Economic Geography Analysis of Gansu Province

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Analysis made in this report and views expressed reflect the views of the key author and not necessarily of the World Bank Group.

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1 Context

1.1 Introduction

Gansu Province is located in the upper Yellow river basin in northwestern China and covers a land area of 450 thousand square kilometers (km²). In 2017, the province had a permanent population¹ of 26.26 million, of which 12.18 million were urban residents, yielding a 46.39% level of urbanization. The Gross Domestic Product (GDP) of Gansu Province in 2017 was RMB 767.7 billion (Gansu Stats, 2018).

Administratively, Gansu Province is consisted of 14 prefecture-level local jurisdictions. In this project, six of them (Tianshui, Wuwei, Zhangye, Dingxi, Jiayuguan, and Jiuquan) are involved. Specifically, five of the prefectures (Tianshui, Wuwei, Zhangye, Dingxi, Jiayuguan) are involved as a whole, and two county-level cities under Jiuquan's jurisdiction, Dunhuang and Yumen, are involved. As a result, in this analytical work, the six prefectures mentioned above are covered.

1.2 Overall Economic Growth in Recent Years in Gansu

Gansu is one of the least developed provinces in China, although the overall economy in Gansu has been growing fast in recent years. With 1.86% of the national population, Gansu had a GDP of RMB 767 billion in 2017, accounting for 0.9% of the national GDP. In per capita terms, Gansu's GDP per capita was RMB 29,238 (US\$4,330,) in2017, ranking in the last position among all provinces, while China's GDP per capita was RMB 59660 (US\$8836) in that year. In contrast, Shanghai's GDP per capita was RMB 124606(US\$18,453), and Beijing's GDP per capita was 128992(US\$19102). Nevertheless, the GDP growth in Gansu was 3.6% in 2017, lower than the national growth of 6.9%. In sectoral terms, the economy in Gansu had also grown at a higher rate than the national total in 2017 except secondary sector, i.e. GVAs of primary, secondary, and tertiary sectors growing at 5.4%, -1.0%, and 6.5% respectively, higher than the national rate of 3.9%, 6.1%, and 8.0% (Gansu Stats, 2018; China National Stats, 2018.

1.3 Main Drivers of Economic Growth in Gansu

Gansu has experienced a major economy structure shift in recent years. Industries with high value added have been growing steadily and fast, while the once powerful light industries are shrinking. The shares of the three economic sectors (primary, secondary, and tertiary sectors) in GDP have shifted from 14.49: 46.84: 38.67 in 2010 to 13.85: 33.38: 52.76 in 2017 (*Gansu development yearbook*, 2018) and accounting for 5.5%, 6.8%, and 8.9% of the total provincial GDP respectively. On the other hand, the GVAs of power, and metal industries had decreased 3.1% and 6.6% in 2016 (*Gansu development yearbook*, 2017). Price of the traditional light industries had decreased by 2.6% in 2016 (e.g. petroleum and natural gas mining, petrochemical industry, chemical industry, non-ferrous metal). The total investment in the

¹ Statistically, a person is defined as "permanent population" of a place if he/she resides in the place for more than six months, regardless of his/her household registration (Hukou) location.

secondary sector had decreased by 6.2% in 2016 (Gansu Stats, 2017; China National Stats, 2017). Although, in the prefectural level, differences in the sectoral structures are large (Table 1).

Sectors (%)	China	Gansu	6 Prefectures					
			Tianshui	Wuwei	Zhangye	Jiuquan	Dingxi	Jiayuguan
Primary Sector	7.9	13.85	16.69	25.65	25.04	15.61	23.10	2.18
Secondary Sector	40.5	36.7 33.38	30.79	29.09	24.10	32.75	21.95	51.84
Tertiary Sector	50.6	52.77	52.50	45.24	50.85	51.62	54.96	45.97

Table 1 Economic Sectors in Gansu Province and the Six Prefectures in 2017

Source: Gansu Stats, 2018

1.4 Government Strategies

Gansu assumes a key position in the Silk Road Economic Belt Initiative, and has announced ambitious developmental plans accordingly. The ancient Silk Road spans 1600 kilometers across the entire latitude of Gansu, making the province, especially the Hexi Corridor region, a key section of the Silk Road. The Silk Road Economic Belt spans 24 counties in 8 prefectures of Gansu, covering 39.7% of the population of the province. The provincial government has issued a comprehensive plan to make Gansu the "Golden Section" of the Silk Road Economic Belt. According to the plan, Gansu will build more than 70,000 km roads and railways in six years, and also establish new passenger and freight lines to central and western Asian countries so as to speed up the formation of Gansu's key transport channels with Central Asia, West Asia, South Asia and Europe. With the improved transportation conditions, Gansu plans to promote the implementation of the six major developmental projects, which include the road interconnection project, the economic growth pole project, the cultural exchange and cooperation project, and the strategic platform construction project. The three strategic platforms in the agenda are the Lanzhou New Area, the Dunhuang International Cultural Tourism City, and the "China Silk Road Expo" (*The Overall Plan for The Development of The Gansu Section of the "Silk Road Economic Zone*).

Gansu also benefits from various central government strategies, initiatives, and programs. These include three major policy platforms: (1) the Gansu Golden Section of the Silk Road Economic Belt Program; (2) the Gansu China Civilization Inheritance and Innovation Zone Program; and (3) the Comprehensive Buffer Zone for National Ecological Security Program. Under these national platforms, regional economic development strategies have been issued. Key programs include the Lanzhou New District and the Lanzhou-Baiyin Science and Technology Innovation Reform Experimental Zone, among others. These strategies and programs have promoted the development of new and strategic industries, such as the

cultural tourism industry and environment-friendly industries, so as to provide new momentums to Gansu's future economic development and socio-ecological enterprises.

Gansu plans to maintain a medium-high speed of economic growth and urbanization in the next five years, such that the economy will be doubled in size from 2010 to 2020 and urbanization level rise by 15 percentage points. Gansu plans to pursue an economy growth at a medium-high speed in the next five years. On the basis of improving the balanced development, inclusiveness and sustainability of growth, the province will pursue an economy growth rate and increase of per capita income of urban and rural residents higher than the national average. At a planned average annual GDP growth rate of 7.5% and per capita GDP growth of 7%, by 2020, the provincial GDP will be more than 1 trillion yuan, and the per capita GDP will reach about 37,000 yuan, both double the level in 2010. In structural terms, the strategic emerging industries will account for 16% of GDP, and the GVA share of the service sector will exceed 50%. Besides, urbanization will steadily progress. By 2020, the urbanization levels of permanent resident and household registration criteria will be more than 50% and 38% respectively (*The Thirteenth Five-year Plan for National Economic and Social Development of Gansu*).

2 Gansu's Economic Geography: General Analyses

2.1 Place

2.1.1 Location

Gansu is located in a center place of the five northwestern provinces of China. It had assumed a key location along the ancient Silk Road, and has maintained the locational importance until today. The province locates in China's deep northwestern inland. A major part of the province, the Hexi corridor, has been the sole accessible land connection between China's southeastern territories and the Central Asia for more than two thousand years. This locational advantage has ensured the province a key place in the ancient Silk Road between China and Europe, and equally, if not more so in modern times under China's national strategy of the Belt and Road Imitative. (Figure 1).



Figure 1The Location of Gansu Province (Left) and the Gansu Section of the Silk Road (Right). Source: Gansu Province Goverment

2.1.2 Natural Assets

Gansu has very diversified natural geographic characters, and its main livable land areas are dry or semi-dry, barren lands. The province is located in a fringe position between China's three major natural geographical and climate zones, and is thus in possession of very diversified land morphologies, including mountains, plateaus, plains, valleys, deserts, and gobis (Figure 2), most of which are not suitable for human living. Even in the livable areas, living conditions are usually far from amiable due to the harsh climate. Gansu has a very typical temperate continental climate. With most of the land areas having an annual precipitation of 400 millimeters or less, the climate is typically dry or semi-dry, and the land is barren and faces the threat of desertification, expect in the rare oases, which usually offer a suitable place for urban developments.



Figure 2 The Three Major Natural Geographical and Climate Zones of China (Left), and the Sattelite Image of Gansu (Right). Source: *China Natural Geography Maps*

2.2 People

2.2.1 Demographics

Gansu has a relatively small population among China's provinces, majorly of Han ethnic and geographically unevenly distributed, and the population has been increasing at a lower rate than the national average since 2010. In 2016, Gansu has a permanent population of 26.10 million, ranked 22nd among China's 34 province-level jurisdictions. Since 2010, the population has been increasing at an average annual rate of 0.32%, significantly lower than the national average of 0.50%. (Figure 3) The population is unevenly distributed, with the southeast prefectures having the highest densities. Ethnic Han account for 90.57% of the total population, slightly lower than the national average of 91.46%. However, ethnic minorities constitute the main population in certain jurisdictions and city districts. The Hui, Tibetan, Kazak, Yugur, Dongxiang ethics form two autonomous prefectures and seven autonomous counties. Nevertheless, the six prefecture-level cities involved in the project do not contain any of the ethnic autonomous regions (Figure 4).



Figure 3Gansu's Historical Population. Source: Gansu Development Yearbook, 2017



Figure 4 Population Distribution by the Prefectures (left) and the distribution of ethnic minorities (right). Source: *Gansu Development Yearbook*, 2017

Gansu is a province typical of population out-migration. Recent censuses in the past 30 years show that the scale of population out-migration has been fast increasing. Among the destinations of the emigrants the top five province-level jurisdictions are Xinjiang (21.6%), Beijing (9%), Inner Mongolia (8.9%), Guangdong (7.8%), and Shaanxi (6.6%), demonstrating a clear economic opportunity-oriented population out-migration, i.e. the emigrants flow either to relatively more developed nearby northwestern provinces, or to the absolutely more developed southeastern provinces and the national capital (Figure 5). (*The Sixth National Population Census*)



Figure 5 Inter-Province Population Migration in Gansu, 1990-2010 (Left), and Shares of Emigrants by Destination Provinces in 2010 (Right) Source: *The Sixth National Population Census*

Gansu's population has shown an aging trend, with work age population beginning to decrease in 2015, first time over the past sixty years. In 2010, census showed that the population aged 15-64 accounted for 73.61% of the total population. In 2015, however, a 1% survey showed that the percentage had dropped to 72.63%, probably because the massive out-migration of work-age population (Figure 6). (1% National Population Sample Survey 2016)



Figure 6 Evolution of the Age Structure of Population in Gansu, 1953-2016 Source: *Gansu Development Yearbook*, 2017

2.2.2 Education

Population is relatively lowly educated, though primary school enrollment remains high in recent years. In 2010, the illiteracy level of Gansu's population was 8.69%, more than double the national average of 4.08%. However, in 2015, the primary school enrollment was 99.83%, which had increased by 0.03 percentage point from the previous year and was slightly higher than the national average of 99.81%. Moreover, population with higher educational attainments, including junior secondary schools, senior secondary schools, junior colleges (advanced vocational schools), and colleges and above, have been steadily increasing over the past three decades (Figure 7) (*The Sixth National Population Census; 1% National Population Sample Survey*).



Figure 7 Illiteracy Levels of the Population (Left), and Population with Various Education Attainments per 100 000 Persons (Right) over the Past Three Decades. Source: *The Sixth National Population Census*.

Gansu's female citizens enjoy equal, if not better education opportunities. The ratios of male and female students in schools of all levels are roughly the same with the national levels, which show generally equal opportunities. Specifically, the number of female undergraduate and graduate students in Gansu's universities are more than that of males (Figure 8).



Figure 8 2016 Population with Various Education Attainments per 100 000 Persons in Gansu (left) and China (right) Source: *Gansu Stats, 2017; China National Stats, 2017.*

Advanced Vocational Education (Junior Colleges) has been experiencing a steady shrink from an enrollment peak around 2009-2010, while the number of schools has been rising steadily. The peak was probably the result of a major enrollment expansion in 2009-2010, which was part of China's post-crisis policy package to lessen the pressure on employment. The most popular fields of study are manufacturing, finance, culture and education, and medicine and health (Figure 10).



Figure 9 Number of Graduate and Enrolled Students in Advanced Vocational Schools by Fields of Study (2015) Source: *Gansu Stats, 2016; China National Stats, 2016.*



Figure 10 Number of Schools and Students in Advanced Vocational Schools 2003-2015. Source: *Gansu Development Yearbook*, 2016

2.2.3 Labor and Employment

The labor force is fully employed, though most of the laborers are employed in low value-added sectors. Out of the total population of 26.09 million in Gansu, 15.49 million were employed by the end of 2016, including 5,910,100 employed in urban areas, and 6.59 million employed in secondary or tertiary sectors. The reported unemployment level is 2.20%, significantly lower than the national average of 4.02% (Figure 11). However, most of the employment concentrate in low value-added agriculture or service industries. The Private Enterprises, Individual Industrial and Commercial Business with the most number of employment is Wholesale and Retail Trades (1.63 million employments), and the one with the most number of legal entities is Public Management, Social Security, and Social Organizations (48 thousand entities) (Figure 12) (*Gansu Development Yearbook*, 2017).



Figure 11 Employment by Sectors (Left), and Percent of Employment by Sectors (Right), 2010-2016 Source: *Gansu Development Yearbook*, 2017



Figure 12 Number of Legal Entities (Left), and Number of Employees (Rights) by Industries; Note: self-employed agricultural works are not included. Source: *Gansu Development Yearbook*, 2017

2.2.4 Level of Living Standards

Both Gansu's urban and rural residents have a lower income level than the national average, so does the household consumption. However, they are fast catching-up. In 2016, Gansu's urban residents had an average per capita dispensable income of RMB 25693, a 8.1% increase from the previous year; rural residents had an average per capita net income of RMB7457, a 7.5% increase from the previous year. Regarding consumption, the per capita household consumption for urban residents was RMB 20733, and rural residents RMB 6859, an 15.8% and 0.4% increase from the previous year, respectively. The absolute levels of income and consumption were both lower than the national average, while the rates of growth are both higher (Figure 13). In terms of the structure of household consumption, the major items are food, housing, and clothing for both urban and rural residents, indicating a relatively high Engel Index (Figure 14) (*Gansu Stats, 2017; China National Stats, 2017*).



Figure 13 Income and Consumption for Urban and Rural Population (Left), and Rate of Growth (Right) in Gansu and China, 2016 Source: *Gansu Development Yearbook*, 2017



Figure 14 The Structure of Household Consumption in Gansu, 2016 Source: *Gansu Development Yearbook*, 2017

The income for both urban and rural residents of Gansu rank the last position among all provinces in the country. Nevertheless, despite the low income, household expenditure in Gansu is relatively strong. The per capita expenditure level of urban residents ranks the fourth from the bottom, and the per capita expenditure level of rural residents ranks the third from the bottom. Based on a quintile classification system, the per capita disposable income of urban residents in Gansu is 2,5693.5 yuan, which is between Lower Middle and Middle, while the per capita disposable income of rural residents is 7456.9 yuan, between Low and Lower Middle.







Item	Per Capita Disposable Income of Urban Households (Yuan)	Per Capita Disposable Income of Rural Households (Yuan)
Low	13004.1	3006.5
Lower Middle	23054.9	7827.7
Middle	31521.8	11159.1
Upper Middle	41805.6	15727.4
High	70347.8	28448

Table 2 Gansu Income Quintile 2016

(China National Stats, 2017)

Gansu has a weak public health system. Despite a relatively high health insurance coverage, there is insufficient and spatially uneven accessibility to high quality health care resources. In 2015, 190.9 million, or 98.3% of the rural population had enrolled in the New Rural Health Insurance Program, slightly lower than the national average (98.8%). Although, health care infrastructures are insufficient. In 2015, the number of beds of hospitals and health centers per 10 000 population was 45.6, lower than the national average of 51.1; the number of licensed (assistant) doctors per 10 000 population was 19.1, lower than the national average of 22.1; the number of registered nurses per 10 000 population (person) was 18.4, again lower than the national average of 23.6. Moreover, the limited health care resources tend to concentrate in major urban regions, worsening the shortage of health care resources in the rural area (Table 3) (*1% National Population Sample Survey in Gansu, 2015*).

Region	Number	Hospi	Health	Numb	Hospita	Health	Number	Hospita	Health
	of Health	tals	Center	er of	ls	Center	of	ls	Center
	Institutio		S	Hospit		S	Persons		S
	ns			al Beds			Engaged		
	(unit)			(unit)			in Health		
							Institutio		
							ns		
							(person)		
Lanzhou	2393	98	69	24873	21577	1176	39063	23708	1815
Jiayuguan	132	5	3	1759	1556	66	2838	1943	85
Jinchang	557	13	12	2453	2175	254	4081	2459	291
Baiyin	1322	32	74	7552	5506	1462	10889	4885	2045
Tianshui	3557	35	132	12400	8736	2450	18663	7422	3102
Wuwei	1761	16	109	7969	5515	2031	11153	4771	2505
Zhangye	1541	35	84	7421	4853	1832	9669	4406	1721
Pingliang	2816	35	110	11516	8639	2488	15142	5800	2999
Jiuquan	989	31	75	5639	4091	1273	7351	3713	1232
Qingyang	1954	23	125	8303	5386	2462	13355	4791	3075
Dingxi	2715	33	139	13312	9478	3277	14350	4875	3483
Longnan	5140	27	216	8465	5659	2315	16316	4751	3016
Linxia	2108	25	130	8411	5738	2238	10606	3603	1703
Gannan	917	19	100	2302	1590	490	5443	1660	1108

Table 3 Basic Statistics of Health Institutions by Jurisdictions in Gansu, 2015

2.3 Infrastructure

2.3.1 Regional Transportation and Logistics

Gansu Province has been seriously lagging behind in transportation and other infrastructures, although the situation has been improved in recent years with increased investments. For a long time, due to harsh natural conditions and sparsely distributed population, and also due to severe underinvestment, Gansu's transportation infrastructure had been insufficient. The situation is fast changing in recent years with increased national and provincial investments. In 2015, the total road mileage in Gansu was 133590 kilometers, of which 3600 kilometers were highways. The total railroad mileage was 4245 kilometers, of which 860 kilometers were high-speed rails. (*Gansu Development Yearbook,* 2016) The province plans to invest up to RMB 800 billion in the next 6 years so as to add another 70000 kilometers of roads and railroads. Regarding air transportation, in 2015, the Lanzhou International Airport had accommodated more than 8 million passengers. The Dunhuang International Airport was also put in operation in recent years. The two international airports are now operating more than 30 international lines. (*The Thirteenth Five-year Plan for National Economic and Social Development of Gansu*)

2.3.2 Rural Infrastructure

Gansu's rural infrastructure has also been weak for a long time, and the situation has also been improved in recent years with increased investments. In 2015, the total mileage of rural road had amount to more than 120 thousand kilometers, and 82% of the villages had been accessible to paved roads. Over the past five years, national and provincial financial transfers of RMB 10.38 billion has enabled the reconstruction of rural shanty houses for 1.03 million rural households. 80% of rural households had access to tap water. Nearly 90% of the villages had access to industry-grade electricity supplies for irrigation. However, the proportion of administrative villages that have domestic waste treatment system is only 17.5%, well below the national level of 48.2% (*China Urban and Rural Construction Statistical Yearbook,2016*).

2.4 Economic Development

2.4.1 Overall Economic Development Patterns

Gansu has a weak, slow growing economy, with great urban/rural and geographical disparities. In 2016, Gansu's per capita GDP RMB 27643, per capita urban resident dispensable income was RMB 25693, and per capita rural resident net income RMB 7457 all ranked the last place among China's 34 province-level jurisdictions. Although, Gansu's economy growth has been slow in recent years. In 2016, the economic growth rate was 3.6%, ranked the 31th place across China's provinces. (Figure 16) The urban/rural income gap is big and has been widening. From 2000 to 2017 the gap had grown from RMB 4027 to RMB19687, 3.44 times the level for the base year. Geographical disparities also prevail. Major cities regions, as well as regions with better natural settings typically have higher incomes, while regions such as Dingxi, Longnan, Gannan and Linxia are less developed. Among them, Linxia and Gannan are both ethnic minority autonomous regions, where development status are especially critical due to weak educational awareness, geographical restrictions, lack of resources, lack of historical accumulation, and industrial backwardness. Lastly, the urban/rural income disparity also has a geographical factor. The income gap forms a decreasing gradient from the southeast part of the province to the northwest part (Figure 17) (Gansu Stats, 2017; China National Stats, 2017).

While regions such as Dingxi, Longnan, Gannan and Linxia are less developed. Among them, Linxia and Gannan are both ethnic minority autonomous regions, where development status are especially critical due to weak educational awareness, geographical restrictions, lack of resources, lack of historical accumulation, and industrial backwardness.



Figure 16 GDP and growth rate in China's 34 provinces, 2017. Source: *Gansu Development Yearbook*, 2017



Figure 17 Gansu's per Capita GDP (Left), and Urban/Rural Income Gap (Right) by Prefectures. Source: *Gansu development yearbook*, 2017

Region	Urban Households		Rural Househo	olds	urban-rural	Ranking	Per Capita GDP(yuan)	Ranking
	Per Capita Disposable Income	Per Capita Consumption Expeniture	Per Capita Disposable Income	Consump- tion Expendi- tures			cor (yuun)	
Jiayuguan	33540	23819	16462	12485	2.03742	13	62641	1
Lanzhou	29661	22893	10391	8717	2.854489	9	61207	2
Jiuquan	30072	23329	14596	11133	2.06029	12	51721	3
Jinchang	32073	21149	12284	10218	2.610957	10	44202	4
Zhangye	21503	18923	11646	10379	1.846385	14	32729	5
Qingyang	25300	14950	7480	7201	3.382353	3	26734	6
Baiyin	25313	14599	7623	5872	3.320609	6	25813	7
Wuwei	23612	16941	9784	7494	2.413328	11	25396	8
Gannan	21327	14661	6414	5221	3.32507	5	19213	9
Tianshui	22684	13221	6499	7359	3.490383	2	17800	10
Pingliang	23446	14407	7008	7460	3.345605	4	17486	11
Longnan	20504	13389	5859	5674	3.499573	1	13085	12
Dingxi	20815	15026	6289	6324	3.309747	7	11892	13
Linxia	17912	14161	5680	5079	3.153521	8	11395	14

Table 4 Per Capita Urban and Rural Income and Consumption Expenditure Levels in GansuProvince at The Prefecture Level in 2016

Gansu's FDI is not high, and the investment has been increasingly concentrating on certain industries, while foreign trade concentrates almost exclusively in Lanzhou. The number of foreign-invested

enterprises in Gansu ranks the 4th least among all provinces in the country, and the total FDI is the 5th least. In the past 20 years, the number of foreign investment projects has been decreasing year by year, while the amount of investment has been generally rising with fluctuation, implying that foreign investment has become more and more targeted on certain industries. The industry with the largest number of foreigninvested enterprises is information transmission, computer services and software, with 1311 enterprises and an amount of investment of 40434 million USD. The industry with the highest amount of investment is electricity production and supply, gas and water, with an amount of investment of 454612 million USD (Figure). Patterns of foreign, though, show more extreme features. From 2010 to 2016, exports had nearly tripled, while imports had reduced by 60%. The city of Lanzhou assumes more than 86.67% of all foreign trades. (Figure 18)(*Gansu Development Yearbook*, 2017)



Figure Number of Projects and Foreign Direct Investment, 1995-2017. Source: *Gansu Development Yearbook*, 2017



Figure 18 Exports and imports by Prefectures (left), and Total Exports and Imports 2010-2016(right) in Gansu. Source: *Gansu Development Yearbook*, 2017

Gansu is on its way of an economic structure change toward a service-sector-dominant economy, but with many pains on the course of transformation. In sectoral terms, Gansu's shares of the three

sectors in GDP was 14.05: 36.74: 49.21 in 2014, when the tertiary sector overtook the secondary sector for the first time in history, marking a significant milestone in economic structure change. However, China as a whole had experienced the same structural change in 2012 and in 2015, the sectoral structure was 9.0: 40.5: 50.5 (Figure 19). (*Gansu Stats, 2017; China National Stats, 2017*). The comparison shows a lagged behind progress in economic structure change in Gansu. Moreover, the structural change does not necessarily bring about a more healthy and efficient economy. In recent years, Gansu has experienced declines in economic growth rate, industrial product prices, corporate profits, fiscal revenues growth rate, total retail sales of consumer goods, and fixed asset investment growth rate, which combined have resulted in an increased systematic risk of the economy. It is believed² that these problems have been caused by factors such as problematic industrial structure and spatial layout, seriously excessive manufacturing capacity, homogenization of regional development strategies, among other issues.



Figure 19 Value Added by Sectors, 1995-2015 Source: Gansu Stats, 2016; China National Stats, 2017

2.4.2 The Agriculture Sector

Gansu's natural geographical settings are generally not suitable for agriculture, rendering the latter weak and overstaffed, though the production of certain economy crops with high value added have been growing rapidly. Gansu has a long tradition as an agricultural province around the Hexi Corridor. However, located mostly on dry or semi-dry barren lands, Gansu's agriculture has a poor natural gift. In 2010, Gansu's per capita arable land area was 2 Mu³, ranked 9th among the province-level jurisdictions; however, the effective arable land factor was only 31.26%, making Gansu one of the provinces with least per capita arable land (compared to a national average effective arable land area of 1.4 Mu). In 2016, agriculture accounted for 13.85% of the economy, but it employed 56% of the laborers, making the sector a weak and overstaffed one (as compared to national averages of 9% and 28.3%, respectively). However,

² http://www.gansu.gov.cn/art/2016/3/1/art_4544_265321.html

³ 1 Mu = 667 square meters

production of certain high value-added economy crops has been booming. In 2015, the production of vegetables, traditional Chinese (herbal) medicine, fruits, and tobacco had grown by 7.6%, 15%, 8%, and 17.3% respectively, much higher than the growth of crop production of -2.04%. Gansu has also announced a plan for promoting the industrialization of agriculture with local characteristics and has designated the greenhouse gardening industry as a future leading industry of the province. (*The Thirteenth Five-year Plan for National Economic and Social Development of Gansu*; Gansu Stats, 2017; China National Stats, 2017)

2.4.3 The Manufacturing Sector

The Manufacturing sector has long been Gansu's major sector. However, it has been shrinking since 2010. In terms of contribution to the economy, the leading place of the industry sector had been overtaken by the service sector in 2014 (Figure 19). In 2015, the manufacturing sector accounted for 36.74% of the economy, 6.06% percentage points less than the level of 2014. Along with the drop of its relative significance, the absolute scale of manufacturing in Gansu has also been shrinking. Fixed investment in the manufacturing sector had dropped by RMB 29.2 billion in 2016 from RMB 351.35 billion in 2014.

2.4.4 The Service Sector

The service sector has been the leading economic sector since 2014 and it has been strengthening its leading position. From 2010 to 2016, the value added in the service sector had more than doubled, from RMB 159.9 billion to RMB 370.4 billion. The slowest rising of industries in the service sector was catering services. The most rapidly growing industries in the service sector was wholesale and retail trades. (Figure 20). (Gansu Stats, 2017; China National Stats, 2017)



Figure 20 Value-added of the Tertiary Industry, Source: Gansu Development Yearbook, 2017

2.4.5 Emerging Industries

With fast development of new and strategic industries, a diversified industrial system has been emerging. In 2015, the cultural industry had a value added of 15.7 billion, 18.9% more than that of 2014, and accounted for 2.3% of the economy. In 2016, there were 5,752 cultural-related units in the province, including artistic firms, public cultural services, performances, entertainment, online cultural market

operators, cultural industrial parks, cultural heritage protection, etc., with a total of 47,868 employees. The total operating income was 1.682 billion yuan. Among them, the number of enterprises above designated size in the province has increased to 21, with operating income of 221 million yuan, an increase of 68.6%. Strategic emerging industries, including the new materials, new energy, bio-industry, information technology, advanced equipment manufacturing, energy saving and environmental protection, new coal chemical, and modern service industries. In 2016, 20 new strategic emerging enterprise backbone enterprises were identified, with a total of 58 enterprises, and the industrial added value increased by 12%, accounting for 13.1% of the economy. Gansu also actively promotes the "Made in China 2025" and "Web +" programs, in hoping to shift the industry structure to skew to a more high-ended industry-oriented one.

2.4.6 Entrepreneurship

Gansu, like other northwestern provinces, performs poor in terms of easy of doing business because of certain social and institutional constraints, and also shows significant under-development of entrepreneurship. In terms of Small and Medium-sized Enterprises (SMEs), Gansu has been doing even poorer than its northwestern neighbors (Table 5). Among with factors such as lack of high-end employees and excess bureaucracy in the government, Gansu's financial institutions have played a significant role in the underdevelopment of the SMEs. In 2013, the credit availability for SMEs in Gansu was only 46.2%. With insufficient credit availability, most SMEs had resorted to self-financing or underground financing vehicles. The prevail of the informal financing practices have been worsening the commercial environment in Gansu. Entrepreneurship is also highly under-developed in Gansu, for very understandable historical reasons. Historically a poor, remote, agricultural region in the front line of national defense, Gansu never had any sophisticated economic or commercial activities until mid-1950s, when a state-led industrialization under a planned economic system "dragged" the province into the industrial age. A wide range of research have shown that such a planned economic system is not an ideal environment to nurture entrepreneurship. Up until 1990s, the first generation of privately-owned businesses had emerged in Gansu. These private firms, however, had suffered from a poorly developed market environment and also lack of human capital resources, and therefore are still inadequate in nurturing entrepreneurship (Xu, 2010).

	Number of	Capital	Income	Profit	Тах	Sales
	SMEs					
Gansu	1675	3386.8	1910.8	86.8	62.7	2153
Northwestern	3417	5909.5	5827.2	453.5	289.1	5866.6
China						
Average						

Table	5 Conditions	of SMEs of	Gansu and	Northwestern	China.	2012
Table	5 contactions		Gallsu allu	NOILINVESLEITI	ciina,	2012

Source: China Economic Census Yearbook, 2013

Notes: Northwestern China includes the Provinces of Shanxi Ningxia Xinjiang Gansu and Qinghai.

2.5 Disparities in Gansu

2.5.1 Overall regional disparities

Gansu is one of the least developed provinces in China in recent years. With 1.86% of the national population, Gansu had a GDP of RMB 767 billion in 2017, accounting for 0.9% of the national GDP. In per capita terms, Gansu's GDP per capita was RMB 29,238 (US\$4,330,) in2017, ranking in the last position among all provinces, while China's GDP per capita was RMB 59660 (US\$8836) in that year. In contrast, Shanghai's GDP per capita was RMB 124606(US\$18,453), and Beijing's GDP per capita was 128992(US\$19102). Furthermore, the GDP growth in Gansu was 3.6% in 2017, lower than the national growth of 6.9%. (Gansu Stats, 2018; China National Stats, 2018.)

Gansu's per capita urban resident dispensable income was RMB 25693, and per capita rural resident net income RMB 7457 all ranked the last place among China's 34 province-level jurisdictions. And, Gansu's economy growth has been slow in recent years. In 2016, the economic growth rate was 3.6%, ranked the 31th place across China's provinces. (Figure 16)



Figure 21 GDP and growth rate in China's 34 provinces, 2017. Source: *Gansu Development Yearbook*, 2017

Gansu's FDI is not high, and the investment has been increasingly concentrating on certain industries, while foreign trade concentrates almost exclusively in Lanzhou. The number of foreign-invested enterprises in Gansu ranks the 4th least among all provinces in the country, and the total FDI is the 5th least. In the past 20 years, the number of foreign investment projects has been decreasing year by year.

2.5.2 Rural-urban disparities in Gansu

Gansu has a weak, slow growing economy, with great urban/rural and geographical disparities. In 2016, Gansu's per capita GDP RMB 27643, The urban/rural income gap is big, and has been widening. From 2000 to 2017 the gap had grown from RMB 4027 to RMB19687, 3.44 times the level for the base year. Geographical disparities also prevail. Lastly, the urban/rural income disparity also has a geographical

factor. The income gap forms a decreasing gradient from the southeast part of the province to the northwest part (Figure 22) (Gansu Stats, 2017; China National Stats, 2017). Income disparities between different cities range from 1.8 times to 3.5 times (Table 6).



Figure 22 Urban/Rural Income Gap by Prefectures. Source: *Gansu development yearbook*, 2017

Table 7	Per Capita Urban and Rural Income and Consumption Expenditure Levels in Gansu
	Province at The Prefecture Level in 2016

Region	Urban House	eholds	Rural Households		urban-	Ranking	Per Capita	Ranking
	Per Capita Disposable Income	Per Capita Consumption Expeniture	Per Capita Disposable Income	Consump- tion Expendi- tures	rural income gap		GDP(yuan)	
Jiayuguan	33540	23819	16462	12485	2.037	13	62641	1
Lanzhou	29661	22893	10391	8717	2.854	9	61207	2
Jiuquan	30072	23329	14596	11133	2.060	12	51721	3
Jinchang	32073	21149	12284	10218	2.611	10	44202	4
Zhangye	21503	18923	11646	10379	1.846	14	32729	5
Qingyang	25300	14950	7480	7201	3.382	3	26734	6
Baiyin	25313	14599	7623	5872	3.321	6	25813	7
Wuwei	23612	16941	9784	7494	2.413	11	25396	8
Gannan	21327	14661	6414	5221	3.325	5	19213	9
Tianshui	22684	13221	6499	7359	3.490	2	17800	10
Pingliang	23446	14407	7008	7460	3.346	4	17486	11
Longnan	20504	13389	5859	5674	3.500	1	13085	12
Dingxi	20815	15026	6289	6324	3.310	7	11892	13
Linxia	17912	14161	5680	5079	3.153	8	11395	14

2.5.3 Disparities between Lanzhou and secondary cities and towns

In 2017, Tianshui ranks the second place in terms of GDP among all prefectures in Gansu, only second to Lanzhou, the capital city. However, in absolute terms, the GDP of Lanzhou was 2.1 times that of Tianshui. Likewise, the public finance budget revenue of Lanzhou is 2.0 times that of Qingyang, the city ranks the second place in statistics, and tax revenue 2.5 times. Major cities regions, as well as regions with better natural settings typically have higher incomes, while regions such as Dingxi, Longnan, Gannan and Linxia are less developed. Among them, Linxia and Gannan are both ethnic minority autonomous regions, where development status are especially critical due to weak educational awareness, geographical restrictions, lack of resources, lack of historical accumulation, and industrial backwardness.

2.6 Quality of infrastructure and services in the province

Gansu Province has been seriously lagging behind in infrastructure and services. For a long time, due to harsh natural conditions and sparsely distributed population, and also due to severe underinvestment, Gansu's transportation infrastructure had been insufficient. By the end of 2016, the actual length of urban roads was 4,668 kilometers, ranking the sixth from the bottom among all 31 provinces in the country, and the number of urban road lighting was also relatively small. By the end of 2016, the number of public transportation vehicles in Gansu, as well as the total length of operating public transit lines (in km) both ranked the fifth from bottom among all 31 provinces in the country. In terms of urban infrastructure, the situation also allows little room for optimistism. Coverage of gas service in cities and county seats ranked sixth from the bottom among all 31 provinces. Specifically, the coverage of gas service in established towns was only 7.75%, ranking the last place; while the coverage in the townships was only 4.58%, ranking third from bottom among all 31 provinces. Water supply is also critical. In 2016, the per capita daily domestic water consumption in the county seats was 65.73 liters, and that in the townships were only 56.58 liters, both ranking the lowest in all provinces in the country. (*China statistical year* book,2017) . Gansu's rural infrastructure has also been weak for a long time, the proportion of administrative villages that have domestic waste treatment system is only 17.5%, well below the national level of 48.2% (China Urban and Rural Construction Statistical Yearbook, 2016).

2.7 Urbanization

Gansu's population urbanization level is low as compared to the national average, and the spatial expansion of the cities has been faster than urban population growth. In 2016, Gansu's level of population urbanization was 46.4 %, as compared to the national average of 58.52% (Figure 23). (China National Stats, 2018) An analysis into the temporal trend of urbanization in Gansu and China has shown a widening gap in urbanization levels, indicating the lagged urbanization process in Gansu (Figure 24). However, the cities have been expanding at a much higher speed than the growth of urban population, indicating potentially ineffective urban land use. (*The Sixth National Population Census*)



Figure 23 Urbanization Levels, 2010 (Left), and Increase in Urbanization Levels, 2000-2010 (Right) by Provinces, Source: *The Fifth and Sixth National Population Census*





Figure 24 Population Urbanization in Gansu and China, 1979-2017, Source: *Gansu Development Yearbook*, 2018

The quality of urban development is low; the level of citizenization is lower than population urbanization. By the Hukou scale, Gansu's urbanization level was only 27.38% in 2015, 15 percentage points lower than the pure population criterion. (*1% National Population Sample Survey in Gansu*)Because urban *Hukous* are linked to a basket of urban public goods and services, the gap indicates that a considerable part of permanent urban residents have limited access to these goods and services, which in term implies a low level of lifestyle citification among the recent rural-urban migrants, and thus a low quality of urbanization.

2.8 Institutions

2.8.1 Institutional Structure

Gansu has a centralized, hierarchical government institution typical of China. There are five levels of governments: the national, provincial, prefectural, county, and town/township governments, each subordinating to the immediate higher level. A "city" can be of the prefecture level, or of the county level, in which case it is effectively a county, usually with a relatively larger and more urbanized county seat town, and subordinates to a certain prefecture. Usually, prefectures are the main body for local economic development and physical construction of cities and infrastructure, while the provincial government designate general strategies on these issues and controls the financial resources.

2.8.2 Institutional Capacity

The centralized governmental system has strong executive capacities, though problems may occur when the attribution of administrative jurisdiction over certain matters is not clear. For example, this World Bank financing project may fall within the administrative jurisdictions of the Provincial Development and Reform Committee (DRC) because it is an economic development initiative; or the Department of Finance because it concerns mainly financing practices; or the Department of Culture or Committee for Tourism Development because the financing is aimed to support cultural tourism developments. A specifically designated project office is often established under such circumstances so as to coordinate the work between the government agencies involved, though not always effectively or successfully.

2.8.3 Reforms

For better execution of the World Bank financing project, reforms on government administration and financial practices at both provincial and local levels are called for. Though a project office has been established, it still lacks the hands and financial resources to effectively coordinate between the various provincial government agencies and local governments involved. An inter-governmental agencies committee may be helpful if certain incentives can be provided. Project management also calls for reforms. Potential new styles of project management and execution, e.g. the Project for Results and Public-Private-Partnership (PPP), requires management expertise beyond the conventional ones. These requirements must be met to ensure a smooth execution of the World Bank financing project.

2.8.4 Fiscal Performance

Gansu runs a very unbalanced budget and relies heavily on national transfers and other outer financing vehicles. In 2016, the fiscal revenues were RMB 144.1billion, accounting for only 0.90% of the national total fiscal revenues. However, the fiscal expenditures accounted for 1.68% of the national total, creating a huge demand for central governmental transfers. The gap has been widening in the recent years (Figure 25). (*Gansu Development Yearbook*, 2017, *China Development Yearbook*, 2017)



Figure 25 Gansu's Financial Permance, 2011-2016, Source: *Gansu Development Yearbook*, 2017

3 Gansu's Cultural Heritage Sustainable Tourism (CHST) Development: Assets and Challenges

3.1 Heritage and Cultural Resources

3.1.1 Heritage Assets

Gansu Province is an important origin place of the Chinese civilization, with a long history and rich cultural heritage. Prehistorical relics dating back to up to 8000 years have been uncovered in many sites in Gansu, and since the conquest by the Wu Emperor of Han Dynasty in 1st century B.C., most regions of Gansu have been annexed to China until now. The names of four of the seven cities, namely Tianshui,

Wuwei, Zhangye, and Jiuquan, are exactly the same as those when they were firstly named by the Wu Emperor. Located in an intermediary location between China's hinterland and Central Asia, Gansu was a natural route for the Silk Road, and the mixture of various cultures had created a rich heritage which we inherit today. The richness of cultural tourism resources in Gansu ranks 5th place across China's province-level jurisdictions, and thus constitutes a unique comparative advantage for Gansu.

Gansu has a rich resource of world cultural heritage sites, as well as cultural preservation sites of all **levels.** Gansu has 7 world cultural heritage sites, among them 4 are located in Jiuquan. Gansu has 153 national cultural preservation sites, and 577 provincial ones. Again, Jiuquan has the most national cultural preservation sites (23). Moreover, Gansu has 385 museums, accounting for 11% of the national total (Table 8, Figure 26). (*The Situation of National Key Cultural Relics Protection Unit in Gansu*)

Table 8 Gansu's World Cultural Heritage Sites, and National and Provincial CulturalPreservation Sites

	World Heritage Sites	National Cultural	Provincial Cultural
		Preservation Sites	Preservation Sites
Lanzhou		11	41
Jiuquan	4	23	60
Jiayuguan	1	3	2
Jinchang		5	13
Tianshui	1	17	54
Wuwei		13	59
Zhangye		15	45
Baiyin		3	31
Pingliang		12	65
Qingyang		21	69
Dingxi		7	53
Longnan		6	37
Linxia	1	9	21
Gannan		8	27

Source: Cultural Relics Protection List in Gansu



Figure 26 Gansu's National and Provincial Cultural Preservation Sites. Gansu Province Government

3.1.2 Tourism Development

The tourism industry has been growing dramatically in recent years and has become a major frontier for economic development in Gansu. Gansu's rich natural geographical and cultural heritage assets, along with its nexus location in the country have created a unique advantage for tourism development, and the potential has been fast realized in recent years. From 2010 to 2016, revenues from the tourism industry had more than doubled, and tourist visits had grown four-folds. The share of the tourism industry in economy had grown from 6% in 2010 to 17% in 2016 (Figure 27).(Gansu Stats, 2017) In 2016, 191 million tourist visits were accommodated across the province, a 22% increase from 2015; revenues from the tourism industry were RMB 121.9 billion, a 25% increase from 2015; direct job creation in the tourism industry were 150 thousand, a 16% increase from 2015; investment in the tourism industry were RMB 51.8 billion, a 26.6% increase from 2014. There were546 travel agencies, and 382 stars-graded hotels across the province, including 3 5-star hotels and 80 4-star hotels. (*The Thirteenth Five-year Plan for Tourism Development in Gansu*). In terms of international tourism, specifically, revenues are mostly from shopping of tourist goods and accommodation (including dining), and aviation is the most important means of transportation for foreign tourists. (*Gansu Development Yearbook*, 2017) (Figure 28)



Figure 27 Gansu's Tourist Visits and Tourism Revenues (Left), and Shares of the Tourism Industry in Economy (Right), 2006-2016 Source: *Gansu Development Yearbook*, 2017



Figure 28 Structure of Revenues from International Tourism. Source: *Gansu Development Yearbook*, 2017

Gansu has a large number of tourist attractions, but major tourism flows concentrate in highgrade attractions. Gansu has 585 designated tourist attractions, of which 197 are Grade A attractions, including 3 5A Grade (the highest grade) attractions and 57 4A Grade attractions. In 2013, all Grade A attractions across the province had accommodated 68.87 million tourist visits, accounting for 68.3% of all domestic tourist visits. Notably, although tourist attractions of Grade 4A or above only account for 9.2% of all attractions, they had accommodated 68.4% of the total tourist visits. (*The Thirteenth Five-year Plan for Tourism Development in Gansu*) At the Inter-provincial level, Gansu's tourism industry is mediocre in terms of both relative economic significance and absolute market share, but has been rapidly catching-up. In 2015, the location quotient (0.88) (Notes: The location quotient reflects the degree of specialization of a regional economy. The higher the value indicates the higher the level of industrial agglomeration in the region. Generally speaking, when the location quotient is greater than 1, region has an advantage in the country; When the location quotient is less than 1, it is at a disadvantage.)and national market share (1.54%) of Gansu's tourism industry remained relatively low, but had increased considerably from their 2010 levels (0.65, and 1.02%, respectively) (Figure 29). At the Intra-provincial level, the relative economic significance and absolute scale of the tourism industry differ greatly among the prefectures, with Tianshui, Jiuquan, and Pingliang the most prominent tourism-dependent prefectures (Figure 30), and the tourism industry had more economic significance in Tianshui, Pingliang, and Jiuquan (Figure 31). On balance, Tianshui, Jiuquan, and Pingliang are the prefectures with both large market share and high economic significance for tourism, making them the most tourism-dependent prefecture economies. (*The Thirteenth Five-year Plan for Tourism Development in Gansu*)



Figure 29 The Location Quotients and Market Shares of China's 31 province-level jurisdictions in the Tourist Industry, 2010 and 2016 (Red Dot Represents Gansu) Source: *Gansu Development Yearbook, 2017*



Figure 30 Demosteic Tourism Revenues and Tourist Visits by Prefectures, 2016. Source: *Gansu Development Yearbook*, 2017



Cultural preservation sites include national cultural preservation units, provincial cultural preservation units, and world heritage. Tourism dependency is the contribution of tourism revenue to GDP. It can be seen from the figure above that areas with rich tourism resources such as cultural preservation units do not automatically bring local economic prosperity, as some areas with less developed economies have many cultural preservation units, such as Qingyang, Wuwei and Dingxi. Therefore, there are many cities whose tourism resources need to be further developed, thus driving local economic growth. In addition, when charting the tourism dependency against the urban-rural income gap of each city in Gansu Province, it is evident that the higher the tourism dependency of the economy, the smaller the urban-rural income gap is, implying a potential contribution of tourism for boosting rural employment.



Tourism dependency and Urban-rural income gap

Perfectures	Tourism dependency(%)	Urban-rural income gap
Zhangye	5.42	1.85
Jiayuguan	4.91	2.04
Jiuquan	4.85	2.06
Wuwei	4.14	2.41
Jinchang	3.83	2.61
Lanzhou	3.50	2.85
Linxia	3.17	3.15
Dingxi	3.02	3.31
Baiyin	3.01	3.32
Gannan	3.01	3.33
Pingliang	2.99	3.35
Qingyang	2.96	3.38
Tianshui	2.87	3.49
Longnan	2.86	3.50



Figure 31 The Location Quotients and Market Shares by Prefectures, 2010 (Left) and 2015 (Right)Source: *Gansu Development Yearbook*, 2016

Gansu's tourism industry has a strong impact on economic growth. A simple OLS regression between the tourism revenues and GDP for Gansu's prefectures between 2000 and 2013 show a strong relationship between the two, with an R² of 0.85 (Figure 32)(Notes: An R² closer to 1 indicates a better goodness of fit). Though the direction of the causation remains unclear through the pure quantitative analysis, qualitative analyses above hint that the tourism industry constitutes an important driver of Gansu's economy.



Figure 32 Gansu's Prefectural GDP and Tourism Revenues, 2000-2015. Source: *Gansu Development Yearbook*, 2016

Gansu has an ambitious plan to further strengthen its tourism industry. The province plans to make Dunhuang an internationally famous tourist city. It also plans to develop 20 major cultural tourism attractions, 20 key cultural tourism industry park, 20 key firms in cultural tourism, 30 historic towns, with 50 strategic cultural tourist development projects of RMB 1 billion investment or more. The aim is to upgrade the province's tourism industry to make it not only a big one, but also a strong one. Moreover, the province proposes to make specific encouraging policies and institutional reforms to deregulate the tourism market so as to attract private capitals. (*The Thirteenth Five-year Plan for Tourism Development in Gansu*)

However, there remain many shortcomings concerning Gansu's tourism development. The integration of Gansu's rich but scattered tourism attractions for development is far from adequate. Though tourist visits soar, per capita revenues from the visits has been dropping (Figure 33), probably because of the increasingly shortage of infrastructures in the tourism attractions. Moreover, disparity of tourism development between different prefectures remains high, and the potentials of tourism development have not been fully realized, especially in certain prefectures with rich tourism resources. Jiuquan, for example, with 4 world heritage sites and 23 national level, 60 province-level historic preservation units, tops the province in terms of richness of high-quality tourist attraction. Nevertheless, its tourist market share does not match such advantage in tourist resources. Similar problems apply also in Wuwei, Zhangye, and Qingyang (*The Thirteenth Five-Year Plan for Tourism Development in Gansu*). Lastly, high-quality, professional consulting service for tourist plans is in urgent need. There is a common lack of professional, comprehensive plans for tourist develop or historic preservation in tourist attractions with historic preservation units. Or, in the case of such plans do exist, plans for tourist development and those for historic preservation are usually found not compatible.



Figure 33 Per Capita Revenues from the Visits Source: Gansu Development Yearbook, 2017

3.2 Potentially Sensitive Issues Concerning the CHST Development: Environmental and Poverty Alleviation Challenges

The CHST development has both potentially positive and negative impacts on Gansu's socioecological system. Particularly, challenges on the environment and poverty alleviation are discussed below. On the one hand, by its relatively higher employment elasticity and lower skill requirements (as compared to the secondary sector), the CHST development may potentially benefit the poverty alleviation enterprise in Gansu. On the other hand, the environmental externalities of the CHST development must also be considered, especially for an ecologically vulnerable place like Gansu.

3.2.1 Environmental and Ecological Challenges

Gansu is an ecologically vulnerable place, and is also a key ecological buffer for China's southeastern hinterland. Located in a fringe position between China's three major natural geographical zones and with less than 400 millimeters of annual precipitation, Gansu in itself is a dry or semi-dry, barren land as compared to most other parts of the country, and regions such as upper Yellow River and upper Yangtze River basins, and the loess highland are especially ecologically vulnerable under development pressures. In 2015, China's per capita water resource was 2038 square meters, while Gansu only had 765 (Figure 34). Forest coverage was less than 12% in Gansu, less than half the national average, and 85.66% of the land area is in threaten of soil and water loss. Nevertheless, lying in the upper Yellow River basin and connecting China's densely populated southeastern provinces with its mostly deserted northwestern regions, Gansu performs as a major ecological buffer for China's hinterland, and has benefited from various central government transfers for the preservation of the buffer zone. (*The Thirteenth Five-year Plan for Environment Protection in Gansu*)



Figure 34 Gansu's Water Resources, as Compared to the National Average, 2005-2015. Source: *Gansu Development Yearbook*, 2016

Gansu is facing serious environmental pollution challenges, while investments in pollution treatment have been decreasing in recent years. In 2015, Gansu's waste water discharge was 670.7 million tons, a 10.1 million increase from the level of 2014. Industrial waste gas emission was 1329.3 billion m³, a 100.3 billion m³ increase from the level of 2014 after two years' decrease. None of the prefecture-level cities in Gansu has achieved the second-grade air quality. However, investment in pollution treatment had decreased from RMB 4.8 billion in 2012 to RMB 0.6 billion in 2015 (Figure 35). Also in 2015, Gansu's investment in forestry preservation was RMB 5.0 billion, lower than the national average and ranking 21 among the provinces (*Gansu Development Yearbook, 2016*).



Figure 35 Gansu's Major Pollutants, and Investment in Pollution Treatments, 2012-2015. Source: *Gansu Development Yearbook, 2016*

Gansu has made major action plans to preserve its ecological environment, though the source of fund needed for implementing the plans remains largely unclear, and substantial institutional reforms are needed to improve the now scattered administration of ecological preservation and effectively implementing the plans. Gansu has issued the plan to build four major ecological buffers: the west-Yellow-River region inland river basin ecological security buffer, the upper Yangtze River basin ecological security buffer, and the loess highlands ecological security buffer, as well as one major ecological preservation corridor along the Yellow River. The province also proposes to pursue integration of the projects to achieve a more comprehensive preservation goal by 2020. (*The Thirteenth Five-year Plan for National Economic and Social Development in Gansu*) Nevertheless, the source of funding for the projects remains largely unclear, as governmental transfers apparently cannot cover all the costs. Moreover, institutional reforms are also need to change the now scattered administration of ecological preservation. Currently, the environment protection, forestry, land resources, water resources, and construction branches of the government all assumes part of the

responsibilities in the administration of ecological preservation, creating confusion and sometime chaos in practice. An integration of not only the project, but also the government administrating institutions, is thus urgently called for.

3.2.2 Poverty Alleviation

Gansu has severe poverty problems, though efforts in poverty alleviation has been significant in recent years. In 2011, Gansu has 8.42 million poverty population, accounting for 40.5% of the population, ranking 2nd place across the country (only next to Tibet). Efforts in poverty alleviation since then have greatly changed the situation. In 2016, population in poverty was reduced to 2.26 million, accounting for 8.66% of the population. Though Gansu still ranks 3nd place in terms of prevalence of poverty across the country, its absolute poverty conditions have been improved.

Specific programs on poverty alleviation have been proposed and implemented, and tourism development play an important role in the programs. Gansu plans to reduce poverty at a rate of 1.4 million population each year through 2020. It has announced one general strategy and 17 specific programs on poverty alleviation, and has mobilized more than 400 government officials of all ranks to establish one-on-one connections with the villages in poverty. Specifically, it has designated 464 villages as experimental sites for national and provincial "Poverty Alleviation through Tourism" Programs, in which 100 were designated key samples (Table 9). Various programs, including rural built enviroment beatification, rural road building, shanty house reconstruction, gabage treatment, credit benefits of up to RMB 50 thousand per household, and capacity building and empowerment program, have been implenmented. It is expected that by 2020, 500 villages will be running the experimental "Poverty Alleviation through Tourism" program, benifiting 700 thousand population previously in poverty. (*The Thirteenth Five-year Plan for National Economic and Social Development in Gansu*)

Prefecture	National Project	Provincial Project
Lanzhou	1	2
Baiyin	1	2
Wuwei	1	3
Tianshui	2	7
Pingliang	1	6
Qingyang	2	9
Dingxi	4	8
Longnan	2	17

Table 9 Number of Proposed "Poverty Alleviation through Tourism" Programs in Gansu'sPrefectures

Linxia	3	8
Gannan	4	12
Total	21	74

Source: The Thirteenth Five-year Plan for National Economic and Social Development in Gansu

Table 10 List of National Rural Tourism Poverty Alleviation Key Villages

Province	Prefecture	County	Key Villages	Population Covered	Rank of Village Numbers
Guizhou	9	86	2422	1076563	1
Hunan	14	111	1978	537566	2
Hubei	14	84	1798	601866	3
Yunnan	16	112	1619	1125635	4
Sichuan	19	139	1443	278900	5
Gansu	13	75	1182	462317	6
Shaanxi	10	87	1178	360396	7
Henan	19	106	1065	467608	8
Tibet	7	74	1055	119800	9
Shandong	17	115	1051	133849	10
Hebei	9	58	793	287558	11
Shanxi	11	73	791	180424	12
Xinjiang	21	108	754	329969	13
Jiangxi	11	85	741	168335	14
Guangxi	14	102	688	325363	15
Chongqing	2	32	613	181047	16
Qinghai	8	41	594	118507	17
Liaoning	9	33	569	125482	18
Neimenggu	11	74	565	96201	19
Fujiang	8	62	472	37783	20
Heilongjiang	14	63	361	198043	21
Jilin	9	48	359	51338	22
Anhui	16	66	333	134907	23
Hainan	2	17	138	26242	24
Ningxia	3	8	89	51320	25
Total	286	1859	1859	7477019	

http://www.360doc.com/content/18/0316/18/53058791_737570301.shtml

Although, Gansu still faces great challenge in poverty alleviation, especially on capacity building. Despite the progress and proposals, lack of available funds for poverty alleviation is still prominent. Moreover, the favorable policies have revealed side effects in many locations where the practice of poverty alleviation relies solely on the offering of unconditional poverty alleviation compensation, and it sometimes nurtures a social atmosphere of taking the aid for granted. Thus, the practice creates negative motivation for people to actively pursue poverty alleviation for themselves. In extreme cases, people refuse to be removed from the poverty alleviation subjects list for not willing to lose the compensation. In contrast, capacity building for those in poverty is usually under-emphasized. In terms of poverty alleviation through tourism development, the gap between an obvious need for labor in the related industries and the lack of qualified laborers to meet the need is prominently observed in many cases. A transformation in the major means of poverty alleviation from "blood transfusion" to "blood creation", is thus called for.

4 Conclusions and SWOT Analyses

Gansu is among China's most under-developed provinces. Traditionally an agriculture-dominated economy, Gansu's natural geographic conditions are not ideal for grain production, and the existing agriculture regions are constantly under threat from desertification. Nevertheless, population density in Gansu's rural areas is comparable to China's other main agricultural regions with far more amiable environments. Poor natural conditions, overpopulation, and a landlocked location, these factors combined had shaped Gansu's consistent poverty over history.

The state-led industrialization in the 1950s marked a major shift in Gansu's economic structure. In a few decades' time, Gansu had built modern heavy industries including the steel, energy, chemical, and nuclear industries. Urbanization had emerged following the fast industrialization. By 1980s, Gansu had turned into a manufacturing-dominated economy. Nevertheless, the top-down nature of the industrialization had only affected a fraction of Gansu's population, and so did the urbanization. Level of urbanization remained low, and the rest of population, mainly still living on agriculture, had still been living on the subsistence level. Furthermore, in recent years, Gansu's manufacturing and mining industries found themselves threatened by the exhaustion of natural assets that they rely on. A growing public awareness of environment protection and stricter regulations on industrial pollutions have also constituted a major challenge for Gansu's high-energy consumption, high-environment impact industries. Since 2010, the manufacturing sector has not only retired as the leading sector, but also shrank in absolute terms, leaving a major challenge to the province in finding the next driver for economic growth and poverty alleviation.

The marketization of the economy since the Reform and Open-up in late 1970s at least reached Gansu in the 1990s, and the service sector found a historical chance to flourish. Tourism was among the sectors that have benefited the most in this transformation. Having an 8000-year history of human settlement and assuming a nexus location connecting China's southwest hinterland to the Central Asia, India, and the West, Gansu in history had been a key section of the ancient Silk Road, and was also a hot spot for communication between different cultures. Rich cultural heritage have been inherited until today, and these become precious assets for the development of the tourism industry. Moreover, the tourism industry has a high employment multiplier and a relatively low skill threshold, making it an ideal choice of development for the purpose of poverty alleviation.

Nevertheless, Gansu's development of cultural tourism still faces many challenges. A sensitive ecological environment and the non-renewability of the cultural heritage combined constitute strict constraints on the scale of tourism development. Although investment on key infrastructures and

introduction of advanced management institutions may help the province address the problems, it lacks the financial resources to implement the investment, either in public or private terms. It also lacks the professional consultation required to designate comprehensive development and protection plans of its culture heritage, business and physical construction plans for tourism development, and media campaigns to promote the public awareness of Gansu's rich tourism resources, etc. Last but equally importantly, Gansu's labor force's, especially its rural laborers' generally low human capital capacity has constituted another main obstacle for the tourism industry to achieve more added value through improvement of its service.

In sum, both financial inputs and capacity building are needed for the further development of Gansu's cultural and heritage sustainable tourism such that the aim of poverty alleviation as well as cultural heritage preservation are achieved simultaneously. Additionally, reforms regarding the administrating of tourism development and environment protection are also necessary, in order to clear the institutional obstacles in these fields, to simply the administrating process, and to reduce financial and social costs of administration. Suggestions on specific measures that may worthy taking include the creation of a standing expert-led task force for the professional consultation on heritage preservation, physical construction of the tourism sites, and business plans and media promotion of tourism development projects, the integration of the various government functions on environment protection and ecological preservation into one government entity, creation of a more flexible small-amount financing vehicle for the rural residents, etc.

Lastly, regarding the financing priority between the six prefectures (and seven cities), combining a "need-based" and a "merit-based" criteria, this report suggests the following ranking: Tianshui, Wuwei, Dingxi, Zhangye, Jiuquan, and Jiayuguan. On the one hand, from a "need-based" perspective, Tianshui has 6 designated poverty-stricken counties out of a total number of 43 in Gansu, and Wuwei has 2, and Dingxi has 7. Zhangye, Jiuquan, and Jiayuguan do not have any poverty-stricken counties. Specifically, though most of the prefectures suffer from a vulnerable nature ecosystem, Dingxi has the most severe problem of overpopulation. On the other hand, from a "merit-based" perspective, Jiuquan and Tianshui both have a rich asset of cultural heritage that has a great potential for tourism development. Wuwei and Zhangye follows in this aspect, and Jiayuguan and Dingxi have the lowest potential on this aspect. On balance, Tianshui and Wuwei should have the first priorities for financing support for a combination of great potentials and urgent need, and Dingxi and Zhangye follow. Jiuquan, though has the best cultural heritage assets, has relatively plenty financial resources such that it relies less on outside support. Jiayuguan is placed the last place for similar reasons. A complete collection of profiles for each of the prefectures is provided in the Annex.

4.1 SWOT Analysis for Gansu Province

	Gansu Province	
	Strength	Weakness
Context	High economic growth, especially in	Economy is weak;
- Introduction	the tertiary sector;	
- Economic growth		Institutional barriers are yet to be get
- Drivers of growth		rid of;

- Govt. strategies	National and provincial development initiatives offer challenges for	
	economic development;	
Place (natural capital) - Location - Natural Assets	Nexus location between China's southeast hinterland and the west; Diverse natural geographical settings and landscape;	Dry and semi-dry climate, barren lands;
People (human capital) - Demographics - Education - Labor & employment - Living standards and Healthcare	Relatively low population burden (small population);	Aging population, slow growth; Massive out-migration; Relatively lowly educated; Low living standards; Limited access to high-quality health care;
Infrastructure (physical capital) - Regional Transport and Logistics - Rural infrastructure	Key transportation location;	Underinvestment in all kinds of infrastructures, especially rural infrastructure;
Economic Development - Overall - Agriculture sector - Industry sector - Service sector - Emerging industries - Entrepreneurship	High economic growth, especially in the tertiary sector; Fast development of new and strategic industries;	Economy is weak; Natural assets are not suitable for agriculture; Secondary sector is shrinking; Entrepreneurship is low; commercial environment is far from encouraging;
Urbanization	Land for urban development is adequate;	Low urbanization level, and slow growth; Low quality of urbanization;
Institutions - Institutional structure - Institutional capacity - Reforms - Fiscal performance	National and provincial development initiatives offer challenges for economic development;	Institutional barriers are yet to be get rid of; Imbalanced financial performance;
Heritage and Cultural Resources	Rich cultural heritage assets;	Underinvestment in tourism infrastructure;

 Heritage Assets Tourism Development 	Fast growing tourism industry;	Marginally decreasing tourism revenues;
		Regional disparity of tourism development;
Environmental Challenges	A major ecological buffer for China's	Serious environmental pollution
- Pollution	hinterland;	challenges;
- Ecological degradation		
	Central government transfers for the	underinvestment in pollution
	preservation of the buffer zone;	treatment;
Poverty Alleviation	Poverty alleviation achievements in	Poverty is prevailing;
	recent years are significant;	
	Opportunities for "Poverty	
	Alleviation through Tourism";	

4.2 SWOT Analysis for the Six Prefectures

	6 Prefectures											
	Tianshui		Wuwei		Zhangye		Jiuquan		Dingxi		Jiayugua	n
	S	W	S	W	S	W	S	W	S	W	S	W
Context - Introduction - Economic growth - Drivers of growth - Govt. strategies	GDP ranked 4/14;	Per capita GDP ranked 9/14; GDP growth is slow;	GDP growth ranked 3/14; 0.4 percenta ge points higher than average;	Per capita GDP ranked 8/14;		GDP growth ranked 12/14; 1.9 percentag e points lower than average;	GDP ranked 3/14; Per capita GDP above average;	GDP growth ranked 9/14; 1.1 percenta ge points lower than average;		GDP ranked 9/14; Per capita GDP ranked 11/14;	Per capita GDP ranked 1/14; 2.86 times the average;	GDP ranked 14/14;
Place (natural capital) - Location - Natural Assets	Adjacent to Shaanxi; Part of Guanzhon g- Tianshui Inter- provincial economic region	Hilly terrains;	Gateway of the Hexi Corridor; Plain terrains;	Lack of water resource;	Major part of the Hexi corridor;		Largest prefectur e in Gansu;	Dry, desert terrains;	Gateway to Lanzhou; Rich hydropow er endowme nts;		Gateway to Xinjiang;	Very small jurisdictio n;
People (human capital) - Demographic s - Education	Populatio n ranked 2/14;	Aged populatio n; work- age populatio n share ranked 14/14;	Work- age populati on share ranked 5/14;		Work- age populati on share ranked 4/14;	Small populatio n (ranked 9/14);	Work-age populatio n share ranked 3/14;	Small populati on (ranked 10/14);	Population ranked 3/14;		Work- age populati on share ranked 1/14;	Small populatio n (ranked 12/14);
 Labor & employment Living standards and Healthcare 	Number of school enrolmen ts ranked 2/14;	Share of college graduates in labor force less			Number of college students ranked 2/14;					Share of college graduates in labor force	Share of college graduate s in labor force	

		than average;								ranked 11/14;	ranked 3/14;	
		Income level below average; Per capita health care resource below average by 20%;	Rural per capita income higher than average;	Urban per capita income lower than average; Per capita health care resource below average;	Rural per capita income higher than average by 65%; Per capita health care resource above average;	Urban per capita income lower than average by 16%; ranked 10/14;	Both urban and rural per capita incomes higher than average;	Per capita health care resource below average;		Both urban and rural per capita incomes lower than average; both ranked 11/14; Per capita health care resource below average;	Both urban and rural per capita incomes much higher than average; both ranked 1/14; Per capita health care resource ranked 1/14;	
Infrastructure (physical capital) - Regional Transport and Logistics - Rural infrastructure	High- grade roads accountin g for 92% of all roads;		Highway mileage ranked 6/14;	No high- speed railway accessibili ty;			Highway mileage ranked 1/14;				High- grade roads accounti ng for 95% of all roads;	
Economic Development - Overall - Agriculture sector		Relatively weak service sector contributi on to		Weak industry and service sectors;		Weak industry sector;		Heavily reliant on industry sector;	Industry and service sectors combined contribute	Agricultur e shrinks;	Service sector contribut es more than 200% of	Industry sector shrinks significan tly;

 Industry sector Service sector Emerging industries Entrepreneur ship 		economic growth (66.09%)						more than 100% of economic growth;		the economy growth;	
Urbanization		Urbanizati on level 33.9%, ranked 9/14, 7.77 percentag e points lower than average;		Urbanizati on level 34.01%, ranked 8/14, 7.67 percentag e points lower than average;		Urbanizati on level 40.33%, ranked 6/14, 1.35 percentag e points lower than average;	Urbanizati on level 55.23%, ranked 4/14, 13.55 percentag e points higher than average;		Urbanizati on level 28.77%, ranked 11/14, 12.91 percentag e points lower than average;	Almost a standalo ne city jurisdicti on with very few affiliated rural areas.	
Institutions - Institutional structure - Institutional capacity - Reforms - Fiscal performance		Per capita fiscal revenues ranked 10/14;		Per capita fiscal revenues ranked 8/14;	Per capita fiscal revenues ranked 6/14;		Per capita fiscal revenues ranked 4/14, 11.62% higher than average;		Per capita fiscal revenues ranked 12/14, 70% lower than average;	Per capita fiscal revenues ranked 1/14, 150% higher than average;	
Heritage and Cultural Resources - Heritage Assets	One of the four ancient prefectur es west of the		One of the four ancient prefectur es west of the		One of the four ancient prefectur es west of the		One of the four ancient prefectur es west of the			The far west end of the Great Wall;	

- Tourism Development	Yellow River; Rich prehistori cal relics;	Yellow River;		Yellow River; National historic city;		Yellow River; 4 world cultural heritage sites;				
Environmenta I Challenges - Pollution - Ecological degradation	Relatively good air quality;		Ecological ly sensitive;	Relativel y good air quality;	Ecological ly sensitive;		Bad air quality; Desert terrains;	Relatively good air quality;		Bad air quality;
Poverty Alleviation			Prevalenc e of rural poverty;		Prevalenc e of rural poverty;				Prevalenc e of rural poverty;	

Annex

	5A		4A	4		3A		2A		1A	
	Natur	Cultur	Tot								
	al	al	al								
Lanzho			4	2	6	1	8	3			23
u											
Jiayugu		1	4			1	16			1	22
an											
Tianshu	1		5	2	2	1	11	10			32
i											
Baiyin			1	1	1	1					4
Wuwei			5	1	3	1	4	4			18
Jinchan			2	1	2		1				6
g											
Zhangy			9	6	3	4	2	2			26
е											
Jiuquan	1		5	3	7	5	2	2		1	25
Pinglian	1		5	1	6	1	1				14
g											
Qingya				3	2	2	5	1			13
ng											
Dingxi			2		4		5	3			14
Linxia			4		4	1	3				12
Gannan			5	1	4	1	5	2			18
Longna			5	4	3	1	2	1			16
n											

1. Tourist Attractions by Grades and Types (Natural/Cultural), Gansu's Prefectures, 2015.

Source: World bank staff based on http://www.gsta.gov.cn/jx/lyqyml/18343.htm.

2. Calculation of the Location Quotient

Location quotient is a measure of relative advantage in a certain field (e.g. economic sector or industry) among different regions. The formula of calculating the location quotient is:

$$\mathbf{Q}_{ij} = \frac{d_{ij} / \sum_{i=0}^{n} d_{ij}}{D_i / \sum_{i=0}^{n} D_i}$$

Where *j* denotes a specific region, and in this case, it represents Gansu amongst China's 31 province-level jurisdictions. *i* denotes a specific industry, and in this case, it represents the tourism industry amongst all industries. Thus, d_{ij} denotes Gansu's revenues from the tourism industry, and D_i denotes the country's total revenues from the tourism industry. $\sum_{i=0}^{n} d_{ij}$ denotes the total revenues of all industries in Gansu province, and $\sum_{i=0}^{n} D_i$ denotes the total revenues of all industries in China.

The location quotient of a place (Gansu in this case) in a specific industry (tourism in this case), denoting Q_{ij} , reflects the place's relative advantage in that industry. The larger the Q is, the larger the relative advantage the place has in the specific industry as compared to its counterparts across the country. A Q larger than 1 indicates that the development level of the specific industry in the specific place is above the national average.

3. City Profiles

Tianshui

Tianshui is located in the southeast corner of Gansu, and is consist of 5 counties and 2 districts. It covers a hilly, southeastward inclined land area of 14325 square kilometers. In 2015, it had 3.323 million permanent residents, of which 35.3% were urban residents, 7.6 percentage points lower than the provincial average. Ethnic Han constitute the vast majority of all ethnic groups, and Ethnic Hui concentrate in their autonomous county. Per capita GDP was RMB 16956; per capita dispensable income for urban residents was RMB 20829, and 6007 for rural residents. The prefecture is rich in prehistoric culture heritage sites, and one of the earliest relics of human settlements in China dating back 8000 years is found in Tianshui.



Location of Tianshui

Strengths: advantageous economic geographical location; mild climate; suitable natural conditions for agriculture; rich cultural heritage; rich tourist resources.

1. Location. Tianshui is located in the southeast gateway of Gansu, and is a land transportation hub connecting Gansu with the nearby Shaanxi and Sichuan provinces, and also the rest of China's southeast hinterland. Besides the existing railroads and highways, a new high-speed railway is planned to be operational later 2017, which will reduce the travel time from Tianshui to Lanzhou from 5 hours to 1.5 hours, further strengthening Tianshui's locational advantage.

2. Climate. Tianshui has a mild, semi-humid climate, with four distinct seasons. The average temperature is 11.5 °C. Compared to other prefectures in Gansu, the climate is most suitable for agriculture development.

3. Agriculture. The production of non-grain products, including fruits, vegetables, and meat has been emerging in recent years. The growth rate of the agriculture sector in Tianshui is 2.5 percentage points higher than the provincial average.

4. Cultural heritage and tourist resources. Tianshui has 1 world heritage site, 17 national historic preservation units, and 54 provincial historic preservation units. It also has 169 key national, provincial, and prefectural cultural heritage units. The most famous ones among them include the Maiji Mountain Caves, the Dadiwan prehistoric relics, and the Fuxi temple. Legends go that Fuxi and Nuewa, the legendary ancestors of the Chinese race, were both born in Tianshui. All the cultural heritage resources in Tianshui constitute potential valuable assets for tourist development.

Weaknesses: Weak economy; underdevelopment of the tourist industry; vulnerable environment.

1. Economy. Tianshui has a relatively weak economy, especially in the manufacturing and service sectors. The per capita GVAs of the manufacturing and service sectors are 53.8% and 36.3% lower than the provincial average, respectively. Its average salary level is 16% lower than the provincial average, and per capita financial revenues rank 10/14 among all prefectures in Gansu.

2. Tourist industry. The rich cultural tourist resources in Tianshui are mostly underdeveloped or undeveloped. A tourist market with acceptable supporting services does not exist, nor do tourist firms of reasonable scales. Promotion or advertising of the local tourist attractions are weak, and an interior tourist and recreational market is also underdeveloped.

3. Environment. Tianshui is located in the upmost basins of both Yellow and Yangtze rivers, making it a significant water-resource preservation region and is thus very sensitive to potential environment impacts of economic development. It is also historically a high risk region for earthquakes and flood.

Opportunities and Threats

The thirteenth five-year plan of Tianshui proposes to further develop the tourist industry by exploiting the prefecture's rich cultural heritage resources, especially those related to the origin of the Chinese civilization. Nevertheless, other industries face the competition from the nearby larger cities, including Lanzhou and Xian. To preserve the non-renewable cultural heritage resources in exploiting their tourist values is also a major challenge.

Wuwei

Wuwei is located in the central-north of Gansu, and is consist of 3 counties and 1 district. It covers a mostly plain land area of 33238 square kilometers. In 2015, it had 1.816 million permanent residents, of which 35.9% were urban residents, 7 percentage points lower than the provincial average. Ethnic Han constitute the vast majority of all ethnic groups, and Ethnic Tibetan concentrate in their autonomous county. Per capita GDP was RMB 22948; per capita dispensable income for urban residents was RMB 21702, and 9101 for rural residents.



Location of Wuwei

Strengths: suitable natural conditions for agriculture; rich cultural heritage and tourist resources; favorable national and provincial development policies.

1. Agriculture and the related industries. Wuwei has a continental climate suitable for agriculture, and it has been a base for the production of grains, oil, fruits, and vegetables of provincial and even national importance. Related industries, including food processing and service industries, have benefited from the development of agriculture. The per capita GVA of agriculture in Wuwei is 56.3% higher than the provincial average, and is fast growing.

2. Cultural heritage and tourist resources. Wuwei has 13 national historic preservation units and 59 provincial historic preservation units. It has 18 grade-A tourist attractions, in which 6 are of 4A grade.

3. Policies. In 2014, Wuwei was designated one of the two tariff-free zones in Gansu (the other one being the Lanzhou New District), and has since benefited from favorable taxing and trade policies.

Weaknesses: weak human capital reserve; underdeveloped manufacturing and service sectors; lack of access to the high-speed rail.

1. Human capital. Accessibility to educational and health care resources in Wuwei is below the provincial average. Higher education and vocational education are both weak.

2. Manufacturing and service sectors. Wuwei lacks mineral resources, and does not assume a locational advantage in economic geographical terms, both hindering the development of the manufacturing sector. Poor human capital reserve also hinders the development of the service sector. The per capita GVAs of the two sectors were 23.8% and 32% lower than the provincial average, respectively in 2015.

3. High-speed rail. Wuwei does not have access to the Lanzhou-Xinjiang High-speed Rail. This is a major obstacle for economic development, especially for the tourist industry which relies on fast and convenient transportation of tourist passengers.

Opportunities and Threats

Being the original discovery place of the "horse over the swallow" artifact, which later became the logo for China's tourism, Wuwei has a unique advantage to promote its rich cultural and tourist development. Nevertheless, both the "hardware" (physical infrastructure) and the "software" (social infrastructure, human capital) of tourist development in Wuwei are weak, placing Wuwei in a disadvantageous position facing the competition of nearby cities.

Zhangye

Zhangye is located in the northwestern part of Gansu, and is consist of 5 counties and 1 district. It covers a mostly plain land area of 40874 square kilometers. In 2015, it had 1.22 million permanent residents, of which 42.19% were urban residents, slightly lower than the provincial average. Ethnic Han constitute the vast majority of all ethnic groups, and Ethnic Yugu concentrate in their autonomous county. Per capita GDP was RMB 30704; per capita dispensable income for urban residents was RMB 19673, and 10823 for rural residents.



Location of Zhangye

Strengths: adequate labor and high-quality human capital; well-developed agriculture; rich cultural heritage and tourist resources.

1. Labor and human capital. Zhangye has a relatively young labor force, and its share of college students in population is only second to Lanzhou in Gansu Province.

2. Agriculture. Zhangye, similar to Wuwei, is historically a major location for agriculture development in Gansu. It has been a base for the production of grains, beans, oil, fruits, and vegetables. The per capita GVA of agriculture in Wuwei is 33% higher than the provincial average.

3. Cultural heritage and tourist resources. Zhangye is a national historic city. It has 15 national historic preservation units and 45 provincial historic preservation units. It was chosen as an experimental city for the second phase of national "all-territory city tourism" program.

Weaknesses: low local labor income; underdeveloped tourism market.

1. Income. The per capita dispensable income of urban residents in Zhangye is 16% lower than the provincial average, and the average salary level is 18% lower. A relatively low GDP growth has worsened the problem.

2. Tourism market. The scale of the current tourism development is still very limited as compared to Zhangye's potentials. Professional service to the tourist industry hardly exists. Diversity of tourist products is also very limited.

Opportunities and Threats

Zhangye's thirteenth five-year plan proposes to upgrade its tourism industry by further integration of related industries. It also proposes to promote recreational tourism and winter tourism. Nevertheless, environment once again constitutes a main constraint. Most of Zhangye is a semi-dry region, where the protection of surface vegetation may potentially be influenced by a large-scale winter tourism development.

Jiuquan

Jiuquan is located in the northwestern corner of Gansu, and is consist of 5 counties, 2 county-level cities, and 1 district. It covers a mostly plain, desert land area of 192 thousand square kilometers, and is the largest prefecture in Gansu, occupying 42% of all its land area. In 2015, it had 1.115 million permanent residents, of which 56.87% were urban residents, 13 percentage points higher than the provincial average. Ethnic Han constitute the vast majority of all ethnic groups. Per capita GDP was RMB 48918; per capita dispensable income for urban residents was RMB 27793, and 13603 for rural residents. The two county-level cities, namely Dunhuang and Yumen, are both included in this project.



Location of Dunhuang and Yumen

Strengths: advantageous economic geography location; rich natural assets and cultural tourism resources; strong economy with all three major sectors well developed.

1. Location. Jiuquan is the far point of China's ethnic Han majority region, and connects the Hexi Corridor to ethnic minority regions such as Xinjiang, Qinghai, and Inner Mongolia.

2. Natural assets and cultural tourism resources. Jiuquan is rich in mineral reserves, and is a major industry center for oil refinery. It also hosts China's first wind-electricity generating base with a capacity of 10 million kilowatts or above. Also, Jiuquan possesses world-class culture heritage and tourism resources. It has 4 world heritage sites, 23 national historic preservation units, and 60 provincial historic preservation units. Richness of the cultural resources tops the province, and is also among the top ones across the country.

3. Economy. Jiuquan's economy is among the strongest across Gansu's prefectures. Its per capita GVA in agriculture is 22.57 times the provincial average; per capita GVA in manufacturing is 138.1% higher than the provincial average; and per capita GVA in service is 89.8% higher than the

provincial average. Key industries, for example the aerospace industry, the new energy industry, and the nuclear industry assume a nationally important position.

Weaknesses: Harsh climate; vulnerable and polluted environment.

Most of Jiuquan's land territory is inhabitable sand desert, with little precipitation and wild wind all year round. The limited space with high density settlements, though, is threatened by a seemingly drying environment and air pollution generated by the manufacturing industry.

Opportunities and Threats

Overall, Jiuquan has a good economic base, and very good assets for tourism development. Nevertheless, its vulnerable environment requires such development be carried out in a careful and sustainable way.

Dingxi

Dingxi is located in the central Gansu, and is consist of 6 counties and 1 district. It covers a hilly land area of 20330 square kilometers, only 98 kilometers to the east of Lanzhou, the provincial capital. In 2015, it had 2.778 million permanent residents, of which 30.4% were urban residents, 12.8 percentage points lower than the provincial average. Ethnic Han constitute the vast majority of all ethnic groups. Per capita GDP was RMB 10999; per capita dispensable income for urban residents was RMB 19167, and 5823 for rural residents.



Location of Dingxi

Strengths: fast growing economy.

Dingxi has an economy that is among the fastest growing ones across the province, especially in the manufacturing and service sectors. Its growth rate of manufacturing ranks No. 1 among the prefectures, 2.94 percentage points higher than the provincial average, and that of service No. 2, 0.34 percentage point higher than average.

Weaknesses: weak economy; limited natural and cultural assets; weak human capital reserve.

1. Economy. Though fast growing, Dingxi's economy is weak in absolute terms. Its per capita GVA in agriculture is 19.6% lower than the provincial average, per capita GVA in manufacturing is 82.3% lower than the provincial average, and per capita GVA in service is 55% lower than the provincial average. Per capita GDP ranks 11/14 among the prefectures. It also has an urbanization level that is among the lowest across the province.

2. Natural and cultural assets. Per capita resource of water, land, and mineral resources in Dingxi, as well as it forests coverage, are all far below the provincial average. Dingxi's culture heritage resource is also relatively limited in both quantity and quality. It has only 7 national historic preservation units and 53 provincial historic preservation units.

3. Human capital. Despite a large population, Dingxi has a labor force of college education or above ranking only 11/14 among Gansu's prefectures.

Opportunities and Threats

A highly under-developed economy and very tight natural and cultural assets constraints combined make poverty alleviation a serious challenge for Dingxi. Its insufficient high-quality human capital reserve constitutes another challenge. Being adjacent to the provincial capital city may have worsened the problem as Lanzhou is an obvious more attractive and convenient place to work for laborers with higher human capital. Nevertheless, the proximity to Lanzhou may also turn out to be Dingxi's advantage, if it manages to divert part of the passenger flow from the main transportation hub of Gansu to its own territory and accommodate them with its own tourism industry.

Jiayuguan

Jiayuguan is located in northwestern Gansu. It is the smallest prefecture-level jurisdiction in Gansu, and is consist of only 3 districts, covering a land area of 2935 square kilometers. It is a relatively new industrial city, created in 1958 along with the establishment of Jiuquan Steel Company, one of the 152 key industrial development projects for China's first five-year plan. It is also the prefecture with the smallest population in Gansu. In 2015, it had 245.9 thousand permanent residents, of which 93.42% were urban residents. Ethnic Han constitute the vast majority of all ethnic groups. Despite the small size, Jiayuguan is the richest local jurisdiction in Gansu. Per capita GDP was RMB 78336; per capita dispensable income for urban residents was RMB 30714, and 15371 for rural residents.



Location of Jiayuguan

Strengths: very strong economy; rich industrial heritage assets; high-quality human capital reserve.

1. Economy. Jiayuguan has the strongest economy in Gansu's prefectures. Its per capita GDP, per capita financial revenues, per capita dispensable income of urban residents, and per capita GVA in manufacturing all rank No. 1 among the prefectures, and per capita GVA in service ranks No. 2. It is the largest steel production base in northwestern China.

2. Industrial heritage. Being one of China's first industrial cities, the city is rich in industrial heritage assets, many of which have potential tourist values.

3. Human capital. Jiayuguan has a young labor force, and also a well-educated one. It ranks the 3rd place in both graduate and enrolled college students among Gansu' prefectures.

Weaknesses: high dependence on the steel industry; remote location; low public awareness of tourism.

1. Industrial structure. Despite a highly-developed economy, the economy relies heavily on the city's steel industry, which is shrinking rapidly as the local mineral assets for the steel industry approaching exhaustion. Alternative industries, as the current situation goes, are insufficient to fill the gap.

2. Location. Jiayuguan is more than 700 kilometers away from Lanzhou, and lacks direct transportation connections to out of the province.

3. Public awareness. Although rich in industrial heritage assets, the public awareness of its tourist value remains low out of the province.

Opportunities and Threats

Facing a major economic structure change in the near future, Jiayuguan finds itself in fierce competition with other prefectures in attracting tourists. Opportunities lie on a further promotion of its industrial heritage tourism, and improvement of direct transportation conditions with the outer world.

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