

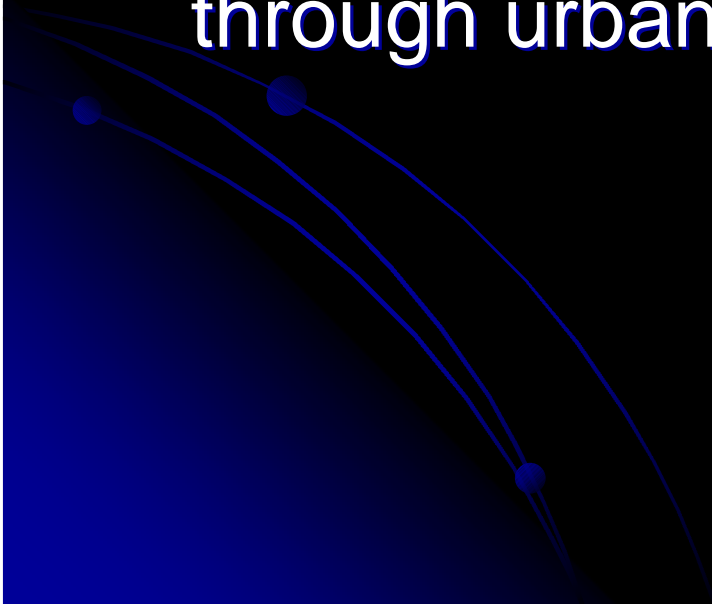
# *Satoyama*-like Landscape in Hunshandak

Dr. Peng Yu

Minzu University of China

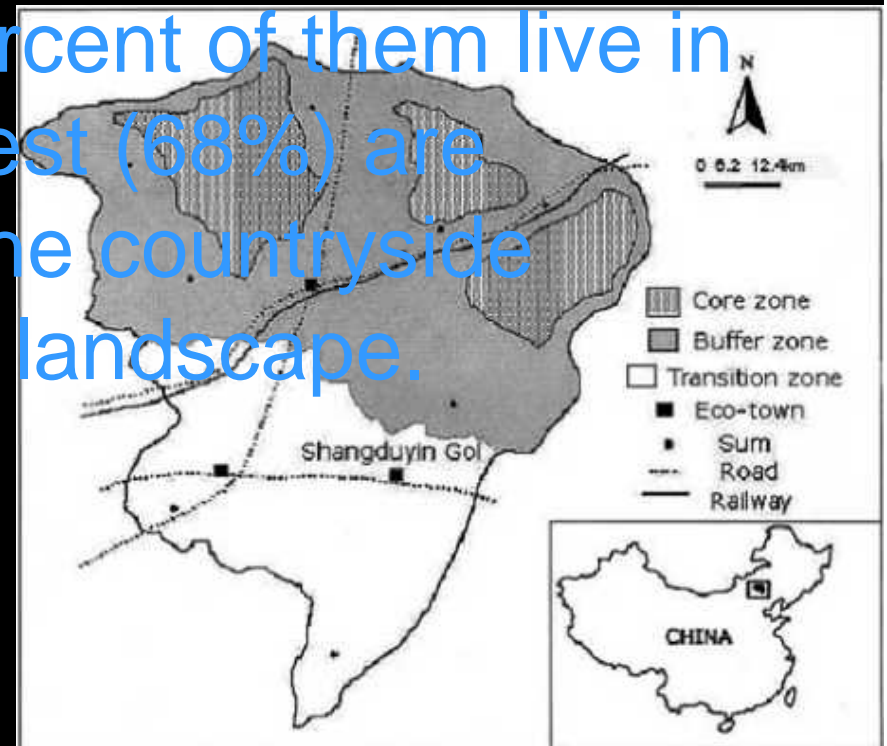
yuupeng@yahoo.com.cn

- The structure of *Satoyama-like* landscape
- The degradation of *Satoyama-like* landscape
- Conserving *Satoyama-like* landscape through urbanization



# 1. The structure of *Satoyama-like* landscape

- Hunshandak Sandland is located in Inner Mongolia, northern China
- Has a area of 10182 km<sup>2</sup> and a population of 78400, thirty-two percent of them live in three towns. and the rest (68%) are scattered throughout the countryside areas—*Satoyama-like* landscape.



# 1. The structure of *Satoyama-like* landscape

- Sandland was classified into four landforms: sparse-elm-forest, low grassland, hills, and wetland.
- About 801 higher plant species, more than 402 vertebrate species, 174 birds, and 526 insects have been recorded, with the total species number exceeding 1500.



# 1. The structure of *Satoyama-like* landscape



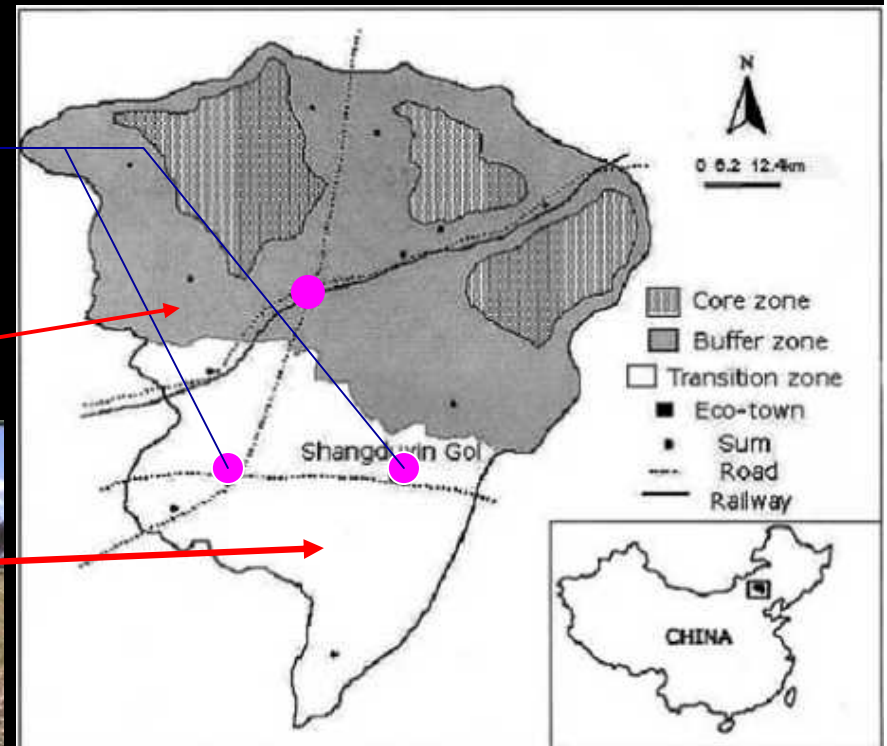
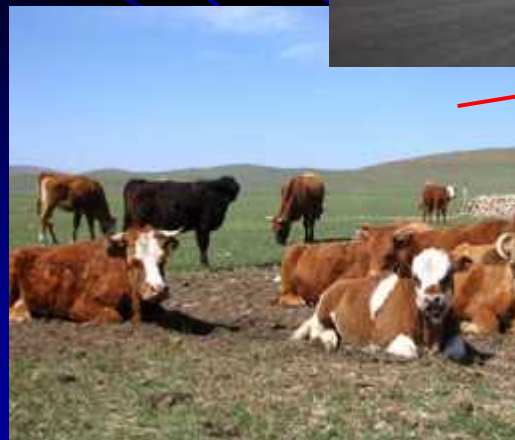
- sparse-elm-forest, hills.

# 1. The structure of *Satoyama-like* landscape

- hills, and wetland.

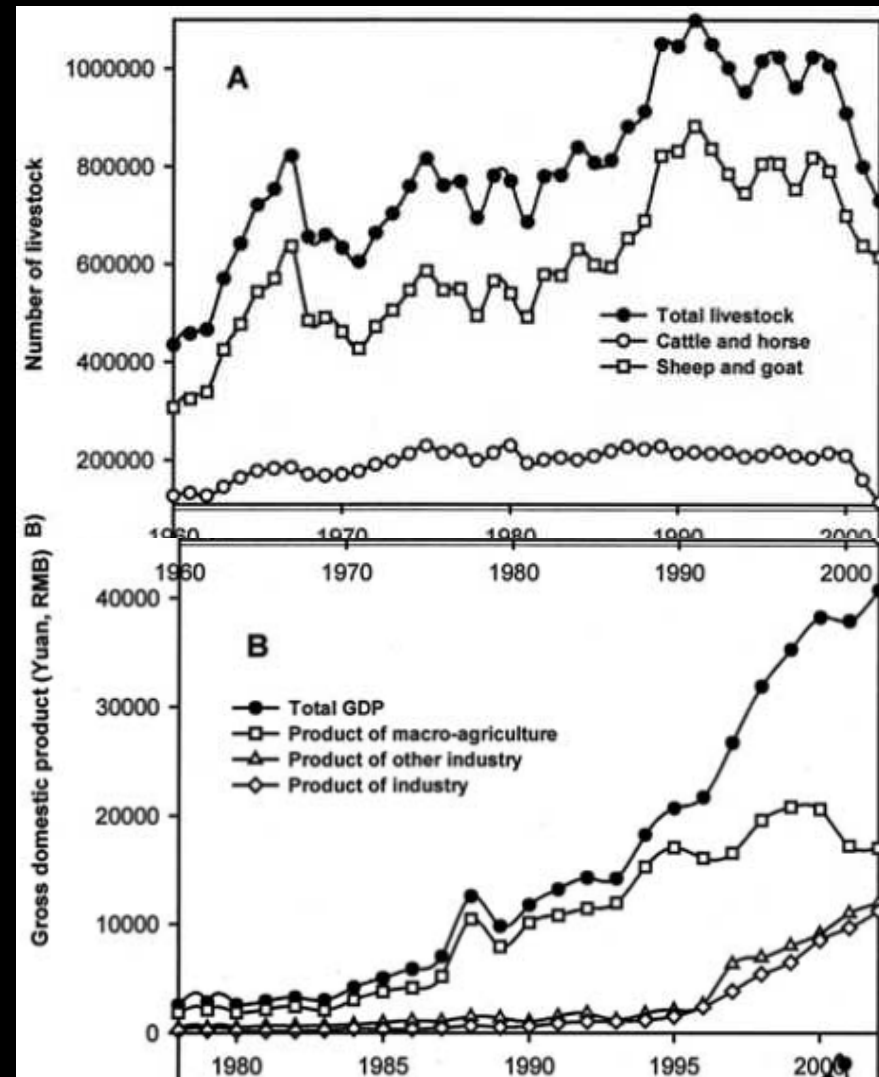
# 1. The structure of *Satoyama-like* landscape

- Such landscape mainly distributed in countryside around the three towns.
- Of the total Sandland area, the towns comprise 1%, and the country landscape comprises the remaining 99%.



# The services of *Satoyama-like* landscape in Hunshandak

- Biodiversity: About 801 higher plant species, more than 402 vertebrate species, 174 birds, and 526 insects have been recorded, with the total species number exceeding 1500.
- Human-beings benefits: livestock raising





## 2. The degradation of *Satoyama-like* landscape

- Determination of degradation degree
- The ratios of plant community height to the potential plant height (without grazing) of <20%, 21–50%, and >50% corresponded to “severe,” “intermediate,” and “least” desertification, respectively.
- The degree of decrease in reproductive branch (categories <50%, 51–90%, >90%) and edible grass production (category <30%, 31–65%, >65%) were both determinants for the three categories of degradation.

## 2. The degradation of *Satoyama-like* landscape

| Landform          | Desertification area | Severe desertification area | Population in severe desertification area |
|-------------------|----------------------|-----------------------------|---|
| Sparse-elm-forest | 4582 (45%)           | 2138 (21%)                  | 4121                                      |
| Low grassland     | 3258 (32%)           | 1629 (16%)                  | 2237                                      |
| Hills             | 1222 (12%)           | 407 (4%)                    | 3526                                      |
| Wetland           | 1018 (10%)           | 305 (3%)                    | 623                                       |
| Total             | 10,080 (99%)         | 4480 (44%)                  | 10,507                                    |



## 2. The degradation of *Satoyama-like* landscape

The ratio of the area between severely, moderately, and least desertified degrees was 22:13:15. The biodiversity exhibited can be well protected by establishment of a core zone. The population in severely degraded grassland accounts for 10,507, amounting to 13% of the total population of Hunshandak Sandland.

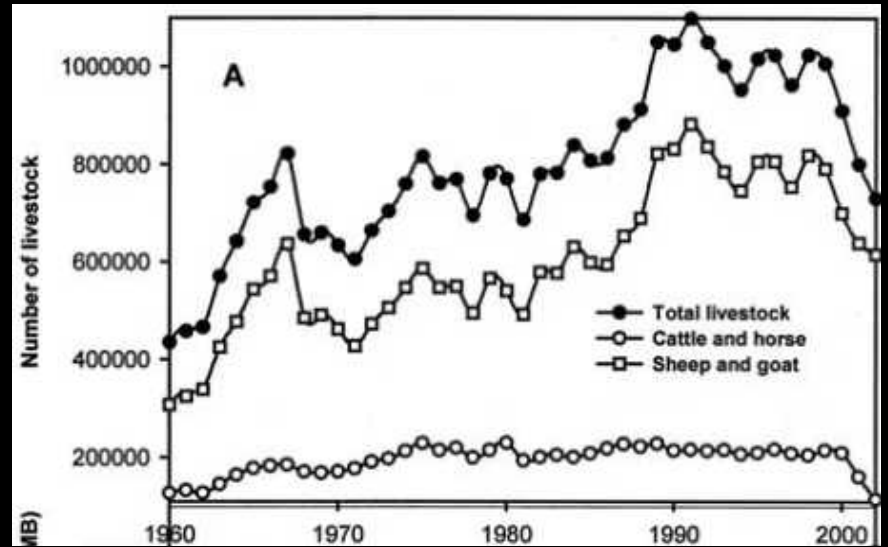
## 2. The degradation of *Satoyama-like* landscape

*Satoyama-like landscape would lost,  
what shall we do?*

## 2. The degradation of *Satoyama-like* landscape

- Many research results pointed out that most degradations in landscape in Hunshandak is mainly due to overgrazing.

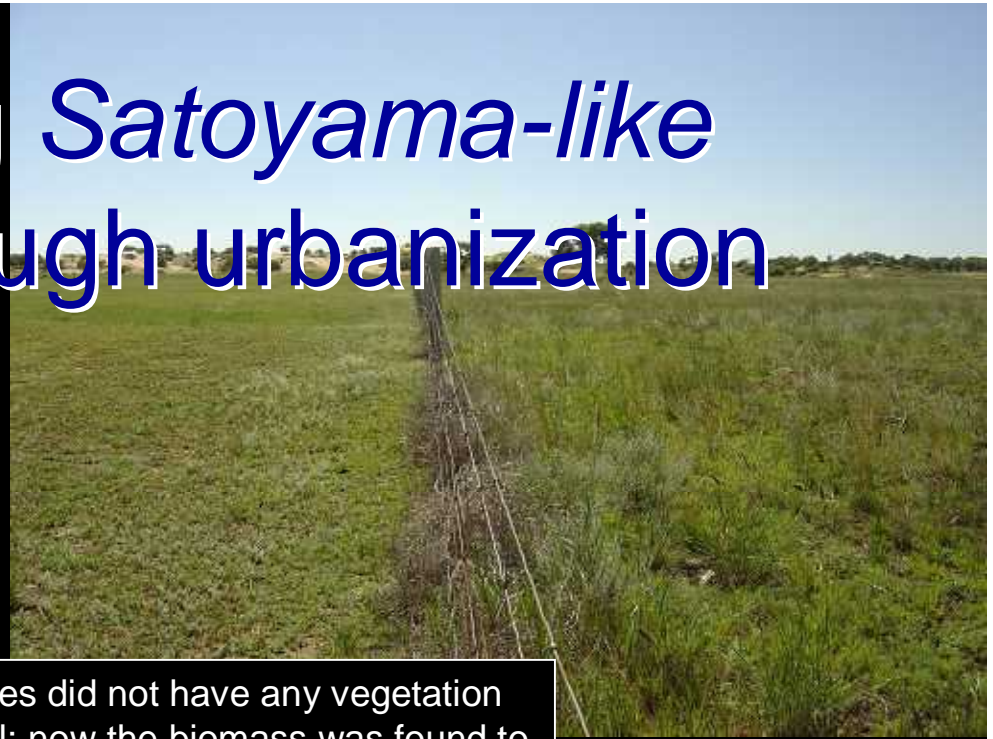




### 3. Conserving *Satoyama-like* landscape through urbanization

- Most human disturbances in *Satoyama-like* landscape should be removed, so that it can restore its service values;
- People lived in *Satoyama-like* landscape concentrate into towns can enhanced urban development;
- A mutually benefit relationship can be established between developed urban area and a *Satoyama-like* landscape

### 3. Conserving *Satoyama*-like landscape through urbanization



Shifting sand dunes did not have any vegetation before this field trial; now the biomass was found to have attained some  $1560 \text{ g m}^{-2}$  compared to  $220 \text{ g m}^{-2}$  in protected area and interval protected areas. Plant community coverage also achieved 60% and 32%, respectively.









- Biomass of 1 m<sup>2</sup> in the forage farmland was equal to that of 20–1000 m<sup>2</sup> in the degraded landscape or that of 180–1000 m<sup>2</sup> in the severely degraded landscape.
- When the severely degraded Satoyama-like land with an area of 4480 km<sup>2</sup> is protected, it is necessary also to establish a forage farmland with an area of 4–25 km<sup>2</sup> outside of the protected zone inasmuch as some plots demonstrate more fertility in supporting restoration.
- Thus, most land will be free from the pressure of livestock grazing.

### 3. Conserving *Satoyama-like* landscape through urbanization



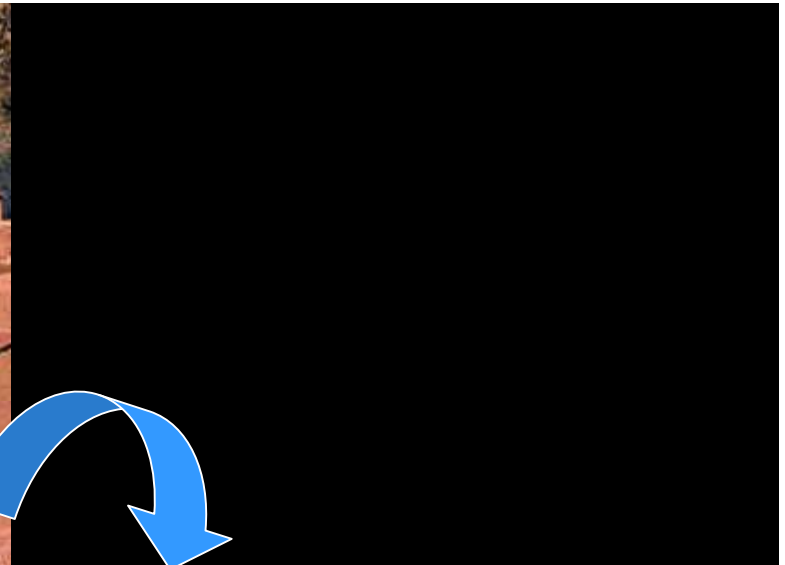
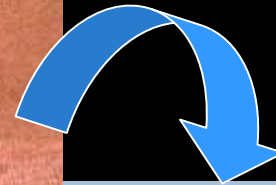
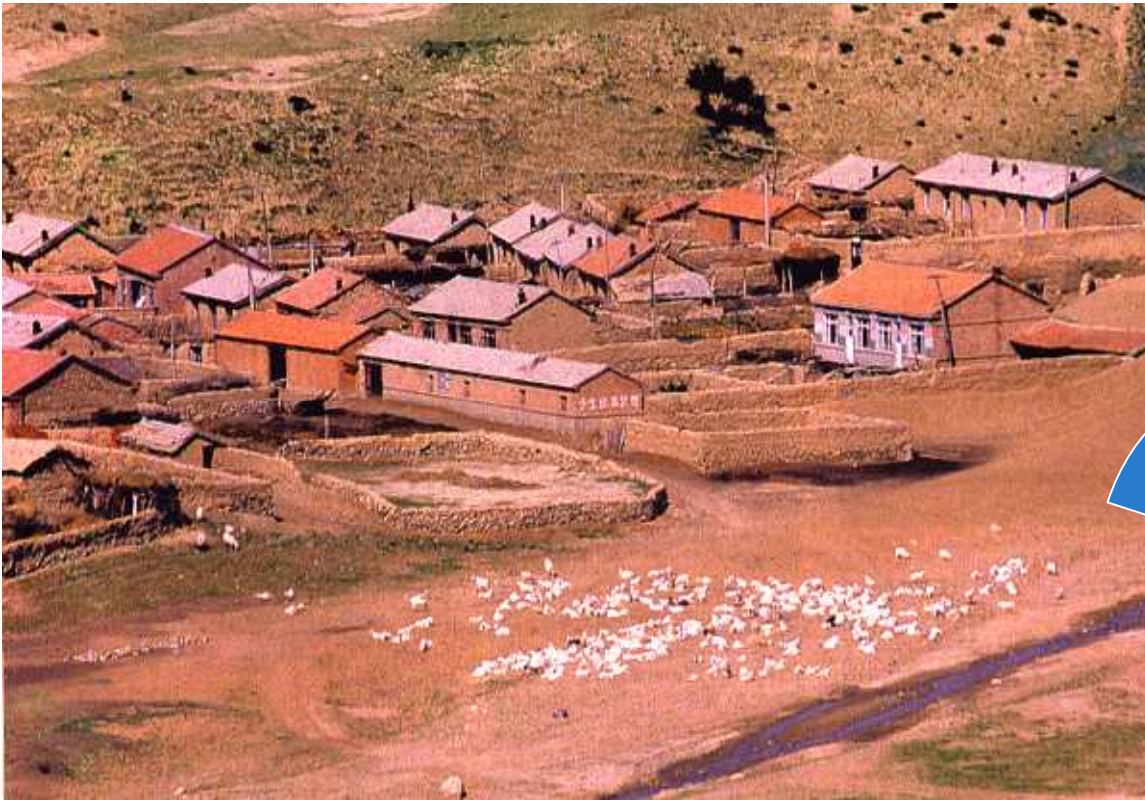
Planting corn in 1% land to feed livestock, 99% land can be free



### 3. Conserving *Satoyama-like* landscape through urbanization



In the winter,  
the grass  
and forage can be  
Stored for livestock  
use



• Satoyama-like landscape is restored

### 3. Conserving *Satoyama-like* landscape through urbanization

- Once the degraded *Satoyama-like* landscape is protected, the people living in severely desertified land, accounting for 13% of total population, needed to move out. Three small ecotowns located in the edge of Hunshandak Sandland could accommodate these dislocated persons

### 3. Conserving *Satoyama-like* landscape through urbanization

- These three towns cover an area of 10.2 km<sup>2</sup> (0.1% of the Hunshandak total area), but now contain 32% of the area's total population, and still will have a large potential for holding more people.
- In the other hand, these people can help to enlarge the town's size; also, people will improve their life level once they live in the developing city.

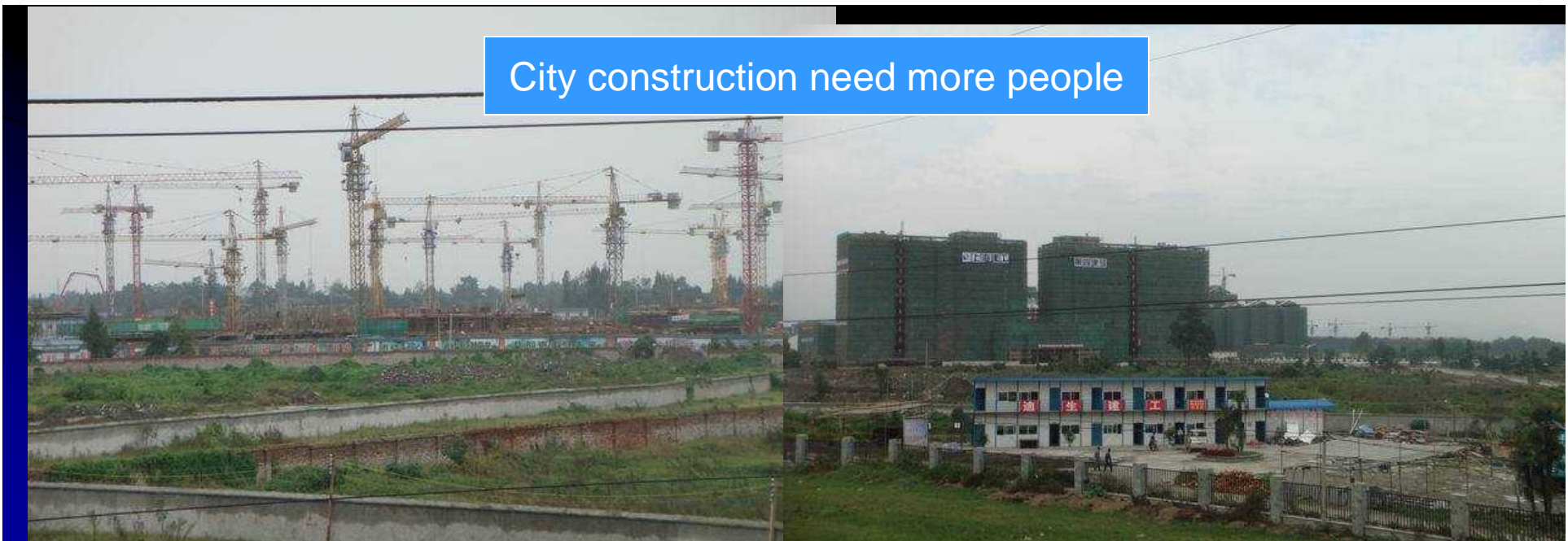


# 3. Conserving *Satoyama-like* landscape through urbanization

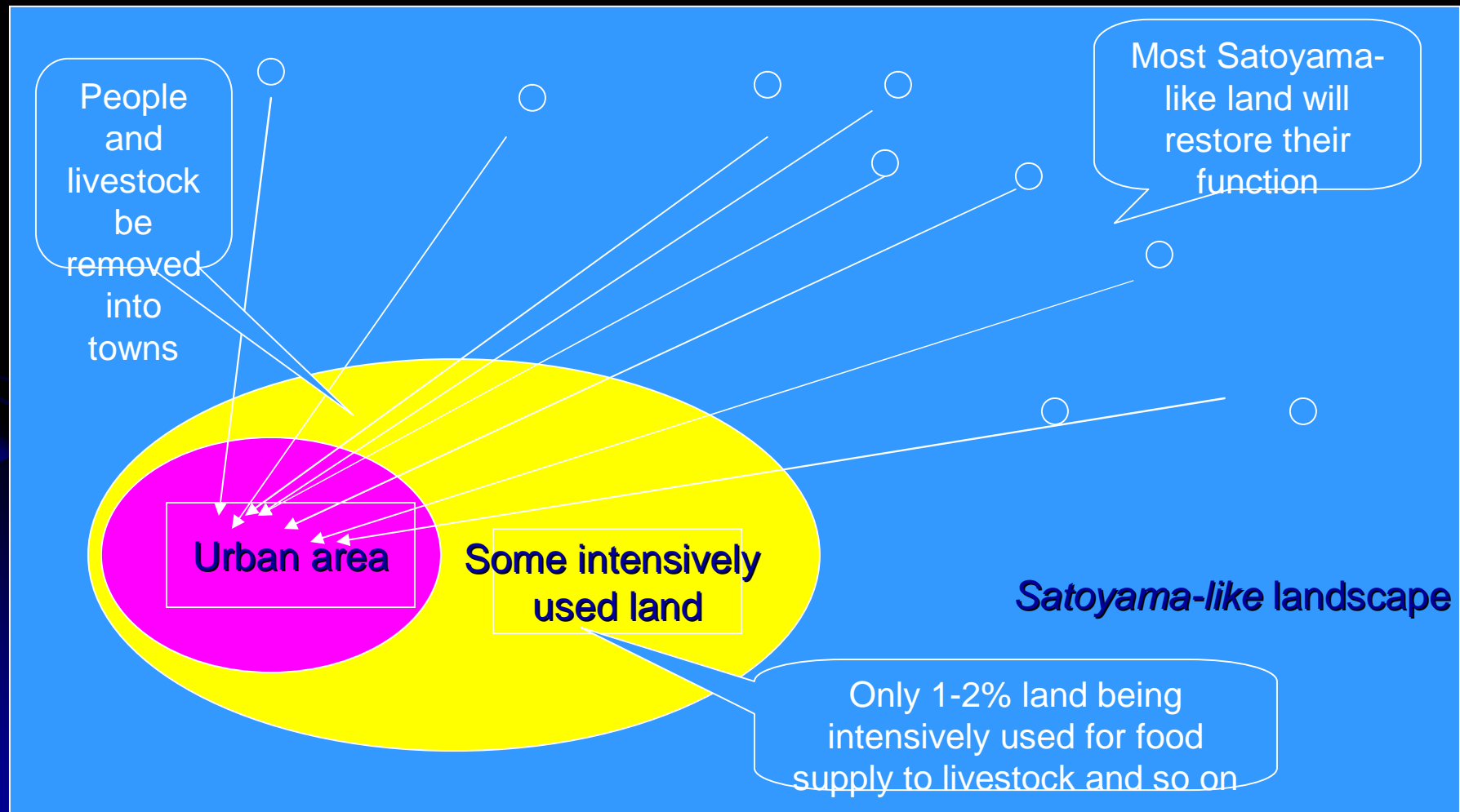
Table 3. Population demand for present and planned industrial items

| Items <sup>a</sup>             | 2002   | 2005   | 2010   |
|--------------------------------|--------|--------|--------|
| Ecotourism                     | 5600   | 10,600 | 23,000 |
| Dairy and meat industry        | 2400   | 5200   | 15,600 |
| Power plant                    | 200    | 420    | 620    |
| Fur, leather, textile industry | 1600   | 2400   | 6500   |
| City construction <sup>b</sup> | 220    | 2120   | 5500   |
| Total                          | 10,020 | 20,740 | 51,220 |

City construction need more people



# 3. Conserving *Satoyama-like* landscape through urbanization



### 3. Conserving *Satoyama-like* landscape through urbanization

- Urbanization has lowered the pressure of *Satoyama-like* land;
- *Satoyama-like* has supplied the human resource to city development;
- After restoration of *Satoyama-like* land, it will serve the social-economic development of urban area;
- A mutual benefit relationship between urbanization and *Satoyama-like* landscape protection is formed.

- Xiexie

- Thank you for your attention

