

Islamic Republic of Pakistan

FY2016 Ex-Post Evaluation of Technical Cooperation Project¹

“The Project for Development of Centre of Excellence (CoE) for Technical Education”

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0. Summary

Technical Cooperation Project “The Project for Development of Centre of Excellence (CoE) for Technical Education” (hereinafter referred to as “the Project”) was implemented with the purpose of turning the Government College of Technology Railway Road (hereinafter referred to as “GCT RR”) in Punjab Province into a center of excellence in the mechanical and architecture fields and providing technical education relevant to the needs of industry, and with the overall goal of disseminating the outputs of this to other Government Colleges of Technology (hereinafter referred to as “GCT”) in the province. Technical and vocational education had high importance in the policies and development needs of Pakistan and Punjab Province when the Project was planned and also when it was completed. The Project was also consistent with Japan’s ODA Policy at the time of planning. Therefore, it had high relevance. Through the Project, GCT RR’s system for linkage with industry and placement support was strengthened and a revised curriculum was introduced in line with the needs of industry, therefore, the project purpose was achieved. The revised curriculum has been applied in the province and training for mechanical department instructors is being advanced in line with it. However, the mechanical departments at other colleges are confronted with equipment constraints such as lack of access to the latest machinery and so on. Other project approaches such as strengthening of linkage with industry and so on have been only partially applied at other colleges. Accordingly, the overall goal was partially realized. In terms of other impact, the Project contributed to improving the quality of human resources that are supplied from GCT RR to industry. Accordingly, effectiveness and impact of the Project is considered to have been high. The project period was as planned. However, because project costs exceeded the planned amount, efficiency of the Project was fair. In terms of sustainability, there have been no major issues in political/institutional, organizational, technical and financial aspects. Since activities have been continuing in good condition in GCT RR following the completion of the Project, the sustainability of the Project has been high.

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

¹ In this ex-post evaluation, an in-depth analysis was carried out by a Japanese expert regarding the female education and gender equality in technical and vocational education and training in Pakistan. Selection of the expert was done by the external evaluator, and subsequently agreed by JICA.

1. Project Description



Project Location



Government College of Technology
Railway Road (GCT RR)

1.1 Background

The Government of the Islamic Republic of Pakistan compiled the national development plan, Vision 2030, in 2007 with the aim of achieving stable socioeconomic development, and it has been striving to promote industrialization under this with 2030 as the target year. With a view to developing the manpower to realize the Vision 2030 goals of increasing the GDP share of manufacturing from 18 percent to 30 percent and improving per capita GNP (from USD742 per person to USD3,000 per person), the Government of Pakistan has made it a priority to reconstruct the Technical and Vocational Education and Training (hereinafter referred to as “TVET”)² and advanced formulation of the strategy for rebuilding the TVET sector. This strategy is composed of three basic objectives: (i) training of technical personnel capable of responding to the needs of the industrial sector, (ii) improvement of the access to education and vocational training opportunities as well as employment opportunities, and (iii) guaranteeing of the appropriate quality of course contents for education and vocational training, while individual strategies include establishment of advanced model schools (Centers of Excellence), strengthening of management of training and education institutions and so on. Moreover, on the level of provinces, the Technical Education and Vocational Training Authority (hereinafter referred to as “TEVTA”) has been established and is working to improve technical education and vocational training.

In Pakistan, due to the growth of manufacturing, construction and other industries, approximately 11 million new jobs were created between 1997 and 2007. However, while the manufacturing sector became increasingly modernized, the institutions responsible for implementing technical education and vocational training in Pakistan lacked the adequate facilities and equipment and were unable to conduct training to a sufficient level. Moreover, not

² This was established as the NAVTEC (National Vocation & Technical Education Commission) but was renamed as the NAVTTC (National Vocation & Technical Training Commission) in 2011.

only did industry require skilled labor, but there was also an urgent need to develop middle-level technicians who could link between construction/manufacturing sites and management.

It was in these circumstances that the Government of Pakistan requested the Government of Japan to offer various assistance for the strengthening of its vocational and technical education institutions. JICA examined feasibility of such cooperation through implementing the Fact Finding Study on TVET in Pakistan in 2006-2007 and a preparatory study in 2008, after which it implemented the Project over five years starting in December 2008.

1.2 Project Outline

The Project was implemented with the purpose of turning the Government College of Technology Railway Road (GCT RR)³ in Punjab Province into a center of excellence in the mechanical and architecture fields and providing technical education relevant to the needs of industry, with the overall goal of disseminating the Project knowledge and experience to other colleges and thereby providing technical education relevant to the needs of industry in Punjab Province.

Overall Goal		Acquired knowledge of the Project, which provides technical education to fulfill industrial needs, is applied into other institutes (mechanical and architecture) in Punjab.
Project Purpose		Mechanical and Architecture courses of Government College of Technology Railway Road (GCT RR) provide quality in technical education based on industrial needs as CoE.
Outputs	Output 1	Management system of GCT RR is strengthened as CoE which can offer technical education relevant to industrial needs.
	Output 2	Training management cycle of mechanical and architecture courses is strengthened.
	Output 3	Placement support of GCT RR is strengthened.
	Output 4	Knowledge and experience of GCT RR is shared with other courses in GCT RR and TVET institutes.
Total Cost (Japanese Side)		413 million yen
Period of Cooperation		December 2008 – December 2013
Implementing Agencies		Technical Education and Vocational Training Agency (TEVTA) Punjab, Government College of Technology Railway Road (GCT RR)
Other Relevant Agencies/		None

³ The education system of Pakistan entails 10 years of basic education, which comprises elementary school (first to fifth grades), lower secondary school (sixth to eighth grades), and upper secondary school (ninth and tenth grades). Students then proceed to senior high school for two years (11th-12th grades), after which they can proceed to college or university. Apart from this, there is a vocational education line whereby graduates of elementary school and lower secondary school can enroll in vocational schools, while graduates of upper secondary schools can advance to three-year diploma courses. At the GCT targeted by the Project, education is conducted under this diploma course, and almost all the students enter the college after receiving 10 years of general education (equivalent to first grade at senior high school in Japan). At GCT RR in Punjab, in addition to the mechanical and architecture departments targeted for assistance in the Project, there are an air conditioning and refrigeration department and an automobile and diesel department, and diploma education is conducted through lessons divided according to the morning and afternoon.

Organizations	
Supporting Agency/ Organization in Japan	None
Related Projects	The Project for Strengthening of DAE ⁴ Mechanical & Architecture Departments in GCT Railway Road of Punjab Province (JICA Grant Aid, 2011), The Project for Strengthening DAE in Mechanical Technology at Government College of Technology in Punjab Province (JICA Technical Cooperation, 2015-2019)

1.3 Outline of the Terminal Evaluation

1.3.1 Achievement Status of Project Purpose at the Terminal Evaluation

It was judged that the project purpose would have been achieved, not only because of the improvement of employee satisfaction, graduate satisfaction, and completion examination pass rate and achievement of the targets for each, but also in light of the improved performance of enrolled students and the certification results in the Mechanical Department by the National Vocational and Technical Training Commission (NAVTTTC)⁵.

1.3.2 Achievement Status of Overall Goal at the Terminal Evaluation (Including other impacts)

The revised curriculum for the Mechanical Department has already been adopted at all the government colleges of technology in Punjab Province that have mechanical departments (19 colleges including GCT RR), while the revised curriculum for the Architecture Department has also been adopted at some colleges (private colleges, etc.) in the province. Accordingly, since the project outputs are being deployed throughout the province, it is judged that the overall goal will be achieved.

1.3.3 Recommendations from the Terminal Evaluation

Recommendations for TEVTA Punjab and GCT RR by the time the Project is completed:

- Recruitment of teachers with consideration given to age composition, etc.
- Improvement in the quality of education, especially the quality of afternoon courses (assignment of teachers, completion examination pass rate, etc.)
- Implementation of regular seminars targeting other colleges in the province to disseminate the knowledge and experience of GCT RR
- Strengthening of the system for various supports including support for placement of

⁴ Diploma of Associate Engineering

⁵ In the certification assessment conducted by the National Vocational and Technical Training Commission, the Mechanical Department of GCT RR was rated B (second) in the four-stage rating (A-D) based on the results of evaluation in April 2012. The A rating was not awarded to any of the Mechanical Department of colleges in the entire country. As for the Architecture Department, this was not targeted for certification because the Architecture Department building was still being constructed under the Grant Aid "Project for Strengthening of DAE Mechanical & Architecture Departments in GCT Railway Road of Punjab Province" that was commenced while the Project was still being implemented.

female students in the Architecture Department

- Securing of necessary budget to improve the quality of education

Long-term recommendations for TEVTA Punjab and GCT RR following completion of the Project:

- Strengthening of the placement support office and dissemination of the placement support system to other colleges in the province
- Preparations for revision of curriculum starting in 2015
- Support for introduction of revised curriculum to other GCT in the province
- Systemization of the knowledge and experience acquired at GCT RR
- Activities to disseminate knowledge and experience acquired at GCT RR to other parts of the country

2. Outline of the Evaluation Study

2.1 External Evaluator

Hajime Sonoda, (Global Group 21 Japan, Inc.)

2.2 Duration of Evaluation Study

The ex-post evaluation study was conducted with the following schedule.

Duration of the Study : September 2016 - September 2017

Duration of the Field Survey : November 16 - December 14, 2016

March 15 - 23, 2017

The external evaluator of the Project also implemented an ex-post evaluation for a grant aid project (the Project for Strengthening of DAE Mechanical & Architecture Departments in GCT Railway Road of Punjab Province; hereafter referred to as “the Grant Aid Project”) at the same time as that for the Project. Since the implementing agencies and related organizations of the two projects overlap, the survey was carried out in an integrated manner, but the ex-post evaluation reports were prepared separately for each project.

3. Results of the Evaluation (Overall Rating: A⁶)

3.1 Relevance (Rating:③⁷)

3.1.1 Consistency with the Development Plan of Pakistan

As was described in section 1.1 Background, at the time of planning (2008), Pakistan had embarked on reform of the TVET sector with a view to achieving economic growth based on

⁶ A: Highly satisfactory; B: Satisfactory; C: Partially satisfactory; D: Unsatisfactory

⁷ ①: Low; ②: Fair; ③: High

industrialization and it was formulating strategies with the objectives of “training of technical personnel capable of responding to the needs of the industrial sector”, “improvement of the access to education and vocational training opportunities as well as employment opportunities” and “guaranteeing of the appropriate quality of course contents for education and vocational training”. This strategy was finalized as the National Skills Strategy 2009 - 2013. It contains individual strategies, including the establishment of CoE and strengthening of the management of educational and training institutions.

In Pakistan Vision 2025, which was adopted as the national development plan by the new administration that assumed power in July 2013, TVET is emphasized in relation to development of human resources, private sector-led growth, and strengthening of international competitiveness out of seven major goals. This administration implemented the TVET Reform Program (Phase 1: until December 2016) which began in 2011 while generally maintaining the direction set by the strategy.

Accordingly, the Project was highly consistent with the development policies of Pakistan at both the time of planning and the time of Project completion (December 2013).

3.1.2 Consistency with the Development Needs of Pakistan

As was described in section 1.1 Background, TVET institutions in Pakistan did not have adequate levels of facilities and equipment or education at the time of planning (2008). Moreover, not only did industry require skilled labor, but there was also an urgent need to develop middle-level technicians who could link construction/manufacturing sites with management. Lahore, the capital city of Punjab Province and home to the target institution of the Project, GCT RR, had concentrations of various engineering industries. However, the curriculum formulated by the provincial TEVTA had not been revised for more than 10 years and there was a high need to conduct revision to better reflect the needs of industry.

In Punjab Province, persons aged 30 years or under account for two-thirds of the population. In Punjab Growth Strategy 2018, the development plan that was compiled by Punjab Province in 2015, reflecting the need to create one million new jobs every year by 2018⁸, it was made a goal to implement TVET training for two million young people over four years between 2015 and 2018. By the time of completion of the Project (December 2013), it is thought that the needs for human resources in industry were sustained. Moreover, GCT RR, which was established as a center of excellence through the Project and the Grant Aid Project, was training master trainers capable of educating instructors in other colleges, so TEVTA Punjab has been anticipating that GCT RR would play a leading role in TVET training in the province’s mechanical and architecture fields.

⁸ The ratio of people aged 30 years or younger in Punjab Province is roughly the same as the national average.

Accordingly, the Project was highly relevant to the development needs of Pakistan at both the time of planning and the time of Project completion.

3.1.3 Consistency with Japan's ODA Policy

At the time of the ex-ante evaluation, Japan's ODA plan for Pakistan (February 2005) had the objectives of securing a sound market economy and diversifying the industrial structure. One of the priority fields of JICA's country-based project implementation policy was "support for higher education, technical education and vocational training geared to promoting growth of the middle class", and the "Technical Education and Vocational Training Program" was being implemented. The Project was implemented within this program.

The Project was highly relevant to the Pakistan's development plan and development needs, as well as Japan's ODA policy. Therefore, its relevance was high.

3.2 Effectiveness and Impact ⁹(Rating: ③)

3.2.1 Effectiveness

3.2.1.1 Achievement of Project Outputs and the Process Involved¹⁰

(1) Strengthening of linkage with industry (Output 1)

In the Project, activities were conducted to strengthen linkage between GCT RR and industries in Lahore making it possible to provide technical education corresponding to the needs of industry. The Institute Management Committee is composed of the representative (chairperson) of TEVTA Punjab, the college principal (vice chairperson), one instructor (secretary), and eight members of private sector representatives from industry. However, the private sector representatives did not have a good attendance record during the planning of the Project. In the Project, a Technical Working Group was newly added to the college operating committee and the private sector representatives were encouraged to actively take part in the school operations. Activities included; lecturers from private enterprises were invited to conduct lecture meetings; exhibitions inviting parents where works by (individual or group) students evaluated by lecturers belonging to private enterprises and universities are displayed; skill competitions to solve specific tasks with speed and accuracy; job fairs inviting private enterprises to provide personal careers advice to third-grade students; and internships with private companies lasting between 2 - 4 weeks conducted for third-grade students. Out of these activities, the lectures by private sector lecturers and internships in private sector enterprises had also been sporadically conducted before the Project. However, they came to be effectively conducted on an organized basis through the Project. As for the other activities, these were started as a result of the Project. At the same time, information on students,

⁹ Impact is also considered when rating effectiveness.

¹⁰ Conditions regarding the achievement of indicators are attached to the end of the report.

education, equipment and placement (information on enterprises and employers) was computerized and made available for use in running colleges and courses. Accordingly, the strengthening of linkage with industry was achieved as planned.

(2) Development of revised curriculum and preparation of instructors and facilities to enable its introduction (Output 2)

Curriculum for the GCT RR Architecture Department and Mechanical Department had not been revised for more than 10 years and it had become detached from the needs of industry. In the Project, a training needs assessment was implemented with cooperation from 66 enterprises in the Lahore area. Based on this, the draft revisions compiled by instructors of GCT RR were modified upon hearing advice from private enterprises and university professors; provisional approval was obtained from TEVTA Punjab; and pilot classes were implemented and evaluated for one year before the revised curriculum was completed. These tasks were implemented in order one year at a time, and the first batch of students to receive three years of education under the revised curriculum graduated in 2012. The revised curriculum was approved by the TEVTA Punjab and the National Vocational and Technical Education Commission in April 2012.

The revised curriculum had new contents such as Computer Aided Design (CAD) and manufacturing with Computerized Numerical Control (CNC). The GCT RR instructors received training in the subjects covered by the revised curriculum, and this resulted in the development of 10 master trainers (instructors qualified to train instructors) in the Mechanical Department and eight master trainers in the Architecture Department¹¹. In addition, the lesson plans, operation sheets, and handout materials for students were revised and compiled into books for each subject.

The equipment for practical training that became necessary under implementation of the revised curriculum was introduced to GCT RR through the Project and the Grant Aid Project that was implemented at the same time¹². GCT RR renovated and constructed the equipment installation areas under the budget of TEVTA Punjab. The main equipment for practical training of the Project was installed by 2011. However, equipment supplied under the grant aid project was installed in 2013 (the final year of the Project), not in time to be used for the third-year training of the first graduates. Moreover, according to teachers in the Mechanical Department, there was not enough time for the Japanese experts to sufficiently train instructors on operation, maintenance and utilization in practical classes of the CNC processing equipment that was supplied under the Grant Aid Project.

¹¹ At the start of the Project, the Architecture Department only had four lecturers, but by the time the Project was completed, it had eight lecturers including six females. Similarly, whereas the average age of lecturers in the Mechanical Department (29 lecturers) was high at the start of the Project, seven new lecturers had been recruited by the end of the Project. The total number of lecturers at the end of the Project was 13 in the Architecture Department and 31 in the Mechanical Department.

¹² In the Project, welding equipment, CNC processing equipment, surveying equipment and more than 300 PCs were supplied.

Accordingly, except for the fact that sufficient guidance could not be provided to instructors concerning some items of equipment before the end of the Project, the outputs regarding introduction of the revised curriculum were more or less achieved as planned.

(3) Strengthening of the placement support setup (Output 3)

In GCT RR, the instructors had conventionally offered individual careers advice to students. However, they had not organized information on recruitment. In 2011, GCT RR established the Career Support Center inside the main campus to offer students advice on careers and respond to job offer inquiries from enterprises, and it started operating its database of students, graduates and enterprises seeking human resources. A job placement officer was assigned to the Main Campus that housed the Mechanical Department, and another officer (also serving as an instructor) was assigned to the new campus that housed the Architecture Department, with whom individual career counselling was provided to third grade students. According to the both departments, most students utilized the career counseling. Also, a follow-up survey of the employment status of the first graduates under the revised curriculum was implemented. Students and employers were satisfied with these career support activities. Accordingly, strengthening of the placement support setup was achieved according to plan.

(4) Dissemination of the knowledge and experiences acquired at GCT RR (Output 4)

In 2013, the final year of the Project, the GCT RR Architecture and Mechanical Departments invited other GCT colleges in Punjab Province to a seminar to disseminate the knowledge and experience that had been acquired in the Project. Out of 18 colleges in the province that had a mechanical department, 17 colleges attended. Since GCT RR was the only college in the province to possess an architecture department, nine colleges in the province that had civil engineering courses were invited to the Architecture Department seminar, and six attended. According to TEVTA and GCT RR, the participants, including principals, course directors, and instructors, responded favorably to the seminars, and the Project outputs concerning dissemination of knowledge and experience were achieved according to plan.

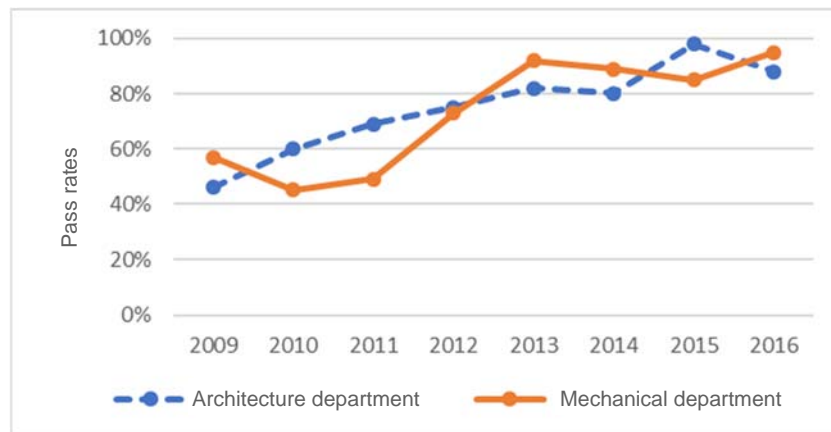
3.2.1.2 Achievement of Project Purpose

The project purpose of the Project was to turn GCT RR into a center of excellence capable of providing quality technical education relevant to the needs of industry in the Mechanical and Architecture fields, and three indicators of this were set as shown in Table 1. Considering that these three indicators and the outputs were achieved to a high degree, it is judged that the project purpose was achieved.

Table 1 Achievement of Project Purpose

Project Purpose	Actual
① 70% or more firms considers performance of graduates of GCT RR after new curriculum introduction is higher than previous graduates.	According to the survey of employers (implemented in March 2013 targeting 47 firms related to the Mechanical Department, and 10 firms related to the Architecture Department), 72% of firms related to the Mechanical Department and 100% of firms related to the Architecture Department responded that the graduates produced following introduction of the revised curriculum displayed “very good”, “good” or “satisfactory” performance compared to the previous graduates. <Achieved>
② 70% or more graduates of GCT RR are satisfied with diploma course contents compatible to industrial needs.	In the Mechanical Department, 95% of graduates responded that they were satisfied with the course contents. In the Architecture Department, 95% of graduates responded that they were satisfied with the curriculum and 100% that they satisfied with the equipment. <Achieved>
③ Passing examination rates of students in mechanical and architecture courses increase.	The completion examination pass rates in both departments improved over the duration of the Project. Following revision of the curriculum, the pass rates increased by approximately 20 - 30% ¹³ . (See Figure 1.) <Achieved>

Source: Materials provided by JICA, materials provided by GCT RR



Source: GCT RR

Figure 1 Completion Examination Pass Rates

¹³ The completion examination is implemented by Punjab Board of Technical Education targeting all GCTs in the province. Since external examiners implement a common examination, it is assumed that objectiveness and consistency are secured to an extent. Moreover, the pass rate in the GCT RR Mechanical Department in 2013 (92%) was far higher than the pass rate achieved by other colleges in the province (65% at five main colleges out of 12 colleges).

3.2.2 Impact

3.2.2.1 Achievement of Overall Goal

(1) Achievement of Overall Goal

The overall goal of the Project was to disseminate acquired knowledge of the Project which provides technical education to fulfill industrial needs to other institutes (mechanical and architecture) in Punjab. As the indicator of this, it was envisaged that the Project approach would be introduced to at least 70% of other GCT colleges in Punjab Province.

Table 2 Achievement of Overall Goal

Overall Goal	Acquired knowledge of the Project, which provides technical education to fulfill industrial needs, is applied into other institutes (mechanical and architecture) in Punjab. <Partially achieved>
Indicator	Actual
70% or more of GCTs (Mechanical and Architecture) in Punjab introduce the approach of the Project.	The revised curriculum is applied to other GCTs in Punjab Province. However, as for the mechanical departments, due to lingering equipment constraints, some of the practical training cannot be implemented according to the curriculum. Concerning collaboration between industry and academia and support for employment, partial introduction is being advanced to other colleges.

As is described on the following section, the revised curriculum has been applied as a unified curriculum to other colleges in the province that have diploma level architecture and mechanical courses¹⁴. The teaching materials that were created in the Project such as lesson plans, operation sheets, handout materials were distributed to the GCTs that implement the revised curriculum. Moreover, the revised curriculum is also applied to all private colleges (Architecture and Mechanical courses) in the province.

In the Mechanical Department, under the “Project for Strengthening DAE in Mechanical Technology at Government College of Technology in Punjab Province” (hereafter referred to as “the Subsequent Project”) that was implemented by JICA after the Project, Mechanical Department instructors of GCT Faisalabad are being developed as additional master trainers in addition to the master trainers who were trained in the Project. Furthermore, training is being advanced to the teachers of mechanical departments at 11 other colleges in the province¹⁵.

¹⁴ At the time of the ex-post evaluation study, in addition to GCT RR, there were 12 GCTs with mechanical departments and two with architecture departments (of which one was scheduled to open in fiscal 2017) in Punjab Province. In addition, 65 private colleges had mechanical departments, while eight had architecture departments. The revised curriculum has been applied to all these colleges.

¹⁵ The Subsequent Project was started in 2015 and was intended to continue over five years with the objective of “strengthening the organizational setup for providing high-quality education in Diploma of Associate Engineer mechanical course at GCTs in Eastern Punjab Province”. This project has added GCT Faisalabad as a center of excellence and is implementing intensive support there, and it is also striving to help the other 11 GCT colleges with mechanical departments make planning to approach to the level of the centers of excellence.

Since practical training for CNC processing and some other training items, which were newly introduced following revision of the curriculum, cannot be appropriately implemented without equipment, it is necessary to introduce new training equipment to implement the revised curriculum in the mechanical department. According to TEVTA Punjab, it is supplying equipment to other colleges over the scope permitted by its own budget, however, the equipment supply is behind schedule¹⁶.

Architecture courses were newly established at two colleges (one existing college and one new college, both of which are girls-only colleges) in the province following completion of the Project, and the head of the Architecture Department at GCT RR offered advice on how to conduct classes, etc. However, TEVTA Punjab has not implemented training for instructors.

Among the other activities that were adopted in the Project, exhibitions have come to be implemented all over the province as the organized activity of TEVTA Punjab. On the other hand, skill competition and activities for linkage with industry such as technical working groups, lectures by private sector instructors, internships, job fairs have only partially extended to other GCTs¹⁷. Concerning support for placement, TEVTA Punjab has established a job placement database (website) and the setup has been strengthened with the assignment of 21 placement officers throughout the province, although these activities have not followed the Project model.

Accordingly, it is judged that the overall goal of the Project has been partially achieved.

(2) Continuation of activities following completion of the Project

① Linkage with industry

Activities that were either started or strengthened in the Project were continuing strongly at the time of the ex-post evaluation. According to the principal and instructors of GCT RR, enterprises are continuing to participate in internships, job fairs, Technical Working Groups, etc. and linkage with industry is satisfactory. Meanwhile, in the visit surveys of enterprises, one set of voices said that they were satisfied with linkage with GCT RR, while other voices called for stronger ties. In particular, according to a beneficiary survey targeting 30 related enterprises¹⁸, numerous voices called for revision of the curriculum to better reflect industrial needs, practical training using the latest CAD software, strengthening of internships and so on.

¹⁶ It is expected that some of the equipment needed by GCT Faisalabad will be supplied under the Subsequent Project.

¹⁷ Concerning internships, TEVTA Punjab is considering making these compulsory for third-grade students.

¹⁸ The beneficiary survey was implemented as a questionnaire survey targeting GCT RR instructors, students (third-grade), graduates, and the enterprises where graduates have found employment. The survey targeted all 47 instructors in both departments, and responses were received from 12 instructors in the Architecture Department and 25 in the Mechanical Department. Responses from students were received from 129 randomly selected students in the morning and afternoon classes; 61 out of 127 in the Architecture Department including 9 female students, and 68 out of 407 in the Mechanical Department (all males). Responses from graduates were received from 80 randomly selected graduates of 2014 and 2015 who could be reached by telephone and so on; 36 graduates of the Architecture Department including 3 females, and 44 graduates of the Mechanical Department (all males). As for enterprises, responses were received from 30 enterprises; 15 in the architecture field and 15 in the machine field, that were introduced by the GCT RR as the major employers of the graduates (enterprises that employ large numbers of graduates).

The skill competitions that were newly started in the Project were continuing at the time of the ex-post evaluation. As for exhibitions, TEVTA Punjab now implements a province-wide exhibition once every year.

② Implementation and dissemination of the revised curriculum

Concerning the mechanical course, a training needs assessment was implemented once again and further revision of the curriculum was examined as part of the Subsequent Project. According to the experts in this project, it is likely that Kaizen (continual improvement) and quality control will be added to the curriculum. Also, as was mentioned earlier, progress is being made on the training of master trainers at GCT RR and GCT Faisalabad and implementation of training by master trainers at the 11 other colleges in the province. On the other hand, installation of equipment for practical training is not progressing according to schedule due to budget constraints in TEVTA Punjab.

Concerning the architecture course, there are no moves to revise the curriculum again. TEVTA Punjab has not implemented training for the instructors of the architecture department in the two newly established colleges. The master trainers that were trained in the Project only conduct guidance and advice for newly appointed instructors in GCT RR.

The curriculum for the architecture and mechanical courses that was revised in the Project has been posted on the NAVTTC website as a standard curriculum (New Traditional Curriculum)¹⁹. According to NAVTEC, each provincial TEVTA in Pakistan can compile their own curriculums for each specialty, and the revised curriculum from the Project is disclosed as a reference example.

③ Support for placement

Dedicated instructors continue to be assigned to the GCT RR Career Section Office, and the databases of students, graduates and enterprises continue to be utilized for support of placement (responding to requests for recruitment from enterprises, introducing enterprises to students, career counselling, etc.). A job fair continues to be held once a year, and internships (in long-term holiday) continue to be implemented. According to hearings conducted in each course, these activities have continued at roughly the same pace or more actively following completion of the Project.

According to the beneficiary survey, roughly 20% of graduates of the Architecture Department and 50% of graduates of the Mechanical Department have found employment through the support activities of GCT RR. There have been numerous cases where students found

¹⁹ The website displays curriculums for more than 20 diploma-level courses in addition to the two courses here. Concerning the architecture course, in addition to the revised curriculum that was created in the Project, a separate curriculum compiled under assistance by another donor is also posted. No information could be obtained concerning whether the revised curriculum from the Project is being used or referred to by TEVTA in other provinces.

employment after being introduced by the Career Support Centre to enterprises seeking recruits, or where employment was arranged in a job fair, or where students found employment in the enterprises where they conducted internship and so on. Moreover, the ratio of graduates responding that they were “very satisfied” or “generally satisfied” with the placement support activities was 23% in the Architecture Department and 80% in the Mechanical Department. It is thought that the figure was so low among graduates of the Architecture Department because the Career Support Centre was established inside the Main Campus away from the New Campus where the Architecture Department is situated.

④ Sustainment of the project purpose

According to the beneficiary survey, 93% of GCT RR graduates (80 graduates of the first and second years of the revised curriculum) in the Architecture Department and 94% in the Mechanical Department responded that they were satisfied with education at GCT RR. Moreover, as is described later, the enterprises where graduates have found employment rate GCT RR highly. Also, the pass rate in the completion examination has remained at a high level following the end of the Project. (See Figure 1.) Accordingly, it is judged that the project purpose has continued to be achieved at the time of the ex-post evaluation.

3.2.2.2 Other Positive and Negative Impacts

(1) Supply of human resources to industry

Following the first batch of students to graduate under the revised curriculum (2012), GCT RR has continued to turn out between 100 - 130 students every year in the Architecture Department and 300 - 400 students per year in the Mechanical Department. According to a follow-up survey by the college, it is inferred that almost 50% of Architecture Department graduates and approximately 70% of Mechanical Department graduates have found employment in relevant fields, indicating that human resources have been supplied to industry.

According to the beneficiary survey, many of the interviewed enterprises have indicated that the quality of GCT RR graduates improved following the Project and was higher than the quality of graduates from private colleges in the Lahore area. (See Table 3.) Concerning the Architecture Department, some enterprises commented that “graduates in the past could only draw by hand, but the current graduates are knowledgeable and skilled at computer drawing and they are fast workers”, whereas others commented that “graduates lack knowledge of the latest software”, “they lack English ability even though architecture drawings are all written in English”, “onsite training is needed to strengthen practical knowledge of building materials and standard dimensions, etc.”, “graduates need to see projects through from beginning to end to acquire understanding of the overall work flow, and they need sufficient ability to make presentations to clients”. Concerning the Mechanical Department, both positive and critical comments were made.

Among the positive comments, it was said that “graduates’ knowledge has increased following revision of the curriculum, meaning that less time needs to be spent on training following recruitment”; “while the curriculum is the same as at private colleges, GCT RR graduates acquire better technique because the college has a full range of equipment”. Among the critical comments, it was said that “it seems that the equipment in the college is not fully utilized as there are too many students per class. The students need to conduct practical training using actual equipment. We are not happy with the current situation”; “the teachers need to learn new technologies and enhance their ability through participating in training conducted by enterprises, etc.” Also, in both courses, it was pointed out by half the targeted enterprises that the English and communication skills such as presentation making ability, technical communication ability. of students need to be improved²⁰.

Accordingly, the Project contributed to improving the quality of human resources supplied from GCT RR to industry. However, there is still room for improvement in line with the needs of industry.

Table 3 Assessment of GCT RR Graduates by Enterprises (5-scale Assessment)

	Architecture department	Mechanical department
The quality of graduates from 2012 onwards is “very good” or “good”	86%	60%
The quality of graduates is “much better” or “better” than that up to 2011.	67%	86%
The quality of graduates compared to other colleges in the province is “very good” or “good”	93%	80%

Source: Beneficiary survey

Note: Responses based on a five-stage assessment comprising: “Very good / Much better”, “Good / Better”, “The same”, “Poor / Worse”, and “Very poor / Much worse”.

(2) Social and environmental impacts

As a result of the Project, female students came to be admitted to the GCT RR Architecture Department for the first time and co-education was commenced. Pakistani society has traditional stereotypes regarding the kinds of jobs that men and women should engage in, and TVET has conventionally separated colleges into those for boys and those for girls depending on

²⁰ The curriculum includes one lesson of English per week for first-grade students in both departments, and GCT RR is striving to strengthen English ability through finding an additional lesson for extra-curricular English. It is basically required that English be used for teaching materials and lessons in specialist subjects. However, most explanations are conducted in the local language (Urdu) and it is necessary to deepen the understanding of students that don’t possess good English ability. In the final examinations in each year, students can select Urdu or English as a media language for the examination. However, according to GCT RR, only a minority of students select English.

the vocation. Such stereotypes have prevented girls from freely receiving TVET. The adoption of co-education in the GCT RR Architecture Department through the Project has been a successful case of gender barriers being removed in public TVET. Moreover, promoting co-education is more efficient than building separate schools for boys and girls. (Refer to the expert analysis below.) Thus, the Project demonstrated the possibilities for eliminating gender impediments and improving efficiency of public TVET in Pakistan.

However, in the Architecture Department, even though 40% of the morning class capacity is assigned to female students (33-34 students out of 84, two classes in 2016), the number of female students enrolling in the college is decreasing and the classes are not being filled. As a result, the total number of students in the morning class is less than the capacity.²¹ According to the Architecture Department, this college is famous as a boy's college and it is not widely known that female students can enroll for the Architecture Department, and parents also have resistance to enrolling daughters in co-education. Other major reasons why female students and their parents are unwilling to enroll in GCT RR are that the college has no exclusive buses or dormitories for female students and opportunities to continue studies at university following graduation are limited²².

No impacts on the natural environment were confirmed.

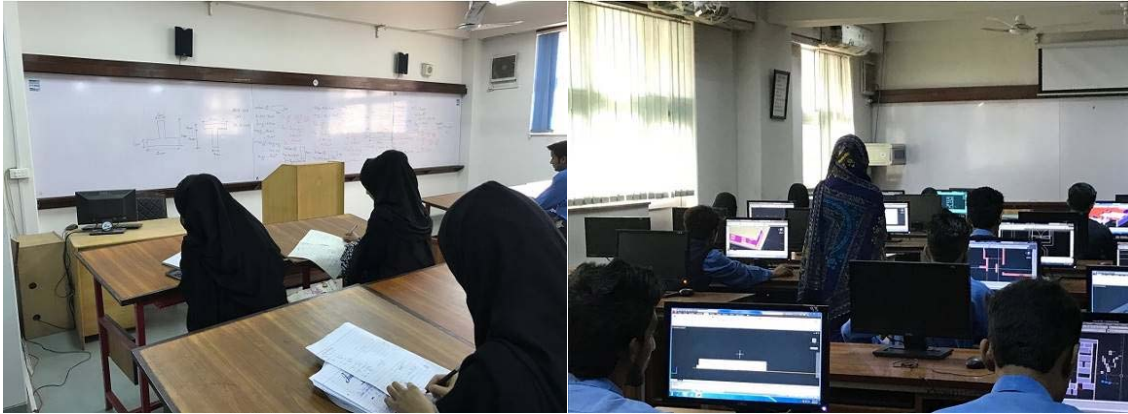


(Left) Practical training in the Mechanical Department

(Right) Works produced in the Mechanical Department CNC processing training

²¹ The number of enrolled female students was 27 in 2010 and 35 in 2011, but the number has declined every year since, falling to 21 in 2012, 20 in 2013, 15 in 2014, 11 in 2015, and 10 in 2016.

²² In Pakistan, it is not common for girls to commute to school with boys. According to instructors of the Architecture Department, the parents of girls who are interested in GCT RR are worried about this point. Moreover, co-education in Pakistan is generally conducted from university and it is normal for girls and boys to sit separate classes up to high school. University Architecture Departments are popular with girls in Pakistan. However, basically, only graduates of high school general courses are allowed to enroll, and only one diploma-level graduate is allowed to advance to each public university (where fees are cheaper).



(Left) Female students learning in the Architecture Department

(Right) PC practical training by a female instructor in the Architecture Department

(3) Other impacts

According to the principal, vice-principal and instructors of GCT RR, they learned, through conducting joint work with the Japanese experts, how to appropriately conduct tidying, cleaning and time management and acquired techniques for managing work based on goals. The long-term dispatch of the Japanese experts imparted a beneficial impact on workplace customs in the college.

Summing up, the project purpose of “mechanical and architecture courses of GCT RR provide quality technical education based on industrial needs as CoE” was achieved through implementation of the Project. Moreover, concerning the overall goal, knowledge from the Project is being disseminated to other colleges in Punjab Province and effects are being manifested mostly according to plan. Therefore, effectiveness and impact of the Project are high.

3.3 Efficiency (Rating: ②)

3.3.1 Inputs

The following table shows the planned and actual inputs for the Project on the Japanese side and the Pakistani side.

Table 3 Comparison of Planned and Actual Inputs to the Project

Inputs	Plan	Actual (at time of Project completion)
Inputs from the Japanese side		
(1) Experts	3 long-term experts (108 person-months) 2 short-term experts (60 - 90 person-months) Total 168 - 198 person-months	4 long-term experts (157.3 person-months) 3 short-term experts (4.7 person-months) Total 162 person-months
(2) Trainees received	Training in Japan: technical education policy and guidance methodology, etc.	Training in Japan: 18 persons
(3) Equipment	CNC work machines, surveying instruments, etc.	Ditto (Some contents were switched. Total approximately 110 million yen)
(4) Operational expenses	Database building work, onsite seminar staging costs, onsite consulting fees, etc.	Ditto (Approximately 45 million yen)
Japanese Side Total Project Cost	Total approximately 370 million yen	Total 417 million yen
Inputs from the Pakistani side		
(1) Assignment of counterparts	TEVTA Punjab, GCT RR employees (Numbers unknown)	Main counterparts: 35 persons Teachers: Mechanical 35 persons, Architecture 12 persons
(2) Others	Office for the Japanese experts, pilot training workshop, classrooms, etc.	Provision of office for the Japanese experts, etc.
Total project cost on the Pakistani side	Training needs assessment implementation costs, equipment maintenance costs, etc.	Facilities and equipment: 31 items including construction of 4 practical training classrooms, rehabilitation and repair of facilities, installation of generator and electrical equipment, etc. Total approximately 22 million yen

Source: Created by the evaluator based on materials provided by JICA

3.3.1.1 Elements of Inputs

Two Japanese experts (chief advisors) were assigned for approximately two years each, while long-term experts were assigned for more than four years to the Mechanical and Architecture departments (one expert in each department). According to GCT RR, the experts were highly skilled and their diligent and selfless attitude to their work imparted various beneficial impacts on the work attitude of the counterparts.

According to TEVTA Punjab and GCT RR, the Project was implemented smoothly. According to the beneficiary survey, almost all the teachers thought that communication with the experts and Project administration were good.

TEVTA Punjab and GCT RR displayed strong commitment to the Project through investing own funds in 31 items of facilities and equipment installation, prohibiting the trained

instructors from transferring to other colleges and so on. For the Project, TEVTA Punjab bolstered instructors in GCT RR, with numbers increasing from 29 to 31 in the Mechanical Department and from four to 13 in the Architecture Department. Teachers with high academic qualifications were recruited, and the ratio of teachers in both departments possessing bachelor's degree or higher (B.Sc. Tech., B. of Architecture) increased from 10% before the Project to 40% after the Project. Meanwhile, due to delays in the recruitment of practical training assistants, it was not possible to conduct adequate maintenance of practical training equipment including PCs and this hindered the practical training.

Since constructing and installing facilities and equipment under the budget of TEVTA Punjab would have taken too long, the JICA budget for the project (total 1.2 million PKRs) was used when urgency was needed. As equipment installation under the Grant Aid Project was conducted in the final year (2013), the first batch of graduates (in May 2013) in the Mechanical Department who studied under the revised curriculum were unable to receive practical training using appropriate equipment in some subjects. Moreover, it was not possible to implement sufficient training for instructors in how to use some items of equipment procured in the Grant Aid Project. (See 3.2.1.1 Achievement of Project Outputs and the Process Involved.)

GCT RR's practical training equipment was procured in the Project (75 million yen) and the Grant Aid Project (220 million yen). In the Project, three practical training rooms were added to the Mechanical Department centering on the CNC practical training room that was installed following the curriculum revision, and equipment was procured for the Architecture Department. In the Grant Aid Project, existing equipment was upgraded and bolstered: a wide range of equipment was procured for all 11 practical training rooms in the Mechanical Department; and facilities (classrooms, etc.) were constructed for the Architecture Department. The Grant Aid Project was completed in April 2013, after review of the request contents by the Japanese experts, issue of the request by the Government of Pakistan to the Government of Japan in 2009, implementation of the preparatory survey, signing of the Grant Agreement in July 2011, and the construction of facilities and procurement and installation of equipment.

3.3.1.2 Project Cost

The project cost on the Japanese side was planned as approximately 370 million yen but actually amounted to 417 million yen (113% compared to the plan). Since there was no itemized breakdown of the planned amount, the reasons for the additional cost cannot be identified. As the assigned expert person-months were less than planned, the additional costs likely arose from another area²³.

²³ It is possible that the equipment costs increased. The equipment contents changed greatly from the plan in the preparatory survey (December 2008) but it is difficult to conclude that the increased cost arose from the increase in equipment and additional outputs".

3.3.1.3 Project Period

The project period was planned as 60 months from December 2008 to December 2012. The Project commenced according to plan in December 2008 and was completed in December 2012.

Summing up, although the project period was within the plan, the project cost exceeded the plan. Therefore, efficiency of the Project is fair.

3.4 Sustainability (Rating: ③)

3.4.1 Related Policy and Institutional Aspects for the Sustainability of Project Effects

As was stated in 3.1 Relevance, placing emphasis on the TVET sector, the Government of Pakistan implemented the TVET Reform Program (Phase 1: until December 2016) with the objective of executing the “National Skills Strategy”. According to the NAVTTC, the draft TVET policy that was proposed as part of the said program was generally consistent with the direction of the National Skills Strategy, and final adjustments aimed at obtaining approval were being conducted at the time of the ex-post evaluation. Moreover, it is scheduled for a new National Skills Strategy to be compiled after the draft policy has been finalized. The said new policy contains no stipulations concerning establishment of advanced model colleges, while, the NAVTTC continues to certify such model colleges based on its certification system. Accordingly, concerning sustainability, there are no problems in policy and institutional aspects.

3.4.2 Organizational Aspects for the Sustainability of Project Effects

GCT RR, which conducts operation and maintenance of the Project facilities and equipment, has four departments that offer diploma-level courses: the Architecture Department, the Mechanical Department, the Air Conditioning and Refrigeration Department, and the Automobile and Diesel Department. Number of instructors in the Architecture Department and Mechanical Department in April 2017 are as shown in Table 4. In the Architecture Department, whereas the sanctioned quota of instructor is 14, only 12 instructors comprising nine instructors and three junior instructors are employed. In addition, there are three visiting instructors who take charge of afternoon classes. According to the head of the Architecture Department, it is planned to newly recruit an additional one visiting instructor and the quota is almost filled. However, considering the frequent turnover of visiting instructors and the fact that the shortage of instructors means that the permanent instructors are too busy to devote enough time to lesson preparation and their own studies, it is desirable to replenish the permanent instructors. On the other hand, in the absence of practical training assistants, it had been necessary to outsource the maintenance of practical training PCs and software. However, the junior instructor who was employed in 2016 following the end of the Project now performs this work. Whereas it took time to resolve problems

when work was outsourced, things have since been speeded up. At the time of the ex-post evaluation, the number of sanctioned posts for instructors in the Mechanical Department was 30, and 31 staff comprising 27 instructors and four junior instructors were working. In addition, there were 16 visiting instructors in charge of afternoon classes. Roughly one or two shop assistants / shop attendants were assigned to each practical training room. These shop assistants / shop attendants were conventionally graduates of secondary school. However, according to the policy of TEVTA Punjab, they are being replaced with diploma level personnel (graduates of GCT RR or equivalent) who jointly serve as junior instructors and practical training technicians²⁴.

Table 4 Number of Instructors in GCT RR Architecture Department and Mechanical Department (March 2017)

	Architecture Department	Mechanical Department
Number of classes (AM/PM)	6 / 6	12 / 15
Sanctioned posts	14	30
Total permanent instructors	12	31
- Instructors	9	27
- Junior instructors	3	4
Visiting instructors	3	16

Source: GCT RR

The Career Support Center, which was newly established in the Project, is staffed by five staff members who also work as instructors in the departments. While there are no dedicated members of staff, there is merit in having instructors who individually know the students conduct career assistance and there is no problem in terms of the setup. At the time of the ex-post evaluation, the director of GCT RR, head of the Architecture Department, and head of the Mechanical Department demonstrated strong commitment to maintaining the Project effects²⁵.

Summing up, concerning the Project sustainability, in terms of setup, there is need to replenish the permanent teaching staff in the Architecture Department, while there are no major issues.

3.4.3 Technical Aspects for the Sustainability of Project Effects

At the start of the Project, many GCT RR instructor held diplomas. However, since the policy of TEVTA Punjab now requires that newly appointed teachers be university graduates or higher, the academic level of instructors is gradually improving in line with the turnover of

²⁴ According to the Mechanical Department, as of April 2017, shop assistants / shop attendants have been replaced with junior instructors also serving as practical training technicians in roughly half of the practical training rooms.

²⁵ According to TEVTA Punjab, as the background to this, the Project was necessary and important for the province's TVET sector and GCT RR; the motivation of counterparts (including teachers) was boosted by the training in Japan, etc.; and important outcomes including the establishment of the first co-education courses in the country were achieved.

instructors.

In the Architecture Department, 16 instructors received training as counterparts and enhanced their teaching knowledge and skills in the Project. Of these, eight permanent instructors received additional training and became master trainers. As of April 2017, due to retirements, transfers to other colleges and other reasons, six of the instructors who received training (including four master trainers) are employed. According to the head of department, since there are experienced instructors and even master trainers who can perform core functions and teaching materials such as lesson plans, handout materials are also available, the Project outputs are being adequately sustained.

In the Mechanical Department, 35 instructors received counterpart training, and 10 of these went on to receive further training and become master trainers. As of April 2017, 10 of the original 35 instructors have retired or been transferred, while eight of the master trainers remain. In the Subsequent Project, young instructors in the Mechanical Department have received further training to become master trainers. Each responsible instructor conducts maintenance of the practical training equipment, and since they provide instruction on maintenance and it is possible to receive support from domestic suppliers if necessary, there are no major problems in technical terms.

According to the beneficiary survey with the instructors, 60% of instructors feel that they need to build their capacity through training, etc. Especially in the Mechanical Department, many instructors want to receive training in subjects and on equipment from practical training from experts with corporate experience or onsite training in enterprises. According to the Mechanical Department, TEVTA Punjab compiles a training program for instructors every year. However, inexperienced lecturers are appointed and the contents do not always correspond to the needs on the ground.

TEVTA Punjab curriculum section, which carries out curriculum revisions, has established a cycle of surveying training needs in multiple departments and revising curriculums with support from external experts in enterprises and universities as necessary, so there are no major problems in technical terms. Concerning GCT RR's Mechanical Department, curriculum revision work has been advanced while receiving support in the Subsequent Project. Meanwhile, the TEVTA Punjab training section, which trains instructors, implements various training programs for thousands of instructors employed at more than 400 TVET institutions in the province. Training is also conducted in response to the individual requests of TVET institutions, however, as was mentioned earlier, the ability to appropriately plan specialized training is inadequate.

Summing up, in technical aspects, there is need to continue training for GCT RR instructors and to strengthen the training implementation setup in TEVTA Punjab, while there are no major problems.

3.4.4 Financial Aspects for the Sustainability of Project Effects

The budget for TEVTA Punjab is allocated by the government of Punjab Province and is on the increase. It increased by approximately 2.5 times over the nine years between 2008 and 2016. (See Table 5.) According to TEVTA Punjab, it is expected that the budget will continue to increase from now on in accordance with the provincial government policy of providing TVET training for 2 million young people by 2018²⁶. Out of the TEVTA Punjab budget, the development budget (investment in buildings and equipment) increased by approximately 1.5 times between 2015 and 2016.

Table 5 Historical Trends in the TEVTA Punjab Budget

(Unit: 1,000 PKRs)

	2008	2009	2010	2011	2012	2013	2014	2015	2016
TEVTA budget	3,911	5,445	6,595	7,856	7,806	7,574	8,135	8,582	9,589
Development budget	881	1,707	1,560	2,112	1,453	1,550	2,000	2,097	3,000
Other budget	3,030	3,738	5,035	5,744	6,353	6,024	6,135	6,485	6,589

Source: TEVTA Punjab

Note: 1PKRs=approximately 1.1 yen

Table 6 Historical Trends in GCT RR Expenditure

(Unit: 1,000 PKRs)

	2010	2011	2012	2013	2014	2015
TEVTA subsidies: personnel expenses	125,913	136,559	155,637	157,998	164,416	174,007
TEVTA subsidies: non-personnel expenses	1,832	12,872	8,253	13,444	9,193	13,842
Own college budget	30,818	31,038	28,688	26,615	34,921	50,188
Total	158,563	180,469	192,578	198,057	208,530	238,037

Source: TEVTA Punjab

Note: 1PKRs=approximately 1.1 yen

Approximately 80% of the GCT RR budget comes from subsidies for TEVTA Punjab, while the remaining approximately 20% comes from the college budget including lesson fees, etc. (See Table 6.) The amount of expenditure increased approximately 1.5 times over six years up to 2015. According to the college, the budget is appropriate but it is not plentiful, and it was observed during the field survey that the college needs to strive to save money through limiting use of the generator during power interruptions, refrain from using air conditioners in the Architecture Department and so on. Concerning operation and maintenance of the facilities and equipment, no major budget constraints that could inhibit the effect of the Project were seen.

Accordingly, there are no major issues regarding the financial sustainability of the Project.

²⁶ It wasn't possible to obtain data on expenditure by TEVTA Punjab, however, it says that the allocated budget is almost entirely executed.

Summing up, no major problems have been observed in the policy background and the institutional, organizational, technical, financial aspects. Therefore, sustainability of the project effects is high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The Project was implemented with the purpose of turning the GCT RR in Punjab Province into a center of excellence in the mechanical and architecture fields and providing technical education relevant to the needs of industry, and with the overall goal of disseminating the outputs of this to other GCT in the province. Technical and vocational education had high importance in the policies and development needs of Pakistan and Punjab Province when the Project was planned and also when it was completed. The Project was also consistent with the Japan's ODA Policy at the time of planning. Therefore, it had high relevance. Through the Project, GCT RR's system for linkage with industry and placement support was strengthened and a revised curriculum was introduced in line with the needs of industry, therefore, the project purpose was achieved. The revised curriculum has been applied in the province and training for mechanical department instructors is being advanced in line with it. However, the Mechanical Departments at other colleges are confronted with equipment constraints such as lack of access to the latest machinery and so on. Other project approaches such as strengthening of linkage with industry and so on have been only partially applied at other colleges. Accordingly, the overall goal was partially realized. In terms of impact, the Project contributed to improving the quality of human resources that are supplied from GCT RR to industry. Accordingly, effectiveness and impact of the Project is considered to have been high. The project period was as planned. However, because the project costs exceeded the planned amount, efficiency of the Project was fair. In terms of sustainability, there have been no major issues in political/institutional, organizational, technical and financial aspects. Since activities have been continuing in good condition in GCT RR following the completion of the Project, the sustainability of the Project has been high.

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

4.2 Recommendations

4.2.1 Recommendations to TEVTA and GCT RR

(1) Examination of measures for increasing female students (Architecture Department)

Since the quota for female students in the Architecture Department is not filled, it is necessary for TEVTA Punjab and GCT RR to examine and implement the following measures to increase female admissions to the department:

- Strengthening of explanation meetings in local secondary schools and advertising campaign through the mass media

- Securing of college buses for female students
 - Construction of a women's dormitory
 - Establishment of a bachelor's degree course in the Architecture Department that is attached to GCT RR
- (2) Strengthening of English capacity in students (Architecture and Mechanical Departments)
- To further advance the development of human resources that meet the needs of industry, it is necessary for GCT RR to secure ample time for English lessons and utilize Communication Skill lessons and so on to improve English capacity in students. It also needs to work on improving the English ability of teachers and work for lessons to be conducted in English as much as possible. Also, it is desirable for TEVTA Punjab and the Punjab Board of Technical Education to examine measures that will encourage students to receive year-end examinations in English, or to allow them receive these examinations in English only.
- (3) Provision of practical training equipment for Mechanical Department in other GCT colleges in Punjab Province
- To implement classes according to the new revised curriculum in the Mechanical Departments of other GCT colleges in the province, it is necessary to install practical training equipment that is lacking. It is necessary for TEVTA Punjab to confirm the needs for practical training equipment and promptly install it.
- (4) Implementation of training for instructors of Architecture Department in other GCT colleges in Punjab Province
- It is necessary for TEVTA Punjab to implement training by the GCT RR master trainers who were developed in the Project for instructors of the Architecture Departments (two colleges) that have been newly established in the province.
- (5) Strengthening of the training setup for instructors of Mechanical Departments of Punjab Province
- To improve training for instructors of Mechanical Departments at GCT colleges in Punjab Province, it is necessary for TEVTA Punjab to examine and implement the following measures.
- TEVTA Punjab should conduct a training needs assessment for the Mechanical Departments of GCT colleges in the province and compile annual training programs.
 - Cooperation should be sought from master trainers at GCT RR, which is an advanced model college, for implementation of the training needs assessment, planning of

training themes, contents and lecturers, and evaluation of the training results.

- In addition to utilizing the GCT RR master trainers for the training, onsite training (company training), which is demanded by numerous teachers, should be utilized.

4.2.2 Recommendations to JICA

It is desirable that JICA support the above recommendations pertaining to mechanical departments through the Subsequent Project.

4.3 Lessons Learned

Implementation schedule for grant aid projects that assumes synergic effects with technical cooperation projects

When the provision of facilities and equipment under a grant aid project is planned to have synergistic effects with a technical cooperation project, it is essential to carefully examine the implementation schedule so that the planned training on and/or utilization of the facilities and equipment under the grant aid project are completed within the implementation period of the technical cooperation project. In this Project, some of the equipment enabling the introduction of the revised curriculum was provided by the Grant Aid Project, but the actual installation of such equipment took place in the final year of the Project, as the detailed study on the equipment needs by the experts and JICA's preparatory study took two years to complete. Because of this, students in the first year under the revised curriculum were unable to use the new equipment. Meanwhile, as there was not sufficient time to fully train instructors on the use and maintenance of the new equipment, it was necessary to outsource training after the completion of the Project to an external institute and the Subsequent Project. This situation suggests that it was necessary to carefully examine the implementation schedules of the two projects in advance. For example, if the sufficient use of or guidance on new equipment cannot be anticipated to take place during the technical cooperation period, the arrangement of a soft component for providing sufficient training on utilization of the new equipment to be added to the grant aid project should be made possible to complement the technical cooperation project.

End

Achievement of Outputs – Summary Table

<p>Output 1: Management system of GCT RR is strengthened as a CoE which can offer technical education relevant to industrial needs. (Achieved)</p>	<ul style="list-style-type: none"> ① Use of computerized data on students, teachers, equipment, job placement, etc. for school / department management ② Ten (10) or more significant market players participate in working group for promoting collaboration between GCT and industries. ③ Ten (10) or more annual collaborative activities with industry. ④ Quarterly meetings of working group for promoting collaboration between institute and industries. ⑤ Production of quarterly project newsletters, regularly updated webpage of GCT RR 	<ul style="list-style-type: none"> ① Achieved: Department-separate data, career support data, equipment data, etc. are computerized, updated and utilized. ② Achieved: Five or more enterprises participated in the college operating committee and working group meetings by the time of the terminal evaluation. ③ Achieved: Activities such as training for enterprises, lectures by lecturers from enterprises, visits to enterprises, skill competition, internships, job fairs, etc. were conducted. ④ Achieved: Reflecting the opinions of industry, around two meetings per year were deemed to be appropriate and have been conducted. ⑤ Achieved: Implemented.
<p>Output 2: Training Management Cycle (TMC) of Mechanical and Architecture courses is strengthened. (Almost achieved)</p>	<ul style="list-style-type: none"> ① Implementation of training needs assessment ② Revised curriculum based on industrial needs ③ Trained master trainers (15) for the pilot courses ④ Instructors trained by the master trainers ⑤ Revised of teaching materials and examination papers ⑥ Installed equipment and maintenance activities ⑦ Monitoring and evaluation of pilot courses ⑧ Preparation of TMC manual 	<ul style="list-style-type: none"> ① Achieved: This was implemented with cooperation from 66 enterprises. ② Achieved: The revised curriculum was approved by TEVTA Punjab. ③ Achieved: 10 master trainers were trained in the mechanical field, and 8 were trained in the architecture field. ④ Generally achieved: Education and training were conducted by the master trainers in each department. ⑤ Achieved: Teaching materials were created based on the revised curriculum. Examinations were conducted by TEVTA Punjab based on the revised curriculum. ⑥ Achieved: The equipment required in the revised curriculum was installed and is properly maintained. ⑦ Achieved: A monitoring and evaluation (M&E) survey of the pilot courses was implemented. ⑧ Achieved: A training management cycle manual was created.

<p>Output 3: Placement support of GCT RR is strengthened. (Achieved)</p>	<ul style="list-style-type: none"> ① Computerized data on placement, internships, and employment opportunities. ② 70% or more of students take career counseling. ③ 70% or more of students are satisfied with placement support. ④ 70% or more of employers are satisfied with placement support. 	<ul style="list-style-type: none"> ① Achieved: The Job Placement Office was established and a database of information on careers, internships, and employment opportunities was constructed. ② Achieved: In the Mechanical Department, 76% and 84% of third-year students received counseling in 2012 and 2013 respectively. In the Architecture Department, the figures were 95% and almost 100% in 2012 and 2013 respectively. ③ Achieved: 92% and 100% of students responded they were satisfied in the Mechanical Department and Architecture Department respectively. ④ Achieved: In the Mechanical Department, 45 out of 47 companies (96%) responded they were satisfied. In the Architecture Department, 17 out of 17 enterprises (100%) said they were satisfied.
<p>Output 4: Knowledge and experience of GCT RR is shared with other courses in GCT RR and other TVET institutes. (Achieved)</p>	<ul style="list-style-type: none"> ① Two or more seminars held. ② 70% or more of DAE institute in Punjab Province (mechanical and architecture) participate in the seminars. ③ 70% or more of participants understand the seminar contents. 	<ul style="list-style-type: none"> ① Achieved: Each department conducted a seminar inviting other colleges in the province. ② Achieved: In the mechanical department, 17 out of 18 colleges (94%) participated, while in the architecture department, 6 out of 9 colleges (67%) participated. ③ Achieved: 100% of participants responded they understood the seminar contents.

Female Education and Gender Equality Geared to Realization of SDGs

--- Issues of technical and vocational education and training (TVET) in Pakistan ---

Dr. Yasushi Katsuma²⁷

In the 2030 Agenda for Sustainable Development that was adopted by the United Nations in 2015, it is anticipated that TVET will contribute to multiple Sustainable Development Goals (SDGs). First, in terms of education policy, it helps to “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all” (Goal 4). In terms of industrial policy, it is anticipated that it will help “Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all” (Goal 8). Furthermore, in terms of promoting participation in economic activities by impoverished people and women, it contributes to “End poverty in all its forms everywhere” (Goal 1) and “Achieve gender equality and empowering all women and girls” (Goal 5).

In TVET initiatives, gender disparities regarding participation in economic activities in the labor market and the income impoverishment of females that arises from this are important issues that demand consideration. This should not be forgotten in light of the basic ethos of the SDGs that “no one will be left behind”.

As a background to gender disparities in the labor market, not only is there gender bias whereby employers are unwilling to employ women, but there are also social stereotypes regarding occupations that view engineering jobs as belonging to men and sewing work as belonging to women.

On the other hand, as the academic background and lack of technical and vocational skills among job-seeking women are also major issues, TVET for girls and women is important. Having said that, against the background of gender bias among the enterprises that seek human resources and stereotypes in society, the TVET side also sometimes limits opportunities for girls and women. Such institutional discrimination arises when public TVET is provided by boys-only or girls-only colleges rather than co-educational colleges.

In Pakistan, it is common for secondary education, technical education and vocational training to be conducted separately for boys and girls. Pakistani society has traditionally not encouraged adolescent boys and girls to conduct learning in the same classrooms. Therefore, TVET has been conducted separately in boys-only or girls-only colleges, with colleges providing courses for vocations that have traditionally been reserved for each gender. This contributes to the embedding of gender stereotypes regarding occupations and hinders the social advancement of women. Looking ahead, the challenge will be to find concrete measures to equalize women’s access to TVET and encourage female empowerment²⁸.

²⁷ Professor, International Studies Program, Graduate School of Asia-Pacific Studies (GSAPS), Faculty of International Research and Education (FIRE), Waseda University.

²⁸ Government of Pakistan, NAVTTC (2016). “Gender analysis of TVET sector in Pakistan: Key issues and opportunities,” Government of Pakistan, Ministry of Education, Training and Standards in Higher Education.

In the Architecture Department of the Government College of Technology Railway Road (GCT RR), which received assistance from JICA through a Technical Cooperation project and Grant Aid project, the fact that a co-education diploma course was established for the first time in the country is noteworthy as an attempt to overcome gender stereotypes in TVET. This was made possible thanks to the fact that JICA proposed co-education from a third-party viewpoint in consideration of needs in the architecture sector, which was open to women, and the fact that the assigned Japanese experts conducted sincere and practical negotiations with officials of TEVTA Punjab and GCT RR. Furthermore, JICA prepared a women's-only lounge and toilets in the Architecture Department and thereby created an environment that would persuade families to let their daughters study at the college. Amidst JICA's efforts to enhance the contents of technical education in the Architecture Department, multiple female instructors were recruited. These female instructors not only became role models for female students, but also the presence of teachers able to listen to the concerns of and counsel female students helped reassure the families of these students.

Against such a background, the adoption of co-education in the GCT RR Architecture Department has proved to be a success story regarding the elimination of gender barriers preventing access to public TVET. However, since the adoption of co-education, numbers of female students have not reached capacity. To encourage more female students to enroll from now on, the department will need to analyze and eliminate any remaining barriers such as the attitudes and insufficient information on the side of parents (especially fathers) and families, the dearth of safe public means of transport suitable for by girls.

Encouraged by the fact that it is now possible for architectural design firms and so on to employ women and the fact that co-education has been adopted by the GCT RR Architecture Department, two girls-only colleges in provincial cities of Punjab Province are establishing similar diploma-level architecture departments. However, when establishing architecture departments in girls-only public colleges, it is necessary to do so in tandem with boys-only colleges that also have Architecture Departments, otherwise opportunities for boys to enroll in architecture departments will be conversely denied. Having said that, it is also financially prohibitive to establish separate boys-only colleges and girls-only colleges having architecture departments in the same city. Therefore, it is financially more realistic to build co-educational architecture departments. Assuming it is financially impossible to build boys-only colleges and girls-only colleges for all departments, the current situation whereby only boys-only colleges can offer education for jobs traditionally reserved for men will continue and it will be impossible to realize equal access to opportunities for girls. Accordingly, since Pakistan aims to promote a gender-equal society, in the field of public TVET, assuming that various efforts will need to be made to remove impediments as demonstrated in the Project, it will basically be desirable to promote co-education from now on.

As reforms continue to be made in the TVET sector, it is hoped that the National Vocational & Technical Training Commission (NAVTTTC), which is responsible for public TVET in Pakistan, will explore ways for disseminating the example of co-education in the Project to other public TVET programs and departments in other fields.

On View of Expert

In this ex-post evaluation, opinion of academia was invited to capture more specialized and diverse views for the projects, in addition to the perspectives of the DAC five evaluation criteria to be conducted by the external evaluator. The external evaluator selected and enlisted the support of a leading figure in the field: Yasushi Katsuma, Professor for International Studies Program, Graduate School of Asia-Pacific Studies (GSAPS), Faculty of International Research and Education (FIRE), Waseda University.

Prof. Katsuma, author of this report, specializes in Development Studies, International Human Rights, Human Security and Global Governance so that the external evaluator asked him to conduct detailed analysis based on his expertise and experience. Specifically, the detailed analysis titled “Female Education and Gender Equality Geared to Realization of Sustainable Development Goals (SDGs)” was conducted to supplement the ex-post evaluation of this project, namely, “The Project for Development of Centre of Excellence (CoE) for Technical Education” (technical cooperation project for Pakistan 2008-2013) regarding to the issues of technical and vocational education and training (TVET) in Pakistan.

The purpose of the analysis is to objectively grasp the situation of female education and the gender issue of access to public TVET at the time of ex-post evaluation regarding to the fact that a co-education diploma course was established for the first time in the country at the Government College of Technology Railway Road in Punjab Province.

Thereby the author tried gaining insights regarding the impact of gender which were implemented under the project mentioned above. Moreover, the expert shared his comments and suggestions for the further improvement of female education in public TVET which are obtained through the analysis. The result of the analysis was partially included in the evaluation report and the summary of the analysis was appended to the evaluation report as attachment.

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