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Theories and Diagnostic Methods of Land Use Conflicts

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Abstract With social and economic development, the land resources are becoming increasingly scarce, and the land use conflicts are getting more frequent, deeper, more diversified and more severe. Besides, the factors that induce land use conflicts are more and more complicated. Therefore, the key to solve many difficult problems in regional sustainable land use lies in the research of land use conflicts, scientific evaluation of the intensity of regional land use conflicts, and the further reveal of external forms as well as intrinsic mechanisms of land use conflicts. Based on the review of both domestic and foreign literatures, this paper has completed the theoretical framework as well as the contents of land use conflicts research, established the diagnostic models and methods of land use conflicts intensity and proposed the key research areas of future studies. The purpose is to promote the evolution of spatial structure of China's land resources to the positive direction and achieve integrated and coordinated management of land use through improving spatial allocation efficiency of land factors and buffering the pressure on land resources.

Key words Land use change, Land use conflict, Conflict diagnosis

1 Origin and evolution of land use conflicts

Land use conflicts can be summarized into inconsistency and inharmoniousness of land use methods and quantity among stakeholders as well as the contradictory condition between various land use methods and the environment[1]. This objective contradictory condition always exists throughout each development stage of human society. In the early 18th century, the law of diminishing returns of land put forward by T. R. Malthus verified the conflicts existing between human's "exploitation" of land and "subsistence" needs. Researches of David Ricardo, William and Nicholls also indicated the changing development relationship among land rental, population and land use system[3,4]. In the 1970s, American scholar Carpenter S L also brought forward that over exploitation of natural resources is bound to cause complicated fierce environmental conflicts[5]. These researches have drawn extensive attention from related organizations and fields, as listed in Table 1.

Table 1 International agencies and organizations for land-use conflicts research initiated

Year	Conference name	Organized by	Focus
1977	Symposium of Urban Fringe	The Countryside Agency in Britain	Land management, land use relationship and conflicts
1992	World Commission on Environment and Development	IHDP	It was proposed to improve the social acceptability of stakeholders' participation in decision making about land use, coordinate the conflict between productivity goals and long term land needs of the main body of land use.
1995	Seminar on the Management of Conflicts about Forestry Resources Operation	Organizations such as FTPP, RECOFTC, FAO *etc.*	The main body of conflicts should actively participate in strategy response for the conflict between land use and resources management.
1997	World Forestry Congress	Istanbul	Conflicts management should be integrated into the framework of state policies
2000	Conflicts between Floods and Land Use along Yangtze and Rhine	Germany, China	Discussed the floods and land use conflicts in the drainage area along Yangtze in China and Rhine in Germany - sustainable drainage area risk management strategy.
2001	Management Methods for the Conflicts during the Management and Use of Natural Resources	Chinese Academy of Science, Beijing	Discussed the reason and process of conflicts generation, conflicts type, effects and impact of policies and laws on conflicts management, and the solutions to conflicts.

However, modern research on land use conflicts started from the 1960s and the 1970s, mainly because frequent occurrence of land use conflicts due to scarcity of land resources. Such conflicts concentrate on regions among which regional resources are not equally occupied, developing countries with internal inharmonious conditions and developed countries with increasing industrialization[6,7]. For example, ecological environment conflicts on the basis of land in India in recent years[8], conflicts between land resources and water resources due to increasingly fierce competition among pasturing, culture and wild animals[9], conflict between land use and rare plants protection in Canada[10], land use conflicts in the drainage area along Amazon River[11], all these show that complicated interactions relationship exists among land use and social sovereignty, history, politics, economy and environment[12]. Land use competition and conflicts have resulted in de-

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terioration of regional ecological environment, which in turn reduces biological diversity, arouses serious conflicts of rural and agricultural economy with ecological system effect, and directly influences the development of regional economy. In addition, land use conflicts impairs the enthusiasm of not only local farmers, but also the external investors, towards land investment, leading to land left uncultivated[13]. Therefore, scholars have established a dynamic balance model for human society system and the biological and physical system to solve the coordination relationship between resource competition and the land use and environmental conflicts factors[14].

2 Theory framework of land use conflicts

In fact, the essence of land use conflict is an indication of inharmonious relationship between land and human. Conflicts are just an external imagery of the result of land use and obvious manifestation of land use situation in certain time and space dimension. To reveal the deep reason for land use conflicts, the process and evolution mechanism of land use must be thoroughly studied, and only in this way are we able to put forward an effective adjustment and control scheme. Therefore, the framework of study on land use conflicts includes investigation and analysis on stakeholders of land use, forms and contents of land use conflicts, evaluation of land use intensity, as well as studies on establishment and selection of land use conflicts and solutions (as shown in Fig. 1).

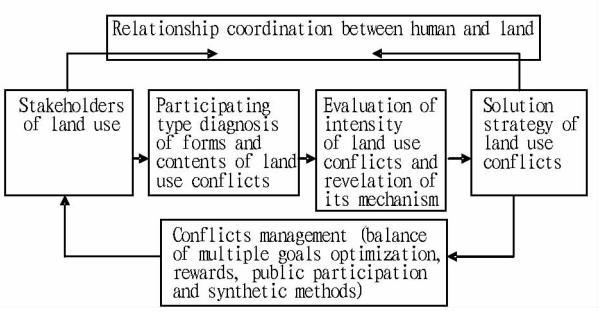

Fig. 1 The research framework of land-use conflicts and reconciliation

No doubt that revelation of the process and conflicts mechanism of land use is the core content of theoretical research of land use conflicts, which must be based on theoretical basis of land use science, landscape ecology, land ecology *etc*. Land use is a process that human, according to the natural and economical properties, changes natural ecological system of land into an artificial one, by using modern technologies to carry out long term operation activities for certain economic and social purposes. Therefore, land use reflects the utilization condition of land and its social and economic properties; landscape ecology focus more on the natural property of land; and the core of land ecology is to seamlessly combine human social and economic system with natural ecological system. As land use activity of human is one of the biggest disturbances towards the environment, the result of land use by human not only satisfies their realistic economic needs, but also generates great impact and even conflicts for the environment and ecology. Research on land use conflicts focuses on objectiveness, initiative and value changes of human about land use. It depicts human's needs for land use values in different times and spaces, the evolution process of land ecological system in different phrases and spaces as well as their impacts on value stream, material stream and energy stream. It also combines well with the economic property of land use, and through such combination it clearly describes the landscape process of land ecology system. Therefore, the revelation of land use conflicts mechanism and reasons would guide human in the future to use land properly to reduce land use conflicts.

3 Content of research on land use conflicts

3.1 Stakeholders of land use conflicts

3.1.1 Stakeholder Theory. This teory was generated based on enterprises' balance of mutually conflicting requirements of each type of stakeholders. It determines stakeholders according to the basis concept put forward in 1963 by Stanford Research Institute that "Stakeholders are such groups without whose support an enterprise can not survive". Since 1980s, American economist Richard Freeman (1984) extended the definition as "stakeholders refer to those who would affect or be affected by the realization of an organization's goal"[15]. This definition incorporates community, government, and other social organizations into the research scope of the stakeholder theory. However, in the 1990s, during empirical research and application, researchers found that existence and development of enterprises is inseparable from stakeholders' support and participation, while each stakeholder would have different degrees of impact on the enterprise. Thus the division and identification of each stakeholder is the key research content of this theory[16].

3.1.2 Stakeholders of land use in China. It is a national strategy goal to develop, use and protect lands in China, as land use involves common interests of the whole nation. According to the theory of land property system, land rights in China can be divided into land ownership and land use right; therefore, stakeholders of land use in China includes not only land owners, but also land users. From the perspective of land use right, land owners refer to state and rural collective economic organizations, while the State Council of the People's Republic of China as the representative of land ownership and each level of governments that have land requisition rights are the most important stakeholders of state-owned lands; rural collective economic organizations (including levels of towns, villages and production groups in each village) that operate and manage farmers' collectively owned lands are the most important stakeholders of collectively owned lands. Form the perspective of land use rights, the stakeholders of state owned lands mainly refer to legal persons, entities and individuals (international, national and interregional), including real estate developers, joint stock enterprises and other legal body for land use. Stakeholders of farmers' collectively owned lands mainly refer to contractors, leaseholders, assignees, rural enterprises, foreign entities and enterprises as well as united construction households as the main body of land contract operation rights and use rights.

3.2 Analysis on the conflicting relations among stakeholders

3.2.1 Analysis on the conflicting relations based on different needs. In the utilization process of land in China, different stakeholders have different goals of land needs, so the conflicts are different. From a macro perspective, land use conflicts in China mainly are manifested as disputes and competition about the formulation of land ownership and use rights among each stakeholder as well as the social economic and ecological environment benefits conflicts caused by land use. They are disputes about land use volume, structure and values caused by different needs of stakeholders[17]; they are divided into three levels (as shown in Fig. 2): (1) needs of macro state level. This includes needs for urbanization, grain security and ecology safety. These needs would always cause conflicts between protection of land use macro strategy goals and current benefits of lands; (2) needs of mid-level of local governments. This mainly includes needs of regional social and economic development, regional industry layout and land capital operation. These needs are restricted by the development goal and technology of stakeholders. Due to restricts of land management system and annual plans, it is impossible to satisfy all needs of each stakeholders, thus it is bound to conflicts between economic benefits perusing maximum profits as the competition goal with the ecological environment benefits; (3) needs of micro level of collectivity and households. This mainly refers to needs of land investment value increase and land ownership protection. For the collectivity, it lies in maintenance of land property rights, response to land requisition of national construction by seeking new approaches for income increase; for farmers, it lies in clarification of property rights relationship, satisfaction of their basis life requirements, reductions of production risks and reduction of conflicts of land lost with land use values.

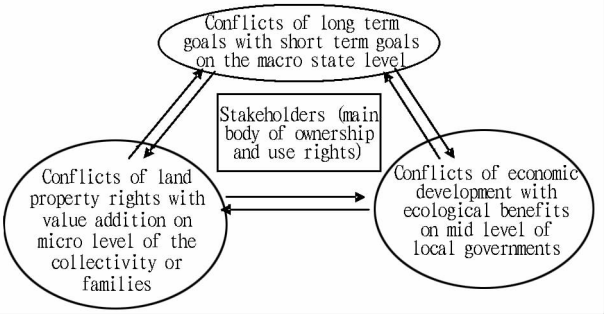

Fig. 2 The relation between the main bodies of conflicts

Conflicts of these three levels are interrelated, mutually restrictive. The state needs are reflects as "top-down" macroeconomic regulation and control, while that of the collectivity, families and regions are manifested as "bottom-up" response, which also deeply affects the results of regional land use.

3.2.2 Analysis on the conflicting relations based on property system. Property system of lands is an integrated reflection of the relationship between human and lands. It regulates the conditions and procedures of land use. It is an important impact factor for optimized allocation and proper use of land resources, and for the formation and development of land markets. The property system of lands also defines the relation of such behaviors as occupation, utilization and benefits obtaining of lands among stakeholders. However, as we has been implementing a double-track system for land property that treats urban and rural areas differently, the degree of marketing allocation of state owned lands is increasing, and land use is gradually getting proper; marketing circulation of rural collectively owned lands has been under restriction for a long time, resulting in a series of conflicts, such as unfair distribution of capital benefits, disordered land utilization and improper structure of rural lands for collectively owned lands. The root reason for conflicts is competition of the main bodies of stakeholders for benefits of land development rights. In China, state land ownership is a complete absolute right, while collective land ownership is a incomplete right, so during land utilization, the state may use government functions to imperatively take lands from rural collectivity, and obtain benefits from land development rights through intensive and economical use of lands; but the collectivity and households also want to share benefits of land development rights through land development by their own. Therefore, the weakness of collectively owned lands, uncertainty of the main body of ownership and ambiguity of the system would definitely various conflicts of governments with collectivity, collectivity with households, and among households themselves.

3.3 Forms of land use conflicts

According to different elements of land use system, land use conflicts can be divided into two forms: element conflicts and functional conflicts. The element type of land use conflicts refer to conflicts generated during the process of development, utilization, distribution and protection of land resources with respect to the quantity and structure of land use. This type of conflicts is repulsive, or essentially opposite and incompatible. Occurrence of such type of conflicts would cause great damages to the life and properties of each party of stakeholders or greatly influence social stability. Functional conflicts of land use mainly refer to conflicts generated among social, economical, cultural and ecological functions, such as conflicts among economic benefits, social benefits, ecological benefits and environmental benefits. The dimensions of conflicts are not intensively opposite, but mutually independent, reciprocal and beneficial.

In China, the form of land use conflicts is mainly reflected as: (1) conflicts of maintenance of land ecological system with the structure of landscape. This mainly refers to the conflict between lands for construction use with the requirement for arable lands. It is directly reflected as the contradiction of industrialization and urbanization with grain securities; (2) conflict of protection of biological diversity of agricultural ecological system with social and economic contribution. On a certain social development level, people's excessive pursuit of economic benefits of land use would also sacrifice the living spaces of plants and animals, thus it's difficult to realize at the same time both social economical benefits and ecological benefits; (3) non-uniformity of agricultural ecological systems and sustainable management problems of land; (4) conflicts of household incoming with social benefits, that is the difference between farmers' desire for private ownership of lands and the social goal of government for macroscopic land management; it is also a problem about how to improve living capacity in rural areas, increase their incomes and promote development of

rural economy. These are main forms of conflicts that exist in land use in China.

4 Diagnosis methods for land use conflicts

Diagnosis of land use conflicts mainly adopts a combine method both quantitative and qualitative. The type of land use conflicts can be determined through site visits and investigation; and regional land use intensity, various conflict inducements and conflicts mechanism can be identified and analyzed with mathematical models. It is a comprehensive research process of the structure, process, status and response of land use, including diagnosis of the development of various natural, social and economic conditions caused by human behaviors in different time in certain regions.

4.1 Determination of the types of land use conflicts with the method of PRA Participatory Rural Appraisal (PRA) is a new method for quick collection of rural information, resources situation and advantages, farmers' voices and development ways. This method can prompt stakeholders to improve their understandings of the conditions of their own, the society, and the environment continuously, make action plans together with the development staff and implement such plans. This concept is put forward in the late 1960s, developed in the 1970s, introduced into China in the early 1980s, and already widely used in the 1990s in some fields, for example for onsite investigation to explain the interrelation between human and the nature.

During the research on land use conflicts, researchers should determine the area to be studied, establish different evaluation index systems based on different goals, objects and application level of their evaluation, and use it to systematically investigate and collect information about rural life, social economic activities, environment and others[18,19]. First, the forms of land use conflicts are determined with an approach of questionnaire survey. Second, semi-structured interviews are adopted to organized various participants, including those from outside, such as government officials, departmental management of industries, technicians, and experts, to have informal discussions, to quickly determine the threads and stresses the regional system is facing, understand the problems and opportunities of agricultural, rural and social development, as well as the utilization goals of and requirements for land resources of stakeholders, and finally finds out the main types of land use conflicts. During actual investigation and research, as land use conflicts to be investigated is a sensitive issue for local governments and rural organizations, understanding and support must be obtained from the governments and land administrative departments before investigation and research. Participants should receive a general training to ask these stakeholders fully and honestly express their opinion about the current forms of land use and put forward practical utilization proposals for future from the perspective of maximization of their own benefits. The objects of the investigation should be sampled from households with a Systematic sampling method to ensure that they are representative. In order to avoid influence of the other family members on the member to be investigated, face to face interview is adopted for the investigation. The area to be investigated is selected on the principle of proper regional layout and convenient transportation. The PRA method is used to find out the most obvious conflicts arising from changes of land use in the village.

4.2 Intensity assessment of land use conflicts on the base of Pressure – State – Response model Land use system is a complex giant system with combination of the system of nature, geography and environment wit the system of cultural, society and economy. The factors that influence land use conflicts are very complicated, requiring incorporation of those natural, economic and social factors into a single system using the nonlinear science theory, modern systematic science theory and the mathematic model method to reveal the evolution laws of the complex giant system of land use. The analysis method with the guidance of Pressure – State – Response (PSR) model and its extended models can be used to evaluate complex environment problem, resource security problem, and sustainable land use problems. It can be used with Fuzzy Mathematics Method to set up an evaluation criterion for land ecological system, analyze the causal relationship among various factors, monitor the continuous feedback mechanism among each index. It is systematic and comprehensive, and is a effective way to find out the causal chain between human activities and ecological system[20]. Therefore, it can diagnose the state and response of the land ecological system to the land use stress, and be used to analyze the problem of land use conflicts.

4.2.1 Determining the evaluation index systems. Pressure part: Pressure reflects the influence and threat brought to the ecological system of agricultural lands by human activities, and it also reflects the utilization intensity and change trends of resources. As for limited land resources within a certain region, pressure is mainly resulted from demand conflicts, *i. e.* conflicts among the demand for arable lands under the condition grain security, the increasing demand for construction lands, and the demand for balanced ecological environment. From the perspective of the relationship between land use and economic development, the evolution of industrial structure influences the possession mode of lands and the level of incomes influences the consumption structure, which in turn influences the industrial structure[21]. Therefore, at different economic development stages, regional industrial structure, combination modes of urban and rural spaces and the incomes and consumption there directly or indirectly bring certain impacts on land use, which is expressed with X1 – X14 decomposition values (as listed in Table 2). Of course, pressure indices can be selected based on the specific conditions of regional development and determined with the method of correlation analysis and main components analysis of various influencing factors.

State part: State reflects the changes of factors of land ecological environment and exhibits the final goals of land protection policies. The state of land use refers to land material, economical output and resources use efficiency, so it is measured with land use structure and important output indices ($X_{15} - X_{21}$).

Response part: Response refers to actions taken by the society or individuals to stop, reduce, prevent or restore unfavorable changes of the land ecological system. Main indices include $X_{23} - X_{25}$, such as land conservation situation (mechanization level, technology input, and land consolidation strength), land environ-

mental benefits, implementation of land systems[22].

Table 2 Evaluation index system of intensity of land-use conflicts

Target level	Criteria level	Indices level	Weight*
Intensity of land use conflicts	Pressure	Gross Domestic Product (GDP) X_1, fixed assets investment X_2, urbanization level X_3, urban population increase X_4, per capita arable land area X_5, fixed assets investment in urban areas X_6, area of lands possessed by roads or railways at or over provincial level X_7; non-household fixed assets investment in rural areas X_8, household fixed assets investment X_9, arable land occupied for agricultural structure adjustment X_{10}, natural disasters frequency X_{11}; arable lands occupied for ecological construction X_{12}, arable land destroyed due to pollution, desertification or salinization X_{13}, per capita green area . X_{14}.	
	State	Arable land percentage X_{15}, intensity of arable land use X_{16}, total output of arable lands X_{17}, Grain crop sown area X_{18}, multi-cropping index X_{19}, areas of plantation land X_{20}, unused land area X_{21}.	
	Response	land conservation situation X_{22} (mechanization level, technology input, and land consolidation strength), the ratio of environmental protection investment to fiscal expenditure X_{23}, ratio of annual tourism income to regional GDP X_{24}; land system X_{25}	

Note *: Weight value of each index is obtained using specific calculation methods, such as entropy weight coefficient method, Analytic Hierarchy Process (AHP) *etc*.

4.2.2 Measuring the intensity of regional land use conflicts. As the evaluation system of land use conflicts are complex and hierarchical, individual index of land use conflicts just reflects its development from a indirect aspect. In order to the overall dynamic level of regional land use conflicts, this paper defines a Regional Comprehensive Index of Land Use (ILU) conflict Intensity, to indicate the development degree of regional land use conflicts. To be specific, it means to calculate each index using a weighting function as follow:

$$ILU = \sum_{i=1}^{3}\left(\sum_{j=1}^{n} X_{ij} W_{ij}\right) R_i$$

where, X_{ij} is the standardized value of the j-th individual index of the i-th category index; W_{ij} is the weight corresponding to the j-th individual index of the i-th category index; R_i is the weight of the i-th category index; is the comprehensive evaluation values of the three category index, namely pressure, state and response[23].

5 Conclusion

5.1 Improving theoretical research, expand evaluation methods There generally exists the following problems: (1) existing researches are mainly about collection of individual cases of land use conflicts, concept of land use conflicts, and the characteristics and inducement factors *etc*, and there is no complete theory system for this. (2) Considering the content of researches, mostly address the conflicts among types of land use forms from the perspectives of the impacts of competitive land use on the environment and ecology, or deal with the external diseconomy of arable land protection and inconsistency of the responsibilities and rights of arable land protection; (3) Current research gives excessive description of conflicts of the two aspects, main body of stakeholders and the main body of land benefits. They mainly concentrate on conflicts of participant main body of arable land protection with the interregional benefits of arable land protection; conflicts among the economical, ecological and social benefits of land use; conflicts of long term benefits with short term benefits, inter-generation benefits conflicts, and benefit conflicts among regions of different development level.

Generally speaking, researches on land use conflicts have entered into a quantitative and qualitative stage from the empirical stage. To manage and coordinate land use conflicts, it is critical to grasp the rational demands for regional lands, the law of intensive land use and know the effect of land use changes. Therefore, in the future academic researches of the following three aspects should be strengthened: (1) evaluation of the intensity of regional land use conflicts; (2) revelation of the inherent mechanism of land use conflicts. (3) reconciliation strategy and management of conflicts.

5.2 Revealing conflict mechanism, guide land use practices Over 30 years since China's reform and opening up, with a series of macroscopic regulation and control policies and system frameworks, the traditional land use conflicts have evolved from quantity and quality conflicts in the early stage towards ecological function conflicts. Under this background, as for management of land use conflicts, we should carefully analyze the special characteristics of regional lands and the inherent mechanism of regional social and economic development, clarify the development direction of landscape pattern in different regions, scientifically evaluate the intensity of regional land use conflicts, further solve various disharmony or conflict problems in the sustainable use of regional lands. All these are significantly important for setting up a development pattern with clearly defined functions, properly divided work, and mutually supplementary advantages, improve special allocation efficiency of production factors, relief pressure of strategic resources, and facilitate the development of the special structure of social economy in China towards a benign direction.

References

[1] YU BH, LV CH. The progress and prospect of land use conflicts[J]. Progress in Geography, 2006, 25(3): 106-115. (in Chinese).

[2] MALTHUS. Population principle[M]. Translated by WANG HH. Xi'an: Shaanxi Normal University Press, 2008: 11. (in Chinese).

[3] LI JT. Principles of political economy and taxation[M]. Translated by GUO DL, WANG YN. Nanjing: Yilin Press, 2011: 5. (in Chinese).

[4] WILLIAM N. Development in agrarian economies: The role of agricultural surplus, population pressures, and systems of land tenure[M]// CLIFTON R, WHARTON JR. Subsistence Agriculture and Economic Development, Frank Cass & Co. Ltd., 1970: 297-319.

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lish scientific farmland asset evaluation system, properly assess rural land value, and gradually form urban and rural integrated management system. In addition, we recommend setting up specialized evaluation mechanism, establishing professional evaluation organizations, training evaluation talents, and setting out relevant laws and codes of practice, to provide evaluation service of mortgage loan of farmland contractual management right for rural credit cooperatives.

4.4 Building barriers for loan risk Local government should establish risk compensation system for agriculture related loan, and provide compensation fund, to support development of local financial industry. In accordance with legal, voluntary and paid principles, without changing the attribute of land collective ownership, land use and not harming rights and interests of farmland contractual management right, it should standardize mortgage process, improve rural loan mortgage guarantee system, and make clear conditions and scopes of mortgage of farmland contractual management right.

4.5 Promoting establishment of farmland circulation market and establishing management system for mortgage land use purpose The establishment of farmland circulation market needs combination of effective and comprehensive legal mechanism. It should establish subject confirmation, pricing, method innovation, market classification, market procedure, market service and market supervision mechanism to promote construction of farmland circulation market. Besides, it is proposed to establish management system for mortgage land use purpose. Specifically speaking, when realizing the mortgage right, the assignee of farmland contractual management right shall not change purpose and attribute of land use. Organizations or individuals that obtain the farmland contractual management right through realizing mortgage right should not change the purpose of land use either.

4.6 Improving related supporting system Firstly, we recommend improving farmland contractual management right registration system and certificate system, to publicize detailed information of the contractual management right, strengthen the public trust, and lay solid foundation for system innovation and business implementation of farmland finance. Secondly, it is proposed to set up rural land banks in pilot areas, to gradually explore operation mechanism of rural land banks. Thirdly, since the realization of mortgage of farmland contractual management right needs a good many financial talents, both government and universities should cultivate relevant students to command comprehensive knowledge, so as to provide personnel guarantee for realization of mortgage of farmland contractual management right.

References

[1] ZHANG Q, AI JG. Reflection and suggestion on the mortgage of farmland contractual business right[J]. Journal of Jiangxi University of Finance and Economics, 2006(4): 23 – 25. (in Chinese).

[2] WANG X. On the mortgage of farmland contractual business right[D]. Changsha: Hunan University, 2009: 14 – 19. (in Chinese).

[3] ZHANG ZH. Finance supporting problem in modern agriculture development in China[D]. Qingdao: Ocean University of China, 2009: 25 – 27. (in Chinese).

[4] LI XF. Primary discussion on the mortgage of farmland contractual business right[J]. Legal System and Society, 2010(4): 214 – 216. (in Chinese).

[5] DONG JR. Existing problems and suggestions during process of mortgage of farmland contractual business right[J]. Jilin Finance Research, 2010(10): 36 – 37. (in Chinese).

(From page 67)

[5] CARPENTER SL, KENNEDY WJD. Environmental conflict management environmental mediation and conflict management[J]. Pergamon, 1980, 2(1): 67 – 74.

[6] FRIES RSD, FOLEY JA, ASNER GP. Land-use choices: balancing human needs and ecosystem function[J]. The Ecological Society of America, 2004, 2(5): 249 – 257.

[7] Country Report. Agrarian Reform and Rural Development in Indonesia[EB/OL]. (2007 – 02 – 19) www.icarrd.org/en/icard_doc_down/national_Indonesia.doc.

[8] GADYGIL M, GUHA R. Ecological Conflict and the environmental movement in India[J]. Development and Change, 1994, 25(1): 101 – 136.

[9] CAMPBELL DJ, GICHOHI H. Land use conflict in Kajiado District, Kenya[J]. Land Use Policy, 2000, 17(4): 337 – 348.

[10] PATRICK NANTEL, ANDRé BOUCHARD, LUC BROUILLET. Selection of areas for protecting rare plants with integration of land use conflicts: A case study for the west coast of Newfoundland, Canada[J]. Biological Conservation, 1998, 84(3): 223 – 234.

[11] SIMMONS CS. The political economy of land conflict in the Eastern Brazilian Amazon[J]. Annals of the Association of American Geographers, 2004, 94(1): 183 – 206.

[12] NORTH LL, KIT WA, KOEP R. rural land conflicts and human rights violations in ecuador[EB/OL]. (2007 – 02 – 19) http://www.yorku.ca/cerlac/documents/North_Kit_Koep.pdf.

[13] ISHIYAMA N. Environmental justice and American Indian tribal sovereignty: Case study of a land-use conflict in skull valley, Utah[J]. Biological Conservation, 2003, 84(3): 223 – 234.

[14] YOUNG U, WATT A, NOWICKI P. Towards sustainable land use: identifying and managing the confiicts between human activities and biodiversity conservation in Europe confiict management[J]. Biodiversity and Conservation, 2005, 14: 1641 – 1661.

[15] GRIMBLE R, WELLARD K. Stakeholder methodologies in natural resource management: A review of principles, contexts, experience and opportunities[J]. Agricultural Systems, 1997, 55(2): 173 – 193.

[16] JIA SH, CHEN HH. Strategic environmental management based on stakeholders' participation[J]. Studies in Science of Science, 2002, 20(2): 209 – 213. (in Chinese).

[17] LI XB. Conflicts between land demands and land service function[M]. Beijing: China Science Press, 2008: 44 – 46. (in Chinese).

[18] ZHEN L, XIE GD, YANG L, *et al*. Interactions between human activities and land use patterns, and conflicts at the village level of Jinghe Watershed[J]. Resources Science, 2007, 29(2): 201 – 207. (in Chinese).

[19] QUAN J. Rapid evaluation of nature reserve management and cable deterministic method and application[J]. Journal of Ecology, 2009, 28(6): 1206 – 1212. (in Chinese).

[20] SHI YL, YANG DF, WANG RS. Ecosystem health assessment based on PSR model: A case study of Dafeng City in Jiangsu Province[J]. Environmental Science and Technology, 2008, 31(2): 120 – 123. (in Chinese).

[21] QIU XP, WENG ZL. Analysis of the canonical correlations between influencing factors and cultivated land amount changes based on CCA[J]. System Sciences and Comprehensive Studies in Agriculture, 2005, 21(4): 256 – 259. (in Chinese).

[22] ZHAI WX, HUANG XJ. Analysis on the effect of policies operation of cultivated land protection in China[J]. China Land Science, 2003(2): 8 – 13. (in Chinese).

[23] YAO CS. Comprehensive evaluation on intensive of agricultural land use based on PSR model and policy suggestion[J]. Research of Agricultural Modernization, 2010, 31(3): 312 – 316. (in Chinese).