The current policy and problems of land reclamation in Chinese mainland

Zhao Shuqin

Shijiazhuang University of Economics, Shijiazhuang 050031, China

1 **Introduction**

1.1 **Li Keqiang**, **the Chinese premier**, said in the "Annual Conference Opening Ceremony of the Hainan Boao Forum" for Asia in 2012, "Urbanization is the greatest potential for China's **domestic demand**".

1.2 The more than **cultivated lands** will be **occupied or destroyed** because **urbanization** and i**ndustrialization**.

1.3 **Owing to** the **lower rate of land reclamation in the past** in our country (Hu Zhenqi, 2003), we will face **a great task** of reclamation **in future**.

2 The reclamation system principles of damaged land

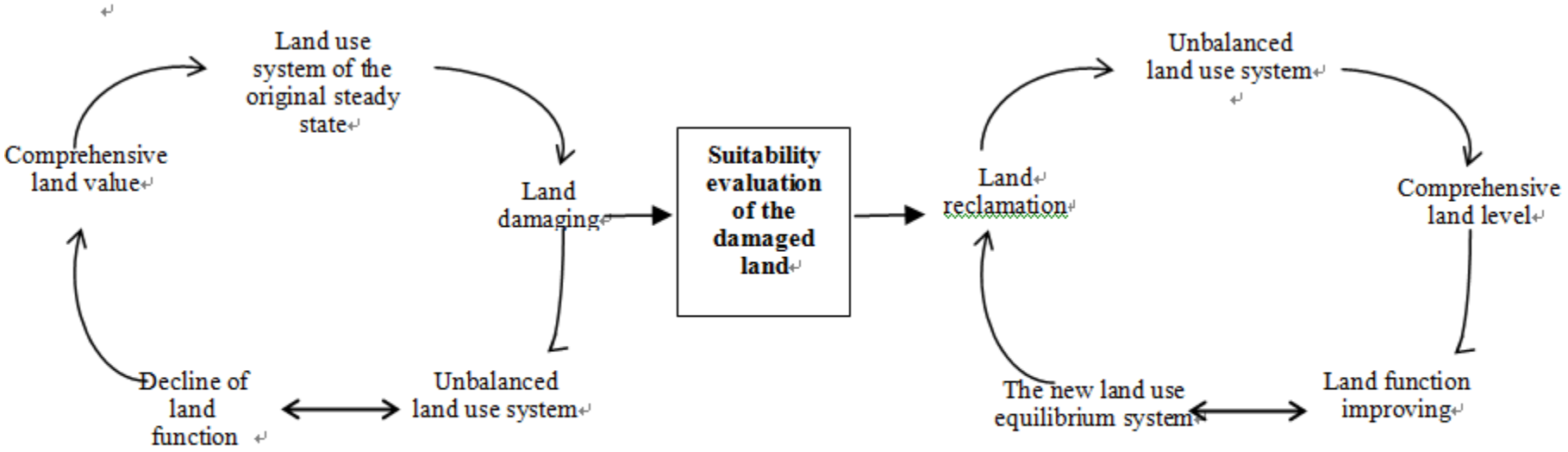


Fig.1. Feedback circuit of the land reclamation system

Land reclamation is a process of turning damaged land into available land. determining the damaged land type and doing suitability evaluation is the determinant aspects of turning the unbalanced land use system into a new balanced land use system successfully.

3 The Method of Damaged Land Suitability Evaluation and Its Improvement

3.1 **"*regulations of land reclamation*" promulgated in 2011 about the "land reclamation" is that: Land reclamation refers to the activities. the damaged land** is as table1 in china.

Table 1 Table of damaged land type

Land damage by digging	Open pit (pit)	Land occupation	Waste dump
	Borrow area		Waste-rock yard
	Others		Hillock
Land subsidence	Water resistance subsidence land		Tailings pond
	Seasonal water-produced subsidence land		Red mud heap
	Non-water resistance collapse land		Buildings and structures
Others	Contaminated land		Others

The principle of determining land reclamation type is that we give priority to reclamation **for agricultural land**. Our government will take responsibility for that the national and the world's food security is still the number one priority of reclamation targets.

because the cost of reclaim to **arable land** is higher than that of **forest** land, **grass** land and **other faming land**. Without giving quantitative optimization schemes of reclamation structure specifically, it provides an opportunity for reclamation **obligor** **choosing an easier reclamation plan** to diminish reclamation responsibility legally.

Besides, it is possible that their unreasonable choices on reclamation structure leads to re-reclamation. As a result, **land reclamation will have risks at social, economical and ecological benefits.**

3.2 For example

Table 2 The main limiting factor of land to be reclaimed for agriculture, forestry, grass industry grade standards.

Limiting factors and classification index		Evaluation on suitability of arable land	Evaluation on suitability of forest land	Evaluation on suitability of grassland
Terrain slope / (°)	<3	1	1	1
	4-7	1 or 2	1	1
	8-15	2	1	1
	16-25	3	2 or 1	2
	26-35	not	2	2
	>35	not	3 or 2	3 or 2
Soil texture	Loam	1	1	1
	Clay 、Sandy loam	2	1	2
	Heavy clay、Sand	2or3	2	3
	Sandy soil、gravelly	not	not or 3	not
	lithic	not	not	not
Effective soil depth (cm)	>100	1	1	1
	99-40	2	1	1
	39-30	3	1	1
	29-10	not	2 or 3	2
	<10	not	3 or not	not
Drainage conditions	No or little drown,Good drainage	1	1	1
	Short-term seasonal drown,Comparatively good drainage	2	2	2
	Comparatively long term seasonal drown, Poor drainage	3	3	3 or not
	Long term seasonal drown,Very poor drainage	not	not	not
Oil organic matter	2.0%—1.0%	1	1	1
	1.0%—0.6%	2 or 3	1	1
	<0.6%	3 or not	2 or 3	2 or 3
Soil nutrient content	Relatively high	1	1	1
	Middle	2	1	1
	Relatively low	3 or not	2 or 3	2 or 3
degree of Road accessibility	Relatively good	1	1	1
	General level	2	1 or 2	1 or 2

Note: 1—comparatively suitable 2—barely suitable 3—unsuitable not—difficult to us

Table 3 Summary of the intended damaged land area.

First-class land type.		Second-class land type.		Area (hm²)	Proportion of the total area (%)	Open pit (hm²)	Dump (hm²)	Industrial site (hm²)	Mine road (hm²)	Overburden dumps (hm²)
01.	Arable land.	013.	Dry land.	1.129	6.23	0.7	0.259		0.17	
02.	Garden plot.	021.	Garden plot.	2.678	14.77	0.802		1.515	0.258	0.103
		023.	Other garden plot.	1.053	5.81	0.817	0.157		0.079	
03.	Forest land.	031.	Forest land.	6.001	33.10	4.704	1.024	0.043	0.073	0.157
		032.	Shrub land.	0.312	1.72	0.061			0.196	0.055
		033.	Other forest land.	6.242	34.43	5.468			0.589	0.185
04.	Grassland.	043.	Other grassland.	0.123	0.68	0.028			0.095	
20.	Town, village, mining land.	204.	Mining land.	0.592	3.27			0.592		
Total area (hm²)				18.13		12.58	1.44	2.15	1.46	0.5
Proportion of the total area (%)					100	69.4	8.0	11.9	8.0	2.7
The way of damage.						Excavation.	Cover occupation.	Cover occupation.	Cover occupation.	Cover occupation.
The extent of damage.						Heavy.	Heavy.	Moderate.	Heavy.	Heavy.

Table 4 Nature of the land to be reclaimed land participating unit.

	Open pit slope	Open pit platform	Dump	Industrial site	Transport Road	Overburden dumps
Terrain slope (°)	>35	<3	<3	<3	4-7	<3
Soil texture	Clay /Sandy	Clay /Sandy loam	Clay 、Sandy	Loam	Loam	Loam
Effective soil depth	40	40	30	40	40	40
Drainage	Good	Good drainage	Good drainage	Good	Good	Good
Oil organic matter	2.0%-1.0%	2.0%-1.0%	<0.6%	2.0%-1.0%	2.0%-1.0%	2.0%-1.0%
Content of soil	Relatively	Relatively high	Relatively low	Relatively	Relatively	Relatively
Degree of road	Relatively	Relatively good	Relatively good	Relatively	Relatively	Relatively

Table 5 Result table of suitability evaluation on land reclamation.

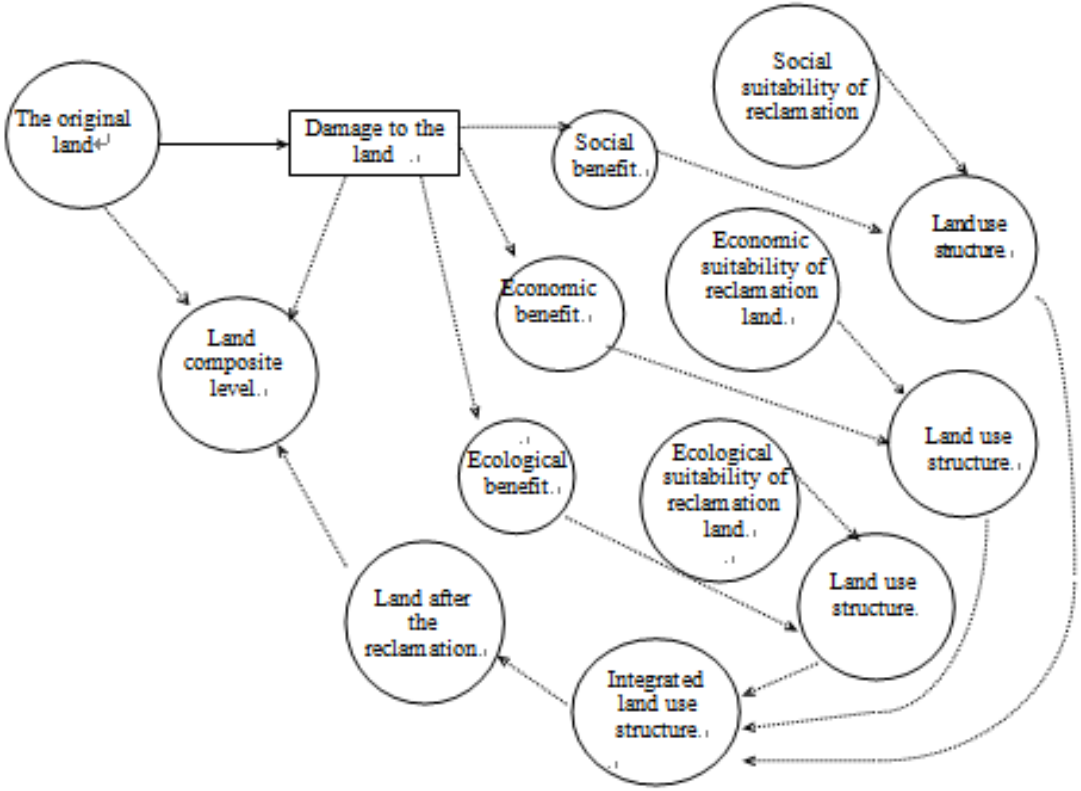
No.	Reclamation unit	Area（hm^2）	Damage type	Reclamation direction
1	Open pit slope	12.58	Excavation	Forestry grass industry
2	Open pit platform			Forestry grass industry
3	Dump	1.44	Cover occupation	Forestry grass industry
4	Industrial site	2.15	Cover occupation	farming, forestry ,grass industry
5	Transport Road	1.46	Cover occupation	farming, forestry ,grass industry
6	Overburden dumps	0.50	Cover occupation	farming, forestry ,grass industry
—	Total	18.13		

Table 6 Land use structure adjustment table before and after reclamation Unit: hm^2

No.	Name	before reclamation	Reclamation structure	Reclamation scheme1	Reclamation scheme2	Reclamation scheme3	……
013	Dry land	1.129	X_1	X_1			
021	Orchard	2.678					
023	Other garden plots	1.053					
031	Forest land	6.001	X_2		X_2		
032	Shrub land	0.312	X_3	X_3			
033	Other forest land	6.242	X_4				
042	Artificial grassland		X_5			X_5	
043	Other grassland	0.123	X_6	X_6	X_6	X_6	
203	Mining land	0.592					
Total		18.13	18.13	18.13			

reclamation structure are diversified. For example, we can define (X1, X3, X6)=(4.11, 12.58, 1.44); or (X2, X6)=(12.58, 5.55); we can also have all the intended damaged land reclaimed to grass land.

4 Conclusion and discussion



Considering ecological-economic-social characteristics of the mining area, through screening evaluation factors(Table 5), and obtained the optimization results (forest land X2, other grassland X6), which not only can effectively avoid risks mentioned above, but also conducive to the supervision and management.

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