Samoa

Ex-Post Evaluation of Japanese ODA Grant Aid Project

"The Project for Upgrading and Extension of Samoa Polytechnic"

External Evaluator: Keisuke Nishikawa

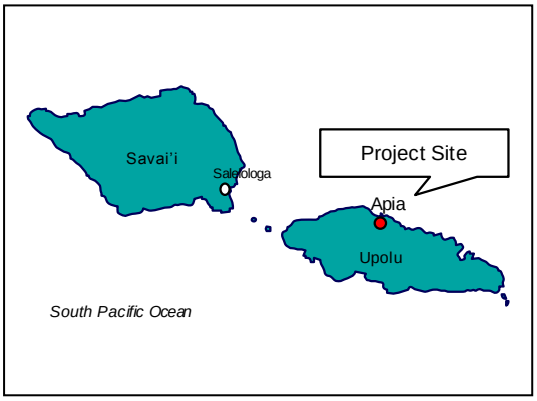
Ernst & Young Advisory Co., Ltd.

0. Summary

The Institute of Technology (IoT) of the National University of Samoa (NUS), formerly known as Samoa Polytechnic (SP) and whose facilities were upgraded under this project, plays an important role in producing graduates necessary for the development of the Samoan economy as this country's only tertiary level technical & vocational education and training institute. This project supported the improvement of deteriorating facilities and replacement of equipment and was consistent with the country's policy to develop human resources equipped with vocational skills capable of meeting the demands of the business community. While the project output changed slightly from its original scope, both project cost and period were within the original plan. With regard to the effectiveness of the project, some improvement is desirable in terms of reversing the decline in student enrolment in some programmes of the School of Engineering and also in encouraging greater cooperation and interaction with the private sector. However, it was also observed that the staff and students of NUS are largely satisfied with the quality of facilities and equipment as well as that of the education provided. Regarding sustainability of the project, while there are no issues on the organisational structure and technical skills, a lack of maintenance management plan and a shortage of funds to fully support an operation and maintenance budget due to the university's operating deficit could be a future concern.

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

1. Project Description



Project Location

Workshop – School of Engineering

1.1 Background

Samoa Polytechnic[1], the only tertiary technical & vocational education and training (TVET) institute in Samoa, consisted of the following three schools: Technology, Commerce & General Studies,[2] and Maritime. There were approximately 500 students enrolled and it was producing some 260 specialists and technicians annually to the public and private sectors in the country. Also, SP had established the Industry Advisory Panel (IAP) in order to incorporate the needs of businesses into their training courses, and was trying to modernise the contents of those courses by soliciting expert advice as necessary. However, as it had been 30 years since the SP facilities were first built, they had deteriorated and school's equipment had also become obsolete and was insufficient, making it difficult to provide an education and training appropriate for meeting the demands of the country's industries.

Moreover, an upgrading of SP was urgently needed in light of the planned merger between SP and the former NUS as part of the consolidation of Samoa's tertiary educational institutes led by the Government of Samoa.

Under these circumstances, developing the training facilities of the Schools of Technology, and Commerce & General Studies (located adjacent to the NUS Campus), in addition to an administration building in consideration of the planned merger with NUS, was viewed as necessary, as well as procuring the proper equipment needed for these facilities.

1.2 Project Outline

The objective of this project was to develop and strengthen human resources both qualitatively and quantitatively by newly constructing and rehabilitating TVET facilities as well as procuring training equipment at Samoa Polytechnic.

Grant Limit / Actual Grant Amount	1,625 million yen / 1,625 million yen (902 million yen (Phase I), 723 million yen (Phase II)
Exchange of Notes Date	11 August, 2004 (Phase I) 14 July, 2005 (Phase II)
Implementing Agency	Ministry of Education, Sports & Culture and Samoa Polytechnic
Project Completion Date	17 February, 2006 (Phase I)

[1] It became part of the university after the merger with NUS, and the name was also changed to National University of Samoa – Institute of Technology (NUS-IoT).
[2] School of Technology has been renamed as School of Engineering, and School of Commerce & General Studies is now called School of Business & General Studies.

		27 October, 2006 (Phase II)
Main Contractor	Construction	Kitano Construction Corp.
	Procurement	NBK Corporation
Main Consultant		Yamashita Sekkei Inc.
Basic Design Study		November, 2003 – May, 2004
Related Projects		[Technical Cooperation[3]] Strengthening Technical and Vocational Education Development in Samoa (2006 – 2008) Follow-up Project for S-TVET (2010) [Projects by Other Organisations] AusAID (Australia): Australia-Pacific Technical College Project (2007 – 2011 (Phase I), 2011 – 2015 (Phase II)), etc.

2. Outline of the Evaluation Study

2.1 External Evaluator

Keisuke Nishikawa (Ernst & Young Advisory Co., Ltd.)

2.2 Duration of Evaluation Study

Duration of the Study: November, 2010 – November, 2011

Duration of the Field Study: 9 – 21 April, 2011, and 19 – 23 June, 2011

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

3.1 Relevance (Rating: ③[5])

3.1.1 Relevance with the Development Plan of Samoa

At the time of project planning, "Strategy for the Development of Samoa 2002-2004", the country's development plan, spelled out nine strategic outcomes to improve its economy and social wellbeing, in which the second outcome was to 'Improve Education Standards'. Key strategies under this outcome had the focus on improving:

i) Teacher training standards and quality of teachers

[3] With the need to increase the number of highly-skilled workers in Samoan industries, these technical cooperation projects aimed at strengthening the management system of NUS-IoT so that graduates with skills matching the needs of the industries will be produced. The project was implemented for two years from 2006 to 2008 with the objectives of enhancing cooperation with businesses, strengthening capacity of NUS-IoT and SATVETI (Samoa Association of Technical and Vocational Education and Training Institutes), and properly managing and maintaining facilities and machinery. Also, a short-term expert was dispatched in 2010 (March – November) in its follow-up project.

[4] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

[5] ③: High, ②: Fair, ①Low

ii) Curriculum and teaching materials
iii) Educational facilities
iv) Coordination between private and public stakeholders
v) Department of Education (DOE) management

In the third strategy, 'to improve education facilities', it was clearly stated that assistance was being sought for the upgrade of Samoa Polytechnic campus. During the same period, a merger of SP and NUS was being planned in 2006 in order to rationalise and enhance Samoa's tertiary education institutes, to establish an effective teaching environment, and to facilitate interaction with the private sector. As a result of this merger, SP was to become part of NUS and to be named NUS-IoT (National University of Samoa – Institute of Technology).

Under the current national development strategy "Strategy for the Development of Samoa 2008-2012", the 'Priority Area 2: Social Policies' also recognises the importance of improving education outcomes as one of the goals. In the sectoral policy of "Strategic Policies and Plan: July 2006 – June 2015', an improvement of adult literacy and access to the skills and continuing education for adults and youth is deemed essential and one of the visions shows the need of quality technical, vocational and applied educational programmes to enable people to be gainfully employed in order to meet the skills requirements of industry and commerce in Samoa. NUS-IoT is positioned as the main technical and vocational institute for this purpose.

In this context, the importance of education, including vocational education, has been high in Samoa's development strategies. Policies have clearly stated the necessity for the improvement of facilities at SP as the only tertiary TVET institute at the time of project planning. Policies at the time of ex-post evaluation also recognise NUS-IoT as the institute playing a central role in Samoa's vocational education. Therefore, it can be concluded that this project has been consistent with the national policies as it contributed to the improvement of facilities that have a key role in the country's technical and vocational education and training.

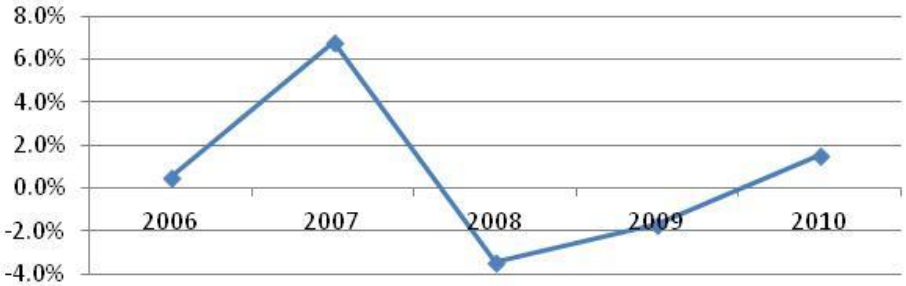
3.1.2 Relevance with the Development Needs of Samoa

SP had been producing specialists and technicians, trained in the respective programmes at School of Technology, School of Commerce and General Studies and School of Maritime, to the public and private sectors in the country. While SP had a crucial role for the economic development of Samoa, most of the facilities had deteriorated as they were more than 30 years old and equipment was also lacking, leading to difficulties in educating and training students effectively.

While the Samoan economy temporarily recorded negative growth due to the global

financial crisis in 2008 and also to tsunami damage in 2009, it was basically growing steadily in the 2000s, which contributed to the steady demand for technicians who could support economic activities. Also, a strong demand for skilled labour was observed due to social factors, e.g., an increase in the number of tradesmen needed during the reconstruction period after the tsunami, and for preparation after the traffic law was changed from driving on the right-hand side to driving on the left.

Tourism is identified as a priority development area by the government. NUS-IoT is playing a vital role in this regard as the students trained at NUS-IoT have acquired basic knowledge to support the tourism and hospitality industry when they graduate, and this should be a big advantage for potential employers. In addition, some of the hotels are training their staff at NUS-IoT to help brush up their skills.



Source: Samoa Bureau of Statistics

Figure 1: GDP Growth Rate

Therefore, with the growing economic activities centred around the tourism industry, etc., needs for skilled labour with vocational training are generally seen as high both during the project implementation phase and the post-project period. It can be said that NUS-IoT has played a big role both at the time of project planning and also at the time of ex-post evaluation.

3.1.3 Relevance with Japan's ODA Policy

In "The Okinawa Initiative: Regional Development Strategy for a More Prosperous and Safer Pacific" adopted at the Third Pacific Leaders Summit Between Japan and Member of the Pacific Island Forum held in May 2003, Japan expressed five priority policy targets for cooperation in the Pacific – Enhanced Security in the Pacific Region, A Safer and More Sustainable Environment, Improved Education and Human Resources Development, Better Health, and More Robust and Sustained Trade and Economic Growth. Based on these policy targets, Japan identified priorities for Samoa in the following five areas: (1) Human Resource Development (with reference to the

TVET institute), (2) Environment Conservation, (3) Development of Economic Infrastructure, (4) Healthcare Improvement and (5) Promotion of Agriculture and Fisheries. Consistency with Japan's assistance policy at that time can be observed as this project corresponds to target area (1).

Also, the development of facilities and equipment in tertiary education is an area in which only Japan was providing cooperation[6] and no duplication with other development partners was observed.

This project has been highly relevant with the country's development plan, development needs, as well as Japan's ODA policy, therefore its relevance is high.

3.2 Efficiency (Rating: ③)

3.2.1 Project Outputs

This project involved the construction of new facilities for the School of Technology and the School of Commerce & General Studies, and an administration building for the entire post-merger NUS, in addition to the renovation of existing facilities. The project period was divided into Phase I (August 2004 – February 2006) and Phase II (July 2005 – October 2006). A comparison of items to be developed and the final output is shown in Tables 1 and 2 below.

Table 1: Comparison of Original Plan and Actual Output (Facilities)

Main Facility	Area Planned (m^2)	Actual Output		Remarks
		Area Constructed (m^2)	Details of Construction	
School of Technology	3,513	3,069	Workshop B, C, D, E	In addition, a pump house, corridors (outside) and a guard room, etc. were constructed as planned. A design change with a reduction of 445.89m^2 was made to the Workshops.
School of Commerce & General Studies	1,567	1,565	LL/PC Labs, Lecture Rooms, Drawing Room, Tourism & Hospitality Building	
Administration	840	840		
Renovation of Existing Buildings	1,627	1,627	Including a demolition work of 484.58m^2	
TOTAL	**7,547**	**7,101**		

[6] Development of the campus of the former NUS, which merged with SP and is now called NUS-IHE: Institute of Higher Education, was implemented as 'The Project for Upgrading of the National University of Samoa (Grant Aid project)' in 1995-1996.

Table 2: Comparison of Original Plan and Actual Output (Equipment)

Facility	Original Plan	Actual Output
School of Technology	Brake speedometer tester, MIG/MAG welder, Thickness planer, Wood lathe, Electronic block system, Kit cool/freeze room, Tractor & trailer, Lathe machine, Universal milling machine, Profile cutting machine, Cut-off machine, Logic analyser, Digital oscilloscope	Brake speedometer tester, MIG/MAG welder, Thickness planer, Wood lathe, Electronic block system, Kit cool/freeze room, Tractor & trailer, Lathe machine, Universal milling machine, Profile cutting machine, Cut-off machine, Logic analyser, Digital oscilloscope
School of Commerce & General Studies	Desktop computer, Laptop computer, Desks & chairs for training, Electric typewriter, Drawing board set with drafter, LL control station, Overhead projector, Iron press machine	Desktop computer, Laptop computer, Desks & chairs for training, Electric typewriter, Drawing board set with drafter, LL control station, Overhead projector, Iron press machine
Administration	Photocopier machine, Shredder, Desktop computer, Filing cabinet, Meeting desks & chairs, Guillotine, Binding machine	Photocopier machine, Shredder, Desktop computer, Filing cabinet, Meeting desks & chairs, Guillotine, Binding machine

The facilities were generally developed as planned, except the buildings for the School of Technology. In order to avoid excessive heat, these facilities were designed to ensure improved heat insulation capacity, deeper eaves, higher floor height, adjusted incident sunlight, and better ventilation. After the detailed design survey, there was a design change for these buildings, and their floor area was reduced by 13%. This change was discussed and approved among the people concerned and interviews with the implementing agency have revealed that the reduction has not caused any operational problems.

With regard to the equipment, it was confirmed in the survey that the major machines called for in the basic design study were actually procured during the project. All major equipment was confirmed as shown in Table 2 and in operation, including some machines whose parts were replaced after breakdowns.

In this project, in addition to the development of facilities and the procurement of equipment, technical assistance (86 days) by two experts was provided in order to improve the capabilities and standard techniques for maintaining the equipment. As a result of this technical assistance, a codebook that could also be used as an inventory book was created through the use of an asset management software called Catsoft. In 2010, this codebook was integrated with the asset management software of NUS-IHE into a new management software, called Attache.

Planning also called for the Government of Samoa to undertake outdoor works such as gardening and fencing, and provide facilities for distribution of electricity, telephone line, water supply, and so on. These works were all implemented as planned and an environmental impact assessment for this project was also conducted, in which no environmental issues were identified.

Photo 1: Automotive Programme Workshop

Photo 2: PC Laboratory

3.2.2 Project Inputs

3.2.2.1 Project Cost

The maximum project cost in the Exchange of Notes was set at 1,625 million yen and the actual project cost totalled 1,625 million yen (100% of the original plan). The cost of the entire project including that incurred by the Samoan government was estimated at 1,657 million yen, but it was difficult to compare the total project costs as the actual disbursement record of the Samoan government was not available. By considering the outdoor works and the installation of electricity, telephone line and water supply implemented, it is estimated that the Samoan side also disbursed its portion of the planned project cost.

3.2.2.2 Project Period

The period of this project[7] comprised of two phases. As Phase I included the detailed designing of Phase II components, Phase II involved only the tendering and construction processes. Therefore the original and actual periods can be compared as shown in Table 3 below.

Table 3: Comparison of Original and Actual Project Periods

		Original	Actual
Phase I	Detailed Design (Phase I + Phase II) Tendering	} 7 months	3 months (Sep. to Dec. 2004) 3 months (Jan. to Mar. 2005)
	Construction	12 months	11 months (Mar. 2005 to Feb. 2006)
Phase II	Tendering Construction	3 months 12 months	3 months (Aug. to Nov. 2005) 11 months (Dec. 2005 to Oct. 2006)
	Technical Assistance	1.5 months	1.5 months (Apr. to Jun. 2006) * Implemented in parallel with Phase II

[7] The project period can be defined as "Detailed Design and Tendering + Construction" period.

Phase I was completed in 17 months, 89% of the original plan of 19 months, and Phase II was completed in 14 months, 93% of the original plan of 15 months. As a result, the entire project period was 31 months, 91% of the period originally planned.

The technical assistance component, implemented in parallel with the construction of Phase II components, was conducted in 1.5 months as planned. Seen by sub-phases, there were no delays in either of the design or tendering processes, and also the construction periods were one month shorter in their respective phases, contributing to the punctual implementation of the entire project.

Both the project cost and project period were within the plan, therefore efficiency of the project is high.

3.3 Effectiveness[8] (Rating:②)

3.3.1 Quantitative Effects

At the time of planning, it was anticipated that the number of students graduating with certificates and diplomas from the School of Technology and the School of Commerce & General Studies would increase as a result of the project.

Table 4: Quantitative Indicators Before and After the Project

(Unit: Person)

	Original Plan		Actual Figures (At Ex-Post Evaluation)				
	Actual (2003)	Target (2010)	2006 (Completed)	2007	2008	2009	2010
School of Technology (School of Engineering at present)	106	225	272	256	224	161	198
School of Commerce & General Studies (School of Business & General Studies at present)	107	180	262	267	270	310	338

Source: Data provided by NUS

The School of Business & General Studies steadily increased the number of graduates to 188% of the target in 2010, particularly due to the increasing number of students in the tourism & hospitality programme backed by the growth of the tourism industry. On the other hand, while the number at the School of Engineering was already larger than the target figure when the project was completed in 2006, it dropped significantly after that to 59% of the 2006 level in 2009. In 2010 (target year), the number stood at 88% of the

[8] The evaluation result of the project impacts is incorporated into the Effectiveness rating.

original target. One of the major factors for this recent decrease was identified in the follow-up project (implemented in 2010), the "Strengthening Technical and Vocational Education Development Project". It found that secondary school students have a negative image of engineering subjects. Another factor could be a lack of secondary school visits by NUS-IoT in recent years (to introduce the programmes by visiting each school in person) though this activity had been done before SP merged with NUS. A closer look into the School of Engineering indicates that the number of students has decreased remarkably in some of the programmes such as Welding & Fabrication and Plumbing & Sheetmetal, leading to the overall decrease. As the related industrial sectors do not have attractive employment prospects and job opportunities are scarce, students are seen as being reluctant to enter programmes catering to these sectors. By contrast, some other programmes such as the Automotive Engineering, Construction & Joinery and Radio & Electronics have sufficient student numbers due to the robust demand in the private sector.

In the beneficiary survey[9] with the NUS-IoT students, a question was asked on whether they thought it would be easier for them to find jobs after completing their programmes. 23% of the students were negative and 43% replied they were uncertain. The main reasons for such answers are that few job opportunities exist in the small market except for some industries and there is strong competition among graduates. Judging from these answers by the students, prospects for job opportunities available after studying at NUS-IoT are ambiguous, which implies some difficulties in securing sufficient number of students for academic areas related to stagnant industrial sectors.

Table 5: Employability Survey

[Question] Do you think that the graduates from NUS-IoT will find it easier 'than the past students) to get jobs in the local economy? (79 respondents)	Yes	No	Not Sure
	34.2%	22.8%	43.0%

⇩ Reasons

Strong competition among graduates	Few job opportunities in a small market	Skills not matching market needs	Many students being attracted to go overseas	Other
25.7%	37.1%	11.4%	14.3%	14.3%

3.3.2 Qualitative Effects

At the time of planning, the following points were expected as qualitative effects of the project.

[9] The beneficiary survey was conducted through questionnaires with 79 students and 50 staff of NUS-IoT. These individuals were asked about the improvement and utilisation of facilities and equipment, improvement in the quality of education, maintenance of facilities and equipment, and the levels of satisfaction. Some questions differed between the students and the staff.

(1) Replacement or renovation of training facilities and equipment at SP, which will improve the training environments
(2) Possible to offer training curricula matching the needs of the local businesses
(3) Training of professionals and experts required in the private sector and governmental organisations will be possible
(4) Provision of barrier-free facilities will create an environment whereby the disabled can participate in vocational training courses and use the facilities

It was observed that formerly deteriorated facilities were now larger and sturdier, and that the workshop equipment was also appropriately located. These improvements are welcomed by the staff and the students, as shown in the beneficiary survey where nearly 90% of the staff reported that the facilities 'Improved a lot' or 'Improved', and approximately 80% of the staff feel the same in regard to the equipment. In addition, more than 70% of the students responded that the facilities and equipment were 'Very good' or 'Good'. Therefore, it can be concluded that the training environments have been improved and currently enjoy generally good reputations.

Table 6: Assessment of Improvement in Facilities and Equipment (Staff)

[Question] What do you think about the facilities and equipment built and installed under the project, compared to what they were like before the project?		Improved a lot	Improved	Same	Worse	A lot worse
	Facilities (49 respondents)	38.8%	49.0%	8.2%	4.1%	0.0%
	Equipment (36 respondents)	11.1%	69.4%	13.9%	5.6%	0.0%

Table 7: Assessment of Facilities (Student)

[Question] What do you think about the NUS-IoT facilities built under the project? (76 respondents)	Very good	Good	Same	Bad	Very bad
	21.1%	52.6%	13.2%	5.3%	7.9%

With regard to the development of human resources that would contribute to the private and public sectors, industry bodies such as the Samoa Chamber of Commerce & Industry and the Samoa Association of Manufacturers and Exporters are positive in their evaluation of the basic knowledge and skills possessed by NUS-IoT graduates and also with the overall contribution of NUS-IoT to business development as graduates are now working for a number of companies including Yazaki EDS Samoa, the country's largest employer in the private sector. Further, there is an apprenticeship scheme

promoted by the Ministry of Commerce, Industry and Labour, to enable workers with several years' private sector experience to study at NUS-IoT to get a theory-based education. This can be regarded as an effort to develop overall human resources. On the other hand, however, insufficient aspects were also observed in terms of regular cooperation with the business community. After the activities of the Industry Advisory Panel (IAP)[10], strengthened in JICA's technical cooperation project "Strengthening Technical and Vocational Education Development in Samoa (2006 – 2008)" and the subsequent follow-up project in 2010, were completed, there has not been any major progress made on those activities. They appeared stagnant at the time of ex-post evaluation. Both groups of stakeholders recognise that, in addition to information exchanges and cooperation, industrial technical standards have yet to be introduced, which would help with identifying technical training needs. Therefore, it is desirable that efforts made during the technical cooperation projects are pursued further by these parties.

With regard to the realisation of barrier-free environment, there did not seem to have been any students experiencing difficulties moving around the campus. But, it is beneficial to have incorporated designs making it easier to move between the facilities, which are built on a sloping land, should there be any person requiring such barrier-free facilities.

Based on the above results, this project has somewhat achieved its objectives, therefore its effectiveness is fair.

3.4 Impact

3.4.1 Intended Impacts

An indirect effect of this project was expected to be the industrial development by qualitatively and quantitatively improving vocational education and training at SP through the development of facilities and equipment.

It was revealed through the beneficiary survey of the students that the quality of education and training is evaluated fairly highly. Three quarters of students answered 'Highly adequate' or 'Adequate' to the question on whether the quality of education/training is adequate with the new facilities and equipment (Figure 1), and also 80% of them offered positive feedback regarding the direct application of the subjects learned at NUS-IoT to their actual work conditions (Figure 2).

[10] A committee, established during the SP period, to exchange information between SP and the industry groups so that the needs of the private sector can be reflected in the curriculum

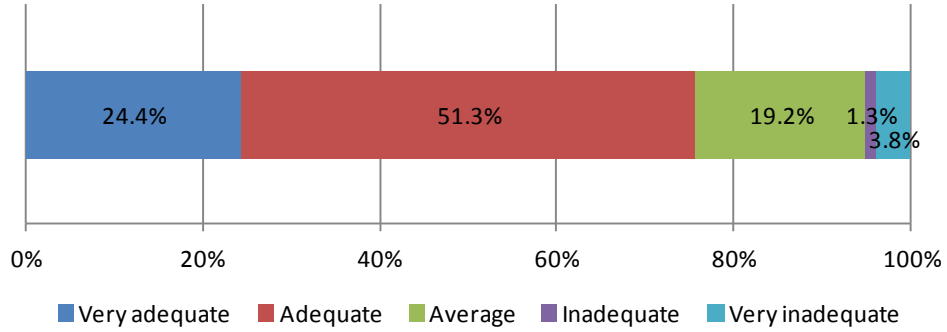


Figure 1: Adequacy of the Quality of Education after the Project (78 responses)

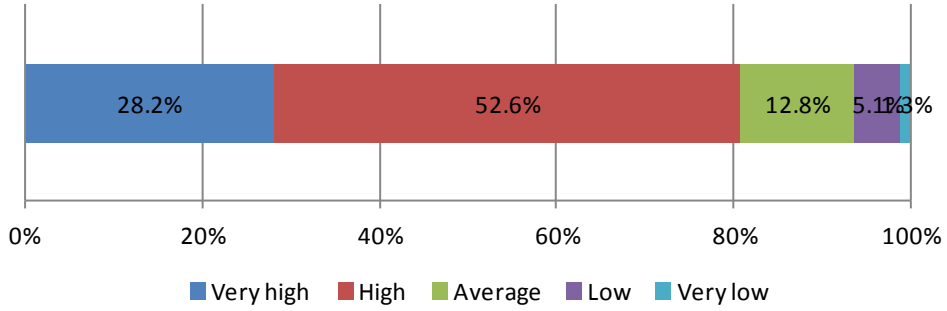


Figure 2: Direct Applicability of the Subjects Learned at NUS-IoT (78 responses)

Seen on a macro-level perspective, industrial sectors closely related to NUS-IoT are construction, electricity and water, and hotels and restaurants, etc., representing 12.4%, 5.1% and 3.2% of GDP (2010), respectively. These industries led the recent growth of the Samoan economy, as shown in Table 8. While there are no data exhibiting the extent of the contribution that graduates are making to the economy, it is presumed that the graduates from NUS-IoT, the top-level TVET institute in Samoa, have underpinned part of the growth of these industries as a significant number of technicians and experts are needed.

The tracer survey of the 2002-2006 graduates, conducted under JICA's technical cooperation project mentioned above, the only survey of this kind, showed that the employment rate of those graduates was as high as 87.2%.

Table 8: GDP Growth by Industry (2006 to 2010)

Industry	Construction	Electricity/Water	Hotel/Restaurant	All Industries
GDP Growth Rate (%)	11.6	14.9	4.3	2.5

Source: Samoa Bureau of Statistics

3.4.2 Other Impacts

3.4.2.1 Impacts on the Natural Environment

During the planning phase, no problems were anticipated as no hazardous wastes would be produced and the discharged water would be permeated into the ground after treatment. No negative impacts on the natural environment were observed in the ex-post evaluation survey.

As to the classrooms and workshops of each programme, it was seen necessary to dispose waste oil such as engine oil from the Automotive programme. Appropriate treatment / disposal by putting it into drums was confirmed. However, in the Panel Beating & Spray Painting programme, painting work was being conducted with the shutters and doors open without any special measures – there were no special facilities such as a closed spray room. An immediate measure seems urgent as not only the impacts around the building but also the long-term health effects on the operators are thought to be major concerns.

3.4.2.2 Land Acquisition and Resettlement

All the facilities were built within the existing premises and neither resettlement nor land acquisition was observed in this project.

3.4.2.3 Other Indirect Impacts

After the implementation of this project, two projects on human resource development on TVET in Samoa were carried out at NUS-IoT. One is aforementioned technical cooperation project "Strengthening Technical and Vocational Education Development in Samoa (2006 – 2008)" by JICA, and the other is an AusAID project "Australia – Pacific Technical College Project (2007 – 2011 (Phase I), 2011 – 2015 (Phase II))". The JICA-assisted project was implemented between 2006 and 2008 with an aim to strengthen cooperation with the business community, to enhance the capabilities of the staff of NUS-IoT and the members of the Samoa Association of Technical-Vocational Education and Training Institutions (SATVETI), as well as to better manage and maintain facilities and equipment. Under the last aim, efforts were made in improving the asset management system. Furthermore, the Follow-up Project for the above technical cooperation project was also implemented, leading to the integration of the asset management systems of NUS-IHE and NUS-IoT.

One aspect of the technical cooperation project was establishing the effective use of facilities and equipment, and the proper operation and maintenance structure. In this sense, the grant aid and the technical cooperation projects have a certain level of

synergetic effects through a series of implementations. Nevertheless, as mentioned above, cooperation with the industries through IAP activities has been weak and, as mentioned later, the asset management system has been insufficient in terms of actual operation. It is therefore necessary to reinforce self-help efforts on a continuous basis.

In addition to the cooperation by JICA, the Australian government has been implementing a TVET programme at a tertiary level since 2007 by setting up the Australia-Pacific Technical College (APTC) in four countries in the Pacific including Samoa[11]. This programme makes the best use of the NUS-IoT facilities and has also constructed two additional buildings of their own (administrative and training buildings) on campus, where they are running the courses similar to those of NUS-IoT. The main difference is that the curricula offered at APTC are higher than the ones at NUS-IoT, and the qualifications given upon completion can also be recognised in Australia[12].

A number of NUS-IoT graduates and staff members are taking APTC programmes. It is expected that their skills will be improved by taking the lectures and practical training at a higher level, and the programmes will become highly effective for the industries in the long run. In many of the Pacific Island states, emigration of highly skilled workers is often seen as a problem, but according to the manager at APTC Samoa, there is little evidence of skilled workers who completed the APTC programmes migrating overseas for employment by utilising their newly acquired skills and qualifications. It will be important to continuously generate employment in Samoa so that an optimal number of skilled persons will stay in the country.

In operating the APTC programmes, while there was a period when APTC and NUS needed to adjust the allocation of time slots for using the facilities, APTC has financially been contributing to NUS through the payment of facility usage fees since 2008. Additionally, some items such as kitchen instruments in the Tourism & Hospitality building have been renewed with APTC funding, representing indirect effects even in terms of equipment.

As described above, NUS-IoT as the only tertiary TVET institute in Samoa has been underpinning the country's economic growth by giving students a level of skills and knowledge required by the industries. In addition, some other projects were/have been implemented, leading to the enhancement of the effects of this project. Despite the need for strengthening cooperation with the private sector, NUS-IoT is

[11] The Phase I ended in June 2006 and the Phase II, scheduled for four years, was commenced from the following month. The website is http://www.aptc.edu.au/

[12] Qualifications obtained at APTC are regarded as Level 3 or 4 (lower than bachelor's degree) in the Australian qualification framework, but are higher than the Levels 1 and 2 programmes offered at NUS-IoT.

considered to be contributing to the development of human resources in TVET in Samoa.

3.5 Sustainability (Rating:②)

3.5.1 Structural Aspects of Operation and Maintenance

The implementing agency of this project was to be the Ministry of Education, Sports & Culture, but the routine administration and facilities maintenance have been undertaken by NUS.

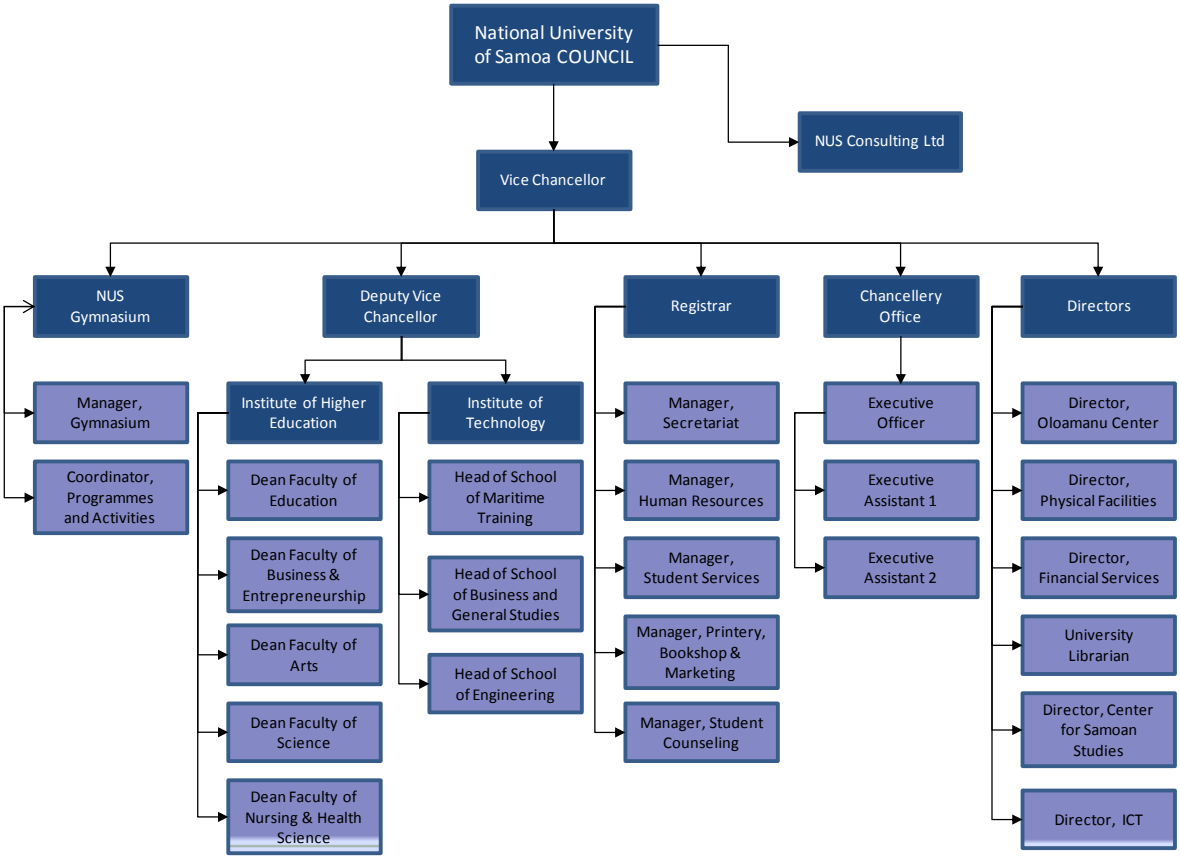


Figure 3: Organisation Chart of NUS

NUS-IoT is a faculty positioned in parallel with NUS-IHE under Deputy Vice Chancellor, and has three Heads of Schools. There were no problems observed with the administrative and implementing structures. In the two schools improved under this project, nine programmes in School of Business & General Studies and ten programmes in School of Engineering were being offered at the time of ex-post evaluation. The academic staff members at NUS-IoT are in charge of the maintenance of equipment for each programme, in addition to conducting lectures and practical training.

The Physical Facilities division, positioned as a division directly under the control of

Vice Chancellor, has approximately 50 members maintaining the facilities and equipment for the entire university. However, 80% of the division members are cleaners, security guards or groundsmen. From the viewpoint of cost reduction, it was thought possible to outsource some of the activities, but the university had found through experience that this would be more costly as the small private sector did not have a competitive market.

Maintenance of NUS facilities is now integrated without any demarcation between the facilities that used to belong to the former NUS or former SP.

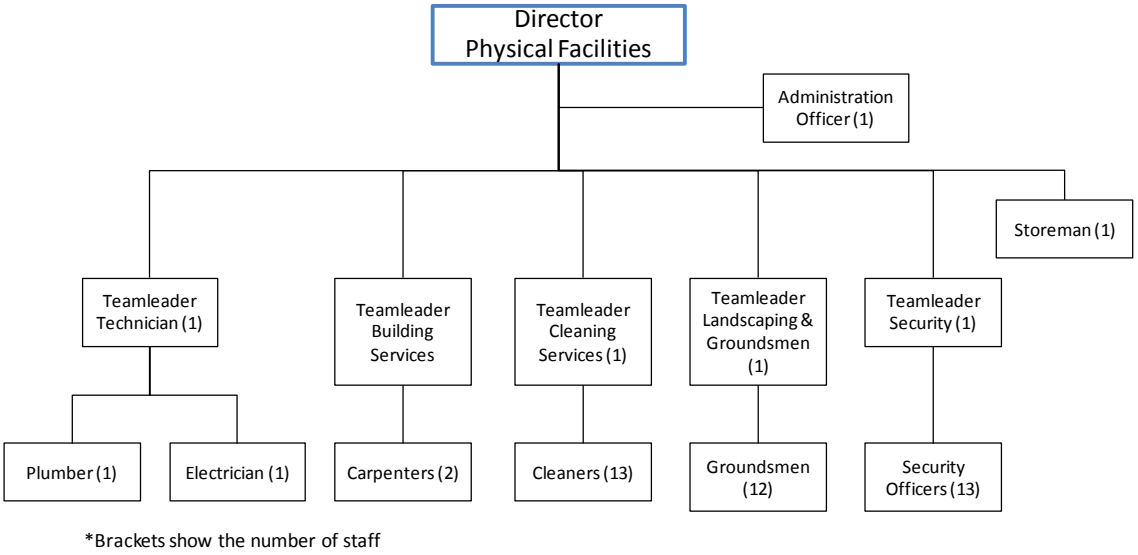


Figure 4: Organisation Chart of Physical Facilities

3.5.2 Technical Aspects of Operation and Maintenance

No technical problems were identified in running the normal education and training programmes at NUS-IoT. As the opportunities to improve their technical capabilities are limited for lecturers in Samoa, some of them take APTC courses to deepen their knowledge and skills.

No advanced techniques are required for the maintenance of the facilities; hence there were no problems observed as indicated by the implementing agency.

With regard to the lift that requires specialised management, a private sector company is to do the repair work in case of any problems. Other equipment is operated and maintained by specific academic staff members using their expertise, as mentioned above, so it can be said that no technical problems were apparent.

3.5.3 Financial Aspects of Operation and Maintenance

The largest source of income for NUS-IoT is a government subsidy, representing

more than 60% of the total revenue. While tuition fees and student numbers are gradually increasing every year, this represents only some 20% of the total. Tuition fees are kept low because of the government policy, but the payroll costs have been rising sharply, becoming a major factor for the deficit of university administration.

NUS received 11,000 Tala in 2007, 165,000 Tala in 2008, 296,000 Tala in 2009 and 269,000 Tala in 2010 from APTC as rental incomes. These incomes are solid financial contributions and are also a valuable source of income that can be directed to O&M.

Table 9: NUS Statement of Income

(Unit: 1,000 Tala)

	2004/05	2005/06	2006/07	2007/08	2008/09
Income					
Operating grant	5,000.0	6,194.6	8,583.2	8,000.0	10,000.0
Course fees	2,114.3	2,579.0	3,242.3	3,239.3	3,421.4
Rental income	48.6	179.8	88.6	304.5	328.5
Amortisation of deferred income	40.9	70.6	1,201.2	1,534.8	1,552.3
Other income	345.8	472.1	432.2	224.3	269.1
Total income	7,549.6	9,496.1	13,547.6	13,302.9	15,571.4
Expenses					
Administration	2,654.8	2,665.8	2,853.3	2,854.8	2,870.1
Depreciation	1,719.1	1,440.2	1,820.0	2,467.0	2,273.8
Personnel costs	4,531.7	5,484.2	8,911.4	10,468.1	10,257.0
Other expenses	307.3	309.0	237.1	189.2	270.4
Total	9,212.9	9,899.2	13,821.9	15,979.0	15,672.0
Interest / Bank charges			-114.3	-57.4	-92.8
Net non-recurring costs					-2,431.0
Excess of expenditure over Income	**-1,663.2**	**-403.1**	**-388.6**	**-2,733.4**	**-2,624.4**

Source: NUS Annual Report (various years)

The O&M budget after the completion of this project has not reached the expected level as shown in Table 10. The main factor is that the O&M cost for facilities and equipment is far below the amount anticipated[13] while the electricity and water costs, directly related to daily operations, are above the expected operating costs.

According to the university, a large amount of O&M cost for facilities and equipment was not deemed necessary as they were still new. However, a lack of maintenance of some locations was noted, such as the painting of exterior wall, and a reasonable

[13] It was proposed at the time of planning that the amount required for equipment renewal five, ten and twenty years later should be put aside , but the accumulation has practically been difficult as the proportion of government grant in the total university budget is large.

budget is clearly necessary.

The actual budget allocated for O&M has been gradually increasing although it is substantially smaller than expected at this moment, but it is anticipated to keep increasing to some extent. However, an increased budget may be required particularly for repairing certain machines that have been left unusable without the necessary parts being ordered.

As the amount of O&M cost expected at the time of planning includes the budget for cleaning the buildings, attention needs to be paid when making a comparison with the actual values excluding such expenses. While it was not possible to determine the NUS-IoT specific routine maintenance cost, such as cleaning, nearly half of the entire NUS budget for this purpose is presumed to be directed to NUS-IoT.

Table 10: O&M Cost for NUS-IoT

(Unit: Tala)

	Amount expected at planning	2006/07	2007/08	2008/09	2009/10
Electricity	230,400	187,500	235,000	252,000	275,000
Phone	54,000	21,800	22,800	27,570	28,600
Water	39,000	No record	42,000	48,500	52,000
Gas & Fuel	96,000	17,520	18,000	28,000	35,000
Facilities Maintenance	130,000	0	5,000	15,000	32,000
Equipment Maintenance	75,000	0	0	8,000	15,000
Other	21,960	-	-	-	-
Total	646,360		322,800	379,070	437,600
[Ref: Daily maintenance cost for the whole NUS]		107,674	104,739	150,845	108,273

Source: Data provided by NUS Finance Division

3.5.4 Current Status of Operation and Maintenance

Although no systematic inventory book of machines and parts was available at the time of project planning, a codebook that could be used as an inventory book was created with the use of the asset management software Catsoft, as already mentioned. This Catsoft-based codebook was later integrated with the inventory book of NUS-IHE to Attache. While the preparation is complete, however, the status of each piece of equipment is not always reflected in the latest software.

In order to deal with this problem, the Physical Facilities Director was drafting a Maintenance Management Plan at the time of ex-post evaluation. After the introduction of the plan, the problem is expected to be solved since a framework in which each department will report to the division the statuses of their equipment and the equipment will also be regularly inspected is to be established.

With respect to the conditions of facilities and equipment, facilities in general including the workshops were generally kept in good condition, but there were several cases where machines were left as they were, or spare parts and consumables had not been replaced in a timely manner due to the difficulties in local procurement. Some of the machines that had broken down remained unused during practical training sessions.

Based on the above, some problems have been observed in terms of O&M financing, therefore sustainability of the project effect is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

NUS-IoT plays an important role in producing graduates necessary for the development of the Samoan economy as this country's only tertiary level technical & vocational education and training institute. This project supported the improvement of deteriorating facilities and replacement of equipment and was consistent with the country's policy to develop human resources equipped with vocational skills capable of meeting the demands of the business community. While the project output changed slightly from its original scope, both project cost and period were within the original plan. With regard to the effectiveness of the project, some improvement is desirable in terms of reversing the decline in student enrolment in some programmes of the School of Engineering and also in encouraging greater cooperation and interaction with the private sector. However, it was also observed that the staff and students of NUS are largely satisfied with the quality of facilities and equipment as well as that of the education provided. Regarding sustainability of the project, while there are no issues on the organisational structure and technical skills, a lack of maintenance management plan and a shortage of funds to fully support an operation and maintenance budget due to the university's operating deficit could be a future concern.

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

4.2 Recommendations

4.2.1 Recommendations to the Implementing Agency

4.2.1.1 Understanding NUS-IoT Programmes

The reasons for unpopularity of some of the NUS-IoT programmes could be a lack of direct promotion activities to secondary schools by NUS-IoT itself and also the negative image held by high school students against some programmes of the School of Engineering, such as Welding & Fabrication and Plumbing & Sheetmetal. Therefore, it is important to stir the interests of high school students by actually

visiting their schools to deepen their understanding of the programmes at NUS-IoT. From the viewpoint of expanding their knowledge on the technologies attached to their daily lives, it could be effective to introduce, where possible, curricula pertinent to TVET at secondary schools in the country.

Moreover, continuous collection of sufficient data on the working status of NUS-IoT graduates should be a significant PR element, and also essential information for high school students to contemplate their future. It is therefore desirable for NUS to identify the post-graduation paths of the graduates as comprehensively as possible.

4.2.1.2 Development of Maintenance Management Plan and Allocation of Budget

As more than four years have passed since the facilities and equipment were developed and procured in the project, it is estimated that there will be more O&M work needed in the future. For this reason, it is important to secure a sufficient budget in consideration of the necessity of periodic equipment renewals and to conduct the maintenance work in accordance with the plan with a focus on preventive measures. No budget is currently allocated for periodic renewals and no common views are shared between the divisions on the maintenance budget. Under these circumstances, steady development and implementation of the maintenance management plan will be of primary importance.

Also, it will be efficient to integrally manage both the facilities of NUS-IoT and of NUS-IHE, developed under assistance from Japan in the 1990s, as in the current structure.

4.2.2 Recommendations to JICA

As incomplete functioning of the current codebook Attache is leading to the improper management of equipment and there are also concerns related to O&M of some parts of the facilities, it is recommended that JICA monitor the progress of the development of Maintenance Management Plan and the proper implementation of maintenance activities by NUS.

4.3 Lessons Learned

During the design of the facilities, due consideration was given as a countermeasure against excessive heat to ensure improved heat insulation capacity of walls and roofs, deeper eaves, higher floor height, adjusted incident sunlight, and better ventilation. These measures appeared to be effective in Samoa, where temperature and humidity are high. In particular, sufficient heights of the ceilings in the workshops of the School of Engineering

seem to have improved air circulation and also safety and comfort. It was a design with ample considerations of the climate conditions, and could be a good reference for other projects that involve the construction of facilities in a country with similar climate conditions.