The Association for Overseas Technical Cooperation and Sustainable Partnerships (AOTS)

[Annual Evaluation Report] (Overview)

FY2024 Human Resource Development Program towards Zero Emission in Asian Countries/Regions

【Chapter 1 Program Outline】

Objectives	The aim of this program is to achieve carbon neutrality together with emerging Asian countries through 1) promoting efficient energy uses and reductions of CO2 emissions by transferring Japan's energy-saving technologies to the industrial sector of each target country of this program and 2) reinforcing the environment for local human resource development and bilateral cooperation towards practical applications of advanced technologies that are required for the achievement of carbon neutrality by holding events to spread these technologies.
Target Countries/ Regions	Countries and regions in Asia and the Middle East 〔Countries and regions defined as "Asia" and "Middle East" in the Ministry of Foreign Affairs of Japan website〕

Project	**Scheme**	**Targeted Fields / Objectives**	**Targets・ Subsidy Rate**
Human resource development program for saving energy consumed by production processes	Domestic human resources development Technical Training （Training in Japan）	To support the development of local human resources necessary for promoting the efficiency of energy use, such as reviewing Japanese-style production processes and introducing energy-efficient machinery in Japan's production bases in Asia. (Target industry) Manufacturing	Small and medium-sized 1/2 Large enterprise 1/3
	Overseas human resources development IIGroup Training Type （Overseas Training）		
	Overseas human resources development IOn-site Guiding Type （Expert Dispatch）		
Human resource development program for introducing and maintaining energy-saving equipment	Domestic human resources development Technical Training （Training in Japan）	i. Energy-saving equipment: Training of foreign engineers responsible for the introduction, maintenance of energy-efficient utility facilities and production equipment in Japanese companies. ii. Industrial robot and FA: Training of foreign engineers responsible for the introduction or maintenance of industrial robots by Japanese companies, and factory automation (smart factories) by Japanese SIer companies.	Small and medium-sized1/2 Large enterprise 1/3
	Overseas human resources development IIGroup Training Type （Overseas Training）		

Development of human resources for advanced Technology diffusion (The Green Growth Strategy)	Invitation of industrial engineers (1) Technical Training (Training in Japan)	Develop local human resources to deepen the understanding on and promote R&D of industrial technologies concerning fields designated as priorities by the Green Growth Strategy and the Asia Energy Transition Initiative (AETI), as well as to nurture international awareness on carbon neutrality. Examples: Offshore wind, solar, geothermal industries. Hydrogen and fuel ammonia industries, next-generation energy industry, nuclear industry, car and storage cell industries, semiconductor and IT industries, airplane industry, carbon recycling and material industries, next-generation power management industry, etc. (1) Engineers who play a pivotal role in introducing new technologies are accepted in Japan and provided with technical training. (2) Key persons, e.g. managerial and technical executives, are invited to Japan to receive explanations about new technologies and to visit demonstration sites. (3) Seminars are held locally to foster, disseminate, and develop the understanding of Japanese companies' zero-carbon technologies.	Higher Educational Institutions, Public service corporations 3/4 SMEs, second-tier Companies 1/2 Large enterprise 1/3
	(2) Invitation of key persons		
	(3) Overseas seminars		

[Chapter 2 Prior Evaluation]

1. Outline of Review Implementation

- Screening Committee – Hold 16 reviews (conducted in document review or online)
- Number of review approvals ( ): the number of participants

I. Development of human resources for low carbon technology export

A. Human resource development program for saving energy consumed by production processes

Technical Training 33 cases (72)、Expert Dispatch 1 case (7)

B. Human resource development program for introducing and maintaining energy-saving equipment

Technical Training 12 cases (17)

II. Development of human resources for advanced Technology diffusion (the Green Growth Strategy)

Technical Training (Invitation of industrial engineers) 13 cases (17), Invitation of key persons 3 cases (21), Overseas seminars 1case (90)

2. Outline of Cases in FY2024

(1) I. Development of human resources for low carbon technology export (A. Human resource development program for saving energy consumed by production processes)

- Technical Training (Training in Japan) Accepting companies (12), Participants(72) Canceled after the review approval(2)
- Expert Dispatch Using companies (1), dispatched experts(1), Participants receiving guidance (12)

(2) I. Development of human resources for low carbon technology export (B. Human resource development program for introducing and maintaining energy-saving equipment)

- Technical Training (Training in Japan) Accepting companies (2), Participants(17) Canceled after the review approval(2)

(3) II. Development of human resources for advanced Technology diffusion (the Green Growth Strategy)

- Technical Training（Training in Japan） Accepting companies（5）,Participants(17)
- Invitation of key persons Accepting companies (2),Participants (21) Canceled after the review approval(4）
- Overseas seminars Accepting companies (1), Participants receiving guidance(254)

【Chapter 3 Interim Evaluation】

1. Domestic human resources development（Technical Training）

(1) Technical Training （[1]General Orientation Course）

-Technical training consists of [1] general orientation course conducted by AOTS and [2] on-site training conducted by the accepting companies. In this chapter, we will discuss the results of the interim evaluation conducted after General Orientation Course (13 weeks, 6 weeks, and 9 days course).

-The mid-term evaluation will be conducted by participants and AOTS at the end of the General Orientation Course, collecting the achievement levels of the goals related to "adaptability to practical training," "ability to transfer technology," and "improvement of affinity towards Japan" which are the objectives of the General Orientation Course.

(i) Evaluation of goal achievement level in the general training <Self-evaluation of the participants>

Participants self-evaluate their achievement levels in 17 evaluation items on a 7-point scale at the beginning and end of general orientation course to measure their progress. The target score at the end of the training is 5 points, but all items exceeded 5 points.

(ii) Evaluation of goal achievement level in Japanese proficiency <Evaluation by AOTS>

Measure the improvement in the 5 evaluation items by comparing the test results at the beginning and end of the general orientation course. In the 6-week course, the target score of 5 points (beginner's first half completion level) was not achieved in all items, but the growth rate from the initial value was approximately 2 points, showing a corresponding increase. In the 13-week course, the target score of 10 points (beginner's second half completion level) was not achieved, but the growth rate from the initial value was more than 6 points, also showing a corresponding increase. In addition, starting in fiscal 2022, we will introduce “the pre-arrival online Japanese language training course” so that participants can learn Japanese (especially hiragana and katakana) before arriving in Japan, thereby making the most of the limited Japanese language training period.

【Chapter 4 Evaluation Immediately after Completion】

I. Development of human resources for low carbon technology export（A. Human resource development program for saving energy consumed by production processes）

(1) Domestic human resources development Technical Training （[2] On-site training）

-Describe the evaluation results of the on-site training conducted at the accepting company.

-The evaluation of on-site training is based on the on-site training report submitted by the accepting company at the end of the training and Evaluation Questionnaire after Specialized Technical Training completed by the participants.

-10 companies and 51 participants who completed on-site training were evaluated (100% response rate).

(i) Evaluation of effect of general orientation course in on-site training <Evaluation by accepting companies >（The full score of 5）

-The general satisfaction rating of accepting companies averaged 4.4 points, exceeding the target rating of 4 points in all eight categories.

(ii) Evaluation of effect of general orientation course in on-site training <Evaluation by participants>（The full score of 5）

- Participants exceeded the target score by 4 points in all 8 items, generally achieving the general training objectives.

(iii) Evaluation of goal achievement level in on-site training <Evaluation by accepting companies and participants>（0～100%）

-All accepting companies answered that they achieved 70% or more, and all of participants answered that they achieved 70% or more. Technical skills were thought to be mostly achieved.

(2) Overseas human resources development（Expert Dispatch Program）

-The evaluation of expert dispatch program is compiled as an evaluation immediately after completion of the degree of achievement of "technical improvement goals" and "human resource development goals."

-One expert who has already returned to Japan will be evaluated (response rate: 100%).

(i) Evaluation by experts（0～100%）

-Goal of technical improvement: 80% was achieved.

-Goal of human resource training: 80% was achieved.

-In addition, when asked whether the technical skills and knowledge necessary to achieve the implementation goals had been acquired at companies receiving guidance, the answer was "yes."

(ii) Evaluation by companies receiving guidance and dispatching companies

-Two companies said dispatch guidance is "expected to have considerable management effects."

-The companies receiving guidance were evaluated as having potential for "Improvement of skills," "improvements in quality," "improvements in productivity," "reduction of lead time and/or cycle time for production," "reduction of down time in production," "Improvement of utilization rate," and "cost reductions."

(iii) Effects of reduction in environmental load

(Evaluation by experts, companies receiving guidance and dispatching companies）

-Evaluating the effects of reduction in environmental load by technical guidance on "reduction in CO2 emissions", "reduction of Wastes", and "reduction of Polluted Air Emission".

I. Development of human resources for low carbon technology export（B. Human resource development program for introducing and maintaining energy-saving equipment）

(1) Domestic human resources development　Technical Training　（[2] On-site training）

-Describe the evaluation results of the on-site training conducted at the accepting company.

-The evaluation of on-site training is based on the on-site training report submitted by the accepting company at the end of the training and Evaluation Questionnaire after Specialized Technical Training completed by the participants.

-The evaluation covers 15 participants from 2 companies who have completed on-site training (response rate: 93%).

(i) Evaluation of effect of general orientation course in on-site training <Evaluation by accepting companies >（The full score of 5）

- The general satisfaction rating of accepting companies remained at an average of 3 points, falling short of the target rating of 4 points in all eight categories.

(ii) Evaluation of effect of general orientation course in on-site training <Evaluation by participants>（The full score of 5）

- The participants exceeded the target score by 4 points, except for some items.

(iii) Evaluation of goal achievement level in on-site training <Evaluation by accepting companies and participants>（0～100%）

-All of accepting companies answered that they achieved 80% or more, and 80% of participants answered that they achieved 80% or more or 70% to 79% or more.

II. Development of human resources for advanced Technology diffusion (the Green Growth Strategy)

(1) Overseas seminars

-Overseas seminar evaluation is based on the participants' self-evaluation, and the degree of goal achievement by the applicant companies is also considered.

-Evaluate one cases involving 254 participants (response rate: 44.1%)

(i) Evaluation Questionnaire by participants (4 grades)

Regarding understanding of Japan's decarbonization-related technologies, 97.3% of participants responded that it was "very useful" or "useful," and 88.4% responded that their interest in introducing such technologies had "greatly increased" or "increased."

(ii) Achievement of goals by applicant companies (10 grades)

The average goal achievement rate was 9, and the average ripple effect of holding seminars was also 8, both of which were high results.

(2) Invitation of industrial engineers (Invitation of key persons)

- Invitation of key persons evaluation is based on the participants' self-evaluation, and the degree of goal achievement by the applicant companies is also considered.

-Evaluate 2 cases involving 17 participants (response rate: 100%)

(i) Evaluation Questionnaire by participants (4 grades)

All respondents answered that understanding/interest/adoption of Japan's decarbonization-related technologies was "very useful" and "greatly increased."

(ii) Achievement of goals by applicant companies (10 grades)

The results were high across the board, with a goal achievement rate of 8.5, participant understanding rate of 10, and ripple effect of 6.5.

(3) Invitation of industrial engineers (Invitation of industrial engineers) (Technical Training) [2] On-site training

-Describe the evaluation results of the on-site training conducted at the accepting company.

-The evaluation of on-site training is based on the on-site training report submitted by the accepting company at the end of the training and Evaluation Questionnaire after Specialized Technical Training completed by the participants.

-The evaluation covers 17 participants from 5 companies who have completed on-site training (response rate: 100%).

(i) Evaluation of effect of general orientation course in on-site training <Evaluation by accepting companies >

(The full score of 5)

-The general satisfaction was highly evaluated 4.0 with the full score of 5.0.

(ii) Evaluation of goal achievement level in on-site training <Evaluation by participants> (The full score of 5)

-The target score of four points was exceeded for all items. It can be said that the goal has been achieved.

(iii) Evaluation of goal achievement level in on-site training <Evaluation by accepting companies and participants> (0～100%)

-All of accepting companies answered that they achieved 70% or more, and all of participants also answered that they achieved 70% or more.

【Chapter 5 CO2 Reduction Effects】

-The effects of energy conservation and CO2 reduction targets in I. A. the Human resource development program for saving energy consumed by production processes were calculated.

-Companies that utilize technical training (Training in Japan), expert dispatch, and overseas training programs are calculating energy-saving effects and CO2 reduction targets to quantitatively demonstrate the contribution of human resource development to decarbonization.

-When all programs were compiled, CO2 reduction was 21,350t-CO2 and the amount of effects was 630 million yen.

CO2 reduction targets achieved through technical training and dispatch of experts: Results converted into monetary terms

technical training Volume of CO2 reduction	dispatch of experts Volume of CO2 reduction	[1]Total Volume of CO2 reduction	[2] Crude oil CO2 emission coefficient*1	[3] crude oil Conversion [1]/[2]	[4]crude oil unit price *2	[5] Volume of CO2 reduction [3]×[4]
21,335 t-CO2	15 t-CO2	21,350 t-CO2	2.62t-CO2/ kL- Crude oil	8,148.85 kL	77,323yen/kL	630.093 million yen

*1 Conversion: Crude oil CO2 emission coefficient＝2.62t-CO2/kL-Crude oil

*2 Crude oil price: As of January 31, 2025, the price of crude oil was US$79.1 per barrel, and the Mitsubishi UFJ Bank (TTS) exchange rate at the same time was 155.43 yen/dollar. One barrel=0.159kL was used for calculation.

【Chapter 6 Summary】

-The “A. Human resource development program for saving energy consumed by production processes” aims to reduce energy consumption and CO2 emissions by improving production efficiency and reducing defect rates, developing parts using materials that reduce CO2 emissions, and introducing low-power consumption manufacturing equipment. It is estimated that this project will reduce CO2 emissions by 21,350t.

-The “B. Human resource development program for introducing and maintaining energy-saving equipment” involves training aimed at acquiring maintenance techniques and technical proposal skills for new customers regarding energy-efficient water supply pumps, transformers, drive control systems, inverters, etc. manufactured by Japanese companies. The introduction of these products in local areas is expected to reduce CO2 emissions.

-The “Development of human resources for advanced Technology diffusion (the Green Growth Strategy) ” implemented projects in the fields of resource recycling, hydrogen, fuel ammonia, semiconductors and information and communications, housing and buildings, and next-generation power management.

- In the questionnaire submitted at the time of application, many respondents indicated that if this project could not be implemented, they would change the training/instruction content and period and implement it independently, but that this would result in “reduced energy-saving effects and delays in achieving goals.” This confirmed the usefulness of this project for companies.

- The low-carbon/decarbonization field still has many advanced initiatives, and we would like to continue promoting human resource development support for new product development, expansion of orders for Japanese companies, and introduction of Japanese technology overseas.