

People's Republic of China

Ex-Post Evaluation of Japanese ODA Loan

Chongqing Higher Education Project

External Evaluator: Takako Haraguchi, OPMAC Corporation

0. Summary

This project aimed to improve teaching and research at ten major universities in the Municipality of Chongqing through the development of their facilities and equipment as well as providing training for teachers. Relevance of the project is evaluated to be high, as it is in line with (i) the higher education policies of China and Chongqing, (ii) development needs for quantitative and qualitative enhancement of the universities, and (iii) Japan's assistance policies. Effectiveness/impact of the project is also high, based on the observations that the project satisfied such development needs, i.e., it improved education activities by enabling more experiments, and improved research activities through outcomes achieved from advanced equipment and training, and thereby contributed to the promotion of the key industries. Efficiency of the project is evaluated to be fair on the whole: although the project cost was within the plan, the project period significantly exceeded the planned period due to delays resulting from the high concentration of procurement works for the Higher Education Projects that were implemented in many provinces at the same time to certain suppliers, as well as external factors such as Severe Acute Respiratory Syndrome (SARS) and the Great Sichuan Earthquake. Sustainability is evaluated to be high, with no problem observed in institutional, technical and financial aspects, and due to the good status of operation and maintenance of the facilities and equipment developed by the project.

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

1. Project Description



Project Location



Students attending a real trial at the court simulation facility developed by this project (Southwest University of Political Science and Law)

1.1 Background¹

In China, together with the remarkable economic development, several development issues have arisen such as narrowing internal disparity between coastal and inland areas, reducing poverty, preparing for joining in the World Trade Organization (WTO) and handling global issues. To deal with these issues, the Chinese government put a high priority on development of human resources that are essential for the accelerated efforts towards developing a market economy and narrowing economic gaps under the policy to strengthen reform and promote openness. Accordingly, the government set out a target to increase the higher education enrollment ratio to 15% by 2005 as well as adopting a policy to strengthen higher education institutions (HEIs) in inland areas.

Chongqing Municipality (a direct-controlled municipality since 1997; total population of 30,900,000 persons in 2000; total area of approx. 82,000 km²), a long-developed center of economy and important point for traffic in the southwest China and the upper Changjiang (Yangtze) regions, achieved high economic growth with an average annual gross domestic product (GDP) increase rate of 9.6% in the years 1996-2000. However, per capita GDP (5,157 yuan in 2000) still remained at 73% of the national average (7,078 yuan). Aiming towards promotion of a market economy and further economic development, the municipal government planned to increase the number of students in higher education to around 350,000 and the enrollment ratio to 15% by 2005. However, in order to achieve such targets, existing constraints in the “hardware” aspects (such as school facilities and equipment), “software” aspects (teachers) as well as financial aspects had to be addressed.

1.2 Project Outline

The objective of this project was to quantitatively and qualitatively enhance higher education at 10 major universities in Chongqing Municipality (Southwest University (SWU), Chongqing Technology and Business University (CTBU), Chongqing University of Technology (CQUT), Chongqing University of Science and Technology (CQUST), Chongqing University of Arts and Sciences (CUAS), Yangtze Normal University (YZNU), Southwest University of Political Science and Law (SWUPL), Chongqing Medical University (CQMU), Chongqing Jiaotong University (CQJTU) and Sichuan International Studies University (SISU))² by

¹ This project is one of the Higher Education Projects funded by Japanese ODA loans targeted to universities in 22 provinces, municipalities or autonomous regions in inland China.

² The names of the universities are those as of today. The following universities had different names at the time of the ex-ante evaluation of this project:

- Southwest University: formerly known as Southwest Agricultural University (merged with Xinan (Southwest Normal University and renamed in 2005).
- Chongqing Technology and Business University: formerly known as Chongqing Institute of Commerce (merged with Yuzhou University and renamed in 2005).
- Chongqing University of Technology: formerly known as Chongqing Institute of Technology (renamed in 2009).
- Chongqing University of Science and Technology: formerly known as Chongqing Technology College (merged with Chongqing Petroleum College and renamed in 2004).
- Chongqing University of Arts and Sciences: formerly known as Yuxi College (renamed in 2005).

developing educational infrastructures such as buildings and equipment (improvement of the hardware aspects) and teachers' training (strengthening of the software aspects), thereby contributing to the market-oriented economic reform in Chongqing Municipality and reduction of disparity with coastal areas³.

Loan Approved Amount/ Disbursed Amount	4,683 million yen / 4,480 million yen
Exchange of Notes Date/ Loan Agreement Signing Date	March 2002 / March 2002
Terms and Conditions	Interest Rate: 0.75% Repayment Period: 40 years (Grace Period: 10 years) Conditions for Procurement: Bilateral tied
Borrower / Executing Agency	The government of People's Republic of China / Chongqing Municipal People's Government (Education Commission)
Final Disbursement Date	July 2009
Main Contractor (Over 1 billion yen)	None
Main Consultant (Over 100 million yen)	None
Feasibility Studies, etc.	<ul style="list-style-type: none"> - Feasibility Study Report by Chongqing Investment Consulting Corporation, 2001. - "Special Assistance for Project Implementation (SAPI) for Higher Education Project in China", Japan International Cooperation Agency (JICA), 2003, 2004 and 2005. - "The Supervision Survey Report on JICA Loaned Higher Education Project", JICA, 2010.

2. Outline of the Evaluation Study

2.1 External Evaluator

Takako Haraguchi (OPMAC Corporation)

- Yangtze Normal University: formerly known as Fuling Teacher's College (renamed in 2006).

³ At the time of the ex-ante evaluation, the direct targeted outcome of the project was "to improve quantitatively and qualitatively higher education in *Chongqing Municipality*", and the indirect targeted outcome (impact) was "to contribute to the market-oriented economic reform in *China* and reduction of disparity". However, since the targeted universities were only part of the HEIs in the municipality, the target area was lowered by one level for this ex-post evaluation.

2.2 Duration of Evaluation Study

Duration of the Study: August 2012 – September 2013

Duration of the Field Study: March 17 – April 10, 2013 and May 26 – June 3, 2013⁴

3. Results of the Evaluation (Overall Rating: A⁵)

3.1 Relevance (Rating: ③⁶)

3.1.1 Relevance to the Development Plan of China

The objective of this project is consistent with the five-year plans for economic and social development and the five-year plans for the education sector at both the national and provincial (municipal) levels, as well as other education-related development strategies and the Western Development Project, which all aim at quantitative and qualitative development of higher education both at the times of ex-ante and ex-post evaluations of this project (Table 1). While there were no large policy changes between the ex-ante and ex-post stages, in recent years more importance has been given to higher education development. Also, the key industries of Chongqing Municipality have shifted to those that require higher technologies.

Table 1: Main objectives of development plans related to this project

	At the time of ex-ante evaluation	At the time of ex-post evaluation
National level development plan	<u>The 10th 5-year Plan for National Economic and Social Development (2001–2005):</u> To increase higher education enrollment ratio to around 15% by 2005.	<u>The 12th 5-year Plan for National Economic and Social Development (2011–2015):</u> To emphasize higher education for promoting industrial advances (quantitative targets include 87% of junior secondary graduates to go on to senior secondary school)
National level education sector plan	<u>The 10th National 5-year Plan for Education (2001–2005):</u> To increase student enrollment in HEIs to 16,000,000 by 2005; to develop human resources that have high skills in high technology, biotechnologies, manufacturing technologies etc. that are necessary for industrial structural adjustment; to strengthen support to HEIs that are relatively at a high level; to strengthen support to fostering of teachers.	<u>The 12th National 5-year Plan for Education (2011–2015) and National Mid- and Long-term Reform and Development Plan for Education Sector” (2010–2020):</u> To increase higher education enrollment ratio from 26.5% in 2010 to 40% in 2020; to increase student enrollment in HEIs from 29,790,000 in 2009 to 33,500,000 by 2015; to develop HEIs in inland areas with special focus on development of departments that are competitive and fostering of teachers.
Provincial (municipal) level development plan	<u>The 10th 5-year Plan for Economic and Social Development in Chongqing Municipality (2001–2005):</u> To achieve annual economic growth rate of 9.2% by 2005; develop the key industries including machines (automobiles and motorcycles), pharmaceutical chemicals, food,	<u>The 10th 5-year Plan for Economic and Social Development in Chongqing Municipality (2011–2015):</u> To achieve annual economic growth rate of 12.5% by 2015; to develop the key industries including communication equipment, high-performance integrated circuits,

⁴ The field study period includes the periods for ex-post evaluation of the Sichuan Higher Education Project and the Gansu Higher Education Project.

⁵ A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

⁶ ③: High, ②: Fair, ①: Low

	At the time of ex-ante evaluation	At the time of ex-post evaluation
	construction materials, and tourism.	energy-saving and new energy- powered vehicles, train equipment, environment conservation equipment, wind power generation devices/systems, optical instruments, new materials, machines, and biotechnology-based pharmaceuticals.
Provincial (municipal) level education sector plan	<u>The 10th 5-year Plan for Education in Chongqing Municipality (2001-2015):</u> To increase higher education enrollment ratio from 13.0% in 2000 to 15.2% in 2005; to increase student enrollment in HEIs to around 350,000 (including around 220,000 in regular HEIs ⁷)	<u>The 12th 5-year Plan for Education in Chongqing Municipality (2011-2015):</u> To increase higher education enrollment ratio from 30% in 2010 to 35% in 2015.

Source: JICA appraisal documents; respective documents of the mentioned development plans; Answers to questionnaires.

3.1.2 Relevance to the Development Needs of China

Development needs were observed for the quantitative and qualitative enhancement of education at the 10 targeted universities at the times of both the ex-ante and ex-post evaluations.

At the time of the ex-ante evaluation, there was a need for quantitative expansion of higher education in order to narrow the economic gap mentioned in “1.1 Background” and following the increase of primary and secondary education in Chongqing Municipality (school intake rates in 2000 were 99.9% for primary education and 89.0% for secondary education). It was forecasted that the number of new entrants in HEIs would increase from approx. 80,000 in 2000 to approx. 100,000 in 2005. There were 23 regular HEIs in Chongqing Municipality, among which the 10 targeted universities were the leading municipal universities⁸. They were expected to further expand their roles of producing human resources for the above-mentioned key industrial sectors, but financial resources for developing the hardware (facilities and equipment) and software (teachers’ training) aspects were limited. Also, there were few opportunities provided for the teachers to visit overseas.

At the time of the ex-post evaluation, the need for narrowing the economic gap still existed even though economic growth remained high at an annual average of 13.3% for the years 2000-2011 and the provincial (municipal) per capita GDP increased up to 34,500 yuan in 2011, which was 87% of the national average 39,442 yuan. The number of new entrants to HEIs in the

⁷ Regular (or standard) HEIs is a term referring to universities and colleges, including four-year undergraduate programs of comprehensive universities and single-department colleges, specialized colleges (similar to junior colleges in Japan), and graduate programs. Adult higher education and higher vocational education institutions are not included. In this report, “universities” include both universities and colleges that grant undergraduate or higher academic degrees unless otherwise mentioned.

⁸ National and public universities in China are under the jurisdiction of the state (Ministry of Education or other state government organizations) or local (sub-national) governments. At the time of the ex-ante evaluation, Chongqing University and Xinan (Southwest) Normal University were under the jurisdiction of the state (i.e. overseen by Ministry of Education). Later, Xinan Normal University was merged with Southwest Agricultural University, a targeted school of this project, and was renamed to Southwest University, which was accordingly placed under the jurisdiction of the Ministry of Education. Both Chongqing University and Southwest University are listed in the “Project 211” (1996-), a national project to intensively support approx. 100 key universities to enhance their research capabilities by the 21st century.

municipality continued to increase from approx. 120,000 in 2005 to approx. 180,000 in 2011, and the need for quantitative and qualitative enhancement of HEIs remains high. On the other hand, the need for hardware development seemed to have been more satisfied compared to the time of the ex-ante evaluation, due to increased financial injection to municipal universities following the above-mentioned higher education development policies.

3.1.3 Relevance to Japan's ODA Policy

At the time of the ex-ante evaluation, Japan's Official Development Assistance (ODA) Charter (1992) placed emphasis on Asian regional support and human resources development support. Additionally, the Country Assistance Policy for China and the Medium-term Strategy for Overseas Economic Cooperation Operations and Country Assistance Strategy put priorities on human resources development from the viewpoint of support for openness and reform and post-WTO economic reform, and on assistance in the mid-western Region in China from the aspect of narrowing the economic gap. The project objective was consistent with such aid policies of Japan.

This project has been highly relevant to China's development plans, development needs as well as Japan's ODA policies, and therefore its relevance is evaluated to be high.

3.2 Effectiveness⁹ (Rating: ③)

The objective of the project, "quantitative and qualitative enhancement of higher education of the targeted universities", has been achieved based on the performance of quantitative indicators as well as qualitative information that are presented in the following sections.

3.2.1 Quantitative Effects (Operation and Effect Indicators)

(1) Quantitative expansion of teaching and research¹⁰

The hardware outputs of this project increased the aggregate floor area of school buildings and the monetary value of educational equipment. With respect to the aggregate floor area of school buildings, the ex-ante evaluation set out the target values for individual universities, and those were mostly achieved (Table 2 and Figure 1). The utilization rates of the facilities and

⁹ Sub-rating for Effectiveness was given with consideration of Impact.

¹⁰ In the ex-ante evaluation, the target year for evaluating the quantitative indicators was set at 2005, which was after the planned project completion date. However, due to the delays in project implementation (see "3.3 Efficiency"), the ex-post evaluation set the actual comparison year as follows: the targets related to the building construction component (completed in 2004) were compared with the actual performance in 2005; the targets related to the equipment (procurement) component and the training component (mostly completed in 2008) were compared with the actual performance in 2009; the targets related to more than two components were compared with the actual performance in 2009. When data for 2009 were not available, the comparison was made between 2005 and 2011. To show the situation at the time of the ex-post evaluation, the data of 2011 were mainly used. While the field study was conducted from 2012 to 2013, the data for 2011 are considered to be the latest reliable data that have been checked and compiled.

equipment developed by this project are high at 90-100% (for facilities) and around 80-100% (for equipment)¹¹ at all universities. Therefore, it can be said that the project well responded to the needs for quantitative expansion of higher education (i.e. constant increase in the number of students as shown in Figure 2).

The facilities and equipment related outputs of this project accounted for on average only 16% of the total facilities (in terms of floor area) and 3% of the total educational equipment (in terms of monetary value) of the targeted universities as of 2009 after project completion. Nevertheless, they played an important role of establishing a foundation on which later development works by the Chinese side took place. More specifically, (i) the project took a strategy to concentrate its resources to the development of key teaching/research areas that required to be strengthened, and (ii) the facilities and equipment developed under this project were highly valued and therefore became the decisive factor in determining the areas that were worth investing in further, which brought in other development funds. In particular around 2002 when it was difficult for the targeted universities to make large scale facility investments on their own, the effective role played by this project was larger than the actual percentages indicate.

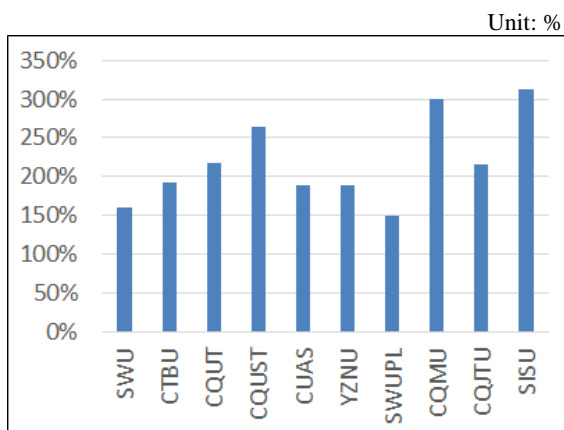
Table 2: School building area

Unit: m²

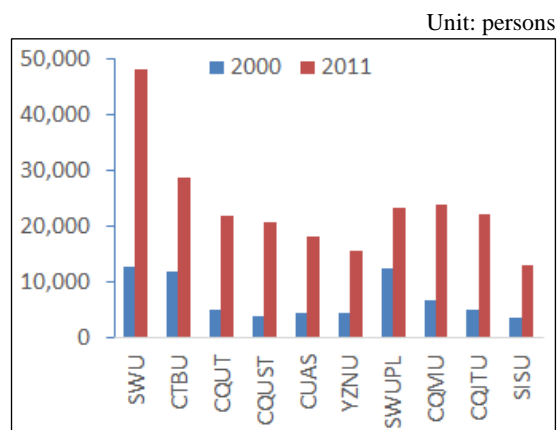
	Actual value 2000	Planned value		Actual value		Actual value 2011
		2005	Portion under this project	2005	Portion under this project	
SWU	421,016	781,000	11,000	1,315,585	25,812	1,666,104
CTBU	368,400	600,000	19,000	532,768	22,103	945,342
CQUT	157,000	382,000	8,544	508,531	19,900	871,437
CQUST	155,000	220,775	9,000	337,704	9,000	479,659
CUAS	115,637	239,000	4,000	368,316	7,886	502,188
YZNU	200,000	279,000	9,000	364,508	9,000	613,911
SWUPL	201,836	582,000	9,000	545,567	9,000	666,716
CQMU	196,609	407,770	8,300	402,355	8,300	652,456
CQJTU	285,890	439,490	8,129	549,047	8,600	698,288
SISU	123,234	220,532	17,470	164,975	17,470	449,054
Total	2,224,622	4,151,567	103,443	5,089,356	137,071	7,545,154

Sources: JICA appraisal documents; responses to the questionnaire by the executing agency and targeted universities.

¹¹ The utilization rates are based on responses to questionnaires provided by each targeted university. The definition of utilization rates at the time of the ex-ante evaluation was “actual usage hours divided by planned usage hours”, and the target values were set at between 72-85%, depending on the university. However, the actual usage could not be compared with the target values based on that definition, since, according to the targeted universities, it was impossible to actually calculate the rates in such manner because planned usage hours varied depending on the types of equipment. According to the interviews with them, the figures provided seemed to represent “the number of equipment that is currently used (i.e. in operation) divided by the total number of equipment procured”. Yet, the results of the visits to each university, observation of the facilities/equipment, and review of some usage records are consistent with the figures provided, and thus it is implied that the questionnaire responses more or less reflect the actual usage of the outputs of the project.



Source: Responses to the questionnaire



Sources: JICA appraisal documents; responses to the questionnaire

Figure 1: Increase rates of monetary values of educational equipment, 2005-2011

Figure 2: Number of students

(2) Qualitative enhancement

As shown in Table 3, the average school building area per student was below both the target set in the ex-ante evaluation and the national standard at many universities in 2005, the target year. The executing agency and the targeted universities explained the reason for such generally lower level of achievement than expected, stating that it took some time until a constructed building was registered as the university's capital asset. Nevertheless, the incremental increase achieved particularly through this project reached the target values at most universities. Also, in 2011 the target values set for this project were more or less achieved, and the national standards were mostly satisfied as well. This implies that the increase in students would not have adversely affected the conditions (quality) of teaching and research. Monetary value of educational equipment per student satisfied the national standard in all targeted universities.

Table 3: School building area per student and monetary value of educational equipment per student

Units: m² or yuan

	School building area per student (m ²)						Value of educational equipment per student (yuan)	
	Actual 2000	Planned 2005		Actual 2005		Actual 2011	Actual 2005	Actual 2011
		Area per student	Increment through this project	Area per student	Increment through this project			
SWU	33	39	0.55	28.8	0.57	34.5	7,391	11,188
CTBU	31	33	1.06	26.8	1.11	32.8	3,395	4,505
CQUT	31	32	0.71	35.0	1.37	39.9	4,595	6,669
CQUST	39	37	1.50	25.5	0.68	23.0	3,571	5,987

	School building area per student (m ²)					Value of educational equipment per student (yuan)		
	Actual 2000	Planned 2005		Actual 2005		Actual 2011	Actual 2005	Actual 2011
		Area per student	Increment through this project	Area per student	Increment through this project			
CUAS	25	24	0.40	29.3	0.62	38.9	3,989	5,294
YZNU	43	30	0.97	29.0	0.73	27.2	3,540	5,247
SWUPL	16	29	0.45	30.9	0.51	28.5	3,060	3,459
CQMU	29	34	0.69	25.5	0.53	27.3	4,541	8,950
CQJTU	55	32	0.59	35.4	0.55	31.6	5,918	8,952
SISU	33	31	2.43	24.3	2.57	34.4	4,010	6,533
Average	34	32	0.93	29.0	0.92	31.8	6,073	7,147

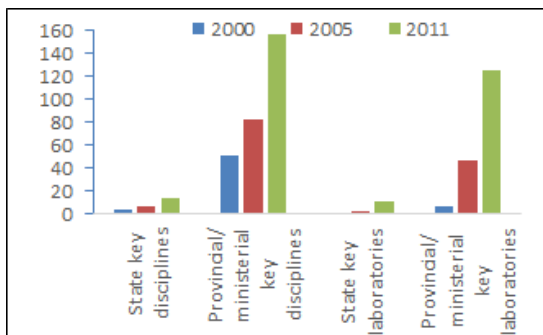
Sources: JICA appraisal documents; responses to the questionnaire.

Note: the national standard of school building area per student is “more than 30 m²”; the national standard for value of educational equipment per student is “more than 5,000 yuan” for laboratory equipment in faculties of science and technology such as science, engineering, agriculture and medicine, “more than 3,000 yuan” for humanity and social science faculties, and “more than 4,000 yuan” for physical education and art faculties (Interim Provisions for Establishment of Regular Undergraduate Schools, No.18 [2006]).

Various indicators to measure the achievements of progress in the areas of teaching and research, such as the number of key disciplines and key laboratories¹², the number of faculties/departments and graduate programs, the number of research projects and social (community) service¹³ projects, the number of published research papers, the number of awards, the number of patents granted, etc., showed increasing trends. In particular, the number of provincial or ministerial key laboratories and research papers published in international journals significantly increased comparing before and after the implementation period of this project (Figures 3 and 4). Although such improvements are the outcome of the overall higher education development policies mentioned in “3.1 Relevance”, part of it is attributable to the outcome of this project through utilization of the facilities/equipment developed under the project and/or involvement of teachers who received training in Japan in teaching/research activities under this project. It was observed in all targeted universities that new provincial/ministerial key laboratories were approved mainly based on facilities/equipment developed under this project, and that the training/research in Japan promoted the participating teachers to start publishing articles in international journals. For example, SWU reported that the number of research papers related to this project amounted to 3,000 in domestic journals and 1,372 in the SCI (Science Citation Index), EI (Engineering Index) and ISTP (Index to Scientific & Technical Proceedings) databases.

¹² Key disciplines and key laboratories are ones that the state or a local government designates as a base for teaching or research activities and to which resources are preferentially distributed.

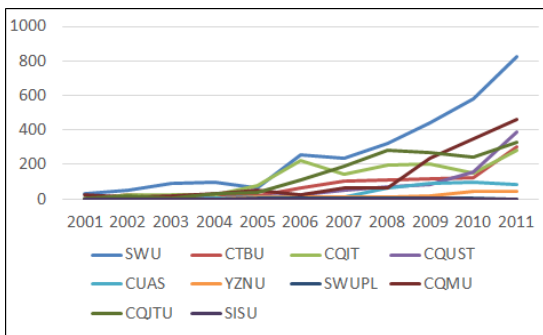
¹³ Social (or community) services are research, testing, etc. that are commissioned by external organizations (government, companies, etc.)



Sources: JICA appraisal documents; responses to the questionnaire

Note: The figures are aggregates of the figures of the 10 targeted universities.

Figure 3: Total number of key disciplines and key laboratories of the 10 targeted universities



Source: Responses to the questionnaire

Note: The figures represent the total numbers of research papers included in SCI, EI and ISTP databases.

Figure 4: Total number of internationally-published research papers by each of the 10 targeted universities

3.2.2 Qualitative Effects¹⁴

(1) Effects on enhancement of teaching and research at each targeted university

On the teaching side, all targeted universities said that the facilities and equipment developed under this project improved the conditions for teaching and experiments both quantitatively and qualitatively. Specific comments include: “the ratio of classes with experiment increased” (YZNU), “sufficient number of microscopes were secured for all students in the class” (CUAS), “more creative experiments became possible” (CQJTU), and “opening of new courses became possible” (e.g. mechanical analytical instruments course at CQJTU). Positive changes were reported in the humanities fields as well. For example, according to SISU, the development of language laboratories and a simultaneous interpretation system resulted in the improvement of students’ speaking and listening abilities in foreign languages. A court simulation facility developed at SWUPL is a unique case of project effectiveness. The facility, equipped with a courtroom, a room for judges, a room for criminal defendants and other related facilities, is used not only for judicial trial simulation lessons but also for real trials under the jurisdiction of Chongqing Municipality, and students have enhanced practical skills by simulating and observing such trials. When the evaluator visited SWUPL for this ex-post evaluation, a real trial was in session, and many students were observing it.

¹⁴ In this ex-post evaluation, it was difficult to exclude effects of activities that were not under this project from the planned quantitative indicators. Therefore, while taking the trends of the indicators into consideration, qualitative information (collected by document review, questionnaires and interviews) was used to understand how specifically this project is related to such trends. The evaluator conducted individual or group interviews in a semi-structured manner with the Education Bureau of Sichuan Province (executing agency) and, at each targeted university, with persons in charge of the project implementation as well as ex-participants in teachers’ training in Japan. In total, 88 persons from the 8 universities (including 26 ex-participants in teachers’ training in Japan) were interviewed. With respect to interviews with universities in Japan that accepted teachers for training from the target universities, the evaluator visited 2 of them and contacted several more universities by telephone or e-mail.

With respect to research, all targeted universities confirmed the improvement of their research activities thanks to the facilities/equipment and teachers' training provided under this project. Individual cases reported include ones where research areas that had already been advanced before this project were further enhanced with the use of the equipment procured under this project (SWU, CQMU, etc.), promotion of university-industry collaboration (CQUST), and provision of social services to the central and Chongqing governments (forensic identification by SWUPL, testing/measurement of roads and bridges by CQJTU, etc.). In addition, there were some cases, though not many, where the combined effects of the procurement of equipment and teachers' training in Japan could be observed (SWUPL and CQJTU).

It was pointed out that the training in Japan had effects as it helped participating teachers have broader views for improving their teaching content and methods, find new research topics, and deepen and improve the quality of research. For example, after staying in Japan for six months in the training program of this project, a teacher of the School of Vehicle Engineering of CQUT studied in Japan again and received a doctoral degree. After returning to CQUT he continued the research he started in Japan, which has developed into joint research with a Japanese university. Also, there are cases, such as the undergraduate program of Japanese language at YZNU, where teachers who attended the project's training program played a key role in establishing new disciplines/programs.

As to the university management training courses, the Education Commission of Chongqing Municipality, the executing agency, focused on the importance of such courses before other executing agencies of Higher Education Projects in other provinces, and established four courses (approx. 1-2 month long) with different curriculums, namely, "Executive Course", "Management Course", "Fund Management Course", and "Asset Management Course", with cooperation from the host university in Japan. These courses were highly appreciated by most of the teachers interviewed for this ex-post evaluation: specific points that many of them mentioned include the smooth proceeding of the training programs based on careful preparation, diversified and specialized programs and contents, and the discussions held on the issues that China is also facing, such as how to cope with the declining birth rate and job shortage.

For both specialized fields and university management training, many targeted universities sent candidates for executive positions, which contributed to an university-wide expansion of the effects of training outcomes.

Table 4 below summarizes notable effects of the project on teaching and research at each targeted university.

Table 4: Qualitative effects on each targeted university (Summary)

<p>Southwest University (SWU)</p>	<ul style="list-style-type: none"> · In the field of sericulture (i.e. cultivating silkworms) that had been an advanced research area at SWU from before this project, the equipment procured by the project played a significant role in establishment of key laboratories/disciplines such as in silkworm genome. Accordingly, the research level was further upgraded. · In the fishery area, the equipment procured by this project contributed to the establishment of a state key laboratory. · After returning to SWU, teachers who attended the training in Japan introduced the seminar-style teaching method, which was regarded as a method of education to cultivate students' interests.
<p>Chongqing Technology and Business University (CTBU)</p>	<ul style="list-style-type: none"> · Students from the entire university benefited from this project through the improvement of equipment at the basic research center and the development of the school LAN. · The equipment installed at the green package laboratory at the School of Mechanical Engineering¹⁵ was used for research and development activities (e.g. degradable and environment-friendly cushioning materials were developed and put into practical use jointly with a company in Guizhou Province). · A teacher who attended the training in Japan joined in development planning for districts.
<p>Chongqing University of Technology (CQUT)</p>	<ul style="list-style-type: none"> · After staying in Japan under the training program of this project, a teacher of the School of Vehicle Engineering studied in Japan again and received a doctoral degree. After returning to CQUT he continued the research (of control of engine vibration) he started in Japan, which has developed into joint research with a Japanese university. · A teacher who attended a university management course applied what he learned in Japan, such as introduction of the concept of student-centered education, to the layout of school facilities in the new campus. · CQUT developed a project management software jointly with the Chongqing Education Commission. The software was used for this project as well as within the Higher Education Project in other provinces, and promoted efficient project implementation (also see “3.4 Efficiency”).
<p>Chongqing University of Science and Technology (CQUST)</p>	<ul style="list-style-type: none"> · The equipment procured under this project contributed to the establishment of the field of industrial production safety in addition to petroleum and metallurgy, the two major fields of education at CQUST. · From before this project, CQUST had been active in university-industry collaboration and research and development (R&D). The equipment procured by this project further accelerated such activities by attracting companies and thus promoting partnership between the university and such companies. Some of the collaborative efforts promoted using the project equipment are already in the stages of practical realization. · As a social services activity to promote local industries, CQUST established the Chongqing Waste to Energy Research and Technology Institute jointly with the Science and Technology Commission of Chongqing Municipality and local companies, and used the equipment procured by this project at the institute. · A technical cooperation program (technical transfer such as in the manufacturing area to laid-off workers) jointly organized by CQUST and the Chongqing Municipal Labor and Social Security Bureau uses the equipment procured under this project.
<p>Chongqing University of Arts and Sciences (CUAS)</p>	<ul style="list-style-type: none"> · The equipment installed in the internet center promoted information sharing. The equipment installed in the research and training center of the School of Computer Science provided students in the entire university with opportunities for self-learning and practice. · The MIDI (musical instrument digital interface) studio and recording equipment installed in the audio visual laboratory are open to public.

¹⁵ “School” or “College” of universities in China is similar to “Faculty” in universities in Japan.

<p>Yangtze Normal University (YZNU)</p>	<ul style="list-style-type: none"> · With the equipment procured under this project, the ratio of classes with experiments reached 100%, and the number of students winning awards at national and municipal levels increased. · The teacher training center (where a monitoring system for teaching practice was installed by this project) contributed to generating teachers. · The undergraduate program of the Japanese language was established partly as a result from the training in Japan. An agreement was concluded on mutual visits between YZNU and the university in Japan that accepted teachers under this project.
<p>Southwest University of Political Science and Law (SWUPL)</p>	<ul style="list-style-type: none"> · The court simulation facility is used for real trials, which are observed by students. · At the Center for Forensic Science (established in 1986), equipment such as analytical instruments procured by this project played a central role in the improvement of research capacity, and the center expanded to become one of the 10 leading national-level forensic institutions in China (and the only national-level forensic institution in the Midwestern region). The number of cases of forensic identification sharply increased from 800 cases in 2003 to 2,300 cases in 2011. · A combined effect of the procurement of equipment and teacher's training in Japan was observed in the Center for Forensic Science (i.e. a teacher learned how to operate the DNA analytical system and other equipment in Japan, and after her return to the center, continued her research using the same equipment procured by this project). · Teachers improved the case study course by referring to what they learned in Japan. They maintain a close relationship with the Japanese Association of the Law of Civil Procedure.
<p>Chongqing Medical University (CQMU)</p>	<ul style="list-style-type: none"> · The equipment procured under this project, such as electron microscopes, is centrally managed by the newly-established Institute of Life Sciences for better usability. · Spare parts of some equipment (such as a flow cytometer) are no longer produced, but teachers devise ways to utilize such equipment.
<p>Chongqing Jiaotong University (CQJTU)</p>	<ul style="list-style-type: none"> · From before this project, the School of Civil Engineering had been engaged in various research projects on roads and bridges in Chongqing and the Three Gorges Dam area, commissioned by government organizations such as the Ministry of Communication, the Ministry of Industry and Information Technology as well as Chongqing Municipality. Many of those projects had received state or municipal-level awards. After the project, the School used the bridge model (structural test system), the most expensive and largest equipment procured for CQJTU by this project, for tests conducted for the Qincaobei Bridge (780 m) over the Yangtze River that is currently under construction. The School also provides calibration services to external customers using the equipment procured by this project. The core faculty members attended the training in Japan and learned how to operate the equipment procured. · The center of traffic and transport engineering used the ITS (intelligent transport system) model procured by this project for research on traffic control in Chongqing. · The equipment at the hydraulic laboratory of the School of River and Sea Architectural Engineering were all procured by this project. The main equipment is the integrated hydraulic experimental system that is capable of 13 experimental items. The laboratory is open to students after school to cultivate students' interest and encourage innovative experiments. In 2012, a total of 1,457 students used the equipment (equivalent to more than 20,000 student hours of use).
<p>Sichuan International Studies University (SISU)</p>	<ul style="list-style-type: none"> · The language laboratory equipment enhanced students' language skills. · The level of SISU's Japanese language teaching had been high before this project (all teachers had made almost perfect scores on Level 1 of the Japanese Language Proficiency Test; the average score on Grade 8 of the test for university students majoring in Japanese language had always been higher than the national average and the highest among universities in the southwestern region). Through training in Japan of half of the 24 Japanese language teachers, the teaching level was further upgraded. · Japanese language teachers taught Japanese to teachers (including those from other targeted universities) who were participating in the training in Japan before their departure.

Sources: Responses to the questionnaire and interviews; websites; etc.



A class using a three-dimensional measuring machine. This machine is also used for research and R&D. (College of Mechanical Engineering, CQUST)



Analyzing muscles using an electron scanning microscope. He belongs to a research team that won in a competition of the university (CQMU).



Fish science laboratory. Conducting experiments on feed for aqua-cultured fish. Before this project, such experiments had used outside ponds. (SWU).



Officer of the Education Commission in charge of this project checking the usage records of a fluorescence spectrophotometer upon his visit for the ex-post evaluation (CUAS).



Monitoring system for teaching practices. Practices in individual classrooms are centrally controlled. (YZNU).



A model bridge facility that is frequently used for various tests in Chongqing, a "city of bridges". (CQJTU).

(2) Use of the procured facilities and equipment

Currently, mergers and abolition of universities and moving of campuses to university cities are under way in accordance with the government's higher education reform policies. Among the targeted universities of this project as well, three universities (CQUT, CQUST and YZNU) moved to new campuses after they constructed school buildings in their old campuses under this project. All those construction works were funded by the Chinese side, and two of them (except CQUST that exchanged their buildings and another property) still use the constructed buildings (by the project) on the old campuses for teaching and research.

By the time of the ex-post evaluation, nearly seven years had passed since the majority of the equipment procured under this project was installed. Therefore, some PCs and monitors have passed their useful lives and have already been disposed of in accordance with the university regulations. Also, along with progress in technological innovation, some equipment has been replaced by equipment of higher performance/precision. However, it was confirmed from the visits to and interviews with the targeted universities that most of the other major teaching/research equipment was still used in good conditions and effective at the time of the ex-post evaluation. The equipment that could no longer be used for advanced research was used for teaching undergraduate students. According to SWUPL, for example, it brought a faculty

member who was highly specialized and had a good knowledge of trends of the relevant equipment into the procurement team in the stage of deciding on specifications. By doing so, the university selected the equipment with better future prospects (i.e. specialized equipment) and made by top-level manufacturers (i.e. sophisticated equipment), which consequently was used for many years.

It is worth noting that Chongqing Municipality has a municipal platform for sharing large-scale laboratory equipment. The platform was established in 2004, and currently lists a total of 1,878 items of laboratory equipment owned by HEIs and research institutions, including large-scale equipment procured to the targeted universities by this project, for shared use. Searching and application for use of the registered equipment can be conducted on the internet. An average operation rate (per 800 hours) is reported to be 74.68% during the period from January 2009 and August 2012.



The Homepage of the Chongqing municipal platform for sharing large-scale laboratory equipment (www.csts.net.cn).

3.3 Impact

3.3.1 Intended Impacts

(1) Enhancement of teaching and research at the provincial (municipal) level

Table 5 shows selected higher education indicators at the municipal level. Improvement is seen in the indicators for both quantitative expansion (such as the number of students and enrollment rate) and qualitative enhancement (school building area per student). The enrollment rate is significantly increasing beyond the national average. This project is partly involved in such improvements through the expansion of the facilities and equipment at the 10 targeted universities. Also, given the fact that there are 64 HEIs (including 17 universities) in Chongqing Municipality and that the targeted universities are all leading universities in the municipality, the upgrading of teaching and research level at these universities as shown in Table 4 could be considered as the upgrading of teaching and research level of the entire province.

Table 5: Higher education indicators of Chongqing Municipality

	Actual 2000	Planned 2005	Actual 2005	Actual 2009	Actual 2011
Number of HEIs	41	50	51	57	64 (of which universities with undergraduate programs: 17)
Number of students enrolled in HEIs	260,000	360,000	333,563	523,379	567,813

	Actual 2000	Planned 2005	Actual 2005	Actual 2009	Actual 2011
Enrollment rate in HEIs	12.1%	15.2%	19.0%	27.0% (national average: 24.2%)	32.0% (national average: 26.9%)
School building area per student (m ² /person)	N.A. (average of targeted universities: 31.0)	N.A. (average of targeted universities: 30.0)	33.44	74.9 (average of targeted universities: 31.0)	32.10 (average of targeted universities: 31.8)

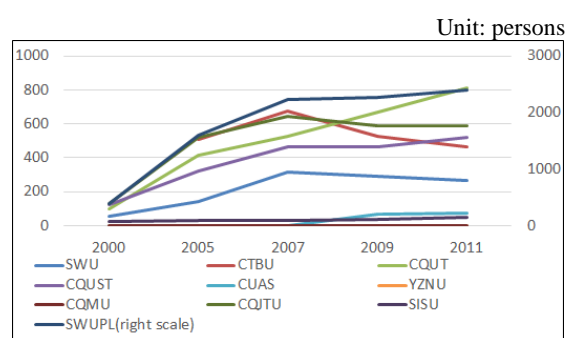
Sources: JICA appraisal documents; JICA, "The Supervision Survey Report on JICA Loaned Higher Education Project", 2010; Project Completion Report; China Statistical Yearbook 2011; Educational Statistical Yearbook of China 2011; Chongqing Municipality Statistical Yearbook 2011.

Note: The reason for the unusually high school building area per student in 2009 is unknown. However, as it dropped to 29.22m², the same level as other years, in 2010, the figure in 2009 is considered to be either incorrect or representing a temporary special situation for some reason.

(2) Contribution to promotion of market-oriented economic reform, reduction of disparity, development of rural areas and reform of state-owned enterprises

The titled impacts were expected in the ex-ante evaluation. Although the information was limited to the results of the interviews with the executing agency and individual targeted universities and observations, they are considered to have been achieved to a certain extent through production of graduates in the key industries, promotion of R&D (these two factors were observed at several universities), training for laid-off workers (observed only at CQUST), and utilization of equipment by other institutions through the Chongqing municipal platform for sharing large-scale laboratory equipment.

1. Promotion of market-oriented economic reform: As shown in Figure 5, there is a common trend in the number of graduates in the fields of accounting, law and financial management among the universities that are relevant in these fields: it sharply increased in the early 2000s, and thereafter has remained at almost the same level. Three targeted universities, including SWUPL that produces more than 2,000



Source: Responses to the questionnaire.

Figure 5: Number of graduates in the fields of accounting, law and financial management

graduates in the field of law every year, commented that the project contributed to promotion of a market economy through the enhanced capacities of those graduates¹⁶.

¹⁶ The president of the Supreme People's Court at the time of the ex-post evaluation was also a graduate of SWUPL.

2. Reduction of disparity: A stable number of graduates from the targeted universities have found jobs in Chongqing Municipality's key industries. For example, 200-300 graduates from CQUT are employed in the mechanical electronics industry every year, and 65% of them are working at companies in Chongqing. In each targeted university, the job placement rate was around 80-90% in both 2005 (during project implementation) and 2011 (after project completion), generally showing an increasing trend. Nine targeted universities said that this project contributed to a higher capacity of human resources in the key industries through the enhanced capacities of their graduates in research and operation of laboratory equipment as well as through broader views and knowledge of the teachers. As mentioned in "3.1.2 Relevance to the Development Needs in China", Chongqing Municipality has achieved high economic growth, and the gap in GDP per capita between

3. Chongqing and the national average is decreasing. The human resources that the targeted universities of this project have produced play a part in such development.

4. Development of rural areas: Although seven targeted universities such as CUAS produce graduates who then became teachers in rural areas, and 80 graduates from CQMU in 2009 became rural doctors, all of these universities said that those graduates were not directly related to this project. Also, ex-participants in the training in Japan from some targeted universities such as SWU and CTBU have conducted research on rural development, although its relation to this project is not clear.

5. Support to reform of state-owned enterprises (addressing the issue of laid-off workers): Only CQUST uses the facilities constructed under this project to train laid-off workers (Table 4). In 2009, 285 laid-off workers were trained in this regard.

3.3.2 Other Impacts

(1) Impacts on the natural environment

No negative impacts were observed. By the time of the ex-ante evaluation, all targeted universities had completed the necessary domestic procedures of environmental clearance with the Environmental Impact Assessments (EIA) approved by the Environmental Protection Department of Chongqing Municipality. Some noises, vibrations and dusts due to the building construction and foul water due to the use of the constructed facilities had been expected but to a small scale. All universities reported that during the construction phase they controlled the noises, etc. and thus kept the negative effects at a minimum. The executing agency explained that environmental monitoring after the project completion is not required considering the small scale of impact. According to SWUPL and CQMU that said the above-mentioned

Environmental Protection Department conducted environmental monitoring, the monitoring results reported that the major environmental parameters were within the standard.

(2) Land acquisition and resettlement

As planned in the ex-ante evaluation, there was no land acquisition and resettlement associated with this project.

(3) Strengthening of exchanges and cooperation with universities in Japan

It was observed in several targeted universities that academic exchanges with universities in Japan have been enhanced through this project. In some cases such as that of SWUPL, joint research or teachers' visits that had existed before the project were reinforced by the project, while in other cases, as seen in the case of SWU, there had been exchanges with universities overseas but not with those in Japan. At several universities such as CQJTU, the relationships that the project created are maintained or have been further developed. According to the executing agency, the current exchanges across the fields of study are owed to having leaders at the time of project implementation or candidates for leaders (who are leaders at present) learn about the higher education system and university management in Japan. As an interesting case, CQMU employed graduates from the Japanese language program of SISU (ex-students taught by teachers who attended the training in Japan) at its administrative section. Therefore, further promotion of understanding of Japan is expected in the future.



Graduates from SISU who found jobs at the office of the president, CQMU. They speak fluent Japanese.

At the same time, several universities pointed out issues for continuing exchanges, such as mismatch of priorities in selection of partners (i.e. the Chinese side tends to prefer universities in Western countries while the Japanese side tends to prefer universities in coastal China), exchanges relying only on single-shot research funds (CQUT), and host universities' tendency to accept trainees from China but not to send teachers from Japan (SISU).

Overall, this project has largely achieved its objectives; therefore its effectiveness is evaluated to be high.

3.4 Efficiency (Rating: ②)

3.4.1 Project Outputs

The actual production of the outputs is summarized in “Comparison of the Original and Actual Scope of the Project” on the final page of this report (the floor area of the buildings constructed for each university is in Table 2). The hardware outputs (facilities and equipment)

were developed mostly as planned with some changes as follows:

- Building construction: floor area increased by 133% compared to the plan, mainly due to the increase in demand.
- Procurement of equipment: it is difficult to precisely compare the actually-procured equipment with the original plan prepared in the project appraisal stage, because detailed consideration and final selection took place after the commencement of the project. However, the colleges/disciplines to which equipment were installed and the major equipment items installed were mostly in accordance with the plan.



Experimental devices for electrical and electro technology (CTBU)

As for the software outputs (i.e. training of teachers in Japan or invitation of teachers from Japan), adjustments were made in the number of participants and the lengths of stay to cope with the funding status and needs of each university. Accordingly, the actual number of participants were 257 persons compared to the planned 192 persons (134% of the plan), but the actual person months was 1,107 person months compared to the planned 1,446 person months (77% of the plan).

3.4.2 Project Inputs

3.4.2.1 Project Cost

As shown in Table 6, the total project cost was 7,123 million yen (of which the Japanese ODA loan was 4,480 million yen), which was 97% of the plan. According to the executing agency, it adjusted the training plan so that the total project cost would be within the planned amount even after taking into account the increase or decrease in construction and procurement cost. This can be said to be a good practice of optimal use of funds.

Table 6: Planned and actual project costs

Unit: million yen

	Plan (appraisal)			Actual		
	Foreign currency	Local currency	Total	Foreign currency	Local currency	Total
1. Building construction	569	2,062	2,631	549	2,092	2,641
2. Equipment	3,609	467	4,076	3,664	487	4,152
3. Training	219	0	219	267	64	330
4. Price contingency	64	6	69	0		0
6. Physical contingency	223	127	350	0		0
Total	4,683	2,662	7,345	4,480	2,643	7,123

Sources: JICA appraisal documents; project completion report; responses to the questionnaire.

Note: The exchange rates applied were: (planned) 1 yuan = 15 yen; (actual) 1 yuan = 14.25 yen.

3.4.2.2 Project Period

As shown in Table 7, the actual project period was 82 months, which was significantly longer than the planned 43 months (ratio against the plan: 191%) due to the following reasons:

- To avoid the spread of SARS that broke out in 2002-2003, meetings for selection of equipment to be procured or other purposes could not be conducted for 12 months.
- For half a year after the Great Sichuan Earthquake in 2008, transportation of goods was restricted to those related to relief and reconstruction. Chongqing was the eastern gateway for transportation of goods to the affected area.
- There was a certain period during which all of the Higher Education Projects funded by Japanese ODA loans in 22 provinces were being implemented¹⁷. However, as the number of suppliers who qualified for international competitive bidding was limited, one supplier ended up contracting with several provinces, and concluded longer contracts than originally estimated to avoid shortage of working capital. The executing agency handled this situation by switching source of funding for some equipment from the Japan ODA loan to funding from China, or by cancelling procurement of some equipment.

Despite the significant overall delay, the building construction completed earlier than planned. Also, the total duration of the project was still shorter than the duration of other Higher Education Projects. These are possibly attributable to the high level of project management capacity of the executing agency and the use of project management software it developed with CQUT (also see Table 4), which enabled constant monitoring and updating of the progress of the project at different levels from overall implementation to individual tasks as well as the status of payments.

Table 7: Planned and actual project periods

	Plan (appraisal)	Actual
Signing on Loan Agreement	March 2002	March 2002
Building construction	December 2004	September 2004
Procurement of equipment	December 2004	December 2008
Training	September 2005	July 2008
Project completion (lengths of months)	September 2005 (43 months)	October 2008 (82 months)

Sources: JICA appraisal documents; project completion report; responses to the questionnaire.

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.

¹⁷ The Higher Education Projects in 22 provinces were implemented in five batches. This project (Chongqing Municipality) was in the first batch, and the fifth (final) batch started in 2006. Therefore, during the implementation of this project, a maximum of 22 provinces implemented the projects at around the same time.

Although the project cost was mostly as planned, the project period exceeded the planned period, and therefore efficiency of the project is evaluated to be fair.

3.5 Sustainability (Rating: ③)

3.5.1 Institutional Aspects of Operation and Maintenance

As planned during the ex-ante evaluation, the facilities and equipment developed under this project are operated and maintained by each targeted university, and the Education Commission of Chongqing Municipality, the executing agency, oversees them. All targeted universities added the developed facilities and the equipment to the universities' fixed assets, and established the operation and maintenance system with clearly defined responsibilities and procedures through establishing regulations such as the procedures for maintenance of large equipment and fund management, work regulations on experiment teaching, the procedures for fixed asset management, etc. There are no issues recognized with respect to the number of staff in charge of operation and maintenance.

3.5.2 Technical Aspects of Operation and Maintenance

No problem was observed in the technical aspects as all targeted universities regularly carry out maintenance and inspection of the facilities and equipment, and outsource repair works to contractors such as suppliers when necessary. To secure the skills necessary to operate and maintain large or sensitive laboratory equipment, the universities appoint full-time technical staff for each instrument or laboratory to manage the equipment in an integrated manner.

3.5.3 Financial Aspects of Operation and Maintenance

The targeted universities except SWU (directly administered by the Ministry of Education) are overseen by the government of Chongqing Municipality, and their budgets consist of subsidies from the municipality and own income such as tuitions and fees. The municipal budget is generally in an increasing trend, and expenditures to the education sectors are also increasing (Table 8).

In all targeted universities, cost for operation and maintenance of the facilities and equipment is part of the university budget and managed under standardized procedures. Normally, certain amount of the operation and maintenance budget is allocated from such expense items as operating expenses. Also, laboratories spend part of the laboratory operating expenses, research fund and income from social services for routine maintenance of equipment. Revenues are constantly increasing in all targeted universities, and operation and maintenance expenses are stable or increasing (Table 9)¹⁸. In the interviews for the ex-post evaluation, both

¹⁸ The evaluator confirmed, through the data provided in the questionnaire, that the revenues and expenditures of each university were at a surplus or balanced in recent years.

management and laboratory-level staff of all targeted universities said that the necessary amounts of operation and maintenance cost were secured.

Table 8: Budget of Chongqing Municipality

Unit: billion yuan

	2009	2010	2011
Fiscal revenue	116.56	96.47	150.81
Fiscal expenditures	180.81	103.33	164.14
of which, total expenditures in education	27.88	37.00	42.15
Higher education	5.52	7.84	12.30
Higher education expenditure per student (yuan)	10,645	13,978	20,064

Source: Response to the questionnaire by the executing agency.

Note: The revenue only includes municipal fiscal revenue. Deficits are compensated by the central government.

Table 9: Operation and maintenance expenditures related to this project

Unit: thousand yuan

	2009	2010	2011
SWU	93	130	120
CTBU	303	280	474
CQUT	111	95	101
CQUST	1,250	1,630	1,940
CUAS	407	511	614
YZNU	45	50	61
SWUPL	150	161	96
CQMU	760	830	91
CQJTU	148	287	303
SISU	53	64	80

Sources: Responses to the questionnaire.

3.5.4 Current Status of Operation and Maintenance

In all targeted universities, the equipment developed by this project is registered in the maintenance and management database. Based on observation and review of usage or inspection records, it was confirmed that the equipment was mostly in good condition. A user of equipment must record the status of usage as well as the condition of the equipment every time they use it.

Most of the laboratories which were visited had posted the operational procedures and maintenance plan for each instrument in a place easily seen by users, and such procedures seem to be well followed. Also, it was observed that for sensitive equipment, the environment of the laboratories was managed by recording room temperature and humidity.

In all universities, breakdowns and other troubles are handled either by repairing by themselves or by outsourcing (sending the equipment to manufacturers or having repair persons visit the laboratory). It was also reported that there were no major problems in purchasing and keeping stock of consumables. Some universities such as SWUPL said that they made efforts to procure equipment that could be easily maintained, for example, to select equipment of high performance rather than with multiple functions so that future maintenance would be easier, to procure the main unit, accessories and spare parts altogether, and to select the same manufacturer as much as possible in order to receive better after-sales services.



All universities keep usage and inspection records for each instrument (the photograph was taken at CQUT)

No major problems were observed in the operation and maintenance system, and therefore sustainability of the project effect is evaluated to be high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project aimed to improve teaching and research at ten major universities in the Municipality of Chongqing through the development of their facilities and equipment as well as providing training for teachers. Relevance of the project is evaluated to be high, as it is in line with (i) the higher education policies of China and Chongqing, (ii) development needs for quantitative and qualitative enhancement of the universities, and (iii) Japan's assistance policies. Effectiveness/impact of the project is also high, based on the observations that the project satisfied such development needs, i.e., it improved education activities by enabling more experiments, and improved research activities through outcomes achieved from advanced equipment and training, and thereby contributed to the promotion of the key industries. Efficiency of the project is evaluated to be fair on the whole: although the project cost was within the plan, the project period significantly exceeded the planned period due to delays resulting from the high concentration of procurement works for the Higher Education Projects that were implemented in many provinces at the same time to certain suppliers, as well as external factors such as SARS and the Great Sichuan Earthquake. Sustainability is evaluated to be high, with no problem observed in institutional, technical and financial aspects, and due to the good status of operation and maintenance of the facilities and equipment developed by the project.

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

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

The targeted universities are recommended to continue the proper use of the facilities and equipment developed under this project in teaching and research, as well as to extend the knowledge that has been gained from exchanges with Japan.

4.2.2 Recommendations to JICA

To take advantage of the relationship that have been cultivated through this project, it could be effective to update the Higher Education Projects website even with respect to the completed projects as much as possible (e.g. reports on exchange after the project completion), so that it would serve as a focal point for continuing and expanded exchanges for universities in China and Japan.

4.3 Lessons Learned

(1) Effectiveness of the training component

In the area of assistance in higher education, in addition to assistance in hardware, it is effective to provide software-type assistance (such as teachers' training) in a way that is responsive to existing needs. Past higher education assistance projects have proven effectiveness in training on individual fields of teaching and research, and this was also confirmed in this project. In addition, university management courses such as the ones implemented under this project could be effective even in short training periods, if participants are selected among those who are candidates for executive positions and have potential to extend the outcomes, and based on careful planning by the host universities as was the case in this project.

(2) Indicator setting for evaluation

In this project, as well as in other Higher Education Projects in China by Japanese ODA loans, although it was targeted to a limited number of universities (and particular facilities/equipment and teachers of those universities), many effectiveness indicators were ones which measure provincial-level situations (such as aggregated education indicators of the province) or indicators which measure aspects beyond the direct benefits of the project. This ex-post evaluation used those indicators to evaluate Impact. In order to measure the net effect of the project, the ex-ante evaluation should distinguish indicators that measure direct outcomes from indicators that do not.

(3) Utilization of strengths of related organizations in project implementation

One of the promoting factors for implementation and effectiveness of this project is that it utilized strengths of related organizations in project implementation, for example, (i) the Chongqing Education Commission and CQUT jointly developed the project implementation system and managed this project using such system, (ii) universities such as SWUPL brought experts in their procurement teams for selection of equipment with high effectiveness and sustainability, and (iii) teachers of the Japanese language program of SISU conducted training in Japanese for teachers before they left for Japan. As such, when the related organizations have high level of skills, those could be actively utilized for efficient and effective project implementation.

(4) Sharing of laboratory equipment

Major laboratory equipment procured under this project was registered in the Chongqing municipal platform for sharing large-scale laboratory equipment, and is widely open for use by external institutions through simple web-based procedures to search and apply for certain equipment. This system could be a sample model for common use of equipment. Projects that

procure expensive laboratory equipment often aim at improvement of operation rates by sharing the equipment with others. Therefore, when designing similar systems of equipment sharing, it is advisable to refer to the system of the Chongqing platform.

End

Comparison of the Original and Actual Scope of the Project

Item	Original	Actual
1. Project Outputs	Target: 10 universities in Chongqing Municipality	Target: same as planned
(a) Hardware		
i) Building construction	11 buildings such as research building; total floor area of 103,443 m ²	Total floor area of 137,371 m ²
ii) Procurement of educational equipment	Biology, electronics, machines, physics, materials, medicine, basic education, information, etc.	Areas of education: same as planned Total 11,360 items
(b) Software		
Teachers' training in Japan or acceptance of experts from Japan	Total 192 persons (including 40 experts from Japan)	Total 257 persons from 52 Japanese universities or institutions (including 4 experts from Japan)
2. Project Period	March 2002 – September 2005 (43 months)	March 2002 to October 2008 (82 months)
3. Project Cost		
Amount paid in Foreign currency	4,683 million yen	4,480 million yen
Amount paid in Local currency	2,662 million yen (177 million yuan)	2,643 million yen (186 million yuan)
Total	7,345 million yen	7,123 million yen
Japanese ODA loan portion	4,683 million yen	4,480 million yen
Exchange rate	1 yuan = 15 yen (As of September 2001)	1 yuan = 14.25 yen (Average between 2003 and 2008)