

People's Republic of China

Ex-Post Evaluation of Japanese ODA Loan

Inland Higher Education Project (Guizhou)

External Evaluator: Naomi Murayama, OPMAC Corporation

0. Summary

The project objective was to improve higher education in Guizhou Province quantitatively and qualitatively by supporting the construction of buildings, the procurement of equipment and the training of teachers in the target universities. This objective has been highly relevant to the country's development plan and development needs as well as to Japan's ODA policy; therefore its relevance is high. Despite a significant increase in students from the project commencement to the ex-post evaluation, the effectiveness and impact of the project was high because quantitative indicators on education and research (building areas, amount of educational equipment) and qualitative indicators (number of key faculties and laboratories, number of research papers, etc.) have been improving. The output increased responding to the needs of each university. The project cost exceeded the plan, but this was relevant due to the increase of output. Severe Acute Respiratory Syndrome (SARS) and the Wenchuan earthquake affected the project, and the project period significantly exceeded the plan; therefore the efficiency of the project is fair. No major problems have been observed in the operation and maintenance system; therefore the sustainability of the project effects is high.

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

1. Project Description



Project Location



Guizhou University of Finance and Economics, Academic Exchange Center

1.1 Background

Guizhou Province ranked as one of the poorest provinces in China as the GDP per capita (RMB 2,865 in 2001) was substantially below the national average (RMB 7,543 in 2001)

although GDP grew by an average of around 9.6% per year during the 9th Five-Year Plan period (1996 – 2000). The 10th Guizhou Province Five-Year Plan (2001 – 2005) targeted a GDP growth rate of about 9%, a GDP per capita of RMB 3,844 in 2005. In the fields of economic growth and industrial structural adjustment, the energy, the mining of raw materials and the high-tech industry were specified as key industries. Provincial government recognized the necessity of expanding higher education in order to attain its objectives and announced a policy to raise the higher education enrollment rate from 7.3% in 2001 to 9% and the number of higher education students to around 331,000 (out of this total, 150,000 ordinary higher education students) by 2005.

1.2 Project Outline

The objective of this project was to improve higher education in Guizhou Province quantitatively and qualitatively by developing educational infrastructure such as university buildings and equipment and by enhancing human resources through teacher training in 8 universities¹ that play an important role in regional development. The aim was to strengthen the local market economy and the environmental conservation, thereby contributing to market oriented economic reform and disparity rectification in China.

Loan Approved Amount/ Disbursed Amount	4,593 million yen/ 4,526 million yen
Exchange of Notes Date/ Loan Agreement Signing Date	March, 2003/ March, 2003
Terms and Conditions	Interest Rate: 2.2% Repayment Period: 30 years (Grace Period: 10 years) For training component; Interest rate: 0.75% Repayment Period: 40 years (Grace Period: 10 years) Conditions for Procurement: General untied
Borrower/ Executing Agency	The Government of the People's Republic of China/ Guizhou Provincial People's Government
Final Disbursement Date	July, 2010
Main Contractor (Over 1 billion yen)	—
Main Consultant (Over 100 million yen)	—

¹ The target universities at the time of appraisal were 1) Guizhou University, 2) Guizhou University of Technology, 3) Guizhou Normal University, 4) Guiyang Medical College, 5) Zunyi Medical College, 6) Guiyang College of Traditional Chinese Medicine, 7) Guizhou University of Finance and Economics, and 8) Guizhou University for Ethnic Minorities. However, the target universities at the time of ex-post evaluation dropped to seven due to the merger between Guizhou University and Guizhou University of Technology in 2010.

Feasibility Studies, etc.	<ol style="list-style-type: none"> 1. F/S: “Feasibility Study Report, Japanese Yen Loans for the Guizhou Province Personnel Training Program” (China Investment and Consultancy Company, Guizhou Branch, May 2002) 2. JICA report: <ol style="list-style-type: none"> 1) “FY 2001 Special Assistance for Project Implementation (SAPI) for the Higher Education Project in China” (August 2003) 2) “SAPI for a Higher Education Project in the People’s Republic of China” (March 2004) 3) “SAPI for a Higher Education Project in China” (May 2005)
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2. Outline of the Evaluation Study

2.1 External Evaluator

Naomi Murayama, OPMAC Corporation

2.2 Duration of Evaluation Study

Duration of the Study: August, 2012 – September 2013

Duration of the Field Study: March 15, 2013 – April 3, 2013, May 27, 2013 – June 3, 2013

3. Results of the Evaluation (Overall Rating: A²)

3.1 Relevance (Rating: ③³)

3.1.1 Relevance to the Development Plan of China

China was admitted to the World Trade Organization (hereinafter referred to as WTO) in December 2001 and was aiming at high rates of economic growth, openness and reform through industrial structural adjustment. Disparities between coastal and inland areas, and between urban and rural areas were issues in China. To address increasing environmental issues, not only the government approaches but also more comprehensive approaches were needed, such as human development and research on environmental conservation in higher educational institutions.

This project sought 1) to tackle industrial structural adjustment through the development of highly-skilled human resources in key industries in Guizhou Province, 2) to respond flexibly to market needs and international competition after becoming a WTO member state through the development of high-quality human resources in the fields of law, finance and trade, and 3) to rectify the disparities between coastal and inland areas and between urban and rural areas. It also sought to respond to the varied needs for environmental protection through the

² A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

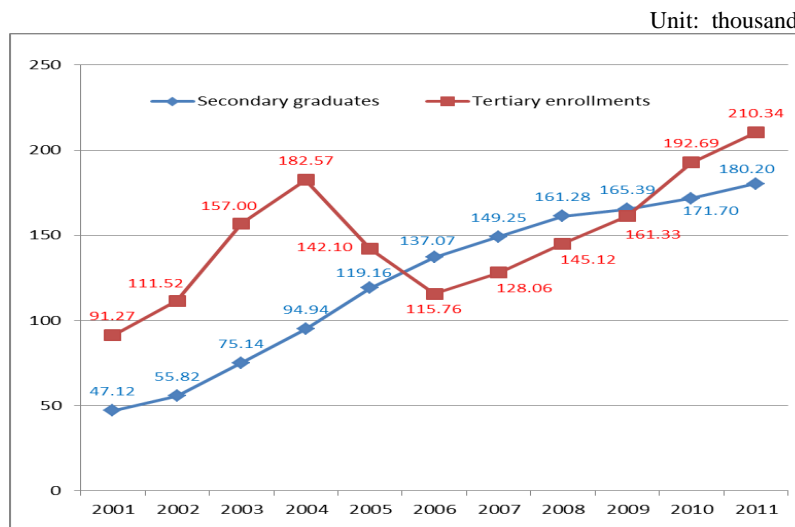
³ ③: High, ②: Fair, ①: Low

development of human resources in the field of environmental problems such as dealing with air and water pollution and the promotion of research on environmental conservation. These project objectives were in line with “10th Five-Year Plan for National Economic and Social Development (2001-2005)”, “10th Five-Year Plan for Education”, “China Western Development” and “Guizhou Province 10th Five-Year Plan” at the time of the appraisal.

At the time of the ex-post evaluation, the “National Mid- and Long-Term Reform and Development Plan for the Education Sector (2010-2020)” had been formulated in addition to the “12th Five-Year Plan for National Economic and Social Development (2011-2015)”, “12th Five-Year Plan for Education”, “China Western Development” and “Guizhou Province 12th Five-Year Plan” and China had been promoting human resource development and regional disparity rectification for further economic growth, openness and reform.

3.1.2 Relevance to the Development Needs of China

At the time of the appraisal, the quantitative demand for higher education was growing along with the increase in the number of secondary graduates. However, the lack of facilities and teaching staff of universities was an issue. It was necessary to strengthen facilities, human resources and the financial aspects in order to address this issue. This project supported the strengthening of facilities and human resources; therefore it was consistent with the development needs of China.



Source: Guizhou Provincial People’s Government

Note: Higher education institutions (Tertiary) include vocational technical schools, short-term higher education, four-year universities, and graduate schools. In this chart, these indicate institutions excluding graduate schools.

Figure 1: Number of Postsecondary Students and Tertiary Enrollments

The number of tertiary enrollments had steadily been increasing in Guizhou Province since project commencement. Although there was a temporary stagnant period in the mid-2000s,

recently they increased drastically again (see Figure 1). The temporary stagnation is attributed to restrictions on applicants for institutions. The reason why they restricted is that the improvement of educational infrastructure has not kept up with the drastic increases in tertiary enrollments. The number of enrollments began to increase again with completion of the construction of buildings and the procurement of equipment at each university. At the time of the ex-post evaluation, the numbers of graduates from high schools and enrollments in higher education had been increasing at a higher rate than the 2006 forecast (numbers of graduates from high schools: 141,700 enrollments in higher education: 116,200) at appraisal time. This indicates a growing need for higher education. The need for higher education in Guizhou Province in particular drastically increased with the implementation of the “9+3 plan”⁴.

Although the income level in Guizhou Province exponentially improved from GDP per capita RMB 2,865 in 2001 to RMB 16,413 in 2011, it still fell much below the national average of RMB 29,992 in 2011⁵. At the time of the ex-post evaluation, the need for higher education was still growing quantitatively and qualitatively in the light of 1) regional development, 2) strengthening market rule and 3) environment conservation.

During project implementation, the number of applicants to universities was expanded and the placement and structures were optimized. It shows that the timing of financial support has been very good. The higher education reform is still continuing. Thus, the project objectives are consistent with the development needs of universities.

3.1.3 Relevance to Japan’s ODA Policy

Japan’s ODA Charter at the time of appraisal placed importance on assistance in the Asian region and assistance in human resource development; therefore the project objectives were consistent with Japan’s ODA policy.

Furthermore, the Country Assistance Policy for China, the Medium-Term Strategy for Overseas Economic Cooperation Operations and the Country Assistance Strategy at the time of appraisal made human resource development a priority from the viewpoint of support for openness and reform (market rules), environmental conservation, and regional development (including progress in Japan-China exchanges). The project objectives were consistent with Japan’s aid policies.

This project has been highly relevant to China’s development plan and development needs, as well as to Japan’s ODA policy; therefore its relevance is high.

⁴ Guizhou Province Education “9+3” Plan: to ensure the enforcement of nine-years of compulsory education and to provide a free three-year secondary vocational education service.

⁵ National GDP: <http://www.stats.gov.cn/tjsj/ndsj/2011/indexeh.htm>, as of April 12, 2013. Guizhou Province GDP: Guizhou Province Statistical Year Book 2012.

3.2 Effectiveness⁶ (Rating: ③)

This project aimed at quantitative and qualitative improvement of higher education in Guizhou Province by supporting the construction of buildings, the procurement of equipment and training of teachers in the target universities. To identify the effectiveness of the project, the indicators showing the improvement of project objectives was usually utilized. There were 48 universities in Guizhou Province as of 2011. Only eight out of these 48 were target universities (seven target universities at the time of the ex-post evaluation due to the merger between Guizhou University and Guizhou University of Technology). It is difficult for the project to directly contribute to quantitative and qualitative improvement of all the higher education institutions in Guizhou Province. Therefore, only quantitative and qualitative improvement in the target universities was analyzed in this section.

3.2.1 Quantitative Effects (Operation and Effect Indicators)

In this ex-post evaluation study, the evaluator analyzed the quantitative effects using the indicators directly related to the three project components, i.e. building construction, educational equipment and training. Specifically, contributions (effects) to increasing the number of students were evaluated by analyzing school building area (floorage), the monetary value per student of educational equipment and the utilization rate of school buildings and educational equipment for quantitative improvement.

For qualitative improvements, educational environment by floorage per student and the monetary value per student of educational equipment were analyzed. Then, the project's contributions to aspects of education and research were evaluated based on the number of key faculties, key laboratories, research papers, research projects, patents for invention and so forth.

3.2.1.1 Quantitative improvement

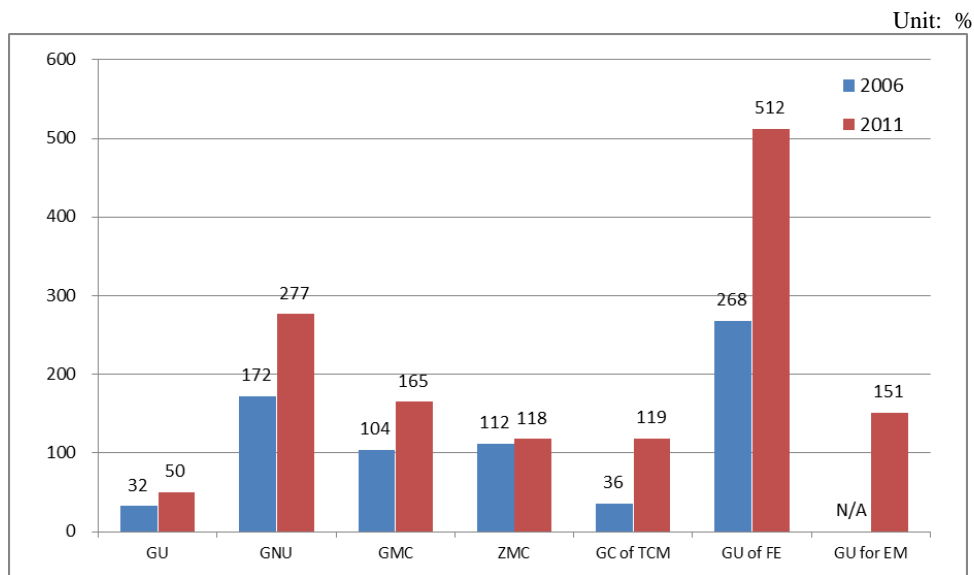
(1) Change in the number of students

In China, the number of university students has sharply increased since the release of the "Action Plan for Educational Vitalization Facing the 21st Century" in 1998, which aimed to increase the university enrollment rate from 9.8% in 1998 to 15% in 2010. In the meantime, the number of universities in Guizhou Province increased from 37 in 2001 to 48 in 2011. The number of students also increased from 190.8 thousand in 2001 to 423.7 thousand in 2011 (a rise of 222%).

Although the increase in students at the target universities was not the same as the increase in the entire province, it was still more than double. The following bar chart illustrates the growth rates of students in 2006 and 2011 by a comparison with the number of students in the base year (2001). The total number of students at the target universities increased by 79,150 in

⁶ To be rated in judging effectiveness by taking impact into account.

the decade, from 56,928 in 2001 to 136,078 in 2011 (a rise of 139%).



Source: Responses to the questionnaire

Note: GU: Guizhou University, GNU: Guizhou Normal University, GMC: Guiyang Medical College, ZMC: Zunyi Medical College, GC of TCM: Guiyang College of Traditional Chinese Medicine, GU of FE: Guizhou University of Finance and Economics, GU for EM: Guizhou University for Ethnic Minorities.

Figure 2: Growth rate of students in the target universities

(2) Change in school building areas

To meet the increase in university students mentioned in the above (1), each target school constructed education and laboratory buildings, libraries, gymnasiums and so on. Academic cities have been constructed in many regions in China. In Guizhou, the provincial government has been constructing Huaxi academic city and many universities in Guiyang are on the way to relocating their campuses. Depending on relocating the campuses or not, the actual building area, growth rate or proportion to this project as of 2012 is different. Building area at all universities, however, has increased and future increases are also expected. The buildings constructed by this project account for 4.3% to 21.5% of the total school building area (see Table 1). The buildings constructed by this project do not necessarily account for a large proportion. In the case of Guizhou province, universities that have not yet moved their campus to the suburbs but which are still located downtown show a tendency to have a large share of Project building.

However, most universities answered in the questionnaire that this project had contributed to alleviating a shortage in buildings and facilities by its implementation at a time when the size of universities was expanding. Therefore, the project have contributed to a mitigation of the shortage of buildings and facilities to some extent.

Table 1: Change in school building area at the target universities

Unit: m²

	Baseline (2001)	Actual (2011)	Growth rate (%)	Project area	Share of the project (%)
Guizhou University (Guizhou University of Technology)	187,149 (115,569)	538,718	78	36,000	6.7
Guizhou Normal University	196,100	609,886	211	26,138	4.3
Guiyang Medical College	45,424	537,460	1,083	29,876	5.6
Zunyi Medical College	54,443	126,547	132	16,132	12.7
Guiyang College of Traditional Chinese Medicine	73,310	93,331	27	20,070	21.5
Guizhou University of Finance and Economics	68,801	318,289	263	32,704	10.3
Guizhou University for Ethnic Minorities	46,432	150,828	225	25,000	16.6

Source: JICA appraisal documents, Responses to the questionnaire

(3) Change in the monetary value of educational equipment

In Guizhou Province, not only the floorage of school buildings but also the monetary value of educational equipment has increased annually responding to the increase in the number of university students. The Undergraduate University Establishment Standards of China by the Ministry of Education of the People's Republic of China has the following requirements: the monetary value of educational equipment per student for science faculties is not less than RMB 5,000; for literature and social faculties, not less than RMB 3,000; for gymnastic and art faculties, not less than RMB 4,000. None of the target universities met this requirement before the project implementation. After the project completion, however, all the target universities met this requirement. The total amount of the educational equipment procured by the project was JPY 3,063 million and the total number of students at the target universities in 2011 was 136,078. The benefit as of 2011 for the equipment procured by the project per student was about JPY 22,510 (RMB 1,500, if RMB 1 = JPY 15) shown by simple arithmetic⁷ and it accounts for a substantial portion on the monetary value of educational equipment. It can be said that the project has been quite important regarding the monetary value of educational equipment at the target universities. In light of the above, this project can be said to have largely contributed to increases in the monetary value of educational equipment at the target universities.

Table 2: Monetary value of educational equipment per student

Unit: RMB

	Baseline (2001)	Actual (2006)	Actual (2011)
Guizhou University (Guizhou University of Technology)	4,080 (4,320)	9,310	9,605
Guizhou Normal University	3,379	4,700	9,400
Guiyang Medical College	4,370	7,073	21,400
Zunyi Medical College	3,000	6,550	7,299

⁷ As it was difficult to collect detailed data, the evaluator simply divided the total amount of educational equipment procured under the project by the number of students as of 2011. However, if the amount at the time of procurement completion at each university was divided by the number of students at that time, the benefit per student would have been more than the evaluator's calculation.

	Baseline (2001)	Actual (2006)	Actual (2011)
Guiyang College of Traditional Chinese Medicine	4,375	5,867	6,750
Guizhou University of Finance and Economics	3,236	7,045	7,853
Guizhou University for Ethnic Minorities	4,281	5,076	6,269

Source: Responses to the questionnaire

In the “Undergraduate University Teaching Level Evaluation” conducted by the Ministry of Education of the People's Republic of China in 2007, all the target universities won the honorary title “*Excellent University*” due to improvements in school buildings and equipment⁸. These improvements are the result not only of the project but also of the efforts of the universities themselves. However, each university has insisted that the project has played an important role in improving the university operating environment through school buildings and educational equipment developed under the project.

(4) Utilization rate of school buildings and educational equipment

As mentioned above, the school building area and the monetary value of educational equipment per student increased as each target school quantitatively responded to the increase of students. However, effectiveness cannot be discussed if these buildings and equipment are not actually utilized.

Table 3 shows the utilization rate of major school buildings. In every university, the utilization rate is more than 90 % since the buildings are constructed and completed. This rate is very high.

Table 3: Utilization rate of major school buildings

	Unit: %			
	2005	2006	2009	2011
Guizhou University	—	85	95	100
Guizhou Normal University	—	100	100	100
Guiyang Medical College	100	100	100	100
Zunyi Medical College	0	100	100	100
Guiyang College of Traditional Chinese Medicine	Not completed	90	More than 90	95
Guizhou University of Finance and Economics	More than 90	More than 90	More than 90	More than 90
Guizhou University for Ethnic Minorities	100	100	100	100

Source: Responses to the questionnaire

Table 4: Utilization rate of major equipment

	Unit: %		
	2005	2009	2011
Guizhou University	60	95	98
Guizhou Normal University	100	95	96
Guiyang Medical College	90	90	92
Zunyi Medical College	85	90	90
Guiyang College of Traditional Chinese Medicine	75	More than 90	95
Guizhou University of Finance and Economics	More than 90	More than 90	More than 90
Guizhou University for Ethnic Minorities	100	90	70

Source: Responses to the questionnaire

⁸ The evaluation system on higher education introduced by the Ministry of Education of the People's Republic of China. Once every five years, school operations and the quality of education are evaluated. The first phase of the evaluation was conducted from 2003 to 2008. The results are evaluated on a five-point scale. “Excellent” is the top rating.

Table 4 shows the utilization rate of major equipment at the target universities. This is also a very high ratio. At Guizhou University for Ethnic Minorities, the utilization rate has been declining recently. It was caused by not gradually utilizing end-of-life equipment such as PCs for undergraduate students. However, since these are already past their estimated service life, there is no particular problem if they have been not in use already. Some of the end-of life equipment is recycled and reused (see Box 1).

As seen above, regarding quantitative improvement, the number of students at the target schools drastically increased, in the lowest case this growth rate was 50% (Guizhou University) and in the highest case it was 512% (Guizhou University of Finance and Economics). Despite this, however, the monetary value of educational equipment per student increased at all the target universities. In addition, the school building area also increased at all the target universities. The utilization rate of school buildings and equipment was also very high. Regarding building construction, as mentioned above, it cannot be said that this project necessarily accounted for a large proportion. However, most universities said in the questionnaire that they thought this project had contributed to alleviating a shortage of buildings and facilities at a time when the size of universities was being expanded. In light of the above, this project contributed largely to quantitative improvement against a drastic increase of university students.

Box 1: Recycling and reuse of computers procured under the project

At Guizhou University for Ethnic Minorities and Guizhou University of Finance and Economics, the utilization rate of school buildings and equipment developed under the project was high, but as it is necessary to update PCs frequently, PCs procured by the project have already been replaced by new ones using the universities' own funds. However, some lectures from the faculty of "learn-by-doing" at the universities collected the available parts from end-of-life PCs procured under the project, reassembled them and donated them to elementary and junior high schools in mountainous rural areas. Because of this, the benefit from the project has expanded to these elementary and junior high schools.

3.2.1.2 Qualitative improvement

(1) Floorage and monetary value of educational equipment per student

The Undergraduate University Establishment Standards of China required that the 2006 national standard of floorage per student was more than 30 m². Most target universities did not meet this standard as of 2011. Moreover, the floorage per student at some universities had deteriorated compared to 2001. The main reason for this was the rapid increase in students. All the target universities except Guizhou University for Ethnic Minorities plan to construct new campuses in other places and some universities have already started construction. Therefore, the issues of floorage per student will be resolved. However, it is difficult to say whether this project has contributed to increases in the floorage per student because the increase of the floorage per student through the project is not necessarily large.

Table 5: Floorage per student

Unit: m²

	Baseline (2001)	Actual (2011)	
		Floorage per student	Increase of the floorage per student through the project
Guizhou University (Guizhou University of Technology)	10.9 (10.7)	13.7	0.92
Guizhou Normal University	24.0	19.5	0.83
Guiyang Medical College	7.6	36.9	2.05
Zunyi Medical College	7.9	13.1	1.67
Guiyang College of Traditional Chinese Medicine	11.6	9.2	1.97
Guizhou University of Finance and Economics	13.4	16.6	1.71
Guizhou University for Ethnic Minorities	7.5	12.6	2.10

Source: Responses to the questionnaire

The monetary value of equipment per student, as confirmed in the Table 2, has improved and was greatly affected by this project. Should evaluation be comprehensively made in view of further increases in floorage, the entire trend is toward improvement while there may only have been a temporary worsening of the educational environment.

(2) Change in number of key faculties and key laboratories

In China, since “The opinion of some, concerning the development of higher education institutions and key faculties” by the State Education Commission in 1993, the state or provincial government has designated faculties and laboratories which closely relate to national development strategies and public welfare. These are labeled key faculties and key laboratories and funds are intensively supported by the government in order to raise education and research to an international level (see Table 6 and Table 7)⁹.

Table 6: Number of key faculties

	Baseline	Target	Actual	
	2001	2006	2006	2011
Guizhou University (Guizhou University of Technology)	NL:0, PML:11 NL:0, PML:9	NL:3, PML:20 NL4, PML: 17	NL:1, PML:23	NL:1, PML:33
Guizhou Normal University	NL:0, PML:5	NL:0, PML:8	NL:0, PML:8	NL:0, PML:13
Guiyang Medical College	NL:0, PML:6	NL:2, PML:10	NL:0, PML:7	NL:0, PML:7
Zunyi Medical College	NL:0, PML:4	NL:2, PML:7	NL:0, PML: 3	NL:0,PML: 5
Guiyang College of Traditional Chinese Medicine	NL:0, PML:4	NL:6, PML:8	NL:0, PML:5	NL:1, PML:27
Guizhou University of Finance and Economics	NL:0, PML:3	NL:0, PML:6	NL:0, PML:4	NL:0, PML:7
Guizhou University for Ethnic Minorities	NL:0, PML:4	NL:0, PML:10	NL:0, PML:6	NL:0, PML:6

Source: Responses to the questionnaire

Note: NL (National Level): National key faculty, PML (Provincial or Ministerial Level): Provincial or ministerial key faculty

⁹ National key faculties are designated by the State government. The provincial or ministerial key faculties are designated by the provincial government, while ministerial key faculties are designated by the provincial government or ministries such as the Ministry of Education.

The target universities could not match the target of the number of national key faculties. However, 98 faculties, that exceeded the number of target (86 faculties), were designated as provincial or ministerial key faculties as of 2011. The project especially encouraged the development of the faculty of agrochemicals in Guizhou University, which is designated as a national key faculty and which contributed to development of related laboratories.

Table 7: Number of key laboratories

	Baseline	Actual	
	2001	2006	2011
Guizhou University (Guizhou University of Technology)	NL:0, PML:10 NL:0, PML:8	NL:0, PML:25	NL:0, PML:35
Guizhou Normal University	NL:0, PML:0	NL:0, PML:1	NL:1, PML:5
Guiyang Medical College	NL:0, PML:0	NL:0, PML:0	NL:3, PML:4
Zunyi Medical College	NL:0, PML:0	NL:0, PML:2	NL:0, PML:3
Guiyang College of Traditional Chinese Medicine	NL:0, PML:0	NL:0, PML:1	NL:0, PML:5
Guizhou University of Finance and Economics	NL:0, PML:0	NL:0, PML:1	NL:0, PML:3
Guizhou University for Ethnic Minorities	NL:0, PML:0	NL:0, PML:0	NL:0, PML:2

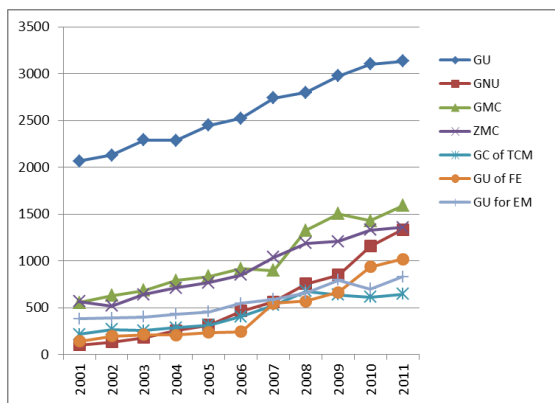
Source: Responses to the questionnaire

Note: NL (National Level): National key laboratory, PML (Provincial or Ministerial Level): Provincial or ministerial key laboratory

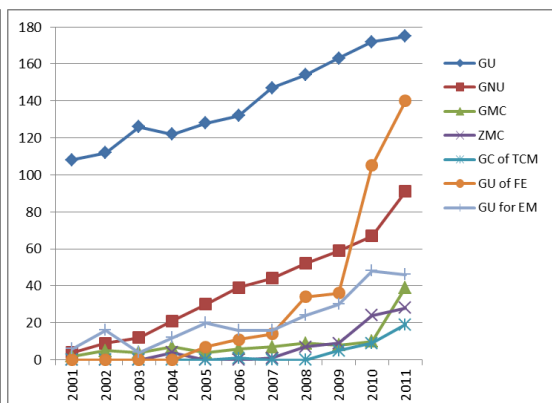
A target was not set for key laboratories. As of 2001, only Guizhou University, including the former Guizhou University of Technology, had 18 provincial or ministerial key laboratories. However, key laboratories were established in all the target universities in 2011. The number of national key laboratories rose to 4 and the number of provincial or ministerial key laboratories rose to 57. In accrediting key faculties and key laboratories, the enrichment of facilities and equipment (including libraries) is included in the screening criteria. Therefore, many target universities pointed out in the questionnaire that the development of buildings and equipment under the project contributed to the accreditation of key faculties and key laboratories.

(3) Number of research papers, research projects, patents for inventions etc.

Research papers published in China and articles published in scholarly journals such as Science Citation Indicators (SCI) are increasing (see Figure 3 and Figure 4). Although in Guizhou University there have long been many articles produced, the number has increased constantly. In the other target universities there has been a drastic increase in articles since around 2007 or 2008. In particular, the number of articles published in international journals such as SCI increased after the completion of equipment procurement under the project.



Source: Responses to the questionnaire
 Note: GU: Guizhou University, GNU: Guizhou Normal University, GMC: Guiyang Medical College, ZMC: Zunyi Medical College, GC of TCM: Guiyang College of Traditional Chinese Medicine, GU of FE: Guizhou University of Finance and Economics, GU for EM: Guizhou University for Ethnic Minorities.



Source: Responses to the questionnaire
 Note 1: SCI (Science Citation Indicators), EI (Engineering Index), ISTP (Index to Scientific & Technical Proceedings)
 Note 2: GU: Guizhou University, GNU: Guizhou Normal University, GMC: Guiyang Medical College, ZMC: Zunyi Medical College, GC of TCM: Guiyang College of Traditional Chinese Medicine, GU of FE: Guizhou University of Finance and Economics, GU for EM: Guizhou University for Ethnic Minorities.

Figure 3: Number of domestic articles

Figure 4: Number of articles in SCI, EI, ISTP

There have been many articles related to the project. Especially in Guizhou University for Ethnic Minorities (78), Guiyang College of Traditional Chinese Medicine (54, of which 4 articles have been published in international journals such as SCI), and Zunyi Medical College (21, of which 2 articles have been published in international journals such as SCI), there have been a lot of articles related to the project¹⁰. The connections with the project are as follows: 1) it became possible to publish articles because the researchers could make higher-level experiments due to the procured equipment; 2) the researchers took advantage of training in Japan to publish articles. Moreover, some trainees undertook joint research with professors in Japanese universities where they went for training during their half-year stay and they then published the articles in SCI-level journals (see Box 2).

¹⁰ The number within the brackets is total number of articles related to the project.

Box 2: A case of how training contributed to research articles and projects
— Guiyang College of Traditional Chinese Medicine —

Some teachers dispatched from Guiyang College of Traditional Chinese Medicine to Japanese universities for relatively long terms have been attempting to fuse various oriental medicines with western medicine.

For example, a teacher who conducted research on the electrophysiological activity of a cell (research on nerves) received research funds from the provincial government and is a member of a national level research project after one year and a half of training at Fukushima Medical University. Currently the teacher is adopting the viewpoint of nerves in western medicine into acupuncture and moxibustion therapy and is conducting research on the curative effects of a combination of acupuncture, moxibustion therapy and Chinese herbal medicine. Furthermore, the teacher is making use of the results of this research in education in the graduate school so that the students can study the combined medicine of the orient and the west.

Another teacher who studied oriental medicine at Toyama University researched about cures for type B hepatitis and acquired immune deficiency syndrome (AIDS) using traditional medicines used by Chinese minorities. The teacher published the research results in authoritative journals and presented them to the academy in Japan. Moreover, the teacher is applying for a patent for new medicine. In 2010, the teacher invited the preceptor in Toyama University to Guiyang College of Traditional Chinese Medicine for lectures. The teacher continues academic exchanges with the Japanese preceptor.

The number of research projects is dramatically increasing at all the target universities (see Table 8). For instance, Guiyang Medical College acquired a total of 81 research projects such as the “National Natural Science Foundation of China” and the “Guizhou Science and Technology Issues Breakthrough Project” by using equipment procured under the project. As a result of these projects, the university was awarded the first prize for Guizhou Province Scientific and Technological Achievements, the first prize for Guiyang City Scientific and Technological Achievements, the second prize for Guiyang Science and Technology, the third prize for the Guiyang City Science Progress Award and the second prize for the Guizhou Medical Society Science and Technology Award. In light of these, the project can be seen to have contributed to improving the level of research at the target universities to some extent.

Table 8: Number of research projects

	Baseline (2001)	Actual (2006)	Actual (2011)
Guizhou University	18 (National level)	46 (National level)	83 (National level)
Guizhou Normal University	56	79	216
Guiyang Medical College	101	212	270
Zunyi Medical College	67	197	251
Guiyang College of Traditional Chinese Medicine	76	196	314
Guizhou University of Finance and Economics	17	52	128
Guizhou University for Ethnic Minorities	51	80	302

Source: Responses to the questionnaire

Note: the data of Guizhou University includes only national level research projects. The data for other universities is a sum of national and provincial/ ministerial level research projects.

The number of social services also increased at all the target universities (see Table 9). For example, Guizhou University of Finance and Economics constructed a library and the Guizhou Province provincial information reference room. Following this, the professors have actively

made policy proposals to Guiyang municipal government and Guizhou provincial government using the large amount of information available. Proposal acceptances are increasing year by year. Some professors have become government advisors and Guizhou University of Finance and Economics is of increasing importance in the financial management of Guizhou province.

Equipment procured under the project in the analysis and measurement inspection center, Guizhou Normal University, has provided more than 3,000 measurement inspection services annually to universities, colleges, science institutes, public security departments, investigations into criminal cases, judicial branches, legislative committees of the Regional People’s Congress and individuals in Guizhou province. It has also provided product quality improvement services to more than 50 pharmaceutical companies. In addition, the university provided medical measurement test services to more than 100 companies annually and necessary technical assistance for the purchase of materials and quality control of products.

Guizhou Normal University, as mentioned in Box 3, has digitalized literature data for research and shared the data through the Guizhou province science technology database platform. This platform utilizes information network equipment procured under the project and symbolizes project impacts in the field of social services.

Table 9: Number of social services

	Baseline (2001)	Actual (2006)	Actual (2011)
Guizhou University	N/A	45	91
Guizhou Normal University	2	23	149
Guiyang Medical College	1	2	2
Zunyi Medical College	1	2	3
Guiyang College of Traditional Chinese Medicine	4	6	7
Guizhou University of Finance and Economics	3	7	38
Guizhou University for Ethnic Minorities	23	45	85

Source: Responses to the questionnaire

Box 3: Guizhou province science technology database platform —Guizhou Normal University—

The library of Guizhou Normal University has participated in the establishment of the “Guizhou province science technology database platform” by utilizing information network equipment procured under the project. It provides digital information resource services at no charge to higher education institutes, science institutes, new materials research centers etc. in Guizhou province, and participates in data sharing beyond the research area.

Many research prizes have been awarded related to the project such as the “Research and Application of a Medicament for Preventing Pests through Soil among Crops” (Guizhou University, second prize of the National Science and Technology Progress Award, 2007). In many cases, the teachers participated in the projects after training in Japan and they used facilities and equipment procured under the project. The number of patents for inventions has increased, especially at universities which have faculties of medicine and faculties of science

and engineering (see Table 10).

Table 10: Number of patents for invention

	Baseline (2001)	Actual (2006)	Actual (2011)
Guizhou University	13	20	28
Guizhou Normal University	0	10	13
Guiyang Medical College	5	17	32
Zunyi Medical College	0	1	2
Guiyang College of Traditional Chinese Medicine	0	4	6

Source: Responses to the questionnaire

Note: this table includes only universities which have records of patents for inventions.

Faculties at undergraduate schools and courses at graduate schools have also demonstrated an upward trend at all the target universities (see Table 11). According to the following table, Guizhou University for Ethnic Minorities did not have a graduate school. However, the establishment of courses was approved in 2012 and now there are master courses. Guizhou University of Finance and Economics created some courses such as one in international accounting based on the international exchange experiences of teachers participating in training in Japan. In addition, Guizhou University of Finance and Economics established a Japanese language course and the “Society of Japanese Language Education, Guizhou Province”. In some universities, the project exerted a direct influence on the establishment of new faculties and courses.

Table 11: Number of faculties and courses

	Baseline	Actual	
	2001	2006	2011
Guizhou University	Undergrad.: 91 Master: 86 Doctor: 4	Undergrad.: 122 Master: 213 Doctor: 36	Undergrad.: 137 Master: 241 Doctor: 56
Guizhou Normal University	Undergrad.: 38 Master: 15 Doctor: 0	Undergrad.: 49 Master: 40 Doctor: 0	Undergrad.: 56 Master: 92 Doctor: 0
Guiyang Medical College	Undergrad.: 11 Master: 26 Doctor: 0	Undergrad.: 16 Master: 34 Doctor: 1	Undergrad.: 30 Master: 43 Doctor: 6
Zunyi Medical College	Undergrad.: 12 Master: 14 Doctor: 0	Undergrad.: 19 Master: 17 Doctor: 0	Undergrad.: 24 Master: 13 Doctor: 0
Guiyang College of Traditional Chinese Medicine	Undergrad.: 4 Master: 11 Doctor: 0	Undergrad.: 8 Master: 15 Doctor: 0	Undergrad.: 9 Master: 21 Doctor: 0
Guizhou University of Finance and Economics	Undergrad.: 17 Master: 0 Doctor: 0	Undergrad.: 32 Master: 21 Doctor: 0	Undergrad.: 49 Master: 40 Doctor: 0
Guizhou University for Ethnic Minorities	Undergrad.: 17 Master: 0 Doctor: 0	Undergrad.: 37 Master: 0 Doctor: 0	Undergrad.: 72 Master: 0 Doctor: 0

Source: Responses to the questionnaire

In light of the above, regarding qualitative improvement, the educational environment is gradually getting better as floorage and the monetary value of equipment per student show a trend toward improvement. Regarding the development of school buildings and experimental equipment, there has been a substantial improvement especially in educational equipment while the project has contributed to the improvement of floorage to some extent.

The project has had a great effect on the increase in the designation of key faculties and laboratories. The project contributed also to the increase in the number of research papers, patents, etc. as many of these used equipment procured under the project or were achieved by participants in training in Japan. Therefore, the project has played a significant role in improving the quality of education and research.

3.2.2 Qualitative Effects

Qualitative effects of the project are (1) improvement in the results of the “Undergraduate University Teaching Level Evaluation” through upgrading of the educational environment, (2) increased numbers of holders of a doctorate degree, and (3) improvement in teaching methods as qualitative effects of the project.

(1) Improvement in the results of the “Undergraduate University Teaching Level Evaluation” through upgrading of the educational environment

According to the Education Department of Guizhou, all of the seven target universities, as mentioned above, won the honorary title “Excellent University” in the “Undergraduate University Teaching Level Evaluation” conducted by the Ministry of Education of the People's Republic of China in 2007. The practical education of Guizhou University of Finance and Economics was evaluated as B in the 2006 evaluation. Thereafter, they focused on the development of laboratories using the project, later receiving straight As in all the evaluation items and winning “Excellent University”. They took the opportunity afforded by this achievement for developing other buildings, facilities and equipment at an accelerated pace. In the end, building constructed under the project was designated as a “State Educational Model Center of Economic Management”¹¹. Therefore, this project provided the university with an opportunity for further development.

When Guizhou University was designated as one of the universities of “Project 211”¹², the project indirectly contributed to the development of facilities.

¹¹ Established by the Ministry of Education of the People’s Republic of China in order to promote the reform of experimental education in higher education and to enhance the quality of higher education. For the designation of “State experimental education model center”, universities have to pass the following assessment process: application, government approvals and licenses, development, assessment and acceptance inspection. Guizhou University of Finance and Economics “state educational model center of economic management” passed the inspection in 2013.

¹² Project 211 is a national project, named from an abbreviation of “the 21st century and approximately 100 universities respectively”. To be designated as Project 211 by the Ministry of Education of the People’s Republic of

In addition, there is the opinion that the employment rate of students has been boosted by the increasing social recognition of universities such as the Excellent Universities and designated Project 211 universities

(2) Increase in holders of doctorate degrees

The participants in training in Japan increased significantly due to a reduction in staff dispatched for long-term training and an increase in staff dispatched for short-term “university management courses”. Having said that, there were a lot of participants in mid-term or long-term visits for research purposes. Most of these are characterized by belonging to laboratories at Japanese universities and by using the project for about half a year or one year and before going on to doctoral courses appropriate for exploring their research themes in more detail and continuing their research using their own funds or scholarships provided by the universities. Although the concrete number is unknown, there are some cases like this at each university. In light of this, the project has contributed to an increase in the number of holders of a doctorate degree to some extent.

(3) Improvement of teaching methods

As a main effect of the training component, there are many teachers who are using Japanese methods of research and education as they have believed that they help improve educational methods. In particular, there are many cases where the seminar method has been introduced although traditionally a lecture style in a big classroom is common in China. One teacher won the provincial or ministerial level prize in 2011 with research on “Application of the Seminar Educational Model in a Music Master Course” after training in Japan (see Box 4).

Box 4: Application to research and education after training — Zunyi Medical College —

A professor from the immunology lab in the school of basic medicine, Zunyi Medical College, participated in training for half a year in Japan through the project. The professor himself made a contact with Kumamoto University and conducted his research project using the winter break. The research was in “Molecular systems produced by high affinity antibodies”. After training in Japan, he became a core professor in the education of basic medicine and has played an important role in both education and research. Another lecturer from a school of languages underwent training at Yamaguchi University for half a year. During her stay in Yamaguchi, the lecturer assisted in the development of software for the International Japanese Language Aptitude Test and she collected and analyzed data. After training, she introduced the advanced Japanese educational ideas and methods into Japanese language education at the school.

China means that the university is a top level in education, research and management. (Source: Japan Science and Technology Agency China Research Center, 2011, “2010 Current Situation and Trend of Higher Education in China”)

3.3 Impact

3.3.1 Intended Impacts

(1) Impact on higher education at provincial level

The quantitative indicators for the whole of higher education in Guizhou province have demonstrated an upward trend. However, it is difficult to say that construction of school buildings under the project had an impact to the entire province as the floorage per student became nearly flat or slightly deteriorated after the great improvement.

Table 12: Impact on higher education at provincial level

Purpose	Indicators	Baseline (2001)	Target (2006)	Actual (2006)	Actual (2009)	Actual (2011)
Quantitative improvement	Number of higher education institution	27	—	37	47	48
	Number of students at higher education institutions	192,225	259,000	221,546	299,072	344,100
	Higher education enrollment ratio (%) (=Appropriate age enrollment/ Appropriate age population)	7.3	9.3	11.0	18.4	23.2
Qualitative improvement	Floorage per student (m ² /student) (=floorage/number of students)	11.8	12.2	34.11	30.29	28.50

Source: Responses to the questionnaire

(2) Impact on regional development

At the time of appraisal, there was an expected impact on regional development through dispatching school teachers and doctors to rural areas, providing human resources to key industries, and by collaboration between Chinese universities and Japanese universities. Regarding the dispatch of human resources, a system of dispatch to rural areas has been in place since the commencement of the project. Therefore, there have been a lot of cases of dispatching teachers and doctors for some time. However, the evaluator could not confirm a relationship between the dispatches and the project. Moreover, some universities, such as normal universities, and some medical colleges do not have data on whether or not graduates got jobs in rural areas.

As for providing human resources to key industries, statistical data also only exists at a few institutes. However, according to responses to the questionnaire from the target universities, many universities said that the employment rate to key industries had been raised to enhance students' practical abilities through the procurement of equipment by the project.

Collaboration between Chinese universities and Japanese universities will be mentioned later in other impacts. There are noteworthy cases like Guizhou University of Finance and Economics as mentioned in Box 5. This project has had some impact on regional development.

Table 13: Providing human resources to key industries

	Baseline	Actual	
	2001	2006	2011
Guizhou University	1,923	2,531	2,716
Guiyang Medical College	35	72	120
Guizhou University of Finance and Economics	60	388	548

Source: Responses to the questionnaire

Note: there is no data if universities are not listed in the above table.

Box 5: Good practice of regional development — Guizhou University of Finance and Economics —

Guizhou University of Finance and Economics has constructed a library (including the Guizhou province provincial information reference room), a laboratory building and an academic exchange center, has developed related facilities and equipment, and dispatched 65 trainees to Japan. Many things have been improved through the project.

Through the construction of the laboratory building and the procurement of related equipment, the building became the one and only “State educational model center of economic management”. Due to the advanced facilities and management principles the building and the MBA course was also designated as a Guizhou province model modernization experimental base and professional education base.

This laboratory building became not only a facility for fostering the practical abilities of students but also a bridge or matching function between business and academia, and among business, though business training. Thus it expanded the project impact socially. The project contributed to improvements in the quality of education by supplementing equipment shortages in experimental education and thus the competitiveness of graduates in employment improved. Moreover, the project also contributed to the changing of the name from college to university (upgraded in 2012).

In the academic exchange center (see the photo at the beginning of this report), the university jointly hosts academic exchange activities several times at every year. In addition, the university has built a collaborative relationship for long-term training with many institutes in Guizhou province and provides adult education. For example, the academic exchange center is designated as a training center for the executives of Guizhou province tax authorities. The center gathers executives from all tax authorities in the province and provides capacity-building training courses.

(3) Impact on the strengthening of market rule

The number of graduates from faculties in accounting, law and finance shows a substantial increase in all except medical schools (see Table 14). Although most of the target universities do not see a direct link between the increase of graduates and the implementation of the project, the universities where student numbers have increased drastically such as Guizhou University, Guizhou University of Finance and Economics, and Guizhou University for Ethnic Minorities, have pointed out a relationship between this and the project.

In the case of Guizhou University, most of the lectures who participated in training in Japan are now in charge of faculties of accounting, law and financial management. They have utilized the student advice and teaching methods that they learned in Japan. As a result, the students choosing these courses have increased. In the light of this, the training has contributed to increasing students’ interest in these fields. In the case of Guizhou University of Finance and Economics, the project has provided students with practical facilities such as a mock court, an accounting process simulation lab, a practical training room for the soft aspects of finance etc. These are in the laboratory building constructed under the project because these faculties have the strong character of practical studies. Through the practical training, students become high

skilled human resources and are active as work-ready recruits after their graduation.

Table 14: Number of graduates from faculties of accounting, law and finance

	Baseline	Actual	
	2001	2006	2011
Guizhou University	1,683	1,850	2,058
Guizhou Normal University	48	428	1,501
Guiyang Medical College	0	63	72
Zunyi Medical College	0	0	0
Guiyang College of Traditional Chinese Medicine	0	0	0
Guizhou University of Finance and Economics	60	413	1,117
Guizhou University for Ethnic Minorities	N/A	198	540

Source: Responses to the questionnaire

(4) Impact on environmental conservation

At the universities which have faculties or courses related to the environment, the number of graduates who go to environmental related companies is increasing (see Table 15). Most of these universities suggested that the project had some impact on the graduates in the field of the environment. For example, some universities pointed out that devices such as apparatus for analysis and measurement provide a good experimental environment for students who study engineering and agriculture. Such students can learn environmental conservation and environmental monitoring and the project have contributed to their interest in working in the field of the environment. Some lecturers have pointed out that students were able to recognize that all humans share the responsibility for environmental conservation and students' willingness to embrace environmentalism has been encouraged by a lecturer conveying his experience of water resources conservation and water treatment equipment in Japan (see Box 6). Furthermore, there is an opinion that this project has contributed to not only improving the level of research at universities in this field but also to the social recognition of graduates through the development of special equipment for the environment and the training of lecturers.

Table 15: Graduates working in the environmental field

	Baseline	Actual	
	2001	2006	2011
Guizhou University	458	563	769
Guizhou Normal University	347	345	391
Guiyang Medical College	0	22	35
Zunyi Medical College	0	0	0
Guiyang College of Traditional Chinese Medicine	0	0	0
Guizhou University of Finance and Economics	25	101	324
Guizhou University for Ethnic Minorities	N/A	0	59

Source: Responses to the questionnaire

Box 6: Impact on environmental conservation — Guizhou University for Ethnic Minorities —

Guizhou University for Ethnic Minorities developed some facilities related to environment through this project. The experimental equipment for sewage treatment and experimental apparatus for liquids and gas have contributed to improving research abilities on environmental conservation. Since 2007, the university has monitored the quality of water and air in Huaxi District, Guiyang, by utilizing the facilities developed under the project. In 2008, the university concluded a cooperation agreement with Guizhou Kei Yue environmental conservation company and started to cooperate on more than 100 projects such as monitoring the quality of air and water and wastewater treatment. The university also conducts some joint research with related governmental offices and companies. The university's lecturers publish the results of the research as many research papers.

3.3.2 Other Impacts

(1) Impacts on the natural environment

The Environmental Impact Assessment (hereinafter referred to as EIA) was conducted prior to project implementation in accordance with Chinese regulations. "Three-Stage Simultaneous" implementation (i.e. regulation that environmental protection facilities shall be designed, constructed and put into production simultaneously with main the construction structures) was envisioned.

Based on this regulation, noise-abatement measures, appropriate sewage treatment and waste disposal were conducted by each university during the implementation period. Environmental facilities such as a waste water treatment plant were constructed before project completion, as necessary, and the environmental facilities were operated at the same time as the buildings and equipment were put into use. All the target universities took necessary environmental protection measures including environmental monitoring at each stage, namely the design, construction and operation stages. In this way, "Three-Stage Simultaneous" was smoothly implemented.

At the time of the ex-post evaluation, no negative impact on the environment was observed, according to responses by the universities to the questionnaire, interviews with the persons in charge, and visual confirmation at the sites by the evaluator.

(2) Land Acquisition and Resettlement

The project was carried out on existing university properties, hence there was no land acquisition or relocation of residents.

(3) Mutual understanding between Japan and China

It can be said that participants in the training in Japan could understand Japan deeply. They renewed their perception of Japan through not only research and education but also small events in daily life. Regarding research and education, many lecturers were impressed with Japanese educational methods, philosophy, and attitudes toward research and put them into practice. At the daily-life level, many trainees renewed their perception of the Japanese as they were really touched by Japanese tender-heartedness; for example, a stranger on the street took a trainee who

do not understand Japanese all the way to their destination when he asked for directions.

Moreover, there are many examples of the development of relationships between Japanese universities and Chinese universities for academic exchange and the dispatch of students during training period as seen in Box 7. However, these relationships, which include academic exchange, are systematically and continuously conducted at each university and they are not necessarily shared among the universities, including the target universities in Guizhou province. Especially academic exchanges were not active in some universities.

Box 7: Mutual understanding between Japan and China — Guizhou University —

Collaboration between Guizhou University and Japanese universities has been strengthened by the project. As of 2001, the university had concluded agreements with two Japanese universities. This increased to 7 Japanese universities as of 2011. In particular, cooperation with Saga University started after a trainee studied at Saga University for research on supermolecular chemistry. This developed into academic exchange and the dispatch of students.

In the academic aspect, after a lecturer comes back to China, he maintains contact with his academic supervisor at Saga University. The university has invited the supervisor to Guizhou for lectures three times and the trainee has published about 10 articles jointly with the supervisor. Among these articles, some were published in authoritative European journals. Regarding the dispatch of students, four students have already been dispatched to Saga University to take doctoral degrees. One of them completed a doctoral degree and came back to China. In dispatching, Guizhou University finances but Saga University offers scholarships, too.

This project has largely achieved its objectives, therefore its effectiveness and impact is high.

3.4 Efficiency (Rating: ②)

3.4.1 Project Outputs

The project is composed of the construction of school buildings, the enhancement of educational and research equipment, and the training of higher education personnel. The outputs of each component are as follows:

Table 16: Comparison of Outputs (planned and actual)

Items	Planned	Actual (achievement rate)
Buildings	8 universities total: 144,000 m ²	7 universities total: 185,92 m ² (129.1%)
Equipment	8 universities	7 universities: mostly as planned (101.14%)
Training	8 universities total: 184 staff	7 universities total: 319 staff (173.4%)

Source: JICA appraisal documents, Responses to the questionnaire

There was no drastic re-examination of the plan for building construction although floorage was expanded depending on the needs of each university.

Educational equipment was procured in three phases. At the first phase, the arrival of procured equipment was enormously delayed. Thereafter, the education department exercised strong leadership and analyzed the problems. As a result, the main factor of delay was found out

to be that the imported equipment had got caught up in Customs and stayed there for a long time. On the basis of this experience, the education department supervised the project appropriately from the second phase by dispatching an officer to Customs to procure the necessary equipment at an appropriate time. As a result, the output of educational equipment was almost as planned.

As for the training component, as mentioned above, participants in the training in Japan increased significantly due to reductions in staff dispatched for long-term training and increases in staff dispatched for short-term courses instead. The main reason was that the education department made a comprehensive judgment with a nod to the following: the necessity of human resources for university management, and the high effectiveness of the “university management course” etc. According to the Guizhou education department, the lecturers’ capacities were strengthened and the comprehensive level of the target universities was increased through training in Japan. The number of participants in training who improved educational methods and applied for research projects is not negligible.

3.4.2 Project Inputs

3.4.2.1 Project Cost

Actual project costs amounted to 7,822 million yen (of this, the actual loan disbursement amounted to 4,526 million yen) against the estimated costs of 6,772 million yen (of this, the planned loan amounted to 4,593 million yen). The actual costs were higher than planned (115.5%) but this was reasonable considering the increase in the outputs.

3.4.2.2 Project Period

The project period planned at the time of appraisal was 36 months, or from March 2003 to March 2006. The actual project period was 78 months, or from March 2003 to September 2009 which was equivalent to 216.7% of the original plan, and was significantly longer than planned due to the increase of the output.

However, it is particularly worth noting that Guizhou province completed the project¹³ by the planned final disbursement date without an extension of deadline as procurement was completed as planned through the strong leadership of the education department (although there was confusion at the beginning of the project). The reasons why the project was not completed within the planned project period are 1) the planned project period was too short, 2) the project was temporarily stopped due to the merger between Guizhou University and Guizhou University of Technology, 3) the project was affected by accidental forces such as SARS and the Wenchuan earthquake.

¹³ The completion of the project was defined as completion of three components: teaching and /or research buildings, educational and/ or research equipment, and personnel training at the time of appraisal.

3.4.3 Results of Calculations of Internal Rates of Return (IRR)

Due to the nature of the project, a quantitative analysis of the internal rate of return was not possible.

As mentioned above, The actual costs were higher than planned (115.7 %) but this was reasonable considering the increase of the outputs. On the other hand, the project period was affected by SARS and the Wenchuan earthquake. This was a 216.7% delay in accordance with the definition of the project completion.

In light of the above, although the project cost slightly exceeded the plan, this was reasonable considering the increase of the outputs. On the other hand, the project period significantly exceeded the plan, and therefore the efficiency of the project is fair.

3.5 Sustainability (Rating: ③)

3.5.1 Institutional Aspects of Operation and Maintenance

The hard assets such as buildings constructed and equipment procured under the project are managed by each target university and supervised periodically by the provincial government (the education department). The audit office, which is equivalent to the Board of Audit of Japan, conducts the annual inspections for the management at each university and the supervision of department of education.

A maintenance plan is made at the beginning of each school year. These are submitted to the president of the target university in charge of the project for approval. At each target university, necessary personnel from the personnel affairs department, the equipment management department, the security department, the building management department and the audit department are assigned and they conduct operation and maintenance. In general, the operation and maintenance team consists of 5 director level personnel, 2 engineers, and 7 operational staff. All the target universities evaluate that the number of team members is adequate.

3.5.2 Technical Aspects of Operation and Maintenance

All the target universities set regulations and conduct maintenance and inspection periodically. If necessary, they get suppliers or makers to perform maintenance for them. There is no particular problem on the technical aspects.

3.5.3 Financial Aspects of Operation and Maintenance

The budget for operation and maintenance at each university is allocated annually from the provincial financial budget. If there is a shortage in the budget for operation and maintenance, the shortage is borne using the revenue of the universities.

Regarding discharge, Guizhou provincial government covers 70% of the loan amount and

the universities cover 30%. The provincial government collects payments from each university and repays the total amount to the central government.

Table 17: Operation and maintenance costs at each target university (annual)

Unit: RMB ten thousand

	2009	2010	2011
Guizhou University	500	500	500
Guizhou Normal University	1,232	1,487	1,037
Guiyang Medical College	30~40	30~40	30~40
Zunyi Medical College	283	454	587
Guiyang College of Traditional Chinese Medicine	32	38	42
Guizhou University of Finance and Economics	70	70	70
Guizhou University for Ethnic Minorities	228	351	625

Source: Responses to the questionnaire

Note: The costs of Guizhou University, Guiyang College of Traditional Chinese Medicine and Guizhou University of Finance and Economics are limited to the facilities related to the project.

There is no evidence that the equipment lies neglected without maintenance and therefore, it is thought that the necessary resources for operation and maintenance are provided.

3.5.4 Current Status of Operation and Maintenance

At all the target universities, the buildings and equipment are well maintained. All the universities have inventory books and maintenance logs for the major equipment.

End-of-life equipment, such as PCs, has been updated already. However, valuable equipment is well maintained and the utilization ratio is high. In order to raise the utilization ratio, the education department has established a platform for sharing equipment and this is open to other universities.

No major problems have been observed in the operation and maintenance system, therefore the sustainability of the project effect is high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The project objective was to improve higher education in Guizhou Province quantitatively and qualitatively by supporting the construction of buildings, the procurement of equipment and the training of teachers in the target universities. This objective has been highly relevant to the country's development plan and its development needs, as well as to Japan's ODA policy; therefore its relevance is high. Despite a significant increase of students between project commencement and ex-post evaluation, the effectiveness and impact of the project remained high as quantitative indicators on education and research (building areas, amount of educational

equipment) and qualitative indicators (number of key faculties and laboratories, number of research papers etc.) have been improving. The output increased responding to the needs of each university. Project cost exceeded the plan, but this was relevant in view of the increase of the outputs. While SARS and the Wenchuan earthquake affected the project, the project period significantly exceeded the plan; therefore efficiency of the project is fair. No major problems have been observed in the operation and maintenance system; therefore sustainability of the project effects is high.

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

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

In order to deepen exchanges with Japanese universities structured by the project, it is recommended that a platform is established for sharing collaborative projects among the target universities and utilizing academic exchanges with Japanese universities. This would make it possible to enhance the sustainability and effectiveness of the training component.

4.2.2 Recommendations to JICA

It is desirable that JICA continuously cooperates with efforts to establish the above mentioned platform. For example, one idea is to post the characteristics of the target universities and the research themes (especially those of the participants in long-term training in Japan) on the existing website, the “Higher Education Project in China” and in so doing, another idea is to enhance functions of the website for the benefit of academic exchanges between Japanese universities and Chinese universities.

4.3 Lessons Learned

- In Guizhou province, equipment procurement was conducted relatively smoothly in comparison to other provinces. The factor behind this success was the analysis of problems at the first stage and to take effective steps to solve the problems. In concrete terms, the main reason for delay in the first stage, or delay in the installment of equipment, was that the imported equipment was stopped in Customs. To solve this problem, the education department allocated an officer to Customs, which avoided the procedure being disrupted. Especially in a project where equipment is procured, the project often gets delayed. Therefore, it is a good practice to analyze the problem at an early stage and implement the solution.
- In planning an education project, it is necessary to set the project period bearing in mind its components and objectives. For instance, this project was planned at 3 years. However, if the training component were to include as one of its aims, taking of a

doctoral degree, the project period should be set at least for seven years on the assumption that several batches of trainees would be dispatched. The project period is set at seven years in similar ongoing projects in other provinces.

End

Comparison of the Original and Actual Scope of the Project

Item	Original	Actual
1. Project Outputs		
(1) Building Construction	8 universities: 144,000 m ²	7 universities: 185,920 m ²
(2) Equipment Procurement	8 universities	As planned
(3) Training	8 universities: 184 staff	7 universities: 319 staff
2. Project Period	March 2003 - March 2006 (36 months)	March 2003 – Sep. 2009 (78 months)
3. Project Cost		
Amount paid in foreign currency	4,292 million yen	4,526 million yen
Amount paid in local currency	2,180 million yen (145.3 million RMB)	3,296 million yen (219.7 million RMB)
Total	6,772 million yen	7,832 million yen
Japanese ODA loan portion	4,593 million yen	4,526 million yen
Exchange rate	1 RMB = 15 yen (As of March 2003)	1 RMB = 15 yen (As of March 2003)