Malaysia

Ex-Post Evaluation of Japanese ODA Loan Project

"Higher Education Loan Fund Project (II)"

External Evaluator: Takako Haraguchi, International Development Associates, Ltd.

0. Summary

This project is the second phase of a series of projects titled "Higher Education Loan Fund Project (HELP)" that aims at human resource development in science and technology by providing support to Malaysian students for study at universities in Japan. Under this project, a total of 270 undergraduate and 79 graduate students obtained the bachelor's and master's degrees, respectively, in Japan. Relevance of the implementation of this project is high mainly because its objective is consistent with Malaysia's development policies and needs related to (i) promotion of knowledge- and technology-intensive economy through development of high-level human resources and (ii) in doing so, learning from Far East Asia including Japan. Efficiency is evaluated to be fair mainly as the project sent a smaller number of students to Japan than planned, while the project cost was within the plan. Effectiveness and impact are high since most students completed their programs with good grades and are active as engineers, lecturers, etc. using what they had learned in Japan such as work ethics of Japan and knowledge and skills in specialized fields. The undergraduate program of this project is characterized by "twinning," with which part of undergraduate education is provided in Malaysia, and students transfer to universities in Japan in the middle of the program. The introduction of twining made an impact on reduction of cost of study in Japan that had been said to be high as well as improvement of twinning in the next HELP that led to the improved efficiency and effectiveness of study in Japan. As for sustainability, no problem was seen in terms of both follow-ups for graduates produced under this project and continuation of overseas study programs by the executing agency.

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



1. Project Description



A graduate who became a lecturer of Faculty of Engineering and Built Environment, National University of Malaysia

Project Location

1.1 Background

Malaysia had been aiming for establishment of the economy and society based on high technologies (an advanced nation) by the year 2020 according to "The Way Forward (Vision 2020)" announced in 1991. Among others, development of human resources in science and technology including engineers was essential to increase the value added and strengthen competitiveness of the Malaysian industry such as manufacturing. However, the deployed efforts to enhance quantity and quality of domestic education institutions could not fully meet the human resource development needs. In particular, those who wanted to learn advanced knowledge had to study abroad.

On the other hand, Malaysia had promoted the Look East Policy since 1982. The Look East Policy, introduced by the then Prime Minister Mahathir, aimed to build a nation in a unique way by proactively learning from Far East Asian countries such as Japan and Korea. In 1983, Japan had started to provide assistance to support the Look East Policy in such a way as dispatch of teachers for a pre-matriculation program in Malaysia, and since 1984 it had continuously accepted Malaysian students to study in Japanese universities. In 1993, a Japanese ODA Loan project, "Higher Education Loan Fund Project" (preceding phase of this project; hereafter called "HELP1" when it refers to the first phase of HELP¹) was launched with Yayasan Pelajaran MARA (MARA Education Foundation) (YPM) as the executing agency. Under HELP1, a total of 310 Malaysian students were supported in their study in Japan such as through provision of a pre-matriculation program and scholarships². However, there was an issue that study in Japan was more expensive than study in the United States or European countries. In response to this issue, it was decided to introduce a system called "twinning" under this project (HELP2). With this system, students transfer to Japanese universities in the middle of their undergraduate education instead of entering Japanese universities from the first grade. Malaysia had had experiences of twinning with universities of the United States, the United Kingdom, Australia, etc., and this project was to introduce twinning with Japanese universities as well for continuous support for study-in-Japan programs.

1.2 Project Outline

The objective of this project is to develop qualified engineers by providing support to Malaysian students for their study in undergraduate or postgraduate programs in science and engineering in Japanese universities, thereby contributing to Malaysia's economic development through promotion of science and technology.

¹ The three-phased ODA Loan projects, "Higher Education Loan Fund Project," "Higher Education Loan Fund Project (II)" and "Higher Education Loan Fund Project (III)" are called "HELP1," "HELP2" and "HELP3," respectively. This project is HELP2. In addition, a Malaysian domestic project "Malaysia Japan Higher Education Program (MJHEP)," which is implemented by YPM (without external financial assistance) by means of a twinning system developed under HELP and with Japanese universities that participated in HELP, is sometimes called "HELP4."

² HELP1 originally planned to send 240 students to Japan. Out of the 310 students who were actually supported under HELP1, 279 students finally got the degrees.

Loan Approved Amount/ Disbursed Amount	5,285 million yen / 4,984 million yen				
Exchange of Notes Date/ Loan Agreement Signing Date	April, 1999 / April, 1999				
Terms and Conditions	Interest Rate Repayment Period (Grace Period) Conditions for Procurement:	0.75% 40 years (10 years) General Untied			
Borrower / Executing Agency	Malaysia / Yayasan Pelajaran MARA (MARA Education Foundation) (XPM)				
Final Disbursement Date	J	fune, 2009			
Main Contractor (Over 1 billion yen)	None				
Main Consultant (Over 100 million yen)	Registered Non-Profit Organization Asia SEED				
Feasibility Studies, etc.	"Special Assistance for Project Implementation (SAPI) for Higher Education Loan Fund Project (II)" Japan International Cooperation Agency (JICA), 2001.				
Related Projects	 "Higher Education (Japanese ODA Loan p "Higher Education (Japanese ODA Loan p Dispatch of expert Cooperation, 2000-200 Cultural Grant Aid t (Grant Aid project, 200 Dispatch of teachin Foundation by the Japa "Malaysia Japan High (Domestically-funded p 	Loan Fund Project (HELP1)" roject, 1992-2002) Loan Fund Project (HELP3)" roject, 2006-2015) is (teaching staff) (Technical 3) to MARA Education Foundation 1) ig staff to MARA Education n Foundation (1999-2001) er Education Program (MJHEP)" project of Malaysia, 2011-)			

Table 1 outlines the HELP-related projects that have been planned and implemented by the time of this ex-post evaluation.

			(/
	HELP1	HELP2 (This project)	HELP3	MJHEP (HELP4)
Scheme (Loan	Japanese ODA Loan	Japanese ODA Loan	Japanese ODA Loan	Malaysian domestic
Agreement)	project (May 1992)	project (April 1999)	project (March 2005)	project (-)
Executing	YPM	YPM	YPM	YPM
Agency				
Project Period	1993-2004	1999-2009	2005-2015	2011-2020
Program	Undergraduate	Undergraduate	Undergraduate	Same as HELP3
	- 2 year study in	- 2 year study in	- 3 year study in	
	Malaysia	Malaysia (1 year	Malaysia (1 year	
	(pre-matriculation)	pre-matriculation and 1	pre-matriculation and 2	
	- 4 year study in Japan	year undergraduate	year undergraduate	
	(enrollment to the 1 st	education for the 1 st	education for the 1 st and	
	grade)	grade)	2 nd grades)	
		- 3 year study in Japan	- 2 year study in Japan	
		(transfer to the 2 nd grade)	(transfer to the 3 rd grade)	
		Master's	Master's	
		- 2 year study in Japan	- 2 year study in Japan	
			Doctor's	
			- 3 year study in Japan	
Planned number	Undergraduate: 240	Undergraduate: 400	Undergraduate: 242	Undergraduate: 1,500
of students by		<u>Master</u> : 140	Master: 55	<u>Master</u> : 240
category			Doctor: 25	Doctor: 50

Table 1: Outlines of HELP1-HELP3 and MJHEP (HELP4)

Sources: Prepared based on JICA documents and response from the executing agency.

2. Outline of the Evaluation Study

2.1 External Evaluator

Takako Haraguchi, International Development Associates, Ltd.

2.2 Duration of Evaluation Study

Duration of the Study: August, 2014 – October, 2015

Duration of the Field Study: November 5-14, 2014, January 25-30, 2015

3. Results of the Evaluation (Overall Rating: A³)

- 3.1 Relevance (Rating: (3^4))
 - 3.1.1 Relevance to the Development Plan of Malaysia

This project is consistent with the development policies at the times of both appraisal and ex-post evaluation. First, regarding general development policies, Vision 2020 and the Look East Policy mentioned in "1.1 Background" are still effective at the time of ex-post evaluation⁵. Also, the Seventh Malaysia Plan (1996-2000) at the time of appraisal and the Tenth Malaysia Plan (2011-2015) at the time of ex-post evaluation both set an objective of contributing to economic development through development of high-level human resources in science and technology.

³ A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

⁴ ③: High, ②: Fair, ①: Low

⁵ In 2012, the 30th anniversary of the Look East Policy, implementation of the Second Wave of the Look East Policy in the six priority areas including advanced technology was announced (statement of Prime Minister Najib on December 13, 2012).

Second, regarding science and technology promotion policies, the Ministry of Science, Technology and Innovation (MOSTI) places human resource development at the head of the list of nine strategic objectives to achieve Vision 2020 and the Tenth Malaysia Plan⁶.

Third, as for higher education development policies, the National Higher Education Strategic Plan (2007-2020) states that economic development requires establishment of a knowledge-based economy and creation of innovation through development of human resources with first-rate intelligence. To achieve this, the plan places priority policies such as promotion of research and innovation, strengthening of higher education institutions and internationalization of universities, and sets the targets such as increasing the number of researchers, scientists and engineers to 100 per 10,000 workforce⁷.

3.1.2 Relevance to the Development Needs of Malaysia

Due to the situation described in "1.1 Background," the objective of this project is highly consistent with development needs at the time of appraisal. At the time of ex-post evaluation, it is considered to be mostly consistent with development needs based on the following findings (relevant indicators are shown in Table 2). First, needs for engineers seem to have been filled as the number of registered engineers and research and development (R&D) personnel increased faster than the number of the workforce, and the number of scientists, researchers and engineers per workforce significantly increased. However, a number of documents including the Tenth Malaysia Plan point out, as an issue of the Malaysian labor market, the dependence on unskilled foreign labor that has hindered transition to high value added industry and the consequent drain of high-level human resources abroad. This shows the continuing needs for high-level human resources.

Second, regarding needs for higher education, development of higher education institutions in Malaysia have progressed compared to those at the time of appraisal. However, the development should be continued following the increase in the number of students. The ratio of students in science and technology has remained a little under 40% of students enrolled in higher education. From this, necessity to enhance science and technology education, the target area of this project, is confirmed.

Third, the number of students studying abroad was stagnant (data on the exact number were not available) at the time of appraisal due to the economic crisis in 1997, but it turned to an increasing trend at the latest in the middle of the 2000s. The major designations of Malaysian students for study include Australia, the United States and the United Kingdom, while the number of students studying in Japan only slightly increased. According to persons related to Malaysian students' study in Japan, students have not increased much due to the limited number of institutions that provide pre-matriculation programs for study in Japan. It was also reported that the number of applicants to pre-matriculation programs has been decreasing since 2011 partly due to the Great East Japan

⁶ MOSTI website.

[&]quot;Review of the National Higher Education Strategic Plan" Ministry of Education, 2013.

Earthquake. Nevertheless, YPM, the executing agency of this project, and the Public Service Department of Malaysia that supervises study-in-Japan programs under the Look East Policy emphasized the high needs for learning advanced knowledge and technologies from Japan.

Besides sending students abroad, internationalization of education has progressed in Malaysia such as through establishment of satellite schools of foreign universities and cooperation between Malaysian universities and foreign universities (twinning, credit transfer and double degree⁸). Accordingly, the domestic higher education system has been developed so that students could receive high quality education in Malaysia without having to study abroad. In this way, it can be said that studying in Japan with twinning that this project supported is still significant as one of the diversifying higher education opportunities.

Table 2: Indicators on Supply of Human Resources in Science and Technology and Higher Education

	1998 Year of Appraisal	2002	2006	2010 1 year after project completion	2011	2012	2013	Annual average growth rate
Indicators on supply of human resources in science	and techr	ology		compretion				1400
Total workforce (thousand persons) ^a	8,884	9,543	10,276	11,777	12,284	12,723	13,210	3%
Of which, manufacturing (thousand persons) ^a	1,908	2,069	2,083	1,972	2,222	2,228	2,215	1%
Number of newly registered engineers (person) ^b	1,773	N.A.	3,253	5,235	7,266	6,543	7,922	10%
Number of R&D personnel (person) ^c	6,656	10,731	13,416	50,484	57,405	N.A.	N.A.	18%
Number of researchers, scientists and engineers per 10,000 workforce (person) ^d	7.0	18.0	17.9	55.4	58.1	57.5	N.A.	16%
Indicators on higher education								
Number of public higher education institutions (universities) ^{aef}	11	N.A.	20	20	20	20	20	4%
Number of polytechnics ^e	9	14	18	25	28	30	32	9%
Number of community colleges ^e	0	22	45	76	79	84	86	13%
Number of private higher education institutions aef	N.A.	N.A.	515	476	500	437	418	-3%
Gross enrollment ratio to higher education (%) ^c	22.7*	25.74	28.58	37.13	35.97	N.A.	N.A.	4%
Number of students enrolled in higher education (thousand persons) ^c	473*	632	737	1,061	1,036	N.A.	1,156	6%
Ratio of science and technology students (%) ^c	N.A.	40.1	37.8	34.2	34.9	34.8	N.A.	-1%
Number of students studying abroad (person) ^c	N.A.	N.A.	53,924	77,623	89,580	81,282	78,936	6%
Of which, studying in Japan (person) ^g	N.A.	1.885	2.156	2,465	2.417	N.A.	N.A.	3%

Sources: a) Yearbooks of Statistics Malaysia; b) Board of Engineers Malaysia; c) United Nations Educational, Scientific and Cultural Organization (UNESCO) Institute of Statistics; d) Malaysian Science and Technology Information Centre, MOSTI; e) Ministry of Higher Education of Malaysia; f) National Educational Statistics; g) Japan Student Services Organization. Notes: 1) A polytechnic (professional technical school) and a community college (junior college) are higher education institutions that do not award undergraduate or higher degrees.

2) The data with asterisk "*" in the column of year 1998 are as of 1999.

3.1.3 Relevance to Japan's ODA Policy

This project is consistent with Japan's ODA policy at the time of appraisal. Based on the policy dialogues with the Malaysian side and studies in the economic cooperation mission in March 1993 and policy discussions thereafter, the priority areas of Japan's assistance for Malaysia were set as

⁸ Under a double degree program, a student can receive degrees from both the Malaysian universities that s/he belongs to and the cooperating foreign university at one time.

environmental conservation, poverty eradication and regional development, and development of human resources and small and medium enterprises. The priority area "human resource development" includes assistance in higher education and capacity development in high value-added industry, as well as in the Look East Program⁹.

In this way, this project has been highly relevant to Malaysia's development plan and development needs, as well as Japan's ODA policy. Therefore its relevance is high.

3.2 Efficiency (Rating: ②)

3.2.1 Project Outputs

The outputs of this project consisted of (1) implementation of an overseas study program for undergraduate degree (provision of scholarships for pre-matriculation education in Malaysia and undergraduate education in Japan, etc.), (2) implementation of an overseas study program for postgraduate (master's) degree (provision of scholarships for post graduate education in Japan, etc.), (3) procurement of equipment for education in Malaysia, (4) dispatch of teaching staff from Japan for education in Malaysia, and (5) consulting services. The total number of students and the number of teaching staff dispatched were smaller than the numbers originally planned at the appraisal, while the other outputs were produced as planned. The number of students decreased as the project revised the planned number downward¹⁰ in 2002 (after the commencement of the project), and aligned the number of students to recruit, educate and send to Japan to the revised plan. It is considered that the decrease in the number of teaching staff was due to the reduction of the number of students and thus reasonable. In this way, the actual outputs were compared to the plan at the appraisal, not the revised plan, in accordance with the principle of ex-post evaluation of Japanese ODA Loan projects.

(1) Overseas study program for undergraduate degree (undergraduate program)

In the undergraduate program, it was planned that students would receive pre-matriculation education for one year and a part of undergraduate education in Malaysia (the Japan Associate Degree Program (JAD Program)), transfer to Japanese universities with credits earned from the JAD Program and recognized by the Japanese universities, receive the rest of undergraduate education required for graduation, and obtain the undergraduate degrees from the Japanese universities. Regarding twinning, the project planned (i) to apply the "2+3" system, in which students would spend two years in Malaysia (pre-matriculation education for one year and undergraduate education for the 1st grade) and transfer to Japanese universities at the 2nd grade for

⁹ "Kunibetsu Enjo Jisseki 1991 nen – 1998 nen no Jisseki (results of country-specific assistance in 1991-1998)," Ministry of Foreign Affairs of Japan.

¹⁰ In February 2002, the executing agency and JICA agreed to revise the planned number of students to be sent to Japan from 400 persons (plan at appraisal) to "at least 280 persons" for the undergraduate program, and from 140 persons (ditto) to "at least 52 persons" for the postgraduate program. This downward revision was made to cope with the likelihood of increase in cost of education per student following the changes in the situations surrounding the project (also see "3.2.2.1 Project Cost").

three-year education up to graduation, for students of the first two batches out of the total five batches, and then (ii) to shift to the "3+2" system from the third batch, where students would spend three years in Malaysia (pre-matriculation education for one year and undergraduate education for the 1^{st} and 2^{nd} grades) and transfer to Japanese universities at the 3^{rd} grade.

Table 3 shows the actual result: a total of 285 students in five batches were enrolled at the JAD Program, 280 of them (68% of the plan at appraisal) transferred to Japanese universities, and 270 students obtained the degrees and graduated.

	(Ont. person)									
Batch	Ed	lucation in N	/Ialaysia (JA	.D)		Education in Japan				
	Plan at	Revised	No. of	No. of	No. of	No. of s	tudents award	ed bachelor	's degrees	No. of
	appraisal	plan	entrants	completed	students		(Act	ual)		dropouts
	(set in	(set in	(Actual)	students	transferred		In standard	After	After self-	(Actual)
	1999)	2002)		(Actual)	(Actual)	Total	time period	1-year	funded	
								repeating	extension	
1	60	53	53	52	52	51	44	6	1	1
2	60	53	53	49	49	47	43	3	1	2
3	80	69	69	69	69	68	59	4	5	1
4	100	60	60	54	54	50	39	8	3	4
5	100	45	50	56	56	54	42	11	1	2
Total	400	280	285	280	280	270	227	32	11	10

 Table 3: Plan and Actual Result of the Overseas Study Program for Undergraduate Degree

(Unit: person)

Sources: Prepared based on JICA documents and responses from the executing agency. Notes: Reason for dropouts from the JAD Program (5 persons) was academic performance. Reasons for dropouts from Japanese universities (10 persons) were health (1 person) and academic performance (9 persons, of which 1 students was expelled due to arrears with tuition during self-funded extension period). There was a rule that a student can receive the scholarship for one-year repeating, and all expenses for the stay longer than that must be funded by her/himself.

The venue of the JAD Program was YPM College Bangi (Selangor State), which was same as planned. In Japan, 13 private universities (as planned) and 19 national universities accepted the HELP2 students. In the initial stage of project implementation, the 13 private universities, which had participated in HELP1, formed a consortium¹¹ and developed the common syllabuses for the 1^{st} grade of undergraduate education and the credit transfer criteria. At later stages, a total of 19 national universities accepted students. Introduction of the "3+2" twinning system was cancelled under this project, and all of the five batches applied the "2+3" system. This was because a JICA study¹² after the project commencement found that the cost saving effect of shifting the system from "2+3" to "3+2" in the middle of the project would not be high.

(2) Overseas study program for postgraduate (master's) degree (postgraduate program)

The postgraduate program provided support to students of the undergraduate program of HELP1 and the Batch 1-3 of this project who wished to continue to study in Japan.

Table 4 shows the actual number of students supported. A total of 79 persons (56% of the plan

¹¹ The project consultant participated in the consortium, too.

¹² "Special Assistance for Project Implementation (SAPI) for Higher Education Loan Fund Project (II)" Japan International Cooperation Agency (JICA), 2001.

at appraisal) in eight batches enrolled to graduate school, and all of them obtained their master's degrees in two years, the standard period of time. The number of students increased from the revised plan as the remainder of the loan fund after adjustment of fluctuation of unit cost for study was used to support an additional number of students (see "3.2.2.1 Project Cost").

							(Unit: person)	
Batch	Plan at appraisal	Revised plan	Numb	er of students enrol	Number of s	tudents awarded		
	(set in 1999)	(set in 2002)				master's degree (Actual)		
			Total	Obtained bachelor's degrees under HELP1	Obtained bachelor's degrees under HELP2	Total	In standard time period	
1	5	3	3	3	0	3	3	
2	15	11	11	11	0	11	11	
3	20	13	13	13	0	13	13	
4	20	15	12	12	0	12	12	
5	20	10	13	13	0	13	13	
6	20	-	1	1	0	1	1	
7	20	-	6	1	5	6	6	
8	20	-	20	3	17	20	20	
Total	140	52	79	57	22	79	79	

Table 4: Plan and Actual Result of the Overseas Study Program for Postgraduate Degree

Sources: Prepared based on JICA documents and responses from the executing agency.

(3) Procurement of equipment

This project planned to procure computers and laboratory equipment for the subjects of mechanical and material engineering, electric, electronic and system engineering and chemical and environment engineering in the JAD Program, and to install them to the computer laboratory and the engineering laboratory. The detailed information on the planned items and quantity was not available, and as for the actual result, a total of 722 pieces of educational and laboratory equipment were procured and installed to the above-mentioned laboratories. In addition to them, 142 pieces of computers and laboratory equipment were procured and installed under the Cultural Grant Aid project (2001).

(4) Dispatch of teaching staff

Lecturers in science and engineering subjects, general education subjects and Japanese language necessary for the JAD Program were selected and dispatched from the universities participating in the consortium (mostly from Takushoku University and Shibaura Institute of Technology). The number of lecturers was determined according to the number of students in each year. The actual work volume of lecturers amounted to 1,332 man-months compared to 1,738 man-months planned at appraisal. This work volume includes that of experts dispatched from JICA and the Japan Foundation (as grant assistance). While information on the planned work volume of those experts under grant assistance was not available¹³, the actual volume was 60 man-months

¹³ The amount was 199 million yen.

from JICA and 36 man-months from the Japan Foundation.

(5) Consulting services

The scope of work of the consultant was (a) assisting the executing agency in education in Malaysia, (b) discussions and coordination with Japanese universities on twinning, (c) monitoring of students, (d) assisting the concerned parties in taking necessary procedures for education in Japan, and (e) reference to and promotion of internship, which were all implemented as planned. The work volume of consultants was 146 man-months in terms of both plan and actual record.

3.2.2 Project Inputs

3.2.2.1 Project Cost

The total project cost was 5,846 million yen (of which the Japanese ODA Loan was 4,984 million yen). Although the project cost was lower than planned, it can be said that the project cost exceeded the plan if taking into consideration of the decrease in the outputs, i.e., downward revision of the planned number of students, with the project cost unchanged¹⁴. The breakdown of the project cost is shown in Table 5.

(Unit: million yen)												
			Plan (ap	praisal)			Actual					
	Fore	eign ency	Locurre	Local currency		tal	Fore curre	eign ency	Lo curre	cal ency	To	tal
		ODA Loan		ODA Loan		ODA Loan		ODA Loan		ODA Loan		ODA Loan
Undergraduate and graduate programs	3,733	3,733	576	0	4,309	3,733	3,439	3,439	411	0	3,850	3,439
Procurement of equipment	113	113	0	0	113	113	0	0	146	104	146	104
Dispatch of teaching staff	1,108	909	40	0	1,148	909	909	909	29	0	938	909
Administration cost	0	0	50	0	50	0	0	0	323	0	323	0
Consulting services	530	530	40	0	570	530	526	526	58	0	584	526
Total	5,484	5,285	706	0	6,190	5,285	4,874	4,874	966	104	5,840	4,978
Total (including disbursement charges)	5,484	5,285	706	0	6,190	5,285	4,880	4,880	966	104	5,846	4,984

Table 5: Planned and Actual Project Costs

Sources: Prepared based on JICA documents and responses from the executing agency.

Notes: 1) Due to rounding down of the fractions smaller than 1 million yen, the breakdown and total amounts may not match. 2) The actual cost for procurement of equipment includes 41 million yen of the Cultural Grant Aid project. 3) The planned cost for dispatch of teaching staff includes 199 million yen of the grant assistance (dispatch of experts from JICA and the Japan Foundation), but the actual cost corresponding to it was not available. 4) The exchange rates applied were: (planned) 1 ringgit=31.9 yen; (actual) 1 ringgit=30.5 yen.

The downward revision of the planned number of students was made in order to cope with the increase in the unit cost for education in Japan within the limits of the project budget. It is

¹⁴ It was roughly calculated that if the initial estimation of the project cost in 1999 had used the number of students equivalent to the number after the downward revision in 2002, the "planned" cost would have been estimated to be 5,025 million yen, and the actual cost of 5,846 million yen would have been 116% of such a "planned" cost.

reported that such an increase took place mainly due to the following factors: (a) the Malaysian government increased the cost of overseas education per student by 15% (since January 2000); (b) in the undergraduate program, expenditures for scholarships for repeating students were added (the rule was to continue scholarships up to one-year repeating); and (c) in the undergraduate program, expenditures for travel to and stay in Japan for taking exams for transfer admission were added. This project was planned during the period when the Malaysian government was suspending or downscaling overseas education programs following the currency crisis in 1997, and the estimated unit cost was cut to minimum. Therefore, it is considered that the project had little choice but to reduce the number of students in response to the cost rise during the implementation period. In re-estimating the unit cost, the project tried to avoid underestimation by assuming that all students would enroll to private universities in the area where living cost is high. As it turned out that a certain number of students enrolled to national universities and national or private universities in the areas where living cost was lower, the number of students sent to Japan was finally larger than the revised plan.

3.2.2.2 Project Period

The project period was longer than planned (111% of the plan with details shown in Table 6) as some students repeated a year.

	Plan (appraisal)	Actual		
Signing on Loan Agreement	April 1999	April 1999		
Undergraduate program	March 2008	March 2009		
Postgraduate program	March 2008	March 2008		
Procurement of equipment	April 2002	November 2002		
Project completion (duration)	March 2008 (9 years)	March 2009 (10 years)		

Table 6: Planned and Actual Project Periods

Sources: Prepared based on JICA documents and responses from the executing agency.

Note: Project completion was defined as graduation of students in the last batch from undergraduate and postgraduate programs.

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

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

As stated above, although the project cost was within the plan, it did not match the decrease in the outputs. Also, the project period exceeded the plan. Therefore, efficiency of the project is fair.

3.3 Effectiveness¹⁵ (Rating: ③)

Most students completed their programs with good grades, and got jobs related to science and technology such as engineers and lecturers. Therefore, it can be said that the graduates obtained high-level knowledge and skills, and became ready to be "qualified engineers" as expected in the project objective. A survey conducted in the ex-post evaluation found that a certain number of graduates were actually developed to be "qualified engineers," and more graduates were either promoted to management or became university lecturers or researchers. It was also found that graduates were satisfied with the overseas education programs of this project.

3.3.1 Quantitative Effects (Operation and Effect Indicators)

Operation and effect indicators were not set at the time of appraisal, nor were the target year for achievement of the project objective. With reference to the operation and effect indicators mentioned in the ex-post evaluation of HELP1 and the ex-ante evaluation of HELP3, this ex-post evaluation used the five indicators shown in Table 7¹⁶. By the nature of these indicators that can be achieved at the same time or around the same time as graduation of the students, it is considered reasonable to regard the year of project completion as the target year. Only Indicator 5 (status of employment or education after graduation) was assessed based on the situations at the times of both project completion and ex-post evaluation.

	Target	Actual	Actual
	2009	2009	2014
	Completion year	Completion year	5 years after completion
(1) Indicators to show attainment of acad	emic degrees (Operation i	indicators)	
Indicator 1	Bachelor: 400 persons	Bachelor: 270 persons	Same as 2009
Number of students who obtained	Master: 140 persons	Master: 79 persons	
degrees			
Indicator 2	(Not set but assumed to	Bachelor: 95% of entrants to	Same as 2009
Percentage of students who obtained	be 100%)	JAD Program or 96% of	
degrees (Graduation rate)		students who were sent to Japan	
		Master: 100% of students who	
		were sent to Japan	
(2) Indicators to show academic performa	ance of students (Effect in	dicators)	
Indicator 3	(Not set)	Bachelor: 43% received	Same as 2009
Grades of graduates (Percentage of		"Excellent"	
students who received "Excellent")		Master: No data	

 Table 7: Operation and Effect Indicators

¹⁵ Sub-rating for Effectiveness is to be put with consideration of Impact.

In this ex-post evaluation, effectiveness and impact were defined as follows, based on the objective and the logical sequencing of project components seen in the ex-post evaluation of HELP1 and ex-ante evaluation of HELP3.

[•] Output: Students complete the overseas study programs (graduate).

[•] Direct outcome (effectiveness): Students graduate and get jobs or continue to study for higher degree with capabilities to be qualified engineers.

[•] Indirect outcome (impact): Graduates play active roles as qualified engineers as their workplaces.

¹⁶ In the planning stage of this ex-post evaluation, Indicator 6, "Percentage of students who obtained positions in research and development," was set. However, use of this indicator was abandoned as it was found difficult to precisely identify the status of its achievement from the data collected. Nevertheless, having confirmed sufficiently the degree of achievement of the project objective based on the other five indicators, it was judged that the non-use of this indicator would not affect the ex-post evaluation much.

(Table 7 continued)

	Target	Actual	Actual
	2009	2009	2014
	Completion year	Completion year	5 years after completion
Indicator 4	(Not set but assumed to	Bachelor: 227 persons (85% of	Same as 2009
Length of years till graduation	be 100%)	graduates)	
(Percentage of students who graduated		Master: 79 persons (100%)	
in the shortest period of time)			
(3) Indicator to show the status of employ	ment or education after g	raduation (Effect indicator)	
Indicator 5	Indicator 5	Indicator 5	Indicator 5
Percentage of students who obtained	Percentage of students	Percentage of students who	Percentage of students
positions or proceeded to upper-level	who obtained positions	obtained positions or proceeded	who obtained positions
school in science and technology	or proceeded to	to upper-level school in science	or proceeded to
	upper-level school in	and technology	upper-level school in
	science and technology		science and technology

Sources: Prepared based on JICA documents, responses from the executing agency and the beneficiary survey.

Notes: 1) Baseline value in the appraisal year was zero for all indicators (as these indicators were related to human resources that would be newly produced by this project). 2) Graduates who were not counted in Indicator 5 were those fall under the job categories that are likely to have little direct relations to science and technology (such as personnel affaires or sales divisions, restaurants and interpreting), those out of employment, those whose jobs were not clear, and those who did not answer the relevant questions in the survey.

(1) Attainment of academic degrees (operation indicators)

The number of students who obtained the degrees (Indicator 1) was below the target due to the decrease in the number of students who were sent to Japan compared to the plan at the appraisal. As the judgment on effectiveness was made based on the degree of achievement of the expected outcome through use of the outputs, this indicator, showing the absolute number of degrees awarded (i.e., primarily measuring the degree of production of the outputs), was not counted as a ground for judgment. On the other hand, percentage of students who obtained the degrees (Indicator 2), an indicator that enables a relativistic judgment based on the actual outputs, showed a high degree of achievement. Therefore, the attainment of academic degrees was judged to be good.

(2) Academic performance of students (effect indicators)

It can be said that the academic performance of students after they enrolled to universities in Japan was mostly good based on the degree of achievement of Indicator 3 and Indicator 4.

Regarding grades of graduates from the undergraduate program, 43% of the students received their average grades of "Excellent" or higher (Indicator 3)¹⁷. Looking at other relevant indicators, repetition rate was 15% and dropout rate was 3%. The repetition rate was a little higher than the average of all students including Japanese students¹⁸, indicating a variation in grades among HELP2 students. Nonetheless, the rate is considered to be within an acceptable range, as it did not exceed the rough target of 15% set by the executing agency and the graduation rate (Indicator 2)

¹⁷ The average score calculated by giving 3 points to "Very Excellent" and "Excellent," 2 points to "Good" and 1 point to "Fair" was 2.16.

¹⁸ Referring to "*Gakko Kihon Chosa* (basic survey on schools)" of Ministry of Education, Culture, Sports, Science and Technology of Japan, an average repetition rate of universities in Japan was estimated to be around 4% in the academic year 2013.

was high. Also, according to the executing agency, these results except for the repetition rate were better than those of HELP1 even though the period of study in Japan under this project (HELP2) was one year shorter. The project consultant pointed out that it was attributed to the undergraduate education for the 1st grade students in Malaysia, which was made possible by introduction of twinning, and in which detailed instructions by Malaysian and Japanese lecturers were provided to students based on the common syllabuses developed by the consortium of Japanese universities.

Although no information was available on the academic record of students who obtained the master's degrees, it is considered that their academic performance was good since all of them received the degrees within the designated period of time.

(3) Status of employment or education after graduation (effect indicator)

The status of HELP2 graduates' employment or education in science and technology fields after graduation was found satisfactory. The survey conducted by the executing agency to all graduates right after their graduation and the survey conducted in this ex-post evaluation (a total of 96 graduates responded)¹⁹ both showed that most graduates have had jobs related to science and technology (Indicator 5).

The breakdown of the job status of graduates is shown in Figure 1 and Figure 2. According to the survey at the time of ex-post evaluation, the percentage of engineers decreased and that of lecturers increased compared to in the survey right after graduation. The percentages of researchers and managers also increased. The nationality of the organizations where graduates were employed became diversified from the time right after graduation when a majority of graduates had been engineers of Japanese-affiliated companies: according to the survey right after graduation, 34% of graduates from the undergraduate program had joined Malaysian companies or other organizations and 66% had joined Japanese-affiliated companies or enrolled to Japanese universities (as students); the survey at the time of ex-post evaluation found that 71% of respondents (graduates from the undergraduates program) had jobs at Malaysian companies/ organizations, 13% at Japanese-affiliated companies and 16% at companies/ organizations of other nationality. A similar trend of diversification was seen on graduates from the postgraduate program: the survey right after graduation showed that 22 out of 33 engineers had been employed by Japanese-affiliated

¹⁹ The outline of the beneficiary survey conducted for this ex-post evaluation was as follows.

Respondents: The evaluator delivered the questionnaire to all graduates and collected 96 valid responses (26 females and 70 males). The respondents consisted of 72 graduates from the undergraduate program, 18 from the postgraduate program, and 6 from both programs, and covered all of the five batches of HELP1 and HELP2 (this project), respectively (the respondent graduates from HELP1 were graduates from the postgraduate program of HELP2).

[•] Methods: Self-administered structured questionnaire delivered and collected by email; interviews with 12 respondents (the questionnaire for them was answered and collected at the time of interviews).

[•] Main questions: (a) Effectiveness – satisfaction with the overseas study program and career after graduation; (b) impact – use of what they learned from study in Japan.

[•] Supplementary information was collected from interviews with supervisors of graduates on their jobs (4 persons consisting of 2 from government organizations, 1 (Japanese) from a national university and 1 (Japanese) from a Japanese-affiliated company).

companies (details on nationality of employers in other job categories were not available), while the survey at the time of ex-post evaluation showed that 68% had jobs at Malaysian companies/ organizations, 21% at Japanese-affiliated companies and 11% at multinational enterprises²⁰. Regarding the type of business of graduates' places of employment, the survey at the time of ex-post evaluation found that among 85 respondents who had jobs²¹, 40 persons belonged to private companies, 4 persons belonged to private education or research institutions, 28 persons belonged to public education or research institutions, 4 persons belonged to other government organizations, 6 persons were self employed, and 3 persons gave other answers than above. No difference was seen in the trend of advancement to graduate school and employment by sex and by batch.



Source: Prepared based on documents provided by the executing agency.

Notes: 1) Students who completed the undergraduate program and continued to the postgraduate program both under this project are counted in both graphs. 2) "Others" includes consultants, interpreters, students, job seekers and those who did not provide answer.

Figure 1: Status of Employment, etc. Right After Graduation

(Survey conducted by the executing agency right after graduation)



Source: Prepared based on the result of the beneficiary survey.

Notes: 1) The six students who completed both undergraduate and postgraduate programs under this project are counted in both graphs. 2) "Others" includes consultants, interpreters, students, job seekers and those who did not provide answer.

Figure 2: Status of Employment, etc. in 5-13 Years After Graduation

(Beneficiary survey conducted at the time of ex-post evaluation)

²⁰ Among the 96 respondents to the beneficiary survey, 57 persons (59%) proceeded to graduate school. 42 persons of them entered graduate schools in Japan (33 persons of them received scholarships under HELP).

²¹ In terms of employment pattern, the 85 respondents with jobs consisted of 78 employees, 1 employer (entrepreneur) and 6 self-employed. Besides 5 students, the number of respondents who did not have jobs was 6 including 4 females (some of them answered they were housewives).

3.3.2 Qualitative Effects

(1) Acquisition of higher level of knowledge and skills as well as Japanese work ethics and human resource development methods

Based on reports of the executing agency and the results of the beneficiary survey conducted at the time of ex-post evaluation (Figure 3), it can be said that graduates acquired scientific knowledge and technology as well as knowledge and skills of Japanese language; therefore "acquisition of higher level of knowledge and skills," an expected effect of this project, was achieved. Although "Japanese work ethics and human resource development methods," another expectation for this project, were also acquired through living and studying in Japan (especially, acquisition of Japanese work ethics was agreed by many respondents as shown in Table 3), some respondents said they acquired them through working with Japanese-affiliated companies after graduation from university.

(2) Graduates' satisfaction

The beneficiary survey results show high degree of satisfaction with this project (Figure 3).



Source: Both Figure 3 and Figure 4 were prepared based on the results of the beneficiary survey. Notes: 1) Each score is the average of responses to the question ranging from 1 point ("Strongly Disagree") to 5 points ("Strongly Agree"). 2) "Language" refers to Japanese language. 3) "Work ethics" refers to Japanese work ethics. 4) "S&T" stands for science and technology. 5) "HRD" stands for human resource development. 6) "Others" in Figure 4 includes communication, problem-solving, analytical skills, etc.

Figure 3: Knowledge and skills that graduates acquired from this project and graduates' satisfaction with the project (n=96) Figure 4: Extent to which graduates use knowledge and skills they acquired from this project in their jobs (n=96)

3.4 Impacts

3.4.1 Intended Impacts

"Contribution to Malaysia's economic development through promotion of science and technology," the expected impact of this project, was observed.

Science and technology-related industries (e.g. manufacturing, knowledge-intensive service industry, and education to produce human resources for the above-mentioned industries) have continued to play an important role in the Malaysian economy²². The beneficiary survey found that

²² The value-added of the knowledge- and technology- intensive industries (defined as high-tech manufacturing products

graduates produced under this project have actively played their respective roles in such industries and higher education services using what they had learned in Japan. A number of respondents said that Japanese work ethics and specialized expertise were particularly useful. For example, a majority of graduates who were already in a position to instruct their subordinates pointed out discipline and time management that they had learned in Japan helped them instruct their staff or lead their teams. Also, according to some respondents, they were aware that they had gained advanced knowledge and experiences with public money, and thus regarded it important to give such benefits back to the Malaysian society and economy (Figure 4 and Box 1). The interviews with graduates revealed that there are many cases where graduates no longer use the knowledge of the fields they had majored in at Japanese universities or Japanese language due to career change or promotion. Nevertheless, a certain number of respondents acknowledged that their engineering background was still of help.

⁽such as semiconductors) and knowledge-intensive services (such as financial and communications services) in the MOSTI website) increased, particularly contributed by the growth of the knowledge-intensive services, from 87.1 billion ringgit (approximately 2.5 trillion yen) in 2000 to 141 billion ringgit (approximately 3.8 trillion yen) in 2010. On the other hand, the share of the knowledge- and technology-intensive industries in Malaysia's gross domestic product (GDP) dropped from 25% to 18% during the same period (source: MOSTI statistics). The number of Japanese-affiliated companies in Malaysia was 1,409 as of August 2012, and 52% of them were manufacturing companies such as electric-electronic parts. The new entry of Japanese-affiliated companies to the Malaysian market slowed down in the labor-intensive manufacturing industry, while it increased in the services industry. While the amount of foreign direct investment to Malaysia showed a slight decrease, Japan was the largest investing countries (2.8 billion ringgit (approximately 72.3 billion yen) in 2012) (sources: "Malaysia Handbook 2014," the Japanese Chamber of Trade and Industry, Malaysia (JACTIM) and an interview with JACTIM. The yen values of the figures were calculated using annual exchange rates announced by International Monetary Fund (IMF)).

Box 1: Cases of Status of Graduates

Case 1: University. After obtaining the doctorate degree in Japan, the graduate returned to Malaysia as a lecturer in electronic engineering of Malaysia-Japan International Institute of Technology (MJIIT), to which Japan is providing assistance through an ODA Loan Project²³ aiming to establish a Japanese-style engineering education system. She had achieved a high level of performance such as receiving a prestigious award from an academic society of the United States during her postgraduate period. Her academic advisor in Japan (who was also a lecturer of MJIIT at the time of ex-post evaluation) also highly acknowledged her talent. She commented, "It was attractive to work in Japan (note: she once joined a Japanese semiconductor company after receiving her master's degree), but I wanted to contribute to development of education in Malaysia by using the experiences and knowledge I got in Japan in the Japanese style education of MJIIT."

Case 2: University. The graduate obtained the doctorate degree in Japan and returned to Malaysia. After establishing and running a business, he became a lecturer in automotive engineering of the National University of Malaysia. He commented, "With the money that was spent for my study in Japan, 30-40 students could have studied in Malaysian universities. Therefore, I wanted to bring benefits back to at least that number of students." (Photograph is shown on the first page of this report)

Case 3: Manufacturing company. The graduate is the manager of a paint shop of a Malaysian car manufacturer (with Japanese capital). The manager of a recently built second paint shop is also a HELP2 graduate. They contributed a lot to technology transfer from Japan in terms of both technical knowledge and Japanese language skills. A co-manager dispatched from Japan highly acknowledged their performance and Japanese language abilities. (Upper right photograph)





Case 4: Information Technology (IT) services. The graduate is a manager in the IT support center of one of the biggest multinational IT solution company. She supervises her staff to respond to customers in Asia in Japanese and other languages, and has received recognition and awards for her outstanding performance at the Asian level. (Left photograph)

Case 5: Malaysian governmental organization. The graduate serves in Malaysian Communications and Multimedia Commission (MCMC). His supervisor highly valued his disciplined attitude and time management skills. She commented, "Japanese workplace culture somehow works in a government organization, where there is a clear hierarchy." (Lower right photograph, with the supervisor)



Case 6: Malaysian governmental organization. The graduate serves in Multimedia Development Corporation Sdn. Bhd. (MDEC). Her supervisor highly valued her language abilities and communication skills. Although her current job is promotion of investment (including investment from Japan), her engineering background is an advantage. Also, the attitude of analyzing and examining things in detail and problem-solving approaches she acquired in Japan are useful for her work.

(Source: Beneficiary survey)

²³ "Development Project for Malaysia-Japan International Institute of Technology (MJIIT)" (Loan Agreement signed in 2011).

3.4.2 Other Impacts

No negative impacts were observed. As a positive impact, a way to reduce cost for study in Japan was found by the introduction of twinning to this project. According to a study by JICA Research Institute²⁴, there was no significant difference between those who graduated from the undergraduate program of this project (i.e. stayed in Japan for three years) and those who completed the "traditional" study-in-Japan program (i.e. stayed in Japan for four years) in terms of their employment status, job ranks, salaries and so forth, and therefore, cost effectiveness of twinning was proven. Also, YPM acquired know-how of twinning through implementation of this project, which led to the realization of the "3+2" system in the subsequent phases of HELP (HELP3 and MJHEP)²⁵. In those phases, YPM has gradually replaced Japanese lecturers with Malaysian lecturers for the part of education in Malaysia.

As an impact on Japanese universities, internationalization of universities was promoted²⁶. The project consultant commented that particularly for the private universities that had not yet accepted many international students, this project played a pioneering role in promoting their preparation and management to receive international students. Also, based on the consortium of Japanese universities formed for this project, the Registered Non-Profit Organization Japanese University Consortium for Transnational-education (JUCTe) was established in 2006 as an organization to support international students. JUCTe is involved in the implementation of MJHEP that is equivalent to HELP4.

In addition, as Box 1 shows an example, an impact was found on Japanese-affiliated companies such as smooth promotion of shifting of plants and technology transfer as the graduates played their role as bridge engineers (human resources to serve as an intermediary between the partner country and Japan).

As stated above, this project has largely achieved its objectives. Therefore effectiveness and impact of the project are high.

²⁴ Yoshiko Koda and Takako Yuki, "The Labor Market Outcomes of Two Forms of Cross-Border Higher Education Degree Programs between Malaysia and Japan" in "Analysis of Cross-Border Higher Education for Regional Integration and Labor Market in East Asia," JICA RI Working Paper, JICA Research Institute, 2012. The study covered HELP3 graduate as well.
²⁵ The continuation of twinning-based HELP also led to the authorization of the JAD Program as a diploma-awarding institution. Although the JAD Program had been authorized as a pre-matriculation education institution called the Japan Matriculation Center (JMC) in 1991 (at the time of commencement of HELP1), it had not been allowed to award degrees that are effective in Malaysia. Similarly, the JAD Program under HELP2 (this project) could not certify students who completed it to be eligible to transfer to universities in Malaysia, as HELP2 applied the "2+3" twinning system that provided only one-year undergraduate education in Malaysia, which did not satisfy the requirement for transfer (i.e. two years or longer). Since HELP3 (2008-), with introduction of the "3+2" system, two-year undergraduate education has been provided in Malaysia, and thus awarded the diploma to students who completed the JAD Program. With the diploma, students can transfer to Malaysian universities at their 3rd grade in case they would not go to Japan.

²⁶ Interviews with stakeholders from the cooperating Japanese universities were not possible, as the key persons had already retired. Instead, information was collected from existing documents and interviews with the project consultant.

3.5 Sustainability (Rating: ③)

On each of the following aspects, sustainability was evaluated in two dimensions: (1) whether sustainability of effects brought about by the graduates under this project is secured (i.e. sustainability of project effects); and (2) whether the executing agency continues programs to support overseas study (i.e. sustainability of overseas study programs). The second dimension was used only in a supplementary manner, as it was not the main objective (effect) of this project.

3.5.1 Institutional Aspects of Operation and Maintenance

The system of operation and maintenance has mostly been established. (1) Regarding sustainability of effects of this project, there are some follow-up mechanisms for graduates such as the Return to Malaysia Program and the alumni association. The Return to Malaysia Program is organized every year by YPM for fresh HELP graduates. During the program of three days and two nights, graduates participate in activities such as reporting on their stay in Japan and lectures and discussions on working in Malaysia, etc. During the program, YPM collects the baseline data for its tracer study. Also, YPM organizes the Home Coming Day every year. In this event, YPM invites HELP graduates to the JAD Program and have them speak to current students, thereby enhancing educational effects on students and maintaining communications with the graduates.

As the alumni association of HELP, YPM established the Japan Alumni of Yayasan Pelajaran MARA (JAPEMA) in 2006. JAPEMA is entrusted with the tracer study of HELP graduates by YPM. Since establishment up to the time of ex-post evaluation, one HELP graduate has managed to operate JAPEMA as the representative. At the time of ex-post evaluation, JAPEMA is an unregistered organization, and its activities have been carried out on a voluntary basis. However, YPM is planning to register JAPEMA as a non-profit organization (a society registered to the Registry of Society (ROS)).

Although there had been no particular mechanism to proactively use the outcome of study in Japan in employment in Malaysia, there was no problem with that as most students had decided on their jobs before they returned to Malaysia²⁷.

(2) Sustainability of overseas study programs has been secured. The status and organization of YPM as a subordinate organization of the Majlis Amanah Rakyat (MARA) (Indigenous People's Trust Council) under the Ministry of Entrepreneur and Cooperative Development have not been changed since the time of project completion. The HELP unit of YPM has implemented HELP3 and MJHEP.

²⁷ Since 2011, there have been several facilities such as TalentCorp (a government organization in charge of development of high-level human resources in Malaysia (e.g. through internship, and scholarship) and invitation of Malaysian living abroad back to the country) and the Management Apprenticeship Programme of the Public Service Department that provides graduates of overseas study programs under the Look East Policy with opportunities of three-month apprenticeship at the collaborating companies, government organizations, etc.

3.5.2 Technical Aspects of Operation and Maintenance

No problem was seen in terms of technical aspects of operation and maintenance. (1) Sustainability of effects of this project is not applicable by the nature of this project that the degree of maintenance of knowledge, etc. learned from study in Japan depends on individual graduates. (2) As for sustainability of overseas study programs, YPM has necessary skills as it has implemented HELP3 and MJHEP with twinning smoothly (see also "3.4.2 Other Impacts").

3.5.3 Financial Aspects of Operation and Maintenance

No problem was seen in terms of financial aspects of operation and maintenance. (1) Sustainability of effects of this project is not applicable by the nature of this project. (2) As for sustainability of overseas study programs, although the amount data were not available on financial sources and balance related to YPM's overseas study programs including the JAD Program, it can be said that there is no financial problem as YPM has implemented MJHEP, the successor project of HELP, without external financial assistance.

3.5.4 Current Status of Operation and Maintenance

No problem was seen in the status of operation and maintenance. (1) Sustainability of effects of this project is not applicable by the nature of this project. (2) As for sustainability of overseas study programs, the education and laboratory equipment procured under this project were handed over to the successor project and utilized. After that, most of the equipment past the service life and ended their role. It was observed in the site visit for the ex-post evaluation that the educational equipment procured in the subsequent phases was well maintained²⁸.



A class for the 1st grade undergraduate students of the JAD Program of MJHEP that was going on at the time of ex-post evaluation (MARA University of Technology)



Fluid viscometers procured under this project. Still used by the 2nd grade undergraduate students of the JAD Program (MARA University of Technology)



School building where the JAD Program was implemented under this project. It belonged to YPM College at that time, and to MARA Polytechnic College at the time of ex-post evaluation.

²⁸ The venue of the JAD Program have been changed from YPM College Bangi (HELP1 and HELP2), to the University of Selangor (HELP3) and then to MARA University of Technology (MJHEP), according to the scale of education required in each phase. The equipment procured under this project was moved to the new venues, and it was confirmed that some equipment was still kept at MARA University of Technology. YPM College was changed to MARA Polytechnic College (KPTM), and there is no relationship between KPTM and HELP.

In this way, no major problems have been observed in the institutional, technical and financial aspects of the operation and maintenance system. Therefore sustainability of the project effects is high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project is the second phase of a series of projects called HELP that aims at human resource development in science and technology by providing support to Malaysian students for study at universities in Japan. Under this project, a total of 270 undergraduate and 79 graduate students obtained the bachelor's and master's degrees, respectively, in Japan. Relevance of the implementation of this project is high mainly because its objective is consistent with Malaysia's development policies and needs related to (i) promotion of knowledge- and technology-intensive economy through development of high-level human resources and (ii) in doing so, learning from Far East Asia including Japan. Efficiency is evaluated to be fair mainly as the project sent a smaller number of students to Japan than planned, while the project cost was within the plan. Effectiveness and impact are high since most students completed their programs with good grades and are active as engineers, lecturers, etc. using what they had learned in Japan such as work ethics of Japan and knowledge and skills in specialized fields. The undergraduate program of this project is characterized by "twinning," with which part of undergraduate education is provided in Malaysia, and students transfer to universities in Japan in the middle of the program. The introduction of twining made an impact on reduction of cost of study in Japan that had been said to be high as well as improvement of twinning in the next HELP that led to the improved efficiency and effectiveness of study in Japan. As for sustainability, no problem was seen in terms of both follow-ups for graduates produced under this project and continuation of overseas study programs by the executing agency.

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

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

(1) YPM is recommended to maintain the current good implementation status of MJHEP.

(2) YPM is recommended to continue to follow up HELP graduates. This would be beneficial in such ways that (i) knowing about achievement of graduates would improve motivation of current students, (ii) graduates would be more aware that they are valuable as being equipped with high level knowledge and understanding of Japan, which would eventually enhance the effect of study in Japan. As the tracer study of graduates takes a lot of time and effort, it is also important to accomplish the planned registration of JAPEMA to ROS in order to maintain and reinforce the conduct of study and use of the study results without relying on voluntary work.

4.2.2 Recommendations to JICA

The higher education human resources who were developed by this project and who have gained a good understanding of Japan should be regarded as resource persons for future cooperation projects with Malaysia. Therefore, information on those human resources should be maintained and updated as much as possible. So far, a tracer study was conducted by the JICA Research Institute in 2012, and updated information has been obtained from the executing agency in relation to HELP3 that was still ongoing. After completion of HELP3 as well, it is desirable that JICA collect the updated information as much as possible.

4.3 Lessons Learned

Setting the target number of students and cost estimation in overseas study projects

In this project, the planned number of students to be sent to Japan was reduced during the implementation, as the cost estimation at the appraisal cut the unit cost for study in Japan to minimum without allocation to stay in Japan for taking exam for transfer admission and one-year repetition (that was permitted in the rule), and the Malaysian government increased the cost for overseas study. In a future project to provide support for overseas study, a precise cost estimation linked to setting of the target number of students is important for ensuring the expected effect in quantitative terms (it will also be good to set a minimum requirement such as "at least XXX persons," as this project did when it revised the planned number). Although it was difficult in this project due to the economic conditions of Malaysia at that time, it should be considered in the planning stage to articulate that even in case where the ODA Loan fund cannot cover the planned number of students due to cost increase, the target number should be kept by increasing funding from the partner country.

Comparison of the Original and Actual Scope of the Project

Item	Plan	Actual
1.Project Outputs		
(1) Overseas study program	400 persons	280 persons (of which 270
for undergraduate students		graduated)
(2) Overseas study program	140 persons	79 persons (all graduated)
for postgraduate students		
(3) Procurement of	Education and laboratory	Places of installation were as
equipment	equipment for Computer	planned
	Laboratory and Engineering	722 pieces
	Laboratory	
(4) Dispatch of teaching staff	Science and engineering,	Subjects were as planned
	general education, Japanese	1,332 man-months
	language	
	1,738 man-months	
(5) Consulting services	146 man-months	Same as planned
2.Project Period	April 1999 – March 2008	April 1999 – March 2009
	(108 months)	(120 months)
3.Project Cost		
Amount paid in Foreign currency	5,484 million yen	4,880 million yen
Amount paid in Local currency	706 million yen	966 million yen
	(22 million ringgit)	(31 million ringgit)
Total	6,190 million yen	5,846 million yen
	5 205	4.00.4
Japanese ODA loan portion	5,285 million yen	4,984 million yen
Exchange rate	1 ringgit – 31 9 ven	1 ringgit – 30 5 ven
	$(\Delta s \text{ of November 1008})$	(Average between 1000 and
	(AS 01 100 cm 0 cm 1990)	2000)
		2007)