The Research of Farming and Livestock Development in the Area of Ili River Valley of Xinjiang Uygur Autonomous Region

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Abstract: this article analyses spatial political, economic and social contexts of successful of farming and livestock development in the area of Ili river valley (AoIRV). AoIRV is located on Xinjiang Uygur Autonomous Region (XUAR), where is a vital and historical agricultural area in this region. In the Context of 'Western Development Drive' of China, central government enhance the support for western region and cities continually. According to the *'XUAR 12th Five-Year Plan'*, the region governance and local authorise plan to improve modernisation of agriculture, especially on farming and livestock industries, that improve economic development and social regeneration. Yet, the local agricultural development still faces kinds of problems, such as lack of higher quality labours, extensive recourse using, developing farming structure and ecological pressure. This article bases on *the Urban System Planning of Area of Ili River Valley* and point out the urbanisation is the core strategy for the local development and resolution of current problems. The planning regulates the building of countryside resident settlements in order to create much more intensive urban-town system that lead urbanisation in this local area. The local urbanisation could not only offer higher quality public service, such as healthy service and education for local people, but also improve the qualities of labour and set up basis of service industry. Meanwhile this planning advises the spatial arrangement of agricultural industry for adjusting the industry structure based on local agricultural community. Furthermore it plans a sustainable agricultural manufacturing via spreading organic standard and environment friendly policy.

Key Words: Area of Ili River Valley, Farming and Livestock Development, Countryside Residents

1. Introduction

Xingjiang Uygur Autonomous Region (XUAR) locates at northwest of China and a drawback province for long time. In 2011, the Gross Domestic Product (GDP) of XUAR was 661bn Yuan, just one percent of GDP of China. In its economic structure, agricultural is a vital part of GDP. The agricultural industry contributed 17.2% GDP for XUAR, manufacturing industry and service industry contributed 48.2% and 34.0% separately (China Statistical Yearbook, 2011). Therefore, to enhance agriculture development situation was believed the first step for XUAR economic development. Therefore, central government supports agricultural development in XUAR strongly and comprehensively.

According to *Xingjiang Uygur Autonomous Region National Economy and Social*

Development 12th Five-Years Plan Outlines, local government planned to propose to utilize modern development concept to lead agricultural and livestock industry, utilize modern material conditions to equip agricultural and livestock industry, utilize modern science and technology to transform agricultural and livestock industry, utilize modern industry system to upgrade agricultural and livestock industry, utilize modern operation mode to impel agricultural and livestock industry. Meanwhile it continuously enhance agricultural and livestock industry level and overall level, greatly improve production efficiency and the income of farmers and shepherds, and facilitated XUAR's transmission from agricultural and livestock industry big regions to agricultural and livestock industry strong region. Take the promotion of modern agricultural and livestock products processing industry development as key breakthrough of the transmission from agriculture big region to agriculture strong region, and the realization of modern agricultural and livestock industry. Construct four huge platforms of information services, science and technology support, industry parks and agricultural products and processed products export sales. With leading enterprise as dependence, and cantered by cotton, grain and oil, fruits, animal by-products, regional feature agricultural products, vigorously develop agricultural products precision and deep processing industry of high scientific and technological connotation, high class, high added value. And form industry layout with south XUAR characterized by feature fruits precision and deep processing being given priority to, and north XUAR characterized by feature agricultural and side-line products and animal by-products precision and deep processing being given priority to.

This research based on *the Urban System Planning of Area of Ili River Valley* which is a part from supporting policies, and introduce the main methods of this planning on agricultural development in this area. This research will introduce the basic situation of natural resource and key issues of agricultural development firstly. Secondly, the main strategies of the planning are to upgrade the agricultural structure and improve the eco-technique in using of agriculture and livestock produce. Finally, the planning will solve the key issues and reality the strategies via several approaches. The planning construct seven producing bases for different agriculture productions in order to re-arrange the agriculture industry structure and the spatial layout. Meanwhile, the planning promotes the water-saving technique and spices of plant for reducing dependant of water by agriculture producing. Furthermore, planning adjusts the arrangement of rural resident's layout. The planner considers that the new town will be built that can improve the life quality of residents, increase the quality of labour and create a more intensive energy using life-style. Meanwhile, these new town will create thousands job opportunities in new service industry, such as tourism.

2. Background

2.1 Natural Resource

Ili River Valley is a "wet island" in the dry regions of Eurasia. There is vast territory, various species and resources, sufficient water, soil, light, and heat sources. The Valley is possessed with unique agricultural and livestock advantage and huge

potential. It used to be named as “Jiangnan beyond the Great Wall”. The water resource in Ili is rich. There are several rivers including Tekes River, Kashen River, Gongnaisi River, and Ili River. The annual volume of runoff of surface water reaches 16.7 billion cubic meters, accounting for 20% of total volume of runoff of XUAR. The water volume held per capital is 4 times of national per capital. It is of typical valley climate. The frost-free period is 103 days to 191 days. The annual sunshine hours are up to 2,992.3 hours. Such conditions are not only appropriate for the growth of stable crops such as wheat, corn, soybeans, oil, but also good for the planting of carious feature crops such as rice, sugar beets, potatoes, malting barley, vegetables, edible mushrooms, melon and fruit, red flower, processed tomato, processed peppers, herbs, and aromatic plants. In the same time, premium livestock such as XUAR fine-wool sheep, Ili horse, XUAR brown cow, China Merino fine-wool sheep, and Ili white hog are also nurtured.

2.2 Key Issues

Low labour efficiency of agricultural and livestock industry

In 2010, Ili River Valley thrice industry GDP proportion were 24.2:35.8:40.0. From the perspective of population employment structure, in 2010 there were 993 thousand employed workers, and the proportion of three industries employment were 56.0:12.6:31.4. The primary industry only created 24.2% economic contribution with 56% employment proportion. Hence, compared with secondary industry and tertiary industry, agricultural and livestock labour production level was relatively low, and the development of agricultural industrialization was lagged. In 2010, there were 444.4 thousand hectares of arable land in Ili, yet every agricultural labour only shouldered 11.11 Mu arable land. It was of huge distance in relation to developed countries and regions. For example, in 2007, every agricultural economically active person had 5.7 hectares (85.5 Mu) of arable land in Israel, equalling the total of 8 farmers in Ili. Therefore, the labour production level of farmers and shepherds in Ili River Valley has much room for improvement.

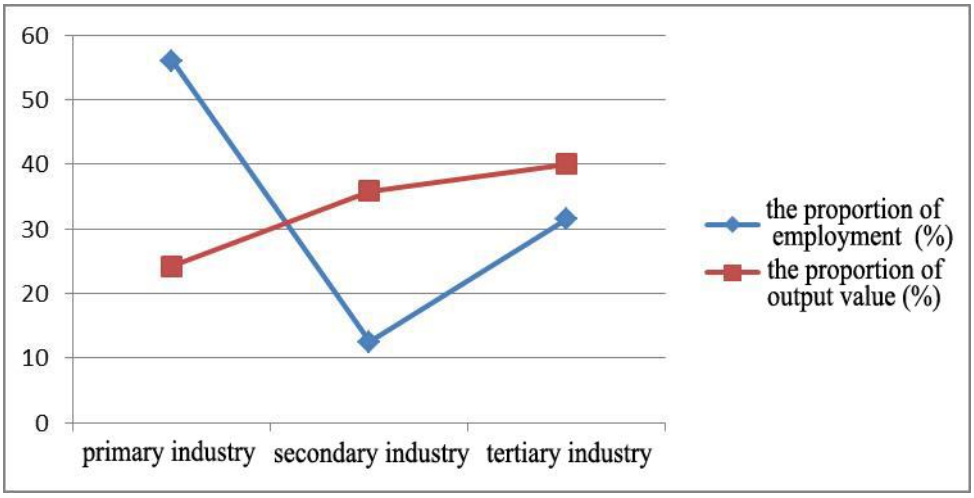


Figure 1: Ili River Valley Employment Proportion and Output Value Proportion Correlation Analysis (Xinjiang Statistical Yearbook, 2011)

Extensive agricultural water using

At present, China adopts irrigation method with water utility rate at 40% at maximum, 60% of the water is wasted. In Israel, irrigated lands commonly use pressure irrigation technology system, which reduces 50% to 70% of water consumption on unit land. This system delivers water via plastic tube and directly to the roots of plants where water is mostly needed. The maximum water utility rate is 95%. Israel has 420 thousand hectares of arable land and an annual usable water resource of 2 billion cubic meters. Agricultural water use accounts for 60% to 70% of all water consumption. The average agricultural irrigation water consumption is only 300 cubic meters. However, the average agricultural irrigation water consumption in Ili River Valley, XUAR, and eastern China is 700, 850, and 600 cubic meters respectively. Although the river valley regions has comparatively higher agricultural water utility rate in XUAR, it still has room of improvement when compared with eastern China regions and international level.

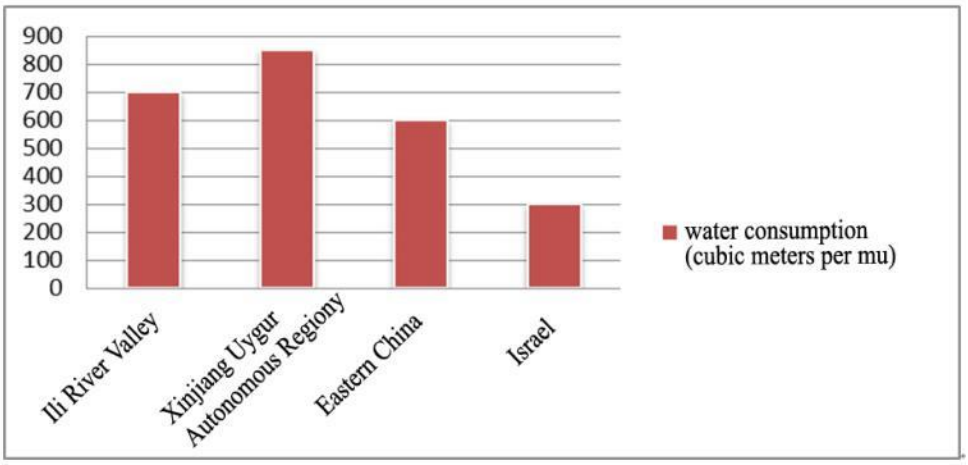


Figure 2: Agricultural Irrigation Water Consumption Comparison between Ili River Valley Region, XUAR, Eastern China, and Israel (Wang etc, 2010)

Insufficient technical training, low rural labour quality

In Ili River Valley, rural labour with education level lower than middle and primary school accounts for 40%, while those with middle and primary school education level account for 40%, and those higher than middle school education level only account for 20% (Selection data, 2012). The bilingual level is low, the ability to learn and grasp new knowledge and apply new technology is poor, and the concept is comparatively backward. Thus, agricultural labour technical level in river valley region cannot adapt to the needs of modern agricultural development. In particular, with the development of second industry and third industry in rural areas in recent years, the majority of young and educations peasants no longer stay for agricultural work. The knowledge level and agricultural technical application ability of those engaged in agriculture declines comprehensively. At the same time, most of the agricultural population is minority. Influenced by language barrier, their market competition recognition is poor, and ability to accept new technology is weak, which cannot live up to the demands of developing agriculture through science and education, accelerating the process of industrialization, and promoting high output, high quality, and high efficiency

agricultural development. The development of modern agriculture is significantly restricted.

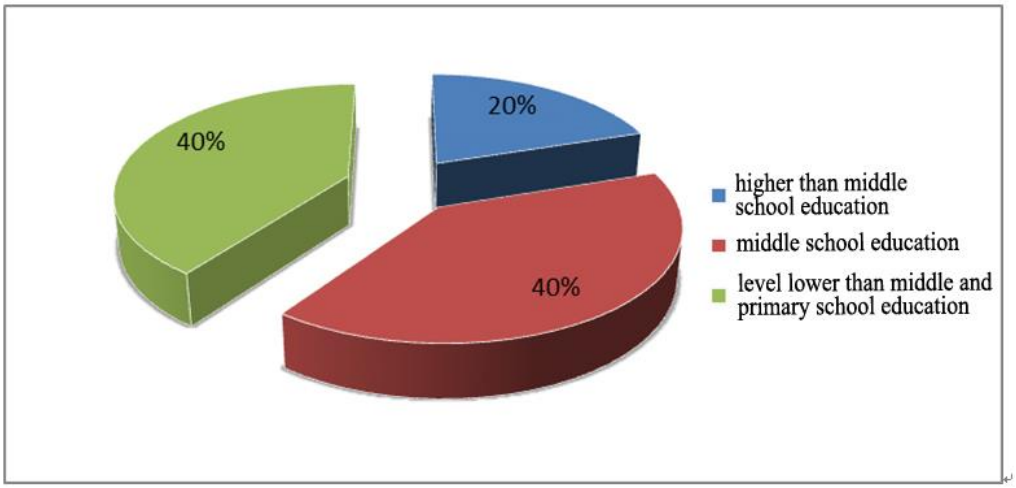


Figure 3: Ili River Valley Region Rural Labour Educational Level (Xinjiang Statistical Yearbook, 2011)

Week in Agricultural and Livestock Industry Cluster

In recent years, traditional industry in Ili River Valley, lead by agricultural and sideline products processing. In sugar refining, there are three enterprises in river valley, COFCO Sifang Sugar, COFCO Xinning Sugar, COFCO Xinyuan Sugar. The daily sugar beet processing amount is 25 thousand tons, the annual sugar beet processing amount is 2.5 million tons, and hence the annual sugar production capacity is 290 thousand tons. In fat processing, the river valley has formed production scale of 200 thousand tons of edible vegetable oil. In special fruit juice processing, there is extremely strong growth. In 2006, Ilite wild fruit juice processing project. Nongfushanquan was introduced to reorganize Huocheng county cherry plum production project. In dairy processing, by “the Eleventh Five-Years”, there were 29 dairy production enterprises in river valley, a number of comparatively large scale dairy enterprises, and a capacity of 30 thousand tons of industrial milk powder and casein on annual basis. Meat processing has become traditional advantage industry of Ili. Meat processing enterprises led by Bakouxiang industrial limited company have formed. In white wine processing, the production capacity in river valley regions has reached 35 thousand tons, holding 50% of total output of XUAR. In flax processing, the annual production is 150 thousand tons. Ili has become important base for flax industry in China. On the whole, agricultural and livestock products processing industry in Ili River Valley is still at its preliminary stage. Most of the agricultural and side line products processing projects do not have high added value. It is demanded to explore in aspects of deep processing and precision processing, to extend industry chain.

Increasing grassland vegetation degradation

Deterioration of grassland resource and environment is severely influencing the sustainable development of animal husbandry in Ili. 2.45 million hectares of

grasslands are resembling different levels of degradation, desertification, and salinization, accounting for 80% of utilizable grassland. By the end of 2010, the number of livestock had increased 3.5 times of that of initial post-liberation period. Affected by the policy of concentrating on agriculture while neglecting grazing in Cultural Revolution, newly reclaimed grassland at flatland, desert, piedmont hills with less than 300mm annual precipitation reached 200 thousand hectares. Therefore, 1 million standard livestock was reduced. Among the reclaimed 200 thousand hectares dry hill grassland, 83.3 thousand hectares of low production dry land had not been returned from farmland to woodland. In addition, in some area, phenomenon of arbitrary reclamation of grassland emerge constantly, which devastated grassland desertification and soil erosion. Pasturing area grassland, particularly Spring and Fall Grassland are severely overgrazed. The conflict between grassland and livestock is intensified. Plus, 350 thousand hectares of lands are suffering from frequent occurrence of drought and pest.

Table 1: Ili River Valley Region Grassland Grazing Capacity Statistics (Primary Data, 2011)

Grassland	Area (0'000 Mu)	Theoretical Grazing Capacity (0'000 Sheep Unit)	Actual Grazing Capacity (0'000 Sheep Unit)	Overloaded Grazing Capacity (0'000 Sheep Unit)
Summer Grassland	1517.10	887.22	1150.37	253.15
Spring and Fall Grassland	1263.45	338.99	485.13	146.14
Thermal Inversion Layer Warm Grassland	1254.90	559.63	629.48	69.84
Winter and Spring Grassland	583.05	132.08	228.01	96.11
Total	4618.50	1917.92	2492.99	565.24

3. Development Strategy

3.1 Strengthen local feature, build agricultural and livestock industry brand

Integrating resource, local authority will vigorously develop green agriculture, organic agriculture, and facility agriculture, and build distinctive Ili agricultural and livestock products brand, actively nurture feature agricultural and livestock products. Meanwhile, local authority could deepen export agricultural and livestock industry development. Moreover, considering the various characteristics of counties and cities, the local authority should help local enterprises to add value of agricultural and livestock products and increase regional reputation via precision and deep processing and improvement of local feature agricultural and livestock products, extend industry chain.

3.2 Transform production methods, realize economic breakthrough

The local authorities need to vigorously promote technologies of land saving, water saving, fertilizer saving, medicine saving, seed saving, and energy saving. Introduce water saving irrigation technologies appropriate for regional development. Energetically develop water saving agriculture, and effectively save water resource. Transform four-seasons grazing to winter point indoor feeding plus summer grassland grazing. Change the over-grazing condition of grassland. Strengthen the integration of frost and grassland to develop animal husbandry. Protect grassland ecology. Combine the project of “settle down and develop grazing, enable people to earn material gain and have stable living” to greatly perfect the living condition of farmers and shepherds, and improving the quality of life.

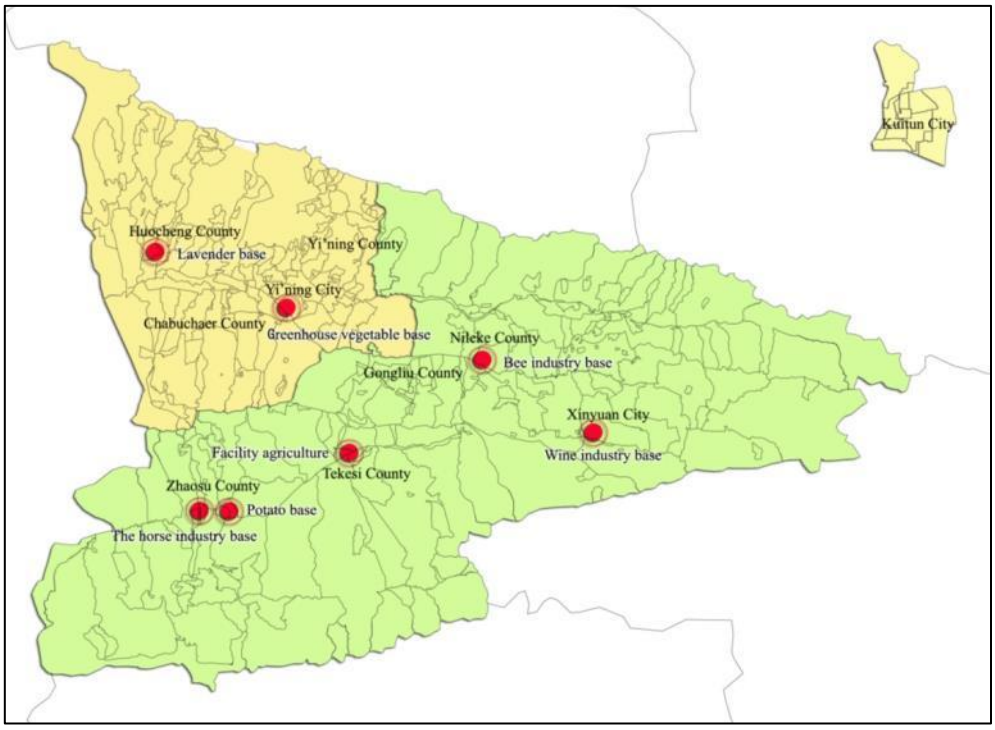
3.3 Implement developing agriculture through science and education, develop efficient agriculture

Local authorities should help the farmer to learn and use new eco-technique via raising the level of agricultural mechanization and automation, strengthen agricultural science and technology innovation.

4. Planning Strategy

4.1 Agricultural and Livestock Industry Development Layout

This agriculture industry planning will highlight the characteristics of agricultural and livestock industry development in Ili River Valley region, and set up “Seven Features Industry Bases”.



Pic 1: Seven Agriculture Industry Base in Ili River Valley Area

Seven Features Industry Bases: With Ili stud farm and Ili Zhaosu stud farm as core, radiate to horse industry bases in surrounding counties and cities; centered by Yi'ning city, take Yi'ning county, Cha county, Huocheng county as supplementary greenhouse vegetable production bases; centered by Huocheng county lavender base, build "Eastern Provence"; with Xinyuan city as the center, form wine industry base, build "No.1 county of XUAR white wine"; with Nileke county, Gongliu county at the heart, shape bee industry base; with Tekesi county as the middle, form facility agriculture base; take Zhaosu county as the core, form potato and rape bases.

Table 2: Ili River Counties Agricultural and Livestock Industry Features Table

Name	Agricultural and Livestock Industry Features	Main Agricultural and Livestock Industry
Yi'ning City	Greenhouse vegetable base	Greenhouse vegetable, dairy products
Kuitun City	—	Food processing
Yi'ning County	Apricot blossom village	Corn, wheat, soybeans, sugar beets, dairy farming, dried apricots
Chabuchaer County	Rice base, dairy products village	Rice, dairy products, feature greenhouse and vegetables, grain grinding, vegetable oil
Huocheng County	Eastern Provence	Flavors and fragrances, fat, health care products, apples, food deep processing
Gongliu County	Wild fruits village	Wild nuts, wild berries, wheat, soybean, oil sunflower, corn, bee industry
Nileke County	Black bee village	Bee products processing, bee culture display, beef and mutton processing, dairy products
Xinyuan City	While wine base	Feature food processing, animal by-products processing, brewing industry, sugar refining industry
Tekesi County	Facility agriculture	Greenhouse vegetables, bee industry, agricultural sideline products processing, food and manufacturing, fruit forest industry deep processing
Zhaosu County	Organic food, Pegasus village	rape, potatoes, garlic, beef and mutton processing, dairy products, Pegasus, brown cows

4.2 Water Saving

Adjust Plant Structure

The concept of plant structure adjustment is to limit the planting of crops with large amount of water consumption, and aim to obtain maximum economic benefit with minimum water resource. Take references from Israel, before the 1970s, the development of Israel depended on self-sufficient planting industry with the production of food. After the 1970s, the development of Israel depended on export planting industry with gardening. Peasants made a living by exporting. The adjusted plant structure demanded less of land and water resources, but increased the planning of

economical crops with higher requirements on science and technology. These crops could bring substantial economic income. Ili River Valley region should actively adjust agriculture plant structure, increase the planting of economical crops with less demands on land and water, and realize maximum economic benefits.

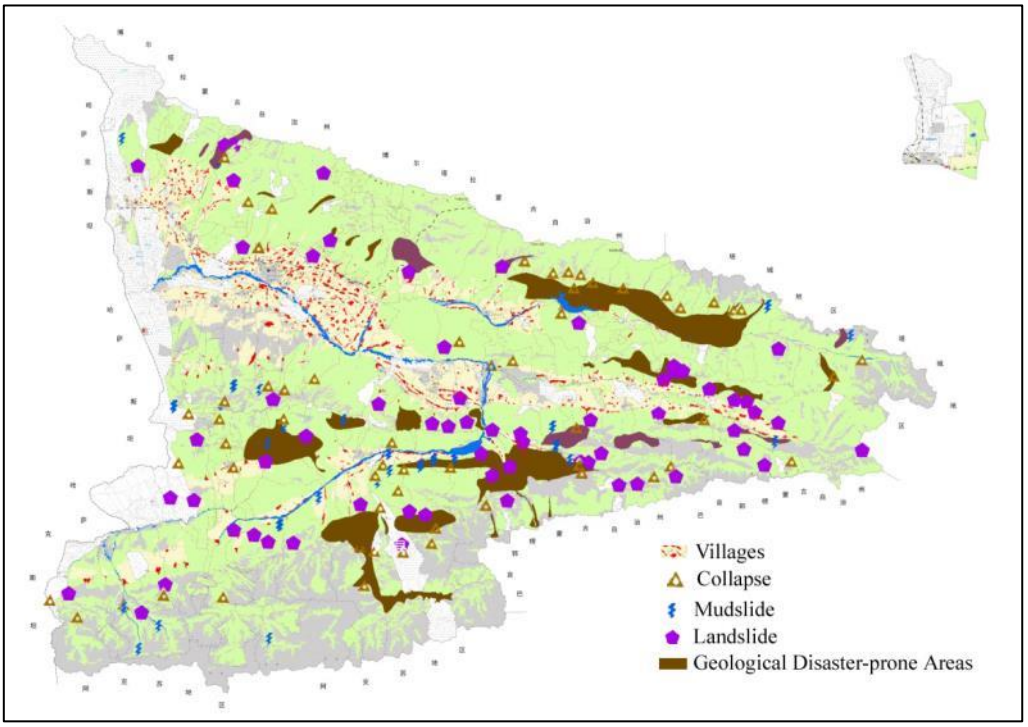
Support Water Saving Technology

Local authorities should pay much attention on promoting water saving tech in using of local agriculture producing. First of all, the investment should be paid on water saving infrastructure and help farmer to use them. Meanwhile the government implement relevant tax policies and finance policies to encourage local farmer to use water saving technique. Moreover, these policies should enhance agricultural scientific and technological innovation conditions, greatly increase agricultural scientific and technological investment, particularly water saving innovation, gradually improve agricultural research and development investment percentage in agricultural added value, and construct long-term and effective mechanism with stable increase in investment.

To Build Intensive Rural Residential Areas

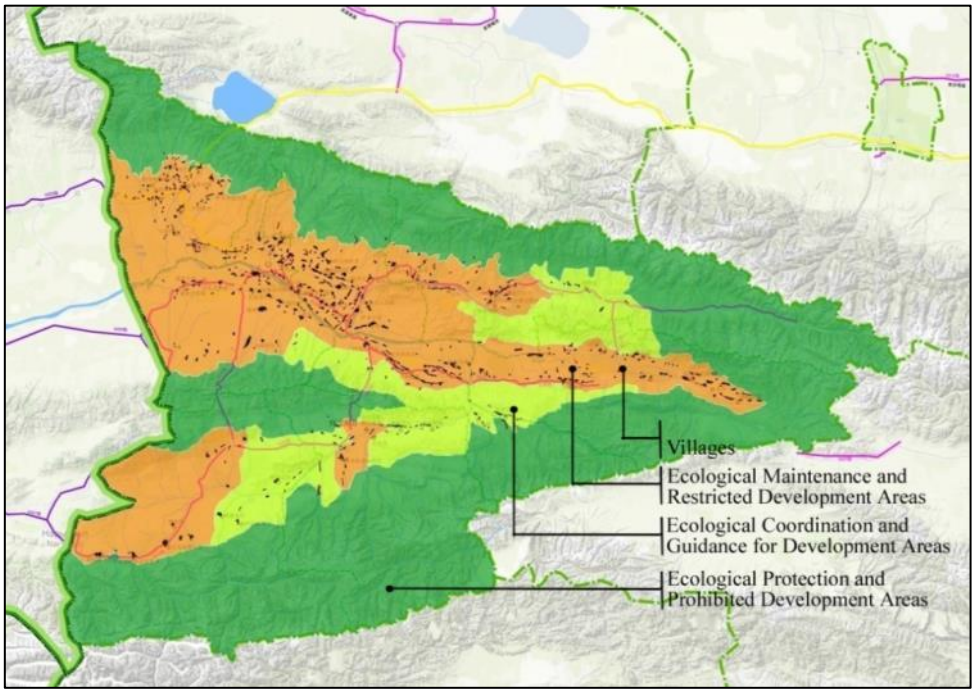
Improve the utility level of rural residential areas, speed up rural infrastructure construction and centre village construction, coordinate the arrangement of new rural area construction land, guide appropriate summon of rural residential areas, appropriately optimize space distribution.

(1) Avoid geological disaster-prone areas (spots): According to “XUAR Ili region geological disaster prevention and treatment planning”, geological disasters in Ili River Valley region mainly include the three types of collapse, mudslide and landslide. Geological disaster-prone areas are majorly distributed at Nileke county (mainly located at the mid-north part, in stripe shape, also sporadically incur in other places), Xinyuan county (mainly located at north-ease part, and south mid and low mountainous areas), Gongliu county (mainly located at the south part, and cleugh), Tekesi county (mainly located at the south part, main cleugh and west-north part), Huocheng country (incur in small area, mostly at cleugh, in stripe shape, in G312 Guozigou section), Yi’ning county (incur in small area, in stripe shape, mostly in cleugh), Zhaosu county (mainly near the juncture with Tekesi at Qitemisigou). In future development, residential areas for farmers and shepherds should at the best avoid geological disaster-prone areas. In mid-and-low prone regions, rational avoidance and prevention measures are to be adopted.



Pic 2: Farmers and Shepherds Residential Areas Distribution and Geological Disaster-prone Areas (Spots) Overlapping Map

(2) Relocate villages at ecologically sensible regions: this plan to divide Ili River Valley into ecological protection and prohibited development areas, ecological maintenance and restricted development areas, ecological coordination and guidance for development areas. In ecological protection and prohibited development areas, protection of ecological space is of crucial importance. All exploration and construction activities that are harmful to ecology are prohibited. In the region, concentration is placed upon agricultural and livestock industry. Over grazing is controlled. Residential areas for farmers and shepherds should be placed at regions where ecological sensitivity is comparatively low and construction conditions are comparatively good. Rich natural resources and natural landscapes in the region should be fully utilized. Appropriate ecological travelling can be developed. Yet, travelling exploration utility strength is to be under control. The construction of tourism facilities should be in harmony with surrounding landscapes.



Pic 3: Farmer and Shepherd Residential Area Distribution and Ecological Function Partition Overlapping Map

4.3 Rural Labour

The development of agricultural and livestock industry is of significance to the development of national economy in Ili. Nevertheless, in the long period of development, irrational grazing had caused damage to grassland resources. Lagging agricultural technology led to the fact that a great number of peasants are engaged in agricultural production, which affected the process of regional economic development. therefore, it is planned to abide by the principle of “restore grazing with grassland, settle down people with grazing, develop agriculture with farmland”, to realize ration transfer of rural labour, and facilitate the speedy development of urbanization.

Studies show, the bearing capacity of Ili River Valley grassland under low utility rate, mid utility rate and high utility rate are 4,233.3 thousand, 4,491 thousand and 4,788.1 thousand sheep. Calculated at 100 sheep per shepherd, with grassland bearing capacity under high utility rate, 4,788.1 thousand sheep demand for approximately 50 thousand shepherds. In 2010, Ili River Valley had permanent resident population of 2,756 thousand, agricultural population of 1,590 thousand, among which shepherds account for 50,844 households and 258,836 persons, hence 100 thousand surplus labour can be displaced. Besides, with the continuously improvement in intensive operation level in agriculture, the every arable land of each agricultural economic activity will also increase. Calculated by 10 Mu arable land per capital, 650 thousand agricultural labour is needed, and hence 200 thousand surplus labour can be displaced. These farmers and shepherds can engage in agricultural and livestock products precession and deep processing industry, tourism, and feature catering industry, and offer reserve forces for urban second and third industry development.

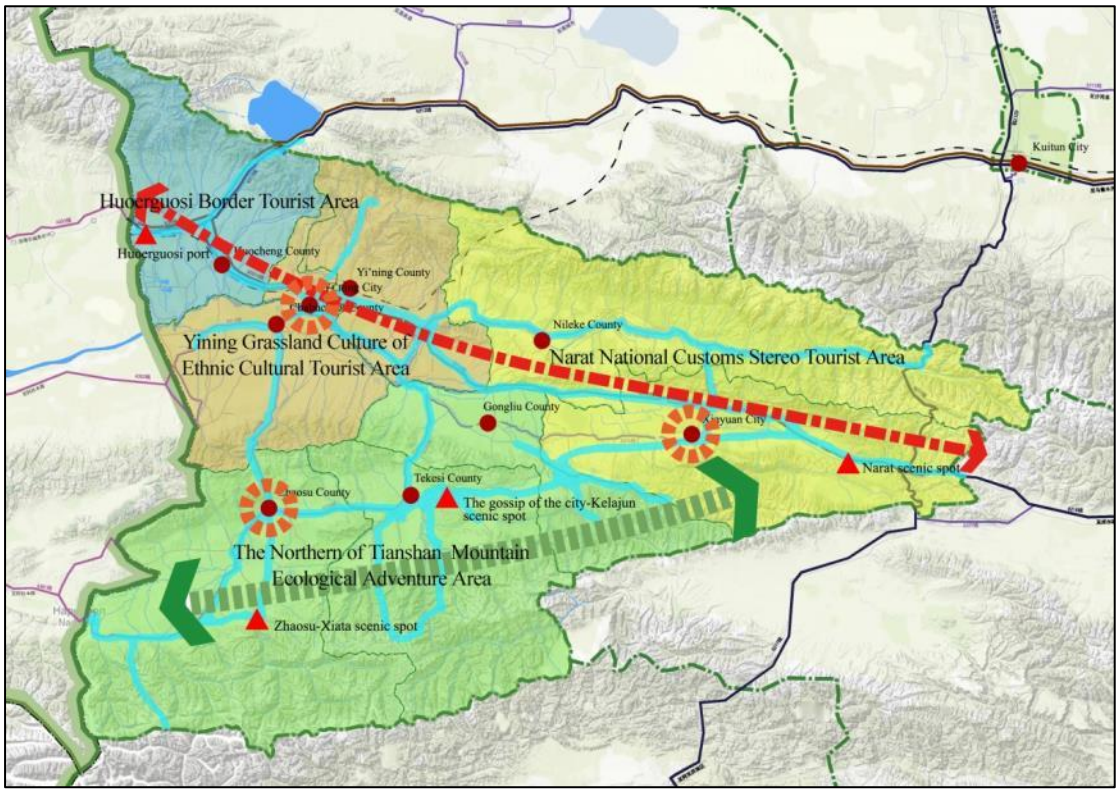
4.4 Rural Tourism

Through integration of various resources, create world level ecological valley tourism and leisure destination, build Ili River Valley brand, enrich the image of Ili River Valley tourist destination, enable Ili River Valley region to be leisure and tourist destination with distinctive features.

(1) Travelling and Shopping: Upon travelling routs setting, allocate feature streets and districts for the sales of feature tourism products, and offer souvenir for tourists, in order to expand the reputation for regional products. At the same time, provide employment opportunities for surplus labour, help farmers and shepherds increase their income. e.g. via promoting local food (Badanmu, jujube, dried apricots, nuts, honey, crusty pancake, etc.), agricultural processed products (lavender essential oil, mask, etc.), medicines and chemical reagents (deer blood wine series, lycopene, toadstool , bulb of fritillary, etc.) and crafts (tapestry, harness, wooden products, musical instruments), create feature tourism shopping base.

(2) Leisure on Farm: Through methods of home visiting to farmers and shepherds, enable tourists to feel the combination of local characteristics and exotic flirtatious expressions, nurture diversified feature tourism village. Via eating ethnic foods, dancing ethnic dances, living in ethnic houses, form interactions and affinity to local farmers and shepherds, enable tourists to sense the hospitality of local farmers and shepherds, increase sense of belonging of the tourists, improve local feature food reputation, e.g. roasted whole lamb, lamb skewers, noodles, cold noodles, bean jelly, crusty pancake, etc. further advertise ethnic feature food brands.

(3) Tourism Festival: In the aspect of tourism festival, there are Pegasus festival, and cycle racing on sands at the moment. And the festivals expected to develop are Baguacheng ecology festival, Ili Silu International Ethnic Cultural Festival. Via the set-up of Horse Cultural Festival, enable to tourists to have some understanding of the culture of horse through drinking horse milk, eating horse meat, riding on horse, racing horse. In addition, integrate horse jump performance and traditional customs activities, to expand impact, improve image, attract tourist, and increase benefits.



Pic 4: Structure Picture of Tourism Planning of Ili River Valley Area

5. Spatial Planning

5.1 Town-Rural Spatial Structural Planning

This planning will create “one circle, one pole, three development axis” spatial structure. Based on this spatial structure, local authorities will comfier the scale of urban in different level that will make relevant spatial policies and investment to support these urban physical construction and economic development.

“One Circle”

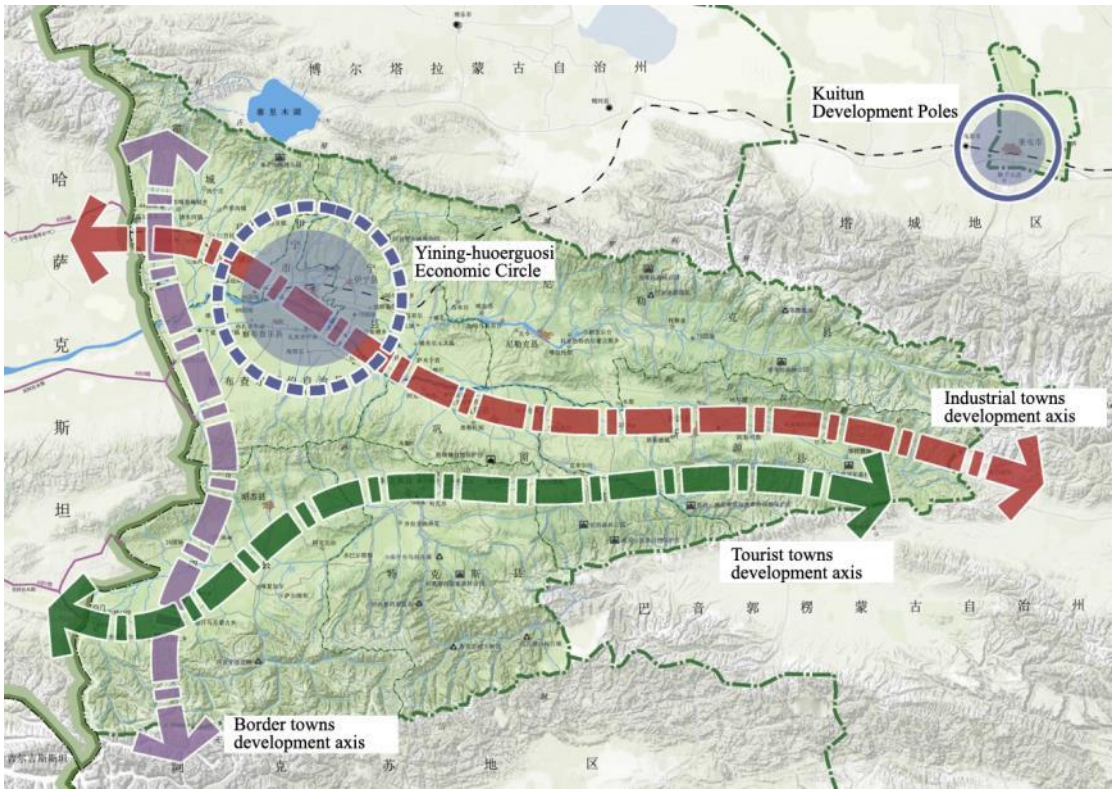
The Yining city will the core of this circle and the radius will be 100km that to growth an urban intensive development area which based on modern service industry and advanced manufactory industry. This circle area should be the biggest urban area which concentrate main function of urban, meanwhile, a more intensive land using principle introduce to land-using strategy that lead to building an spatial intensive urban area. This circle will be the core to promote Ili Region economic development

“One Pole”

One Pole means Kuitun development pole.

“Three development axis”

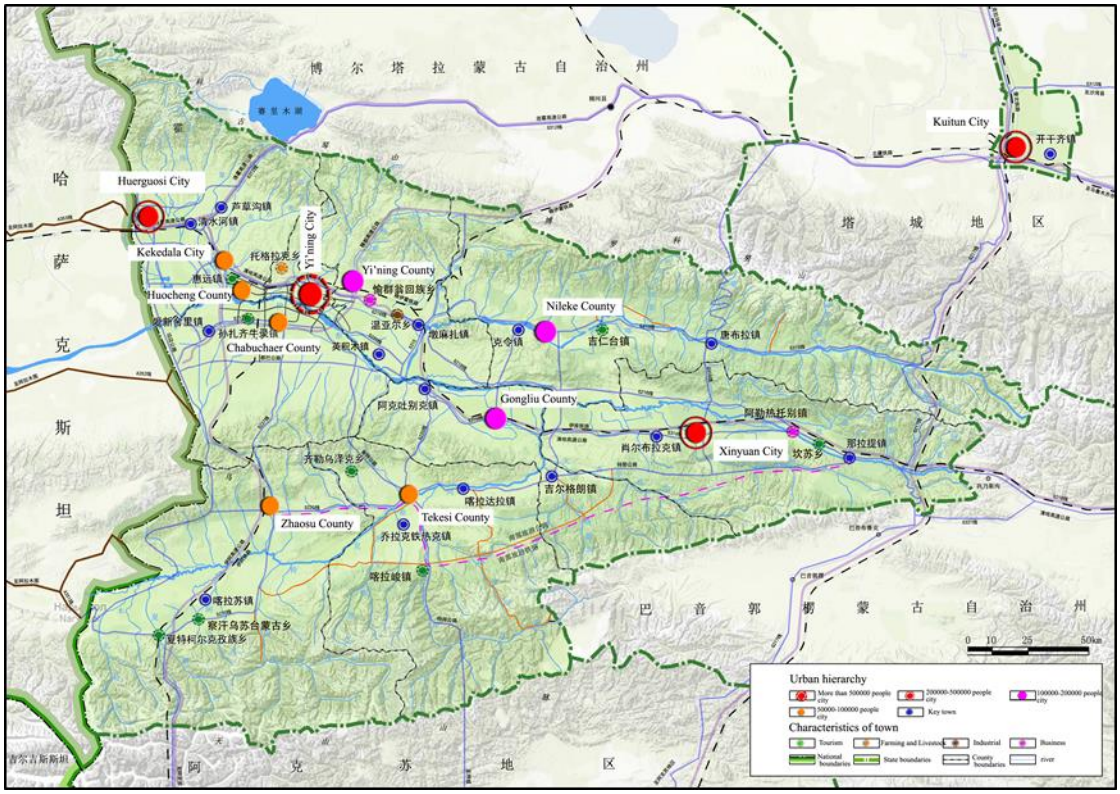
This planning sets three development axis which are *Northern Industry and Commeasure Town Development axis, Southern Tourist Town Development Axis* and *Western Border Town Development Axis*.



Pic 5: Ili Region Urban-Rural Structure Planning

5.2 The Urban Scale Levels

This planning set 5 levels for different urban scales which **centre urban, vice-centre urban, county, important town** and **common town**. While the end of Planning period, the centre urban could contain no more than 1 million people. And vice-centre urban will contain 500 thousand people. And there will be no more than 200 thousand people, 30 thousand people and 10 thousand people living in the **country, important town** and **common town** separately. Depend on the law of China urban and rural planning, this planning predicts and set the properly population for different urban in these different scale levels.



Pic 6: Structure Picture of Urban System Planning of Ili River Valley Area

5.3 The Rural Settlement Planning

The aim of rural settlement planning

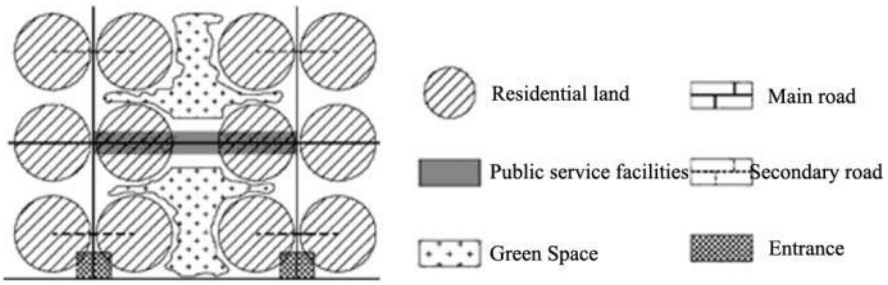
According to the prediction of population growth and urbanization trend in AoIRV by this planning, there will be still 12 million people to live in rural area, when the urbanization level maintain 70%. Therefore, rural are development will be the most vital contents for urban-rural area coherence development.

Thus, this planning sets intensive spatial polices that introduce farmer and herdsman to move in sentiments via infrastructure investment and urban construction. the main centre settlement will contain 300-500 houses and the based settlement will contain 50-200 houses. The this planning hope that all of farmer and herdsman can move into settlements till 2015, furthermore, Ili Region can build 1500 settlements with full function and which can meet anti-seismic standard.

The Model of Rural settlement

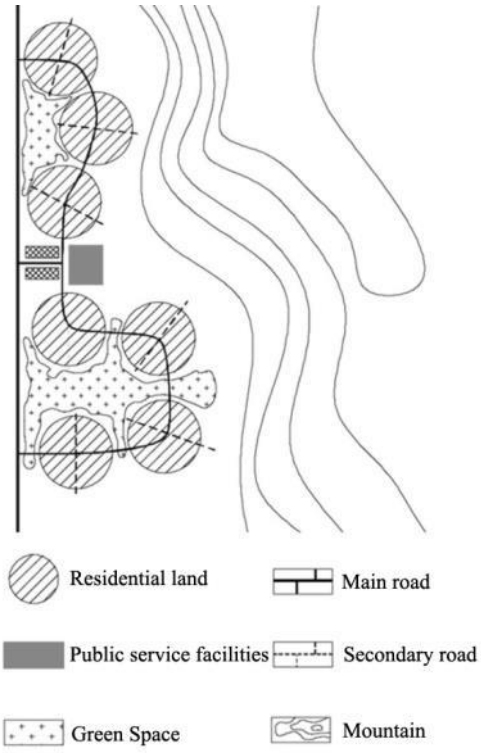
Depending on different geographic condition: This planning set three models of rural settlement as fellow:

1): Suburban area: the large scale settlement will be built here with intensive building spatial structure. This settlement will be constructed closed to county or town, meanwhile, road and river will influence on this kind of settlement distribution.



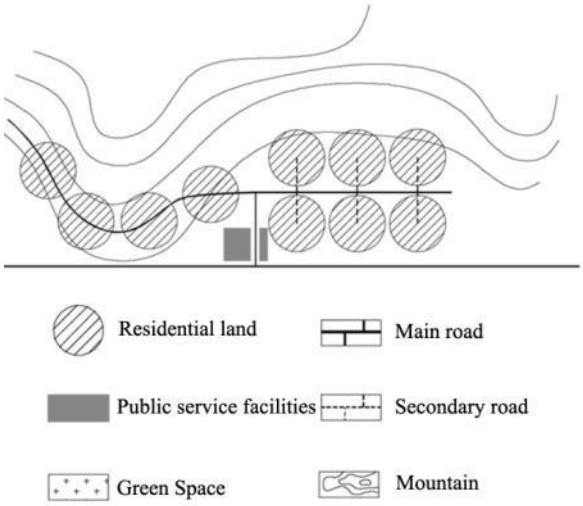
Pic 7: Model of settlement of Suburban Area

2): Road-side area: metro way is a big attractive for settlement. Comparing with model of suburban settlement, it contains less house for this model. Depanding on the different conation of road, it is better to set these settlement just in one side, meanwhile, the planning controls the length of settlement by roadside.



Pic 7: Model of settlement of Road-side area

3): Hinterland area: because of poor condition of transportation and economic function, it will be difficult to spread the settlements in this area. The main principles of build this kind of settlement are closed to water resource spot and tourism spot, meanwhile, improving efficiency of resource using and reducing the construction cost.



Pic 8: Model of settlement of Hinterland area

6. Conclusion

This research pointed out the key problems faced by local agriculture and livestock development in Ili river valley area, which concentrate in three aspects. Firstly, the agriculture industry structure only offer primary produces. Current industry structure cannot add high value to their produces and cannot create high reputation of brand. Secondly, because of this primary industry structure, the style of resource using is extensive for long time. That leaded a deep pressure on local environment, such as water resource and grassland resource. Finally, the recent urban-town structure cannot offer better public service, especially on public education. That could be a strong barrier for upgrading industry structure, improving value added produces and promoting environment friendly tech.

Therefore, *Urban System Planning of Area of Ili River Valley* implements relevant schemes in order to solve every single problem. First of all, the planning set seven industry clusters based on local special agriculture produces in spatial aspect in order to create unique local brand. Meanwhile, investment from government will pay for enhancing the industry chain that can increase the added value of local produces. Secondly, local authorities encourage the promotion of eco-tech using via investment, tax and governance ways. On the hand, there is a massive investment on irrigation infrastructure, on the other hand, the farmer and shepherd will be taught how to use the eco-tech, especially on water saving technique. Thirdly, of cause, the most directly scheme is to build new rural residents town. Via building intensive residents town, the resource using could be more intensive, and reduce the pressure on deterioration of grasslands. Meanwhile, it is easy to enhance the public education in order to improve quality of labour. Moreover, the industry of further processing on agricultural produces could be settle down based these new town that could extend current industry chain. Finally, new service industry, such as tourism, are emphasised by this planning.

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