Ministry of Labor and Vocational Education and Training

Ministry of Education Youth and Sports

Summary Report

Kingdom of Cambodia

Pilot Survey for Disseminating SME's Technologies for Tsubame-Sanjo Brand Tools

September, 2014

Japan International Cooperation Agency

TOP KOGYO CO., LTD.

1. BACKGROUND

Although Cambodia in recent years has shown significant growth, with various foreign direct investments, it still requires improvements in various areas. Especially, the shortage of the human resources with practical skills and technical know-how for industrialization is considered to be one of the major bottle necks for further economic development. Up until now, the manufacturing sector has been focused on labor-intensive subsectors, such as garment and textile. To promote foreign manufacturing firms from Japan and elsewhere to make further investments to Cambodia, it is imperative that sufficient human resources with skills in manufacturing, including the use of high precision tools, is available. Japanese tools (Tsubame-Sanjo brand tools), with its high precision and durability are ideal for high value-added manufacturing that contributes to economic development in Cambodia. This needs to be understood through actual use.

Although educational institutions and vocational training schools take the major role in building the industrial human resources, 1) shortage of required training materials and 2) inadequate teaching skills of local teachers regarding practical education, rather than theoretical lectures, hinder to address the development of industrial human resources.

Through the Project Formulation Survey under the Governmental Commission on the Projects for ODA Overseas Economic Cooperation: Marketing Research for High Quality Hand Tools in Cambodia & Vietnam (Ho Chi Minh area) in FY2012, it has been confirmed that the demand for skills in the use of basic tools is high in Cambodia.

Therefore, Top Kogyo Co., Ltd. (hereinafter referred to as "Top Kogyo") implemented the Pilot Survey for Disseminating SME's Technologies for Tsubame-Sanjo Brand Tools (hereinafter referred to as the "Survey") ,which is entrusted by and in collaboration with Japan International Cooperation Agency (JICA) to verify the effectiveness of the Tsubame-Sanjo brand tools that contribute to address developing industrial human resources in Cambodia.

2. OUTLINE OF THE PILOT SURVEY FOR DISSEMINATING SME'S TECHNOLOGIES

(1) Purpose

-To build local industrial human skills in the long term, utilizing Tsubame-Sanjo brand tools and conducting practical trainings on the use of tools in target educational institutions and vocational training schools.

-To enhance teaching skills of local teachers on the use of tools in target educational institutions and vocational training schools for sustainability of the trainings.

(2) Activities

a. Finalization the target institutions and the Survey schedule, among other preparation work

Top Kogyo first gathered information on the general status of the vocational training and tools usage in the Cambodian market. Then the target educational institutions and vocational training schools were shortlisted and finalized to 10 institutions by a set of criteria, as well as through discussions with Ministry of Labor and Vocational Education and Training (MoLVT) and Ministry of Education Youth and Sports (MoEYS).

The formation of the lectures and workshops was determined through MoLVT, MoEYS and institutions under study. For each target institution, it was planned that 50 students would attend a half-day or full-day lecture and workshop. Three tool experts from Tsubame-Sanjo area, Niigata, Japan were dispatched as lecturers, who prepared carefully the learning materials of the trainings. Those materials on presentation slides were translated into Khmer.

b. Handover of the tools to be used in the trainings, and usability test of the tools for local conditions

Tool sets were shipped from Japan, prior to the training courses. They were transferred to the local counterparts, i.e., the target institutions. Through discussions with the counterparts and school staffers, the usability and the local demand of the tools were confirmed.

c. Training on the use of tools

The trainings on the use of tools were conducted in the 10 target institutions. The tools and learning materials to be used for trainings were provided by Top Kogyo, Maruto Hasegawa Kosakujo Inc. (hereinafter referred to as “Maruto Hasegawa”) and lecturers in Tsubame-Sanjo area. Each visit lasted for around a week, with trainings at 4 institutions. The initial plan for the whole training session was as follows:

Period #1 (Preparation: November 2013; Training: December 2013)

- Total period： 1 week
- Venue： Vocational schools and educational institutions, a total of 4 schools
- No. of courses：once per school, total of 3-4 courses
- No. of students：50 per lecture (total students to be 150-200)
- Course Material：each school to be received 50 sets of tools (total of 500 sets

shipped to Cambodia through 3 shipments)

- For each course, there was a simple questionnaire survey to assess the satisfaction of the students, the result obtained were fed back to the next set of courses
- Detail of the training: As displayed in Figure 1, each training session was initiated by opening remarks by a school principal or a director, along with the introduction speech by Top Kogyo. This was followed by Maruto Hasegawa's explanation that what makes Tsubame-Sanjo manufacturing so special. Then the course proceeds to lectures on manufacturing processes in general, on forging, and on heat treatment, with the assistance of the DVD material on how they were actually manufactured. After the tools were delivered to participants, specifically on the purposes, and on how to use them in an appropriate way were lectured. The lecturers, teaming up with local teachers, distributed the tools to student groups, typically in a workshop room, and taught how to use them in an interactive way. After a break, a slightly different but relevant topic on 5S was introduced to focus on its relevance in manufacturing. In some sessions students made 5S into practice by organizing the provided tools in a neat and tidy manner. The session was concluded by a round of Q&A. After the session, a wrap-up was held by lecturers and local faculty to improve the content and delivery of training.

Period #2 (Preparation: December 2013; Training: January 2014)
・・・（Same as Period #1.）
Period #3 (Preparation: January 2014; Training: April 2014)
・・・（Same as Period #1. Partly performed by local trainers）
Period #4 (Preparation: April 2014; Training: May 2014)
・・・（Same as Period #1. Partly performed by local trainers）
Period #5 (Preparation: May 2014; Training: July 2014)
・・・（Same as Period #1. Partly performed by local trainers）

Through these 5 sets of courses, a total of 1,493 students were estimated to attend the training. A typical curriculum for the training course, which was modified according to the needs and level of the participants in the target institutions, was as follows:

Figure 1: A typical time schedule of a full-day training

08:30-08:40	Opening Remark	Director
	Introduction	Mr. Ishii
08:40-08:50	What makes manufacturing in Tsubame-Sanjo different?	Mr. Hasegawa
08:50-09:30	Manufacturing process – General & Forging	Mr. Shioura
09:30-10:00	– Heat treatment	Mr. Hori
10:00-10:15	Coffee Break	
10:15-10:35	How are these tools actually manufactured?	Mr. Hori (DVD)
10:35-11:15	What are these tools for?	Mr. Ueno
11:15-11:30	How to use the tools	ALL (DVD)
11:30-13:30	Lunch	
13:30-14:30	Let's use tools... but in correct way!	Mr. Ueno and ALL
14:30-14:45	Coffee Break	
14:45-15:50	What is 5S, and why do we need it?	Teachers
15:50-16:00	Q&A, wrap-up	

d. Training of Trainers (ToT) on the use of tools

To assist the sustainability of trainings in each institution after the Survey, Trainings of Trainers (ToT) on the use of tools were provided to the local teachers and other staff. These were conducted by gradually relegating relevant portions of the teaching session from the Japanese lecturers to local teachers. More specifically, a workshop session on how to use the tools in practice was jointly taught with local teachers. Moreover, for the final two sessions, 5S sessions were lectured by local teachers in NTTI, ITI, NPIC and JVC Technical College (5S practice session only) and also learning materials on 5S were delivered by local teachers. 5S sessions by local teachers for a change were generally favored by students, as they were familiar to them. On the other hand, initially they skipped explanation on the motivation behind 5S activities, along with time misallocation of lectures. These problems were addressed later by improving explanation and utilizing original DVDs.

e. Display of tools from Top Kogyo and Tsubame-Sanjo area

In some of the target institutions such as NPIC, tools that were used in the training were on display. Also, there were discussions with the counterparts about how to lease or loan the tools (for free or for a fee) to other local technicians to increase the recognition of the tools. Some tools in NTTI were leased to a training center for agricultural machinery training for a short period of time, where the tools were welcomed by the trainees as they facilitated their usage. Other forms of utilization

were also considered.

(3) Information of Product/ Technology to be Provided

In the Survey, Top Kogyo supplied its tool sets (TTS-1000), which were used widely among professional users and general users alike, to the target educational institutions and vocational training schools for educational and training purposes. Also, insulated tools manufactured by Maruto Hasegawa were supplied. Shown below was one tool set provided.

Figure 2: Sample of the Tool set to be provided by Top Kogyo

Figure 3: Sample of the insulated tools to be provided by Maruto Hasegawa

(4) Counterpart Organization

For vocational training schools, Ministry of Labor and Vocational Training (MoLVT) was in charge, and for the educational institutions, Ministry of Education, Youth and Sports (MoEYS) was in charge.

(5) Target Area and Beneficiaries

The Survey selected 10 target institutions, including 8 vocational training schools around the country. The target institutions were shortlisted and finalized by a set of criteria, as well as through discussions with MoLVT and MoEYS. Target 10 institutions were as below.

MoLVT in charge:

a. National Technical Training Institute (NTTI)
b. National Polytechnic Institute of Cambodia (NPIC)
c. Preah Kossomak Polytechnic Institute (PPI)
d. Industrial Training Institute (ITI)
e. JVC Technical College
f. Siem Reap Regional Training Center (Siem Reap RTC)
g. Svay Rieng Regional Training Center (Svay Rieng RTC)
h. Kampot Regional Training Center (Kampot RTC)

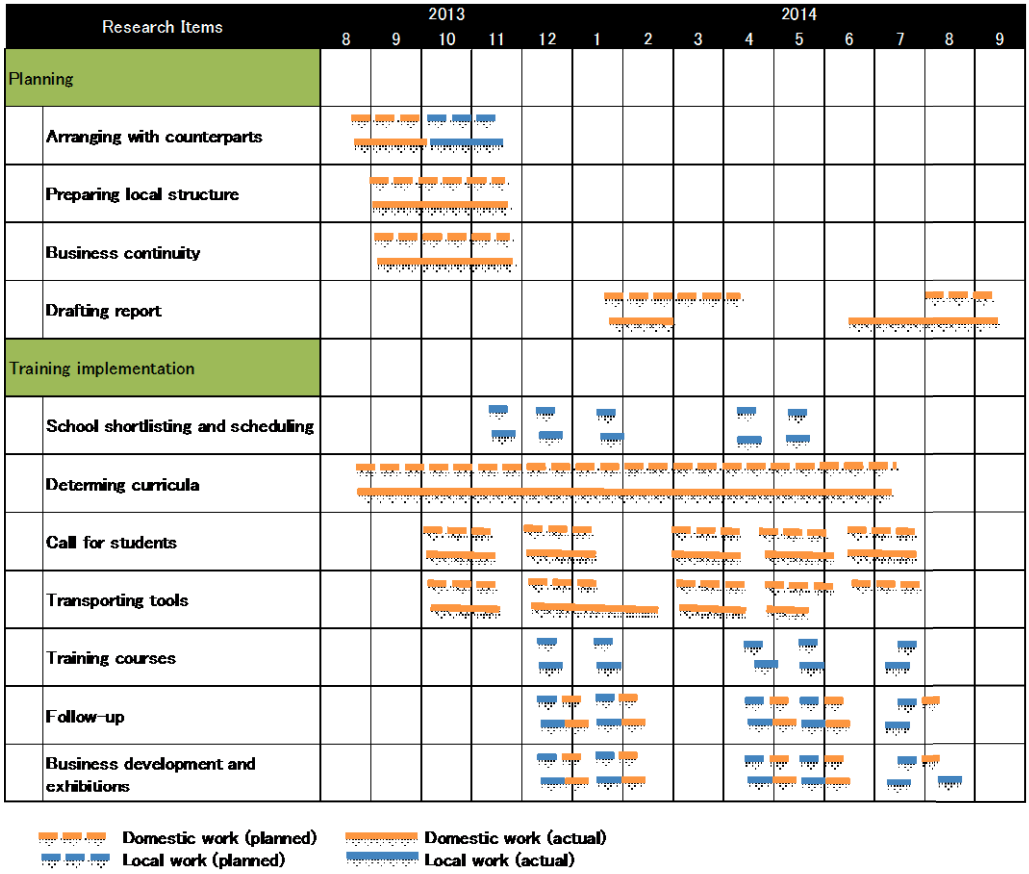
MoEYS in charge:

a. Cambodian Institute of Technology (ITC)
b. Cambodia-Japan Cooperation Center (CJCC)

(6) Duration

From August, 2013 to September, 2014

(7) Progress Schedule

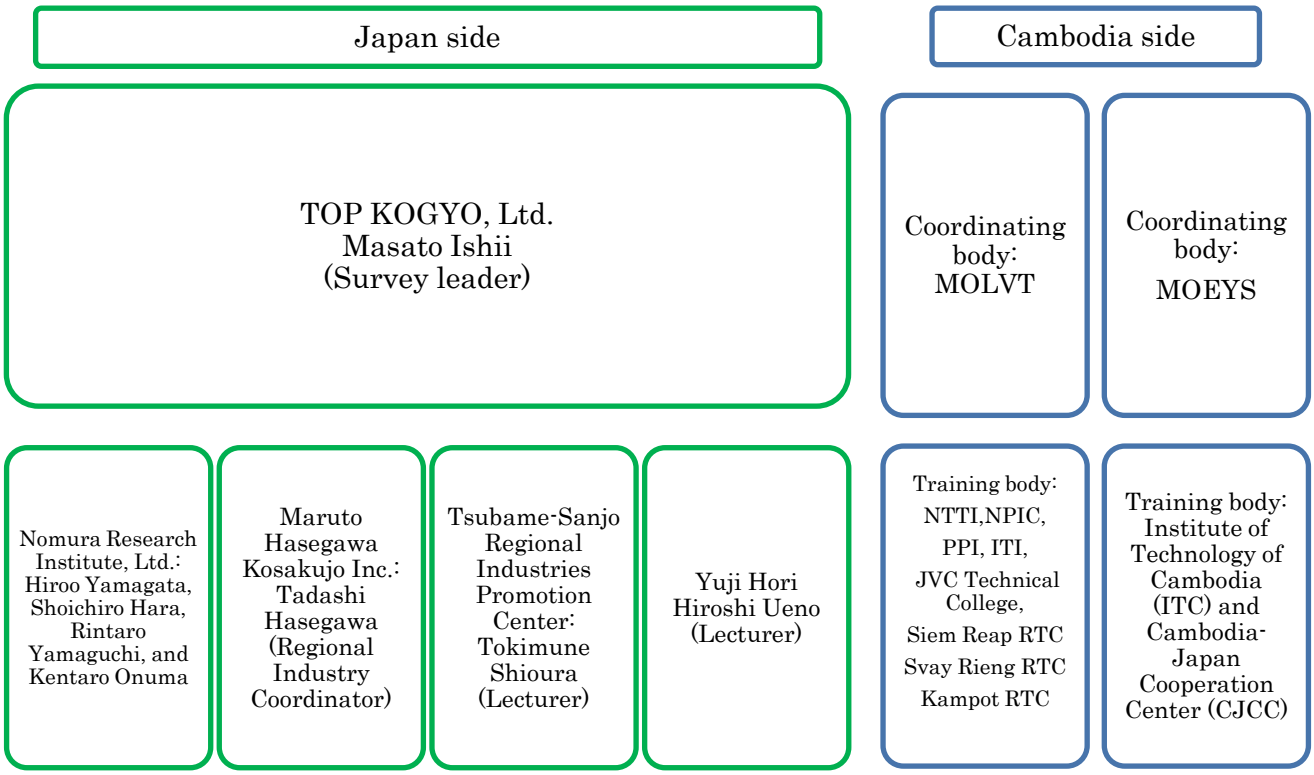


(8) Manning Schedule

Affiliation	Name		FY 2013 8	9	10	11	12	1	2	3	FY 2014 4	5	6	7	8	9
Top Kogyo	Masato Ishii	Planned	5	7	2	7	2	7	4	7	12	7	2	7	4	7	9
		Actual	14	7	3	7	2	10	6	7	15	7	2	7	10	7	8
Nomura Research Institute; Chief	Hiroo Yamagata	Planned	5	7	2	7	18				7	2	7	4	14	9	
		Actual	14	7	0	5	23				7	10	7	8	13	3	
Nomura Research Institute; Business Modeling	Shoichiro Hara	Planned	5	7	2	7	2	7	2	7	20				14	9	
		Actual	7	7	3	7	0	10	6	7	20				13		
Nomura Research Institute; Coordination	Rintaro Yamaguchi	Planned	5	7	3	7	2	7	17		7	2	7	4	14	7	
		Actual	14	7	7	10	3	7	12		7	2	7	6	7	4	6	6
Nomura Research Institute; Coordination	Kentaro Onuma	Planned	40														
		Actual	26														
Maruto Hasegawa; Regional Industry Specialist	Tadashi Hasegawa	Planned	3	7	4	7	10				7	2	7	4	10	7	
		Actual	6	7	9	10	6	7	3		7	4	7	2			
Tsubame-Sanjo Regional Industries Promotion Center; Lecturer	Tokimune Shioura	Planned	10			7	3	7	10		7	2	7	2	7	3	
		Actual	12			10	3	7	3		7	0	7	9	7	3	
Lecturer	Hiroshi Ueno	Planned	10			7	3	7	10		7	2	7	2	7	3	
		Actual	28			10	9	7	6		7	1	7	3	7		
Lecturer	Yuji Hori	Planned	10			7	3	7	10		7	2	7	2	7	3	
		Actual	27			10	7	7	4		7	0	7	0	7		

: Domestic work
: Local work

(9) Implementation System



3. ACHIEVEMENT OF THE SURVEY

(1) Outputs and Outcomes of the Survey

An overview of the training sessions, as well as total number of tools and cabinets delivered are shown in Table1. As can be read from the Table, as many as 1,493 students attended the sessions held 20 times across 10 target institutes. In terms of the hardware, 500 tools sets along with 20 cabinets were provided to the schools.

From the questionnaire surveys distributed after each and every training session, it could be safely concluded that more than 90% of the participants were overall satisfied with the contents and delivery of training sessions. Of particular interest to the participants were, among others, 5S theory and practice, and the realization that the way they used tools was inappropriate. There were many requests for similar training on a regular basis. To be fair, a few pointed out that some of the materials were too hard to grasp, in which case the lecturers updated and rearranged learning materials so that the next round of participants can reach a higher level of understanding. Also, around 40 teachers from the faculty of institutions attend the Training of Trainers (ToT), which empowered them to continue similar training to students even after the completion of the Survey. The display of the tools enhanced not only the brand

awareness but also the understanding that high-quality tools have contributed to the manufacturing industry in Japan.

(2) Self-reliant and Continual Activities to be Conducted by Counterpart Organization

To make sure the continuous delivery of the trainings on the use of tools to students even after the Survey, Top Kogyo focused upon the training of trainers in the fields of 5S and handling tools in practice, as mentioned earlier. Moreover, Top Kogyo toured to each and every target institutions under study at the end of the Survey in July 2014, to discuss how the learning materials, which were provided to schools in electronic formats, were ideally integrated into the existing curricula, as well as how the hand tools were to be effectively employed to classes. Most target institutions commented that they would plan that the learning materials of the Survey were to be used, including regular courses on tools to be held in some schools and partial usage of the materials in others.

Table 1: Overview of training sessions and tools provided

Counterpart	Institutes	Site	December 2013		January 2014		April 2014		May 2014	July 2014	Total		
			Tools provided	Training 12/4-13	Tools provided	Training 1/26-2/1	Tools provided	Training 4/27-5/3	Training 5/18-24	Training 7/13-19	Sessions	Tools sets	cabinets
MoEYS	Cambodia-Japan Cooperation Center (CJCC)	Phnom Penh	10	12/7 AM	—	—	—	—	—	(7/12 inspection)	1	10	0
	ITC (Institute of Technology of Cambodia)		50	12/11 PM	—	—	20	4/30 PM	—	(7/11 inspection)	2	70	3
MoLVT	NTTI (National Technical Training Institute)	Phnom Penh	50	12/6 AM	—	—	20	—	5/22 Full-day	7/17 AM	3	70	3
	NPIC (National Polytechnic Institute of Cambodia)			—	50	1/28 Full-day	20	—	5/20 Full-day	7/15 Full-day	3	70	3
	PPI (Preah Kossomak Polytechnic Institute)		50	12/9 Full-day	—	—	—	—	5/19 Full-day	(7/11 inspection)	2	50	2
	ITI (Industrial Training Institute)			—	70	1/29 AM	—	—	5/21 Full-day	7/16 AM	3	70	3
	JVC Technical College			—	50	1/30 Full-day	20	4/28 Full-day	—	7/14 Full-day	3	70	3
	Siem Reap RTC	Siem Reap		—	30	1/31 PM	—	—	—	(7/8 inspection)	1	30	1
	Svay Rieng RTC	Svay Rieng		—	—	—	30	4/29 AM	—	(7/9 inspection)	1	30	1
	Kampot RTC	Kampot		—	—	—	30	5/2 AM	—	(7/10 inspection)	1	30	1
	Tools sets disseminated		160		200		140			—	—	500	20
	Number of audience			278		358		371	278	208	20	1,493	

4. FUTURE PROSPECTS

(1) Impact and Effect on the Concerned Development Issues through Business Development of the Product/ Technology in the Surveyed Country

The outputs and outcomes mentioned in the previous section implied that the Survey contributed to both of the provision of tools and learning materials (hardware), development of industrial human resources and enhancing the teaching skills of local teachers (software) in target institutions. On the hardware side, there were even requests from students and local teachers for more and/or different tools, an indication that the tools provided were of use to the institutions. Through the training sessions, it was emphasized that solidly manufactured tools and the appropriate use of them would be a foundation for the upcoming manufacturing sector in Cambodia. These effects should be enhanced by continued efforts by the institutions to deliver similar training to the students who would be engaged in the future manufacturing sector of Cambodia. On the business development front, it was expected that the tools sets were to be showcased and marketed in business entities in Phnom Penh, possibly leading to even more dissemination of the tool sets, along with the core values that high-quality tools were required in many productive sectors.

(2) Lessons Learned and Recommendation through the Survey

As pointed out earlier, continued efforts in the training sessions delivered to the younger generation of the country would be of great value. This was already ensured by local teachers already having a hand in partially teaching utilizing the materials which were provided in the Survey. It has to be noted though that there was room for improvement in teaching, partly because they were relatively young and with insufficient knowledge of how the tools were manufactured, utilized, and organized in line with 5S philosophy. A possible solution would be training and exposing those younger teachers to the practical 5S exercise and actual factory lines. All in all, regular follow-up of the institutions by ensuring that the tools were in effective use in classes in line with their theoretical and practical curricula, with emphasis on attitude toward properly manufactured tools and work values including 5S, would be recommended to the authorities in charge of education.

ATTACHMENT: OUTLINE OF THE SURVEY

Pilot Survey for Disseminating SME's Technologies for Tsubame-Sanjo Brand Tools in Cambodia

Outline of the Survey

- Proposed by : TOP KOGYO CO., LTD., Sanjo, Niigata, Japan
- Counterpart Organization : Ministry of Labor and Vocational Education and Training, Ministry of Education Youth and Sports
- Target area and Beneficiaries : 10 institutes, including 8 vocational training schools around the country (5 in Phnom Penh, plus Siem Reap, Svay Rieng, and Kampot), Cambodian Institute of Technology (ITC) and Cambodia-Japan Cooperation Center (CJCC)
- Duration : From August, 2013 to September, 2014

Concerned Development Issues in Cambodia ⟷ match ⟷ **Proposed Products / Technologies**

Educating human resources for the industrial sector

- As more and more firms appear in the electric and machinery sectors, securing and education industrial human resources is hugely in demand. However, the current industry is biased toward labor-intensive textile and apparel sectors, and qualified individuals with practical knowledge who cater to manufactures.

Empowering vocational schools

- Current education in vocational schools for technical experts is focused on study without practice. Although there is ongoing effort by foreign donors to invest in the facilities, insufficient maintenance and knowledge of how to manage them prevent them to be in full use, implying there is a need for improving curricula and empowerment of the staff.

- Tsubame-Sanjo brand tools are a prime example of high-quality products that make or break the work of engineers and craftsmen. Moreover, the city has long been engaged in hosting Southeast Asian trainees for manufacturing workshops.

Implemented Activities in the Survey

- Top Kogyo and other companies provided high-quality hand tools sets (500 in total) to 8 vocational schools, Institute of Technology of Cambodia (ITC), and Cambodia-Japan Cooperation Center (CJCC). Employing these tools, Japanese lecturers taught students and teachers how to use these tools, as well as manufacturing process of these tools, the importance of qualified tools in the manufacturing sector, and the practice of 5S. Training of local teachers were also implemented by partially delegating teaching to them.

Outputs and Outcomes of the Survey

- 500 tools sets and 20 cabinets are provided, and lectures were delivered to as many as 1,493 students. Furthermore, those schools are now capable of delivering similar lectures on their own on a regular basis, since all the contents and relevant knowledge were transferred to local teachers.

Impact on the Concerned Development Issues in Cambodia

- Led to deeper understanding of manufacturing and associated skills formation in human resources in the manufacturing sector in Cambodia