People's Republic of China

Ex-Post Evaluation of Japanese ODA Loan

Hunan Environmental and Living Conditions Improvement Project

External Evaluator: Hiromi Suzuki S., IC Net Limited

0. Summary

This project aimed to improve the living conditions of the residents of the Wuling Mountain region[1] located in the northwest part of Hunan Province, where the population living in poverty is concentrated, by constructing small to mid-sized infrastructure related to education, health, water supply, and rural markets.

This project has been highly relevant to both China and Hunan Province's development plans and development needs, as well as Japan's ODA policy, at the times of both appraisal and ex-post evaluation; therefore its relevance is high. In relation to operation and effect indicators, all subprojects on education, health, water supply and rural market sectors have achieved the goals of both the indicators set at the time of appraisal, as well as auxiliary indicators added at the time of ex-post evaluation. Satisfaction levels of the beneficiaries are also high, and on the whole, the expected effects from the project can be recognized, thus the effectiveness and impact are high. Project cost was within the plan, but the project period exceeded the plan, therefore, efficiency of the project is fair. As for operation and maintenance, although there is no major problem in the financial aspect, there are some concerns in the organizational aspect; especially the health centers located in small villages are facing difficulties in order to secure medical doctors and nurses. In the technical aspect, although manuals and training systems are in place, the level of awareness when it comes to the importance of maintenance is still low, thus maintenance in the work place is not being fully implemented. Due to this, the maintenance status especially of schools and hospitals, need to be improved. In sum, some minor problems have been observed in the organizational, technical and current status of the operation and maintenance, therefore sustainability of the project effects is fair.

In light of the above, this project is evaluated to be satisfactory.

[1] The Wuling Mountain region in the northwestern part of Hunan Province consists of the Xiangxi Tujia and Miao Autonomous Prefecture, and the Zhangjiajie City.

1. Project Description

Project Location


Photo 1: Yongshun County's Shidi Town Rural Market: view of the garment market

1.1 Background[2]

Hunan Province was a typical inland region where its rural population accounted for 70% of the total population (country average: 64%). Due to poverty alleviation efforts conducted throughout 20 years after the market-opening reform policy was adopted, approximately a total of 1.2 billion people have come out of poverty, however, in 2002, 20 counties (cities and districts) out of 127 counties were designated as National Level Poverty counties. The "Hunan Province Rural Poverty Alleviation Plan (2001-2010)" aimed to improve the enrollment ratio of elementary and middle schools to 99% and 95% respectively; to increase the ratio of villages with health centers to 90% and to increase the water-supply system coverage rate to 90%.

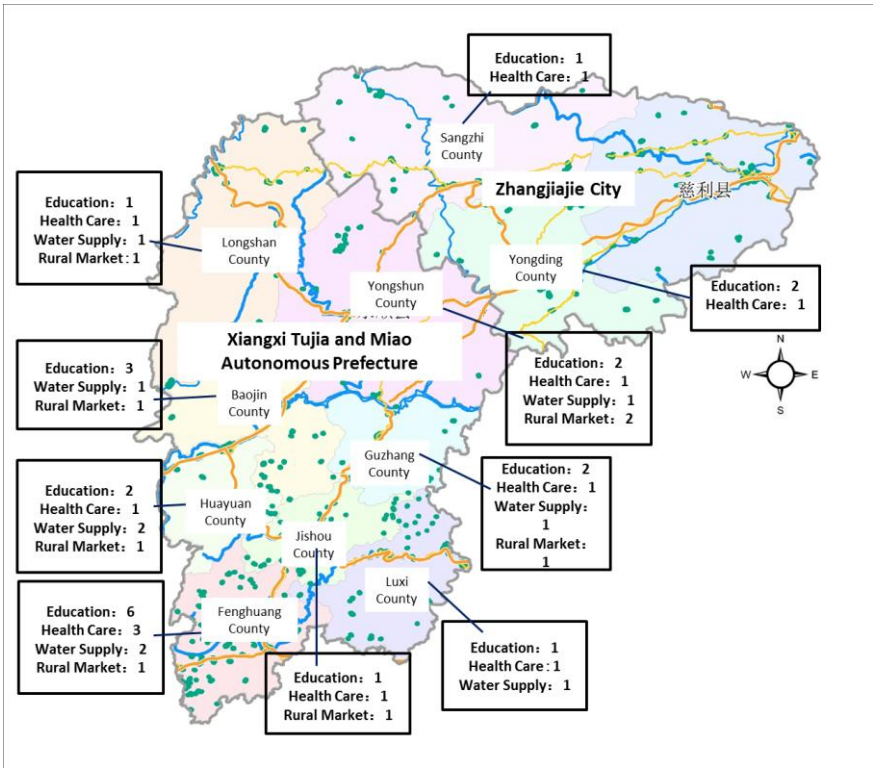
The target area of this project, namely the Wuling Mountain Area in northwest of Hunan Province, is a mountainous area where the Province's poorest population was concentrated. Agricultural productivity was low, and although the majority of the residents were making a living on agriculture, most of the crops were for self-consumption. The annual per capita net income in the region was as low as 1,360 Yuan (in the year 2000). While the national average poverty rate was approximately 3%, the said region's rate stood out at 9% (in the year 2000). Low economic and livelihood levels in the region and difficulty in accessing public services resulted in a low Human Development Index (which is based on health conditions, literacy rates, etc.), which in turn made it even more difficult to come out of the vicious cycle of poverty.

1.2 Project Outline

The objective of this project is to improve the livelihood of residents living in the Wuling Mountain Region in the northwest part of Hunan Province where poverty is

[2] Based on documents provided by JICA and the Executing Agency.

concentrated, by constructing social service facilities (i.e. education, health, water supply) and rural markets, thereby contributing to the region's social and economic stability.



Source: Based on documents provided by the Executing Agency.

Figure 1　Location of Subprojects by County

Loan Approved Amount/ Disbursed Amount	7,882 million yen / 7,460million yen
Exchange of Notes Date/ Loan Agreement Signing Date	March 28, 2003 / March 31, 2003
Terms and Conditions	Interest Rate: Education, Health, Rural Market 2.2%, Water Supply 0.75% Repayment Period: Education, Health, Rural Market 30 years (Grace Period 10 years), Water Supply 40years (Grace Period 10 years) Conditions for Procurement: General Untied
Borrower / Executing Agency	Government of the People's Republic of China / Hunan Provincial People's Government
Final Disbursement Date	July 30, 2012
Main Contractor (Over 1 billion yen)	None
Main Consultant (Over 100 million yen)	None
Feasibility Studies, etc.	F/S: Hunan Province International Construction Consultancy Company, July 2002 "Special Assistance for Project Formation" JICA, February to June 2002
Related Projects	"General Poverty Alleviation Project" World Bank, 1995 to 1999

2.　Outline of the Evaluation Study

2.1 External Evaluator

Hiromi Suzuki S., IC Net Limited

2.2 Duration of Evaluation Study

Duration of the Study: August 2014 – November 2015

Duration of the Field Study: November 27, 2014 – December 18, 2014;
April 6, 2015 – May 18, 2015

2.3 Constraints during the Evaluation Study

At the time of appraisal, operation and effect indicators and their targets were set for

each subproject and were officially agreed between JICA and the Executing Agency in order to quantitatively assess the effectiveness of the project. However, at the time of the ex-post evaluation the following four problems became clear: (1) there were subprojects that did not have any indicators set, or even if they did, the indicators were not sufficient to thoroughly assess the effects; (2) the exact definition and formulae of the indicators were not clearly defined; (3) there were cases where different indicators were set even though the subprojects belonged to the same sector and had a similar scope; and (4) the above problems were an obstacle to assess the effect of the project at the sector level. In order to deal with these problems, in this ex-post evaluation, homogeneous definitions and formulae were established for the officially agreed indicators. In addition, an attempt was made to establish auxiliary indicators in order to more accurately assess the operation and effectiveness of each subproject. For this, while taking into consideration the differences in the scope of each subproject, at the sector level, auxiliary indicators were standardized to the extent possible. By doing this, the level of accuracy of the project's effect at both the subproject and sector levels was enhanced. However, there were some restrictions depending on the auxiliary indicator, such as availability of data at the township, district, and/or city level, or data was simply not to be publicized. Facing these limitations in setting auxiliary indicators, it was not possible to accurately and thoroughly measure the project's effect.

A Poverty Line[3] was supposed to be used in order to assess one of the expected impacts of the project, namely the "improvement of the living and cultural standard of the poor". The poverty standard used in China is the "Poverty Line" established by the National Bureau of Statistics. However, there are on-going discussions even within the country, in terms of its accuracy and appropriateness. Especially, the fact that its definition is revised so often that a year-on-year comparison is not possible, made it difficult for this ex-post evaluation to use it as a poverty standard which is necessary in order to assess the project's impact. Therefore, in this ex-post evaluation, after

[3] The definition of Poverty in China until 2007 was divided into two: "Population Living in Survival Conditions" who are the people living below the poverty line which was based on the minimum amount of calorie consumption, and the "Low Income Population" who were living just above the poverty line. However, after 2007, the poverty line was defined as "the income necessary to secure the least minimum necessary clothes, food and shelter" and taking into account the increase in consumer price index, it has been adjusted almost every year from 1,067 yuan in 2007 to 2,736 yuan in 2013. However, there is still a lot of debate regarding the definition and basis to establish what is the "least minimum necessary clothes, food and shelter", as well as the definition of urban and rural area in the population statistics, which is ambiguous. On the other hand, in some cases, the poverty line announced by the World Bank in 2008 (1.25 U.S. dollars per day) has been converted using 2005's Purchasing Power Parity and the result has been used as a poverty standard. But also, for purposes of public assistance programs, different poverty standards exist, resulting in a situation where there is a lack of a "Poverty Standard" that is "objective, logical and with publicness" (Source: based on interviews to the Executing Agency and experts, research papers (Li, Li "A study on the poverty line in the rural area and incidence of poverty – based on data from the National Statistical Bureau and Department of Public Welfare" *Research on Modern Economics* No. 8, 2012, and Cheng Yonghong, "Poverty Index estimation and analysis since China's economic reform" *Research on Contemporary Economy*, No.6, 2013).

discussions with the Executing Agency and JICA, instead of using the "Poverty Line" to assess the "improvement of the living and cultural standard of the poor", the "Net average income per rural resident" is used although it does have limitations as an indicator that accurately assesses the effect of the project on poverty reduction.

3 Results of the Evaluation (Overall Rating: B[4])

3.1 Relevance (Rating ③[5])

3.1.1 Relevance to the Development Plan of China

The national poverty alleviation policy at the time of appraisal was the "China Rural Poverty Alleviation Program (2001-2010)" which focused on poverty alleviation of two groups: approximately 300 million people living below the poverty line (625 yuan in 2000) classified into "Population Living in Survival Conditions", as well as approximately 6,000 to 7,000 people living barely above the poverty line classified as "Low Income Population". The Program specifically set six main principles, among which the following are highly related with the project: (1) promoting the construction of rural infrastructure in poor areas; (2) promoting education, healthcare, culture, science and technology, especially in areas where ethnic minority groups live; (3) implementing poverty alleviation activities basically at the township, municipal and village levels even though the basic unit would be the county. The Wuling Mountain Area, which is the target area of this project, was one of the six regions in the country classified as "National Focal Development Regions for Poverty Alleviation" and it was a region where immediate measures were needed. The Hunan Province Government formulated the "Hunan Province Rural Poverty Alleviation Plan (2001-2010)" based on the National Program", aiming to improve production and living environment as well as quality of life, in order to solve the basic problem of "clothes, food and shelter". Specifically, it aimed to achieve elementary and middle school enrollment ratios of 99% and 95% respectively by 2010, and to improve the proportion of villages with health care centers to 90%, among other things.

The national poverty alleviation policy at the time of the ex-post evaluation is the "China Rural Poverty Alleviation and Development Program (2011-2020)". The Program states that even though the problem of "clothes, food and shelter" improved, the income disparity in China is growing, and it emphasizes that the need to reduce relative

[4] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory.
[5] ③: High, ② Fair, ① Low.

poverty is becoming apparent[6]. It defines the poverty line as "the per capita average annual income of less than 2,300 yuan". It also establishes 14 poverty areas (total of 679 counties, among which 31 are in Hunan Province), and aims to continue taking actions for poverty alleviation. Based on this National Program, the Government of Hunan Province formulated the "Hunan Province Rural Poverty Alleviation Plan (2011-2020)". The Plan indicates that there is still a big disparity in the development levels of the urban and rural areas, and that relative poverty is a serious problem. The Wuling Mountain Area continues to be considered as a poverty area, and it puts special emphasis in reducing the poverty of farmers (mostly ethnic minority groups) that live in this area. In order to solve the poverty problem, the said Plan aims to devote its resources to identify main industries and its sustainable development, as well as to continue constructing basic infrastructure such as education, health care, water supply, electricity, roads and small-scale irrigation. In addition, by 2015, it plans to attain 80% of water supply coverage, 100% of basic education attendance rate (nine years of elementary and middle school) and 95% in the proportion of villages with health care centers.

The above shows that both at the time of appraisal and the ex-post evaluation, the Wuling Mountain Area was and continues to be an important poverty area in both national and provincial development plans, and aims to develop infrastructure in order to alleviate poverty. In sum, this project is highly relevant to the development policies at the national and provincial levels; therefore its relevance is high.

3.1.2 Relevance to the Development Needs of China[7]

As mentioned above, the Wuling Mountain Area located in the northwest of Hunan Province is a mountainous area (more than 70% of the total area are mountains), and within Hunan Province, it is an area where the population living in poverty is concentrated. When the national average poverty rate was 3% in 2002, the rates were especially high reaching 34% in the Xiangxi Tujia and Miao Autonomous Prefecture, and 15% in Zhangjiajie Prefecture-level City. Because the Wuling Mountain Area has a Karst topography with low water retention soil, it is difficult to secure arable land, and because agricultural productivity was low, economic and household budget levels were low. In addition, due to the difficulty to access public services, health conditions, literacy rates, access to safe drinking water remained low; resulting in a vicious cycle where it became even more difficult to escape from poverty. From the above, it is clear

[6] When it comes to poverty, there are the "absolute poverty" and "relative poverty. The former is a situation in which the least minimum necessary living standards are not fulfilled, whereas the latter is a situation, where relative to the majority of a certain regional society, people are poorer (Source: UNICEF). At the time of appraisal, "absolute poverty" where the least minimum necessary "clothes, food and shelter" was not fulfilled was a serious problem, whereas at the time of the ex-post evaluation, the issue is the "relative poverty".

[7] Based on documents provided by JICA.

that the development needs of the project were high at the time of appraisal.

The most recent statistics available at the time of ex-post evaluation were those from the year 2012. According to these data, the average annual income per farmer in the Wuling Mountain Area improved from 1,600 yuan in 2002 to 4,600 yuan in 2012. Access to public services has clearly improved when compared to the situation that existed in 2002, and especially elementary school attendance rate reached 99% in 2010. However, as, agriculture productivity continues to remain low, it is classified as a National Poverty Area. While the national average poverty rate[8] in 2012 was 7%, the rates for Xiangxi Tujia and Miao Autonomous Prefecture and Zhangjiajie Prefecture-level City were still high at 36% and 18% respectively. Thus the development needs in terms of poverty reduction at the time of ex-post evaluation remain high.

3.1.3 Relevance to Japan's ODA Policy

Japan's assistance policies for China at the time of appraisal were the following three: namely, the "Economic Cooperation Plan for China (formulated in 2001)", the "Policy for Conducting Overseas Economic Cooperation Activities (2005-2008)" and the "Country-Specific Action Policy (2002-2005)".

The "Economic Cooperation Plan for China (formulated in 2001)" shifted its priority area from the traditional model which focused on the development of the coastal area, to the improvement of living conditions, social development, human resource development, institutional-building and technology transfer of the inland region, establishing six focus areas. Among those areas, this project contributes to the assistance for the eradication of poverty, i.e. the project is an economic and social development assistance project that aims to help reduce the gap in the per capita income between the coastal and inland areas, thus it is highly consistent with Japan's assistance policy. The "Policy for Conducting Overseas Economic Cooperation Activities (2005-2008)" establishes four focus areas, and the project coincides especially with (1) assistance for poverty reduction, and (2) development of a basis for sustainable development. On its part, the "Country-Specific Action Policy (2002-2005)", established environmental protection, human resource development and poverty alleviation as its focus areas, based on the fact that regional disparities were increasing, and problems related to environment and infectious diseases, etc., appeared as China experienced a sudden growth. It also establishes that it will consider cooperating in activities that contribute to the living conditions of the inland area. As it can be seen, the purpose of the project is consistent with all assistance policies for China.

[8] As mentioned in footnote 3, due to the change in official poverty standard in 2007, it is not possible to simply compare the poverty rate indicated in the development needs at the time of appraisal in 2002, with the poverty rate at the time of ex-post evaluation.

In light of the above, this project has been highly relevant to China's development plan and development needs, as well as Japan's ODA policy. Therefore its relevance is high.

3.2 Efficiency[9] (Rating ②)

3.2.1 Project Outputs

This project planned to develop a total of 56 major facilities in 18 townships belonging to 10 counties, covering four sectors: (1) development of educational facilities (extension and construction of elementary and middle school buildings, dorms and procurement of educational equipment), (2) development of health care facilities (extension and construction of hospitals and health centers, procurement of medical equipment), (3) development of rural markets (construction of rural markets, procurement of equipment such as refrigerators) and (4) development of water supply facilities (i.e. extension and construction of water purification plants and water distribution network). In addition to these, it was also planned to develop elementary schools, health centers, drinking water facilities in villages (total or 351 places), as secondary works. Compared to the plan, a total of 49 subprojects were actually conducted in 17 townships belonging to 10 counties, and secondary works were conducted as planned. The main reasons in output changes are as follows (see Annex 1 for township-level reasons for changes in output).

	
Education Subproject: Jishou City No. 8 Elementary School	Health Care Subproject: Sangzhi County Ruitapu Township Health Center

[9] Efficiency is evaluated with the impact in mind.

	
Water Supply Subproject: Longshan County Liye Township Water Purification Plant	Rural Market Subproject: Huayuan County Chadong Township Rural Market

Photo 1: Representative Subprojects per Sector

(1) Lack of accuracy in the geological survey and cost estimation at the time of the feasibility study (F/S): As for the construction of a health care facility, it was found that there was a fault in the planned construction site once the civil works had started. As for the construction of rural markets, construction sites had to be changed as it was found that the geological features were more complex than expected, and additional foundation works had to be done. Also, in the case of water supply facilities, it became clear that water conduction from the water source would be difficult and expenses would run up, thus the petition of the subproject itself was cancelled. In addition, especially for rural market subprojects, it became clear that cost estimations at the time of the detailed design would be much higher than the county's budget, thus the number of markets had to be reduced, resulting in the development of only those markets with the biggest transaction volumes.

(2) Changes due to the project delay: Because of the delays in the project, especially subprojects with high development needs, such as the case of health care facilities; these were constructed earlier than the project and were excluded from the project.

(3) Repayment capacity of the beneficiary institution[10]: Although it was possible to transfer the yen loan funds of those subprojects whose applications were cancelled to other subprojects, the repayment capacity of the beneficiary institution was established as one of the selection conditions for this project. Due to the fact that institutions that could meet those standards were limited, the number of subprojects decreased.

[10] Selection criteria for the subprojects were: (1) to be a County or City defined as national or provincial level poverty assistance/focal development area; (2) to be a remote township; (3), not to duplicate with projects of other donors; (4) to be an area of ethnic minority; (5) the beneficiary institution has to have repayment capacity. All subprojects into which funds were reallocated comply with all these conditions.

3.2.2 Project Inputs

3.2.2.1 Project Cost

The total planned project cost was 10,543 million yen, from which the Japanese ODA loan portion was 7,882 million yen, and 2,661 million yen was planned to be covered with domestic funds from the central government's subsidy for Hunan Province Poverty Reduction Projects, as well as provincial and city budgets. The total actual project cost was 8,222 million yen, which is lower than the planned amount, partially due to reduction in project output. The breakdown was 7,460 million yen for the Japanese ODA loan portion, and 762 million yen of domestic funds. The total project cost was 78% compared to the planned amount which was within the plan.

Table 1: Project Cost: Planned and Actual (Unit: Million Yen)

Sector	Planned Value			Actual Value			Compared to Planned
	Japanese ODA Loan[1]	Local Currency	Total	Japanese ODA Loan[1]	Local Currency	Total	
Education	1,835	0	1,835	2,285	122	2,407	131%
Health Care	1,299	0	1,299	971	223	1,194	92%
Water Supply	2,141	0	2,141	1,773	301	2,074	97%
Rural Market	2,044	0	2,044	1,852	116	1,968	96%
Supplementary Projects[2]	0	398	398				
Others	0	1,942	1,942	579	0	579	30%
Price Escalation	127	18	145				
Physical Contingency	436	142	578				
Interest During Construction	0	161	161				
Total	7,882	2,661	10,543	7,460	762	8,222	78%

Source: Planned amounts are based on documents provided by JICA. Actual amounts are based on information provided by the Executing Agency.

Planned amounts: Exchange rate was 1 US dollar = 121yen / 1 yuan = 15 yen / price escalation was 1.6% for the foreign currency portion, and 0.3% for the domestic currency portion / physical contingency rate: foreign currency portion 5.0%, domestic currency portion 6.0% / Base year used in cost estimation: September 2002

Actual amounts: exchange rate was 1 yuan=13.81yen (monthly average from January 2005 to July 2014).

1: The breakdown of the planned Japanese ODA loan amount was: 1,187 million yen of foreign currency and 6,695 million yen equivalent of local currency. Breakdown of actual amounts into foreign and local currency were not available.

2: Actual amounts of the secondary works are included in the amount of the main works.

The main reasons for the change in project cost are as follows:

a. Education: The addition of the underground multistory parking lot of First Zhangjiajie Middle School's gymnasium, as well as the fact that some schools increased their scale and added secondary facilities as well, resulted in a cost that is 131% compared to plan.

b. Health Care: As the location site of the Jishou health care subproject was changed, additional costs related to foundation works arose. On the other hand, the health care subproject in Baojin County was developed separately with funds from the

Public Health Administration Department, thus it was excluded from the project, resulting in a cost that is 92% compared to plan.

c. Water Supply: It took more time than expected in order to assess water conduction methods from the water source, as well as coordination for land acquisition, thus, some water supply subprojects were excluded from the project and were developed separately. In addition, although it was possible to reallocate the Japanese ODA loan portion of the excluded subprojects to other subprojects, as mentioned in "3.2.1 Project Output", there were subprojects that could not be executed because the fact that an essential selection criteria of the subprojects was "that the beneficiary institution must have repayment capacity", and entities that could meet such condition could not be found. Thus the project cost was 97% compared to plan.

d. Rural Market: In some townships, subprojects that were planned to be developed within this project were excluded due to project delays, and were developed separately with their own funds. In addition, due to the maximum limit of the Japanese ODA loan, measures such as narrowing down the subprojects to those with the highest priority had to be taken, leaving out some subprojects, which resulted in the project cost that is 96% compared to plan.

From the above, in the education sector where one subproject was added, the project cost was slightly higher than plan. However, for those sectors in which subprojects were cancelled such as health care (two cases out of 127 were cancelled), water supply (two cases out of 11 were cancelled) and rural markets (four cases out of 161 were cancelled), all project costs were within plan[11].

3.2.2.2 Project Period

The planned project period was from March 2003 to December 2006 (three years, total of 46 months). The actual project period was from March 2003 to July 2014 (11 years five months, total of 137 months) which resulted in 298% compared to plan, substantially exceeding the plan.

11 However, since accurate information on the cost of those subprojects that experienced changes in their output could not be obtained, it was difficult to confirm whether the project cost is actually appropriate when compared to their respective increase/decrease in output.

Table 2: Project Period: Plan and Actual

Step	Planned	Actual	Compared to Planned	Delay of start
L/A Signing	March 31, 2003	March 31, 2003		
A. Education				
Design	July 2003to February 2004 8 months	January 2004 to January 2009 61 months	763%	6 months
Tender/Procurement	January 2004 to January 2005 13 months	October 2004 to January 2010 64 months	492%	9 months
Civil works	January 2004 to January 2005 13 months	February 2005 to January 2011 72 months	554%	13 months
Installation of facilities and equipment, test run	February 2005 to December 2005 12 months	February 2010 to October 2012 33 months	275%	60 months
B. Health Care				
Design	July 2003 to February 2004 8 months	January 2004 to January 2009 61 months	763%	6 months
Tender/Procurement	January 2004 to January 2005 13 months	October 2004 to January 2010 64 months	492%	9 months
Civil works	January 2004 to January 2005 13 months	February 2005 to December 2013 107 months	823%	13 months
Installation of facilities and equipment, test run	February 2005 to December 2005 12 months	February 2010 to July 2014 54 months	450%	60 months
C. Water Supply				
Design	July 2003 to February 2004 8 months	January 2004 to January 2009 61 months	763%	6 months
Tender/Procurement	January 2004 to November 2004 11 months	October 2004 to January 2010 64 months	492%	9 months
Civil works	January 2004 to April 2006 28 months	February 2005 to January 2011 72 months	554%	13 months
Installation of facilities and equipment, test run	September 2004 to April 2006 20 months	February 2010 to February 2012 33 months	125%	65 months
D. Rural Market				
Design	July 2003 to February 2004 8 months	January 2004 to January 2009 61 months	763%	6 months
Tender/Procurement	January 2004 to January 2005 13 months	October 2004 to January 2010 64 months	492%	9 months
Civil works	January 2004 to January 2005 13 months	February 2005 to January 2011 72 months	554%	13 months
Installation of facilities and equipment, test run	February 2005 to December 2005 12 months	February 2010 to February 2011 13 months	108%	60 months
Project As a Whole	**March 2003 to December 2006 46 months**	**March 2003 to July 2014 137 months**	**298%**	

Source: Planned periods are from documents provided by JICA. Actual periods are from documents provided by the Executing Agency.
Note: Project completion was defined as the delivery of facilities and equipment of the whole project.

There were no major delays in starting the respective procedures of design, tender/ procurement and civil works. However, because the period of the civil works substantially exceeded the planned period, the period for the installation of facilities and equipment, as well as test runs was delayed. The main reasons of the substantial delay in

the project period are as follows:

a. Project as a whole: (1) since this was the first Japanese ODA loan project for the Executing Agency, it took time for them to get used to several procedures such as making requests to JICA for changes in subprojects, as well as procurement procedures according to Japanese ODA loan guidelines. (2) Because the project consisted of a large number of subprojects, it took more than expected to conduct and coordinate the various procedures in each process. As a result, the needs of each township changed, which meant having to change the content of the subprojects or cancel subprojects altogether.

b. Subproject level: (1) for the health care subproject in Jishou, the geological study at the design stage was not sufficient, and a fault in the expected site location of the hospital was found once the civil works had already started. Due to this, the works had to be interrupted, and time was needed to conduct additional studies and designs. While the subproject was expected to be completed in 15 months, it took approximately four years and a half, ending in July 2014. Similar problems related to geological features were found as well in some water supply and rural market subprojects. Especially in the latter, it was necessary to reinforce the foundation works of some parking lots. In the case of some water supply subprojects, basic confirmation of facts such as securing the water source and assess water conduction methods were not sufficient, making it necessary to cancel the request. As can be see, the lack of proper studies in the F/S considerably affected the project period[12]. (2) As the project experienced delays, the financial losses of contractors increased as market prices increased and exchange rates fluctuated, forcing some subprojects to interrupt their works.

3.2.3 Results of Calculations of Internal Rates of Return (Reference only)

As no Internal Rates of Returns (IRR) were calculated for this project at the time of appraisal, no IRR was calculated at the time of ex-post evaluation as well.

From the above, the total project cost was within the plan and it was appropriate when taking into consideration the increase/decrease in outputs. On the other hand, as for the project period, basic problems such as lack of proper geological studies resulted in a substantial delay of the Jishou health care subproject, which in turn resulted in the delay of the project period as a whole. From a general point of view, the project period exceeded the plan and was not appropriate when considering the actual output; therefore,

[12] The Executing Agency itself considered that there were flaws in the geological study in the F/S as well as in securing water sources etc., and that they should have improved the accuracy of these studies. They considered that these issues should be captured as lessons learned.

efficiency of the project is fair.

3.3 Effectiveness (Rating ③)

3.3.1 Quantitative Effects (Operation and Effect Indicators)

In 2002, a base line survey was conducted for this project, and based on the survey; the baseline values of 2002 as well as the target values to be met two years after project completion were officially agreed on a sector-basis between JICA and the Executing Agency. In the ex-post evaluation, these were considered as basic indicators. However, for the additional education subproject, as well as all water supply subprojects, basic indicators were set separately, in order to assess more precisely their operation status and appearance of their effects.[13] In addition, for the education sector, even if the indicators were not established as basic indicators, "enrollment ratio", "intake rate" and "dropout rate" were set and collected as common auxiliary indicators. For subprojects in which student dormitories were constructed, the "dormitory utilization rate" was established as an indicator. In the ex-post evaluation, the auxiliary indicators were considered only as reference information. Also, the evaluation of the effectiveness for the project as a whole was done on a sector basis, as was done at the time of appraisal.

a. Education (see Annex 2 for detailed indicators): All 21 schools met the target set for the basic indicators. Enrollment rates and intake rates are either improving or have reached almost 100% and the dropout rates are also low. As for the schools in which student dormitories were constructed, with the exception of the Jiaoziya Township Nine-year School where students from the rural area are decreasing, all other dormitories' utilization ratios were 100%. As for schools in which libraries were constructed, targets on the number of books per student have been met 100%. In addition, as for the Zhanjidae First Middle School's gymnasium, which has a capacity to accommodate 2,000 persons; it is being used not only for the school's

Photo 2: Fenghuang County Ala Township: Girls dormitory at Middle School No. 3.

[13] A Base Line Survey of the project was conducted in 2002, and based on it, a base value and a target value to be met two years after project completion was set for each subproject, and officially agreed between JICA and the Executing Agency. However, for the subproject that was added in Yongding Zhangjiajie First Middle School, indicators were newly set as the content of the subproject was the construction of a gym and its multistory parking lot, and new indicators to assess their utilization condition were established (see Annex 2). As for water supply subprojects, only two out of nine subprojects had pre-established indicators, thus based on discussions with the Executing Agency as well as each water supply company, new indicators were set (see Annex 4).

own events, but also for events of other schools in the area, local government events, and especially, events of neighboring rural villages, which shows that a certain project effect can be recognized. As for the underground multistory parking lot of the gymnasium, repair works were being done at the moment of the ex-post evaluation, thus it was not being used, but the repair works are planned to be completed during 2015. From an overall point of view, the effect of the education subprojects can be fully recognized.

b. Health Care (see Annex 3 for detailed indicators): From the 11 subprojects, with the exception of Jishou City Wangrongjian Central Hospital, all the rest were completed from 2010 to 2011. Due to the improvement of medical services that were already provided in the existing facilities, as well as the execution of awareness programs on health and hygiene to the residents, the targets for infant mortality rate, cure rate of endemic diseases and maternal mortality rate were already met at the moment the project was completed, and as they have continued to improve, the project's contribution can be recognized. As for the hospital in Jishou, even though there was a delay in civil works due to deficiencies in the topographical survey, as of December 2014, the hospital had already started activities by conducting health check-ups for the neighborhood residents. In addition, since it is located in an area which is a development district, needs are expected to grow from now on, which will result in a higher capacity utilization rate of the hospital, which leads to expect that all indicators will meet their targets. As for Jiaoziya Township Health Center which was planned to be developed by the project, it was constructed ahead of the project with local funds from the Zhanjidae City government because the project was delayed. Although the request was cancelled, the funds were relocated to the construction of Yongding Central Hospital. The Jiaoziya Township Health Center is a branch hospital of the Yongding Central Hospital, and because of this, it receives patients of the said health center, which is in a rural area, on a preferential basis. In addition, the Yongding Central Hospital sends medical doctors to Jiaoziya Township Health Center, and receives medical doctors from Jiaoziya Township Health Center for training, thereby contributing fully to the health care of the regional community. Judging comprehensively, effects of the health care

Photo 3: Jishou City Wangrongjian Central Hospital: conducting a health check-up

subprojects can also be fully recognized.

c. Water Supply (see Annex 4 for detailed indicators): In all subprojects, all the targets of the newly set indicators, namely, amount of water supply, population served, and water quality (mainly turbidity) were met more than 100% two years after project completion. As for the percentage of population served, two out of 11 subprojects (Longshan County and Huayuan County) met more than 80% of the target, and in only one subproject (Guzhang County) the target attainment rate was 50%. However, all subprojects are improving. In addition, water quality has achieved the National Standards for Drinking Water, and it has contributed to significantly improve the living environment of local residents. Since all water supply subprojects were newly-constructed, judging by the fact that indicators have almost met the targets since right after the project completion, it can be said that the project's effect is high.

Before the project, residents fetched water from the river
(Photo provided by the Water Supply Company Luxi County, Pushi Township)

After the project, water is pumped up from the river, and sent to each household after being purified in the plant

Photo 4: Luxi County, Pushi Township Water Supply Subproject

d. Rural Market (see Annex 5 for detailed indicators): All markets have met the target for average annual income of neighborhood residents, and it is even on an upward trend. Indicator on new job opportunities has also met their targets. Rural markets existed before the project, by the roadside, or by closing the roads and opening the market every month on a pre-established frequency. However, because they were conducted in a disorderly manner, management was not sufficient, and problems such as traffic obstruction arose. However, even in such environment, the turnover in these rural markets grew as China's economy grew, and average annual income was also on an upward trend. Therefore, other reasons besides this project are behind the fact that indicators have met their targets. Nonetheless, land for rural markets were secured by this project, and general management, including health

and sanitation management, was enabled. As shown in Table 4, other commercial facilities have been constructed around these rural markets, and on the whole, the project's contribution to the average income of the neighbor residents and the increase in new job opportunities can be recognized.

In sum, as for the project's quantitative effects, all subproject indicators officially agreed between JICA and the Executing Agency have met their targets. In addition, the targets of the auxiliary indicators that were added at the time of the ex-post evaluation, have also either met their targets, or are improving, thus, realization of the effects of the project can be sufficiently recognized.

3.3.2 Qualitative Effects (Other Effects)

The qualitative effect expected from the project was "to improve the living and cultural standards of the poor". However, since this can be considered as an impact-level of project effect, it has been evaluated together under section "3.4 Impact".

3.4 Impacts

3.4.1 Intended Impacts

The project expected impacts were "to improve the living and cultural standards of the poor" and "socioeconomic stability of the target region". An attempt was made to obtain basic statistics by sector, but this was difficult due to the following reasons: (1) these statistics are outside the jurisdiction of the Executing Agency of the project; (2) statistics that can be published are limited; and (3) data by county that can be compared year by year cannot be gathered. Therefore, the manifestation of the impact *"to improve the living and cultural standards of the poor"*, was assessed based on the *"per capita annual average net income of rural residents"*, the beneficiary study, and interviews during the site survey.

a. Per capita annual average net income of rural residents: since there are many debates on China's poverty standard (for details see footnote 3), in this ex-post evaluation, "the per capita annual average net income of rural residents" was used in order to assess the living standards of the poor. The fact that the project target area is classified as a National Poverty Area, and the fact that in all counties, the proportion of the rural population compared to the total population is high between 80% to 87%, thus an improvement in the per capita annual average net income of rural residents can be considered as a rough estimate of the improvement in poverty. As shown in Table 3, although the per capita annual average net income of rural residents is low compared to the average for the whole Province, it has been steadily improving in all counties since the project started in 2003. Although it

cannot be identified the extent of the project's contribution, judging from the operation and effect indicators, the beneficiary study, and the impacts that could be confirmed through the site study, in overall terms, certain contribution can be recognized.

Table 3: Rural Residents: Average Net Annual Income Per Capita (Unit: Yuan/Year)

	2003 Starting of Project	2010	2011 Project Completion	2012 1 year after Project Completion	2013 2 years after Project Completion
Hunan Province	**2,533**	**5,622**	**6,567**	**7,440**	**8,372**
Fenghuang	1,354	3,460	4,012	4,681	5,733
Longshan County	1,465	3,077	3,628	4,164	5,466
Baojin County	1,267	3,228	3,705	4,191	5,482
Yongshun County	1,338	2,942	3,406	3,963	4,361
Huayan County	1,262	3,290	3,783	4,354	4,903
Jishou City	1,975	3,697	4,162	4,823	6,269
Guzhang County	1,234	2,620	3,086	3,596	4,127
Luxi County	1,246	3,413	3,647	4,089	4,707
Sangzhi County	1,223	2,642	3,020	3,406	4,226
Yongding District	1,715	4,236	4,593	4,961	6,054

Source: Documents provided by the Executing Agency.

b. Beneficiary Survey: In order to assess the project's impact, a beneficiary study to 100 beneficiaries was conducted (for details see Annex 6). In all sectors of education, health care, water supply and rural markets, the satisfaction level of the residents clearly improved comparing the situation before and after the project, and the satisfaction level was also high. It became clear that the level of education, health and sanitation conditions, ways to secure income sources, income, and job opportunities have all improved. It can be said that these are results that the project significantly contributes to both impacts, namely, *"to improve the living and cultural standards of the poor"* and *"socioeconomic stability of the target region"*.

c. Impacts that could be recognized through the field study: In the site survey[14] conducted at the time of the ex-post evaluation, the following impacts were recognized. These, together with the results of the above-mentioned Beneficiary Study, demonstrate that the effects of the project are clearly appearing.

[14] Site surveys were conducted in all Counties. The details were Education (eight out of 21 subprojects), Health Care Centers (six out of 11 subprojects), Water Purification Plants (five out of nine subprojects) and Rural Markets (five out of eight subprojects).

Table 4: Impacts Confirmed During the Site Surveys

【 Education 】

- In the middle schools where Science and Technology Buildings (laboratories, computer, art and music rooms) were constructed, students are now able to participate in the " Science Innovation Contest", to which up to now there were not able to participate, and in 2013, 10 students representing the Prefecture were able to advance to the Provincial-level Contest.
- As a result of constructing art and music classrooms, places to teach traditional crafts (paper crafts, embroidery etc.) and folk dances of the Miao and Tujia ethnic minority groups living in the project area have been secured, contributing also to the protection of the cultural heritage of these ethnic minority groups.
- The schools that were constructed by the project are now able to secure teachers with a higher level of training. Some schools have even become schools to prepare students to advance to higher education in their respective jurisdiction areas, as well as "Model Schools (base schools to train teachers for Hunan Province)".

Baojin County Baojin Ethnic School:Traditional Miao ethnic group embroidery made by student

【 Health Care 】

- As county-level facilities were able to be introduced in townships' health centers and hospitals, (1) the distances to hospitals have been shortened, and utilization rates of hospitals have improved. (2) Since 2009, residents can take free medical check-ups in each township, making it possible to monitor resident's health condition. As a result, it is now possible to put more efforts not only to "medical treatment" but also "prevention". (3) Now they can provide medical services at home by making doctor rounds.
- The facilities that were developed by the project have been recognized as training bases for medical doctors of even smaller health centers in their respective areas, contributing to the bottom-up of the whole region's medical level.

【 Water Supply 】

- All water purification plants mentioned that the greatest effect is that "water-fetching labor is no longer needed". Before the project, people had to fetch water from wells or small rivers that took 30 minutes to one hour one-way walking distance in average. It was necessary to fetch water several times a day, in addition to that, since many people had to fetch water from the same well or river, so if the waiting time is included, one to two hours were used every time for this labor. Today, the water supply coverage rate is on average between 95% and 99%, and now that there is no need to fetch water, residents have started new businesses and/or have gone to the city to work. There were some cases in which resident's income have increased because of this. In addition, now that water supply infrastructure has been developed, effects such as "washing machines can now be used" and "shower and flushing toilet could be constructed, significantly improving the hygienic environment" were recognized as well.
- In the water supply subproject of Baojin County, purified water is now sold in five gallon bottles, resulting in annual sales of one million yuan.

Fenghuang County Ala Township Rural Market: Get-together of Miao ethnic minority

【 Rural Market 】

- Because roofs have been constructed in the markets, people are now able to do business even on rainy days which have resulted in an increase in sales. In addition, because each type of product has a designated sales section of the market, order has been secured and it has become easier to manage, including hygiene. Also barter trade has disappeared.
- After markets were developed, migrant workers have come back, becoming new business owners, and as their business increase, they are creating new jobs as well. Not only market transactions have increased, but also new businesses (hotels and restaurants) around the market have been created.
- Rural markets have traditionally been a place for ethnic minority groups to interact. Especially in the first half of the year, markets also play a role as places for meeting future husbands or wives, and the market administration authorities also provide a space to serve those purposes. New industries have emerged, as ethnic minority groups songs are now sold in CDs at the market, as well as their clothes, accessories, textiles, and dyed goods.

Source: Based on interviews conducted during the site surveys to the staff of each operating entity and residents.

3.4.2 Other Impacts

(1) Impacts on the Natural Environment

The report of the Environmental Impact Assessment of this project was approved in January 2003 by the Hunan Province Environmental Protection Department. From the planning stage, this project was elaborated as a one comprised by the development of small-scale infrastructure and the environmental impact was considered to be small. Also, because it was to be conducted outside any environmental protection area, it was estimated that the possibility to affect these areas would be small. At the time of the ex-post evaluation, it was reconfirmed through interviews to the Executing Agency, the beneficiary study and interviews to the residents, that there are no protection areas or habitats of valuable species in the project sites and their surroundings, and that problems that would jeopardize the natural environment have not occurred. As for the environmental monitoring during the construction period, each county and city-level executing agency monitored waste disposal, dust, turbid water and noise and they were conducted appropriately. In addition, as for environmental monitoring at the time of ex-post evaluation, water quality is monitored on a daily basis at the water purification

plants. Vibrations and noise are not monitored because these facilities are far from residential areas. Specialized entities are in charge of processing medical waste in accordance with the "Ordinance on the management of medical waste treatment", and the Health Bureau monitors it on a regular basis. As for rural markets, each city and county's Environmental Hygiene Department monitors and gives instructions on the hygienic conditions (waste disposal and cleaning) of each market, and no particular impact on the natural environment were recognized at the time of the ex-post evaluation as well.

(2) Land Acquisition and Resettlement

The land area that was planned to be acquired by the project was 59.14 ha in eight counties (741 persons who possess land-use rights), whereas, the actual area was 54.9 ha (93% compared to the plan / 708 persons who possess land-use rights, 96% compared to the plan), which was almost as planned[15]. No resettlement was planned, but a total of five households[16] were actually resettled. Each was provided with housing and no particular problems were recognized. From the beneficiary study, it was also confirmed that both resettlement and land acquisition were completed without major problems. The main reason for this was that the residents understood that the content of this project was to directly contribute to the "improvement of the public welfare".

From the above, regarding the project's quantitative effects, all indicators that were officially agreed between JICA and the Executing Agency either met their targets or are steadily improving. As for the qualitative effects and impacts, the project's contribution could be sufficiently recognized through the results of the beneficiary study and site surveys. There were also no negative impacts related to the natural environment or land acquisition and resettlement. Since this project has largely achieved its objectives, therefore effectiveness and impact of the project are high.

3.5 Sustainability (Rating ②)

3.5.1 Institutional Aspects of Operation and Maintenance

The operation and maintenance supervising institutions by sector are, the

[15] Land acquisition process was conducted as follows in each county/city: (1) establish a land acquisition department in each county/city; (2) elaborate a guideline with specific procedures for land acquisition based on the "Hunan Government Land Acquisition Compensation Ordinance"; (3) issue publicity and explanatory material, and disseminate the policies and purpose of the project through discussions and exchange of opinions with the target residents; (4) Based on the law, issue the standards for compensation (compensation amount was paid based on the "Compensation Amount for Permanent Acquisition of Land" established in the "National Land Administration Law); (5) prepare the annual fund plan for land acquisition, make the request and obtain approval from the County government, once approved, sign the Agreement for Land Acquisition and conclude the acquisition of the land.

[16] The breakdown is as follows: two households (10 persons) in the Huayuan County rural market subproject, one household (number of persons unknown) in the Guzhang County education subproject, and two households (10 persons) in the Sangzhi Country education subproject.

Department of Education, the Department of Health, the Department of Water Resources, the Department of Market Administration and the Department of Industry and Commerce, and each operating entity is in charge of the actual operation and maintenance. In almost all counties and cities, a common operation and maintenance organization exist as shown in Table 5.

Table 5: Institutional Aspects of Operation and Maintenance

Education	• Organization: At the head of is the Principal, followed by the vice-principal, the administrative office, financial office, learning and education office, logistics administration office (in charge of maintenance and educational material), and student office. Depending on the school, there are offices that are in charge of the administration of cafeterias and student dorms. • In large-scale schools, there are from 150 to 200 teaching staff, and about 20 administrative staff. As the scale of the school gets bigger, there are no permanently stationed handymen, and maintenance is either outsourced or the manufacturer or electrician is asked to come as needed.
Health Care	• Organization: At the head is the hospital director, there are an administrative office, financial office, human resources department and a pharmacy. In each hospital or health center there are specialized departments. There is a specialized team in charge of the maintenance of machinery, but depending on the machinery or the content of the repair, it is often outsourced to the manufacturer. • Number of medical doctors, nurses and technicians vary depending on the scale of each facility, but in large-scale hospitals there are from 150 to 180 medical doctors, 200 nurses and 70 administrative staff. However, from the interviews, there were cases in the smallest health centers where operation was done in a small-scale, with 22 specialized medical doctors, 17 nurses, and three administrative staff. Especially, there were cases with lack of specialized medical doctors and nurses, the reason being that salaries and labor conditions are better in urban hospitals.
Water Supply	• Organization: At the head is the plant director, followed by the vice-plant director, the vice production director and the financial office. Below the vice-production director is the facility and equipment team (in charge of maintenance), the production team (in charge of the operation of the water purification plant and the pump stations), the laboratory (in charge of water quality inspection) and the water distribution team. Below the vice production director and the financial office there is the measurement office, monitoring office, meter-reader team, and the water fee collection team. The number of staff is on average 30 persons in a small-scale water purification plant and about 100 persons in a mid-size one.
Rural Markets	• Organization: In each county and city's market administration department, there is a service center for the market that was developed by the project, under which there are the "market section", the

	"financial section" and the "administrative office". • Number of staff slightly varies depending on the scale of the market, but large-size markets have about 40 staff. These personnel are either sent from the county/city's Industrial and Commerce Department or, in the case of jobs that require special certification such as electricians and real estate hygiene administrators, there are cases in which people are recruited separately. • Cleaning of markets are mostly done in turns by all the staff, but in relatively small-scale markets, there are cases in which only two persons are in charge of cleaning. • As for the operation and maintenance of garbage trucks, it has been outsourced to each country/city's Environmental Hygiene Department.

Source: Based on documents provided by the Executing Agency and interviews to the entities in charge of each service.

Institutional aspects of each sector's operation and maintenance are established clearly. Organization charts and each section's roles, as well as line of command are also well-managed. However, there is concern with respect to the operational organization of the smallest health centers. In addition to the fact that opportunities to increase income and progress in their carriers are very few, children's education and other social infrastructure development are limited when compared to urban areas, which results in a low level of convenience of everyday life. This creates a trend for medical doctors and nurses to select working in more large-scale hospitals in urban areas, than to work in the smallest health centers in townships, which is the reason for the difficulties in securing medical doctors and nurses in these facilities. With regard to this problem, county/city governments are concerned as well, but the truth is that they have not been able to come up with effective measures, and improvements are desired.

3.5.2 Technical Aspects of Operation and Maintenance

a. Operation and Maintenance Technical Level

・Education: Teachers must have graduated from a three-year specialized vocational school, or must have obtained the National Teacher Certification; due to this system a certain level of technical level is secured. In addition, efforts to increase teachers' skills are being introduced at the national level, and since 2015, it is mandatory for teachers to take an exam every five years and renew their certification. As for staff and personnel who do maintenance work, mostly these jobs are outsourced to outside certified personnel, so there are no particular problems.

・Health Care: Both medical doctors and nurses hold national certifications, thus technical levels are more or less secured. However, as the health care institution gets smaller and closer to the end of the organizational structure, the problem on

lack of medical doctors becomes more severe.

・Water Supply: Technical level is secured with the sufficient personnel with special certification, and experience, thus a certain technical level is secured.

・Rural Markets: Personnel of the market administration department are either dispatched from the county/city's industry and commerce department, or recruited publicly. Personnel for the maintenance of water supply and sewage as well as electricity-related facilities are required to have a national certification and since only holders of such national certifications are hired, a certain technical level is secured.

b. Preparation and utilization status of the operation and maintenance manuals and maintenance record keeping and their management status

・Education: As for equipment etc., (especially computers and the like) the operation and maintenance manuals are kept, used, and records are kept thoroughly according to the manual. Particularly for special equipment, is mandatory that a person with the necessary certification do the maintenance.

・Health Care: Almost all hospitals and health care centers keep maintenance manuals and records of their facilities and medical equipment. However, in some health care centers, maintenance manuals could not be seen, thus were not used, and maintenance was done by their own rules, and no records were kept. Also, even if manuals are kept, their contents are not necessarily put into place thoroughly. During the site survey, it was found that the difference in the hospital director's awareness was reflected in the on-site maintenance gaps of the medical practice. Hospital directors with high awareness also put efforts to conduct equipment maintenance and staff training.

・Water Supply: Each facility keeps their equipment and machinery's operation and maintenance manuals and maintenance records as well. In most of the water purification plants, the maintenance department reports the maintenance status at least once a month to the management, and they basically conduct preventive maintenance. In the water purification plants where site surveys were conducted, there have been no major breakdowns up to now, and unplanned water cut-offs have not occurred as well. There were no problems to obtain consumable goods and spare parts, and management of spare parts warehouses are done thoroughly. However, there were some cases such as in some pump stations where a section was used to store things, which made it difficult to affirm that manuals were followed completely with respect to cleanliness, tidiness and security management.

・Rural Markets: Detailed manuals that indicate the content and frequency of preventive maintenance, covering from steel frame structures, stainless sinks, fire extinguishers and fire hydrants are kept and maintenance records also exist. However, it is difficult to say that the manuals are applied thoroughly on the field. Warehouses where food was kept had problems with cleaning and an improvement in hygiene management awareness is required.

Jishou City, Wangrongjiang Township Rural Market: refrigerators with insufficient cleaning

c. Development of training systems for the operation and maintenance personnel, status on investment and training for technical improvement.

・ Education: Teachers are sent to trainings to renew the National Teacher Certification, and based on an annual training program, teachers are sent to trainings on computer skills, Chinese language, and other special areas.

・Health Care: A training program is prepared every year, and trainings are conducted to medical doctors, nurses and staff according to this program. Medical doctors and nurses go often to other hospitals for training.

・ Water Supply: Trainings inside the plants are done on a quarterly-basis, staff is sent to outside trainings once every half a year. It is mandatory for all the personnel to receive training on purification technology, installation of water distribution pipelines, standardization of water quality testing, etc.

・Rural Markets: Personnel receive periodical training on real estate management and hygiene management. Training for managers/business owners is also conducted.

At the time of appraisal it was considered that there would be no particular technical problems related to the operation and maintenance of the entities that would be in charge of it. However, during the site surveys of the ex-post evaluation it was found that, even though the operation and maintenance manuals are kept and trainings are conducted, people who truly recognize the importance of the proper and thorough use of these on the job are only few, and as a result, maintenance is not done as the manuals indicate. On the whole, it necessary to be exhaustive in making sure the importance of basic maintenance, as well as increase proper attitude and awareness on maintenance, and improve basic awareness which is necessary even before the technical skills.

3.5.3 Financial Aspects of Operation and Maintenance

Although financial statements are not publicized, it was possible to obtain data on

each subprojects' operation and maintenance budget (labor costs and other operation and maintenance expenses) (see Annex 7). From these data and interviews to the operating entities it was possible to confirm that, with the exception of Sangzhi County's education subproject, all subprojects have secured a proper operation and maintenance budget. In addition, in recent years, especially schools and hospitals, have income sources other than the public budget, such as donations from NGOs and private individuals, which are used to cover operating expenses. As indicated in Annex 7, all subprojects are operating in the black[17], and some water supply operating entities have started new businesses such as entering the drinking water market, reaching annual sales of 1 million yuan. As for rural markets, they have a rent income and in every case they are operating in the black. In addition, because these sectors are basic infrastructure and services, should they have any financial trouble, it is guaranteed that the county government will extend support; therefore no special problems on the operation and maintenance financial sustainability were found.

3.5.4 Current Status of Operation and Maintenance

At the time of the ex-post evaluation, the following were the status of operation and maintenance.

[17] From the water supply subprojects, five out of nine in which site surveys were conducted, the quality of water from the original source is high, thus purifying procedure costs are possible to be kept low. In addition, the prime cost of those subprojects that are able to intake water and send it by gravity flow system are 2 yuan per ton on average, while water charges are 2.5 yuan per ton for domestic use, 4.5 yuan per ton for industrial use (mainly agriculture and commerce). Fee collection rates are as high as 95% on average, and from an overall point of view, the financial aspect of operation and maintenance is stable.

Table 6: Operation and Maintenance Status at the Time of Ex-Post Evaluation

Education	• Dormitories hygienic conditions: Cleaning of students' dormitories is done in turns by students and teachers. However, it stands out that rooms and common toilets and shower rooms are not cleaned thoroughly. • Building conditions: In several schools the corner of the stairs were worn down and chipped, and the walls had fissures. It is necessary to hurry with the repairs in order to secure the safety of students and teachers. • School kitchen: Although it is mandatory to wear masks and gloves when cooking, there were many people who were not wearing them. • Garbage collection: There were no specific buildings for garbage collection, and were gathered and left in a vacant land behind the schools. Although the land is part of the school, it stood out that garbage was just left as is. Although the garbage truck comes once a week, from the educational and hygiene aspects, it is a problem that must be improved. • In some elementary schools, repair of chairs and desks were not sufficient, and from the safety point of view of children, it is necessary to thoroughly repair them.
Health Care	• Building and equipment condition: As for health care centers and hospitals that have been completed approximately more than three years ago, walls had fissures, windows were broken, water leaked from the ceilings, corner of the stairs were worn down and chipped, etc., becoming a hazard and proving that maintenance had not been done thoroughly. Some hospitals were in the process of doing repairs, but it is necessary to make sure that daily and periodical maintenance is done as indicated in the manuals. As for equipment, it stood out that some of them are aging. Ambulances are also aging and it is time to renew some of them. Cleaning was also not enough in the interior of the ambulances. Although manuals are kept, the reality is that their contents are not thoroughly applied. • Maintenance records: Although maintenance manuals do exist, in many cases, records are not kept. In order to effectively use the equipment, it is necessary to thoroughly conduct maintenance including keeping maintenance records.
Water Supply	• Most of the water purification plants are clean, maintenance status is good, and management (tidiness and order) of spare parts warehouse is also good. However, in some pump stations, personal belongings were kept, meaning that manuals are not applied enough. In some cases, the water pipes inside the water purification plant were rusty, rain water had accumulated on top of the water storage tanks and even suspended particles could be seen. The understanding of the staff of this particular plant was that "it does not affect water quality", indicating that it is necessary to improve the awareness on the importance of maintenance.
Rural Markets	• Hygienic condition: Cleaning and hygienic management must be thoroughly conducted in all markets. Hygienic management of cold stores is especially bad, and there is a lot of room for improvement. It is also important to increase awareness of all beneficiaries such as not to throw garbage, use facilities in a careful manner, etc.

Source: Based on site surveys and interviews to the Executing Agency and operating entities.

As for the institutional organization to secure the sustainability of the project's effects, there are concerns regarding the fact that securing medical doctors and nurses on the smallest health care centers is difficult. In terms of the technical level, although manuals and training systems are more or less in place, awareness on the importance of maintenance is still low, and it is necessary to increase consciousness in all sectors. As for the financial situation, each subproject has a secured budget for operation and maintenance and no major problems were found. Regarding maintenance status, especially in some schools, health care centers and hospitals, insufficiency in matters that can affect the safety of children and patients, such as daily cleaning, preventive maintenance, and repairs were often found. Immediate measures in regard to markets' hygienic management and periodical cleaning of facilities such as cold stores are needed. On the whole, in order to make sure that the effect of the project is sustained, it is necessary not only to increase the awareness of entities in charge of the operation and maintenance of these facilities, but to also increase the awareness of residents who are the users of these facilities.

Some minor problems have been observed in terms of the institutional and technical aspects. Therefore sustainability of the project effects is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project aimed to improve the living conditions of the residents of the Wuling Mountain region located in the northwest part of Hunan Province, where the population living in poverty is concentrated, by constructing small to mid-sized infrastructure related to education, health, water supply, and rural markets.

This project has been highly relevant to both China and Hunan Province's development plans and development needs, as well as Japan's ODA policy, at the times of both appraisal and ex-post evaluation; therefore its relevance is high. In relation to operation and effect indicators, all subprojects on education, health, water supply and rural market sectors have achieved the goals of both the indicators set at the time of appraisal, as well as auxiliary indicators added at the time of ex-post evaluation. Satisfaction levels of the beneficiaries are also high, and on the whole, the expected effects from the project can be recognized, thus the effectiveness and impact are high. Project cost was within the plan, but the project period exceeded the plan, therefore, efficiency of the project is fair. As for operation and maintenance, although there is no major problem in the financial aspect, there are some concerns in the organizational aspect; especially the health centers located in small villages are facing difficulties in order to secure medical doctors and nurses. In the technical aspect, although manuals and

training systems are in place, the level of awareness when it comes to the importance of maintenance is still low, thus maintenance in the work place is not being fully implemented. Due to this, the maintenance status especially of schools and hospitals, need to be improved. In sum, some minor problems have been observed in the organizational, technical and current status of the operation and maintenance, therefore sustainability of the project effects is fair.

In light of the above, this project is evaluated to be satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

All entities in charge of the operation and maintenance need to make sure to disseminate the contents of the maintenance manuals to the personnel in charge and improve maintenance. In order to secure the sustainability of the effects of the project, it is necessary to first strengthen the awareness regarding the importance of maintenance and then immediately make sure that the contents of these maintenance manuals are put thoroughly in practice on the sites. In addition, it is also necessary to work on increasing the awareness of not only the persons in charge of the operation and maintenance, but also the residents who are the users of each facility, so that the effects of the project appear in a sustainable way. Specifically, it is desirable to start with conducting awareness activities in each of the facilities. For example, in the case of schools, a "cleaning contest" can be introduced in order to promote the adequate use of classrooms and dormitory rooms. In the case of water supply subprojects, a tour of the water purification plant can be organized for local residents every year on March 22nd, which is the "World Water Day".

4.2.2 Recommendations to JICA

None.

4.3 Lessons Learned

Proper setting of operation and effect indicators in mid-scale infrastructure development projects

As mentioned in "2.3 Constraints during the Evaluation Study", almost all subprojects had operation and effect indicators and their targets set up in order to assess their effectiveness. However, depending on the sector, there were some problems that turned out to be obstacles to assess especially the quantitative effects, such as the case where indicators could only partially assess the effect, or even for subprojects that belong to the same sector, the indicators were not necessarily the same, or, even if the same indicators were set, definitions and formulae were not standardized. In projects

such as this, where many mid-scale infrastructure are developed in a wide area, when setting up operation and effect indicators, it is desirable to the extent possible, to try to set up common indicators by sector. It is necessary to clarify the definitions and formulae, and share them with all subprojects with no exception, and monitor the indicators of all subprojects. If deemed necessary, it is desirable to include a component such as a "capacity building on the monitoring of operation and effect indicators" to a project itself, or attach a technical assistance project for Japanese ODA loan projects, in order to secure a proper understanding of the indicators as well as their monitoring. In addition, if there are changes and/or additions in the indicators during project execution, it is also necessary to make sure that the Executing Agency and JICA officially agree on them. Moreover, as in the case of this project's Zhangjiajie City First Middle School's gymnasium and its underground multistory parking lot, if a subproject with a different scope from other subprojects in the same sector is added, it is desirable to clarify and set operation and effect indicators as well as their targets which are in line with the scope of the subproject, and officially agree on them during the procedures of request and approval.

END.

Annex 8. Comparison of the Original and Actual Scope of the Project

Item	Plan	Actual
1. Project Outputs		
[County and Townships]		
1) Fenghuang County	Shianjiang, Ala,	As planned
2) Longshan County	Liaojiaqiao	As planned
3) Baojin County	Liye	Yangchao: cancelled
4) Yongshun County	Meihua, Yangchao, Fuxing	Lingxizhen:
5) Huayan County	Wangchun, Lingxizhen,	cancelled
6) Jishou City	Shidi	As planned
7) Guzhang County	Chadong, Dongmaku	As planned
8) Luxi County	Wanrongxiang	As planned
9) Sangzhi County	Luiyixi, Chengguan	As planned
10) Yongding District	Pushi	As planned
	Ritapu	Yongding
	Jiaoziya	metropolitan area:
		Added
[Township level central infrastructure construction(total)]	---------- Total:18 townships	---------- Tota:17 townships
a. Education (Expansion and new construction of dormitories at elementary and middle schools, procurement of educational equipment)	20 places	21 places
b. Health care: Expansion and new construction of hospitals, procurement of medical equipment	13 places	11places
c. Water Supply: Expansion and new construction of water purification plants, construction of water pipe network	11 places	9 places
d. Rural Market: New construction, procurement of equipment such as freezing storage	12 places	8 places
[Village level supplementary projects (total)]		
a. Education: elementary school	88 places	As planned
b. Health care: health centers	114 places	As planned
c. Water supply: Infrastructure for Drinking water	149 places	As planned
2. Project Period	March 2003 – December 2006	March 2003 – July 2014

	(46 months)	(137 months)
3. Project Cost Amount paid in Foreign currency Amount paid in Local currency Total Japanese ODA loan portion Exchange rate	 1,187 million yen 9,356 million yen (6,237 million yen) 10,543 million yen 7,882 million yen 1 yuan=15 yen (As of September 2002)	 7,460 million yen 762 million yen (55 million yen) 8,222 million yen 7,460 million yen 1 yuan=13.81 yen (Average monthly rate from January 2005 to July 2012)

Annex 1: Project Outputs: Planned and Actual Number of Subprojects and its contents

Prefecture /City	County /City /District	Township	Number of Subprojects (Plan)				Number of Subprojects (Actual)				Main changes in the content of subprojects and reasons for cancellation
			Education	Health Care	Water Supply	Rural Market	Education	Health Care	Water Supply	Rural Market	
Xiangxi Tujia and Miao Autonomous Prefecture	1. Fenghuang County	(1) Shianjiang	2	1	—	—	2	1	—	—	Education: There were slight changes in the site area and amount of equipment, but none of them are big changes.
		(2) Ala	2	1	1	1	2	1	1	1	
		(3) Liaojiaqiao	2	1	1	—	2	1	1	—	
	2. Longshan County	(4) Liye	1	1	1	1	1	1	1	1	Education: due to the increase in needs, school building, laboratory building and dormitory were expanded.
	3. Baojin County	(5) Meihua	2	1	1	1	2	Request Cancelled	1	1	Healthcare: as repair plans by national health administration authorities could be executed before the project, the request was cancelled.
		(6) Yangchao	—	1	—	1	—	Request Cancelled	—	Request Cancelled	Healthcare: as repair plans by national health administration authorities could be executed before the project, the request was cancelled. Market: the planned site had complex geological features, and infrastructure construction surpassed the plan. Due to limited funds, it was decided to concentrate on Meihua Township.
		(7) Fuxing	1	—	—	—	1	—	—	—	Education: geological features were more difficult than expected, thus the design was changed which required more land than what was originally planned.
	4. Yongshun County	(8) Wangchun	1	1	1	1	1	1	1	1	Education: toilets were added. Healthcare: in order to save construction costs, the CT room was constructed inside the outpatient ward. One ambulance and two of

											equipment for anesthesia were added.
		(9) Lingxizhen	—	—	—	1	—	—	—	Request Cancelled	Market: design changes arose in some markets, and since with the maximum limit of the Japanese ODA loan, it was impossible to construct all three markets, the Lingxizhen Township was cancelled because it had the least amount of transaction.
		(10) Shidi	1	—	—	1	1	—	—	1	Education: school building and gym were expanded.
	5. Huayan County	(11) Chadong	1	1	1	1	1	1	1	1	Market: due to a need increase, the country government allocated land and the areas of the general market section, and the livestock market section were expanded.
		(12) Dongmaku	1	—	1	—	1	—	1	—	As planned
	6. Jishou City	(13) Wanrongxiang	1	1	—	1	1	1	—	1	Healthcare: as a fault was found in the planned construction site of the hospital the location was changed.
	7. Guzhang County	(14) Luiyixi	1	1	1	1	1	1	1	1	Healthcare: according to the needs, the area for the cafeteria was reduced, and the areas of the hospital and diagnosis wards were expanded.
		(15) Chengguan	1	—	—	—	1	—	—	—	As planned
	8. Luxi County	(16) Pushi	1	1	1	1	1	1	1	Request Cancelled	Market: with the limit of the Japanese ODA loan, the market could not be developed, thus the request was cancelled.
Zhangjiajie Prefecture-Level City	9. Sangzhi County	(17) Ritapu	1	1	1	—	1	1	Request Cancelled	—	Water Supply: as constructing a water intake pipeline from the water source was too costly, the request was cancelled.

	10. Yongding District	(18) Jiaoziya	1	1	1	1	1	Funds transferred to Yongding District Metropolitan area Health Care Subproject	Request Cancelled. Funds transferred to Yongding District Metropolitan area Education Subproject	Request Cancelled	Healthcare: the Jiaoziya Health Clinic was constructed with domestic funds, thus funds were allocated to new construction of the Yongding Central Hospital's hospitalization ward. Water Supply: an operating entity with repayment capacity could not be found, and because land acquisition was difficult the request was cancelled. Funds were allocated to the Yongding District Metropolitan Area education subproject (First Zhangjiajie Middle School) Market: part of the planned construction site was a "National Farmland Protection District" and construction permit could not be obtained, the request was cancelled. The market was later constructed with provincial government funds
		(19) Metropolitan area	—	—	—	—	Added with funds transferred from Jiaoziya Water Supply Subproject	Funds transferred from Jiaoziya County Health Care Subproject	—	—	Education: Jiaoziya's water supply subproject was cancelled and funds were transferred to the construction of the gym for the First Zhangjiajie Middle School. An underground multistory parking lot was added as well. Healthcare: funds for Jiaoziya's health centers were transferred to the construction of Yongding Central Hospital's hospitalization building.
Construction of central infrastructure at the Township level (conducted with Japanese ODA loan)			20 places	13 places	11 places	12 places	21 places	11 places	9 places	8 places	
Supplementary projects at the village level			88	114	—	149	88	114 places	—	149	

(conducted with Chinese counterpart funds)	places	places		places	places			places	
Total	108 places	127 places	11 places	161 places	109 places (+1)	125 places (-2)	9 places (-2)	157 places (-4)	

Source: Planned values based on documents provided by JICA, actual values based on documents provided by the Executing Agency.

Annex 2: Operation and Effect Indicators: Education

County	No.	Name of School	Indicator*	Base Year 2002	Target Value**	Project Completion 2010	One year after Project Completion 2011	Two years after Project Completion 2012	2013	2014	Target achievement/ improvement trend***
Fenghuang	1	Shanjiang Township Middle School	No. of students	—	—	505	552	521	486	504	—
			Intake Rate	95.2%	98.1%	100.0%	100.0%	100.0%	100.0%	100.0%	Achieved
			Dropout Rate	—	—	0.0%	0.0%	0.0%	0.0%	0.0%	Achieved
			Enrollment Ratio	—	—	100.0%	100.0%	100.0%	100.0%	100.0%	Achieved
			Utilization rate of student dorm	—	—	100.0%	100.0%	100.0%	100.0%	100.0%	Achieved
	2	Shanjiang Township Elementary School	No. of students	—	—	709	728	793	667	743	—
			Intake Rate	—	—	100.0%	100.0%	100.0%	100.0%	100.0%	Achieved
			Dropout Rate	—	—	0.0%	0.2%	0.0%	0.0%	0.0%	Achieved
			Enrollment Ratio	94.0%	99.7%	100.0%	99.8%	100.0%	100.0%	100.0%	Achieved
			Utilization rate of student dorm			100.0%	100.0%	100.0%	100.0%	100.0%	Achieved
	3	Ala Township Middle School	No. of students			454	464	428	367	1,041	—
			Intake Rate	96.7%	98.5%	100.0%	100.0%	100.0%	100.0%	99.7%	Achieved
			Dropout Rate	—	—	0.0%	0.0%	0.1%	0.0%	0.3%	Achieved
			Enrollment Ratio	—	—	100.0%	100.0%	99.9%	100.0%	99.4%	Achieved
			Utilization rate of student	—	—	100.0%	100.0%	100.0%	91.8%	100.0%	—
	4	Ala Township Elementary School	No. of students	—	—	1,238	1,296	1,278	1,209	1,268	—
			Intake Rate	—	—	99.3%	100.0%	100.0%	100.0%	100.0%	Achieved
			Dropout Rate	—	—	0.0%	0.1%	0.0%	0.4%	0.2%	Achieved
			Enrollment Ratio	96.6%	99.8%	99.3%	99.9%	100.0%	99.6%	99.8%	Achieved
	5	Liaojiaqiao Township Middle School	No. of students	—	—	704	618	553	530	504	—
			Intake Rate	—	—	99.6%	100.0%	99.8%	99.6%	100.0%	Achieved
			Dropout Rate	—	—	0.2%	0.8%	0.1%	0.0%	0.1%	Achieved
			Enrollment Ratio	—	—	99.4%	99.2%	99.7%	99.6%	99.9%	Achieved
			Utilization rate of student	—	—	100.0%	100.0%	100.0%	100.0%	100.0%	Achieved
	6	Liaojiaqiao Township Elementary School	No. of students	—	—	1009	1089	1109	981	927	—
			Intake Rate	—	—	100.0%	100.0%	99.6%	100.0%	100.0%	Achieved
			Dropout Rate	1.4%	0.8%	0.2%	0.0%	0.1%	0.2%	0.1%	Achieved
			Enrollment Ratio	—	—	99.8%	100.0%	99.5%	99.8%	99.9%	Achieved
			Utilization rate of student	—	—	100.0%	100.0%	100.0%	100.0%	100.0%	Achieved
Longshan	7	Liye Township Ethnic Middle School	No. of students	1,850	1,960	2,046	2,073	2,088	2,110	2,276	—
			Intake Rate	90.0%	97.0%	98.7%	98.8%	99.5%	99.8%	99.9%	Almost Achieved
			Dropout Rate	5.0%	—	2.4%	1.4%	1.1%	1.2%	0.8%	Achieved
			Enrollment Ratio	97.0%	—	98.50%	98.5%	98.60%	98.60%	98.6%	Achieved
			Utilization rate of student dorm	0.0%	—	100.0%	100.0%	100.0%	100.0%	100.0%	Achieved
Baojin	8	Meihua Township Elementary School	No. of students	—	—	958	958	987	1078	1142	—
			Intake Rate	—	—	100.0%	100.0%	100.0%	100.0%	100.0%	Achieved
			Dropout Rate	0.5%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	Achieved
			Enrollment Ratio	—	—	100.0%	100.0%	100.0%	100.0%	100.0%	Achieved
			No. of books per student	—	20 books	25 books	26 books	26 books	26 books	26 books	Achieved
	9	Meihua Township Middle School	No. of students	—	—	3,285	3,522	3,688	4,245	4,485	—
			Intake Rate	—	—	98.6%	98.6%	97.9%	99.4%	99.4%	Achieved
			Dropout Rate	5.5%	2.5%	1.4%	1.4%	2.1%	0.6%	0.4%	Achieved
			Enrollment Ratio	—	—	100.0%	100.0%	100.0%	100.0%	100.0%	Achieved
			No. of books per student	11 books	30 books	32 books	32 books	32 books	30 books	30 books	Achieved
			Utilization rate of student dorm	—	—	100%	100%	100%	100%	100%	Achieved
	10	Fuxing Township Middle School	No. of students	—	—	794	785	785	870	882	—
			Intake Rate	—	—	97.30%	97.90%	97.90%	98.20%	98.20%	Achieved
			Dropout Rate	5.5%	2.5%	2.3%	2.1%	2.1%	1.8%	1.8%	Achieved
			Enrollment Ratio	—	—	100.0%	100.0%	100.0%	100.0%	100.0%	Achieved
			No. of books per student	—	—	30 books	31 books	31 books	32 books	32 books	Improving
Yongshun	11	Wangcun Township Middle School	No. of students	635	—	777	698	688	692	737	—
			Intake Rate	92%	—	99.0%	99.0%	99.5%	99.0%	99.5%	Improving
			Dropout Rate	2.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	Achieved
			Enrollment Ratio	—	—	99.0%	99.0%	99.5%	99.0%	99.5%	—
	12	Lingxi Township Boarding Middle School	No. of students	731	—	1,033	1,031	1,039	1,037	1,108	Improving
			Intake Rate	95%	—	99.5%	100.0%	100.0%	99.5%	100.0%	Achieved
			Dropout Rate	2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	Achieved
			Enrollment Ratio	—	—	99.5%	100.0%	100.0%	99.5%	100.0%	Achieved

County	No.	Name of School	Indicator*	Base Year 2002	Target Value**	Project Completion 2010	One year after Project Completion 2011	Two years after Project Completion 2012	2013	2014	Target achievement/ improvement trend***
Huayuan	13	Chadong Township Nine-year school	No. of students	1,200	—	1,429	1,366	1,357	1,357	1,389	—
			Intake Rate	93.2%	—	98.6%	98.8%	98.6%	98.7%	98.7%	Improving
			Dropout Rate	7.8%	1.5%	1.4%	1.2%	1.4%	1.3%	1.3%	Achieved
			Elementary school enrollment Ratio	97%	100%	99.8%	99.7%	100.0%	100.0%	100.0%	Achieved
			Middle school Intake Rate	93.20%	98.50%	98.6%	98.8%	98.6%	98.7%	98.7%	Achieved
			Utilization rate of	—	—	100.0%	100.0%	100.0%	100.0%	100.0%	Achieved
	14	Dongmaku Township Nine-year school	No. of students	753	—	1,089	1,125	1,089	1,101	1,012	—
			Intake Rate	85.0%	—	92%	95%	92%	95%	92%	Improving
			Dropout Rate	8.6%	1.5%	1.4%	1.5%	1.4%	1.4%	1.4%	Achieved
			Elementary school enrollment Ratio	80%	—	97%	98%	95%	96%	98%	Improving
			Middle school Intake Rate	76%	—	93%	94%	93%	94%	95%	Improving
			Utilization rate of student dorm	100.0%	—	100.0%	100.0%	100.0%	100.0%	100.0%	Achieved
Jishou	15	Wangrongjiang Township Nine-year school	No. of students	—	—	1,411	1,647	1,927	2,166	2,468	—
			Intake Rate	—	—	98%	98.80%	100%	100%	100%	Achieved
			Dropout Rate	5.6%	0.9%	0	0	0	0	0	Achieved
			Enrollment Ratio	—	—	99.00%	99.65%	100%	100%	100%	Achieved
			No. of books per student	—	—	25 books	25 books	25 books	28 books	30 books	Improving
Gyzhang	16	Luoyixi Township Nine-year school	No. of students	578	—	407	385	315	310	281	Decreasing
			Intake Rate	94.2%	99.9%	99.9%	99.9%	100.0%	100.0%	100.0%	Achieved
			Dropout Rate	5.8%	—	0.1%	0.1%	0.1%	0.1%	0.1%	Improving
			Enrollment Ratio	98.0%	—	100.0%	100.0%	100.0%	100.0%	100.0%	Improving
			No. of books per student	15 books	—	23 books	24 books	25 books	27 books	29 books	Improving
	17	Chengguang Township Nine-year school	No. of students	0	—	1,300	1,355	1,358	1,355	1,380	Improving
			Intake Rate	94.2%	99.0%	100.0%	100.0%	100.0%	100.0%	100.0%	Achieved
			Dropout Rate	5.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	Achieved
			Enrollment Ratio	98.0%	—	100.0%	100.0%	100.0%	100.0%	100.0%	Improving
			No. of books per student	—	—	23 books	24 books	26 books	27 books	29 books	Improving
			Utilization rate of student dorm	—	—	100%	100%	100%	100%	100.0%	Achieved
Luxi	18	Pushi Township Middle School	No. of students	857	—	1,921	1,775	1,539	1,383	1,352	—
			Intake Rate			100%	100%	100%	100%	100%	Achieved
			Dropout Rate	4.2%	—	1.0%	1.1%	1.2%	1.1%	1.1%	Improving
			Enrollment Ratio	95.8%	—	99.0%	98.9%	98.8%	98.9%	98.9%	Improving
			No. of books per student	8 books	21 books	32 books	32 books	33 books	33 books	37 books	Achieved
			Utilization rate of student dorm	—	—	100%	100%	100%	100%	100%	Achieved
Sangzhi	19	Ruitaou township Nine-year school	No. of students	3,000	—	2,634	2,995	2,968	2,861	2,804	—
			Elementary and middle school intake Rate	89.6%	98.0%	98.2%	98.1%	98.5%	98.0%	98.9%	Achieved
			Dropout Rate	10.8%	5.0%	1.9%	1.1%	1.5%	2.0%	2.2%	Achieved
			Enrollment Ratio	97%	—	99.3%	99.5%	99.6%	99.5%	99.7%	Improving
			No. of books per student	10 books	—	24 books	24 books	24 books	26 books	26 books	Improving
			Utilization rate of	100%	—	100%	100%	100%	100%	100%	Improving
Yongding	20	Jiaoziya Township Nine-year school	No. of students	625	—	1,635	1,724	1,789	1,698	1,619	Improving
			Elementary and middle school intake Rate	95%	—	100%	100%	100%	100%	100%	Improving
			Dropout Rate	89.4%	98.0%	98.0%	98.0%	98.0%	98.0%	98.0%	Achieved
			Enrollment Ratio	10.5%	—	2.1%	1.8%	1.5%	1.0%	1.1%	Improving
			No. of books per student	19 books	35 books	33 books	35 books	35 books	37 books	38 books	Achieved
			Utilization rate of student dorm	—	—	91%	93%	95%	92%	91%	—
	21	Zhangjiajie City First Middle School+	No. of students	5,300	—	6,158	6,437	6,488	8,436	8,512	—
			from rural villages	4,241	—	4,618	4,892	4,924	5,120	5,187	—
			from poor households	2,544	—	2,632	2,837	2,900	2,798	2,804	—
			Intake Rate	94.2%	—	97.2%	97.9%	98.3%	98.9%	99.5%	Improving
			Dropout Rate	8.0%	—	4.7%	4.1%	3.8%	3.1%	2.6%	Improving
			Enrollment Ratio	93.0%	—	97.2%	97.7%	98.1%	96.6%	99.5%	Improving
			No. of books per student	19	—	37	38	41	41	45	Improving
			Frequency in which the gym is used for events related to students (times/year)	—	—	—	—	226	234	229	—
			Frequency in which the gym is used for events related to the city (times/year)	—	—	—	—	15	21	28	—
			Frequency in which the gym is used for events related to rural villages (times/year)	—	—	—	—	7	9	8	—
			Average utilization rate of underground parking (unit of car parking lots: 287 cars)	—	—	—	—	89.0%	95.0%	94.0%	Achieved

Source: Target values are based on documents provided by JICA. Actual values were provided by the Executing Agency.
*: Indicators that have a target set are indicators officially agreed as basic operation and effect indicators of this Project in the M/D. The rest of the indicators are supplementary indicators. If the subproject includes the construction of a library, "No. of books per student" was added as indicator. If dorms were constructed by the Project, the "Utilization rate of student dorm" was added as indicator.
**: Target value that has to be achieved two years after project completion.
***: In the case of basic indicators, targets considered as "Achieved" if the actual value was 80% or more of the target value.. For supplementary indicators that have a base year value, it was indicated as "Improving" or "Decreasing" comparing the actual value to the base year value. If the supplementary indicator does not have a base year value, the actual value was compared to either its trend from 2010, or its ideal target value, and it was indicated as "Achieved" if the value achieved 80% or more of that value, or it is on an upward trend.
+: Because Zhangjiajie First Middle School's subproject scope was the construction of a gym and its underground parking lot, indicators to assess their utilization status were additionally established.

Annex 3: Operation and Effect Indicators: Health

Country	No.	Name of Health Center / Hospital	Indicator	Base Value	Target Value	Project Completion	One year after Project Completion	Two years after Project Completion			Achievement of Target Value Two Years after Project Completion
						Year					
				2002	Two years after completion	2010	2011	2012	2013	2014	
Fenghuang	1	Shianjiang Township Central Health Center	Infant Mortality Rate	4.40%	3%	2.3%	2.9%	1.8%	1.1%	0.9%	Achieved
			Cure Rate of Endemic Deseases	42%	80%	79.0%	86.0%	88.0%	84.0%	89.0%	Achieved
			Maternal Mortality Rate	0.20%	0.10%	0.1%	0.0%	0.0%	0.0%	0.0%	Achieved
	2	Ala Township Central Health Center	Infant Mortality Rate	4.35%	3%	1.8%	1.1%	0.5%	0.2%	0.1%	Achieved
			Cure Rate of Endemic Deseases	42%	80%	79.0%	81.0%	85.0%	89.0%	90.0%	Achieved
			Maternal Mortality Rate	0.20%	0.09%	0.0%	0.0%	0.0%	0.0%	0.0%	Achieved
	3	Liaojiaquao Township Central Health Center	Infant Mortality Rate	4.50%	3%	1.4%	0.8%	0.5%	0.1%	0.0%	Achieved
			Cure Rate of Endemic Deseases	45%	80%	89.0%	95.0%	96.0%	98.0%	98.0%	Achieved
			Maternal Mortality Rate	0.20%	0.10%	0.1%	0.1%	0.0%	0.0%	0.0%	Achieved
Longshan	4	Liye Township Hospital	Infant Mortality Rate	2.30%	1.80%	0.2%	3.3%	1.6%	1.9%	0.4%	Achieved
			Cure Rate of Endemic Deseases	96%	99%	100%	100%	100%	100%	100%	Achieved
			Maternal Mortality Rate	0.20%	0.10%	0	0	0	0	0	Achieved
Yongshun	5	Wangcun Township Central Hospital	Infant Mortality Rate	3.20%	2.40%	1.1%	0.5%	0.6%	0.6%	NA	Achieved
			Cure Rate of Endemic Deseases	63.20%	82%	87%	85%	88%	90%	NA	Achieved
			Maternal Mortality Rate	0.10%	0.05%	0.03%	0.03%	0.03%	0.03%	NA	Achieved
Huayuan	6	Chadong Township Hospital	Infant Mortality Rate	1.57%	1.20%	0	0	0	0	0	Achieved
			Cure Rate of Endemic Deseases	75%	90%	92%	93%	92%	93%	92%	Achieved
			Maternal Mortality Rate	0.08%	0.06%	0	0	0	0	0	Achieved
Jishou	7	Wangrongjiang Township Central Hospital	Infant Mortality Rate	2.80%	1.20%	—	—	—	—	—	Not Achieved because it was completed in July 2014
			Maternal Mortality Rate	0.078	0.04%	—	—	—	—	—	
Guzhang	8	Luoyixi Township Central Hospital	Infant Mortality Rate	20.40%	8%	6.9%	7.4%	7.2%	6.1%	NA	Achieved
			Cure Rate of Endemic Deseases	83%	95%	95.6%	96.5%	96.2%	97.3%	NA	Achieved
Luxi	9	Pushi Township Central Hospital	Infant Mortality Rate	2.40%	1.80%	0.3%	0.5%	0.7%	1.0%	0.3%	Achieved
			Cure Rate of Endemic Deseases	55%	83%	95%	95%	95%	95%	95%	Achieved
			Maternal Mortality Rate	0.20%	0.10%	0	0	0	0	0	Achieved
Sangzhi	11	Ruitapu Township Central Hospital	Infant Mortality Rate	0.30%	0.20%	0	0	0	0	NA	Achieved
			Cure Rate of Endemic Deseases	78%	85%	90%	91%	91%	92%	NA	Achieved
			Maternal Mortality Rate	0.80%	0.08%	0	0	0	0	NA	Achieved

Source: Planned values based on documents provided by JICA, actual values based on documents provided by the Executing Agency.

Annex 4: Operation and Effect Indicators: Water Supply

County	No.	Name of Water Treatment Plant (WTP)	Indicator	Target Value	Project Completion	One Year After Project Completion	Two Years After Project Completion			Achievement of Target Value Two Years after Project Completion
					Year					
				Two years after Project Completion	2010	2011	2012	2013	2014	
Fenghuang	1	Ala Township WTP	Amount of Water Supply (T/day)	To be on an upward trend	1,500	2,000	2,500	2,500	3,000	Achieved
			Population Served (10 thousand persons)	To be on an upward trend	1.5	2	2.2	2.5	2.5	Achieved
			Percentage of Population Served	90%	92%	92%	95%	95%	98%	Achieved
			Water Quality (turbidity)	< 1NTU	0.6	0.6	0.6	0.6	0.6	Achieved
			Rate of Facility Utilization	80%	100%	100%	100%	100%	100%	Achieved
	2	Liaojiaqiao Township WTP	Amount of Water Supply (T/day)	To be on an upward trend	800	800	1,000	1,500	2,000	Achieved
			Population Served (10 thousand persons)	To be on an upward trend	0.8	1.2	1.2	1.2	1.5	Achieved
			Percentage of Population Served	90%	90%	92%	95%	95%	97%	Achieved
			Water Quality (turbidity)	< 1NTU	0.7	0.6	0.6	0.5	0.5	Achieved
			Rate of Facility Utilization	80%	100%	100%	100%	100%	100%	Achieved
Longshan	3	Liye Township WTP	Amount of Water Supply (T/day)	To be on an upward trend	6,000	7,000	7,100	8,000	8,500	Achieved
			Population Served (10 thousand persons)	To be on an upward trend	4.2	4.3	4.6	4.9	5	Achieved
			Percentage of Population Served	90%	82%	85%	85%	85%	90%	More than 80% achieved
			Water Quality (turbidity)	< 1NTU	2.14	2	1.47	1.14	0.93	Achieved
			Rate of Facility Utilization	80%	70%	75%	75%	80%	85%	Achieved
Baojin	4	Meihua Township WTP	Amount of Water Supply (T/day)	To be on an upward trend	7,452	7,780	8,274	8,438	8,657	Achieved
			Population Served (10 thousand persons)	To be on an upward trend	5.9	5.9	6.0	6.1	6.1	Achieved
			Percentage of Population Served	90%	98%	98%	99%	98%	98%	Achieved
			Water Quality (turbidity)	< 1NTU	< 1	< 1	< 1	< 1	< 1	Achieved
			Rate of Facility Utilization	80%	76%	78%	83%	85%	87%	Achieved
Yongshun	5	Wangcun Township WTP	Amount of Water Supply (T/day)	To be on an upward trend	10,800	10,900	11,200	11,250	NA	Achieved
			Population Served (10 thousand persons)	To be on an upward trend	1.6	1.9	2.0	2.0	NA	Achieved
			Percentage of Population Served	90%	91%	95%	95%	97%	NA	Achieved
			Water Quality (turbidity)	< 1NTU	< 1	< 1	< 1	< 1	NA	Achieved
			Rate of Facility Utilization	80%	80%	80%	80%	80%	NA	Achieved
Huayuan	6	Chadong Township WTP	Amount of Water Supply (T/day)	To be on an upward trend	3,000	6,790	7,000	8,000	8,500	Achieved
			Population Served (10 thousand persons)	To be on an upward trend	0.8	1.8	1.9	2.2	2.3	Achieved
			Percentage of Population Served	90%	—	74%	76%	87%	89%	More than 80% achieved
			Water Quality (turbidity)	< 1NTU	0.9	0.8	0.8	0.8	0.8	Achieved
			Rate of Facility Utilization	80%	100%	100%	100%	100%	100%	Achieved
	7	Dongmaku Township WTP	Amount of Water Supply (T/day)	To be on an upward trend	2,700	3,200	3,500	3,900	4,200	Achieved
			Population Served (10 thousand persons)	To be on an upward trend	0.8	0.9	1.0	1.1	1.2	Achieved
			Percentage of Population Served	90%	59%	72%	75%	86%	88%	More than 80% achieved
			Water Quality (turbidity)	< 1NTU	0.9	0.8	0.8	0.8	0.8	Achieved
			Rate of Facility Utilization	80%	100%	100%	100%	100%	100%	Achieved
Guzhang	8	Luoyixi Township WTP	Amount of Water Supply (T/day)	To be on an upward trend	8,200	8,760	9,040	9,315	9,580	Achieved
			Population Served (10 thousand persons)	To be on an upward trend	0.6	0.6	0.6	0.7	0.8	Achieved
			Percentage of Population Served	90%	57%	58%	60%	70%	80%	More than 50% achieved
			Water Quality (turbidity)	< 1NTU	< 1	< 1	< 1	< 1	< 1	Achieved
			Rate of Facility Utilization	80%	70	73	78	80	85	Achieved
Luxi	9	Pushi Township WTP	Amount of Water Supply (T/day)	To be on an upward trend	1.1	1.1	1.1	1.4	1.4	Achieved
			Population Served (10 thousand persons)	To be on an upward trend	3	3	3.2	3.6	3.6	Achieved
			Percentage of Population Served	90%	82%	83%	90%	95%	95%	Achieved
			Water Quality (turbidity)	< 1NTU	< 1	< 1	< 1	< 1	< 1	Achieved
			Rate of Facility Utilization	80%	100%	100%	100%	100%	100%	Achieved

NTU: Nephelometric Turbidity Unit

Source: Planned values based on documents provided by JICA, actual values based on documents provided by the Executing Agency.

Annex 5: Operation and Effect Indicators: Rural Markets

County	No.	Name of Market	Indicator	Base Year	Target	Project Completion Year	One Year After Project Completion	Two Years After Project Completion			Target achievement status two years after project completion
						Year					
				2002	2 years after project completion*	2010	2011	2012	2013	2014	
Fenghuang	1	Ala Township Rural Market	Average annual income of neighborhood resident	717 Yuan	900 Yuan	1,540	1,860	2,120	2,461	2,580	Achieved
			New job opportunities	—	2000 persons	2,110	2,150	2,180	2,300	2,320	Achieved
Longshan	2	Liye Township Rural Market	Average annual income of neighborhood resident	924 Yuan	1814 Yuan	5,900	6,100	6,500	6,800	NA	Achieved
			New job opportunities	—	360 persons	397	423	469	498	586	Achieved
Baojin	3	Meihua Township Rural Market	Average annual income of neighborhood resident	1000 Yuan	1400 Yuan	4,215	4,420	4,664	4,851	5,482	Achieved
			New job opportunities	—	360 persons	370	370	370	370	400	Achieved
Yongshun	4	Wangcun Township Rural Market	Average annual income of neighborhood resident	1151 Yuan	1331Yuan	3,226	3,571	3,951	4,389	NA	Achieved
			New job opportunities	—	639 persons	1,322	1,465	1,590	1,752	NA	Achieved
	5	Shiti Township Rural Market	Average annual income of neighborhood resident	1166 Yuan	1376 Yuan	3,132	3,396	3,387	4,115	NA	Achieved
			New job opportunities	—	377 persons	655	677	796	904	NA	Achieved
Huayuan	6	Chadong Township Rural Market	Average annual income of neighborhood resident	875 Yuan	1275 Yuan	4,100	3,750	3,800	3,800	NA	Achieved
			New job opportunities	—	1500 persons	1,600	1,610	1,625	1,638	NA	Achieved
Jishou	7	Qianzhou Township Rural Market	Average annual income of neighborhood resident	1000 Yuan	1175 Yuan	10,594	10,620	12,360	13,350	16,201	Achieved
			New job opportunities	—	1000 persons	4,009	3,216	3,814	3,679	3,950	Achieved
Guzhang	8	Luoyixi Township Rural Market	Average annual income of neighborhood resident	761 Yuan	1500 Yuan	2,620	3,002	3,596	4,127	NA	Achieved
			New job opportunities	—	1200 persons	445	692	945	1,206	NA	79% Achieved

* Target values of new job opportunities created are accumulated values.

Source: Planned values based on documents provided by JICA, actual values based on documents provided by the Executing Agency.

Annex 6: Results of the Beneficiary Study

Survey Period	December 8 to December 10, 2014
Area and Sample number	Longshan County Liye Township's 100 residents (Note: as a result of discussions with the Executing Agency, among the counties where subprojects of all four sectors were conducted, Longshan County was selected as it was where the most funds were invested).
Sampling method	With the cooperation of the County Poverty Alleviation Office, residents were requested to cooperate. The residents that gathered were asked to respond to a questionnaire. As a result, 100% of the samples were direct beneficiaries of the project. All of them were beneficiaries of the education, health care and rural market subprojects, and 96 persons were beneficiaries of the water supply subproject.
Sample Characteristics	• Number of samples: 100 persons (50 men and 50 women / proportion of ethnic minority: 97%, others: 3%). • Age distribution: 20 to 29 years old (14%), 30 to 39 years old (25%), 40 to 49 years old (28%), 50 to 59 years old (14%), over 60 years old (19%). • Final academic background: finished middle school (51%), finished elementary school (19%), dropped out from elementary school (14%), dropped out from middle school (8%), Others (8%). • Occupation: agriculture (55%), commerce (38%), fishery (2%), others (5%). • Annual income: less than 2,300 yuan (poverty, 21%), from 2,300 yuan to less than 5,000 yuan (32%), from 5,000 yuan to less than 10 thousand yuan (25%), more than 10 thousand yuan (22%). • Beneficiaries whose family member(s) are working in urban areas: 44%.
Results of the Survey	
1. Education Subproject (Elementary school) • Enrollment and graduation situation: While 50% of the residents recognized that before the project "almost all school-aged children are enrolled" or "everybody is enrolled", 94% of the respondents answered that now "everybody is enrolled", 16% answered that "almost everybody is enrolled" thus it can be recognized that enrollment has significantly improved. As for graduation rate most respondents answered that before the project "children dropped out of school because their parents became migrant workers", however, now all respondents said that "100% graduate". • Changes in the educational environment: respondents were asked to evaluate on a scale from 1 to 4 (1: not sufficient; 2: more or less not sufficient"; 3: more or less sufficient; 4: sufficient) on the following aspects: "number of school compared to number of children in the area"; "number of teachers per class", "number of classrooms", "safety of classrooms", "number of desks, chairs and textbooks", "condition of educational facilities" and "condition of toilets". Average points for conditions before the project was 2.7, while, the same was 3.7 now, showing that there was a clear improvement. • Comments most often made in the free comments section: (1) classrooms have more light and are more	

hygienic, each student have their own desk and chair which has increased children's motivation to learn. (2) Number of teachers has improved and generally, quality of education has improved.

2. Health Care Subproject

- Changes in health conditions and access to health care services: 39% of beneficiaries said that "before the project I often got sick" or "I was prone to get sick". However, now only 7% or beneficiaries had the same answer, while 93% said "I hardly get sick" or "I am completely healthy". The reasons being that hospitals were developed in the neighborhood and that living conditions (water and hygienic conditions of housing etc.) have improved.
- Changes in the medical environment: respondents were asked to evaluate on a scale from 1 to 4 (1: not sufficient; 2: more or less not sufficient"; 3: more or less sufficient; 4: sufficient) on the following aspects: "street and road and conditions to a medical facility", "number of medical facilities", "number of medical doctors and nurses compared to local population", "number of times in which hospitalization was refused due to lack of beds", "problems due to lack of medical equipment", "price of medication", "percentage in which a newborn lives up to seven years old", "medical facilities awareness activities and provision of information to prevent sickness". While total average points for conditions before the project was 2.6, the same clearly improved to 3.6 after the project.
- Comments most often made in the free comments section: (1) hospitals were developed which is convenient since there is no need to go to hospitals that are far; (2) hospitalization is available in a near hospital which gives peace of mind; (3) technical levels of medical doctors and facilities improved and medical services as a whole were enhanced, (4) it is desirable to continue investing, introduce new equipment and strengthen preventive health, (5) it is a must to continue training of medical staff.

3. Rural Market Subproject

- Changes in the way rural markets are utilized: 54% of residents responded that before the project they were "doing transactions directly in the market as producers", while the same has decreased to 38% now after the project. On the other hand, residents that were selling merchandise purchased from producers were 25% before the project, while the same has increased to 45% now. And while 91% of producers, sellers and consumers were utilizing the market in one way or another before the project, the same has slightly increased to 95% now. (Note: although in small scale, but sellers are residents that are business owners, and includes residents that are employed by these business owners.
- Changes in annual income: 28% of respondents' annual income before the project was less than 2,300 yuan, which is the definition for poverty, but the same had decreased to 6% now. On the other hand, 61% of residents had an annual income before the project that was between 2,300 yuan to 10,000 yuan, while the same has decreased now to 47%. However, while residents whose annual income was more than 100,000 yuan before the project was only 9%, this has increased significantly now to 46%. Many residents mentioned that although markets existed since before the project, now they are being managed in an orderly manner, job opportunities have been created, resulting in an increase in farmer's income.
- Satisfaction level of markets: respondents were asked to evaluate on a scale from 1 to 4 (1: not sufficient; 2: more or less not sufficient"; 3: more or less sufficient; 4: sufficient) on the following eight aspects: "access", "user-friendliness of facilities", "hygienic conditions", "merchandise assortment", "freshness", "price", "job opportunities", "place for the community's interaction". The overall grade for conditions before the project from the producers and sellers point of view was 2.3, and 2.4 from the consumers' point of view. The same have improve respectively to 3.5and 3.6.
- Comments most often made in the free comments section: (1) market scale has increased and as the market place has been unified, selling places are ordered which has increased convenience to both sellers and buyers. (2) Markets are now cleaner, overall environment has improved, there is more variety of products, and fresh products are now available. (3) From now on, it is desirable to strengthen hygienic management of markets. (4) Prices are often not uniform, thus it is desirable to do a manage markets in a more rational way.

4. Water Supply Subproject

- Access to water supply: Before the project, 42% of respondents used to fetch water from "wells and small rivers", 18% from "communal water taps", and 40% answered that they "already had water taps in their own house and there was no need to fetch water". At the time of the ex-post evaluation, 1% of residents said that they "fetch water from wells", 1% from "communal water taps, and 92% "have water taps in their own house", showing a significant improvement.
- Changes in water-fetching labor and time: the residents that used to fetch water from wells and small rivers, spent about 30 minutes/day (47%), from 30 minutes to one hour per day (15%) , more than one hour (8%). This shows that improving access to water in Liye Township was a considerably important development need. Through this project, almost all respondents said that they are now able to use tap-water at home from at any time, saying that they can "save time and it is very convenient". In addition, before the project, 89% of residents answered that mainly adults from each household used to fetch water, but now, after the project, since each household have their own tap-water, adults are able to do other activities (agriculture, go to work in the city, etc.).
- Changes in health condition: before the project, 64% of residents answered that they "often or sometimes got sicknesses caused by dirty water", but now, this percentage has decreased to 18%, and residents that answered

that they "hardly get sickness caused by dirty water" increased from 21% to 59%, showing that as safe and clean water has been secured, at least the situation of sicknesses caused by dirty water have improved. Respondents were asked to evaluate on a scale from 1 to 4 (1: not sufficient; 2: more or less not sufficient"; 3: more or less sufficient; 4: sufficient) on the changes in the quality of water for domestic use. The overall average grade before the project was 2.4, while the number has now improved considerably to 3.7.

- On water supply services: residents evaluate highly the actual water supply services, and 95% said that "maintenance condition is good", and 92% answered that "water charges are reasonable".
- Comments most often made in the free comments section: (1) development of water supply infrastructure has made daily life more convenient and finally we are able to drink clean water without any worries. (2) Standard of living has improved. (3) For farmers, it is now more convenient to use water when doing farm work.

Annex 7. Budget and Expenditure of Subprojects by Sector (Unit: million yuan)

County	Item		2010	2011	2012	2013	2014
Fenghuang	Education	Budget	127.2	167.7	225.1	242.2	256.7
		Expense	127.2	167.7	225.1	242.2	256.7
		Difference	0.0	0.0	0.0	0.0	0.0
	Health Care	Budget	0.4	0.4	0.4	0.4	0.4
		Expense	0.4	0.4	0.4	0.4	0.4
		Difference	0.0	0.0	0.0	0.0	0.0
	Water Supply	Budget	5.2	6.0	6.2	6.6	7.7
		Expense	5.2	6.0	6.2	6.6	7.7
		Difference	0.0	0.0	0.0	0.0	0.0
	Rural Market	Budget	Construction Period		0.6	0.8	0.9
		Expense			0.4	0.5	0.7
		Difference			0.2	0.3	0.3
Longshan	Education	Budget	0.4	0.5	0.5	0.5	0.6
		Expense	0.4	0.5	0.5	0.5	0.6
		Difference	0.0	0.0	0.0	0.0	0.0
	Health Care	Budget	4.3	4.8	5.9	9.0	11.3
		Expense	4.2	4.6	5.3	7.1	10.5
		Difference	0.1	0.2	0.6	1.9	0.8
	Water Supply	Budget	18.0	18.5	19.2	19.8	22.0
		Expense	17.0	17.8	18.2	18.5	20.0
		Difference	1.0	0.7	1.0	1.3	2.0
	Rural Market	Budget	1.9	2.0	2.1	2.4	2.7
		Expense	1.5	1.7	2.0	2.2	2.3
		Difference	0.4	0.3	0.1	0.2	0.4
Baojin	Education	Budget	2.4	1.8	0.6	1.2	1.9
		Expense	1.0	0.9	0.2	0.6	0.9
		Difference	1.4	0.9	0.4	0.6	1.0
	Water Supply	Budget	7.1	7.3	7.6	8.0	8.4
		Expense	1.3	3.1	3.5	3.6	3.7
		Difference	5.8	4.2	4.1	4.4	4.7
	Rural Market	Budget	1.0	1.1	1.2	1.3	1.4
		Expense	1.0	1.0	0.9	1.1	1.0
		Difference	0.1	0.1	0.3	0.2	0.4
Yongshun	Education	Budget	3.5	3.9	4.0	4.3	4.3
		Expense	2.6	2.8	2.9	2.9	2.8
		Difference	1.0	1.1	1.1	1.4	1.5
	Health Care	Budget	2.0	2.0	2.3	2.5	2.5
		Expense	1.7	1.9	2.1	2.4	2.2
		Difference	0.3	0.1	0.2	0.2	0.3
	Water Supply	Budget	1.8	3.0	2.7	2.7	2.8
		Expense	1.5	1.7	1.7	1.9	2.0
		Difference	0.3	1.3	1.0	0.8	0.8
	Rural Market	Budget	2.6	2.9	2.9	3.0	2.9
		Expense	2.2	2.3	2.6	2.6	2.5
		Difference	0.4	0.6	0.4	0.4	0.4

County	Item		2010	2011	2012	2013	2014
Huayuan	Education	Budget	9.2	11.5	11.9	13.4	15.5
		Expense	9.2	11.5	11.9	13.4	14.7
		Difference	0.0	0.0	0.0	0.0	0.8
	Health Care	Budget	1.1	2.3	5.1	7.2	7.5
		Expense	1.0	2.2	4.8	6.9	7.5
		Difference	0.1	0.0	0.3	0.4	0.0
	Water Supply	Budget	1.8	3.1	3.3	3.7	3.9
		Expense	1.7	2.9	3.1	3.5	3.7
		Difference	0.1	0.2	0.2	0.2	0.2
	Rural Market	Budget	0.5	0.5	0.5	0.5	0.5
		Expense	0.3	0.3	0.3	0.3	0.3
		Difference	0.2	0.2	0.1	0.1	0.2
Jishou	Education	Budget	0.1	0.1	0.2	0.3	0.4
		Expense	0.1	0.1	0.2	0.3	0.4
		Difference	0.0	0.0	0.0	0.0	0.0
	Rural Market	Budget	0.2	0.2	0.2	0.2	0.5
		Expense	0.2	0.2	0.2	0.2	0.5
		Difference	0.0	0.0	0.0	0.0	0.0
Guzhang	Education	Budget	7.3	9.7	9.7	12.5	11.9
		Expense	7.3	9.7	9.7	12.5	11.9
		Difference	0.0	0.0	0.0	0.0	0.0
	Health Care	Budget	0.1	0.1	0.1	0.1	0.1
		Expense	0.1	0.1	0.1	0.1	0.1
		Difference	0.0	0.0	0.0	0.0	0.0
	Water Supply	Budget	5.0	5.5	5.7	6.0	6.2
		Expense	4.8	5.2	5.3	5.5	5.5
		Difference	0.2	0.3	0.4	0.6	0.7
	Rural Market	Budget	0.1	0.1	0.1	0.1	0.1
		Expense	0.1	0.1	0.1	0.1	0.1
		Difference	0.0	0.0	0.0	0.0	0.0
Luxi	Education	Budget	0.0	0.0	0.0	0.4	0.4
		Expense	0.0	0.0	0.0	0.4	0.4
		Difference	0.0	0.0	0.0	0.0	0.0
	Health Care	Budget	9.5	15.2	20.0	18.4	12.9
		Expense	9.4	14.8	19.8	18.2	12.9
		Difference	0.1	0.5	0.2	0.2	0.0
	Water Supply	Budget	4.0	4.1	5.8	7.5	8.3
		Expense	3.7	3.8	5.3	6.8	7.8
		Difference	0.3	0.3	0.5	0.7	0.5
Sangzhi	Education	Budget	7.6	13.1	18.6	21.1	14.4
		Expense	8.5	13.9	19.1	21.1	14.9
		Difference	-1.0	-0.8	-0.5	-0.0	-0.5
	Health Care	Budget	4.5	4.9	6.4	6.8	4.6
		Expense	4.0	4.9	6.0	6.3	4.1
		Difference	0.5	0.0	0.4	0.5	0.5
Yongding	Education	Budget	8.2	8.2	8.2	8.6	8.9
		Expense	1.0	1.0	1.0	1.0	1.0
		Difference	7.2	7.2	7.2	7.6	7.9
	Health Care	Budget	52.0	65.0	89.0	103.0	145.0
		Expense	41.6	52.0	71.2	82.4	101.5
		Difference	10.4	13.0	17.8	20.6	43.5

Source: Based on documents provided by the Executing Agency.