		Bozhou City	357175.71	
		Lu'an City	340888.08	
		Bengbu City	334501.27	
		Anqing City	299571.14	
Grade-three potential district	120000 – 220000	Hefei City	188636.93	720029.50
		Maanshan City	184625.31	
		Huaibei City	182258.52	
		Xuancheng City	164508.74	
Grade-four potential district	20000 – 120000	Wuhu City	103001.25	283116.15
		Huainan City	102115.39	
		Chihzou City	77999.51	
Grade-five potential district	< 20000	Huangshan City	14964.24	27790.23
		Tongling City	12825.99	

According to above potential grading result, it is obtained that Anqing City is Grade-one potential district of quantity potential. Via land consolidation, more arable land and profit could be obtained. Fuyang City and Suzhou City are key regions of quality potential of agricultural land. Via land consolidation, quality of more cultivated land is improved, and grain output is increased, which plays an important role in earnestly solving regional grain safety problem. Regardless of quantity potential or quality potential of agricultural land, both Huangshan City and Tongling City are suboptimal areas, and quality of cultivated land could be improved by other manners.

3.2.2 Consolidation potential of rural construction land. (i) Calculation method and result. Based on predicted methods of population and urbanization level, total population, non-agricultural population, agricultural population, urban population and rural population in each administrative district during base year period and corresponding population in the planned target year are calculated. The prediction of urbanization level mainly uses the method of United Nations.

Specific calculation method is as below. Firstly, difference of urban-rural population growth rate between two representative years is counted:

$$URGD = \ln\frac{PU(1)/[1-PU(1)]}{PU(2)/[1-PU(2)]}\Big/n$$

where $URGD$ is difference of urban-rural population growth rate; $PU(1)$ is the proportion of urban population in prior representative year, while $PU(2)$ is the proportion of urban population in latter representative year; n is year number between two representative years. Then, the proportion of urban population in one year is counted:

$$\frac{PU(t)}{1-PU(t)} = \frac{PU(1)}{1-\mathrm{PU}(t)} \times e^{URGD \times t}$$

where $PU(t)$ is the proportion of urban population in the t year, and t is the time interval from prior representative year. The advantage of United Nations method is that it corresponds with the principle of Northam S type of curve in normal urbanization process.

Here, base year uses 2000. It could be predicted that urbanization level of 2015 is 50.17%, while urbanization level of 2020 is 56.89%. Using urbanization rate, urban population is counted. By deducting natural growth amount of urban population, population transforming from agricultural to nonagricultural is obtained. Finally, using land data of rural settlement in the second investigation and per capita land use index, consolidation potential is obtained. First of all, combining rural settlement land and related thematic content in total plan of land use in Anhui Province (2006 – 2020), it is predicted according to different classification methods, and population scale in the plan target year is obtained. Secondly, per capita land standard is determined. Upper limit values of land standards of current rural settlement, target rural settle-

ment and new countryside construction in base period year are used respectively, and corresponding consolidation potential of three kinds of standards is respectively potential easier to be achieved, potential could be realized and theoretical potential. Here, upper limit of new countryside construction land uses 120 m^2 of per capita land use(when current per capita land use is less than 120 m^2, current data are used to replace)[3]. Finally, based on population prediction and per capita settlement consolidation land standard, land demand of target rural settlement is counted, and consolidation potential corresponding to different standards is obtained by current scale subtracting(Table 6).

Table 6 Calculation result of consolidation potential of rural settlement in Anhui Province

Area	Present scale//ha	Rural population in 2020	Potential easier to be achieved//ha	Potential could be realized//ha	Theoretical potential//ha
Whole province	1129817.46	2684.12	145995.19	727198.86	807722.58
Hefei City	98291.82	180.28	23817.99	71250.57	76658.82
Wuhu City	49006.64	114.63	9520.86	31812.59	35251.40
Bengbu City	56725.28	140.30	7003.39	35679.68	39888.80
Huainan City	22608.85	59.83	4904.24	13634.95	15429.73
Maanshan City	28557.41	63.40	6065.83	19046.89	20948.99
Huaibei City	30679.55	72.69	4996.66	19776.05	21956.75
Tongling City	7905.14	10.68	2546.53	6302.47	6623.00
Anqing City	114358.95	274.43	13436.34	73194.75	81427.59
Huangshan City	17677.18	62.08	2452.93	8365.48	10227.82
Chuzhou City	104401.53	179.25	14549.84	77513.81	82891.35
Fuyang City	149665.65	449.22	12104.62	82282.50	95759.13
Suzhou City	120087.34	311.73	11163.69	73328.59	82680.34
Lu'an City	138159.95	300.37	14567.61	93103.93	102115.13
Bozhou City	105092.32	293.81	9052.00	61021.12	69835.36
Chizhou City	29254.39	61.54	4024.08	20023.17	21869.41
Xuancheng City	57345.46	109.89	8983.24	40862.34	44158.96

Table 7 Grading of consolidation potential of rural settlement in Anhui Province

Potential grade	Grading standard//ha	City	Realizable potential//ha	Total//ha
Grade-one potential district	> 80000	Lu'an City	93103.93	175386.43
		Fuyang City	82282.50	
Grade-two potential district	60000 – 80000	Chuzhou City	77513.81	356308.84
		Suzhou City	73328.59	
		Anqing City	73194.75	
		Hefei City	71250.57	
		Bozhou City	61021.12	
Grade-three potential district	30000 – 60000	Xuancheng City	40862.34	108354.61
		Bengbu City	35679.68	
		Wuhu City	31812.59	
Grade-four potential district	10000 – 30000	Chizhou City	20023.17	72481.05
		Huaibei City	19776.05	
		Maanshan City	19046.89	
		Huainan City	13634.95	
Grade-five potential district	< 10000	Huangshan City	8365.48	14667.95
		Tongling City	6302.47	

(ii) Results and analyses. Seen from above calculation result, 145995.19 – 807722.58 ha of arable land could be obtained by consolidation of rural settlement in Anhui Province during the 13th five-year period, with huge potential, and consolidation potential of rural settlement in Lu'an City and Fuyang City could reach over 80000 ha. But seen from current stage (end of 2015), according to the stipulation of per capita construction land use index in the *Planning Standard of Village and Town* (GB50188 – 93), per capita construction land use index is divided into five grades: Grade One, (50, 60]; Grade Two, (60, 80]; Grade Three, (80,100]; Grade Four, (100,120]; Grade Five, (120, 150], and the unit is m^2/person. Per capita land of rural settlement in whole province reaches 372 m^2, which far exceeds the highest grade of per capita construction land, with huge hollow village area. The task of optimizing rural construction land structure, revitalizing inefficient and idle land and improving land carrying

ability is very huge.

(iii) Dividing of potential grade. By clustering analysis, consolidation potential grade and distribution of rural settlement in Anhui Province are determined, and consolidation potential of rural settlement in whole province is divided into five levels (Table 7). According to potential grading result, preferred rural settlement consolidation region should be Grade-one potential district, namely Lu'an City and Fuyang City. Due to the maximum consolidation potential, it could guarantee obtaining greater economic benefit and social value after consolidation. In the region with smaller potential, consolidation could be postponed, or planting level of cultivated land could be enhanced by other aspects, such as introducing more modern planting techniques and improving management experience.

4 Benefit analysis

In this paper, rural land consolidation of Anhui Province is conducted based on the calculation results of consolidation potentials of agricultural land and rural settlement, which is convenient to planning and implementation, and realizes the unity of social benefit, economic benefit and ecological benefit.

4.1 Social benefit Via rational consolidation of rural land in Anhui Province, it could normalize structure and layout of rural land use, increase the area of arable land and create more employment opportunities, which makes more farmers participate in agricultural labor, improves rural infrastructure construction, is important content of constructing beautiful village, and finally realizes "beautiful village, life and local customs". It improves whole image of countryside and finally brings active social benefit.

4.2 Economic benefit By remedying agricultural land and construction land in the countryside, it could earnestly and effectively increase area of arable land, rise farmer's income, improve local economic environment, attract more foreign investment, and impel the improvement of local economy level. Seen from the result of rural land consolidation potential in Anhui Province, consolidation potential of agricultural land could reach 114097.48 ha, while consolidation potential of rural construction land is between 145995.19 and 807722.58 ha, with huge whole consolidation potential. When using the remedied land for agricultural production and life, considerable economic benefits could be obtained, thereby increasing farmer's income, improving farmer's life, promoting regional development and laying solid basis for poverty alleviation work[4].

4.3 Environmental benefit In 2015, soil erosion area of whole province reached 1.7×10^6 ha, and point exceeding rate of main soil pollutants was 7.61%, and annual average soil loss amount was near 0.1 billion t. Damage situation of arable land by natural disaster and industry is also serious, and the problem of ecological function of arable land dropping and crude resource use is not solved radically, and standard system of ecological construction of high-standard farmland is not built. Enhancing consolidation and repair of land eco-environment will be important task of land consolidation in Anhui Province in future five years. Under the premise of environmental protection, land consolidation could make that farmland irrigation, comprehensive treatment of small basin, land leveling and field construction integrate together. Via a series of measures, such as saving water, increasing irrigation area, decreasing soil erosion, and intensively using land, efficient farmland ecosystem is realized. Via continuous input of agricultural technology, crude agriculture develops toward modern agriculture, and layout and structure of ecosystem are optimized, and the theory of ecological benefit is also shown.

5 Recommendations

5.1 Enhancing scientific nature of consolidation planning It should establish the leading agency of government leading and multiple departments commonly participating to overall impel each work of land consolidation, thereby guaranteeing successful implementation of planning. Compared with strategic prominence of national and provincial planning, municipal and county land consolidation planning is at specific operation layer. It should firstly implement target and task of upper planning, and organize, program and implement land consolidation planning in the region according to upper planning. Scientific programming of planning is an important link of land consolidation. Grasping from planning, land consolidation work is conducted step by step to prevent the phenomenon of acting of one's own free will and disorderly development.

5.2 Enlarging public participation For the status quo of weak participation consciousness and ability of farmer, it should increase propaganda intensity of land consolidation, making broad farmer better recognize, understand, support and participate in the work. According to the requirement of "clear property right", the works of right determination, register and certificate issuing of rural land should be done well. Land consolidation basis should be laid, and farmer's right and benefit should be guaranteed by law[5]. For the status quo that the public participation lacks legal basis in land consolidation work, it should accelerate impelling legal construction of public participation in land consolidation.

5.3 Innovating input and excitation mechanisms It should perfect distribution system of paid use fee of newly added construction land, and increase policy support on high-standard basic farmland construction and key region of supplement farmland. Complementation mechanism of farmland protection should be built, and the area where farmland protection and basic farmland construction task complete well should be awarded to sufficiently mobilize the enthusiasms of area and farmer. According to the principle of "who invests and who benefits", it should encourage and guide private capital participating in land reclamation, to mobilize the enthusiasms and initiatives of land reclamation obligor, subject of social investment, land oblige and local government participating in land reclamation. The scale of industrial waste land reclamation use pilot should be controlled and implemented strictly. It should study and explore fund operation mode of land consolidation marketization, establish multiple investment and financing channels of land consolidation, and sufficiently play lever role of government input on starting social investment, thereby forming fund guarantee system of land consolidation, which is dominated by government fund and attracts private capital.

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environment (Table 8).

Table 8 Degree of coordination between land use and ecological environment in Hefei Economic Circle

City	$F(x)$	$G(y)$	D	Degree of coordination	Degree of coordinated development
Hefei City	0.8608	0.4409	0.4704	Ecological environment lagging behind	Endangered imbalance
Huainan City	0.6648	0.6253	0.5176	Ecological environment lagging behind	Reluctant imbalance
Chuzhou City	0.1372	0.34	0.0954	Decline status	Extreme imbalance
Lu'an City	0.2327	0.256	0.1204	Decline status	Serious imbalance
Anqing City	0.2622	0.4108	0.1857	Land use lagging behind	Serious imbalance

4 Conclusions and recommendations

(i) Establishing the indicator systems and evaluation models for land use and ecological environment subsystems is favorable for achieving the coordination between the two systems of quantitative evaluation. The study shows that Hefei is on the verge of imbalance, Huainan remains at reluctant coordination status, Chuzhou is extremely out of balance, Lu'an and Anqing are extremely imbalanced, and every city is accompanied with different ecological environment or land use lagging problem.

(ii) In order to improve the degree of coordination between land use and ecological environment and promote the coordinated development of land use and ecological environment in Hefei Economic Circle, every city in Hefei Economic Circle should lay equal stress on the construction, protection and administration according to the coordination degree and development situation. For example, it is recommended to optimize and upgrade traditional industries, implement intensive and conserved use of land, increase input, and establish environment-friendly land use mode.

(iii) Through the implementation of various effective measures, including building urban green space system, increasing the forest coverage, increasing wetland protection zone area, building sponge city, strengthening control of land ecological environment, and ensuring sustainable use of land resources, it is expected to ensure coordinated development of land use and ecological environment in the rapid development of Hefei Economic Circle.

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5.4 Impelling whole coordinated development of rural land consolidation The essence of future urbanization land use is digging stock construction land. With impelling of urbanization process in Anhui Province, under the premise of strictly controlling total scale of urban-rural construction land, the fundamental direction is optimizing urban-rural land use structure and realizing the transformation of rural construction to urban land use[6]. To adapt to the need of land consolidation work, related policies should be perfected actively, such as land ownership and fund management. When necessary, it should improve management function of professional organization of land consolidation, sufficiently play social service role of land consolidation research and training agency, enhance continuing professional education of land consolidation, and improve business quality of management and professional technical personnel of land consolidation.

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