EVALUATION REPORT
FOR
ENVIRONMENTAL PROJECT
IN
YONGSHUN COUNTY,
HUNAN PROVINCE,
PEOPLE'S REPUBLIC OF CHINA

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1 Overview

1.1 Background

Yongshun County is located in the central part of Wuling Mountain, in the northern part of Tujia and Miao Minority Autonomous Prefecture of Western Hunan, with altitude ranging from 380 to 700 meters. This county has a subtropical monsoon, humid continental climate, with abundant rainfall and heat. Average annual temperature is 16.4℃, and average annual precipitation is 1,357 millimeters. It covers an area of 3,810 square kilometers, of which 28,200 hectares are cultivated land. The per capita arable land is 0.056 hectare. The main crops cultivated are rice, corn and potatoes, and the cash crops are tobacco, rapeseed, bamboo, tea, citrus, kiwi, etc. The county comprises 327 administrative villages of the total 30 townships under its administration. Among its 504,800 people, 462,260 people inhabit in rural area, which is proportionally 91.64% of the total, and 421,000 people are minorities (Tujia as majority), which accounts for 83.4％ of its total. In 2010, the total output value of agriculture was 1.53 billion RMB and the farmer's per capita net income is 2,662 RMB. About 25.4% of its total population, i.e. 128,300 people, has per capita income below 1,196 RMB (national poverty line standard), the national poverty line. Yongshun is the state-designated poverty county. As a typical karst mountainous area, the shortage of water and energy plagued the local farmers for a long time.

In March and October of 2007, with the company of local government and water conservancy authorities, Amity Foundation conducted field investigations and interviews with local people and agriculture and technical officials. After taking a comprehensive investigation on local economic, social, energy development, population growth and other information, Amity Foundation decided to try to help the local residents in improve their basic production and life facilities, and enhance their abilities, and proposed the Yongshun Environmental Project (referred to as "the Project") to Norwegian Mission Society (NMS) for funding. The Project was permitted by NMS and a total of 1,243,500 RMB was invested in Yongshun County to perform the projects as follows:

1) Water conservancy:
    a) Rebuilding the irrigation canal system of Yadong reservoir (Year 2009)
    b) Building drinking water system in Sicheng village (Year 2009)
2) Awareness building and skills training:
    a) Township agriculture technician training and farmers training (Year 2009)
    b) Health and hygiene training (Year 2010)
3) Renewable energy:
    a) Biogas system building (Year 2010 & Year 2011)
    b) Biogas utilization and maintenance training for farmers (Year 2010)
    c) Biogas system maintenance and repairing for village biogas workers (Year 2010)

The Project was aimed to address local people's problems such as drinking water, irrigation and energy, and to improve agricultural production facilities and living conditions, so that the villagers can resist drought and floods in extreme weather conditions and improve their scientific and technological capacity, and eventually to improve their health condition and quality of life.

The Project involved a total of 15,881 people of 3,046 households in 217 villages under the administration of 23 townships in Yongshun. The social and economic development status of the main target areas are listed in table 1 below.

Table 1 Social and Economic Development Status of Main Target Area

Villages and Township	Land resources situation (ha)				Population (person)			Famer's per capita net income (RMB)	Activities of project
	Land	Farmland	Paddy field	Dry land	Total population	Agricultural population	Minority population		
Sicheng Village, Lingxi Township	4,000	192	65	127	1,685	1,200	1,661	600	Drinking water system in Sicheng Village
Dongshan Village, Maoba Township	1,800	97	92	275	3,810	2,830	2,574	1,170	The irrigation canal system of Yadong reservoir
HongxiongVillage, Cheping Township	1,200	89	80	266	1,727	1,727	1,623	1,300	Biogas system

Note: Township agriculture technician training and farmers training, Health and hygiene training, Biogas utilization and maintenance training for farmers and Biogas system maintenance and repairing for village biogas workers covered a large amount of target groups in all 23 townships, namely Gaoping, Songbai, Furong, Zhangguan, Huilong, Yongmao, Qingping, Shaoha, Shidi, Cheshou, Zejia, Liangcha, Liexi, etc.

1.2 Evaluation Purpose/Goal

The main purposes of the evaluation include:

1) Applying a comprehensive assessment on the completion of scheduled project indicators;
2) Summarizing the useful experience and practical approach of the project in promoting local environmental protection, enhancing the ability of farmers and the development of women, children and community in rural areas;
3) Proposing any issue that may need further improvement and refinement, providing guidance and reference to the future work of Amity Foundation.

1.3 Evaluation Contents

The evaluated the Project activities and the effects to judge the relevance, effectiveness, efficiency, impact and sustainability of each activity and the whole project. The main information of each activity is as follows in table 2:

Table 2 Information on Each Activity of Yongshun Environment Project

Project Activities	Contents	Places	Aid fund (RMB)	Beneficiaries	Total fund (RMB)
The irrigation canal system of Yadong reservoir	build 4,980m of new canal; consolidate 4,000m of old canal; build 1 aqueduct	Dongshan Village, Maoba Township	440,000	3,800 persons	577,000
Drinking water system in Sicheng Village	build 11 new reservoirs with a total storage capacity of 440 m^3; lay 31,420 m water pipelines, including 19,420 m explosion proof plastic trunk pipe ø32, 3,500m trunk pipe ø20 and 8,500m branch pipe ø15.	Sicheng Village, Lingxi Township	140,000	1,217 persons	280,000
Township agriculture technician training and farmers training	Advanced pollution-free production technical management; storage technology; knowledge of green agricultural products quality testing; rules and laws related to agricultural production.	Changguan Township, Gaoping Township, Shaoha Township, etc.	100,000	200 persons	100,000
Biogas technicians training	basic concepts of biogas fermentation; biogas combustion characteristics; basic structure of gas stove and technical requirements; gas stove installation, usage methods and special precautions; common household fault repairs of biogas stove.	Hongxing Village, Cheping Township	44,000	110 persons	210,500
Biogas utilization and maintenance training for farmers	stove installation, usage and special precautions; common household biogas stove fault maintenance manuals; precautions of safe handling gas; emergency treatments	Cheping Township, Cangping Township, Liren Township, Shaha Township, etc.	83,500	3,000 persons	100,000
Health and hygiene training	biogas slurry and sludge utilization in agricultural production, rural lavotories reconstruction; health care knowledge; agricultural ecological environmental protection; agricultural ecological science knowledge, and characteristic breeding	Cheping Township, Cangping Township, Liren Township, Shaha Township, etc.	30,000	3,050 persons	50,000
Biogas digesters construction	build 680 biogas digesters in yr 2010	Shaoha Township, Wanping Township, Wanmin Township	340,000	680 households	1,408,000
	build 110 biogas digesters in yr 2011	Liangcha Township, Cheping Township	6,6000	100 households	300,000

1.4 Evaluation Methods

Baseline survey method, comparative analysis, logical framework analysis and comprehensive assessment analysis method were applied in this evaluation.

1.5 Evaluation Process and Technology Path

Through clear targets for investigation, field investigation, data queries and questionnaire survey, we assessed the contents and objects. 7 copies of the questionnaires were made separately directing at construction of reservoirs, drinking water for human and animals project, construction of biogas digesters, agricultural technician training, biogas technology and health training, women's questionnaire and village cadres' questionnaire, see Annexes. As Yongshun farmers live very scattered and relatively far apart, gathering them together is not easy. The household situation is basically the same and problems to be solved are same, according to the actual situation, we selected 2 to 3 households as representatives. Besides, with these methods, we held deep interviews with village cadres, the masses and women to draw our conclusions.

The evaluation work started on October 14, 2011 and was completed in December 30, 2011, lasted three months. Specific evaluation process is as shown:

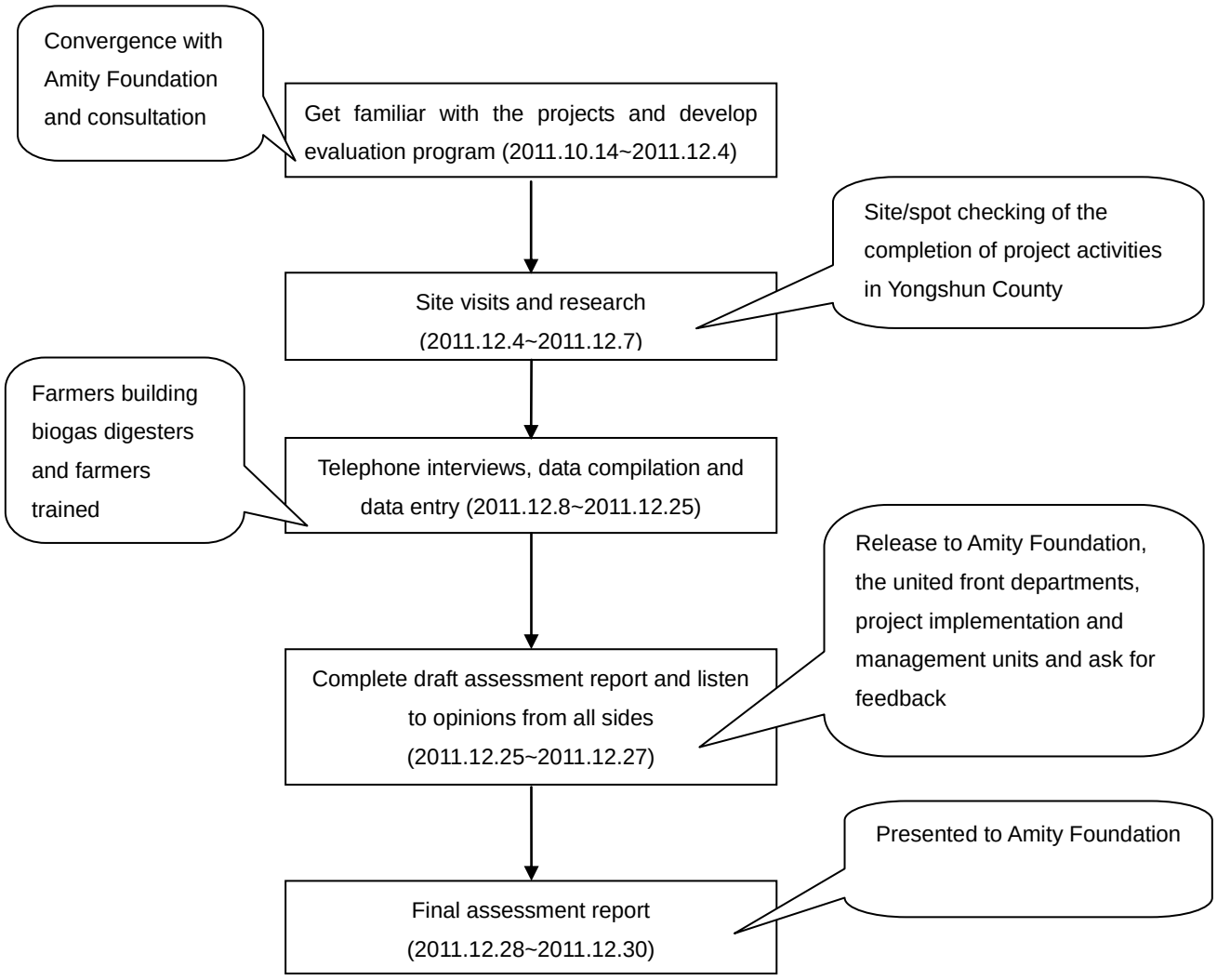

Figure 1 Evaluation Flow Chart

2. Project Relevance Evaluations

2.1 Relevance Evaluation of Drinking Water System in Sicheng Village, Lingxi Township

Villagers expressed that the lack of drinking water is the top most urgent local problems, according to the site visits and interviews with villagers.

As the largest village in Xiangxi Autonomous Prefecture, 20km away from downtown, Sicheng village has the most difficult production conditions, the slowest economic growth and technological culture development, the poorest health care, and the weakest infrastructure, due to its scattered residents and mountainous landscape. According to statistics, in 2006, the villager's per capita net income was less than 600 RMB. The villagers are all Tujia minorities, living on the high slope areas along Dalao Road and Lingxi River. The project area is of typical karst landscape, unable to retain rain water and rainfall. For a long time, villagers had to carry water with long distance and build their own small cellar for rainwater storage. It would take them 3 to 4 hours to fetch water and was very time-consuming and laborious, bringing to life a great burden.

Household cellars were small and the rainwater collected could not meet the need for drinking water, particularly unsafe. With the destruction of the environment by human activities each year, water pollution of Lingxi River was worsening, almost all the drinking water had been infected and villagers were prone to infectious diseases. In recent years, there have been many incidents such as leptospirosis, acute enteritis and other diseases breaking out, leading to 6 death, and 10 critically ill. Although there were annual free vaccines, it didn't solve the fundamental problems. There were still significant risks. Water shortage had seriously hampered the economic development of the region and became a stumbling block.

After the implementation of the project, drinking water for three natural villages with 315 households (1,217 people) and 669 heads of livestock are supplied, the villagers no longer needed to carry long distances to fetch water. They also said that the implementation of the project also reduced the incidence of disease transmission. The well-known "bachelor village" for lacking of water now has many newly married women, and eight households moved here from other villages. The three drinking water points we spot checked are running very well, so are the impounding reservoirs and pipelines. Questionnaires survey showed that, the villagers are 100% satisfied with the drinking water project; they called it "benevolent project for people". All of these suggested the implementation of drinking water project in Sicheng village was achieved well and the effect and impact exceeded the original plan.

2.2 Relevance Evaluation on the Irrigation Canal System of Yadong Reservoir in Maoba Township

Yadong reservoir irrigation area is located in Maobao Township, northwest of Yongshun County. It had a small irrigation reservoir, a pond and had 4000m supporting irrigation channels. Yadong reservoir had a rainwater reservoir area of 6.5 km^2, storage of 21,000 m^3. It was the most important local irrigation and drinking water source for this area. However, as the area are quartz

sand area, due to bare rock, serious weathering, poor vegetation and soil erosion, the channel, which was built in 1960s' under low design standards and poor quality of construction, has not been repaired for years, leading to the irrigation efficiency decaying year by year, and the grain production had followed a downward trend.

The irrigation canal system of Yadong reservoir brought in 2000 m of new canals from Yadong reservoir, with the section size of 0.9 m × 0.9 m, along with other 4 ancillary facilities. Besides the fund assistance from Amity Foundation, the Yongshun government applied 3.05 million RMB from the provincial government for the reservoir reinforcement, which were also aimed at ensure the safety of local irrigation water use and lift the potential threat of flash floods during the rainy season.

After the implementation of the project, 187 ha of farmland irrigation was supported, 3,800 people's drinking water is supplied and the original 34 ha dry land was changed into paddy fields. Yields of rice, rapeseed and potato increased and plenty of local industrial water and domestic water was also provided. The survey showed that the villagers of the project were very satisfied with the projects. The construction of irrigation system had indeed solved the problem of shortage of irrigation water and drinking water. It laid a solid foundation for poverty alleviation and had a profound social impact. So the project and the original plan were correct, and the result reached the target.

2.3 Relevance Evaluation on Biogas System Construction

Through site visit to Hongxing village, Cheping Township, questionnaire and depth interviews with the villagers, we found Cheping, same as other townships in Yongshun, had a very irrational energy structure in the past. Most of the farmers used firewood for cooking and heating, not only destroying the ecology, but also time-consuming. The sanitation was bad and the incidence of disease was high. To solve the energy problems of the project area effectively and improve agricultural production conditions and living environment in rural areas were the wishes of local people and the most urgent problems.

During 2010 to 2011, Amity Foundation aided 780 biogas digesters, with the size of $10m^3$ each and reconstruction of kitchen, lavatories and hog lots.

Through these changes, the household's human and animal feces sewage were poured into biogas digesters for anaerobic digestion, which obtains high-quality energy biogas supply for home cooking, lighting and water heating for bath. Some fertilizers were replaced by biogas digested slurry and sludge. And the yards became clean. In addition, the clean energy provided by biogas has reduced the amount of firewood which the locals relied upon as their main source of energy. And the living environment was also improved and diseases were reduced. Questionnaire survey showed, the villagers were quite satisfied with the biogas project, they all thought highly of the benefits of biogas digesters.

All of these proved that the biogas project's implementation and contents were right, the results of implementation and the impact it brought exceeded the original plan to build biogas works for basic purpose and requirements.

2.4 Relevance Evaluation on Trainings

2.4.1 Township agriculture technician training and farmers training suited local conditions

Yongshun County has abundant agricultural resources, great natural climatic conditions, good soil and water quality, little industrial pollutions and is also an ideal place for producing pollution-free agricultural products. After several years of efforts, Yongshun has built a large number of high-quality rice production bases, basically formed a high-quality rice-based food industry, citrus-based fruit industry, vegetables and tobacco-based industry.

However, due to the famers' low level of education, conservative ideas, isolation consciousness and slow acceptance of new knowledge and technology, the management mode was wild, and the agricultural science and technology level was not high. As a result, agricultural standardization was slow, the area of pollution-free production was few, production scale was small, market competition was weak and the problems of low qualities were outstanding, limiting their development of both the agricultural industry and famers themselves.

Agricultural efficiency and farmers' incomes must rely on scientific and technological progress. Therefore, Amity Foundation's aid in the training of knowledge of agriculture meets local urgent needs. The project design and selection of training content was correct.

2.4.2 Biogas training met the requirement of follow-up operation and management of biogas systems

According to the survey, from 1999 to the end of 2009, aided by Amity Foundation, the biogas digesters has accumulated to over 24,700, covering 30 townships, home-owned biogas rate was 30% in Yongshun County. However, 60%~70% of them had encountered with problems in usage. Some of the built biogas digesters were not working very well, causing serious waste of resources. In addition, lack of routine maintenance, aging pipes and other problems, particularly, lacking of biogas maintenance management technicians has greatly prevented the biogas digesters from functioning regularly. There are only 182 biogas construction technicians in the whole county, among which only 152 people got "biogas production workers" certificate, which could not meet the maintenance requirements of so many digesters in the county.

Therefore, Amity Foundation aided 157,500 RMB for 3,110 biogas technicians and biogas users training in Yongshun County. It would not only meet the requirements of routine maintenance people in the 780 new household biogas digesters worth 406,000 RMB in 2010 and 2011, but also meet requirements for problematic digesters maintenance. It made great contributions to the county's biogas follow-up services. Therefore, it was absolutely necessary and useful for Amity Foundation to set up biogas technical training.

2.4.3 Health and hygiene training met the villagers' needs for health improvement

Along with the digester construction, Amity Foundation aimed at the local prone to disease and carried out trainings in first aid, women's health care, infection treatment, hypertension, hepatitis, AIDs/HIV and other basic literacy training. To enhance the effect of biogas project, Amity also carried out trainings in the knowledge of rural latrines and garden sanitation and health care etc that were related to biogas, strengthening the biogas users of health knowledge.

This kind of health and hygiene training are particularly needed in mountainous areas, where medical personnel and medical resources are scarce and the roads lead to local medical centers are distant, rough and dangerous, which greatly reduce the chance of locals went for medical treatment if they were sick. The health knowledge training aimed at reducing the incidence of hygenic diseases by helping the locals to form a better and healthier way of living. Therefore, it was absolutely necessary and useful for Amity Foundation to carry out the health and hygiene training.

3 Project Effectiveness Evaluations

The Project has brought great direct economic benefits, which include liberated labor force for working outside by drinking water system in Sicheng Village, benefits brought up by irrigation water, industrial water and domestic water supplied by irrigation canal system of Yadong reservoir, etc.

3.1 Effectiveness Evaluation of Drinking Water System in Sicheng Village, Lingxi Township

Eight water intaking sites were constructed for the villagers' drinking water system in Sicheng Village, which provided the 1,217 people of 315 households and more than 669 heads of livestock with domestic water for daily usage. The water sources are directly accessed to natural spring water, which can meet the needs of the villagers for drinking water in the project areas even in the dry season.

In Sicheng Village, with an average daily labor of more than half a man-day for fetching drinking water, and one man-day in the dry season. After the implementation of drinking water system, the burden of labor used for fetching water from long distances and time were significantly reduced, farmers were freed from water fetching. Thus, at least 157 labor forces can be saved, counted as 10 RMB per labor force each day, which can achieve the work efficiency by 573,000 RMB in total. The annual benefits generated by the funding part Amity Foundation aided can be 287,000 RMB. Deducting the management costs of 17 RMB per year with 315 households, the net income of drinking water system is 282,000 RMB per year.

3.2 Effectiveness Evaluation on the Irrigation Canal System of Yadong Reservoir in Maoba Township

The functioning of irrigation canal system of Yadong reservoir in Maoba Township has not only greatly expanded the irrigation area by 187 ha, but also raised multiple cropping index, adjusted the planting structure and eventually improved the yield per unit area. The economic effectives obtained are as follows:

1) 34 ha of dry land changed into paddy fields. The outcomes of paddy fields are 18,000 RMB/ha, while the earnings of dry land was 9,000 RMB/ha. So the increased net benefits are 300,000 RMB per year.

2) Rapeseed cultivation. The output of rapeseed cultivated in a total area of 40 ha was increased, with an average production of 1,200 kg/ha. As the price of rapeseed is 1.8 RMB/kg, the increased net benefits can be 86,400 RMB per year.

3) The multiple cropping of potatoes. A total of 40 ha potato can be multiple-cultivated, with an output of 18,000 kg/ha and 0.2 RMB per kilogram. The increased net benefits are 144,000 RMB per year.

   A subtotal net benefit of irrigation by this project is 530,400 RMB per year.

4) Supply of industrial water and domestic water. After the implementation of the irrigation system, an additional amount of 32,000 m^3 industrial water and domestic water can be supplied to Maoba Township. The price of water is 0.6 RMB/m^3, and the increased net benefits 19,200 RMB per year.

Thus, the total increased net benefits of irrigation canal system of Yadong reservoir in Maoba Township are 549,600 RMB per year.

The annual benefits generated by the funding part Amity Foundation aided can be 369,200 RMB each year. Deducting the management costs for maintenance and administration of 5,000 RMB, the net income of drinking water system is 364,200 RMB per year.

3.3 Effectiveness Evaluation on Biogas System Construction

A 3,000 RMB benefit can be achieve per year by construction of a 10m^3 biogas digester in project area in Yongshun County, according to estimation.

A 10m^3 household biogas digester, if functioning normally and continuously in four seasons of year, can last a lifetime of more than 20 years. In keeping two to five pigs to solve the premise of raw materials of pig feces, a biogas digester can produce 800 to 900m^3 of biogas, 30 to 35 m^3 of digested sludge and 20 tons of digested slurry, which can all be taken advantage of as follows:

1) Biogas used as clean energy for cooking and lightening for the household. The average annual firewood consumption can be reduced 3500 kg, with an 80 man-day labor force can be saved from fetching firewood, or equivalents to a reduction of 2 tons of coal. And the total expenses saved from this kind of energy usage can be 1,400 RMB per year.

2) Digested slurry and sludge used as fertilizer. The digested slurry and sludge provided by a 10m^3 household biogas digester can be applied to 0.20 to 0.27 ha of cultivated land, which needs 3 to 4 packets of chemical fertilizer (100 kg/packet, 140 RMB/packet). And the application of biogas residues can cut half the use of chemical fertilizer per ha, saving 300 RMB per year, while greatly improve the soil organic matter content. In addition, as most of the bacteria and ova are killed during the process of anaerobic fermentation, using the biogas residues as fertilizer can largely reduce the incidence of crop pests and diseases, and can reduce the amount of pesticide application, which can save the annual cost on pesticides by 200 RMB per year.

3) Digested slurry used as feed additives to livestock, such as chickens, fish, pigs, cattle, etc., can save feed costs of 500 RMB per year. Applying the digested slurry with the concentration of 1% as feed additives to pigs, can save 48 to 60 kg of feed for each pig raised per year, which costs 400 RMB per year.

In summary, a 10m^3 biogas digester for household usage can save average 3,000 RMB for villagers per year.

A total amount of 780 household biogas digesters were built in the project areas in year 2010 and 2011, which can create 2,340,000 RMB for the locals each year. The annual benefits generated by the funding part Amity Foundation aided can be 558,600 RMB each year.

The total direct economic benefits of the three projects, the drinking water system in Sicheng Village of Lingxi Township, the irrigation canal system of Yadong reservoir in Maoba Township, and the biogas digesters construction, accumulated to 1,204,800 RMB per year.

3.4 Effectiveness Evaluation on training

The total investment of training programs, the township agriculture technician training and farmers training, the biogas technicians training, the biogas utilization and maintenance training for farmers, and the health and hygiene training of the Yongshun Environment Project is 257,500 RMB.

3.4.1 The Effectiveness of township agriculture technician training and farmers training

The training for agriculture technicians mainly applied the combination of theoretical training and practical processing, by sending out the agricultural technicians to learn advanced experiences in developed areas for management and production knowledge and technology, and giving on-site lectures and demonstrations, hands-on training. The lecturers were senior experts, professors, and senior agronomist in agricultural scientific research institutes or academy of national and provincial levels, who are with strong practical skills, good verbal skills and abundant experiences that suited the characteristics, needs and requirements of the trainees. The training classes were well-designed according to different kinds of trainees, with different technical books, video materials, written materials, which were chosen or recommended by the teachers themselves. The whole process of training, including its contents, time and places, were also reasonable, which ensured the effectiveness of training in a large part.

Through these training, the trainees can master at least 1 to 3 agricultural sciences and technology. The household of trainee can increase the average income of more than 2,000 RMB, which can also provide impetus to more than 10 households by more than 800 RMB per household. The total economic benefits generated by the training of 200 people can reach 2,000,000 RMB per year.

3.4.2 The Effectiveness of biogas training

The biogas training included biogas technicians training and biogas utilization and maintenance training for farmers, which were focused on problems closely related to the biogas digester construction and maintenance. The training of biogas technicians were focused on their knowledge and technology required for the digester construction, while the training for farmers focused on the daily safe usage and maintenance of biogas digester and other kitchen kits. And the particular way of combining knowledge training and on-site practical training with the construction process of biogas digesters in parallel achieved great outcomes.

Among the 110 trained biogas technicians, 80 of them have acquired the National Occupational Certificate of " Biogas Digester Production Worker". There were also biogas technicians carried out by the local energy bureau of Yongshun County from 1999 to 2009, with only 152 biogas technicians out of the total 182 got the certificate. Compared to this, the efficiency of the training project advocated by Amity Foundation was very high. All three biogas technicians we

interviewed with could correctly answerer the 20 technical questions we raised, which indicated that the trainees have fully grasped the knowledge and skills of biogas digester structure, construction, operation, and maintenance. The biogas technicians also played an important part in the training for 3,000 biogas users. The training achieved its original purpose, which mainly lies in the following areas:

1) Trained biogas technicians are responsible for operation and maintenance of biogas digesters and ancillary facilities in project area. There are 1 trained technician in charge of the maintenance of biogas digesters and kits for 300 to 500 digesters in every village.

2) Trained technicians has fully grasp the biogas technology can train more people as trainers. For example, as the first batch of trained technicians, Mr. Chen Jiahai, Mr. Xiang Shiqiao, and Mr. Zhang Qingyun are taking the responsibility of training other biogas technicians and biogas users, which allowed more local villagers to master a technology that can improve their income and living.

3) The biogas digesters built in year 2010 has been functioning very well over one year, which also indicated the good outcome of this training project. It is crucial for the biogas users to have adequate knowledge of management and maintenance of biogas, which can ensure the biogas digesters and its ancillary facilities function properly and serve well for a long term.

4) Trained technician serve overseas. Mr. Chen Jiahai, who used to be a car mechanic, is able to design, construct and run a biogas system independently after he participated in the training program. He was sent to Madagascar in August 2011 and worked as the technical supervisor in the international biogas exchange project. After a series of surveys on local needs and environment, he guided the target community to accomplish two biogas digesters' moulds.

3.4.3 The Effectiveness of health and hygiene training

During the evaluation process, we checked the effectiveness of health and hygiene training by delivering out questionnaires and asking the participants questions, such as basic knowledge in lavatory reconstruction, AIDS/HIV, hepatitis, and so on. According to our statistics, all of the interviewee mastered the basic knowledge of this health and hygiene training.

In the trainees of Hongxing Village of Cheping Township, women accounted for 80%. The training not only increased the level of women's health knowledge but also greatly promoted the health levels of the whole family, for women played an important part in arranging the family’s daily life, which directly connected to the health circumstances of other family members. At the same time, the training has greatly improved the overall quality of women's ability and promoted the development of community by ameliorate the private and public environment of the community. Through the household survey, we found that the courtyards of biogas users are clean and tidy, the phenomenon of leaving litters all around the houses no longer exists, and eventually the incidence of disease of both human and livestock were reduced.

4 Project Efficiency Evaluations

The total amount invested for the Yongshun Environment Project by Amity Foundation was 1,243,500 RMB, of which the three construction projects, the drinking water system in Sicheng

Village of Lingxi Township, the irrigation canal system of Yadong reservoir in Maoba Township, and the biogas digesters construction, accounted 986,000 RMB, resulting in direct economic benefits of 1,204,8 RMB. The detailed project efficiency evaluation is shown in Table 3.

Table 3 Project Investment Returns

No.	Project Activities	Aid fund (RMB)	Net benefit (RMB/yr)	Rate of return (%)
1	Drinking water system in Sicheng Village	140,000	282,000	201.4
2	The irrigation canal system of Yadong reservoir	440,000	364,200	82.78
3	Biogas digesters construction	406,00	558,600	137.6
4	Trainings	257,500	2,000,000	776.7
	Total	**1,243,500**	**3,207,800**	**1,198.48**

5 Project Impact Evaluations

The implementation of the project activities solved local people's lacking of safe drinking water problem, shortage of irrigation water and clean energy, which not only help reduce the incidence of disease, alleviate daily labor burden for carrying water and fetching firewood, but also further neighborhood relationship with each other and with local government. Meanwhile, the implementation of project, from a macro point of view, improves not only local environment but also local people's participation in community affairs. Amity's local partners' capacity was enhanced through the project.

5.1 Guarantee Local Villagers' Essential Right to Existence

Lack of safe drinking water had restricted survival and development of Sicheng Village for a long time. The locals of Maoba Township, though being endowed by nature with abundant water resources, which was favorable for agricultural production, had been suffered from food security problem for years because of the poor irrigation system. The decline of grain production has been the bottleneck of local development and endangered locals' right to existence. The project thus aims to guarantee local people's basic right to existence through building irrigation canal to better irrigation capacity. Besides, a series of trainings with whose focus centered on agricultural technology and biogas utilization and maintenance were carried out for local people to guarantee their right to development. The trainings thus laid a solid foundation for overcoming poverty and achieving prosperity.

5.2 Enhancement of People's Awareness to Participate in the Project

5.2.1 People's awareness of participating in community affairs had been improved.

In the project planning stage, village officials and villagers made group discussion on the possible risks and difficulties they may encounter during the whole project implementation process, thus came to the conclusion that they should find solutions to those problems ahead. In the project implementation stage, local villagers made active and voluntary participation in the project. After the completion of the project, the beneficiaries made follow-up operation and maintenance regulations through villagers' meeting which ensure these regulations reasonable and feasible.

The operation and maintenance regulations were complied into Village Rules. Take drinking water

system for example, the labor investment in the project equals to 41,500 RMB in terms of cash, and discuss how to manage the system through democratic consultation in the village meeting. The irrigation canal system of Yadong reservoir in Maoba Township solved this problem well when it came to the problem concerning its subsidiary facilities and the management responsibilities. Local villagers made good use of the Participatory Management Approach through which they established a distinctive project maintenance system characteristic of local situation. With the approach, villagers formulated the system in which the village official should take turns on duty and others maintain its normal operation. The system was compiled into the Villager Rules. In a word, local villagers made as-ever active participation in the pre-, mid-, and post- period of the project and villagers' awareness of participation in community affairs was greatly improved.

The implementation of the project enhanced local people's awareness of participating in community affairs. The questionnaire survey shows that all the villagers would like to abide by water system management rules. Anybody who was observed being bringing damage to the Reservoir project would be stopped and blamed for what he has done by other villagers.

5.2.2 Capacity building for villagers and women

1) Local villagers' capacity being improved in the training session

Training is one of the best ways to improve one's capacity. The project developed a series of trainings centered on biogas utilization and maintenance, agricultural technology and health and hygiene. These trainings enabled target people to be equipped with at least 1-3 agricultural skills and make good application of those skills in the real practice. Their operation techniques in daily life and agricultural production were greatly improved especially for the women. In the training activities, women's development were attached greatest importance for they accounted for 75% of the total population in agricultural technology training, 60% in biogas utilization and maintenance training and 80% in health and hygiene training. The training not only helped women to improve their capacity in daily production and living, build their awareness to keep healthy hygiene habit, but also brought far-reaching impact on their families, such as children's family education. A well-educated mother will definitely pay more attention to their kids' education. All of which, would facilitate the overall development of the community.

2) Capacity building in the project mobilization stage

Amity's projects, no matter it is small-sized or an integrated rural development project, pay great attention to pre-stage mobilization work among target villagers. By so doing, village official, women backbone and project office staff wanted to widespread and popularize the need and significance for implementing the project, which, would earn local villagers' understanding and support at the very beginning of the project. Take biogas system construction for example, after the mobilization work, target villagers changed their mind from the earlier "being told to do" to later "I want to do". During the process, village official, women backbone and project office staff's capacity were strengthened, which laid foundation for community future development.

3) Capacity building in project implementation process

As being known, the project has been equipped with government supporting fund and community

people's voluntary labor investment. A project in need is a project indeed. Local villagers took it as their own project so that they are active in casting labor to the project construction and post-project maintenance. Instead local people including village official's and villagers' capacity were all improved and meanwhile the community cohesion was thus enhanced, which, would better community development as well.

4) Capacity building in post-project management and maintenance

Project management and maintenance put the operation mechanism which was made by local villagers into practice and achieve great effect. In the participatory project management process, local villagers held timely discussion anytime anywhere to work out feasible management and maintenance system. They elect the person who they believe would shoulder well the responsibility to make smooth operation of the project. Besides, according to the management and maintenance regulations, the project would get repaired with the money villagers paid as water charges. The project, thus, obtained key elements for maintaining its sustainable operation. Local villagers' self-management capacity was also improved in the process.

5.3 Strengthen network between villagers and village official, further harmonious relationship in target community

The project improves social relationship in the community. For village official, they play the coordination role in mobilizing local villagers and making active participation in the project implementation process. The relationship between the villagers and village official thus become closer and more friendly to each other.

The villagers of Sicheng Village, for example, benefited from the drinking water system project which solved their problem in need. However, they still lack of enough domestic water so that villagers made the rotation water usage plan. The plan set down fixed time period for each household to fetch water from the water system. If the household operate weddings and funeral one day, water consumption would be huge and other households then would give their daily "fixed water time" to the target household. It is no doubt the relationship between the households become more and more friendly and closer.

Another example is the biogas digester project in Hongxing Village of Cheping Township. In the implementation process, villagers made active participation in the construction process. The village head took initiative to shoulder the responsibility of the biogas maintenance work for all households in the village. Besides, villagers who have their family biogas system were encouraged to participate in biogas utilization and maintenance training class. Participation in biogas construction process through labor investment, receiving trainings and communization with other members in the training class, as well as mutual learning from each other about biogas utilization skills, all of which help facilitate and build up a strong and better relationship between villagers and village official, among the community households as well.

5.4 Improvement of Living Condition & Health Condition of the Target Group

The implementation of the project improved the life quality of the target group. It provided them with clean drinking water and thus reduced the diseases caused by water. All 15 people who did the questionnaire agreed it is the drinking water project, reservoir and ditch building project and

the biogas project that reduced the disease and improve their living condition.

After the drinking water project was implemented in Sicheng Village, eight families decided to move into the project area and built their new houses there, which is a good demonstration of the benefits community building brought by the project.

When irrigation ditches of Yadong Reservoir were completed, both production condition and living condition in the project area were changed.

In farming, sufficient water made irrigation more efficient and brought a rise in production as well as farmers' income. In daily life, convenience of getting water raised women's awareness of health and enabled them to take care of themselves, which reduced the incidence of gynaecopathia in local community. In all, the project brought both economic and social benefits to villager's life.

According to surveys and interviews of the field trip, villagers' kitchens were often in disorder and excrement of human and animal can be seen everywhere before the project was implemented. As the biogas project was carried out, kitchens and toilets got renovated and the messy environment for insects and germs to breed was eliminated. Since the living environment was improved, villagers' desires to fight poverty in material as well as spirit become stronger.

The project also liberated labor forces and provided more space for development. Before the biogas project's implementation, all families in the target area had to chop the trees on hills for firewood. The annual consumption of firewood per family used to be around 6.5 tons, but now it is only 2 tons. Villagers, especially women (collecting firewood, as one part of the kitchen chores, is usually their responsibility), can spare two months that used to be spent on collecting firewood and use the time to receive training, do livestock raising, or develop brocade, batik, and other forms of handicraft.

5.5 Improvement of Eco-environment

In the area of Yongshun County, as the landforms of water erosion and karst coexist, the general landscape is cut and broken by the rivers. At the same time, the diversity is also large with mountains, mountain plateaus, hills, down lands, syncline valleys etc. When Yadong Reservoir and the affiliated irrigation ditches were completed, the leakage of the old ditches that used to damage local eco-environment was eliminated. The project improved local water resource's conditions and water environment.

A 10 m^3-biogas tank designed for family use can produce 800m^3 of biogas per year on average and save 4.5 tons of firewood. There are 780 biogas systems in the project area, whose effect equals to preventing 3,287 m^2 of forest from being cut. Meanwhile, the biogas project also eliminates the pollution of human and animal excrement, reduces the use of insecticide and fertilizer, ameliorates the soil and protects local vegetation.

5.6 Improvement of Cross-sectional Collaboration & Integrated Administration of Local Government

The project was well supported by Yongshun County Government and its relevant divisions. A special team to coordinate and supervise the implementation (usually a combination process of various government divisions) was put up.

For instance, the construction work of drinking water project was undertaken by Lingxi Township Government and Sicheng Village Administrative Committee. It is the county bureau of water affairs that assembled technicians to design and supervise the construction. After that, staff of the township water pipe station and officials of village-level carried out the field work. As a result, the project was completed in 3 months. During this process, cross-sectional collaboration of the government was strengthened and administrative capacity of individual section was improved.

It is the cooperation of various government divisions that assures the success of the project. To coordinate these divisions to work toward the same goal, local Amity office, which was set up in the United Front Work Department of CCP Committee in Yongshun County, played a very important role. The capacity of this department was greatly improved.

5.7 Strengthening of People's Trust to the Government

The project is closely related to local villagers' life and development. Thus when the villagers felt the positive impacts of the projects, they could not help feeling thankful. Their gratitude to the aid from Amity and local government is the deepest impression the field trip gave us. It can be concluded that the project has strengthened target group's trust to the government.

6 Project Sustainability Evaluations

The projects' sustainability is evaluated by the completeness of managerial body, implementation of regulations and that these projects can operate effectively by means of well management. The on-site survey shows that sustainable running schemes have been established, managerial persons and regulations and funding has been put into practice following the construction of all the three projects. There is considerable sustainability in the projects, and their effective running in the long term is guaranteed. (See Table 4)

Table 4 Long-acting Operational Mechanism

Indicators / Project Activities	Management Personnel	Management System	Management Fund	Quality of Project	Participatory and Supportive Level of Local People
Drinking water system in Sicheng Village	All the villagers	Regular water supply in every three days with fixed amount , 12 minutes for each household,	Every household pay 17 RMB each year, if the fees charged is not enough, villagers meeting will be held to discuss the solution.	Good	High
The irrigation canal system of Yadong reservoir	The village cadres take turns to supervise and the villagers is responsible for daily maintenance	The village cadres take turns to supervise and the villagers is responsible for daily maintenance	3,000 to 4,000 RMB per year of transfer payment from township fiscal revenue; if not enough will send application for subsidy from government	Good	Relatively high
Biogas digesters construction	Biogas technicians and users	A three-level maintenance system consist of township biogas system maintenance and service network, biogas technicians in the village and biogas users	The biogas maintenance technician provide free service for home visit, charge fees for worn parts replacement	Good	High

6.1 Factors Contributed to Long-acting Operation of Project

6.1.1 The long-acting operational mechanism is appropriate with strong operability

The project operational mechanism is developed by participation of all villagers, which gears to actual circumstances and have strong operability. If the maintenance fees increase, the villagers will have group discussion to increase fees charged for management and maintenance of public facilities. Therefore, after the project funding ended, as long as the maintenance fees charged are affordable by villagers, the project is able to act in long term and realize sustainability.

Take the drinking water system project in Sicheng Village of Lingxi Township as an example. After group discussion by the villagers, the agreement has reached by them to contribute 17 RMB per year by each household for the maintenance of water pipe, guaranteeing the long term operation of completed project. As for the maintenance of irrigation canal system of Yadong reservoir, there is 3,000 RMB from the annual transfer payment of township fiscal revenue to village set aside for maintenance fees. As for biogas project, the project operation management personnel, biogas technicians and biogas users have all received strict training, by which they have acquired and mastered related knowledge and skills on biogas maintenance, guaranteeing the daily maintenance of biogas digester; in each village of project area, there is at least one or two biogas technician who provide follow-up service for the whole village, guaranteeing the long term operation of biogas digesters. Besides, the county Energy Bereau has planned to set up rural biogas follow-up service network in Lingxi and Qingpin Town which was the project target area, this will further guarantee the follow-up management of biogas systems, providing professional service in the area of users training, equipment purchase and repairing, as well as correcting malfunction through home visits or phone calls.

6.1.2 High level of participation by villagers

Since the drinking water system, irrigation canal and biogas digesters are closely linked to their survival and development, the villagers have great expectation on every project. They invested money and labor during the construction, thus they will not hesitate to protect the outcomes of their own hard work. Furthermore, with the honest folk culture in these regions, the villagers are full of gratitude towards the aid from the Amity Foundation, which builds the emotional basis for sustainable running of the projects in the population.

6.1.3 Reliable quality of construction

The quality of construction in these projects is the basic safeguard against low sustainability. As it is seen from the on-site survey and statistic analysis, the Irrigation Channels has a relative high quality of construction. There is completeness in documental and statistical work in construction plan, construction work and surveillance, as well as detailed regulations on managerial duty. The surveillance of construction plan, quality and outcome also conforms to the rule. These efforts ensured the quality of construction work, hence the basis of project sustainability.

For instance, the biogas digesters were constructed by biogas technical specialists organized by the local Amity office. These technicians must have obtained the National Occupational Certificate of “Biogas Digester Production Worker”, in order to be on duty. The duty includes construction, quality, biogas production and one-year free service after building the biogas digester.

In this way, the construction quality of the biogas digesters is guaranteed.

6.2 Disadvantageous Factors in Effective Long-term Running of Project

The factor that could impede the sustainability of the projects is the lack of maintenance funds. Take the long-term management of drinking water system in Sicheng Village as an example, although every family pays 17 RMB a year as the maintenance fee, the sustainability is still threatened by problems such as pipe cracking caused by snow storms, when the maintenance fee exceeds the paying ability of villagers. The same maintenance funding problem can happen to the irrigation canal system of Yadong reservoir.

Factors that could obstruct the effective running of the biogas digesters construction lie in the stability and sustainability of service provided by biogas technicians. As the economy grows, it is possible that technicians become occupied by other business production, but spend less time or even no time in biogas technical service. Without the successive service the biogas digesters cannot run effectively for long. Moreover, if the number of animals kept by families increase, the current 10 m^3 biogas digester will be unable to process the increased manure, and it could cause problems in running the biogas digesters as well as livestock pollution.

7 Existing Problems

7.1 Still Insufficiency of Water for Household and Production Use

After the drinking water system in Sicheng Village was carried out, the problem of drinking water for people and livestock were solved, but the water for household use is still insufficient, especially during dry seasons, when many washing machines cannot be used due to the lack of water, not to mention the irrigation of crops, which are all in the hands of nature.

7.2 Lack of Water Restricts the Labor Force

While shortage of water exists, villagers' producing is hindered. Provided there is water, villagers can start breeding yard agriculture and producing commercial crops, so as to elevate the economic efficiency in the local village.

7.3 The Need to Perfect and Refine the Sustainable Running Schemes

The follow-up management of irrigation canal system of Yadong reservoir uses only 3,000 RMB from the annual transfer payment of township fiscal revenue to village. And the managerial personnel are by villager cadres on shifts. It therefore does not fully utilize the initiative of all villagers. When the maintenance cost exceeds the amount of transfer payment, the project's sustainability will be hindered.

7.4 Supplemental Construction Work Yet to Complete in the irrigation canal system of Yadong reservoir

According to on-site investigation, the construction of irrigation canal system of Yadong reservoir has improved the irrigation conditions of some villages. However, there are some other villages which have not benefited from it, because the 4,980 meters of main canal and an aqueduct newly built, and the 4,000 meters of main channel restored did not cover other tributary channels and connection channels. The villagers and cadres eagerly calls for help from the government to

complete supplemental construction work, which consists of building 1,000 meters of main canals, 3,000 meters of tributary canals and 300 meters of aqueducts, in order to fully exploit the dam's capacity to irrigate the croplands in Maoba Village, Taiping Village and Dongshan Village. It can then solve the needs of living and agricultural production use of water by local villagers.

7.5 Lack of Garbage Collection and Disposal Facilities

The villages which these projects benefit still have no collection or disposal facilities of residential garbage, or dustmen. Every family's garbage is left where it is and often burnt in disorder, which not only leads to pollution but wasting of resources as well. As the living standard rises and the amount and varieties of garbage increase, it is imperative that a garbage classification, collection and disposal system be built.

7.6 Inadequate Intellectual Life

Through the Amity Foundation's projects, the basic conditions and standard of living of local villagers was improved, yet in the relatively low-income villages, there is inadequate intellectual life with their longer time off from farming. Thus they have the wishes for more choices of intellectual life such as building kindergartens for children, setting up road lamps and village recreation center etc.

7.7 Outdated Farming Device and Villagers' Vulnerability on the Market

Through the survey, it is found that although agricultural products have improved remarkably both in quality and amount, which is due to the skills training project among farmers, they are still impeded by deficiency of reaping and transporting devices, as well as lack of market information. The cost of reaping and transporting produce is therefore high, while the price on the market remains low, preventing a notable increase in final revenue. Take mandarin orange for example, despite that the high-quality rate rose by 30% to 40%, the sales income did not increase alike. Sometimes there is even negative profit. One main reason for this lies in the fruit growers' weakness in marketing. They are not only devoid of influence on market, but without a sales leader, thus the market price under entire control by outsider buyers. What is more, the young labor forces in these regions have gone out working, so the picking, packaging and transporting of ripe fruits – since there are no mechanic devices – has to be done by hired labors. This further adds to production cost. All together, the quality rises yet value doesn't, products improves yet income doesn't, training in farming skills does not bring about increase of profit. If no measures are taken, the objective to eliminate poverty will remain impossible to be achieved.

8 Conclusions and Advices

8.1 Conclusions

8.1.1 Correct policy planning and content

The Yongshun Environmental Project solved the drinking water, irrigation and energy problems that local villagers faced. It has both realistic significance and historical influence in improving agricultural production and living standards, defending against droughts, floods or other extreme weathers, and helping mountainous villages eliminate poverty and create prosperity. Therefore they are highly imperative. At present, the constructions run well, people are satisfactory and the

plans in each project are logical and implemented in the right way. The projects have achieved their intended objectives, and the actual outcome and influence is greater than the original plan.

By way of training in agriculture skills, biogas techniques and knowledge of sanitation and health, the projects strengthened villagers' technical skills to earn greater profit, to maintain biogas digesters, and helped bringing good sanitary habits to local villagers, especially to women, all together elevated the standard of living of local people.

8.1.2 Enormous economic benefits

The economic benefits resulted from the implementation of these projects include:

1) 1,217 villagers of 315 households and more than 699 domesticated animals now have access to clean water, as a result of the drinking water system in Sicheng Village, Lingxi Township. Labor force that originally used on fetching water can be rearranged to work outside the village, which will boost the local economy to a large degree.

2) 2,800 acres of farmland is now better irrigated, the rate of multiple cropping improved, structure of agricultural products adjusted, area of rice paddy fields enlarged, land output per acres increased, and more industrial and household water is being provided, as a result of the irrigation canal system of Yadong reservoir in Maoba Township.

3) Significant economic benefit is created as a result of the Biogas digesters construction. The biogas, digested slurry and sludge, is used for lighting, cooking, bathing and fertilizing, creating enormous cyclical benefit.

4) The three construction projects above also helped villagers improve their sanitary habits and reduced the risk of disease. In the Sicheng Village and Maoba Township, there is much cleaner drinking water and lower risk of water-borne disease, due to the availability of natural and high-quality mountain spring water made possible by the drinking water system and irrigation system. With the construction of biogas digesters, parasites in the manure such as viruses, mosquitoes and eggs of injurious insects can be killed effectively through oxidization in the plants, to reduce the possibility of catching disease,

8.1.3 High efficiency of projects

The Amity Foundation invested a total of 1,243,500 RMB in the projects, among which 986,000 RMB was invested in the drinking water system in Sicheng Village, the irrigation canal system of Yadong reservoir in Maoba Township and Biogas digesters construction, producing 1,204,800 RMB economic benefits with a rate of return at 421.78%; 250,750 RMB is allocated to training projects, producing 2,000,000 RMB economic benefits with a rate of return at 776.70%. The investment in these projects is highly cost-effective.

8.1.4 Projects' long-lasting influence

The drinking water system in Sicheng Village, the irrigation canal system of Yadong reservoir in Maoba Township and biogas digesters construction adopted Participatory approach of management. It raised the level of villager's involvement in public affairs, ensured their right of survival, improved the relations between people and cadres, strengthened bonds among neighbors, and at the same time, increased the level of inter-departmental cooperation in governments,

improved governments' ability in governance. In addition, through self-governance by villagers, a sustainable running scheme was established for each project. Reasonable and truly practical, the projects can keep running effectively in the long-term even when investment is ended

8.1.5 Increased participation and development of community through project activities

The implementation of the projects largely increased the level of participation by villagers. In the phases of project planning, implementation, successive management and maintenance, the village cadres and villagers all took part actively, cooperated with passion and invested time and labor, which guaranteed the successful construction and running of the projects. In particular, women have strengthened their skills by playing an active role in the construction process, and have contributed to the harmonious, stable development of community.

8.1.6 Practical relevance of training and its outstanding effects

The township agriculture technician training and farmers training aimed to renovate the knowledge of agricultural technicians meet the urgent needs of local village, and the outcome is truly outstanding. Equipped with new theories, the trained farmers are able to apply their knowledge to production and have become pivotal backbones in techniques, radiating support to neighboring families to raise incomes. At the same time, the knowledge updating and training of agricultural technicians is a major contribution to the disseminating practical farming techniques and technological findings, raising the standard of far-reaching scientific and technological development in villages, improving villager's knowledge of science and technology, and finally eliminating poverty and creating prosperity. It has achieved remarkable social and economic benefits.

The biogas technicians training and biogas utilization and maintenance training for farmers met the needs of maintaining and repairing following the construction of biogas digesters, and made up for the insufficient funds at local level for these services. The trained biogas technicians, as well as biogas users all comprehended the techniques of using, maintaining and repairing biogas, and participated in the maintenance work. This has a positive effect on the sustainability of the biogas digesters. It also introduced a cooperation channel between related departments, which formed closer coordination and improved governance of official departments; it also developed the ability to provide successive service and the foundation of maintenance team for biogas digesters at Yongshun County.

The health and hygiene training aimed to instruct trainees in basic knowledge of sanitation and health. The active participation especially by women, who were conscientious in learning, had their sanitary knowledge greatly advanced. It enhanced the overall level of healthiness of families and bettered the communal environment and the development of community as well.

8.2 Policy Advice

8.2.1 Look for more sources of water

Since the completion of drinking water system in Sicheng Village, the drinking water for survival was supplied, yet the problem still remains for household and irrigation use of water. It is recommended that new sources of water are to be found in order to increase the water supply in Sicheng Village.

8.2.2 Complete further associated construction work in the irrigation canal system of Yadong reservoir

The irrigation canal system of Yadong reservoir in Maoba Township has helped 3,800 peoples solving the problem of farmland irrigation and use of water for industrial and living purposes, but within the area there are still places in Maoba Village, Taiping Village and Dongshan Village where irrigation has to wait until the completion of associated construction work of the project. With the intention of creating greater benefit, it is recommended that associated construction be carried out, which includes 1,000 meters of main canals, 3,000 meters of tributary canals and 300 meters of aqueduct, so as to benefit all the people in the area that needs irrigation.

8.2.3 Complete local villagers' sustainable running schemes

Risks still exist, that maintenance fees of construction works will exceed the budget under extraordinary circumstances, and will hinder their sustainability. It is advised that long-term funding be secured, such as encouraging villagers to pool their money for the dam's maintenance and management, or governments saving money for urgent use regarding its long-term running.

8.2.4 Continue educating and training biogas technicians and users

It is estimated that with the development of local economy, the biogas technicians may turn to more economically advantageous activities and spend less or even no time on technical services, which will terminate the successive assistance and the biogas project's sustainability. Therefore, it is advised that education and further training of biogas users and technicians continues, so that their ability to repair biogas digesters and self-competence in problem-shooting can be enhanced for the sake of stable and effective running of biogas digesters in the long-term.

8.2.5 Enhance local villagers' information about market and knowledge of marketing

Advocating trainings concerning local people's marketing capabilities, promoting their control and sales ability on the market, and nurturing farmers as sales agents, are the most wanted capability-building project at present in Yongshun.

8.2.6 Improve basic facilities for collecting and transporting agricultural products

Improving basic facilities for collecting and transporting agricultural products is recommended. Basic machinery facilities should be produced to tackle the problem of shortage in labor and added cost in collecting and transporting agricultural products. With their labor burden and cost downsized, high-quality agricultural goods can bring genuine benefits through eliminating poverty to the villages.

8.2.7 Supporting garbage collection and disposal project

At present, as the standard of living in these villages is gradually on the rise, the amount and varieties of garbage also increase, yet trashes such as used plastics, bottles of pesticides and glass materials are still casually discarded around. It not only causes waste of resources, but also environmental pollution. It is recommended that garbage classification, collection and disposal projects are supported in experiment regions where there is sufficient economic basis and strong intention. In this way, model effects can be achieved and expanded to blaze a new trail in resolving the garbage problem in low-income mountainous district of Yongshun.

8.2.8 More input of “Intellectual Nutrition”

Through completing these projects, the Amity Foundation improved the condition of survival in the region and the standard of living of local people, which leads to wishes for diversified intellectual life. Longer period of time off from farming in villages of low-income districts also increases the need for extra intellectual life. It is recommended that more healthy intellectual projects are added into the Yongshun Project, for the purpose of richer and happier spiritual lives, and of higher quality of living for the villagers in Yongshun low-income district in general.