

OFF-FARM ACTIVITIES IN MIANCHI TOWNSHIP

In Mianchi, as in other hilly and mountainous parts of Wenchuan County, livestock have always been an important source of off-farm income. The economic policy changes, particularly since 1978, have influenced the growth of horticulture, vegetables, and sideline activities at the household level. In Mianchi, the CPRH system for cultivated land was introduced in 1981. In 1983, hill lands were also contracted to households, basically for afforestation and for the development of cash crops. In 1983, Wenchuan County was selected as a trial site for the development of hydropower by the Central Government. This meant that townships in Wenchuan County were given preferential treatment and government grants for the development of hydropower stations. Also, between 1983-85, the State monopoly on the purchase and marketing of agricultural products was gradually (but not completely) relaxed. In 1988, preferential treatment in extending loans to township enterprises was also stopped. These policy changes had an impact on off-farm activities, because the number of enterprises based on local resources increased. Most of this development was at the individual or household level.

Types of Off-farm Activities

Off-farm activities in Mianchi can be divided in terms of types into employment outside agriculture and employment within or related to agriculture.

Off-farm Activities Outside Agriculture

These includes activities in rural industry, transportation, and services. Off-farm activities outside agriculture contributed 21.2 per cent of the total rural output value and employed 11.2 per cent of the total labour force. In Wenchuan County, this contribution is 33.3 and 16.5 per cent respectively, which shows that the level of development of off-farm activities in Mianchi is lower than the county average.

Rural enterprises employed 258 of the economically active labour force in Mianchi. There were 110 enterprises. Table 4 presents the breakdown of employment and income of such enterprises. It shows that rural industry provides the most employment and contributes over 56 per cent of the output value from off-farm activities outside agriculture.

Rural Industries. In 1990 Mianchi had 22 industrial enterprises with 144 employees. The major industries are extractive in nature and are owned by the township. These are sand-quarrying (employing 30 people), quartz mining (20), barite mining (10), logging (34), prefabrication (10), and mica mining (6). Among the individually-run industries are flour mills and farm tools' enterprises. Table 5 shows the employment and income breakdowns in industries by ownership levels. There is only one village level enterprise, but it contributes 54.0 per cent of the total output value of industries. This is the hydro-electric power station owned by Yangdian village.

**Table 4: The Breakdown of Employment and Income in Off-farm Activities
Outside Agriculture, 1990**

Type of Activity	Enterprises		Workers		Total Output Value	
	No.	%	No.	%	('000 yuan)	%
Industry	22	20	144	55.8	347.2	56.7
Transportation	40	36.4	40	15.5	100.0	16.3
Tertiary	48	43.6	74	28.7	165.0	27.0
Total	110	100	258	100	612.2	100

Source: Statistics of Township Enterprises in Mianchi Township (1990)

**Table 5: The Breakdown of Employment and Income of Rural
Industry by Ownership Levels (1990)**

Ownership	Enterprises		Workers		Total Output Value	
	No.	%	No.	%	('000 yuan)	%
Township Level	6	27.3	110	76.4	137.6	39.6
Village Level	1	4.5	16	11.1	187.6	54.0
Individual Level	15	68.2	18	12.5	22.0	6.4
Total	22	100	144	100	347.2	100

Source: Same as Table 4.

Transportation. Transportation as a rural off-farm activity in Mianchi township emerged only in 1979, although the Chengdu-Aba road was constructed in 1953. In 1985, only 25 people were engaged in transportation. During 1986 and 1987 two hydro-electric power stations were constructed in Yangdian village. This created a substantial demand for transportation. At the same time, the agency in charge of constructing the power station provided financial help in the form of loans to households who had suffered because of the location of the power station on lands that they had cultivated. As a result, the number of people engaged in transportation increased to 40.

After the projects were completed in 1988, some of the people engaged in transportation began to experience difficulty in finding enough work. As a result, the average income began to decline. For

example, the income of each person engaged in transportation services was 3,000 *yuan** per year in 1985, the figure had decreased to 2,500 *yuan* in 1990.

There are 40 vehicles, all private. There are two trucks, and 38 small tractors. The latter cost 5,000-8,000 *yuan* each, about 1/5 to 1/4 the cost of a truck. Since the tractors are not technically and economically suitable for long distance transport, most of these are used in the transportation of construction material and agricultural produce locally.

Tertiary Sector. Employment in the tertiary sector mainly consists of family businesses - retail trade, catering, and services such as hair-cutting, and video-parlours - with the lone exception of a township-run hotel. Table 6 shows the employment and income breakdowns for tertiary activities. Retail trade in daily necessities such as food and other essentials employs over half of those in tertiary employment.

Table 6: The Breakdown of Employment and Income for Different Tertiary Activities (1990)

Type of Tertiary Sector	Enterprises		Workers		Total Output Value	
	No.	%	No.	%	('000 <i>yuan</i>)	%
Commerce	30	62.4	42	56.8	90.0	54.6
Catering	9	18.8	15	20.3	39.0	23.6
Service	9	18.8	17	22.9	36.0	21.8
Total	48	100	74	100	165.0	100

Source: Same as Table 4

In 1978 there were 17 collectively-owned tertiary enterprises. After the economic reforms most of the previously collectively-owned enterprises were contracted out to individuals or closed because they were running at a loss.

Spatial Distribution of Off-farm Activities Outside Agriculture. Most of the OFEAs outside agriculture are located in the valley villages. Between 80 to 90 per cent of the employment and 93 to 97 per cent of the total output value are generated in the valley villages (Table 7).

* The conversion rate between the U.S. dollar and the RMB *yuan* was 3.72 in 1987.

Table 7: The Regional Variation of Different Off-farm Activities in Mianchi Township (1990)

Types of Activity	Region	Enterprises		Employment		Total Output Value	
		No.	%	No.	%	('000 yuan)	%
Industry	Valley Village	10	62.5	28	82.4	200.6	95.7
	Mountain Village	6	37.5	6	17.6	9.0	4.3
Transportation	Valley Village	37	92.5	37	92.5	93.0	93.0
	Mountain Village	3	7.5	3	7.5	7.0	7.0
Tertiary Sector	Valley Village	41	87.2	63	91.3	141.5	97.6
	Mountain Village	6	12.8	6	8.7	3.5	2.4

Source: Same as Table 4.

Note: Township run-enterprises are not included here.

In each of the nine villages there are 1-2 flour mills. The Xiasuoqiao Hydropower Station is located in and owned by Yangdian village along the Chengdu-Aba road in the valley. Another Hydropower Station (Chaopo Hydro-electric Power Station) is also located in Yangdian but is owned by the State. There is, therefore, a larger concentration of industrial and transportation activity in Yangdian. Similarly, tertiary activities are concentrated in Mianfong village which lies next to Mianchi town; the township capital and a centre of major services. Unlike the valley villages, the main activities in the mountains are the mining of quartz, barite, and mica.

Off-farm Activities Related to Agriculture

The off-farm activities within agriculture in Mianchi township include mainly livestock, horticulture, and sideline activities. According to township records the total output value of these activities was 1.4 million yuan in 1990 which is 63.8 per cent of the total output value from agriculture and agriculture-related, off-farm activities (Table 8). The sample survey revealed that 47.4 per cent of labour time in agriculture was spent on various off-farm activities.

Table 8: Labour Time Used in Agriculture and Agriculture-related Off-farm Activities and Output Value (1990)

Activities	Labour Days Spent		Output	
	No. (‘000 <i>gong</i>)	%	Value (‘000 <i>yuan</i>)	%
Cropping	233.1	52.6	795.0	36.1
Livestock	79.9	18.0	738.7	33.6
Horticulture	62.8	14.2	379.4	17.3
Sideline Activities	67.4	15.2	285.3	13.0
Total	443.2	100	2198.4	100

Source: 1) Sample household survey
2) Statistics of Rural Economy in Mianchi Township (1990)

Note: 1) The labour time spent on cropping is worked out based on the labour time needed for each crop and the actual area sown. The average labour time required to work one *mu* of maize, wheat, or potatoes is 32.5, 18, and 13 *gong* respectively.

2) There were 2,313 economically active labourers in Mianchi in 1990, and the available time was 693.9 thousand *gong*. Cropping used 33.6 per cent, off-farm activities within agriculture, 30.2 per cent, and off-farm activities outside agriculture 8.9 per cent of this time. Housework involved 7.3 per cent of the time of economically active persons and 20 per cent of labour days remained free.

A *gong* is a labour day of 8 hours.

Livestock. Livestock-rearing is a traditional activity in both valley and mountain villages. Livestock raised include pigs, cattle, sheep, and various farmyard birds such as chickens and ducks. Pigs are raised to meet the farmers' demand for meat and manure and the purpose of raising cattle is to provide draft power.

About 18 per cent of the labour days spent in agriculture-related activities are devoted to livestock. Compared to the labour time spent, the output value from livestock is quite high. Within the livestock sector it is the sale of pork that contributes most to household income, although only 13.6 per cent of the pork enters the market. Poultry comes second as 20.2 per cent of the income from the sale of livestock products is from poultry. In terms of labour days, however, cattle and sheep take over half of the total labour days spent on livestock (Table 9). Only 14.1 per cent of the total output value of livestock products actually enters the commodity market.

Although the total number of livestock raised in some families reaches a considerable scale, not a single household is specialised in raising animals in this township and few labourers raise animals as a main occupation. In fact, most of the livestock-raising is carried out by the theoretically inactive population (including youths under 16, women over 55, and men over 60). According to the farmers' estimates, about half of the work in raising pigs and poultry and 3/5 of the work in raising cattle and sheep are contributed by the inactive population.

Table 9: Livestock, Percentage of Livestock Products Entering the Market, Income from Sales and Labour Days Spent on Livestock in Mianchi Township, 1990

	Pig	Cattle and Sheep	Poultry	Total
No. of animals/birds	2175	4241	6130	
Meat production ('000 kg)	159.1	1.8	0.7	161.1
% of meat sold	13.6	100.0	28.6	14.7
Egg production ('000 kg)	-	-	9.4	9.4
% of eggs sold	-	-	34.0	34.0
Income from sales ('000 yuan)	81.1	2.1	21.1	104.3
% of income from sales	77.8	2.0	20.2	100.0
% of total labour days spent on livestock	37.4	53.9	8.6	100.0

Source: Same as Table 1

- Note:
- 1) The figures for labour days spent on tending animals are based on the following estimates provided by the households and key informants. 1 *gong* (8 hours) per day is required to tend 12 head of pigs, or 8 head of cattle, or 25 head of sheep, and 1 hour per day for 20 head of poultry.
 - 2) Among the total of 4,241 head of cattle and sheep, 1,529 are cattle and 2,712 are sheep.
 - 3) The figures on labour days do not include time spent by theoretical non-labourers.

Horticulture. There are mainly three kinds of horticultural activity in Mianchi township, namely vegetable cultivation, fruit cultivation, and cultivation of other cash crops such as peppers and walnuts. Horticultural activities as a whole earned an income of 379.4 thousand *yuan* and used 62.8 thousand *gong* in 1990. This accounted for 17.3 per cent and 14.2 per cent of the agricultural total respectively.

Mianchi township was the vegetable base of Wenchuan County before 1978. During that time, 10 *mu* of cultivated land from the villages of Mianfeng and Shangunanmiao were set aside for planting vegetables to supply the market in the county capital. After the cultivated land was contracted out to each household, the vegetable growing area expanded. The area sown with vegetables in the whole township was 469.5 *mu* in 1985. It went up to 824 *mu* in 1990. Income from vegetables accounted for 67 per cent of the total horticultural income (Table 10).

The vegetables cultivated here include capsicum, garlic bolt, radishes, and cabbage. The first two are the main vegetables planted for marketing purposes and these account for 60 per cent of the total vegetable cultivation.

Table 10: Output, Sales' Income, and Employment Situation in Horticulture in Mianchi Township (1990)

Activities	Vegetables	Apples	Peppers	Others	Total
Sown area (<i>mu</i>)	824	752.0	758.6	300	2634.6
Current harvesting area (<i>mu</i>)		108.9	246.0		
Output ('000 kg)	1088.4	45.4	3.2	21.9	
Percentage of output for sale	38.7	75.3	87.5	60.7	
Income from sale ('000 <i>yuan</i>)	115.3	25.8	48.3	24.3	213.9
Percentage of income from sales	53.9	12.1	22.6	11.4	100.0
Labour days spent ('000 <i>gong</i>)	45.3	11.0	3.5	3.0	62.8
Percentage of labour days spent	72.1	17.5	5.6	4.8	100.0

Source: As for Table 1

Note: 1) It needs about 55 *gong* for one *mu* of vegetables (51 *gong* for one *mu* of capsicum and 71 *gong* for one *mu* of garlic bolt per crop). The labour time needed to care for one *mu* of apples and peppers during the fruit-bearing stage is 30 *gong* and 10 *gong* respectively. Only 12 *gong* and 2 *gong* per *mu* are needed to take care of plants that are not in the fruit-bearing stage. An average of 10 *gong* is needed for one *mu* of other fruits and cash crops.

Like all off-farm activities within agriculture in this township, no household specialises in just growing vegetables. Based on the survey, the estimate of the labour time spent on vegetable growing shows that 10.2 per cent of the labour time spent on agriculture and 72.1 per cent of the labour time spent on horticulture was devoted to vegetable growing.

A large area in Mianchi township is quite suitable for growing fruits and other cash crops such as peppers, walnuts, and raw lacquer. However, little attention was devoted to the growth of these crops before 1983. In order to encourage the development of fruits and other cash crops and make better use of hilly land, over 8,000 *mu* of hilly land was contracted to each household in 1983. Since that time, some households have begun to grow various fruits and other cash trees on their contracted land, but the scale of fruit production from each household was very small. In 1986 the Forestry Administrative Bureau of Wenchuan County provided young fruit plants to the households at preferential prices. During the period since 1986, over 800 *mu* of apples, peppers, and other cash trees have been planted, both on hilly land and on some cultivated land. In 1990, the total area of fruits and other cash trees reached 1810.6 *mu*, double the amount in 1986. However, most of the fruits and other cash trees have not entered the fruit-bearing stage or are just beginning to bear fruit.

Sideline Activities. The sideline activities in Mianchi township include doing odd-jobs, embroidery, and work as craftsmen such as carpenters, bricklayers, and blacksmiths. The totals for income and employment in sideline activities were 285.3 thousand *yuan* (13.0% of the agricultural total) and part-time

employment for 624 persons respectively in 1990. The labour time spent was about 67.4 thousand *gong*. Odd-jobs contribute to more employment and income than other sideline activities (Table 11). Most of those who perform odd jobs do so in the off-farm season within the county. Most of the odd jobs are more demanding in terms of labour than skills.

Table 11: Employment and Income From Different Sideline Activities (1990)

Activities/ Items	Odd-jobs	<i>Qiang</i> Embroidery	Craftsmen	Other	Total
No. of Workers	350	180	50	44	624
Labour time spent ('000 <i>gong</i>)	31.5	24.3	9.0	2.6	67.4
Percentage of labour time spent	46.4	36.1	13.3	3.9	100.0
Income ('000 <i>yuan</i>)	161.9	40.0	72.0	11.4	285.3
Percentage of income	56.7	14.0	25.2	4.0	100.0

Source: As for Table 1

Note: 1) The time spent on embroidery by non-labourers is not included in this table. Non-labourers contribute about 25 per cent of the work in embroidery.

The *Qiang* nationality has a tradition for a type of embroidery that is famous for its unique pattern and fine workmanship. However, it was not until 1988 that the embroidery was put on sale. An exhibition of Chinese minority nationality products held in Beijing in 1988 helped to find markets for such products, both in China and abroad. Qiangfong village in this township was selected as one of the trial centres for *Qiang* embroidery. Some of the people in other villages are also engaged in this activity. In 1990, about 180 people took this activity as a subsidiary occupation and created an income of 40 thousand *yuan*.

Spatial Variations in Off-farm Activities within Agriculture. Activities such as livestock-raising and odd-jobs do not show variations between valley and mountain villages. Variations are notable with respect to vegetable growing, apple growing, pepper cultivation, and embroidery. Vegetable cultivation is mainly concentrated in the villages of Shanguanmiao and Mianfong, in the valley where vegetable production was an important activity even before 1978. The introduction of CPRH provided an impetus to this activity because of its marketing potential and the skills and experience of farmers. Baitukan and Hepin

villages in the mountains have relatively better natural conditions for the production of apples. Qiangfong is the only village in the valley where apple production is important. Also, the two mountain villages of Diaodao and Keyue have better natural conditions for growing peppers and so most of the pepper production is concentrated here. Embroidery, as indicated earlier, is mainly concentrated in Qiangfong village.

Labour Demand Profile in Agriculture and Agriculture-related Off-farm Activities

Table 12 shows the labour demand profile of the major cereal crops and vegetables. The information is based on the sample survey and is indicative of the complementarity or conflict between cropping activities and vegetable production.

Vegetable cultivation provides considerable employment during March, July, August, and January. There is some conflict in labour demand between vegetable growing and cereal crops during May-June and September-October. Villagers reported that there is some shortage of labour during these months. However, the shortage is met through labour exchange among families.

Table 12: Labour Demand Profile among Major Cereal Crops and Vegetables

Month	Soil Preparation	Seeding or Sowing	Spreading Manure	Weeding	Harvesting	Marketing
March		C1				
April	A4	A1	A3			
May	C5	C5	A4, C10	A5.5	B2	
June			A6, C10	A2, C6	B2	
July	D15			C3		
August		D15	D5	D3	C0.2	C2
September	B2		B4, D10	D4	A3, C0.4	C4
October	B1	B1	B4, D5	D3	A4, C0.4	C4
November				B1	D0.3	D3
December					D0.4	D4
January					D0.3	D3
February						

Source: Sample Household Survey.

Note: A, B, C, D stand for the crops of maize, wheat, capsicum, and garlic bolt respectively. The figures represent labour time (*gong*) spent per *mu* of land under a particular crop. For example, A4 in row 2 and column 2 means that 4 *gong* were spent on soil preparation for one *mu* of maize in April.

Among fruits and cash crops, apples are relatively more demanding of labour time. During February-March about 10-15 *gong* per *mu* are required for activities such as applying lime, irrigating, and pruning. Again, during September-November, the labour needed for harvesting and marketing is greater. About 15-20 *gong* per *mu* are required for this purpose. This is also the time when both cereal crops and vegetables need labour. However, in the Mianchi villages this conflict has not thus far been apparent, because, at present, only a limited number of orchards are at fruit-bearing stage.

Sideline activities are subsidiary occupations and are carried out concurrently with farming activities. In fact, with the exception of persons engaged in full-time, permanent jobs in rural industries or enterprises, almost everybody spends time in farming when help is urgently needed.

Factors Affecting Off-farm Employment in Mianchi Township

Mianchi township does not have a high level of off-farm employment. As indicated above, only about 11 per cent of the labour force is in rural enterprises, not all of which is full-time or permanent employment. About 30 per cent of the labour force undertake off-farm activities within agriculture. A mix of farming and related off-farm activities is the main source of income employment in Mianchi. What have been the factors responsible for the current state of off-farm employment? A number of factors can be distinguished and these have been recorded below.

Policy Attention

Not all areas in Wenchuan County received the same level of policy attention or preferential treatment with respect to policy and programme implementation. Villages near the county headquarters received relatively better policy attention in terms of government aid and technical support. Mianchi was therefore a late recipient of government attention. For example, government support for fruit-growing in Mianchi came only in 1986 whereas Weizhou, the county capital, received it in 1983.

Geographical Position

Areas having a favourable geographical position, with better access to and location of State-owned industrial projects had advantages in establishing or introducing new non-farm activities. Yangdian in Mianchi is an example. The construction of the Hydropower Station gave a boost to transportation.

Market

Off-farm activities come about in areas with easy access to markets. Locations along the Chengdu-Aba road have emerged as markets for off-farm produce such as fruits, vegetables, and tertiary services.

However, in Mianchi, a number of products also have export markets. For example, the quartz, barite, and mica mined here are exported to other areas in Wenchuan. Electricity also has a market outside Mianchi township. Sand and prefabricated components are used as construction material in Mianchi and nearby townships.

Most of the retail trade and other tertiary services are of a local nature, apart from catering (restaurants & hotels) which provides services basically to travellers.

Market opportunities for vegetables and fruits still remain to be exploited. Currently, outside merchants transport about 3/5ths of the vegetables sold in Mianchi to Chengdu. About 1/5th of the vegetables is

transported to outside provinces such as Qinhai and Gansu. About 50 per cent of the apples that enter the market are sold outside the township, mainly to Chengdu and Guanxian. Livestock products are the only products that are more or less consumed within the township, but the demand for pork remains considerable in the northern and southern counties of Aba Prefecture. At present, *Qiang* embroidery is marketed through the County Tourist Bureau. Eighty per cent of it is sold to the Provincial Foreign Trade Bureau for export and 20 per cent of it is sold locally. The potential for expanding the market for *Qiang* embroidery remains significant.

Food Sufficiency

Since 1983 every township in Wenchuan County is reported to have been able to provide enough food for the local farming population. The main outlet for marketing foodgrains is the Township Grain Purchasing Station. Mianchi township basically produces maize, wheat, and potatoes. Therefore, farmers normally exchange maize for rice from the Township Grain Purchasing Station at fixed exchange rates. Informal exchanges also take place in other forms; vegetables for rice, for example. Food security was not perceived as a reason for not going into off-farm activities in the surveyed households. But the local leaders were of the opinion that vegetable cultivation should only be cautiously expanded as it might result in shortages in the supply of grains.

Capital and Technology

Sources of funds for off-farm activities vary by type of activity and the scale of activity itself. For off-farm activities outside agriculture there are three sources of funds: bank loans, government grants, and self-generated funds. For enterprises at township level, self-generated funds and bank loans are an important source of investment, because government grants depend upon policy priority. The hydropower station is the only enterprise that receives government grants in Mianchi. Individuals, however, have to depend on loans from family and friends. To establish off-farm activities within agriculture, only small investments are required. Saplings of fruit trees are distributed by the Government at nominal cost.

Formal training, learning from family members, and learning from practice are the three ways of adapting to technology or acquiring skills. Technicians in township/village enterprises, such as the hydropower Station, are formally trained by the enterprise. Workers mostly learn the skills on the job. In the case of horticulture, livestock, and related activities the learning is through neighbours and family members with guidance from technicians from the relevant extension departments.

Contribution of Off-farm Activities to Household Income

The income survey of 30 households in Mianchi reveals that income from sources other than cropping accounted for 74.9 per cent of the total household income and 92 per cent of the total income in cash (Table 13). Off-farm activities within agriculture contributed 52.1 per cent of the cash income and 33.9 per cent of the income from off-farm activities outside agriculture. Sideline activities, horticulture, and tertiary activities ranked first, second, and third in terms of contributions to household income.

According to the level of annual income per person, the 30 sample households were divided into three categories: those with incomes of over 500 *yuan*, those with 200-500 *yuan*, and those with less than 200 *yuan*. The breakdown of cash income among these groups shows that off-farm activities within agriculture are an important source of cash income to all three categories. However, income from

horticulture, transportation, and tertiary services contributed more to the highest income group than to other groups. In contrast, the incomes from sale of crops and sideline activities were the highest for the low income group (Table 14). This is indicative of the high output value of horticulture, transportation, and tertiary services. It should also be noted that transportation and tertiary services require relatively higher initial investments.

Table 13: Household Income Breakdown for the 30 Selected Households in Mianchi Township (1990)

Sectors	Total Output Value		Income in Cash	
	('000 yuan)	Share (%)	Value ('000 yuan)	Share (%)
Cropping	29.2	25.1	4.4	8.0
Horticulture	17.0	14.6	11.7	21.6
Livestock	27.8	23.9	5.0	9.1
Sideline Sector	15.8	13.6	15.1	27.6
Industry	5.5	4.7	4.6	8.4
Transportation	7.8	6.7	5.1	9.3
Tertiary Sector	13.2	11.3	8.9	16.2
Total	116.3	100	54.8	100

Source: Sample Household Survey

Table 14: The Cash Breakdown of Different Household Groups (1990)

Class	High income group (> 500 Rmb)	Middle income group (200-499 Rmb)	Low income group (< 200 Rmb)
Sectors	Income Share (%)	Income Share (%)	Income Share (%)
Cropping	1.2	7.1	26.0
Horticulture	30.2	18.1	15.6
Livestock	3.7	11.7	10.4
Sideline	9.9	33.3	41.6
Industry	11.1	9.1	0
Transportation	25.3	3.2	0
Tertiary	18.5	17.5	6.5
Total	100	100	100

Source: Sample Household Survey