

## CURRENT STATE OF OFF-FARM EMPLOYMENT

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### Nature of Off-farm Employment

The pattern of off-farm employment (OFE) is different because of different conditions and because of the different strategies of farmers. Some farmers carry out off-farm activities permanently; others do so only seasonally. Some farmers find off-farm jobs outside local areas, others hold them within local areas. We can thus group off-farm employment into four patterns. The first pattern is with respect to OFE within local areas seasonally. These labourers often carry out farm activities concurrently. The second one relates to permanent OFE within local areas. Most of the labourers who work in rural enterprises belong to this pattern. The third one is seasonal OFE outside local areas. This kind of labourer also does farm work concurrently. Often they carry out off-farm activities in cities or towns during slack seasons, and come back to do farm work during peak seasons. The last pattern concerns permanent OFE outside local areas. These labourers often transfer their contracted land to other farmers and find a permanent off-farm job outside the local areas.

The first pattern of OFE is predominant in the Hengdun Mountain Region of Sichuan Province. Most of the off-farm labour force still devote part of their time to traditional agriculture. It is estimated that more than 70 per cent of the off-farm labourers in the Hengdun Mountain Area hold down farm jobs concurrently. Labourers who work in individually-run enterprises form the largest proportion of this category.

### Main Features of Off-farm Employment

- (1) Off-farm employment has made considerable progress during the past decade. Off-farm employment means employment in township enterprises which includes industry, transportation, construction, and tertiary sectors (including trade, catering, and services). With the introduction and spread of the Household Contract Responsibility System and a series of other policies favourable to off-farm employment, the non-farm sectors have made great achievements, particularly since 1978. The labour force employed in non-farm occupations reached \$ 461.7 million, nearly eight times as much as in 1980. More details are shown in Table 3.1.

With the increase in employment, the productivity level (output value per labourer), in both individually-run and collectively-run (including township-run and village-run) enterprises, has also been increasing (Table 3.2). The reasons for the concurrent increase of both employment level and productivity levels are as follows. First, off-farm employment in the Hengdun Mountains of Sichuan Province is still in the initial stages. Both the policy environment and

**Table 3.1: Employment and Output Value of Off-farm Sectors in West Sichuan**

	1980	1985	1988
Number of off-farm labourers (million)	0.063	0.180	0.258
Proportion of total rural labourers (%)	3.2	7.9	10.6
Output value of off-farm sector (\$ million)	59.52	33.0	461.7
Proportion of total rural output (%)	7.9	18.8	29.4

Source: Statistics on Township Enterprises of Sichuan Province, 1989.

- Note:
- (a) All the figures of output value used in Chapter 3 are calculated at fixed prices using the 1980 values. The conversion rate between the U.S. dollar and RMB yuan in 1980 was 1.53.
  - (b) The off-farm sector didn't include enterprises under the village level category in 1980.
  - (c) Output value does not include the public sector.
  - (d) The number of off-farm labourers in this table includes those engaged in the public sector. If the public sector is excluded, the figures are 0.051, 0.161, and 0.224 in 1980, 1985, and 1988 respectively. Since the figures for the public output value are not available, the figure for non-farm labourers used in the following analysis does not contain the public sector either.
  - (e) Rural labourers can be divided into four groups by major occupations, namely, (i) permanent farm-workers; (ii) permanent off-farm workers but still engaged in farm activities (iii) labourers who take off-farm as their principal occupation and concurrently engage in farm activities; (iv) labourers who take farming as their main occupation and concurrently engage in off-farm activities. In Table 2.12, the off-farm labourers only include (ii) and (iii), while in this table, (iv) is also included. So the figure in this table is higher than that in Table 2.12. This is also true for Table 3.9.

internal conditions for off-farm activities have been increasingly favourable. On the one hand, a series of favourable terms for loans and taxation have been provided. This has brought about a large profit margin in off-farm activities. On the other hand, the labourers engaged in off-farm activities have become increasingly more skilled and experienced through practice and study, both at the technical and management levels.

Second, the economic management system of off-farm employment has been instrumental in increasing productivity. Township enterprises are based on the market economy, while State-owned ones are based on the planned economy. This means that most of the off-farm enterprises must assume sole responsibility for the profits or losses, and enterprises have to compete with each other for existence and development. This has led to an increase in productivity for the entire off-farm sector.

**Table 3.2: Off-farm Employment, Output Value, and Productivity at Different Levels of Ownership**

Ownership level	Items	1985	1986	1987	1988
Village level and above	No. of Labourers ('000)	77.0	78.1	80.8	79.9
	Output value (\$ million)	145.4	172.0	193.4	245.2
	Output value/labourer (\$ '000)	1.89	2.20	2.39	3.07
Below village level	No. of Labourers ('000)	83.5	114.3	129.3	144.5
	Output value (\$ million)	87.6	143.5	181.9	216.5
	Output value/labourer (\$ '000)	1.05	1.25	1.41	1.50

Source: Statistics of Township Enterprises of Sichuan Province, 1989.

- (2) The off-farm employment level is still low. Although off-farm employment in the Hengduan Mountains has been developing at a rapid rate during past years, it still remains at a low level. Furthermore, both the level of employment and income are much lower than the national and provincial average. Also, productivity is very low when compared with Sichuan and China. The 1988 output value per labourer in this region is only 0.63 times and 0.59 times that of the provincial and national average (Table 3.3).
- (3) Individually-run enterprises (namely, the enterprises below village level, including enterprises run by households and household teams) are very prominent off-farm activities. In 1988, 64.4 per cent of the off-farm labour force were employed in individually-run enterprises, an increase of 12.4 per cent over 1985. In fact, individually-run enterprises have made a much greater contribution to the growth of the entire off-farm sector than enterprises at village level and above. The growth rate in employment from 1985 to 1988 in individually-run enterprises was 73 per cent whereas, in enterprises at village level and above, the corresponding rate was only 3.8 per cent. Similarly, the corresponding growth rates in output value are 147 per cent vs 69 per cent. More details are shown in Table 3.4.

**Table 3.3: Comparison of Averages of Off-farm Employment, Output Value, and Productivity in Sichuan and China (1988)**

	Hengduan Mt.	Sichuan	China
Proportion of rural off-farm labourers (%)	10.6	19.4	29.3
Proportion of rural off-farm output value (%)	29.4	53.7	58.1
Output value per labourer ('000 \$)	2.06	3.27	3.52

Source: Statistics of Township Enterprises of Sichuan, Province, 1989.

**Table 3.4: The Structure of Employment and Output Value in the Off-farm Sector at Different Levels of Ownership**

Ownership levels		Units	1985	1986	1987	1988
No. of Labourers	Village level and above	'000	77.0	78.2	81.2	79.9
		%	48.0	40.6	38.5	35.6
	Below village level	'000	83.5	114.3	129.3	144.5
		%	52.0	59.4	61.5	64.4
	Total	'000	160.5	192.5	210.5	224.4
		%	100.0	100.0	100.0	100.0
Output value	Village level and above	\$ million	145.4	172.0	193.5	245.2
		%	62.4	54.5	53.5	53.1
	Below village level	\$ million	87.6	143.5	181.9	216.5
		%	37.6	45.5	46.5	46.9
	Total	\$ million	233.0	315.5	375.4	461.7
		%	100.0	100.0	100.0	100.0

Source: Statistics of Township Enterprises of Sichuan Province, 1989.

What needs to be further noted is the productivity level of off-farm activities at each level. As shown in Table 3.2, the productivity of below-village level enterprises has been lower than that of enterprises at village level and above. This is true in all the sectors, although the proportions are different (see Table 3.5). In spite of this, the below-village enterprises have been growing rapidly. It seems that the scale of employment in off-farm activities has been increasing without giving due consideration to productivity. However, the indicator (output value per labourer) does not reflect the situations under which different activities operate. In the Hengduan Mountains of Sichuan Province, most of the labourers engaged in individually-run enterprises are still involved in farm and other activities, while those in township and village enterprises have just a single job. The average time per labourer spent on the same activity is lower in individually-run enterprises than in village and township enterprises. Also the higher technology and management levels in bigger enterprises lead to higher productivity levels. Still the difference in work time is a more important factor in this region. Unfortunately, we are not able to analyse this further because of the lack of data.

**Table 3.5: Productivity of Different Off-Farm Sectors (1988)**

(Unit : \$ '000/labourer)

Items	Village level and above	Below village level
Industry	2.90	1.05
Transportation	4.79	2.97
Construction	4.00	1.47
Tertiary Sector	2.88	1.31

- (4) Rural industry is the main employment-generating sector. As shown in Table 3.6, rural industry has formed the most important source of employment and income in the Hengduan Mountains during past years. However, construction, transportation, service, and other tertiary sectors have shown greater potential for expansion. From 1980 to 1988, the proportion of the industrial sector has been steadily declining, while others are increasing in terms of both employment and income. However, the actual number of employed people and the output value in rural industry have been increasing. In 1988, the industrial sector still generated 58.9 per cent of the total employment and 55.4 per cent of the total output value, much higher than any other off-farm sector.

However, the productivity level of industry is not the highest in this region. As shown in Table 3.7, the transportation and the construction sector enjoy the highest and the second highest status in terms of output value per labourer, while industry comes as poor third. Over the past eight years, as already noted above, the productivity level in all the sectors has been increasing. The tertiary sectors provide a slight exception. The figure for 1985 was lower than in 1980.

**Table 3.6: Employment and Output Value of Different Off-farm Sectors in Different Years**

		Unit	1985	1986	1987
All Sectors	No. of Labourers	'000	51.4	160.5	224.4
		%	100.0	100.0	100.0
	Output Value	\$ million	59.5	233.0	461.7
		%	100.0	100.0	100.0
Industry	No. of Labourers	'000	44.6	103.1	132.2
		%	86.9	64.2	58.9
	Output Value	\$ million	50.8	135.1	255.6
		%	85.7	57.5	55.4
Transportation	No. of Labourers	'000	1.96	18.2	27.9
		%	3.8	11.4	12.5
	Output Value	\$ million	4.1	43.6	85.6
		%	4.5	12.6	10.7
Construction	No. of Labourers	'000	3.36	11.9	16.2
		%	6.5	7.4	7.2
	Output Value	\$ million	2.7	29.5	49.3
		%	4.5	12.6	10.7
Tertiary sector	No. of Labourers	'000	1.45	27.3	48.1
		%	2.8	17.0	21.4
	Output Value	\$ million	1.7	26.3	71.2
		%	2.9	11.3	15.4

Source: Statistics of Township Enterprises of Sichuan Province, 1989.

Note: a) The tertiary sector includes commerce, catering, services, etc.  
 b) The data do not include the public sector.

**Table 3.7: The Productivity of Different Off-farm Sectors  
in Different Years**

	Productivity (\$ '000/labourer)		
	1980	1985	1988
Industry	1.14	1.30	1.93
Transportation	2.12	2.37	2.06
Construction	0.80	2.47	3.03
Tertiary Sector	1.19	0.97	1.48

Source: Statistics of Township Enterprises of Sichuan Province, 1989.

There is a reason for this decrease. Off-farm enterprises did not exist below the village level until 1980. Soon afterwards, when they were introduced, the productivity difference between below-village and above-village levels was in the ratio of 1.05:1.89. This was apparently reflected in a dramatic way in the tertiary sectors. But the trends have improved and the 1988 figure (\$ 1,480/labourer) exceeds the productivity value of 1980 (\$ 1,190/labourer).

- (5) Except for Panzhihua Municipality, the regional variation of off-farm employment in the rural areas of West Sichuan is not large. Both Tables 3.8 and 3.9 indicate that the three prefectures are very similar in terms of employment structure, productivity level, and output value. First, in all the three prefectures, the most prominent employment-generating sector is industry. Tertiary sectors come second, followed by transportation and construction. Second, the proportions of employment and output value in the three regions are very close to each other. Third, the productivity disparity in the entire off-farm activity is also not great, although it is greater for Aba.

Panzhihua Municipality is, however, an exception. First, the structure of employment is different. Although industry is still the most important, the second in line is construction; the tertiary sector is third, and transportation the last. Second, the levels of productivity, employment, and output value in this region are much higher than in the other three regions. A greater level of urbanisation, more advanced industries (including state-owned industry), and better infrastructural facilities have contributed to more rapid development of off-farm employment in Panzhihua Municipality.

**Table 3.8: The Structure of Employment and Output Value in Off-farm Sectors in Different Regions of West Sichuan (1988)**

		Unit	Aba	Ganzi	Liangshan	Panzhihua
All Sectors	No. of Labourers	'000	28.6	33.1	128.8	33.9
	Output Value	(\$ million)	60.7	64.4	225.1	111.5
Industry	No. of Labourers	Per cent	55.7	60.0	57.5	65.6
	Output Value	Per cent	43.6	55.2	56.9	58.7
Transportation	No. of Labourers	Per cent	14.4	13.8	12.6	9.0
	Output Value	Per cent	27.5	18.7	17.1	16.3
Construction	No. of Labourers	Per cent	7.8	5.2	5.9	14.0
	Output Value	Per cent	10.8	6.4	8.4	17.9
Tertiary Sector	No. of Labourers	Per cent	22.1	21.0	24.0	11.4
	Output Value	Per cent	18.1	19.7	17.6	7.1

Source: Statistics of Township Enterprises of Sichuan Province, 1989.

Note: a) The tertiary sector includes commerce, catering, service, etc.  
b) The total does not include the output value of public sector activities.

**Table 3.9: The Level of Employment, Output Value, and Productivity of Off-farm Sectors in Different Regions of the Hengduan Mountains (1988)**

Items	Aba	Ganzi	Liangshan	Panzhihua
Proportion of off-farm labourers (%)	9.7	9.7	8.2	15.6
Proportion of off-farm output value (%)	24.8	23.9	26.3	56.2
Output value per labourer ('000 yuan)	3.25	2.97	2.67	5.0

Source: Statistics of Township Enterprises of Sichuan Province, 1989.

Note: See note (e) in Table 3.1

According to the output value per capita of each county, the off-farm activity can be grouped into three categories namely, higher than 250 *yuan* (\$ 163), between 100 *yuan* (\$ 65) and 250 *yuan* (\$ 163), and less than 100 *yuan* (\$ 65). In 1988, there were 6 counties or districts with an output value per capita higher than 250 *yuan*, in which Renhe District of Panzhihua Municipality had the highest output value per capita of 680.1 *yuan* (\$ 445) in the Hengduan Mountains, but it occupied only the thirty-third position in Sichuan Province. Twenty-six counties had an output value per capita between 100 *yuan* and 250 *yuan* and 19 counties less than 100 *yuan*. Zhou Jue, Meigu, Rangtang, and Shifu recorded less than 50 *yuan* (\$33). More details are shown in Figure 3.1. This figure also shows us the clear linkage of off-farm employment with the economic basis, level of industrialisation, infrastructural facilities, etc. All the counties or districts, except Derong, with high output values per capita, enjoy a better economic basis, higher level of industrialisation and urbanisation, and better access to transportation. Most of the counties with the lowest levels of off-farm employment are located in remote areas and have poor economies, few infrastructural facilities, and a low quality of education and skills.

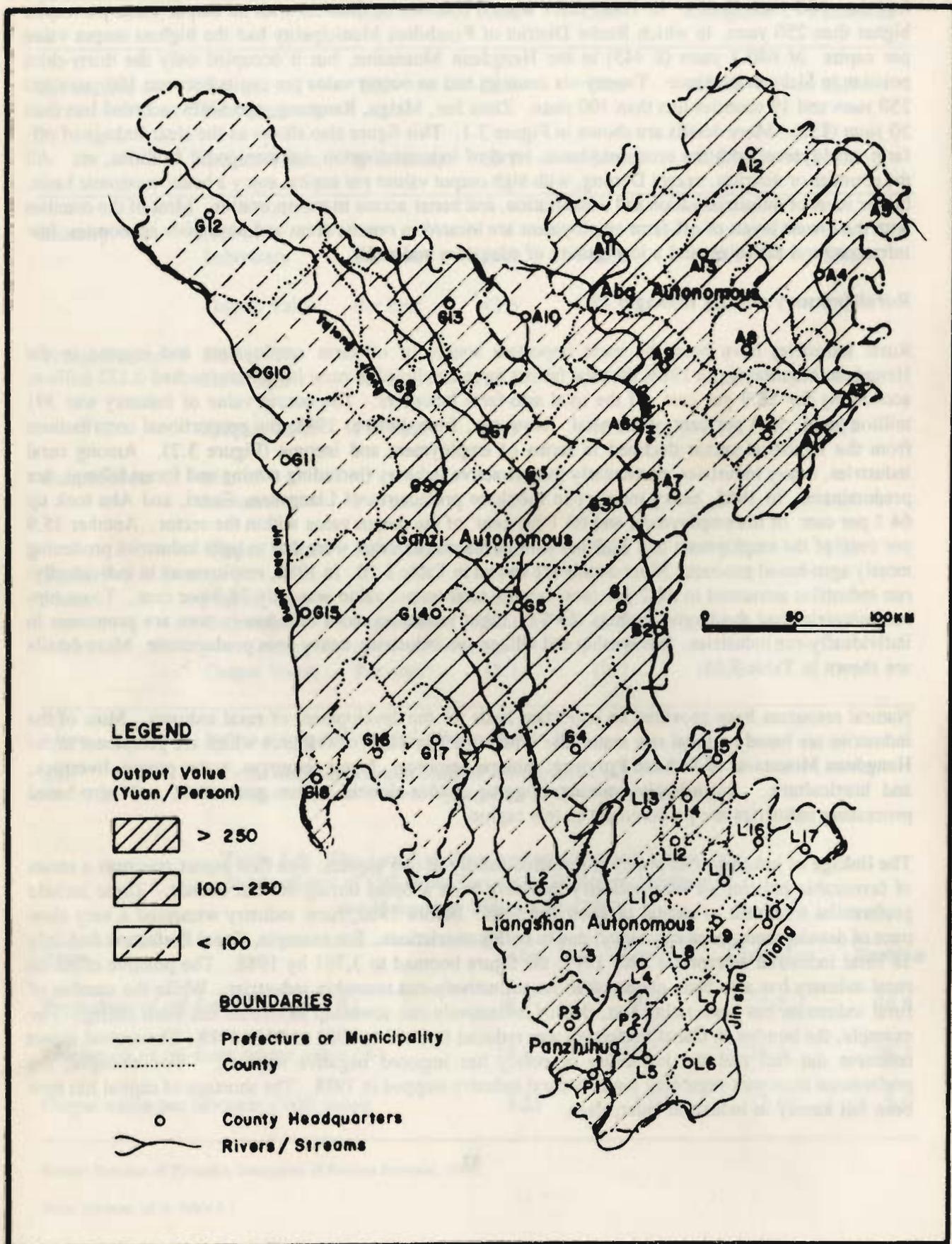
### **Rural Industry and Its Linkages**

Rural industries have been the most important source of off-farm employment and income in the Hengduan Mountains. In 1988, the total labour force employed in rural industries reached 0.132 million, accounting for 58.9 per cent of the total non-farm labourers. The output value of industry was 391 million *yuan*, 55.4 per cent of the total. However, from 1980 to 1988, the proportional contributions from the industrial sector declined in terms of employment and income (Figure 3.2). Among rural industries, heavy industries, particularly the extractive industry (including mining and forest felling), are predominant. In 1985, heavy industry in the three prefectures of Liangshan, Ganzi, and Aba took up 64.1 per cent of the employment and 69.1 per cent of the output value within the sector. Another 35.9 per cent of the employment and 32.9 per cent of the output value were due to light industries producing mostly agro-based products. More details are shown in Table 3.10. In 1988, employment in individually-run industries amounted to 52.2 per cent, but the total output value was only 28.3 per cent. Township-run industries had the largest outputs (64%). Light industries more than heavy ones are prominent in individually-run industries. In township and village-run industries, heavy ones predominate. More details are shown in Table 3.11.

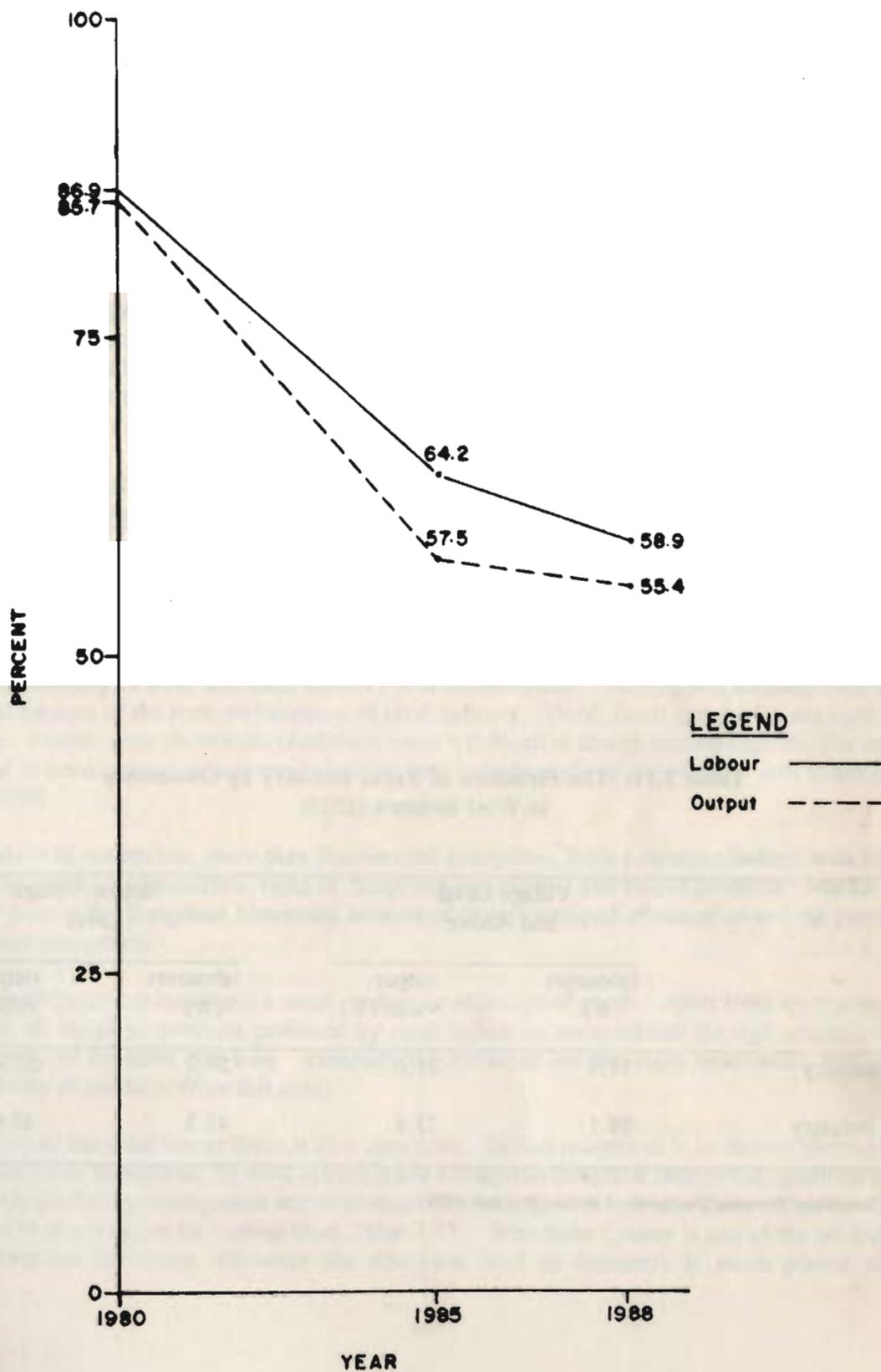
Natural resources have provided an important basis for the development of rural industry. Most of the industries are based on local raw materials. There are five kinds of resource which are prominent in the Hengduan Mountains of Sichuan Province: mineral resources, forest resources, water power, livestock, and horticulture. Accordingly, mining, logging, hydro-electric power generation, and agro-based processing industries are predominant in this region.

The linkage of industry with policy is reflected mainly in two aspects. The first aspect concerns a series of favourable policies on rural industry that have been adopted during the last decade. These include preferential treatment in capital taxation and loan. Before 1980, rural industry witnessed a very slow pace of development, even stagnancy, due to policy restrictions. For example, Ganzi Prefecture had only 38 rural industrial enterprises until 1977; the figure boomed to 3,761 by 1988. The positive effect on rural industry has also been greater than on collectively-run township industries. While the number of rural industries has been rising fast, that of collectively-run township industries has been falling. For example, the number in Ganzi Prefecture was reduced from 82 in 1981 to 50 in 1988. The second aspect concerns the fact that the instability of policy has imposed negative impacts. For example, the preferential treatment regarding loans to rural industry stopped in 1988. The shortage of capital has now been felt keenly in industrial enterprises.

**Figure 3.1 : Regional Variations in Non-farm Activities  
(Output Value Per Capita)**



**Figure 3.2: Percentage of Labourers and Output Value in Rural Industries**



**Table 3.10: The Structure of Employment and the Output Value of Rural Industry in the Three Prefectures of West Sichuan (1989)**

	Labourers (%)	Output value (%)
<u>Light Industry</u>	<u>35.9</u>	<u>32.9</u>
Agro-based	27.0	27.8
Nonagro-based	8.9	5.1
<u>Heavy Industry</u>	<u>64.1</u>	<u>67.1</u>
Extractive type	40.8	39.4
Raw material based	6.7	13.6
Processing	16.6	14.1

Source: Statistics of Township Enterprises of Sichuan Province, 1989.

Note: "Light Industry" includes products that are meant for satisfying subsistence needs. Depending upon the raw materials used an industry may be "agro-based" or "non agro-based". "Heavy Industry" is grouped into three types: extractive industries (obtaining raw materials directly from the natural world), raw material-based industries (preliminary processing of the products from extractive industry), and processing industries (further processing on the products of raw material-based industry).

**Table 3.11: The Structure of Rural Industry by Ownership in West Sichuan (1989)**

Items	Village Level and Above		Below Village Level	
	labourers (%)	output value (%)	labourers (%)	output value (%)
Light industry	11.9	21.6	56.7	57.4
Heavy industry	88.1	73.4	43.3	42.6

Source: Statistics of Township Enterprises of Sichuan Province, 1989.

Rural industry has very strong linkages with the development of small towns and infrastructure. The Hengduan Mountains are the least urbanised in Sichuan Province. There are only two cities and 54 county-level towns, accounting for 8.1 per cent of the provincial urban population. The average distance between towns in this region is six times that of the provincial average. Transportation facilities are also inadequate. Road transportation, as the main means of transportation in this region, is of poor quality and the road density is very low. It is estimated that 25 per cent of the townships are still not linked by roads. Lack of towns and an inadequate infrastructure have thus become the main constraints to the development of rural industries. Because of these constraints rural industrial development has been affected in the following ways: (a) only counties such as Wenchuan, Xichang, and Luding are more urbanised, have better access to roads, and have more advanced and larger-scale rural industries; (b) most of the mineral deposits in the remote areas of this region remain unexploited; and (c) the efficiency of investment is very poor.

There are mainly three sources of capital for rural industry: self-collected capital, bank loans, and government aid funds. Between 1986 to 1988, about 113.24 million *yuan* was invested in fixed assets in township and village-run industries. Of these, bank loans contributed the largest portion (42.1%), self-collected capital, 40.6 per cent, and government aid funds, 17.3 per cent. From 1988 onwards, self-collected capital has become the main source (55.2%) (because of the State's austerity policy) and the second being bank loans (31.8%).

Shortage of capital has been a big problem for economic development in this region. The investment in fixed assets in township and village-run industries in the Hengduan Mountains was only 3.2 per cent of the provincial total. The number of industrial projects at village level and above was 122 in 1988, only 2.5 per cent of the provincial total. The disparity between the Hengduan Mountains, Sichuan, and Chengdu Municipality are shown in Table 3.12. Lack of capital has inhibited the establishments, expansion, and updating of many rural industrial enterprises. Some rural industries have even ceased operation because of the lack of running capital. Four factors are accountable for the lack of capital. First, the economy is weak and rural industry is underdeveloped. Second, self accumulation of capital is limited because of the poor performance of rural industry. Third, funds and profits are used for other purposes. Fourth, poor investment conditions make it difficult to absorb outside capital. The investment of capital in township and village-run industries from outside made up only 6.1 per cent of the provincial total in 1988.

Rural industrial enterprises, more than State-owned enterprises, have a stronger linkage with the market system for purchase of materials, input of manpower and capital, and sale of products. Market facilities are very poor in the Hengduan Mountains because of underdeveloped urbanisation and the prevalence of subsistence economies.

Some townships do not even have a small market for exchange of goods. Apart from electricity, timber, and gold, all the other products produced by rural industries are marketed through unstable channels. Poor quality of products and long transportation distances are the main weaknesses that affect the marketability of products from this area.

The quality of the rural labour force is also very poor. Skilled manpower is in serious shortage in most of the Hengduan Mountains. In most township and village-run industrial enterprises, qualified personnel in all fields (including management and techniques) are lacking. A rough idea about the skills of off-farm labourers in this area can be derived from Table 3.13. Wenchuan County is one of the advanced areas in the Hengduan Mountains. However the education level of labourers is much poorer than the

**Table 3.12: Investment in Fixed Assets and Productivity in Industrial Enterprises at Village Level and Above in Different Areas (1988)**

	No. of projects (No. per prefecture or municipality)	Investment on fixed assets (million <i>yuan</i> per prefecture or municipality)	Fixed assets' increment (million <i>yuan</i> per prefecture or municipality)	Productivity ( <i>'000 yuan</i> per labourer)
Hengduan Mts.	31	9.2	6.7	4.4
Sichuan	232	75.2	40.0	10.8
Chengdu	1,086	208.2	14.9	14.9

Source: Statistics of Township Enterprises of Sichuan Province, 1989.

Note: There are 21 prefectures or municipalities in Sichuan Province, Chengdu Municipality enjoys the highest level of rural industrial activities.

**Table 3.13: Educational Qualifications of Off-farm Labourers in Township and Village-run Industrial Enterprises**

	Maoxian	Wenchuan	Sichuan
Number of Labourers	949	2,906	1,689,575
College Level (%)	0.0	0.03	0.20
High school Level (%)	9.1	9.46	14.70
Junior/Middle School Level (%)	23.3	46.21	46.10
Primary School Level (%)	67.6	44.30	39.00
Technicians (%)	0.0	2.40	3.70

Source: Statistics of Township Enterprises of Sichuan Province, 1989.

provincial average. Maoxian County, which has middle level rural industries, has an even more serious shortage of qualified personnel.

Shortage of skilled manpower has important effects on rural industry. It has led to: (a) more extractive industry and less manufacturing, (b) low level of mechanisation, (c) low economic profit because of poor management and low technical levels.

There are mainly three ways for labourers to obtain the necessary knowledge and skills to run industrial enterprises: first, by inviting technicians or retired workers from relevant large-scale enterprises to run training classes or provide technological consultation; second, by sending people to large-scale enterprises or colleges to learn first, and then using them to train others; third, by learning from the local people who have special skills. The third way is very popular in both enterprises which were founded earlier on and individually-run enterprises. In addition, some relevant departments have helped train employees in rural industrial enterprises.

Rural industries have made a positive impact on several economic sectors. First, they provide certain assistance for agricultural development. Second, the extractive industry has been providing raw materials for State-owned manufacturing industries. Third, the agro-based industries have been instrumental in enhancing the productive use of agricultural products through processing of agricultural commodities. Fourth, rural hydro-electric power stations have been supplying electricity to various economic sectors in both rural and urban areas.

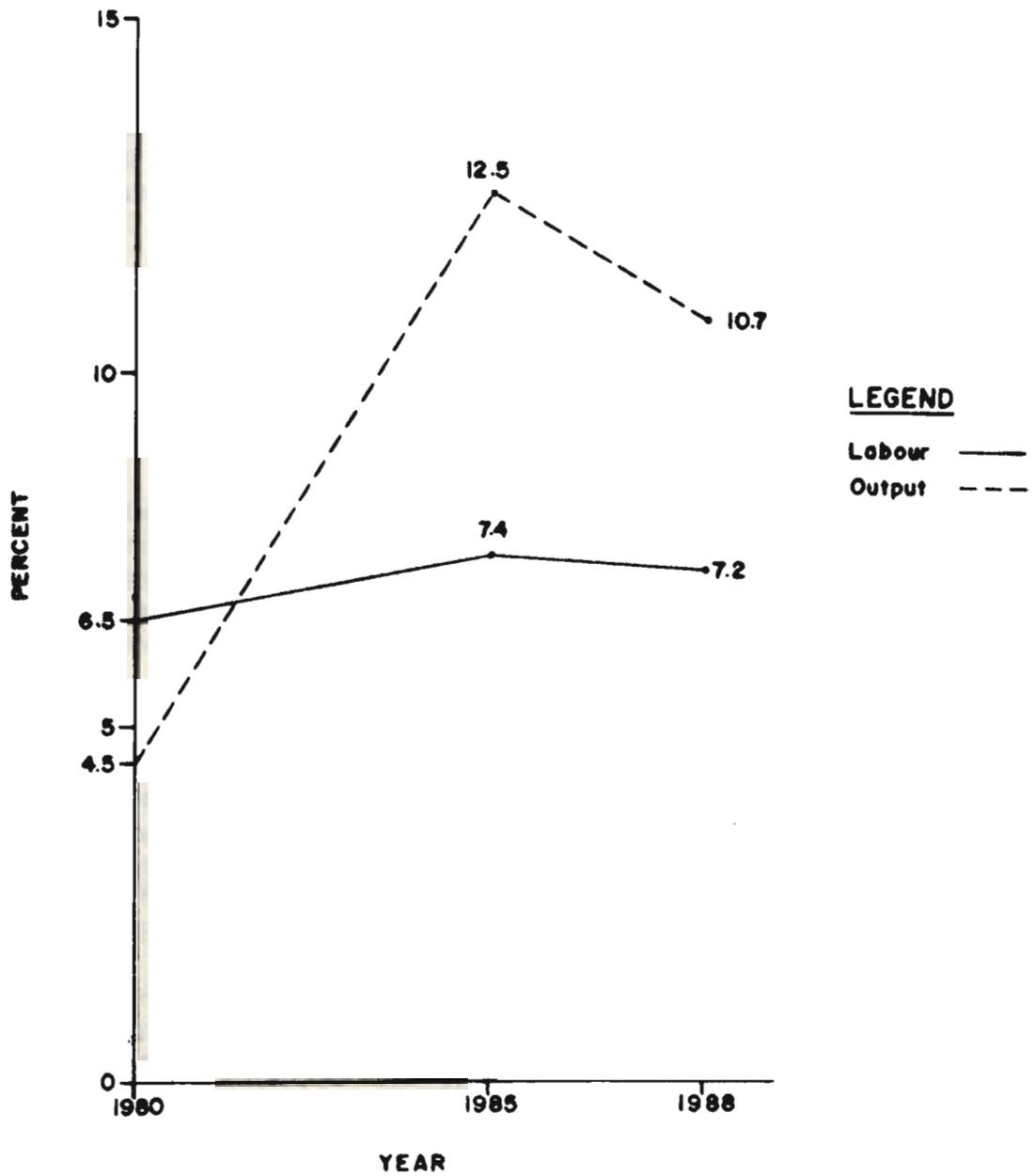
Some rural industries have, however, caused negative impacts on the environment because of inappropriate use of resources. For example, deforestation has been aggravated through excessive felling by some logging enterprises. Secondly, mudflows, landslides, and soil erosion have been aggravated by careless mining. Thirdly, environmental pollution has become more serious as a result of scarcity of funds and inadequate equipment for dealing with pollutants discharged by most industrial enterprises.

### **Construction and Its Linkages**

The levels of employment and output in construction grew rapidly between 1980 and 1985 and became subsequently stable after 1985 (Figure 3.3). The magnitude of employment reached 16 thousand in 1988, 7.2 per cent of the total employed in off-farm activities. The figures were 12 thousand and 7.4 per cent in 1985 and 3 thousand and 6.5 per cent in 1980. The output value was 75.4 million *yuan*, 10.7 per cent of the total, and it was 4 million *yuan* in 1980 and 4.5 million *yuan* in 1985.

Construction enterprises are mostly run by townships in this region. There were, 9,557 labourers engaged in such activities in 1988, accounting for 59.7 per cent of the total employees in rural construction. Their output value was 59.6 million *yuan*, 79.0 per cent of the total. Individually-run enterprises are also significant as they accounted for 38.1 per cent of the total employment and 18.5 per cent of output value in rural construction (1988). Village-run construction enterprises contributed only 2.2 per cent of employment and 2.5 per cent of output value within this sector.

**Figure 3.3: Percentage of Labourers and Output Value in the Construction Sector**



The macro-economic policy has close linkages with construction. The rural construction sector boomed when, during the last decade, the State and local governments adopted the policy to speed up basic construction. When the policy was subsequently changed, the sector also declined. Secondly, the farmers' demand for improved housing conditions has been increasing due to the increase in their income. This is one of the main factors which promoted the development of individually-run construction enterprises in this region. Thirdly, construction activities are relatively small scale and require only small investments, but the returns are high. This is another reason for the growth of the construction sector between 1980 and 1985. Fourthly, the skills needed for construction activities in rural areas are not complicated for the time being. Most of the people learn the skill through on-the-job training. In township-run construction enterprises some formal training classes are given. Generally speaking, the technical level of construction in this region is lower than in other regions of Sichuan Province. This has become one of the main constraints in getting jobs outside the region. In 1988, there were 0.17 million rural builders in Sichuan who found jobs outside the province, but none of them were from the Hengduan Mountain Region. There were, however, 7,269 rural builders in 1988, who carried out activities in cities and towns within the region. This accounted for 45.4 per cent of the total number of rural builders.

### **Transportation and Its Linkages**

Rural transportation in this region has achieved tremendous progress during the last decade (Figure 3.4). In 1988, the employees in transportation reached the 28 thousand level, accounting for 12.5 per cent of total employees in the off-farm sector. This figure was 3.8 per cent in 1980. Its output value was 131 million *yuan*, 18.5 per cent of the total. The corresponding values in 1980 were 6.2 million *yuan* and 6.9 per cent whereas in 1985 they were 67 million *yuan* and 18.5 per cent.

Individually-run transportation dominates the Hengduan Mountains of Sichuan. Its employees were responsible for 95.3 per cent of the entire rural transportation and their output value was 92.6 per cent of the sector. In fact, individually-run transportation is the only sector that has contributed to growth. Township-run and village-run transportation services have been declining. According to statistics, the number of labourers employed in township-run and village-run transportation services were reduced by 40 per cent from 1980 to 1988.

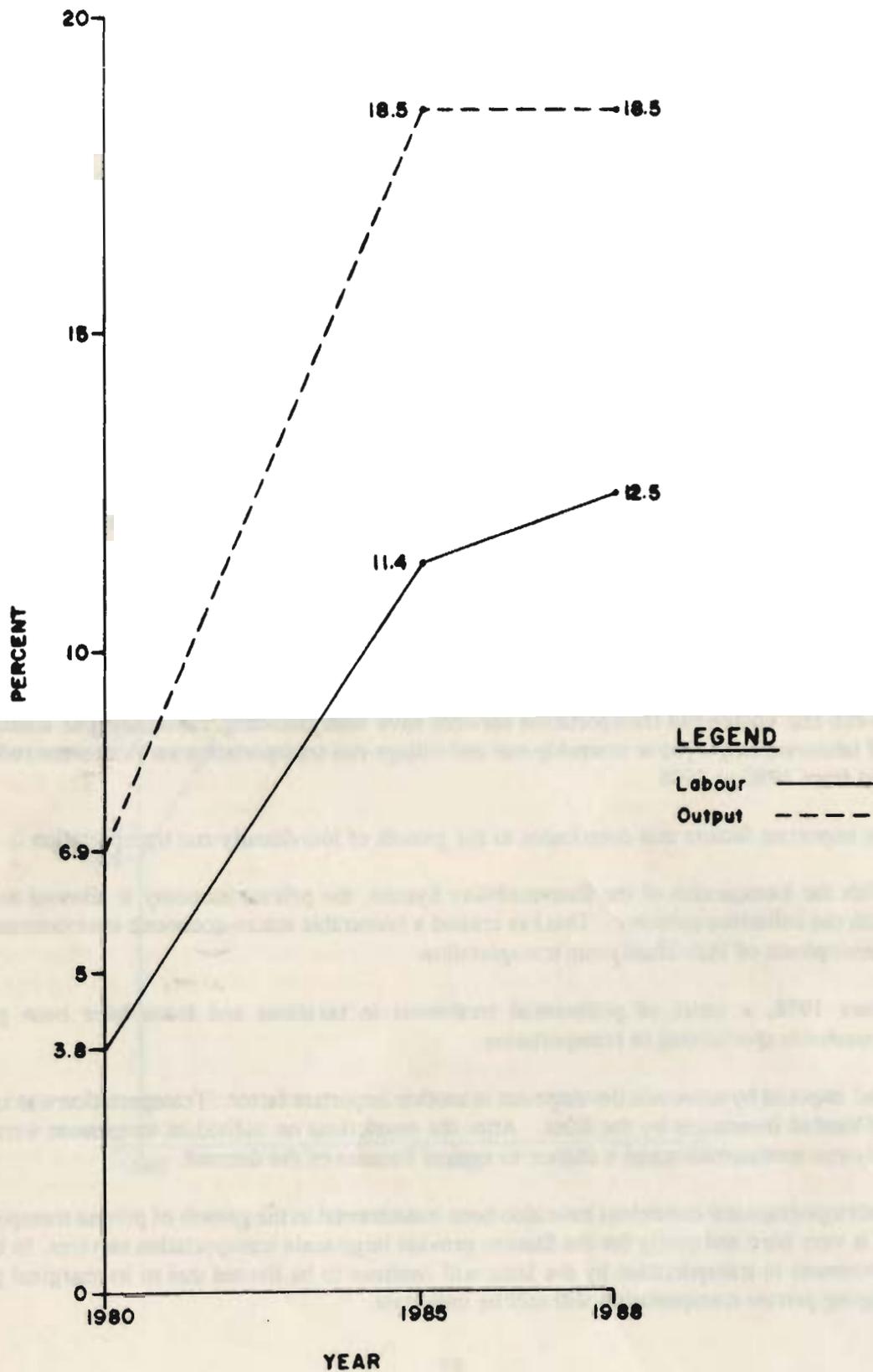
One of the important factors that contributes to the growth of individually-run transportation is policy.

- (a) With the introduction of the Responsibility System, the private economy is allowed to coexist with the collective economy. This has created a favourable macro-economic environment for the development of individually-run transportation.
- (b) Since 1978, a series of preferential treatments in taxations and loans have been given to households specialising in transportation.

The demand imposed by economic development is another important factor. Transportation was inhibited because of limited investment by the State. After the restrictions on individual investment were lifted, individually-run transportation had a chance to expand because of the demand.

The difficult topographical conditions have also been instrumental in the growth of private transportation, because it is very hard and costly for the State to provide large-scale transportation services. In the near future, investment in transportation by the State will continue to be limited due to its marginal position. So, developing private transportation will still be important.

**Figure 3.4: Percentage of Labourers and Output Value in the Transportation Sector**



There are two sources of capital for initiating private transportation, i.e., bank loans and self-collected capital (including private loans). Since developing transportation needs an amount of investment which is often beyond the capacity of a household, bank loans and private loans are usually the main sources of capital. However, the risk of carrying out the transportation activity is not high because of its high profitability.

The skill required for private transportation is not high. Most farmers with primary school education can manage a private transportation enterprise quite well.

Rural transportation has linkages with almost all the economic sectors. It has provided services not only to rural industry and agriculture, but also to some State-owned enterprises.

There are mainly two constraints in rural transportation. One is the limited oil supply. Oil consumption by the vehicle is higher in this region because of the slopes. Notwithstanding, the oil ration per vehicle, supplied by the provincial department, is the same as in the plains. Every year, there are many vehicles which cannot operate fully because of the shortage of oil. Another constraint is the limited traffic capacity of the poor-quality roads and the relatively small number of passengers.

### **The Tertiary Sector and Its Linkages**

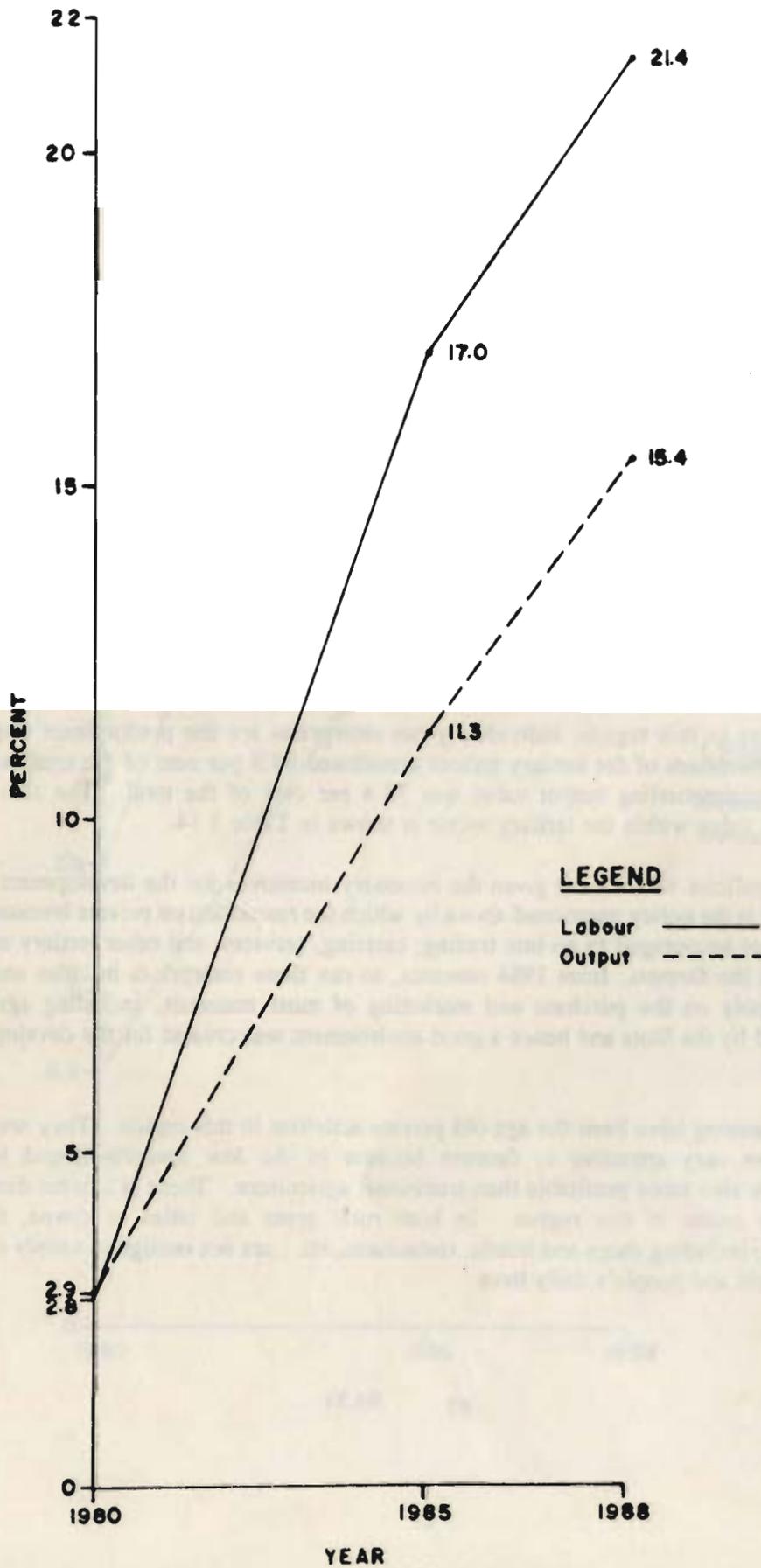
The rural tertiary sectors include trade, catering, services, and others. With the development of the rural and the urban economy, the tertiary sector has been increasing at a rapid rate since 1980 (Figure 3.5). The number of labourers employed in the tertiary sector was 48 thousand in 1988, 21.4 per cent of the total in off-farm sectors. The figures were 1.5 thousand and 2.8 per cent in 1980. Its output value was 109 million *yuan*, 15.4 per cent of the total, compared to 2.6 million *yuan* and 2.9 per cent in 1980.

In all the tertiary sectors in this region, individually-run enterprises are the predominant ones. The employees in private enterprises of the tertiary sectors constituted 88.9 per cent of the total within the sector in 1988. The corresponding output value was 78.4 per cent of the total. The share of the employment and output value within the tertiary sector is shown in Table 3.14.

There are mainly two policies which have given the necessary incentives for the development of rural tertiary activities. One is the policy mentioned above by which the restriction on private investment was lifted. The farmers were encouraged to go into trading, catering, services, and other tertiary activities. Another policy allowed the farmers, from 1984 onwards, to run these enterprises in cities and towns. In addition, the monopoly on the purchase and marketing of most materials, including agricultural products, was rescinded by the State and hence a good environment was created for the development of the rural tertiary sector.

Small businesses and catering have been the age-old private activities in this region. They are suitable for this region and are very attractive to farmers because of the low investment and low skill requirements. They are also more profitable than traditional agriculture. There is a great demand for developing the tertiary sector in this region. In both rural areas and cities or towns, the basic infrastructural facilities, including shops and hotels, restaurants, etc., are not enough to satisfy the needs of economic development and people's daily lives.

**Figure 3.5: Percentage of Labourer and Output Value in the Tertiary Sector**



**Table 3.14: The Structure of Employment and Output Value in the Tertiary Sector in the Hengduan Mountain Region of Sichuan in 1988**

	Labourers (%)	Output Value (%)
Tertiary Sector Total	100.0	100.0
Trade	30.6	39.2
Catering	14.7	19.7
Service	39.3	24.3
Others	15.4	16.8

Source: Statistics of Township Enterprises of Sichuan Province, 1989.

It is worth noting that tourism, which is included in the service sector, has great potential in some areas. Jiuzhaigou, Hailuoguo, and Huanglong Temple located in Ganzi and Aba prefectures are beautiful scenic spots. The natural conditions and social customs of minority nationalities are also valuable in tourism. However, the sector is highly underdeveloped and hotels, restaurants, and shops catering to tourists are insufficient. Lack of data in terms of rural labourers employed in tourism and the income generated in the sector prevent us from making a systematic analysis. The following example may give a rough idea about the role of tourism in the employment and income of rural farmers. The Jiuzhaigou Area recorded an average income of only 200 *yuan* per capita in 1982, lower than the local county average. After the Jiuzhaigou Tourism Management Bureau was set up in 1984, tourism has become an important sector in this area. A large number of local farmers has taken part in tourism-related activities. The average income has subsequently increased rapidly. The income was 600 *yuan* per capita in 1987, much higher than the provincial average.

### Employment within Agriculture

Off-farm activities within agriculture have been an important aspect of household activities in the Hengduan Mountains. This region is one of the five largest pastoral regions and one of the three largest forest regions in China. It is also an important source of fruits and wild plants in Sichuan Province. Thanks to the favourable macro-economic environment, the diversification of agriculture, including livestock, horticulture, sideline production, and cash crop production have achieved great progress in the last decade. In 1988, the output value of diversified activities in the Hengduan Mountains of Sichuan reached 1.13 billion *yuan*, accounting for 66.7 per cent of the total output value of agriculture. The corresponding figures were 63.6 per cent and 54.6 per cent in 1985 and 1980 respectively. The diversified economy has become one of the main reasons for increases in farmers' incomes. For example, the total output value in the region increased by 498 million *yuan* from 1985 to 1988, of which

147 million yuan came from diversified agricultural activities. The number of labourers who were engaged in these activities has also increased to a considerable degree. Unfortunately, we are not able to make an analysis on these aspects in depth because of the lack of adequate information and data.

### *Livestock and Its Linkages*

Livestock is one of the dominant activities within agriculture, especially in Ganzi and Aba prefectures. It is estimated that it is predominant in about 60 per cent of the counties in these two prefectures. Cows and sheep are the main animals raised here. The number of cows reached 4.14 million head in 1987, accounting for 42.6 per cent of the provincial total. The sheep reached 2.83 million head, 32 per cent of the provincial total. However, the meat output provided by these two regions is very low, only 52.3 million kg or 1.6 per cent of the provincial total. More details are shown in Table 3.15. The labour force engaged in livestock-raising in Ganzi and Aba was recorded to be 0.14 million in 1985, accounting for 23.6 per cent of the total in the province. Livestock is one of the main sources of income. For example, 32 per cent of the net income of the households in Ganzi Prefecture was from the livestock sector in 1988.

**Table 3.15: Livestock and Meat Output in Different Regions of Sichuan (1987)**

	Large animals (million head)		Sheep (million head)	Pigs for rearing (million head)	Pigs for sale (million head)	Output of meat (million kg)
	Total	Cows				
Panzhihua	0.84	0.12	0.35	0.38	0.18	14.5
Aba	1.80	1.66	1.04	0.29	0.18	14.5
Ganzi	2.68	2.48	1.79	0.25	0.12	27.2
Liangshan	0.97	0.82	3.44	2.49	1.16	84.7
W. Sichuan	5.59	5.08	6.62	3.41	1.64	151.5
Sichuan	10.30	9.70	8.85	62.03	51.11	3,360.1

Source: Statistics of the Rural Economy of Sichuan, 1987.

Note: The output of meat is derived from pigs, sheep, and cows.

In the crop-dominated areas, mainly Liangshan and Panzhihua, the main animals reared are pigs and sheep. The number of pigs reared here was 2.87 million head in 1987, accounting for 84.5 per cent of the total in the Hengduan Mountains, but for only 4.6 per cent of the provincial total. The sheep, 3.78 million head, constituted a share of 42.7 per cent of the provincial total. The livestock economy in these two regions was characterised by self-sufficiency before 1978. The main purpose of raising animals was to meet the farmers' demand for meat and manure. However, household specialisation in livestock-raising emerged after 1978. The number of households involved was 613 in 1988. Many other households also provide pigs and poultry for marketing. Table 3.15 shows that the number of pigs for sale in Liangshan and Panzhihua reached 1.34 million head, accounting for 46.6 per cent of those reached. According to statistics, the number of pigs and poultry sold increased from 15 per cent in 1978 to 45 per cent in 1988 in Liangshan Prefecture. In addition, in some eastern counties of Ganzi and Aba, market-oriented pig-raising has been established and has expanded.

Policies that have imposed significant impacts on livestock raising include the following.

- (a) In 1980, the provincial government adopted a policy of linking forestry and livestock to develop a diversified economy and thereby ensure the all-round development of agriculture in the three prefectures of Liangshan, Ganzi, and Aba. This policy encouraged farmers to develop livestock.
- (b) In accordance with the Responsibility System, the collectively-owned livestock was divided among, individual households in Ganzi and Aba prefectures from 1980. It improved the farmers' initiatives in livestock raising.
- (c) The State prices for livestock products were raised after 1978 and the State permitted livestock products to be marketed within and outside the Hengduan Mountains after 1985. The livestock raiser has benefitted a lot from this study.

The vast grasslands provide a good basis for the development of livestock. It is estimated that the grassland in the Hengduan Mountains of Sichuan amounts to 80 per cent of the provincial total. The Northwest Prairie, with varied and high-quality grasses, is one of the largest in China. In crop-dominated areas, agricultural products and by-products also provide a good basis for livestock and farmers are very experienced in pig-raising and poultry-raising.

The marketing linkages of livestock have been strengthened since 1980. The State purchasing station was the only channel for livestock trade before 1980. However, some collectively-owned and private commercial organisations began to take part in the marketing of livestock products from 1980 onwards. By 1985, all the relevant business organisations (State-run, collectively-run, or individually-run), within or outside the Hengduan Mountains, could purchase and sell livestock products at the market price. Livestock products, including yak and sheep, have found a big market in Northern China and Sichuan Province, while pigs, and poultry are mainly marketed within the Hengduan Mountain Region. At present, the residents' demand for pig and poultry have still not been satisfied in Ganzi and Aba prefectures. Even in Eastern Ganzi and Aba, where pig-raising and poultry-raising have reached a sizeable scale, about 80 per cent of the pig and poultry consumption is met by local supplies.

The forward and backward linkages of the sector are still weak. On one hand, the service systems for livestock commodity production, such as seed multiplication, feed processing, epidemic prevention, preservation, and transportation are not well developed. On the other hand, the processing of livestock products is still limited. All the related processes including wool spinning, leather tanning, and meat and

milk processing are in the early stages. The commercialisation rate of livestock in Ganzi and Aba prefectures was only 10 per cent in 1988.

Livestock development has caused some negative impacts on the environment. Some investigations indicate that the degradation of grassland in this region has become more and more serious. For example, yield per *mu* of grassland in the Northwest Prairie of Sichuan has decreased about 20 per cent compared with the level in 1960. The factors responsible for that include: (a) overgrazing caused by a rapid increase of livestock and little investment in grassland management; (b) new pasture management systems not set up after the livestock were divided among the households. This has led to poor protection of pastures.

### *Horticulture and Its Linkages*

Horticulture has shown great prospects during the last decade. Fruit growing has become an important activity in the Hengduan Mountain Region of Sichuan. Sericulture, pepper growing, and vegetable growing have also gained prominence in some parts of the region. Fruit growing has grown rapidly and the industry was 3.8 times greater in 1988 than it was in 1980. This constitutes 11.3 per cent of the provincial total. Apples, the main fruit in the Hengduan Mountains, had an output of 31.3 million kg accounting for one third of the total output of fruits in this region and half of the total output of apples in the entire province. Liangshan Prefecture had the highest share in the output of both fruits and apples. More details are shown in Table 3.16.

The commercialisation of fruit growing has developed only to a limited extent in the Hengduan Mountains. There were 212.5 thousand *mu* (14.2 thousand ha) of fruit produced commercially in Liangshan Prefecture in 1987, accounting for 38.9 per cent of the total area under fruit in this prefecture. Maoxian County has been listed as a State-level centre for commercialised fruit production while Xiajin and Jinchuan are province-level centres. Horticulture has become an important source of income, especially in some counties. For example, three of the twelve rural enterprises in Maoxian County had yearly outputs exceeding 200 thousand *yuan* and were horticulture based. The combined output of the three enterprises was 800 thousand *yuan* and they employed 420 labourers. They accounted for 72 per cent and 65 per cent of the output and employment respectively of all the agriculture-based enterprises. In 1988, there were about 600 households specialising in horticulture in the Hengduan Mountain Region of Sichuan Province.

There are mainly three policies which have contributed to the growth of horticulture since 1980.

1. Encouragement to farmers to carry out diversified activities. In order to guarantee the implementation of this policy, the local governments organised farmers to convert cultivated mountain slopes from crop use to horticultural use. About 100 thousand *mu* (6.7 thousand ha) of mountain slopes were thus converted to horticultural use between 1980 and 1988 in Aba Prefecture.
2. Encouragement to farmers to develop market-oriented horticulture. State-owned and collectively-owned barren hills and wastelands were leased to households under a contract term of over 30 years.

**Table 3.16: Output of Fruits in Different Regions (1988)**

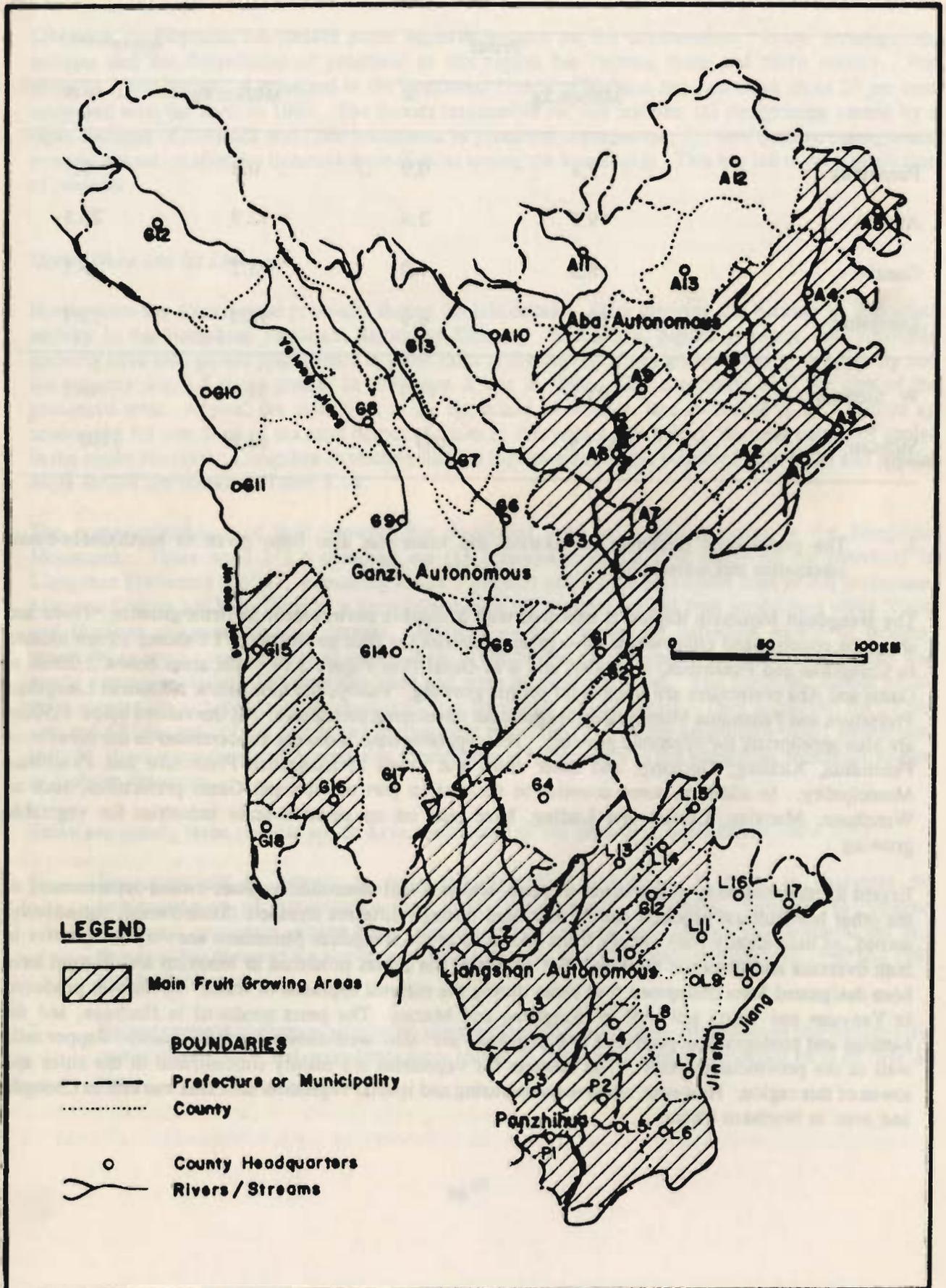
	Fruits		Apple	
	Million kg	%	Million kg	%
Panzhuhua	7.4	0.9	0.3	0.5
Aba	19.9	2.4	12.9	20.5
Ganzi	8.5	1.0	3.2	5.1
Liangshan	57.3	6.9	14.9	23.7
W. Sichuan	93.1	11.3	31.3	49.7
Sichuan	827.5	100	63.0	100

3. The preferential treatment in taxation and loans has also been given to horticulture-based enterprises and households.

The Hengduan Mountain Region is endowed with a suitable environment for fruit-growing. There are about 26 counties and cities which have great potentials for fruit production. Of those, 13 are located in Liangshan and Panzhuhua, 9 in Aba, and 4 in Ganzi (See Figure 3.6). Hill areas below 2,200m in Ganzi and Aba prefectures are suitable for pepper growing. Valleys and hills below 1,800m in Liangshan Prefecture and Panzhuhua Municipality are good for developing sericulture. All the valleys below 1,500m are also appropriate for vegetable growing. The vegetable base is mainly concentrated in the suburbs of Panzhuhua, Xichang, Dechang, and other cities and towns in Liangshan Prefecture and Panzhuhua Municipality. In addition, some counties in the eastern part of Aba and Ganzi prefectures, such as Wenchuan, Maoxian, Lixian, and Luding, have also set up sizeable scale industries for vegetable growing.

Except for the marketing of silkworm cocoons, which is still controlled by State-owned departments, all the other horticultural products can be marketed through different channels (State-owned, collectively-owned, or individually-run). Many fruits produced in the Hengduan Mountains are very competitive in both overseas and domestic markets. For example, the apples produced in Maoxian and Xiaojin have been designated State champions four times during the national appraisal of fruits. The apples produced in Yanyuan and Yuexi sell well in Hongkong and Macao. The pears produced in Jinchuan, and the bananas and pomegranates produced in Liangshan, are also well-known for their quality. Pepper sells well in the provincial markets. The markets for vegetables are mainly concentrated in the cities and towns of this region. However, some early-maturing and special vegetables also find markets in Chengdu and even in Northern China.

**Figure 3.6 : Main Fruit Growing Areas in the Hengduan Mountains of Sichuan**



The forward and backward linkages for horticulture are still weak. On the one hand, the services available for horticulture from cultivation to preservation are not well developed. On the other hand, the rapid expansion of fruit production and other horticultural productions has not been accompanied by corresponding expansions in fruit-based processing. There are two reasons for this. First, fruit production has still not fully met the residents' requirements for fresh fruits. Second, some areas lack the necessary capital or technology for fruit processing. For example, the shortage of capital has prevented Maoxian County from setting up a fruit processing industry. The fruit-canning factory in Wenchuan, one of the two rural enterprises with a fixed asset of over one million *yuan*, ceased operating in 1990. It was unable to bring out good quality products because of poor technology.

### *Sideline Production and Its Linkages*

The main sideline activity in the Hengduan Mountain Region is collection of wild plants, and this is mainly concentrated in Ganzi and Aba prefectures. Sideline production has played an important role in providing income and employment opportunities to households in these two prefectures. In 1988, the percentage output value of sideline production was 16.3 per cent of the total agricultural output, much higher than the provincial average (6.3 per cent). Collection of wild plants has been a traditional off-farm activity in Ganzi and Aba. In some areas, these are the only market-oriented activities. For example, the income from the collection of pine mushrooms was 24.66 million *yuan* in Ganzi in 1988. This means 188.2 *yuan* for each household.

The policy of encouraging diversified activities, as adopted by the provincial government in 1980, has also provided a positive impact on the development of sideline production. When the State monopoly for purchasing and marketing of all specialised local products (except musk) was rescinded in 1985, the farmers perceived this as a crucial incentive to exploit wild plant resources.

Ganzi and Aba prefectures are very rich in these resources. Investigations show that about 3,000 species of wild plants are widely dispersed throughout these two areas. They are the main sources of wild plants (especially medicinal herbs) in Sichuan Province. The State-owned departments monopolised the purchase and marketing of wild plants before 1985. Subsequently, business organisations at all levels, (including private pedlars) have been allowed to purchase and market all wild plants (except musk). Some of the products, especially medicinal herbs, are very competitive in both overseas and domestic markets.

The collection of wild plants is very attractive to local farmers because of its low cost, high profit, and the simple skills required. Generally speaking, the processing of wild plants is very poor because of lack of techniques, equipment, and skilled persons. However, some techniques which are suitable for this region have been recently introduced and have been successful. For example, the technique of processing edible mushrooms in Ganzi Prefecture accelerated the exploitation of pine mushrooms from 1986 onwards, and they have become one of the main goods for export from Ganzi Prefecture. Inappropriate and excessive exploitation of wild plants has become very serious in some areas. This has led to degradation of resources. Investigations show that some rare medicinal herbs, such as *Fritillaria thunbergii* and *Cordyceps sinensis*, are disappearing rapidly.

### *Cash Crops and Their Linkages*

Cash crop production is mainly distributed throughout Panzhihua Municipality and Liangshan Prefecture. Since 1978, cash crop production has grown but less so than the other activities described above. The area under cash crops was 5.9 per cent of the total cultivated area in Panzhihua and Liangshan in 1988,

only 1.15 per cent more than in 1978. The cash crops which have market potential are sugar and flue-cured tobacco. The yield of sugar in these two areas was 577.2 million kg in 1988, accounting for 24.4 per cent of the provincial total; the tobacco yield was 10.8 million kg, 5.8 per cent of the provincial total.

The valleys of the Jinshajiang River and the Anninghe River are suitable for sugarcane growing, while Butuo County and Zhaojue County are suitable for growing sugar beets. The total land area suitable for sugarcane growing in Panzhihua and Liangshan was 0.35 million *mu* (23.3 thousand ha), 4 times as much as the area where it is currently grown. Flue-cured tobacco, mainly grown in the counties of Huili, Huidong, Puge, and Ningnan, is of very high quality.

The market linkages of cash crops are limited within the Hengduan Mountain Region. Sugar crops are mainly purchased by local sugar refineries. At present, production cannot even meet the needs of these local sugar refineries. The expansion of tobacco growing has resulted in the establishment of the cigarette industry in Xichang in 1984. The production and marketing of tobacco have maintained a good balance in this region since 1984.

### Conclusions and Prognoses

- (1) During the past few years, both off-farm employment and employment in non-traditional agriculture have made great progress. However, they are still in the initial stages in this region and are much less advanced than in the provincial and national areas as a whole.
- (2) Generally speaking, the intra-regional disparity of OFE in the Hengduan Mountains of Sichuan is not wide. Panzhihua Municipality is an exception and is of a much higher level in terms of employment, income, and productivity due to its better infrastructural facilities and higher levels of urbanisation and industrialisation. The OFE level in the three prefectures is much lower.
- (3) Individually-run enterprises predominate in this region. Lower investment, lower skill requirements, and greater flexibility are the main reasons for the growth in individually-run enterprises. Given the constraints in capital, skilled manpower, and infrastructural facilities, individually-run enterprises are much more suitable for most of this region and will continue to play a leading role in rural off-farm employment in the future.
- (4) Among the various sectors, industry has been the most important source of employment and income, but its proportion has been declining in terms of both employment and income during the past few years. The outcome per labourer is not as high as in some other sectors. Among the industries, extractive activities including mining and logging, are the prominent ones. Resource advantages have provided the base for these rural industries in this region. Transportation has made great progress because of its higher return, lower skill requirements, and increasing demand. The tertiary sectors have also experienced tremendous growth in the past decade. Although the output per labourer in tertiary activities is the lowest among all sectors, they are still very attractive to farmers because of low investment and low skill requirements. Low cost and high return have contributed to the growth of construction. Favourable policies have been the most important factor for the development of all off-farm sectors. Within agriculture, diversification of activities is showing appreciable results.

- (5) There are three shortcomings to OFE in this region. First, the levels of output per labourer in the prominent sectors are lower than the provincial and national averages. Second, the forward and backward linkages with the farming system are very weak. Third, some off-farm activities have brought damage to the environment and the resource base. In order to ease these shortcomings and make OFE more suitable and sustainable, we suggest the following measures.
- (a) Local governments should make further efforts to help improve the external and internal conditions for OFE development by providing better services for each activity and by helping the farmers improve their skills. Each enterprise should also pay more attention to raising the technology level and management level so as to promote greater productivity.
  - (b) Urgent measures should be taken to protect the resource base, including mines, forests, grasslands, and wild plants. Appropriate adjustments should be made for these, for example, in the surveying of mineral resources and the planning of mineral exploitation, to avoid careless extraction; and in the promotion of processed forest products.
  - (c) In order to strengthen the linkages of off-farm activities with the farming system, agro-based processing should be improved through improvements in infrastructural facilities and through creation of better conditions to absorb more capital and technology from outside.