

添付資料

1. 署名交換済ミニッツ（ANNEX 1～5 の別添資料を含む）
＜別添資料＞
 - ANNEX 1-1：改訂前 PDM（PDM ver.2.0）
 - ANNEX 1-2：改訂版 PDM（PDMe、PDM ver.3.0）
 - ANNEX 2-1：プロジェクト実績調査結果
 - ANNEX 2-2：プロジェクト実施プロセス調査結果
 - ANNEX 3：5 項目評価結果
 - ANNEX 4-1：必要機材リスト 1（至急必要なもの）
 - ANNEX 4-2：必要機材リスト 2（全体）
 - ANNEX 5：今後の教員研修実施スケジュール（暫定版）

2. 日本人専門家リスト

3. 携行機材一覧

4. 本邦研修参加者一覧

5. 本邦研修日程表

6. TTC カウンターパートナー一覧

7. 収集資料一覧

8. 面談記録

MINUTES OF MEETINGS
BETWEEN
THE JAPANESE REVIEW TEAM
AND
THE AUTHORITIES CONCERNED OF THE GOVERNMENT OF
THE REPUBLIC OF TURKEY
ON
JAPANESE TECHNICAL COOPERATION FOR THE PROJECT
ON
STRENGTHENING THE PROGRAM FOR EXPANDING
INDUSTRIAL AUTOMATION TECHNOLOGIES DEPARTMENTS

The Japanese Mid-term Review Team (hereinafter referred to as “the Japanese Team”), organized by the Japan International Cooperation Agency (hereinafter referred to as “JICA”) and headed by Mr. Masato Watanabe, visited Republic of Turkey from February 17 to March 7, 2009.

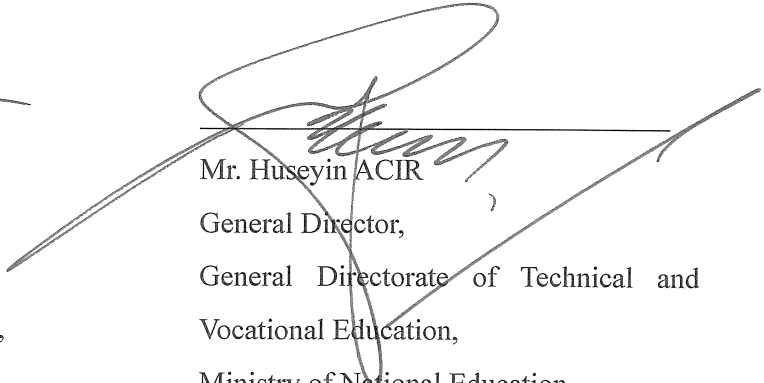
During its stay in Republic of Turkey, the Japanese Team had a series of discussions with the Turkish authorities concerned, jointly reviewed the progress and achievement of the Japanese Technical Cooperation, i.e., “The Project on Strengthening the Program for Expanding Industrial Automation Technologies Department (SPREAD)” (hereinafter referred to as “the Project”) and exchanged views on the project activities to fulfill the Record of Discussion and the Minutes of Meetings signed in May 7, 2007.

As a result of the discussions, the Japanese Team and the Turkish authorities concerned agreed the matters referred in the document attached hereto.

Ankara, March 4, 2009



Mr. Masato Watanabe
Team Leader,
Japanese Mid-term Review Team,
Japan International Cooperation Agency,
Japan



Mr. Huseyin ACIR
General Director,
General Directorate of Technical and
Vocational Education,
Ministry of National Education,
Republic of Turkey

ATTACHED DOCUMENT

THE SUMMARY REPORT OF REVIEW STUDY
ON
THE TECHNICAL COOPERATION
FOR
“THE PROJECT ON STRENGTHENING THE PROGRAM FOR EXPANDING
INDUSTRIAL AUTOMATION TECHNOLOGIES DEPARTMENT”
IN
REPUBLIC OF TURKEY

MARCH 4, 2009

JOINT REVIEW TEAM

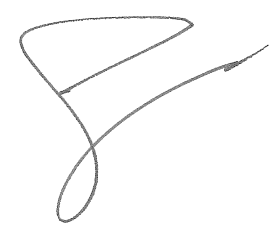
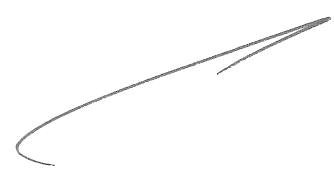


Table of Contents

1. Introduction	1
1-1. Background	1
1-2. Objectives of the study	1
1-3. Reviewers: Joint Review Team	1
1-3-1. Japanese side	2
1-3-2. Turkish side	2
1-4. Main agencies visited, Meeting Attendees and Interviewees	2
2. Methodology of the Study	3
2-1. Guideline and Framework of the Review	3
2-2. Criteria for Evaluation	4
2-3. Reference Materials and Information	5
3. Outline of the Project (Revision of PDM)	5
3-1. Overall Goal	5
3-2. Project Purpose	6
3-3. Outputs	6
4. Findings (Outcomes and Implementation Process)	6
4-1 Achievement of the Plan	6
4-1-1 Outputs	6
4-1-2 Project Purpose (Prospected)	12
4-2. Implementation Process	13
4-3. Other specific items	13
5. Evaluation	14
5-1 Relevance	14
5-2. Effectiveness	14
5-3. Efficiency	15
5-4. Impacts	16
5-5 Sustainability	17
5-6 Conclusion	17
6. Recommendations	18

List of ANNEX

ANNEX 1-1. Project Design Matrix (PDM) ver.2.0

ANNEX 1-2. Project Design Matrix for Evaluation (PDMe)

ANNEX 2-1. Achievement of the Project

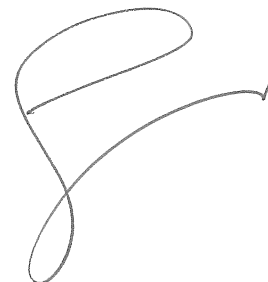
ANNEX 2-2. Project Implementation Process

ANNEX 3. Evaluation by Five Criteria

ANNEX 4-1. List of Necessary Equipment for TTC (Group 1)

ANNEX 4-2. List of Necessary Equipment for TTC (Group 2)

ANNEX 5. Tentative Schedule for Teacher Training for the latter half of the Project



1. Introduction

1-1. Background

Since 1990s, the national economy in Turkey has been rapidly developed. After the recovery of the severe economic crisis, which occurred in 2001, the GDP has maintained a stable growth as shown in the average annual growth from 2002 to 2007 exceeded 7%. The manufacturing sector has contributed almost a quarter of the GDP as indicated in share of 24.8% in 2007.

Rapid expansion of the industries has resulted in the lack of good skilled middle-level technicians especially in the field of Industrial Automation Technologies (IAT). In response to the situation, the Government of Turkey decided to establish departments of IAT in Anatolian Technical/Vocational High Schools (ATL/AML), and requested the technical cooperation to Japanese Government.

Based on the series of discussion, "The Project on Establishment of Industrial Automation Technologies Departments in Anatolian Technical High Schools" was conducted in Izmir Mazhar Zorlu Anatolian Technical High School and Konya Adil Karaagac Anatolian Technical High School from 2001 to 2006. In this project, IAT departments were established as an extension model in Izmir and Konya. Curriculum of IAT departments is mainly composed of mechatronics and computer network, and it systematized the various industrial automation technologies.

With the success of the above project, the Ministry of National Education (MoNE) decided to establish IAT departments at other 20 ATL/AML, and the Teacher Training Center (TTC) as a part of Izmir Mazhar Zorlu School for the teacher training in the field.

Although the TTC has started the teacher training course on 2006, several tasks are arisen such as preparation of teacher training textbooks, arrangement and evaluation of Teacher training courses etc. Under the circumstances, Turkish Government has requested the technical cooperation to Japanese Government on the establishment of teacher training system in TTC in August 2005. Responding to the request, "The Project on Strengthening the Program of Expanding Industrial Automation Technologies Departments (SPREAD)", which aims to establish the teacher training system of TTC, has commenced in 2007 with the three (3) years of cooperation period.

This study is conducted for the purpose of reviewing the progress and achievements of the Project at the middle of the cooperation period.

1-2. Objectives of the study

- (1) To examine the progress and the current achievement of the Project,
- (2) To identify the problems concerning the implementation of the Project and seek for the possible solution for them (if necessary),
- (3) To exchange views and have series of discussions with concerned authorities on the direction of the Project afterwards and desirable measures to be taken for the successful implementation of the Project, and
- (4) To confirm and agree on the result of (1)-(3) as the Minutes of Meetings between Japanese and Turkish side.

1-3. Reviewers: Joint Review Team

The review of the Project was conducted by both of Japanese and Turkish sides, and the main

findings were documented into this Summary Report formulated by the joint review team composed of the members as follows;

1-3-1. Japanese side

Mr. Masato Watanabe Team Leader, Japan International Cooperation Agency (JICA)
 Mr. Shigeru Ikemori Teacher Training, Ministry of Education, Culture, Sports, Science and Technology
 Ms. Sachiko Goto Cooperation Planning, JICA
 Mr. Makoto Takei Evaluation Analysis, Pantel International Co., Ltd.

1-3-2. Turkish side

Mr. Yucel YUKSEL Department Head, General Directorate of Technical and Vocational Education, Ministry of National Education (MoNE)
 Mr. Seref ARSLAN Staff of Projects Section, General Directorate of Technical and Vocational Education, MoNE
 Mr. Suat IYIGUN Section Director, Educational Equipment and Hardware Dept., MoNE

1-4. Main agencies visited, Meeting Attendees and Interviewees

Mr. Mehmet TEMEL	Deputy Undersecretary	Ministry of National Education (MoNE)
Mr. Merdan TUFAN	President	Board of Education
Mr. Huseyin ACIR	General Director of Technical and Vocational Education	Ministry of National Education (MoNE)
Mr. Necmettin YALCIN	General Director of Human Resource Management	Ministry of National Education (MoNE)
Mr. Ahmet Fikret BAYRAKLI	Department Head of In-service Training	Ministry of National Education (MoNE)
Mr. Omer ERDUAN	Department Head of Educational Equipment and Hardware	Ministry of National Education (MoNE)
Mr. Sati CALISKAN	School Principal / Director of TTC	Mazhar Zorlu Anatolian Technical and Plastic Industry Vocational High School (Izmir)
Mr. Turgay ISBILEN	Vice Principal in charge of TTC	Mazhar Zorlu Anatolian Technical and Plastic Industry Vocational High School (Izmir)
Mr. Murat OZDEVECI	Head of IAT department	Mazhar Zorlu Anatolian

		Technical and Plastic Industry Vocational High School (Izmir)
Mr. Egemen DOGER	Teacher of IAT department/ Trainer of TTC	Mazhar Zorlu Anatolian Technical and Plastic Industry Vocational High School (Izmir)
Mr. Abdulkadir ACAR	School Principal	Sanliurfa Anatolian Technical / Technical / Industrial Vocational High School (Sanliurfa)
Mr. Mehmet EKIZ	Provincial Director of Education	Bursa Provincial Directorate of Education, MoNE
Mr. Gurol Erismis	School Principal	Ali Osman Sonmez Anatolian Technical High School and Industrial & Vocational High School (Bursa)
Mr. Mehmet Ali TOKLUOGLU	School Principal	Gebze Anatolian Technical and Vocational High School (Kocaeli)
Mr. Hideo Nakamura	Chief Advisor/Center Management, JICA Expert	SPREAD
Mr. Tamon Nagai	Training Management, JICA Expert	SPREAD
Mr. Hidekazu Kajiwara	PLC, JICA Expert	SPREAD
Ms. Ray Nakashima	Electricity & Electronics, JICA Expert	SPREAD
Mr. Shunichi Mizuochi	Chief Representative	JICA Turkey Office
Mr. Nozomu Yamashita	Assistant Resident Representative	JICA Turkey Office
Mr. Koji Komura	Project Formulation Advisor	JICA Turkey Office
Mr. Ali Bekin	Program Manager	JICA Turkey Office

2. Methodology of the Study

2-1. Guideline and Framework of the Review

The review was conducted in compliance with “*JICA’s Guideline of Project Evaluation; the Practical Method for Project Evaluation Study*” (2004). In this method, a Project Design Matrix (hereinafter referred to as “PDM”) represents the project design, and the outcomes of the Project are compared to the PDM and evaluated according to the five evaluation criteria, i.e. relevance,

effectiveness, efficiency, impact and sustainability.

The revised PDM was prepared for the review, as a PDM for Evaluation (PDMe), by making the modifications in Outputs, Activities and the Indicators, so as to assure the logicity and clarity of the Project. The modified points are as follows (See ANNEX 1-1 for detail);

(1) Outputs

The expressions of the Outputs 1 to 4 were modified to those which indicate the aspect of capacity development of TTC (“TTC’s capacity is strengthened”), because the previous expressions did not reflect the aspect sufficiently (There was some duplication between Outputs and Activities).

(2) Activities

Activities 1-4 to 1-6 were moved to Activities 2-1 to 2-3. These are the steps after the design of the training course specifications, so it is more appropriate to be categorized as a part of “implementation” process.

(3) Indicators

Indicators for Overall Goal, Project Purpose and Outputs were modified or newly added, because the previous ones were not sufficient to measure the achievements of the Project especially in the following points; 1) Target values were not clarified, 2) Lack of indicators which measure the quality, 3) Lack of indicators which measure the level of capacity development, etc.

The review was conducted based on the modified PDM (PDMe). The modifications mentioned above were shared and discussed with the related stakeholders through the study, and proposed by the Japanese Team at Joint Coordinating Committee (JCC) held on February 27, 2009. No objection was raised at JCC, and the discussion was handed over to the meeting among the core stakeholders (the Japanese Team, JICA Turkey Office, Japanese Experts, TTC CPs and MoNE) in Ankara by the chairperson’s decision. As a result of the discussion, both of Japanese and Turkish side agreed the revision of PDM mentioned above (PDM Version 3.0).

2-2. Criteria for Evaluation

(1) Relevance

Relevance of the Project is mainly reviewed focusing on the consistency of Project purpose and Overall goal with the development policy of Turkey and needs of the beneficiaries.

(2) Effectiveness

Effectiveness is assessed by evaluating the actual outcomes of the Project focusing on the

relationship between Purpose and Outputs.

(3) Efficiency

Efficiency of the Project implementation is analyzed with emphasis on the relationship between Outputs and Inputs in terms of timing, quantity and quality.

(4) Impact

Impact of the Project is assessed by either positive or negative influence caused by the Project, which was not originally expected in the Project plan.

(5) Sustainability

Sustainability of the Project is assessed in organizational, institutional, financial, and technical aspects by examining the current achievements of the Project, whether it is going to be sustained or expanded after the Project period.

2-3. Reference Materials and Information

The following materials and sources were reviewed:

- (1) Minutes of Meetings (M/M) signed on February 9 of 2007, Record of Discussion (R/D) and Minutes of Meetings (M/M) signed on May 7 of 2007, Inception Report, Project Progress Reports, Monitoring Reports, and other relative documents,
- (2) PDM for evaluation
- (3) Results of survey questionnaires, information obtained through interviews with Turkish counterparts in TTC, MoNE, Japanese Experts, IAT department teachers of expansion schools who participated in the TTC training courses, and other stakeholders so on.

3. Outline of the Project (Revision of PDM)

The summary of the Project is described in PDM. As already mentioned in 2-1, this study is conducted based on the PDMe, a revised version of PDM for the review. The narrative summary described in the PDMe is as follows (See ANNEX 1-2 for details).

3-1. Overall Goal

Vocational education and training (VET) for IAT at the expansion schools is practiced effectively.

3-2. Project Purpose

Teacher training system of the TTC is established.

3-3. Outputs

- (1) Output 1: TTC's planning capacity of teacher training program is strengthened.
- (2) Output 2: TTC's implementation capacity of teacher training courses is strengthened.
- (3) Output 3: TTC's evaluation capacity for teacher training is strengthened.
- (4) Output 4: TTC's planning capacity of long term organizational strategy is strengthened.

4. Findings (Outcomes and Implementation Process)

Please refer to ANNEX 2-1~ ANNEX 2-2 for further details.

4-1 Achievement of the Plan

4-1-1 Outputs

Output1: TTC's planning capacity of teacher training program is strengthened.

Indicators:

- 1-1. Curriculum development scheme¹ is clarified.*
- 1-2. Curriculum of teacher training is developed along with the above mentioned scheme.*
- 1-3. The developed curriculum has conformity with the framework curriculum for IAT department authorized by Ministry of National Education.*

This output has been produced fairly though there are some issues need to be improved.

TTC originally had two kinds of training courses i.e. "Mechanic" (training course for the teachers with computer, electronic and electricity specialty) and "Electronics" (training course for the teachers with mechanics specialty). These courses had some problems such as; (1) unclear relevance with the framework curriculum of IAT department, (2) duplications of contents among the subjects due to the self-contained characteristic of modules, (3) less consideration about the participants' specialties (some training contents were too basic). Considering those, the Project designed the new structure of teacher training curriculum which is divided into 6 groups of areas and several training subjects under those groups. Grades (10th - 12th) and target teachers (Mechanics, Electricity, Electronics or Computer) were determined for each of the subject as follows;

¹ The "scheme" means the determined process or guideline for curriculum development, such as procedures for needs identification, objective setting, determination of subject structure and volume, setting of duration etc.

Table 1: New Structure of Teacher Training

Group	Subject	Grade				Target** (Specialty of Participants)			
		10	11	12	S*	M	E	En	C
Basic Technology	Programming 1	●				■	■	■	
	Programming 2		●			■	■	■	
	Programming 3				●				
	Computer Network		●			■	■	■	■
Mechanics	Machine Tool	●					■	■	■
	CAD		●			■	■	■	■
	Machine Design		●				■	■	■
	Automatic Production			●		■	■	■	■
Electricity & Electronics	Analogue Electronics	●				■			■
	Digital Electronics	●				■			■
	Computer Aided Circuit Design		●			■	■	■	■
	Sensor and Measurement Control		●			■	■	■	■
Computer Components	Microcontroller 1		●			■	■	■	■
	Microcontroller 2				●				
	PLC		●			■	■	■	■
	Advanced Computer Control			●		■	■	■	■
Control System	Actuator 1		●			■	■	■	■
	Actuator 2			●		■	■	■	■
	Automatic Control			●		■	■	■	■
Factory Automation System	Internet Programming and Server Security			●		■	■	■	■
	SCADA System			●		■	■	■	■
	Modular Assembly System			●		■	■	■	■
	Company Automation				●				
Total 6 groups	Total 24 subjects	4	9	7	3	18	18	18	18

* S: Summer Seminar ** M: Mechanics, E: Electricity, En: Electronics, C: Computer

Syllabus for each subject was developed with a format which contains the items such as relations with module textbooks and other teacher training subjects, purpose and goal of the subject, and the detailed lecture items with time allocation.

Based on the above structure, the following 6 courses have been developed so far;

- (1) Teacher Training Course on 10th & 11th grade for Electronics & Computer Teachers (1st half)

- (2) Teacher Training Course of 10th & 11th grade for Mechanics & Electricity Teachers (1st half)
- (3) Teacher Training Course of 10th & 11th grade for Electronics & Computer Teachers (2nd half)
- (4) Teacher Training Course of 10th & 11th grade for Mechanics & Electricity Teachers (2nd half)
- (5) Teacher Training Course of 12th grade for Electronics & Computer Teachers (1st half)
- (6) Teacher Training Course of 12th grade for Mechanics & Electricity Teachers (1st half)

In the training for 10th & 11th grade, participants learn the subjects other than their specialties. In the training for 12th grade, they learn the subjects of their specialties with advanced level as well as learn those other than their specialties with basic level.

As a result of these re-structuring, conformity with framework curriculum of IAT department has been ensured and the training period was shortened from 3 months to 2 months (4 weeks for 1st half and another 4 weeks for 2nd half after 2-week interval).

While these improvements, following issues are also pointed out from the Project reports and interviews with ex-participants of TTC training;

- Before the commencement of the training courses, the participants were not well informed about the details of curriculum and syllabus
- Gaps of knowledge and skills among participants due to the mix of those with different specialties (Mechanics & Electricity / Electronics and Computers)

Clarifying the curriculum and syllabus for participants and thus modifying the course structure (especially class segmentation according to participants' specialties) accordingly are considered necessary to strengthen the strategic aspect and enhance efficiency of the training.

Regarding the curriculum development scheme, "Teachers Training Manual" which includes the procedures for planning of teacher training has been formulated (the 1st draft proposal is completed). The contents will be elaborated under the discussion between Japanese Experts and Turkish CPs. It is important to practice the contents of the manual at least once within the Project to ensure the establishment of the teacher training system, which is the purpose of the Project, so the earlier completion of the manual is strongly expected.

Output 2: TTC's implementation capacity of teacher training courses is strengthened.

Indicators:

- 2-1. Development procedure and format of syllabi and textbooks for teacher training are clarified.
- 2-2. Each developed training courses has completed textbooks.
- 2-3. TTC trainers are equipped with the knowledge and skills sufficient to give lectures and practices of the designed training courses.
- 2-4. All the developed training courses are conducted at least once.
- 2-5. Logistics such as selection of participants, course notification to the participants, preparation of materials or equipment for each class etc. are well organized.

The progress of this output is rather delayed mainly because some inputs are not sufficient.

Teacher training textbooks are formulated by subjects listed in the table 1. A format for those textbooks (which describes pertinent subject, specialty, field, lecture hours, objective, main points, arrangement of chapters, detailed description and portion of each chapter) was developed, and drafting based on the format have been carried out by strong ownership of CPs and with strong support from Japanese Experts. However, the completion of the textbooks, which was originally planned to be finished by the 2nd year, are rather delayed, mainly because the equipment for teacher training have not been sufficiently procured due to the lack of budget allocation to TTC. The present progress of the textbook drafting is as follows;

- Teacher training textbooks for 10th grade: all of the textbooks are completed (total 4)
- Teacher training textbooks for 11th grade: 5 textbooks out of 9 have been completed.
- Teacher training textbooks for 12th grade: no textbooks have been completed (total 10)

Regarding TTC trainers' capabilities, the results of questionnaire survey which is conducted at the end of each course show that about 86 % of the participants are satisfied with the lecturers' knowledge and performance. On the other hand, the interviews with ex-participants indicated that the level was different depending on person and subject, some of the trainers need to be strengthened their knowledge and skills both on technical field and teaching method.

After the commencement of the Project, teacher training courses were conducted 3 times so far as shown in the following table;

Table 2: Conducted teacher training courses (after the commencement of the Project)

Type of Course	Period	No. of Participants	Remarks
Training on 10 th & 11 th grade (① For 1 st expansion schools) (② For 2 nd expansion schools)	Mar. 3 -28, 2008 Apr. 14 – May. 9, 2008	38 (①20、②18)	Utilizing new training scheme (developed by the Project)
Training on 10 th & 11 th grade (① For 1 st expansion schools) (② For 2 nd expansion schools)	Oct. 6 –Nov. 14, 2008 Nov.24 – Dec. 26, 2008	26 (①11、②15)	Utilizing new training scheme (developed by the Project)
Training on 12 th grade (For 1 st expansion schools)	May 26 – Jun. 20, 2008 (only 1 st half of course was conducted)	33	Utilizing previous training scheme (developed before the Project)

As seen in the above table, training course on 12th grade has not conducted yet sufficiently. It is mainly due to the lack of equipment and the delay of textbook preparation caused by the lack as mentioned above.

Originally, 2 more training courses were planned during September to December 2007 (for 10th & 11th grade), and February to May 2008 (for 12th grade), but those courses were postponed by MoNE who put a priority on re-structuring of the training courses. Short-term advanced course for

Mechanics & Electronics was conducted during November 19-30, 2007, with 42 participants to mainly provide Japanese Experts with the opportunity to conduct monitoring. If including the training courses conducted before the commencement of the Project, total 168 of teachers were trained in TTC so far.

Logistics and procedural aspects of the training courses, such as course notification to participants, are considered improving in general. Regarding the course notification, some ex-participants and the heads of IAT departments evaluated that the information provided by TTC prior to training has been increasing. However, it was also mentioned that some information, such as the curriculum and syllabus of training course, is missing. Therefore, improvement in those aspects also needs to be considered for further enhancement of the training implementation.

As for the selection of participants, the following procedure is followed at present;

- (1) TTC decides the quota for each expansion school (number of teachers by specialty) based on the list of vacancy in IAT department and inform it to MoNE,
- (2) MoNE orders the school to find suitable person for the vacant post
- (3) School looks for qualified persons inside the school or region, and dispatch him/her to TTC training after confirming his/her consent about transfer to IAT department

This is tentative procedures and there are no manuals or guidelines to stipulate it. The timing of determination of participants is sometimes very short notice such as only 1 week before the start of training due to the delay of the above (3). It is getting difficult to find out candidates for IAT department because the position in IAT department doesn't attract many teachers at present. The most critical reason for this is the present regulation on teachers' assignment (department registration) and subject area to teach, which doesn't allow the IAT teachers to teach classes in the fields other than his/her specialty in IAT department. Stable assignment of teachers to IAT department is an important assumption for achieving Overall Goal of the Project, and it could also have a negative impact to the numbers of participants in TTC training, so a countermeasure to solve the issue needs to be considered by MoNE.

Output 3: TTC's evaluation capacity for teacher training is strengthened.

Indicators:

- 3-1. Procedure and format for evaluation (incl. feedback of the result) are clarified with explicit criteria*
- 3-2. Evaluation on teacher training courses is conducted 5 times according to the developed procedures and format*
- 3-3. Procedures and format for monitoring of expansion schools are clarified.*
- 3-4. Monitoring is conducted 20 times at expansion schools according to the developed procedures and format.*

The output has been produced to a certain extent, but needs more emphasis afterwards.

TTC have conducted questionnaire survey to the participants at the end of each training courses. It also started the questionnaire survey to ex-participants 6 months and one and half year after the training. The result of the survey is utilized to modify the training, but the systematic procedure for feedback is not established so far. A draft of “Teacher Training Manual” mentioned above also includes those contents, and it is expected to be elaborated under the discussion between Japanese Experts and Turkish CPs afterwards.

Monitoring to expansion schools, as a part of evaluation activities of TTC training, was conducted 20 times (once for all expansion schools) so far. The monitoring is conducted based on a certain format and various issues have been found through it. However, the analysis and feedback to TTC training is still considered weak. More substantial analysis and consideration of the countermeasures based on it are needed.

Other evaluation activities, such as monitoring of CPs’ lectures by Japanese Experts or mutual monitoring among CPs, are also conducted, but the feedback system for these is not clear either. It is considered that because Plan and Do of PDCA cycle occupy a lot, Check and Action portion mentioned above cannot be allocated enough time so far. It is one of the aspects to be strengthened towards the latter half of the Project.

Output 4: TTC’s planning capacity of long term organizational strategy is strengthened.

Indicators:

4-1. Planning scheme of long term strategy for TTC is clarified.*

4-2. Long term strategy of TTC is appreciated by Ministry of National Education.

The progress of this output is still at primary stage, and need to be accelerated.

Each stakeholder drafted some long term strategy, such as one with 3 steps. According to this strategy, TTC will take the following 3 steps. 1st step (current step) is TTC focus on teacher training course for IAT teachers, 2nd step is to extend its activities to other department and 3rd step is to extend to nationwide and to the third countries. Another strategy describe 6 items such as to package the training application, to give local seminars, to provide periodical brush-up training, to be used for other JICA projects on Industrial Automation, to organize international TTC training package and to meet industry needs which will be expanded gradually.

Though these drafts are under the process of making consensus among related parties, they are slightly different and no official draft document on long-term strategy on TTC was found. Therefore, in spite of the MoNE’s intension that TTC will remain providing teacher training course on IAT related subjects, TTC’s future is not clearly visible or at least not well shared among many stakeholders.

To make a firm long term strategy, it is necessary to stabilize the environment of TTC. This

includes legal status of TCC, budgetary independence, mission of TTC, positioning of TTC trainers (CPs), and trainees' qualification. MoNE is expected to take initiatives for this, but at the same time, the active suggestion and discussion from the Project team is also needed to make the strategy realistic and appropriate.

4-1-2 Project Purpose (Prospected)

Teacher training system of the TTC is established.

Indicators:

1. 90 % of participants assess training courses are practically usable for their lectures and practices for IAT in the questionnaire conducted at the end of the courses.
2. Participants successfully complete teacher training courses (participants who get the score exceeding 70 at the final exam are regarded as "successfully completed").
3. 65 % of participants assess the training courses at TTC are practically usable for their lectures and practices for IAT in the questionnaire XX months after the training based on their experiences in the classes at school.
4. Heads of IAT departments which the participants of TTC training are assigned to evaluate the knowledge and skills of the teachers are improved after participating the training.
5. Procedures on management of teacher training course are clarified.
6. Teacher training courses are implemented as planned.

As described in the above 4-1-1, several kinds of improvement are recognized in the Project towards the achievement of the Project Purpose. However, the delay in some outputs has influenced on the achievement, and there is some concern that the achievement level could not be enough by the end of the Project unless the necessary inputs and acceleration of delayed activities have been promoted in the latter half of the Project.

Achievement level along with indicators is as follows;

[Indicator 1] There is not any data which explicitly show this indicator at present. However, among the data from the questionnaire survey to participants at the end of each training course imply this indicator with the following two questions; (1) "Lectures that have given was beneficial for my profession", and (2) "The lectures that have given were applicable in my school". For these questions, about 80% and 67% of the participants answered either total agree or agree respectively. Many interviewees at expansion schools admitted the teacher training course was improved in some way after the commencement of the Project.

[Indicator 2] So far there is one participant out of 169, who did not complete the training because of family reason. The rest received the certificate.

[Indicator 3] As this indicator is newly adopted, there isn't enough data to show the situation exactly. However, the questionnaire survey to the ex-participants, conducted by the Japanese team, provide some indication on this by asking the question "Was it useful to attend the teacher training course as a whole?" About 76 % of them answered "Yes" to the question (44% of "Yes, very much" and 32%

of “Yes, but to some extent”).

[Indicator 4] As this indicator is newly adopted there isn’t enough data to show the situation exactly. However, same as Indicator 3, the survey conducted by the Japanese team indicates related information by asking the supervisors of the participants who attended the TTC training “Was it useful to make your teachers attend the teacher training course as a whole?” Most of the supervisors (headmasters of expansion schools) answered positively (“Yes, but to some extent” or “Yes, very much”).

[Indicator 5] 1st version of “Teacher Training Manual” is drafted.

[Indicator 6] Teacher training courses have been implemented along with the schedule made by the Project. However, the course for the 12th grade was implemented along with previous scheme. The 12th grade course with new scheme is planned to be implemented from this month, but only the former half of the course will be conducted because of the lack of equipment and uncompleted training textbooks.

4-2. Implementation Process

In general, because of the highly-motivated CPs and good communication among stakeholders, especially between CPs and Japanese Experts, the Project has been implemented actively.

However, there are some obstacles and factors to prevent the smooth implementation of the Project. The matter of incentive for CPs is one of those factors. It is clear that good intangible motivation is appreciated among the CPs, but less tangible motivation (income, tangible official recognition, time pressure) are given so far. This may sometimes threaten the progress of the Project as seen for a while within this Project.

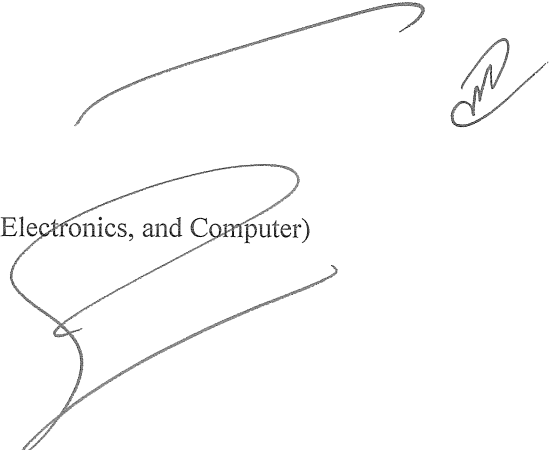
The other thing to be pointed out is that Check and Action portion of PDCA (Plan, Do, Check and Action) cycle is weak in project management. Maybe it is because of Plan and Do portion occupies most of the time and not much time was allocated in Check and Action portion. However, to implement the Project effectively and smoothly, it is necessary to strengthen Check and Action portion along with PDM and Project Cycle Management.

4-3. Other specific items

(1) Uniqueness of IAT

- Newly established department
- Demand from industry is already high
- Composed of 4 technical fields (Mechanics, Electricity, Electronics, and Computer)
- Teacher training for IAT department teachers at TTC

(2) Educational regulatory framework

Handwritten signature and scribbles in the bottom right corner of the page.

- Educational career path to 4-year university for the graduates of ATL/AML is limited
- (3) Current World Wide Economic Crisis

5. Evaluation

Please refer to ANNEX 3 Evaluation by Five Criteria for the further details.

5-1 Relevance

Relevance is high.

Turkish Government aspect: The Project has conformity with the midterm (2007 to 2009) strategy on development by the Turkish Government. In addition to this conformity with the policy, several practical aspects which have conformity with the Project were recognized, such as strong commitment of Turkish Government on IAT education and training, including substantial portion of budget allocation to IAT education related activities, submitting a proposal on IAT teacher assignment to Board of Education to clear the existing issues in the field. It is clearly observed General Directorate of Technical and Vocational Education (GDTVE) considers the Project with high priority. These examples show the Project has conformity with the Policy of the Turkish Government.

Social needs: TTC is highly expected to play an important role in IAT development in Turkey. Because of the uniqueness of IAT in the Turkish regulatory environment, it is the only one organization which drafts the technological direction and takes the lead in the field. This shows the Project has conformity with the Turkish social needs.

Beneficiary needs: Because TTC is a first facility in Turkey to have mandate to conduct teacher training in certain field exclusively, many aspects of it is on the way of building through try and error. It means the support for TTC is strongly needed. In addition to this, many beneficiaries (CPs in TTC) enjoy widening their knowledge and perspectives. Because of complexity of technology of IAT, the demand for study is very high. These show the Project has conformity with the beneficiaries' needs.

JICA policy: The Project also has conformity with JICA's cooperation program for Turkey. The Project is positioned in Promotion of Industry in the International Competitive Environment, Education and training of the Industry HR program, which is one of the core issues in the program.

5-2. Effectiveness

Some delay in the Outputs, especially in Output 2 and 4, have largely influenced on the achievement level of the Project Purpose. As described already, procurement of the equipment and clarification of regulatory framework for TTC need further improvement to make effectiveness high.

Though eagerness of stakeholders (especially MoNE, CPs, Japanese Experts and Expansion Schools) has been driving certain progress toward the Project Purpose, some regulatory framework needs to be considered to make the Project more effective. MoNE describes under the current regulation TTC can not be independent organization. However, there still remain several items to be cleared, such as responsibility and authority, independence of budget, and full time working condition of the trainers.

Although the implementation of teacher training at TTC has been delayed in some part, especially those for 12th grade, the conducted trainings have received moderate evaluation from the participants and their supervisors in expansion schools. As described in 4-1-2, 80 % and 67 % of ex-participants made positive evaluation on “benefit for profession” and “application in their schools” about TTC training respectively. Relatively high percentage of participants’ satisfaction like this indicates that TTC have been providing a certain quality of training. However, it still has some distance from the target level, which is set as 90 % of satisfaction rate of participants. It means there still remain some points to be improved in TTC training, and the detailed analysis and concrete actions for improvement are needed to enhance the effectiveness of the Project. The results of the interviews with ex-participants indicate that items such as class segmentation, preparation of sufficient equipment, provision of sufficient information about training curriculum and syllabus to participants prior to training, especially need to be considered for the improvement.

5-3. Efficiency

Major Inputs are human resources (HR), operational expenses and equipment as described in PDM.

Among these Inputs, HR was very much satisfactory in quality and timing. It is worthwhile to mention that well motivated CPs are assigned. Further more, Japanese Experts are well respected by CPs and CPs are well appreciated by trainees. With efforts of both CPs and Japanese Experts, certain number of textbooks was developed despite the lack of equipment. However, the fact that CPs are not working exclusively for the project have caused some difficulties to carry out the Project activities.

Operational expenses are provided, but unclear segmentation of the budget from Izmir school causes some difficulties in utilization of necessary expenses in TTC, which leads to some limitation in the Project activities, such as purchasing consumables and delivering hard-copy of teacher training textbooks to the participants.

Japanese and Turkish sides recognized about the necessity of improving the above mentioned situation by allocating budget and full-time assigned staff separated from Izmir school. MoNE has just started considering the restructuring of the Ministry, and GDTVE has proposed legal solutions to

improve the situation of TTC. It is expected to promote the solutions as soon as possible to enhance the Efficiency of the Project.

Regarding the equipment, the procurement is delayed because of the lack of allocated budget to TTC, and this causes the delay on Output 2. It is important to pay attention on the fact the lack of equipment have caused the substantial delay to make textbooks and conduct lectures. MoNE stated that this year the high priority for equipment budget will be given to TTC. It is expected that this priority policy shall be executed as soon as possible to enhance the Efficiency of the Project.

The necessary equipment for TTC is listed in ANNEX 4 as type and number in 2 groups. Group 1 is for the textbook preparation and needs to be allocated urgently. Group 2 also includes the equipment needed for teacher training, and lack of it could influence on the lectures for students in expansion schools since the proper teacher training cannot be conducted. Therefore, equipment in Group 2 is also needed before September, 2009. Within the available budgetary framework, it is expected to be allocated by GDTVE.

5-4. Impacts

Impacts are analyzed from two aspects. One is how the Project Purpose will lead to the achievement of Overall Goal and Supper Goal, and the other is unexpected impacts by the Project.

For the first aspect, two important assumptions are observed as follows; (1) Turkish industrial sector continue to develop in same growth rate as present, (2) Teachers of IAT departments after the training at TTC continue teaching. About assumption (1), influence by the world wide economic crisis seems limited at this moment (see 4-3. Other specific items). About Assumption (2), not all teachers who completed training in TTC are assigned to the IAT department of expansion schools and some teachers left from the IAT department. These situations could be critical to ensure the achievement of the Overall Goal. Since they are caused by the regulations mentioned in 4-1-1, regulatory action is expected to be taken as soon as possible.

There is no explicit data available at present to show the indicators for the Goals, and it is too early to judge the achievement of those Goals. However, the interviews to a few companies indicate the related situations as follows; Two companies which accepted the intern students from the IAT department evaluated these students as rich in knowledge, good performance and self-propelled. Other two companies, which had no graduates or intern students, expressed their expectation to the IAT department and eager to employ its graduates because they have wide knowledge and technical skills. These information could be regarded as the positive indication for the achievement of the Goals.

Regarding the second aspect, unexpected impacts, some positive impacts are observed already. They are;

- Japanese Experts are well respected by CPs not only for the technology but working habit, attitudes toward job and responsibility.
- Among the trainees many listed that it was useful to get together and to have chances to exchange the opinions at TTC.
- Network between TTC trainers and expansion school teachers was established, and TTC become a consulting center for expansion schools

Also it is worthwhile to mention that TTC reached such a level that it could conduct a training course to the participants from Republic of Azerbaijan.

5-5 Sustainability

The Sustainability is analyzed from 3 aspects, (1) Policy aspect, (2) Organizational and Financial aspect, and (3) Technical aspect.

Regarding Policy aspect, MoNE has clearly stated at JCC held on Feb. 27, 2009 that TTC will continue to function as a training center in the field of IAT after the completion of the Project based on the approval by the Minister and that the Ministry will maintain its emphasis on the field.

Regarding the Organizational and Financial aspect, it is necessary to stabilize the environment of TTC to ensure the sustainability of the Project, as described in the Output 4 of 4-1-1. To stabilize the environment of TTC and then to pursue the Output 4 are the preliminary and very important step for sustainability.

Regarding Technical aspect, how to keep the technology transferred to TTC CPs is the strong concern. How to sustain and brush up the technology is another subject to be considered.

As a whole, Sustainability is not assured yet and further consideration on this point is required.

5-6 Conclusion

In spite of some difficulties described above, the Project made certain progress with efforts and strong eagerness of the stakeholders. However, there still remain some important issues to be improved to complete the Project successfully, especially to increase Efficiency and Effectiveness and to retain Sustainability.

Major factors described above are summarized as follows;

[Positive factors]

- (1) Strong commitment of Turkish Government on IAT education and training
- (2) Eagerness of stakeholders: Especially MoNE, CPs, Japanese Experts and Expansion Schools
- (3) Many beneficiaries widen their knowledge and perspectives
- (4) Most stakeholders are positive/optimistic/willing to the Project

- (5) Japanese Experts are well respected by CPs
- (6) CPs are highly motivated and well appreciated by trainees
- (7) TTC is highly expected to play an important role in IAT development in Turkey
- (8) Many kinds of improvement are recognized in the Project process

[Factors to be improved]

- (1) Unstable TTC position: Budget, legal position, independency
- (2) Invisible future: TTC, Trainers of TTC (CPs), Teacher Training
- (3) Whole picture of the teacher training course is invisible for expansion school
- (4) CPs and IAT teachers position
- (5) Incentive provided to CPs
- (6) Current teacher training course structure needs further improvement
- (7) Lack of allocated budget for the equipment of TTC
- (8) Delay of making course textbooks
- (9) Delay of the course schedule (12th grade)
- (10) Insufficient information about teacher training course in advance to expansion school
- (11) Budget: equipment, material for the lecture at expansion school
- (12) Check and Action portion of PDCA cycle is weak both in educational activities and project management

6. Recommendations

[Action to be taken by MoNE]

- (1) Provide necessary budget allocation urgently for procurement of TTC equipment; Necessary equipment list is attached in ANNEX 4 (for detail, see 5-3 Efficiency)
- (2) Amend the regulation of teacher assignment at IAT department
- (3) Consider about TTC's positioning
- (4) Consider incentive provided to CPs

[Action to be taken by the Project team]

- (5) Improve the teacher training course structure, such as re-organizing the segmentation of class and curriculum
- (6) Hasten textbook and course development after necessary equipment is provided
- (7) Strengthen Check and Action portion of PDCA
- (8) Inform in advance to expansion schools such as notice of attendance, curriculum and syllabus,