

Sustainable Development Strategy of land Resources in Hebei Province

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Abstract. With the rapid development of economy in Hebei province, the contradiction between plowland and human is intensifying. Based on the analysis of land resources use in Hebei province, we find out the factors that restrict the sustainable using of land resources. And then, We put forward the Countermeasures of sustainable utilization of land resources.

I. Introduction

As the source of all creatures, land is a significant material basis for human society, however, its un-renewability gives rise to scarcity.

At present, with the development of industrialization and urbanization, the imbalance between population, resources and development becomes more and more obvious, which what's more restricts the economic and social development & improvement. Hence, it becomes essential for us to address the imbalance between limited land resource and unlimited social economic needs. Thus, the sustainable development of land resource becomes a heating topic under current situation.

Sustainable development refers to the type of development which can meet modern people's requirements, but also never damage future people's abilities. It was developed in the international land sustainable utilization system seminar at the age of 1990, which was united by Indian agricultural institute, American Agriculture Department, American Rodale Institute. It is not agreeably defined by now.

However, the writer esteem that when it comes to land resource, its sustainable development refers to both its quantity and quality can meet social economic development needs and can also achieve damageonious development of population, resources, environment and economy either at present or in the future. But because of the disordered utilization of land resource, the agricultural land resource is seriously damaged, the ecological environment gets worse, economical development is hinted, and social imbalance becomes more and more obvious. Hence, we must develop land resource sustainable utilization assessment, in accordance with the current land resource utilization status, ensuring the limited land resource are utilized in scientific and reasonable ways.

II. Current Land Resource Utilization Status in Hebei Province

A. Information about this Area

Standing the southeastern North China, as the key point of Bohai Region, Hebei Province is an important part of the Jing-jin-ji City Circle. With various complex geomorphic types, Hebei Province is the only province with plateau, hills, basin plains and seas etc. There are totally 21 kinds of land, among which most is loamy, accessible for agriculture, forestry and animal husbandry industry on the whole, but with some having little nutrient.

B. Current Land resource Utilization Status

The land resources in Hebei Province, as shown in the following table.

Table 1 Land resource table of Hebei Province

	Area under Land Survey(10 000 hectares)	Land for Agriculture Use(10 000 hectares)	Land for Construction(10 000 hectares)
2003	1884.31	1302.79	169.14
2004	1884.31	1304.45	169.88
2005	1884.3	1306.6	173.3
2006	1884.3	1307.9	177.1
2007	1884.3	1307.9	178.2
2008	1884.3	1308.2	179.4

In 2011, there are in total 28.26508 million acres of land throughout Hebei Province, among which 196.2373 million acres for agriculture (69.43%), 26.913 million acres for construction (9.52%), and 59.5005 million acres reserved for nothing (21.05%).

Among land for agriculture, there are 94.7595 million acres for lands (48.29%), 10.5704 million acres for parks (5.39%), 66.3321 million acres for forests (33.80%), 11.9793 million acres for grasses (6.10%), and others as 12.5959 million acres (6.42%).

All the above are the development base for Hebei Province, and land which is not yet utilized are the potential for reasonable development and utilization in the future. According the current land resource status in Hebei Province, there is a large amount of land with various kinds which fit kinds of economic development, but lots of problems need to be solved at the same time.

C. Analysis on Problems in Land Resource Utilization

a. Research on Utilization of Land Resource Quality

In Hebei Province, there are kinds of land resource, but parts of some are rather weak. In details, the impact on land from unreasonable development and utilization is:

(1) Soil & Water Loss

Because of low plant coverage, years of damage, lack of cost and unsuitable management, the soil & water loss and grassland degradation more and more seriously.

It is reported that there is in total 55.45% of mountain land has soil & water loss and 53% of grassland has grassland degradation, and what's worse, it is most serious in the inland water system of Yongding River upstream, Yanghe waterland and Bashang region with over 2500 tons per KM2 year. And there are 67.40 million tons of sands has sand loss, which equals 12.9 thousand acres of cultivated lands of 0.4 meter thick. What's worse, the soil & water loss in mountainous areas even results in inaccessible Water conservancy facilities.

(2) Land Desertification

The serious soil wind erosion & desertification in northern part of Hebei Province is the main cause of sand problems in Beijing.

It is calculated that there are 2.40 million acres of wind erosion & desertification throughout Hebei Province, which occupies 13%, among which 1 million acres of wind erosion & desertification in Bashang region (1/3). The wind erosion & desertification not only declines the usable land, but also damage the agriculture and human life, for instance, make the land structure destroyed, Soil nutrients loss, grassland degradation, and even human safety threatened.

(3) Land Pollution

It is predominately the 3 industrial wastes emission and fertilizer overuse that result in land pollution. It is reported that in 2007, 2.229 billion tons of waste waterland 389.5 thousand tons of waste residue were let out, and 5% of cultivated lands were polluted.

Besides, in order to enhance the output of farm products, farmers use much pesticides and fertilizers. It is reported that in 1991, 1.6072 million tons of fertilizers and 46.8 thousand tons of pesticides were used in overall province, and in 2011, 3.2628 million tons of fertilizes and 83 thousand tons of pesticides were used throughout the province. Though the large amount of fertilizes and pesticides can enhance production, it can also give rise to secondary salinization and low land sustainable production abilities.

Table 2 Consumption of Chemical Fertilizers and Consumption of Agricultural Pesticide in Hebei Province

	Consumption of Chemical Fertilizers (10000 tons)	Consumption of Agricultural Pesticide (10000 tons)
2011	326.28	8.30
2010	322.86	8.46
2009	316.17	8.65
2008	312.40	8.51
2007	311.87	8.35
2006	304.89	8.12
2005	303.39	8.08
2004	289.88	7.57
2003	283.31	7.52
2002	278.80	7.47

b. Research on Utilization of Land Resource Quantity

At first, as a key part of Bohai Economic Circle, Hebei's industrialization and urbanization is getting fast and fast. At the age of 2011 in Hebei Province the GDP was 2.5 trillion yuan, population was 72.41 million, and urbanization rate was 45.6%, thus it is predicted that by 2020, the GDP would reach 3.7 trillion yuan, population 74.80 million, and urbanization 57%, which would as well require more construction land.

And then, the cultivated lands in Hebei Province are decreasing. It is reported that in 1949 there were totally 7.2658 million acres of cultivated lands throughout the whole province with per capita 0.235 acre, and it decreases at the speed of 22.8 thousand acres per year. In such a large province with agriculture and population as Hebei, it's important for us to protect cultivated lands and ensure grain production safety.

However, as kind of un-renewable and limited resource, land is more needed with construction land development and demand, creating much more imbalance between human and land.

III. Research on Sustainable Utilization Strategy of Land resource in Hebei Province

A. Enhance Land Utilization Rate and Control Cultivated Land Declination

It is motivated nationwide to cherish, use and protect each inch of land. And related governmental departments should on the whole facilitate the protection towards cultivated lands, for instance, donot provide land for projects which donot meet industry policies or land demand catalogues. What's more, they should permit lands for projects, taking their address, scale and construction strengthen into account. Particularly, they must strengthen the control and guidance for non-agricultural construction projects, through increase cultivate land costs, implement cultivate land compensation systems and so on to control the cultivate land declination. Besides, serious procedures should be operated for projects indeed need cultivate lands, especially low-grade cultivate lands go first.

In addition, we should use the reserved and misused lands in towns based on reasonable plans, to ensure decreasing the utilization of agricultural cultivate land. Then, the village construction lands should be planed according to new village construction, combining natural villages, reconstructing empty villages, and encouraging proper shift of reserved homestead etc.

B. Facilitate Pollution Settlement and Prevent Lands Quality Declination

Though Hebei Province is a large agricultural province, those low-quality cultivated lands would turn into lands with little or no usage.

Firstly, we should facilitate the management of agricultural fund assessment. cultivated lands cannot be overused for short-term benefits. Besides, much fertilizers and pesticides give rise to problems as water pollution, little fertility. It is testified that it is useful to increase organic

fertilizers, for they can facilitate to update the microbial reproduction, and degrade toxic substances etc.

Hence, organic fertilizers and general ones should be both put into use, which can resolve the imbalance between ratio and quantity, but also enhance utilization rate as well. In addition, we can implement crop rotation, control pesticide amount and so on. Thus, we can enhance fertilizer & pesticide utilization efficiency and decrease land reserved to decrease land pollution through scientific and reasonable fertilization, spraying methods etc.

Secondly, we should control the three wastes. Specifically speaking, relevant supervision departments should force unreasonable enterprises to stop running, or lead enterprises to parks closely, which can prevent industrial pollution from flowing into land ecological system and as well decrease & delimitate the damage to land ecological system.

Thirdly, we should develop greening and conserve soil & water as well. In order to facilitate the land resource sustainable development in Hebei Province, it is essential to increase plant, protect lands, keep water, adjust climate and establish perfect agriculture environment. Hence, we should adjust measure to local conditions, for instance, we should complete greening system and enhance plant coverage to conserve soil & water and prevent cultivate lands declination on the whole.

C. Develop Reserved Land Resource in Reasonable Way

We should on the one hand reasonably use lands, and on the other hand actively develop unused ones to decrease the demand & supply imbalance and achieve utilization-compensation balance. It is calculated that in 2011 there were 59.5 million acres of lands reserved unused (21.05% of total lands throughout the province), which can be developed into parks, forests, grasses and the like. Hence, we can develop these reserved land resources in scientific and reasonable ways, in line with national land related laws and regulations, to achieve land resource sustainable development on the whole.

IV. Conclusion

In a word, land resource is an essential material basis for our life and development. Rapid social economic development and sustainable development & utilization of land resource influence each other in Hebei Province. And setting from the current land resource utilization status in Hebei Province, this article presents problems in land resource utilization, and develops corresponding strategies on respects as increasing income, reduce expenditure and ensuring quality, which may serve as reference for relevant departments.

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