

Third Party Evaluation Report 2016
Ministry of Foreign Affairs of Japan

Evaluation of Assistance in the Industrial Human Resource Development Sector in Thailand

February 2017
Mitsubishi Research Institute, Inc.

Preface

This report is a summary of the results of the Evaluation of Assistance in the Industrial Human Resource Development Sector in Thailand that Mitsubishi Research Institute was commissioned to conduct by the Ministry of Foreign Affairs of Japan (MOFA) in fiscal year 2016.

Since its commencement in 1954, Japan's Official Development Assistance (ODA) has contributed to the development of partner countries and to finding solutions to international issues which vary with time. Recently, more effective and efficient implementation of ODA has been required both in Japan and in the international community. MOFA has been conducting ODA evaluations every year mainly at the policy level with two main objectives: to improve the management of ODA; and to ensure its accountability. The evaluations are conducted by third parties to enhance their transparency and objectivity.

This evaluation study was conducted with the objectives of reviewing Japan's assistance in the industrial human resource development sector in Thailand and drawing lessons from the review to offer recommendations for the planning of future industrial human resource assistance policies and their effective and efficient implementation, and with the further objective of ensuring accountability by making the results of the evaluation widely available to the public.

Professor Izumi Ohno of the National Graduate Institute for Policy Studies served as chief evaluator of the evaluation and supervised the evaluation process as a whole, while Assistant Professor Yoshi Takahashi of the Graduate School for International Development and Cooperation at Hiroshima University served as an advisor, providing expert advice regarding industrial human resource development in Thailand. Both made an enormous contribution to this study from the commencement of the evaluation all the way to the production of this report. In addition, during both domestic research and the field survey, we benefited from the cooperation of the various concerned parties, including the Ministry of Foreign Affairs of Japan (MOFA), Japan International Cooperation Agency (JICA) and the ODA Task Force, as well as Thai government agencies and donors, educational and training institutions, local companies and NPOs. We would like to express our heartfelt gratitude to all those involved.

Finally, we would like to add that the opinions expressed in this report are those of the evaluation team and do not reflect the views or positions of the Government of Japan.

February 2017
Mitsubishi Research Institute

Evaluation of Assistance in the Industrial Human Resource Development Sector in Thailand (Summary)

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Evaluation period: July 2016 – March 2017

Field survey country: Kingdom of Thailand



Background, Objectives and Scope of the Evaluation

Japan has provided assistance in the industrial human resource development sector in various parts of the world, with a focus on Southeast Asia. Over the years many Japanese companies have been making inroads into Thailand, and as the country has come to serve as an important supply chain base to the Japanese economy, governmental and private actors have worked together on various activities in the field of human resource development. This evaluation reviews the initiatives from the 1980s onwards and provides recommendations for the planning and implementation of future ODA policies.

Summary of the Evaluation Results

Development Viewpoints

(1) Relevance of Policies

Supporting industrial human resource development in Thailand is highly consistent with Japan's high-level policies (the old ODA Charter, the Development Cooperation Charter and country-specific assistance policies) and the development needs of Thailand. Furthermore, Japan has a comparative advantage over other donors in this sector in terms of both quality and quantity, and has been involved in it ahead of international aid trends. On the other hand, until the announcement of the Industrial Human Resource Development Cooperation Initiative in November 2015, it had not been clearly defined and communicated as an independent sector, and in the future it will be necessary to reinforce its status as a policy and the communication of related information. As a result, the relevance of policies was found to be moderate.

(2) Effectiveness of Results

The effectiveness of results was evaluated through case studies in five different areas: (1) training policy-making personnel, (2) human resource development in the supporting industries, (3) training of business support personnel, (4) developing private sector human resources through higher

education and vocational schools, and (5) Thailand's emergence as a donor in Triangular Cooperation • South-South Cooperation.

In cases (1) and (5), personnel who create and advance policies, systems and structures were trained in sections such as the Bureau of Supporting Industries at the Ministry of Industry. This also led to the production of human resources who are well informed about Japan. Cases (2), (3) and (4) have also accomplished the training of personnel that were the direct targets of the aid, and overall the effectiveness of result was rated as high. However, in the case of the latter group (*shindan-shi* (SME management consultants), vocational schools etc.) the structures that would have helped increase the impact of aid had not yet been firmly established, which is an issue for the future.

(3) Appropriateness of Processes

Appropriateness of processes was evaluated from three viewpoints: (1) understanding of the development issues of the sector in question, (2) aid implementation structure of the relevant agencies, and (3) implementation of monitoring and follow-up. Overall, the implementation of Japanese industrial human resource development was found to be based on appropriate processes. At the same time, regarding the assessment of needs and practical coordination, considering that there was an absence of a platform where a wide variety of concerned parties from industry, government and academia could participate, before the Round Table Conferences of Human Resources Development began in March 2016, it is necessary to use the momentum of the Japan-Thailand Industrial Human Resource Development Cooperation Initiative of December 2016 to strengthen comprehensive efforts including the monitoring and follow-up of Japanese aid.

Diplomatic Viewpoints

Japanese aid has simultaneously helped strengthen Thailand's industrial power by developing local Thai industries, and contributed to the support and promotion of manufacturing activities, mostly in the automotive industry, of Japanese companies that have been advancing in Thailand. From the viewpoint of economic diplomacy, it has benefited both countries. The growth and success of industrial human resources who is well informed of Japan is also important in terms of diplomatic impact.

Recommendations

(1) Mainstreaming industrial human resource development in Japan's aid and formulating sector-specific development policies

Despite its comparative advantage, the status of Japanese industrial human resource development assistance as a policy has not been sufficiently defined. It is recommended that, based on the growing need for industrial human resource development in various countries, 1) the importance of industrial human resource development be continuously mentioned within the Priority Policy for Development Cooperation 2) sector-specific industrial human resource development policies be formulated for all aid recipient countries, with the aim of expanding assistance in this sector.

(2) Developing the institutional environment through intergovernmental dialogues for further sophistication of industrial human resources in Thailand

It is recommended that, in the future, seizing the opportunity provided by the Japan-Thailand Industrial Human Resource Development Cooperation Initiative, dialogues between the Governments of Japan and Thailand be strengthened, in order to develop the institutional environment with the aim of expanding the impact of aid and further sophistication of industrial

human resources in Thailand (increasing the number of applicants in the field of engineering and vocational schools, promoting the activities of *shindan-shi* etc.).

(3) Formulating, implementing, monitoring and evaluating a comprehensive and effective aid program

It is recommended that in view of the scale of Japanese assistance in Thailand, a comprehensive assistance plan that considers the issues of Thai industry, the supply and demand of labor, as well as the current situation and future of the education sector be formulated, and systematic localization measures be taken in order to increase the effectiveness of its implementation, monitoring and evaluation, as well as the effectiveness of individual aid projects.

(4) Establishing systems and structures to support comprehensive and effective industrial human resource development assistance

Industrial human resource development requires the involvement of a variety of actors from government, industry and educational institutions. It is recommended that a comprehensive and effective aid structure be established enabling the cooperation of industry, government and academia on the policy level as well as in practice (continuously holding roundtable discussions on human resource development involving representatives of industry, government and academia from both Japan and Thailand, and developing policies based on their outcomes, establishing a working-level support organization etc.).

(5) Strategic utilization and fostering of industrial human resources well informed about Japan

In improving the effectiveness and appropriateness of Japanese aid and its diplomatic impact, the role played by Thai industrial personnel well informed about Japan has been very significant. It is recommended that a system that strategically utilizes and fosters industrial human resources personnel well informed about Japan be created (identification and utilization of talented personnel, passing on information related to human resources and sharing it between organizations, etc.).

(6) Strengthening communication on Japan's industrial human resource development assistance

Compared to other donors, Japanese industrial human resource development assistance has distinguishing traits and a long history. It is recommended that a medium summarizing the defining characteristics of Japanese industrial human resource development assistance be produced and utilized in communicating Japan's comparative advantage in the sector, and in donor co-ordination. When doing so, it is important to communicate information in a way that also takes into consideration its relation to international aid trends.

(7) Creating a model from industrial human resource development assistance in Thailand and its implementation in other countries

It is recommended that an industrial human resource development model be developed based on the lessons learned and experiences gained from the assistance in Thailand, and that the model be utilized in future aid to Thailand as well as in aid implemented by Thailand in the form of South-South cooperation.

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Source: University of Texas

List of Abbreviations

Abbreviation	Name
ADB	Asian Development Bank
AEC	ASEAN Economic Community
AHRDIP	Automotive Human Resources Development Institute Project
AHRDP	Automotive Human Resources Development Project
AOTS	Association for Overseas Technical Scholarship
APMP	Asia Pacific Metrology Programme
ASEAN	ASEAN Economic Community
AUN/SEED-Net	ASEAN University Network/Southeast Asia Engineering Education Development Network
BDS	Business Development Service
BHN	Basic Human Needs
BIED	Bureau of Industrial Enterprise Development
BIMD	Bureau of Industrial Management Development
BSID	The Bureau of Supporting Industries Development:
CLMV	Cambodia, Laos, Myanmar and Vietnam
CRS	Common Report Standard
EEI	Electrical and Electronics Institute
GDP	Gross Domestic Product
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GMP	Good Manufacturing Practice
GMS	Greater Mekong Subregion
HACCP	Hazard Analysis and Critical Control Point
HIDA	The Overseas Human Resources and Industry Development Association
ILO	International Labor Organization
IPC	Industrial Promotion Center
IRP	Industrial Restructuring Plan
JETRO	Japan External Trade Organization
JICA	Japan International Cooperation Agency
JODC	Japan Overseas Development Corporation
JTECS	Japan-Thailand Economic Cooperation Society
JTPP	Japan Thailand Partnership Program
KMITL	King Mongkut's Institute of Technology Ladkrabang
MDGs	Millennium Development Goals
MIDI	The Metal Working and Machinery Development Institute
NESDB	National Economic and Social Development Board
NPO	Non-Profit Organization
NIMT	National Institute of Metrology (Thailand)
ODA	Official Development Assistance
OECD	Organisation for Economic Co-operation and Development
OSMEP	The Office of SMEs Promotion
R&D	Research and Development
RISMEP	Project for Enhancing Regional Integrated SME Promotion
ReCCIT	Research Center for Communications and Information Technology
SDGs	Sustainable Development Goals
SME	Small and Medium Sized Enterprises
SSIP	Small-Scale Industry Promotion Project
TAI	Thai Automotive Institution
TICA	Thailand International Cooperation Agency
TNI	Thai-Nichi Institute of Technology
TPA	Technology Promotion Association
TPS	Toyota Production System
TVET	Technical and Vocational Education and Training

Definitions of terminology related to industrial human resources

In industrial human resources, there are various categories and names depending on the role and skill level of the personnel. For the sake of semantic clarity, in this report the principal terms are defined as listed below, following the common usage conventions of the sector (with the exception of practical engineers and innovative engineers; see explanatory note for details).

Term	Definition
Skilled worker	A person engaged in practical operation at the production line. Broadly defined includes line supervisors and technicians in charge of maintenance and quality control, except for engineers
line supervisor	Person in charge of supervising skilled workers at the production line
technician	Person engaged in practical work other than direct production, such as maintenance of production facilities, quality control and inspections
core skilled worker	A skilled worker that plays a central role in the operation and management of the production line. Specifically, in addition to supervisors, among workers in charge of direct operation it refers to skilled workers with a high skill level in a particular area of operation and who engage in a wide range of work
manager	A person who is not involved in practical operation but manages the workers in charge of practical production work. Generally does not involve line supervisors.
engineer	A person who develops and designs products and services and their production processes using technical knowledge. However, in many countries including Thailand, only people who have a bachelor's degree in the field of engineering are called engineers
production engineer	An engineer in charge of development and design of production processes
practical engineer	A person (engineer) who engages in the development and design of specific products and services and their production processes at a company, and who is expected to improve products, product development and production processes based on sufficient understanding of practical operation
innovative engineer	An engineer who engages in basic or applied research at university or corporate research institutes, or who utilizes the outcomes of such research to develop concrete products and services. In both basic and applied research the final objective is expected to be creating new products and services for the market

※ Practical engineer and innovative engineer are terms used in policy talks between Japan and Thailand. It should be noted that the definitions above are not of common usage but policy-specific.

Chapter 1 Implementation Policy of the Evaluation

1-1 Background and objectives of the evaluation

Japan has engaged in industrial human resource development assistance in various parts of the world, with a focus on Southeast Asia. Over the years many Japanese companies have been making inroads especially into Thailand. As the country has come to serve as an important supply chain base to the Japanese economy, many measures have been implemented through official development assistance (ODA), such as establishing human resource development agencies, improving the general business environment, formulation of industrial skill development programs and providing technical training for entrepreneurs. In recent years, industrial human resource development has also been listed as one of the priority areas in the Country Assistance Policy for the Kingdom of Thailand (2012), and the preceding Japan's Economic Cooperation Program for Thailand (2006) and Country Assistance Program for Thailand (2002).

Nowadays, in addition to industrial human resource development in Thailand, initiatives that use Thailand as a core base to benefit the entire region of Southeast Asia, such as the ASEAN University Network/Southeast Asia Engineering Education Development Network (AUN/SEED-Net), are also being actively developed. Furthermore, at the Japan-ASEAN Summit Meeting held in December 2015, the Government of Japan announced the Industrial Human Resource Development Cooperation Initiative, stating that in the future Japan would accelerate industrial human resource development assistance in the entire ASEAN region. It is expected that relevant aid experience and know-how from Thailand will be utilized in this context.

Taking into consideration the abovementioned background, this evaluation has considered the Country Assistance Policy for the Kingdom of Thailand (including the Economic Cooperation Program for Thailand and the Country Assistance Program for Thailand), the Development Cooperation Charter (including the ODA Charter), relevant policies of the Government of Thailand, the initiatives of international organizations, other donors and private companies, Japan's Priority Policy for Development Cooperation and Industrial Human Resource Development Cooperation Initiative. It has also noted the role of Thailand in Southeast Asia. The evaluation of Japan's Assistance in the Industrial Human Resource Development Sector in Thailand is evaluated from both development and diplomatic viewpoints, and recommendations are provided for the future. In addition, while ensuring accountability to the Japanese people, this evaluation also aims to provide feedback to the concerned countries and organizations, and to be of use as public information on Japanese ODA.

1-2 Scope of the evaluation

The target period of this evaluation was longer than the period of 5-10 years that is usually applied in ODA evaluations. It was set to 35 years, from 1980 to 2015, considering the fact that the results of industrial human resource assistance need a certain period of time to manifest itself.

When the term industrial human resource development is used broadly, human resources of any industrial sector could potentially be included in the target group. However, the Industrial Human Resource Development Cooperation Initiative focuses especially on developing human resources that contribute to improving infrastructure, which forms the basis of economic development, and building and improving the key industries of the country in question. This evaluation uses the Industrial Human Resource Development Initiative as a point of reference when defining the range of the term industrial human resources. Industrial human resource development is thus defined as developing human resources that will be directly employed in the industries in question, or training personnel that will be engaged in a supporting role, developing the aforementioned human resources.

The key industry in Thailand during the target period of the evaluation was manufacturing, and within Japan's industrial human resource development assistance in Thailand, aid projects related to the manufacturing industry were the most substantial. Therefore, the main target industries of this evaluation are 1) the manufacturing industry and the service industries related to the production and development of the manufacturing industry, and 2) the industries supporting the manufacturing industry (including the relevant educational and training institutions, research institutes, ministries and agencies). While conducting the evaluation, special focus was placed on the following types of human resource development assistance:

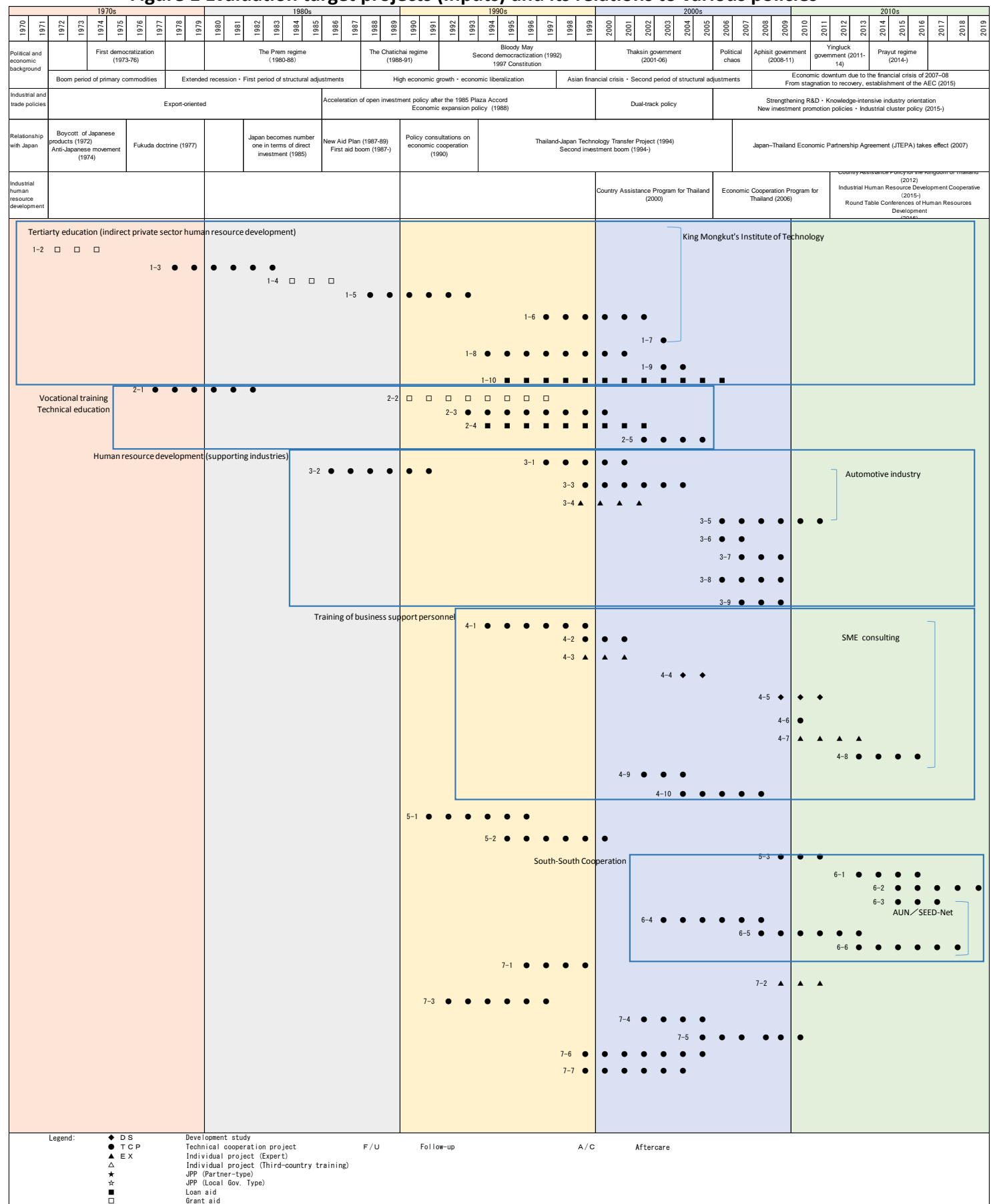
- (a) Assistance for the development of human resources employed by the manufacturing industry and service industries related to the production and development of the manufacturing industry: strengthening the abilities of skilled workers, engineers and managers; development engineers and managers; procurement, marketing and sales staff and managers; executives
- (b) Assistance for human resource development of the industries supporting the manufacturing industry: strengthening the abilities of teachers, trainers, consultants, managers (educational and training institutions), researchers (research institutes) and personnel responsible for planning and implementing policies (related ministries and agencies)

The projects that were targets of the evaluation were arranged into separate categories based on their contents and displayed in chronological order together with the way they relate to the political and economic situation in Thailand, industrial and trade policies and the relationship with Japan, in order to clearly demonstrate the position of each project (Figure 1). After that the subject of the evaluation and their relation to the relevant policies were arranged into an objective framework (Figure 2). Based on the objectives of the recent Country Assistance Policy for the Kingdom of Thailand, "promotion of mutual benefits" and "contribution to regional development" were set as overall goals; "sustainable development of economy and coping with maturing society (includes benefits to Japan)" and "coping with common issues in ASEAN countries" as priority areas; "development of infrastructure to strengthen competitiveness," "improving research abilities and strengthening networks", "promoting the ASEAN community" and "others" as development issues. The initiatives developed by Japan in the industrial human resource development sector with the aim of realizing these objectives were then arranged accordingly. Also, in addition to conducting the evaluation appropriately from development and diplomatic viewpoints, when creating the objective framework, the consistency with Japanese high-level policies (Development Cooperation Charter etc.) and other relevant policies (Industrial Human Resource Development Cooperation Initiative etc.), and the relevant policies formulated by the Government of Thailand as well as the

relationship with the various concerned parties (international organizations, private companies, educational institutions, NGOs etc.) were also considered, with the objective of drawing recommendations and lessons learned that could contribute to future Japanese aid.

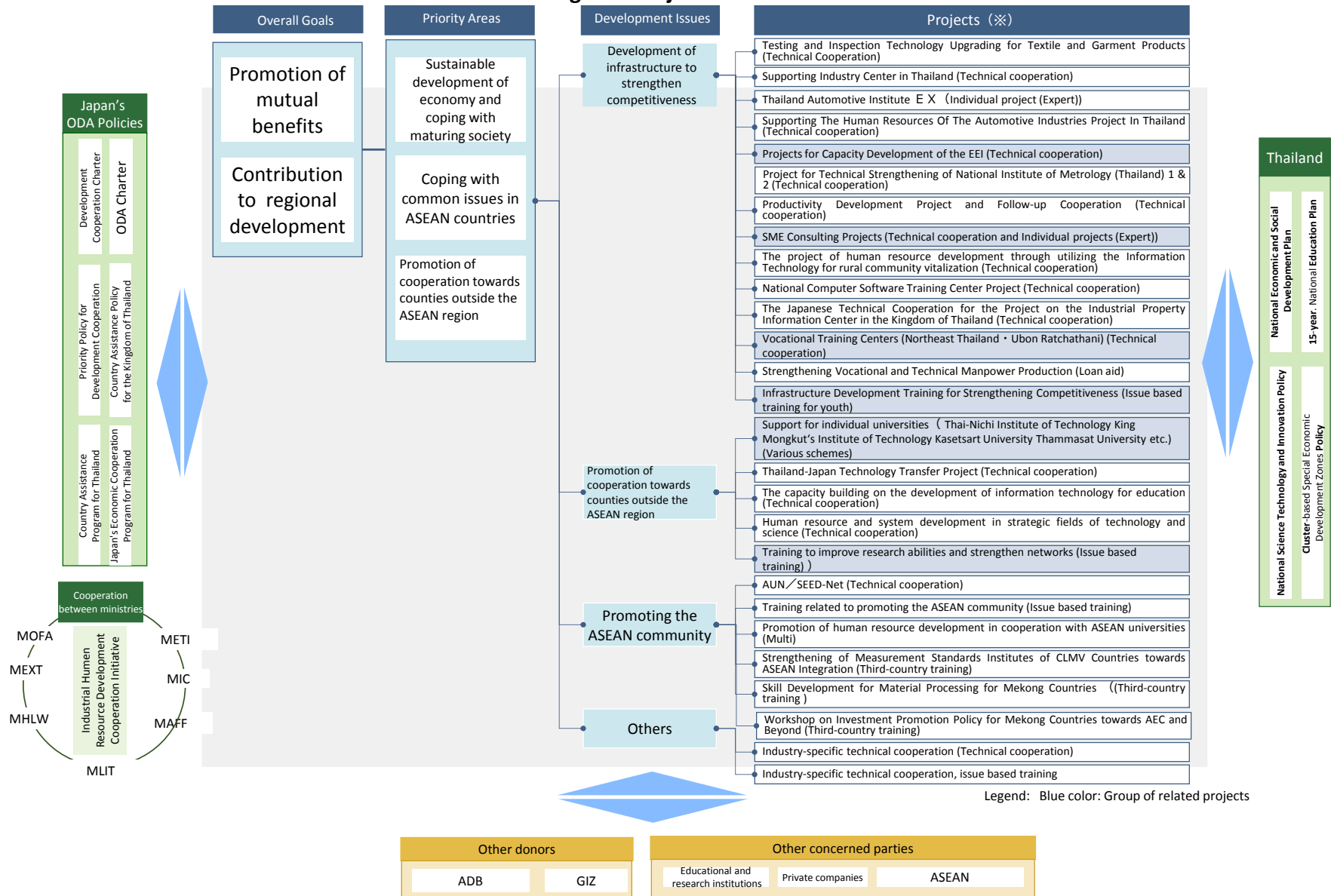
	1980s	1990s	2000s	2010s
1. Demographic Change	Population growth, urbanization, and migration from rural to urban areas.	Continued population growth, with increasing urbanization and migration.	Population growth, with increasing urbanization and migration.	Population growth, with increasing urbanization and migration.
2. Economic Change	Shift from agriculture to manufacturing and services.	Shift from manufacturing to services and technology.	Shift from services to technology and innovation.	Shift from technology to innovation and entrepreneurship.
3. Political Change	Shift from authoritarianism to democracy.	Shift from democracy to authoritarianism.	Shift from authoritarianism to democracy.	Shift from democracy to authoritarianism.
4. Cultural Change	Shift from traditional values to modern values.	Shift from modern values to postmodern values.	Shift from postmodern values to global values.	Shift from global values to local values.
5. Environmental Change	Shift from rural to urban areas.	Shift from urban to suburban areas.	Shift from suburban to exurban areas.	Shift from exurban to rural areas.

		Project title	Scheme
Tertiary education (indirect private sector human resource development)	1-1	Nondhaburi Telecommunication Training Center (1980-1985)	Technical
	1-2	Construction of research laboratory for the Faculty of Telecommunications, King Mongkut's Institute of Technology	Grant aid
	1-3	King Mongkut's Institute of Technology Ladkrabang	Technical cooperation
	1-4	King Mongkut's Institute of Technology Expansion Plan	Grant aid
	1-5	King Mongkut's Institute of Technology Ladkrabang (KMILT) Expansion Plan	Technical cooperation
	1-6	The Research Center for Communication and Information Technology (ReCIT), King Mongkut's Institute of Technology, Ladkrabang, The Kingdom of Thailand	Technical cooperation
	1-7	Follow-up Cooperation for the Project on the Research Center for Communications and Information Technology of KMILT	Technical cooperation
	1-8	Project to Enhance the Capacity of the Faculty of Engineering at Kasetsart University Research Collaboration (II) NAWC Follow-up	Technical cooperation
	1-9		Technical cooperation
Vocational training- Technical education	2-10	Thailand-Japan Technology Transfer Project	Loan aid
	2-1	Northeast Thailand Vocational Training Center	Technical
	2-2	Bon Patchathani Vocational Training Center	Grant aid
	2-3	Development of Mechatronics Engineering Course at Bachelor Degree Level in Pathumwan Technical College in the Kingdom of Thailand	Technical cooperation
	2-4	Strengthening Vocational and Technical Manpower Production	Loan aid
Human resource development (supporting industries)	2-5	The capacity building on the development of information technology for education	Technical cooperation
	3-1	Testing and Inspection Technology Upgrading for Textile and Garment Products	Technical cooperation
	3-2	Development of the metal working and machine industry in the Kingdom of Thailand	Technical cooperation
	3-3	Supporting Industry Center in Thailand	Technical cooperation
	3-4	Thailand Automotive Institute EX	Individual project (Expert)
	3-5	Supporting The Human Resources Of The Automotive Industries Project In Thailand	Technical cooperation
	3-6	The Japanese Technical Cooperation Project for Enhancing the Competency of Electrical and Electronics Institute of the Kingdom of Thailand	Technical cooperation
	3-7	Technical Cooperation Project for Capacity Development of EEI for the Conformity Assessment	Technical cooperation
	3-8	Institutional and Capacity Development in the Targeted Fields of Science and Technology (Establishment of Technology Licensing Office (TLO))	Technical cooperation
Training of business support personnel	3-9	Institutional and Capacity Development in the Targeted Fields of Science and Technology (HRD and standardization project on PV)	Technical cooperation
	4-1	The Productivity Development Project	Technical cooperation
	4-2	Follow-up Cooperation for the Productivity Development Project	Technical cooperation
	4-3	Small and medium-sized enterprises diagnostic institution-building EX	Individual project (Expert)
	4-4	Study on Development of Consulting Services to Promote SME Cluster and Regional Development in the Kingdom of Thailand	Development study
	4-5	The Strengthening Mechanisms for the Regional SME Promotion and Consultancy Service Quality Development	TC for Development Planning (Commissioned)
	4-6	Project for SME Consultant Retraining	Technical cooperation
	4-7	Reinforcement of Thai SME's Activities	Individual project (Expert)
	4-8	Project for Enhancing Regional Integrated SME Promotion (RISNEP) Mechanism	Technical cooperation
	4-9	Project for Technical Strengthening of National Institute of Metrology (Thailand)	Technical cooperation
Human resource development (data processing)	4-10	Project for Technical Strengthening of National Institute of Metrology (Thailand) Phase 2	Technical cooperation
	5-1	National Computer Software Training Center Project	Technical cooperation
	5-2	The Japanese Technical Cooperation for the Project on the Industrial Property Information Center in the Kingdom of Thailand	Technical cooperation
	5-3	The project of human resource development through utilizing the Information Technology for rural community vitalization	Technical cooperation
	South-South Cooperation	6-1	Strengthening of Measurement Standards Institutes of QLW Countries towards ASEAN
6-2		Skill Development for Material Processing for Mekong Countries towards ASEAN	Individual project (Third country training)
6-3		Workshop on Investment Promotion Policy for Mekong countries towards AEC and Beyond	Individual project (Third country training)
6-4		ASEAN University Network/Southeast Asia Engineering Education Development (ASEE-Net)	Technical cooperation
6-5		ASEAN University Network/Southeast Asia Engineering Education	Technical cooperation
6-6		ASEAN University Network/Southeast Asia Engineering Education Development Network (AUN-/SEED-Net) Phase 3	Technical cooperation
Others	7-1	Wireless Training Center Project	Technical cooperation
	7-2	ICT Private Sector Development & Policy Development Support (EX)	Individual project (Expert)
	7-3	Distribution Automation Engineer Training Project in the Kingdom of Thailand	Technical cooperation
	7-4	The Project on the Practical Energy Management Training Center in the Kingdom of Thailand	Technical cooperation project
	7-5	Third country training program on Advance course of Freshwater Aquaculture	Technical cooperation project
	7-6	Development of the Method of Urban Development	Technical cooperation project
	7-7	The Reforestation and Extension Project in the Northeast of Thailand 2	Technical cooperation project
	7-8	Rice Production Technologies for Food Security of African Countries	Technical cooperation
	7-9	Training on Harmonization of Power Distribution System in ASEAN Countries	Technical cooperation
	7-10	Power Distribution System Engineering, Management and Technology	Technical cooperation



Source: JICA documents (with modifications)

Figure 2 Objective framework



Source: Produced by Mitsubishi Research Institute

1-3 Evaluation method and framework

1-3-1 Evaluation viewpoints

Based on MOFA's ODA Evaluation Guidelines (10th Edition), the analysis of this evaluation was conducted from four viewpoints: relevance of policies, effectiveness of results, appropriateness of processes and diplomatic viewpoints.

1-3-2 Evaluation methods

The evaluation criteria were established based on the above-mentioned four viewpoints of MOFA's ODA Evaluation Guidelines (10th Edition), and the analysis was conducted using both qualitative and quantitative methods. In addition, in the evaluation from development viewpoints, the rating of relevance of policies, effectiveness of results and appropriateness of processes was conducted according to the methods and criteria shown in Table 1. However, as in the human resource development sector it is generally difficult to ascertain the effects quantitatively, qualitative evaluation is highly effective. Therefore, with the aim of implementing a more specific qualitative evaluation, case studies were also utilized.

Figure 3 Evaluation Criteria • Content and Rating

Viewpoint	Evaluation criteria • Content (Example)	Rating
Relevance of Policies	Is it consistent with Thailand's development needs?	Relevance of Policies, Effectiveness of Results and Appropriateness of Processes were all rated on a scale of "very high," "high," "moderate" and "marginal," with an accompanying supplementary explanation.
	Is it consistent with the Development Cooperation Charter (ODA Charter) and the Priority Policy for Development Cooperation?	
	Is it consistent with the Country Assistance Policy and sectoral basic policies?	
	Is it consistent with international industrial human resource development initiatives and aid trends?	
	Is it consistent with other donors (multi-donor trust funds, bilateral aid agencies) assistance policies?	
	Did the aid provided utilize Japan's comparative advantage?	
Effectiveness of Results	Is the ODA invested by Japan in the industrial human resource development sector in Thailand sufficient (inputs)?	
	The number of persons, companies and organizations that have benefited from industrial human resource development projects in Thailand (outputs)?	
	How big was the contribution to the objectives and indicators of the industrial human resource development sector in Thailand (outcome)?	
	How was the impact on Thai development policies and international aid trends?	
	Are there signs of Thai ownership, sustainability and development towards self-reliance?	
Appropriateness of Processes	Were the approaches listed in the Development Cooperation Charter (ODA Charter) implemented?	
	Were there continuous efforts to assess the needs of Thailand (policy consultations etc.)?	
	Where global changes in the industrial human resource development sector accurately assessed, followed and/or initiated?	
	Was there a process in place to regularly assess and follow the implementation of aid?	
	Was the cooperation between Japanese aid agencies in Thailand, MOFA and the JICA headquarters etc. smooth?	

Viewpoint	Evaluation criteria • Content (Example)	Rating
	Was there cooperation with other bilateral aid agencies, multi-donor trust funds etc.?	
	Did the concerned parties share the project evaluation results with the Government of Thailand and other donors?	
Diplomatic Viewpoints	Diplomatic importance (strengthening bilateral ties, deepening diplomacy, sharing basic values etc.) Diplomatic impact (strengthening Japanese presence, strengthening economic ties, benefits to Japanese companies etc.)	

Source: Produced by Mitsubishi Research Institute

1-3-3 Evaluation framework

Before commencing the actual evaluation, the evaluation viewpoints, evaluation criteria, main evaluation content and indicators, as well as concrete methods for gathering information and sources of information were organized into an evaluation framework based on MOFA's ODA Evaluation Guidelines (10th Edition).

Figure 4 Framework for the Evaluation of Assistance in the Industrial Human Resource Development Sector in Thailand

【Evaluation target】 Assistance in the Industrial Human Resource Development Sector in Thailand 【Evaluation period】 1980-2015			
View point	Evaluation criteria	Main evaluation content • indicators	Methods and sources for gathering information
Relevance of Policies	1. Consistency with the development needs of the recipient country	Is it consistent with the needs of Thai government agencies, development policies and industrial human resource development policies?	◆ Literature and web research • Development Cooperation Charter (ODA Charter), Country Assistance Program for Thailand, Economic Cooperation Program for Thailand, Country Assistance Policy for the Kingdom of Thailand, relevant policies of the Ministry of Economy, Trade and Industry (METI), the Industrial Human Resource Development Cooperation Initiative etc. • Policy papers and reports of the Government of Thailand and other donors (National Economic and Social Development Plan, Automotive Master Plan, Cluster Development Policy, Structural Adjustment Program, Thailand 4.0 and others) ◆ Research interviews in Japan • Ministry of Foreign Affairs, JICA, Ministry of Economy, Trade and Industry, Ministry of Education,
	2. Consistency with Japan's high-level policies	Is it consistent with the Development Cooperation Charter (ODA Charter), Priority Policy for Development Cooperation, Country Assistance Policy etc.?	
	3. Relation to international priority issues	Is it consistent with international aid trends and initiatives in the industrial human resource development sector?	
	4. Consistency with other donors	Is it consistent with the assistance policies of other donors (multi-donor trust funds, bilateral aid agencies etc.)?	

【Evaluation target】 Assistance in the Industrial Human Resource Development Sector in Thailand 【Evaluation period】 1980-2015			
View point	Evaluation criteria	Main evaluation content ・ indicators	Methods and sources for gathering information
	5. Japan's comparative advantage	Did the implemented aid utilize Japan's comparative advantage?	<p>Culture, Sports, Science and Technology, HIDA, JTECS, relevant companies and others</p> <p>◆Field survey</p> <ul style="list-style-type: none"> • Thai government agencies (Ministry of Industry, Ministry of Education, Ministry of Labour, Industrial Promotion Center, Thailand International Cooperation Agency, National Institute of Metrology) • Local institutions (King Mongkut's Institute of Technology Ladkrabang, Thai-Nichi Institute of Technology, Pathumwan Institute of Technology, Thailand Automotive Institute, Thailand Productivity Institute, local companies and others) • Embassy of Japan in Thailand, JICA Thailand Office, local offices of other organizations (JETRO , HIDA , Japanese Chamber of Commerce , AUN/Seed-Net , Technology Promotion Association (Thailand-Japan) • International agencies and donors: ADB, GIZ
Effectiveness of Results	1. Inputs	Is the ODA invested by Japan in industrial human resource development in Thailand sufficient? (The percentage of Japanese input of the total international amount, the sum and percentage occupied by Japanese input in the Thai industrial human resource development budget, the percentage of industrial human resource development assistance of the total amount of Japan's aid to Thailand)	<p>◆Literature and web research</p> <ul style="list-style-type: none"> • Statistics, ODA reports, websites etc. of the Government of Thailand and other donors <p>◆Research interviews in Japan</p> <ul style="list-style-type: none"> • Ministry of Foreign Affairs, JICA, Ministry of Economy, Trade and Industry, Ministry of Education, Culture, Sports, Science and Technology, HIDA, JTECS, relevant companies and others <p>◆Field survey</p> <ul style="list-style-type: none"> • Thai government agencies (Ministry of Industry, Ministry of Education, Ministry of Labour, Industrial Promotion Center, Thailand International Cooperation Agency, National Institute of Metrology) • Local institutions (King Mongkut's Institute of Technology Ladkrabang, Thai-Nichi Institute of
	2. Outputs/outcomes	<p>Number of people targeted by the industrial human resource development projects?</p> <p>How are those people utilizing the outcomes of the projects?</p>	

【Evaluation target】 Assistance in the Industrial Human Resource Development Sector in Thailand 【Evaluation period】 1980-2015			
View point	Evaluation criteria	Main evaluation content ・ indicators	Methods and sources for gathering information
	3.Impact	How big was the influence on Thailand's development and industrial human resource development policies and international aid trends? Are there signs of Thai ownership, sustainability and development towards self-reliance? Did economic activity pick up in the target industries in Thailand? To what extent did the aid benefit ASEAN as whole?	Technology, Pathumwan Institute of Technology, Thailand Automotive Institute, Thailand Productivity Institute, local companies and others) • Embassy of Japan in Thailand, JICA Thailand Office, local offices of other organizations (JETRO , HIDA , Japanese Chamber of Commerce , AUN/Seed-Net , Technology Promotion Association (Thailand-Japan) • International agencies and donors: ADB, GIZ
Appropriateness of Processes	1.Implementation of high-level policies	Where the approaches for the industrial human resource development sector indicated in the Development Cooperation Charter (ODA Charter) etc. implemented?	◆ Literature and web research • Policy consultation records of Japanese agencies and other donors • Websites of the Thai government and other donors etc.
	2.Assessment of needs	Were there continuous efforts to assess the needs of Thailand (policy consultations etc.)?	◆ Research interviews in Japan • Ministry of Foreign Affairs, JICA, Ministry of Economy, Trade and Industry, Ministry of Education, Culture, Sports, Science and Technology, HIDA, JTECS, relevant companies and others
	3.Response to international changes	Where global changes in the industrial human resource development sector accurately assessed, followed and/or initiated?	◆ Field survey • Thai government agencies (Ministry of Industry, Ministry of Education, Ministry of Labour, Industrial Promotion Center, Thailand International Cooperation Agency, National Institute of Metrology)
	4.Assessment of implementation	Was there a process in place to regularly assess and follow the implementation of aid?	• Local institutions (King Mongkut's Institute of Technology Ladkrabang, Thai-Nichi Institute of Technology, Pathumwan Institute of Technology, Thailand Automotive Institute, Thailand Productivity Institute, local companies and others)
	5.Cooperation between Japanese agencies	Was the cooperation between Japanese aid agencies in Thailand, MOFA and the JICA headquarters etc. smooth?	• Embassy of Japan in Thailand, JICA Thailand Office, local offices of other organizations (JETRO , HIDA , Japanese Chamber of Commerce , AUN/Seed-Net , Technology Promotion Association (Thailand-Japan) • International agencies and donors: ADB, GIZ
	6.Cooperation with other donors	Was there cooperation with other bilateral aid agencies, multi-donor trust funds etc.?	
	7.Sharing of evaluation results	Did the concerned parties share the project evaluation results with the Government of Thailand and other donors?	
Diplomatic Viewpoints	1.Importance	Were bilateral ties and diplomacy with Thailand strengthened and deepened? Were basic values shared?	◆ Research interviews in Japan • Ministry of Foreign Affairs, JICA, Ministry of Economy, Trade and Industry, Ministry of Education, Culture, Sports, Science and Technology, HIDA, JTECS, relevant companies and others
	2.Impact	To what extent was Japan's international presence heightened? To what extent were friendly economic	

【Evaluation target】 Assistance in the Industrial Human Resource Development Sector in Thailand 【Evaluation period】 1980-2015			
View point	Evaluation criteria	Main evaluation content ・ indicators	Methods and sources for gathering information
		relations with Thailand strengthened? How much did Japanese companies benefit?	<ul style="list-style-type: none"> ◆ Field survey • Thai government agencies (Ministry of Industry, Ministry of Education, Ministry of Labour, Industrial Promotion Center, Thailand International Cooperation Agency, National Institute of Metrology) • Local institutions (King Mongkut's Institute of Technology Ladkrabang, Thai-Nichi Institute of Technology, Pathumwan Institute of Technology, Thailand Automotive Institute, Thailand Productivity Institute, local companies and others) • Embassy of Japan in Thailand, JICA Thailand Office, local offices of other organizations (JETRO , HIDA , Japanese Chamber of Commerce , AUN/Seed-Net , Technology Promotion Association (Thailand-Japan) • International agencies and donors: ADB, GIZ

Source: Produced by Mitsubishi Research Institute

1-3-4 Evaluation procedure

(1) Flow of the implementation

The flow of the evaluation was as follows: 1) establishing the evaluation framework 2) research in Japan 3) field survey 4) organizing the evaluation results and formulating the recommendations.

(2) Establishing the evaluation framework

In order to conduct the evaluation appropriately in accordance with MOFA's ODA Evaluation Guidelines (10th edition), an evaluation framework consisting of the evaluation viewpoints, the evaluation criteria, the specific evaluation content and indicators, as well as the sources of information, was established.

(3) Research in Japan

(A) Literature and online research

Relevant information (in Japanese and English) was gathered and organized from literature and online sources. The main targets of the research were the results of Japanese aid in the industrial human resource development sector in Thailand, relevant policy papers and statistics published by the Government of Thailand, reports concerning the activities of international agencies and other donors in the same sector, material published on project sites (the aid recipient, the universities and centers etc. that have been receiving assistance), and the materials of Japanese companies concerning their Thai branch (employment situation etc.) etc.

(B) Interviews in Japan

Research interviews were conducted, among others, at the Ministry of Foreign Affairs, JICA, Ministry of Economy, Trade and Industry, Ministry of Education, Culture, Sports, Science and Technology, the

Overseas Human Resources and Industry Development Association (HIDA), Japan-Thailand Economic Cooperation Society (JTECS) and relevant companies in Japan. During these interviews the research team inquired about the consistency of the industrial human resource development assistance in Thailand with Japan's high-level policies, the implementation processes of various projects in Thailand, cooperation with other donors, the significance of aid within diplomatic strategy as whole, and the benefits to Japanese companies.

(4) Field survey

Based on the results of the research conducted in Japan, a field survey was implemented in Bangkok and Chiang Mai, with the aim of gathering more concrete information and examination of the items in the evaluation criteria. Information was gathered from Thai government agencies, Japanese agencies in Thailand, international organizations, aid agencies of other countries, institutions and companies involved in aid projects, regarding the consistency of the Thai development strategy with Japanese aid, the impact of Japanese aid, cooperation between the relevant agencies, and the benefits to Japanese companies.

In addition, regarding the aid projects related to the training of *shindan-shi* (SME management consultants, for details see interviews at BSID, Page 72-73) and the development of supporting industries of the automotive industry in particular, in addition to conducting interviews the research team visited those companies that had actually participated in the training programs and the companies that had received support from *shindan-shi* and visited their work premises so as to confirm how the results of aid could be observed there.

Figure 5 Places visited during the field survey

Date • City		Place
31 Oct Bangkok	AM	Bureau of Supporting Industries Development (BSID), Ministry of Industry (1)
		Embassy of Japan in Thailand (1)
	PM	JETRO Bangkok
		JICA Thailand Office
1 Nov Bangkok	AM	Japanese Chamber of Commerce, Bangkok
		Office of the Vocational Education Commission, Ministry of Education
	PM	HIDA Bangkok Office
		AUN/SEED-Net Office
2 Nov Bangkok	AM	National Institute of Metrology (NIMT)
		German Corporation for International Cooperation GmbH (GIZ)
	PM	Thai-Nichi Institute of Technology
		Technology Promotion Association (Thailand-Japan)
		Bureau of Industrial Management Development (BIMD), Department of Industrial Promotion, Ministry of Industry
3 Nov Chiang Mai	AM	Industrial Promotion Center (IPC1)
	PM	Company A (received assistance from <i>shindan-shi</i> and the Industrial Promotion Center)
4 Nov Chiang Mai	AM	Company B (received assistance from <i>shindan-shi</i> and the Industrial Promotion Center)
	PM	Company C (received assistance from <i>shindan-shi</i> and the Industrial Promotion Center)

Date • City		Place
7 Nov Bangkok	AM	Bureau of Supporting Industries Development (BSID), Ministry of Industry (BSID②)
		Pathumwan Institute of Technology
	PM	Company D (participated in training for the supporting industries of the automotive industry)
		King Mongkut's Institute of Technology Ladkrabang
8 Nov Bangkok	AM	Thailand International Cooperation Agency (TICA)
		Company E (participated in training for the supporting industries of the automotive industry)
		Embassy of Japan in Thailand ②
	PM	Department of Skill Development, Ministry of Labour
		Thailand Automotive Institute (TAI)

Source: Produced by Mitsubishi Research Institute

(5) Organizing the evaluation results and formulating the recommendations

Using the results of the research conducted in Japan and the field survey as a base, Japan's initiatives in the industrial human resource development sector in Thailand were objectively evaluated, and the lessons learned and specific recommendations for future industrial human resource development assistance in Thailand and the whole region of South East Asia summarized, while taking into account the arguments concerning the Development Cooperation Charter, the Industrial Human Resource Development Cooperation Initiative and other policies. When summarizing the evaluation results and formulating the recommendations, aiming to improve the quality of the evaluation and recommendations, rating based on the development viewpoints was attempted. In addition, for the recommendations, their order of priority, the implementing party and the time required for implementation were clearly stated, while also taking into consideration the independence and neutrality of the evaluation as well as compliance with policy needs and other factors.

1-4 Implementation structure of the evaluation

The evaluation was conducted by a team composed of the members listed below. The field survey was carried out by these 5 persons, while Mr. Takaaki Kato, Deputy Director of the ODA Evaluation Division, Minister's Secretariat, MOFA participated as an observer.

- Chief Evaluator: Professor Izumi Ohno, National Graduate Institute for Policy Studies
- Advisor: Associate Professor Yoshi Takahashi, Graduate School for International Development and Cooperation, Hiroshima University
- Consultants:
 - Mr. Muneaki Yokoama, Chief Researcher, Science and Safety Division, Mitsubishi Research Institute
 - Ms. Saki Tomita, Researcher, Regional Revitalization Division, Mitsubishi Research Institute
 - Mr. Shota Yamaguchi, Researcher, Healthcare and Wellness Division, Mitsubishi Research Institute

1-5 Limitations of the evaluation

What sets industrial human resource development apart from other sectors of development assistance is that it takes a certain period of time from the moment of intervention for the outcome and impact to be recognizable. This makes it difficult to exclude the influence of external factors, and therefore it is not easy to conduct a detailed evaluation by measuring the results or using quantitative research methods. In the case of this evaluation as well, after literature and online research, it was concluded that it would be difficult to obtain sufficient information needed to appropriately evaluate industrial human resource development in Thailand utilizing quantitative methods. Due to this, the evaluation was conducted mainly using case studies and qualitative evaluation methods, and there is a limit to the general applicability of the evaluation results. The approach to evaluation through case studies and the detailed evaluation results are indicated in *Chapter 3 3-2-1 Approach to case studies*.

Chapter 2 Economic Development in Thailand and the General Situation Regarding Industrial Human Resource Development

2-1 The course of economic development in Thailand and the current situation

Until the 1950s Thailand was an agricultural country that focused on the production and exportation of rice. Since then, the country implemented a set of industrialization policies, and today, secondary and tertiary sectors form the core of the Thai economy. More specifically, after the country had promoted import substitution industrialization in 1960s and that policy had failed, in 1970s the country began turning towards export-oriented industrialization. In the first half of the 1980s, economic growth slowed down due to external factors such as the second oil shock, nevertheless from the 1985 Plaza Accord onwards the strong yen drove Japanese companies to invest in the country, and foreign direct investment increased sharply. As a result, the export-oriented economy grew rapidly, and industrialization advanced led by foreign investment.¹ The value of Thai exports grew 7.2-fold between 1985 and 1995, from 192 billion baht (approximately 540 billion yen) to 1 390 billion baht (approximately 3 900 billion yen).²

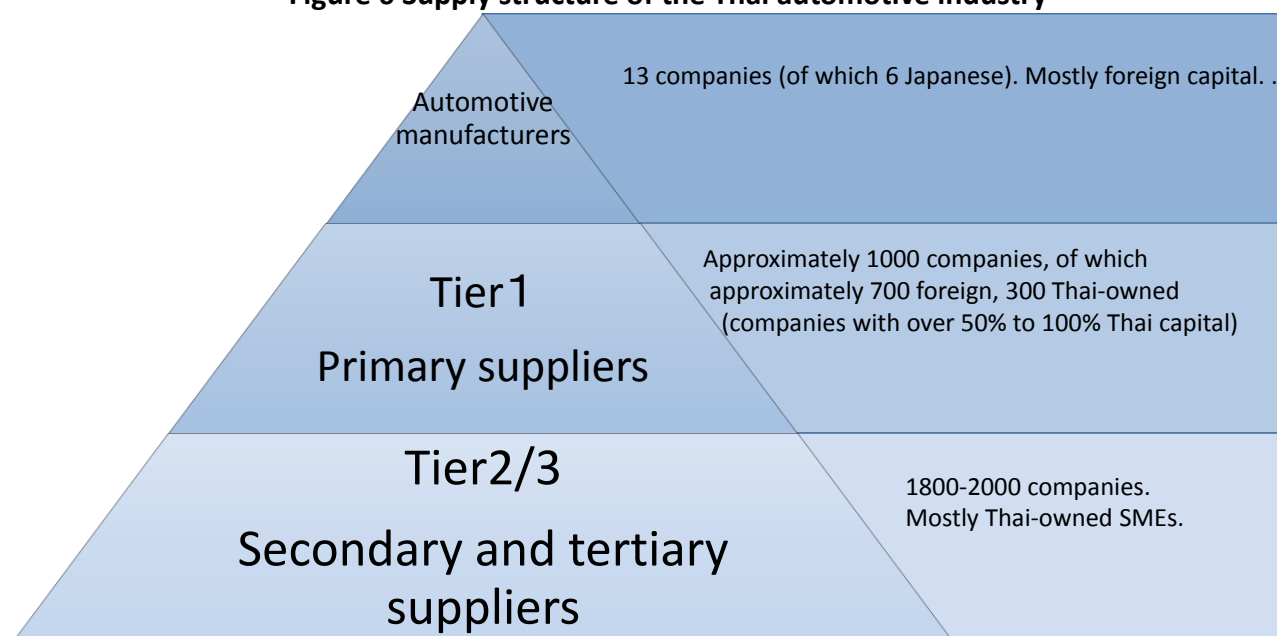
At the time the infrastructure of supporting industries in Thailand was weak, and the increase of foreign investment as a result of the Plaza Accord drew attention to the necessity of developing supporting industries in the metal, automotive and electronic sectors, as well as developing human resources in the related sectors. With assistance from JICA, the Government of Thailand began developing supporting industries and human resources, and established The Metal Working and Machinery Development Institute (MIDI) at the Ministry of Industry in 1988. In 1996 MIDI was reorganized and expanded to form The Bureau of Supporting Industries Development (BSID).³ Yet as can be seen from the figure below, as a result of the growth of supporting industries, in the case of the automotive industry there has been considerable accumulation of secondary and tertiary suppliers, but on the other hand raising the standard of technological and management skills is still required, and developing the corresponding human resources has become a pressing issue.

¹ DBJ Singapore Limited (December 2001), *Tai no kōgyōka no gaiyō* [Summary of Thailand's Industrialization]: 7. http://www.dbj.jp/reportshift/area/singapore/pdf_all/S20j.pdf (Accessed 28 November 2016).

² Ibid., 10.

³ Izumi Ohno and Miho Murashima, “Tai no sangyō kaihatsu seisaku to nikkei chūshō kigyō no shinshutsu” [Economic development policies in Thailand and the emergence of Japanese SMEs] in *Nihongata monodzukuri no Ajia tenkai - chūshō kigyō no shinshutsu to shiensaku* [Development of Japanese-style monodzukuri in Asia – the emergence of SMEs in SouthEast Asia and its support policies] Asia Pacific Institute of Research and National Graduate Institute for Policy Studies: 160, 161.

Figure 6 Supply structure of the Thai automotive industry



Source: Produced by Mitsubishi Research Institute based on Yoko Ueda, *Nihon chokusetsu tōshi to Tai no jidosha buhin meka no keisei* [Japanese FDI and Auto Parts Industries in Thailand]. *Doshisha University Economic Review* 58 (4) (2007): 104.

In addition, from the mid-1990s onwards, development of human resource and productivity came to be seen as tasks linked to strengthening international competitiveness. Wages had risen notably compared to Vietnam and other surrounding countries, and the limits of growth of labor-intensive industries were being debated.⁴ The Thai Government had already listed human resource development as one of the points in its Seventh National Economic and Social Development Plan (1992-96), and the 1997 Eighth National Economic and Social Development Plan (1997-2001) emphasized improving productivity.⁵

After the Asian financial crisis occurred in Thailand in 1997, the issue of developing small and medium-sized enterprises also began to attract attention. During the recession brought on by the financial crisis, the local small and medium-sized enterprises suffered more than the big corporations. As a response, in 1999 the Government of Japan dispatched JICA specialist Shiro Mizutani (former head of the Consumer Goods Industries Bureau at the Ministry of International Trade and Industry) to serve as an adviser to the Thai Ministers of Industry and Finance. He proposed development measures of SMEs in the so-called Mizutani Plan, and in line with this plan, the Thai Government's SME Development Masterplan was approved by cabinet decision in April 2000, leading to the formulation of a set of measures concerning the financing of SMEs, enhancing their capabilities and the creation of a comprehensive policy framework.⁶ SMEs were also expected to play an important role in maintaining the competitiveness of export-oriented Thai industries. This

⁴ DBJ Singapore Limited, *Tai no kōgyōka no gaiyō*: 10.

⁵ Ibid., 11,12.

⁶ JICA, *Tai ōkoku chihō chūshō kigyō fukkō seido no kakuritsu keikaku* [Plan to strengthen the regional development system in the Kingdom of Thailand] (2009): 1,2,14,40.

was because economic recovery was expected to be accomplished by developing the SMEs, which formed the backbone of the supporting industries.⁷

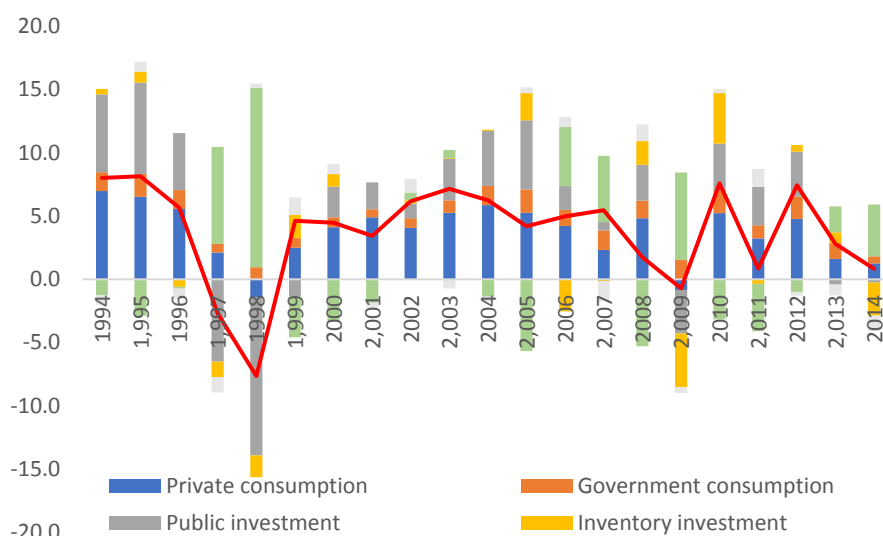
Since then human resource development and transitioning into a knowledge-based economy have occupied an important position amongst Thailand's policy goals, but as the situation stands it would be difficult to say that the goal has been accomplished to the extent that the country had hoped for, and avoiding the so-called "middle-income trap" is identified as a serious issue. Thailand accomplished economic development through the success of its export-oriented labor-intensive industries, but now, due to that economic development coupled by the fact that Yingluck Shinawatra's government raised the daily minimum wage throughout the country, it has lost its competitiveness when it comes to labor cost per unit compared to the surrounding, relatively late-developing countries,. On the other hand, gaining competitive advantage over developed countries in terms of technology or knowledge is not easy. How to avoid the middle-income trap, how to get economic growth back on track, and furthermore, how to escape from excessive dependence on foreign investment and to transition to a knowledge-based economy by promoting research and development; these issues have become important policy goals.

Next, the structural characteristics of the Thai economy will be demonstrated using several figures. First, looking at Figure 7, which shows how much different categories of demand contribute to the growth of the Gross Domestic Product (GDP), one can see that private consumption has constantly been the pillar of economic growth in Thailand. On the other hand, leaving a few years aside, net exports have generally had a negative impact on GDP growth rate. This can be seen as a result of exporting final products such as cars and electronic appliances, while importing in masses the capital goods that follow foreign direct investment to the corresponding economic sectors, and raw materials.⁸

⁷ DBJ Singapore Limited, *Tai no kōgyōka no gaiyō*: 25.

⁸ JICA, *Heisei 13 nendo Taikoku chūshō kigyō fukkō bunya projekuto keisei chosa hōkokusho* [Survey report on of SME promotion sector projects in Thailand in FY 2001] (2002): 8-9.

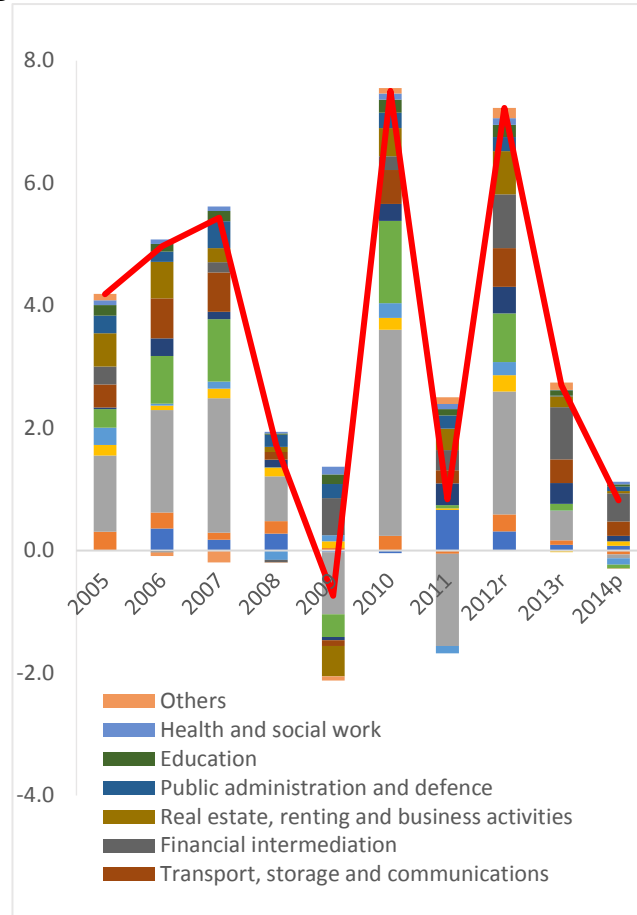
Figure 7 Contributions of expenditure components to the growth of real GDP in Thailand



Source: NSEDB, Quarterly Gross Domestic Product - Chain Volume Measures

On the other hand, when looking at Figure 8, which demonstrates how much different industries contribute to the GDP growth rate, it shows that the effect of the manufacturing industry is overwhelming. It can also be seen that, while it is not as great as that of the manufacturing industry, the wholesale and retail industry, the finance industry, the transportation industry and agriculture also has a certain role.

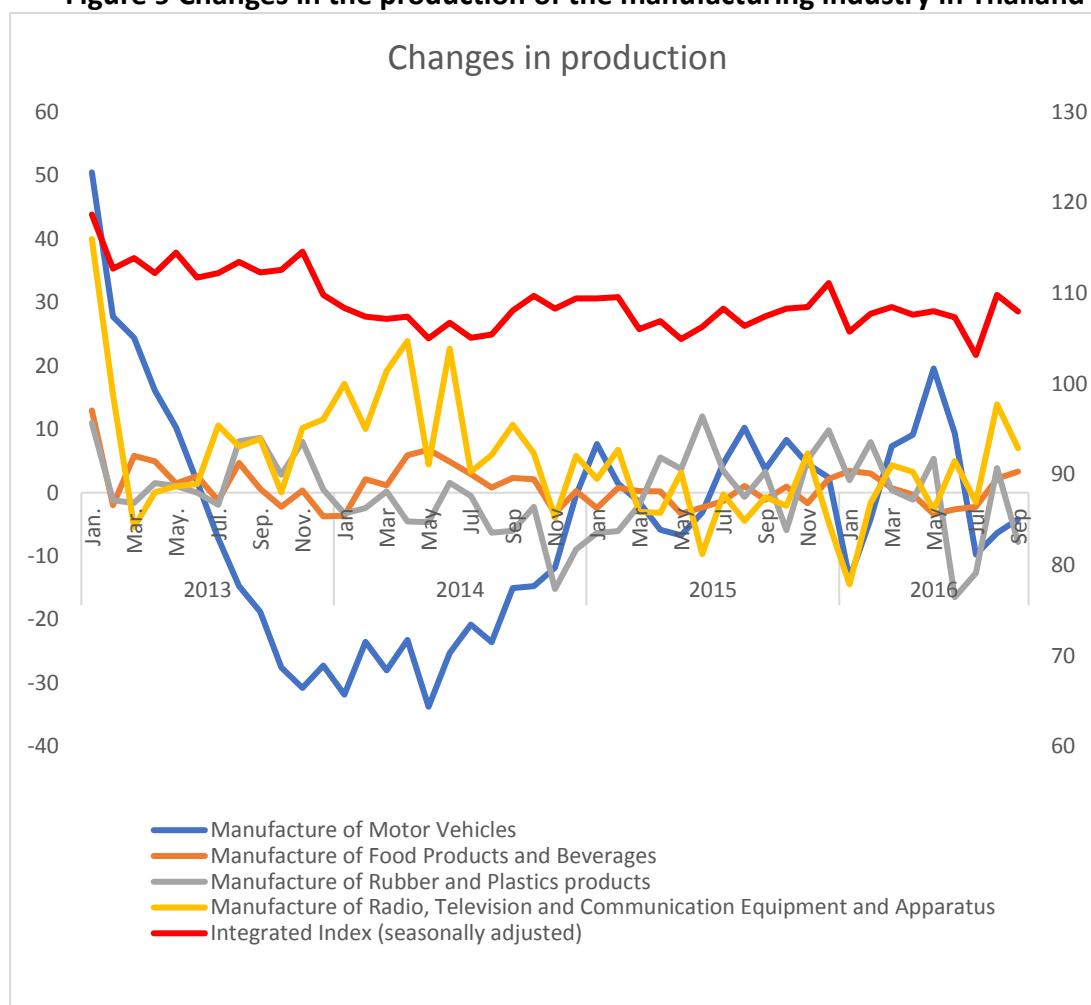
Figure 8 GDP growth rate in Thailand and the contribution of different industries



Source: NSDDB, National Income of Thailand 2014 Chain Volume Measures

Turning to Figure 9 which shows the development of production in the manufacturing industry, it shows that from the second half of 2013 to 2014 there is a substantial drop in automotive production. This corresponds to the drop in the GDP growth rate in 2013 and 2014 in Figures 7 and 8. This shows that within the manufacturing industry, changes in the production of the automotive industry have a particularly strong effect on the Thai economy. As can be seen also from the supply structure of the Thai automobile industry, which was shown earlier in Figure 6, the automobile industry in Thailand is supported by Thai-owned SMEs (secondary and tertiary suppliers). A drop in automotive production shocks these numerous SMEs, and can therefore be considered to have a big impact on the whole Thai economy.

Figure 9 Changes in the production of the manufacturing industry in Thailand

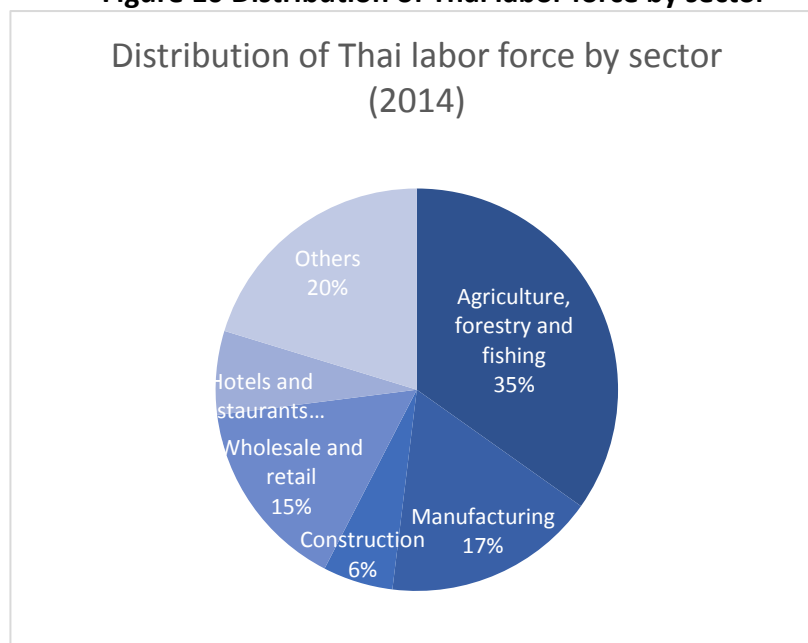


Source: OIE, Monthly Report Industrial Index September 2015 - September 2016

Figure 10 shows the distribution of the Thai labor force by sector. Here it is possible to see that over 30% are concentrated in agriculture, forestry, and fisheries, but as has been shown so far, currently it is the manufacturing industry that has a big impact on the Thai economy, and in fact agriculture, forestry, and fisheries only contribute 10% to the GDP.⁹ In this sense there is a "gap" in the current Thai economy: while its structure is centered around the manufacturing industry, the workers are concentrated in agriculture, forestry, and fisheries. To overcome the gap, agriculture, forestry, and fisheries must not only invest in R&D, but also begin providing more added-value, and the movement of surplus people and things is required.

⁹ NESDB Labor Force Survey

Figure 10 Distribution of Thai labor force by sector



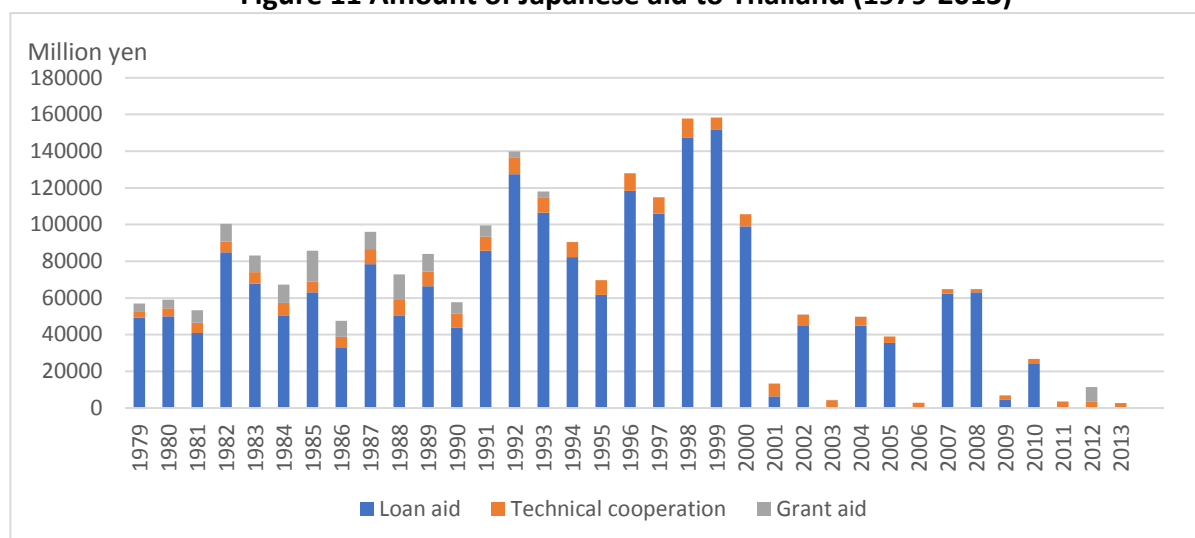
Source: Labor Force Survey 2014

2-2 Relations with Japan

First, the defining characteristics of Japanese ODA to Thailand will be indicated based on the total amount and its breakdown. Figure 11 shows the changes in the amount of Japanese ODA to Thailand. It shows that 1) loan aid is the main form of aid granted to Thailand 2) In the 80s and 90s when Thailand achieved rapid economic growth the amount of aid grew considerably 3) from 2001 onwards the amount of assistance granted to Thailand has gone down considerably. As will be explained later, in the case of 2), the expansion of Japanese companies into Thailand and the Japanese diplomatic policy at the time which extensively supported Thailand's industrial development policies can be considered reasons for this. Regarding 3), although in the 1990s Thailand had reached a certain level in its development, and after 1993 as a general rule grant aid came to an end,¹⁰ the total amount of aid provided did not decrease significantly before 2001, because as a counter-measure to the 1997 Asian financial crisis aid utilizing ODA was provided on a large scale.

¹⁰ MOFA, *Country Assistance Program for Thailand* (March 2000)

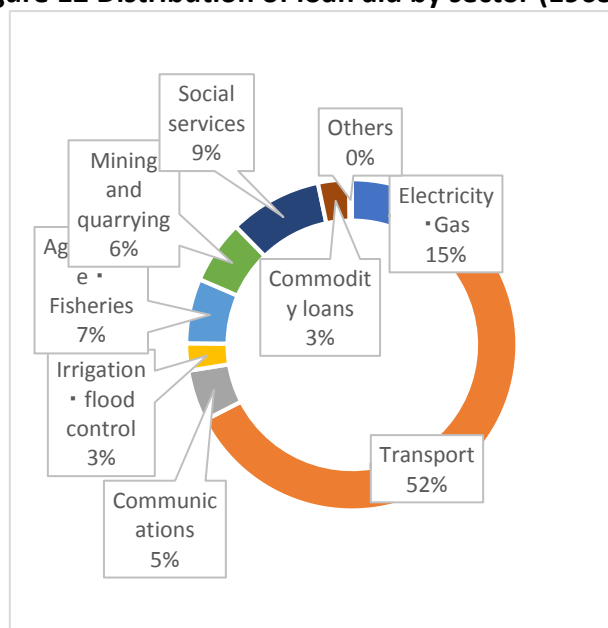
Figure 11 Amount of Japanese aid to Thailand (1979-2013)



Source: Produced by Mitsubishi Research Institute based on JICA's annual sector-based program results

Next, observing the breakdown of the loan aid by sector, which forms the core of the aid to Thailand, transportation occupies more than half, followed by electricity & gas and social services. Within electricity & gas, transmission lines occupy 63% of the total, while within social services water, sewage and hygiene take up 74%. In other words, Japanese loan aid is used mostly for developing the basic infrastructure needed for industrial development, with a special emphasis placed on transport infrastructure. The number of aid loans provided for industrial human resource development related projects is low, but they have been granted for the projects "National Metrology System Development Project (1)" and "Strengthening Vocational and Technical Manpower."

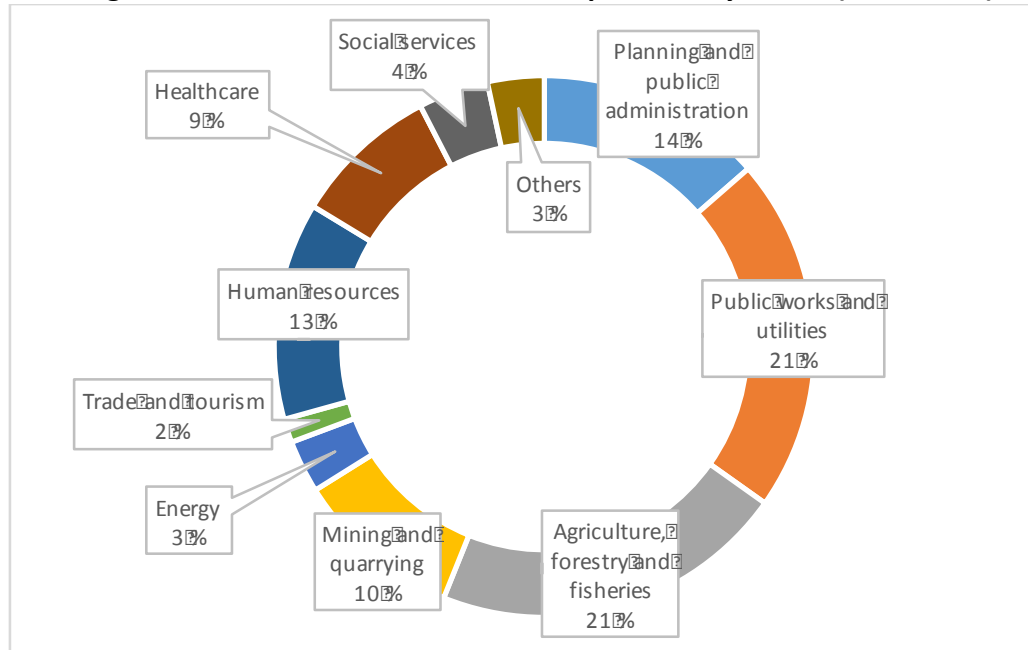
Figure 12 Distribution of loan aid by sector (1963-2010)



Source: Produced by Mitsubishi Research Institute based on JICA's annual sector-based program results

Next, we will look at technical cooperation. Although in financial terms the value is small compared to loan aid, now that Thailand has become a middle-income country, it is the principal aid scheme that is disbursed in terms of ODA. In technical cooperation, the sectors with the highest percentage are agriculture, forestry and fisheries (21%), public works and utilities (21%) and planning and administration (14%). While development of infrastructure also occupies a certain percentage of technological cooperation, the differences between each sector are smaller, and the aid is divided to various fields in a balanced manner. Meanwhile, when combined, public services and planning and public administration occupy 30%. Regarding industrial human resource development, human resources (13%) and mining and quarrying (10%) can be seen as corresponding to this category, and the combined 23% makes it possible to say that it has been a sector of importance.

Figure 13 Distribution of technical cooperation by sector (1988-2013)

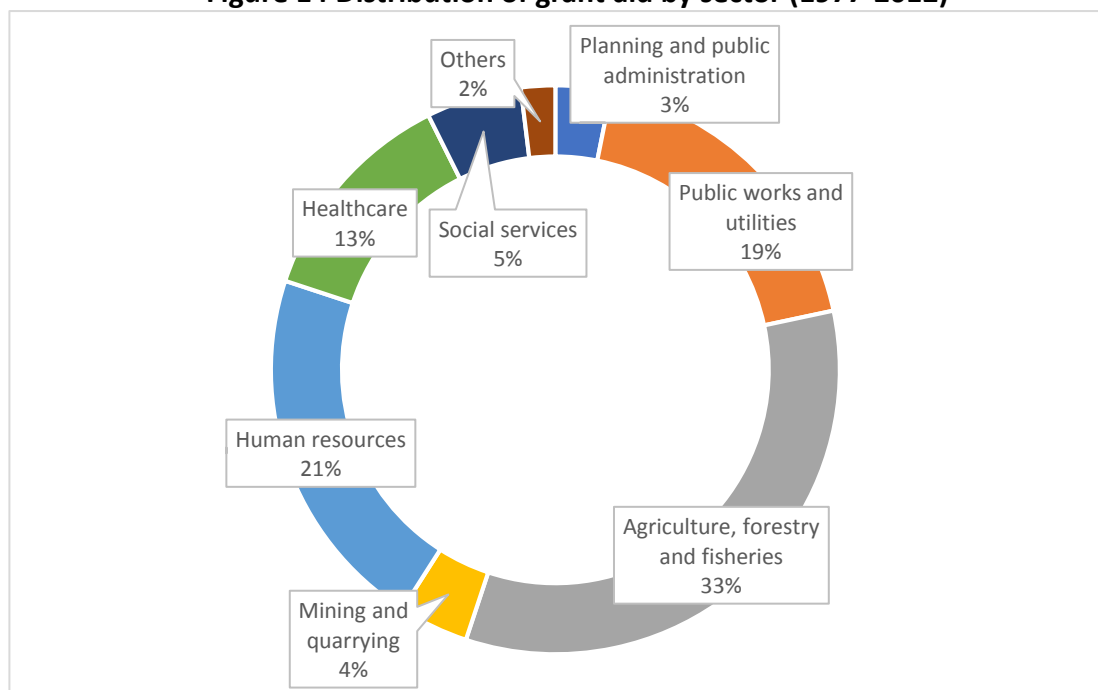


Source: Produced by Mitsubishi Research Institute based on JICA's annual sector-based program results

Finally, let's also look at grant aid. As mentioned earlier, as a general rule, this form of aid came to an end in 1993, and is currently hardly provided at all.¹¹ When looking at the tendencies before 1993, the percentages were the highest in agriculture, forestry and fisheries (33%) human resources (21%) and public works and utilities (19%). Educational aid related to industrial human resource development, with projects such as "King Mongkut's Institute of Technology, Faculty of Telecommunication Laboratory Plan" and the "Ubon Ratchathani Vocational Training Center" is included in human resources.

¹¹ In 2012 a high amount of grant aid was provided, but this was due to the support for recovery from the flood damages caused by the torrential rains the previous year was delivered within the framework of grant aid.

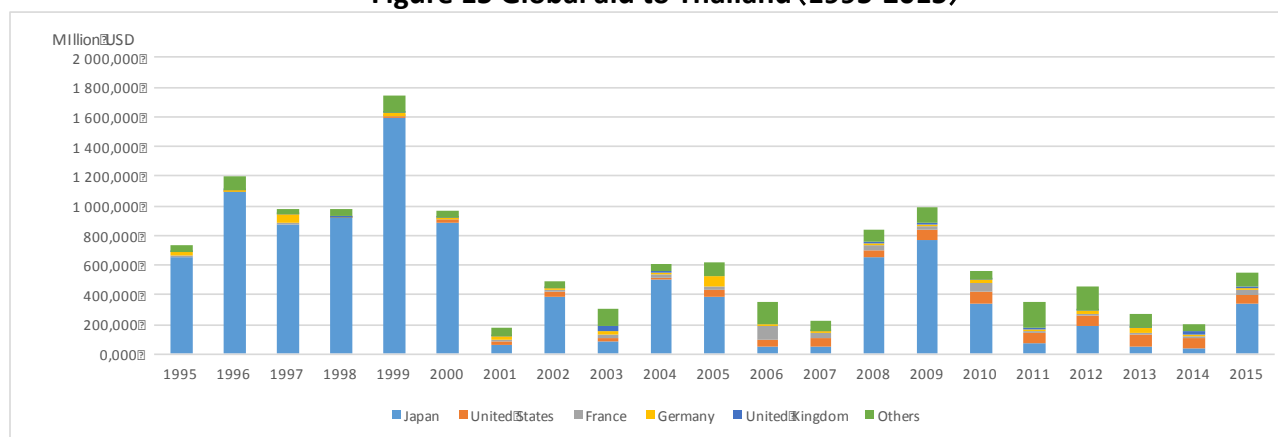
Figure 14 Distribution of grant aid by sector (1977-2012)



Source: Produced by Mitsubishi Research Institute based on JICA's annual sector-based program results

In addition, by including aid provided by other donors, the figure below demonstrates the position of Japanese aid within the total aid received by Thailand. Figure 15 shows the changes in aid given by Japan and other major donors. What can be seen from this figure is that 1) until the year 2000, regarding the total amount of aid given to Thailand, Japan had an overwhelming presence as the top donor both in terms of relative and absolute amount, and 2) while Japanese aid to Thailand has decreased since 2001, overall Japan has maintained the position of a major donor to Thailand.

Figure 15 Global aid to Thailand (1995-2015)



Source: Produced by Mitsubishi Research Institute based on data from the OECD Creditor Reporting System

Next, this section will look at a general overview of the history of economic cooperation between Japan and Thailand will be provided. Japanese companies began making inroads into Thailand in the 1950s. The Japanese Chamber of Commerce was founded in Bangkok in 1954 with 30 member

companies¹², and Toyota Motor Corporation founded its Bangkok office in 1956.¹³ In the 1960s, as Thailand was promoting import substitution industrialization, the number of companies that expanded to Thailand in order to have a local production base grew. In 1972 Japan became number one in terms of direct investment, leaving the United States and European countries far behind.¹⁴ In the 1970s as Thailand was suffering a trade deficit, a momentary boycott movement on Japanese products and anti-Japanese movement occurred, but the growing number of members at the Bangkok Japanese Chamber of Commerce show that the expansion of Japanese companies did not come to a halt.¹⁵

As is the case with many Asian countries, aid to Thailand has its roots in the reparations paid after the war. After the end of the war, a total of 15 billion yen was paid as quasi-reparations to compensate for the “Special Yen” problem that occurred when the Japanese Army was stationed in Thailand. A report published in 2003 by the Study Committee on Japan's ODA to Thailand describes this period from the post-war reparations until 1977 as the “initial phase.”¹⁶ During this period, from the 1960s onward, technical cooperation was offered as a form of war reparations parallel to grant aid based on the Colombo Plan, and ODA loans started in 1968. What was particularly significant about the initial ODA loans was that their substance was to support the Second National Economic and Social Development Plan of Thailand. 60 billion dollars were lent to nine projects, with a focus on electricity related proposals. In 1969 war reparations came to an end, and in 1971 general grant aid began. The objective of this aid to Thailand was to support the economic development of Thailand, but simultaneously also to support the further expansion of Japanese companies, which had already begun to congregate there, as has been mentioned earlier. At the same time, from the Third National Economic and Social Development Plan onwards, the Thai Government switched into an export-oriented industrialization policy and began to devote more effort to industrialization through exports. A measure emblematic of this was the Investment Promotion Act, which aimed to selectively attract foreign capital. In the sense that the economic policies of the recipient country and infrastructure development through the Government's ODA projects created synergistic results and served as a stepping stone to trade and investment by Japanese companies, it can be said that a typical “Japan ODA Model”¹⁷ was developed in Thailand.

¹² Website of the Japanese Chamber of Commerce, Bangkok <http://www.jcc.or.th/about/index3>, accessed 25 November 2016

¹³ Nobuo Kawabe, “Tai no jidōsha sangyō jiritsuka ni okeru nikkei kigyō no yakuwari -Tai Toyota jirei kenkyū” [The Self-Sustenance of the Thai Automobile Industry: The Role of Toyota Motor Thailand] in *Sangkyo keiei* vol 40 (2016): 78.

¹⁴ Institute of Developing Economies, “Keizai nashonarizumu no mosaku: 1972 nen no Tai” [The search for economic nationalism: Thailand in 1972] in *Ajia kōdō nenpō* 1972 (1972) <http://d-arch.ide.go.jp/browse/html/1972/204/1972204TPC.html>, accessed 25 November 2016

¹⁵ Website of the Japanese Chamber of Commerce, Bangkok

¹⁶ JICA Research Institute (JICA-RI), *Tai kunibetsu enjō kenkyūkai hōkokusho* [Report of the Country Assistance Study Committee on Thailand]: 64.

¹⁷ “In activities related to the economic cooperation implemented by Japan so far, a system existed in which, when governance was functioning to a certain extent in the recipient country, development of hard and soft infrastructure and industrial human resources, which form the basis of economic development, were supported in economic cooperation using ODA loans and technical cooperation as the primary tools. Through this, production at the private sector, trade and investment were activated and the dynamics of economic growth put into motion. The approach to ODA behind this system could be called the ‘Japan ODA Model.’” Interim report of the METI Industrial Structure Council ‘*Japan ODA moderu no suishin* [Promotion of the Japan ODA model]: 14.

The second period of aid to Thailand was the “strategic expansion phase” from 1977 onwards. During this period Japan, having finished paying its war reparations, under Prime Minister Fukuda, and what came to be known as the Fukuda Doctrine, said it would double its ODA and began using ODA strategically as a tool of regional diplomacy. The principal targets of this were the ASEAN countries, including Thailand. At the time, Cambodia was in the middle of a prolonged civil war and with events like the Vietnamese invasion of Cambodia that occurred in 1980, the political situation in Indochina was becoming more chaotic, and the geopolitical importance of Thailand as a country neighboring Cambodia increased even further. Due to this, Japan positioned its aid to Thailand as a part of a “comprehensive security” policy, and increased the amount of aid significantly while also expanding the target sectors. For example, the Eastern Seaboard Development Plan was drawn up in this period in order to mitigate excessive concentration of industry into the suburban area around Bangkok. This plan was a grand-scale comprehensive regional industrialization plan targeting the eastern seaboard (the three provinces of Chachoengsao, Chonburi and Rayong) 80-200km to the southeast of Bangkok. Japan provided a total of 27 ODA loans to 16 projects that formed the core of the plan and thoroughly supported its realization. The contribution of Japanese ODA loans to those 16 projects ranged from 40% to 80%, and of the entire plan Japanese ODA loans covered 62%.¹⁸ Also, in addition to this kind of economic infrastructure aid, aid was expanded to fields such as irrigation, development of rural areas, and improvement of water and sewage systems.¹⁹ As a result, in this second and third period, the percentage of Japanese aid came close to 60% of bilateral grant aid received by Thailand from DAC countries.²⁰ However, at the beginning of this second period the basic aid policy to Thailand was not clear, and its strategic pillars were established in the Four Priority Policies of Aid to Thailand announced by Prime Minister Suzuki in 1983.²¹

Supported by this kind of large-scale infrastructure development and with the momentum of the 1985 Plaza Accord, direct investment to the automotive industry and other export-oriented industries grew considerably.²² In the ten years between 1985 and 1995, the number of members to the Japanese Chamber of Commerce grew from 394 companies to 1028 companies, a 2.5-fold increase,²³ and in this period Japanese companies were particularly active in their expansion into Thailand. In the third period of aid to Thailand, which is called the “qualitative transition phase,” Thailand became a middle-income country and in 1993 it graduated from Japanese ODA grant receiver status. The Eastern Seaboard Development Plan, which began during the second phase, also gradually reached completion during this period, and many Japanese companies moved into industrial parks. In 1994, the Japan-Thailand Partnership Program (JTTP) concerning technological cooperation was agreed on, and broader Japan-Thailand regional cooperation in Indochina was also being promoted.

¹⁸ *Heisei 18 nendo keizai kyōryoku hyōka jigō (Keizaikyōryoku no suishin ni kakaru seisaku hyōka) chōsha hokokusho* [Evaluation report on promotion of economic cooperation in FY 2006) <http://www.meti.go.jp/report/downloadfiles/g70524a03j.pdf> p.21

¹⁹ JICA Research Institute (JICA-RI), *Tai kokubetsu enjō kenkyūkai hōkokusho* [Report of the Country Assistance Study Committee on Thailand]: 66.

²⁰ Risako Ishii, *Tai no ODA dōnaka to Nihon no shien ni kansuru shisatsu* [An Analysis on Japanese Cooperation Towards Thailand as an Emerging' Donor] (2016): 528.

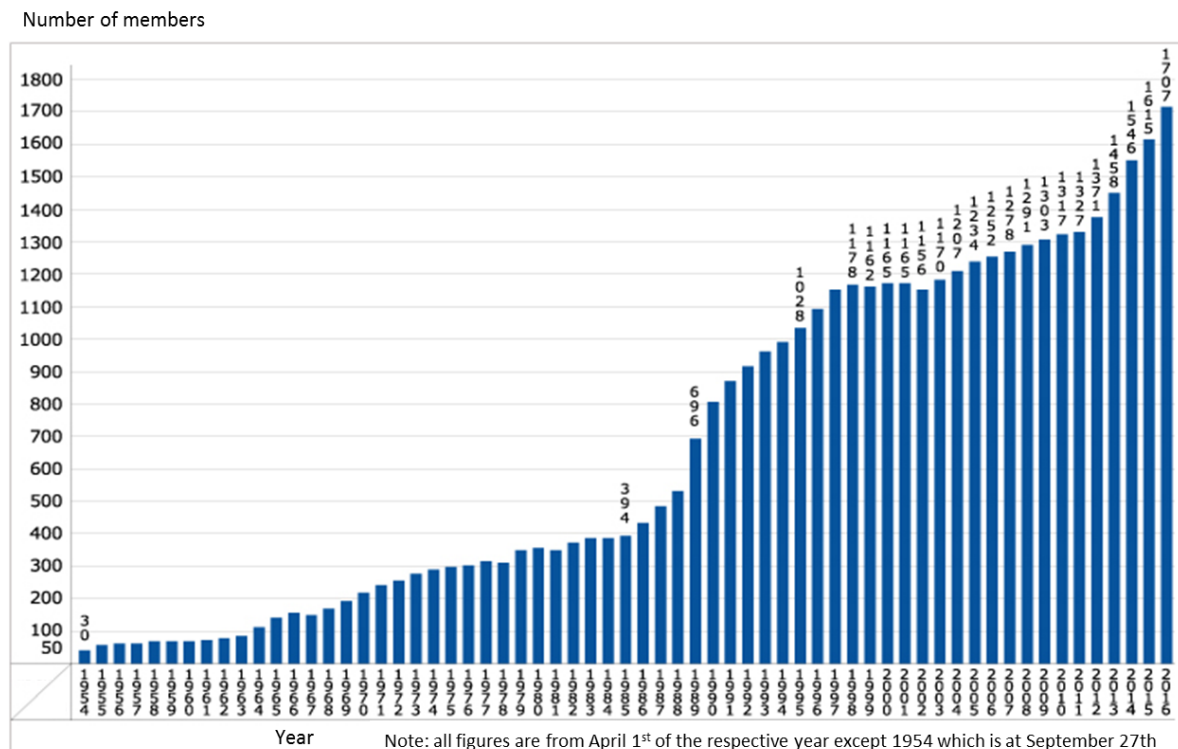
²¹ JICA Research Institute (JICA-RI), *Tai kokubetsu enjō kenkyūkai hōkokusho* [Report of the Country Assistance Study Committee on Thailand]: 66.

²² Japan Bank for International Cooperation, *Tai no tōshi kankyō* [Investment environment in Thailand] (2012): 32.

²³ Website of the Japanese Chamber of Commerce, Bangkok

Due to the effects of the 1997 Asian financial crisis, direct investment from Japan decreased significantly, and the rising member count at the Japanese Chamber of Commerce in Bangkok stagnated for a while. As a counter-measure to the Asian crisis, more effort was put especially into human resource development and the revitalization of SMEs, and in the Mizutani Plan, which will be discussed later, out of the priority sectors mentioned in the Government of Thailand's Industrial Restructuring Program, Japan supported industrial structural adjustment and the development of SMEs. Partially as a result of the crisis counter-measures, Japanese direct investment, which had been dropping, began to show signs of recovery after 2003 as well.²⁴ The effects of the 2008 Lehman Shock caused Japanese direct investment to decrease again in 2009, but this effect was short-lived.

Figure 16 Number of members of the Japanese Chamber of Commerce, Bangkok

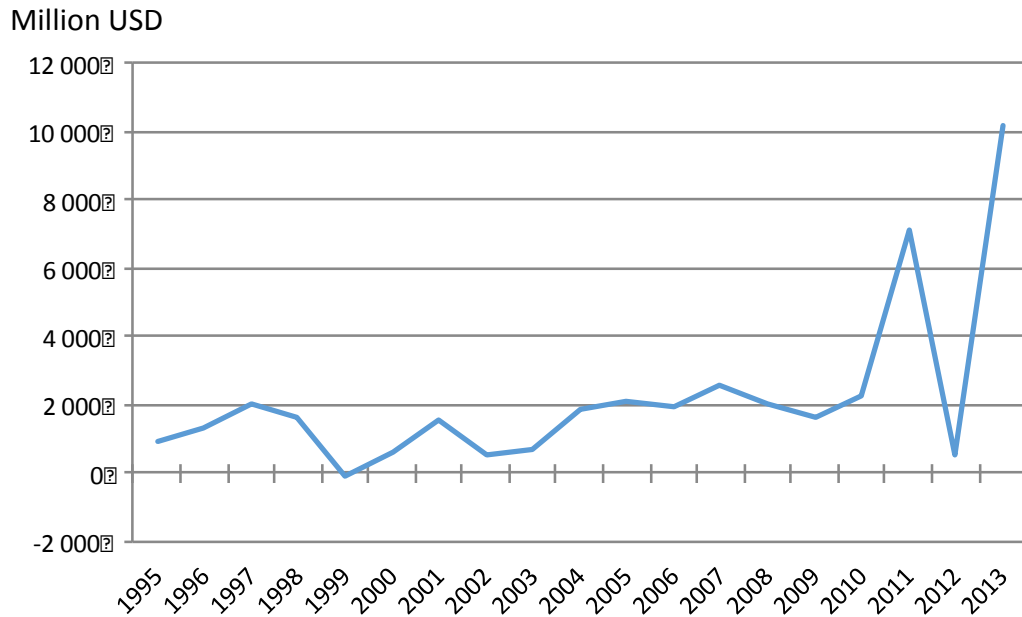


Source: Japanese Chamber of Commerce, Bangkok

²⁴ Japan Bank for International Cooperation, *Tai no tōshi kankyō* [Investment environment in Thailand] (2012): 33, on the website of Japanese Chamber of Commerce, Bangkok.

²⁵ Japan Bank for International Cooperation, *Tai no tōshi kankyō* [Investment environment in Thailand] (2012): 33.

**Figure 17 Japanese direct investment to Thailand
(Net flow of international balance of payments)**



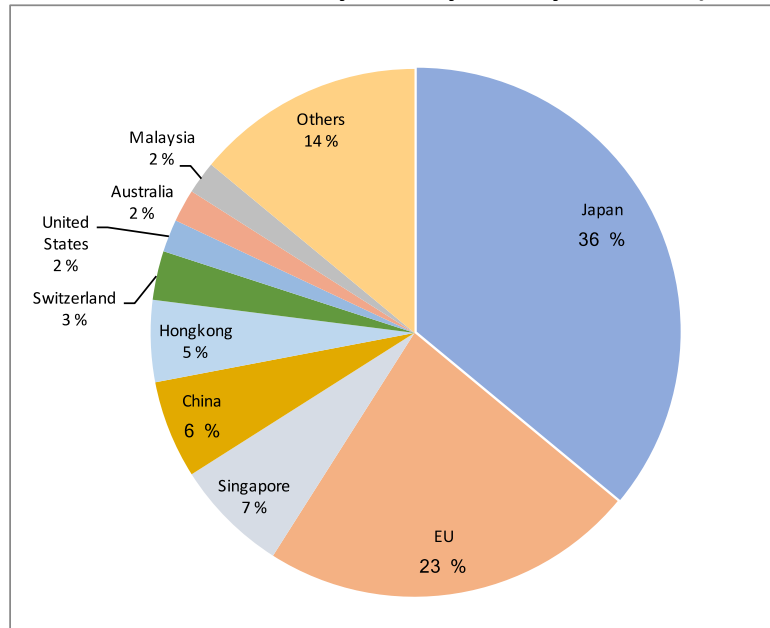
Source: JETRO

Both in terms of number of cases and amount of investments Japan occupies roughly 40% of foreign direct investment to Thailand, which makes it the top investor, leaving other countries behind by a large margin.²⁶ In a questionnaire survey conducted by the Japan Bank for International Cooperation in 2015 regarding the investment destinations of the Japanese manufacturing industry, Thailand was number four among the countries of the questionnaire in terms of development prospects for the mid-term period of roughly three years.²⁷

²⁶ Ibid., 29.

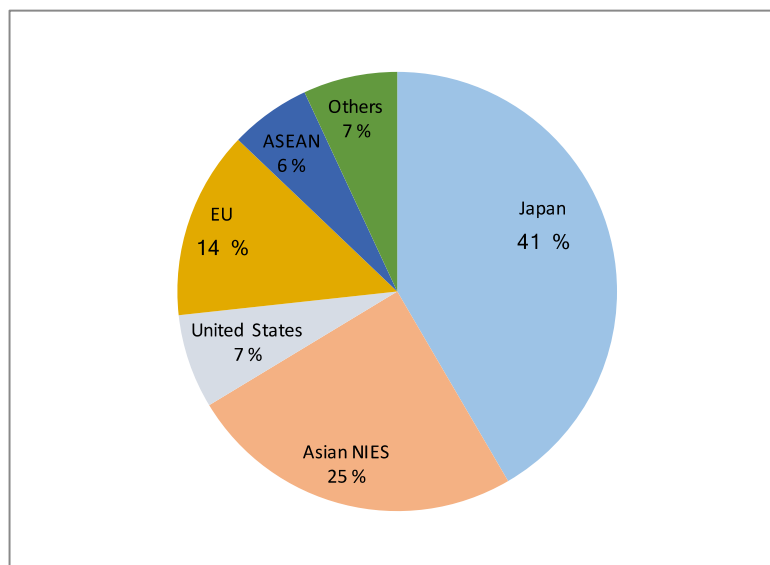
²⁷ Ibid., 20.

Figure 18 Direct investment to Thailand by country, fiscal year 2010 (amount • approval basis))



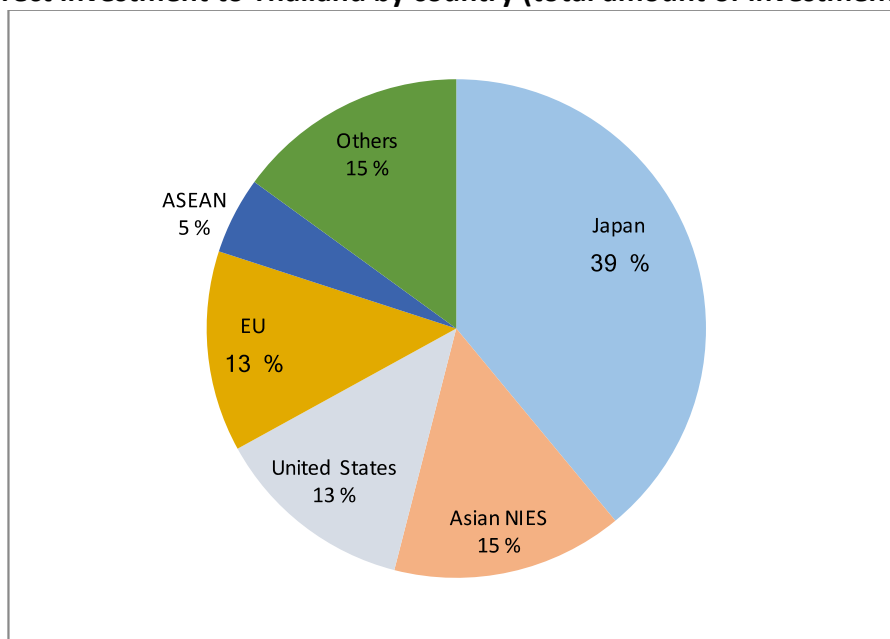
Source: Japan Bank for International Cooperation, *Tai no tōshi kankyō* [Investment environment in Thailand] (2012): 29.

Figure 19 Direct investment to Thailand by country (total number of cases 1999-2000)



Source: Japan Bank for International Cooperation, *Tai no tōshi kankyō* [Investment environment in Thailand] (2012): 29.

Figure 20 Direct investment to Thailand by country (total amount of investments 1999-2000)



Source: Japan Bank for International Cooperation, *Tai no tōshi kankyō* [Investment environment in Thailand] (2012): 29.

However, on the other hand over a half of the respondents of the same survey mentioned “rising labor costs” as an issue.²⁸ Indeed, when looking at Figure 21, wage levels in Bangkok cannot be described as low when compared to other major cities in the surrounding countries,²⁹ and from 2012 onwards under Yingluck Shinawatra’s government the minimum wage was significantly raised.³⁰ For Japanese manufacturers, of which most have expanded to Thailand by establishing a local production base,³¹ the rise of labor costs may decrease the appeal of Thailand as a country to invest in.

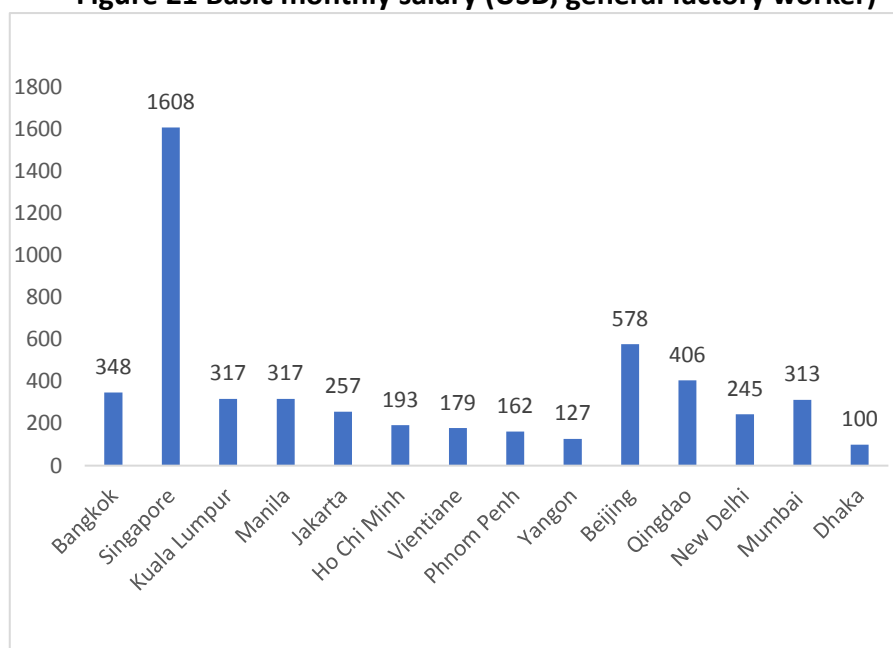
²⁸ Ibid., 27.

²⁹ Mitsubishi UFJ Research and Consulting, *Tai keizai no genjō to kongo no tenbō* [Current situation and future prospects of the Thai economy] (2016): 21; JETRO, *Dai 25-kai Ajia Oseania shuyō toshi chiiki no tōshi kanren kosuto hikaku* [25th comparison of investment-related costs in major urban areas of Asia and Oceania] (2015): 4-9.

³⁰ Mitsubishi UFJ Research and Consulting, *Tai keizai no genjō to kongo no tenbō* [Current situation and future prospects of the Thai economy] (2016): 21.

³¹ For example, in 2016, out of the 777 manufacturing member companies of the Japanese Chamber of Commerce, Bangkok, 755 (approximately 97%) had a local production base (Website of the Japanese Chamber of Commerce, Bangkok).

Figure 21 Basic monthly salary (USD, general factory worker)



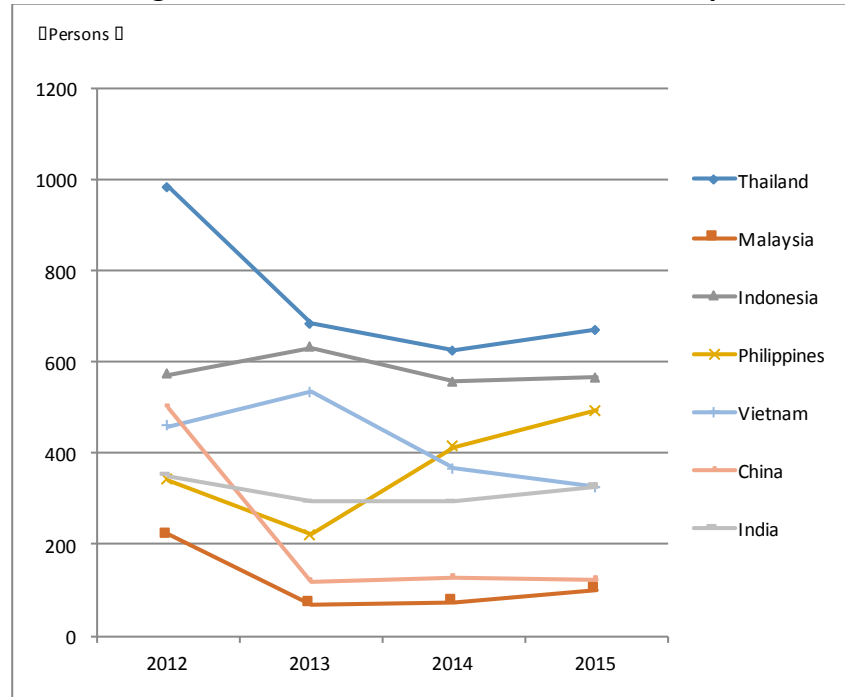
Source: Produced by Mitsubishi Research Institute based on JETRO, *Dai 26-kai Ajia Oseania shuyō toshi chiiki no tōshi kanren kosuto hikaku* [26th comparison of investment-related costs in major urban areas of Asia and Oceania] (June 2016)

This section will discuss the personal interactions related to industrial human resource development will be discussed, mostly focusing on technical training and the dispatch of experts. The training of foreign engineers in Japan had been initiated by the Association for Overseas Technical Scholarship (AOTS), founded in 1959, while the dispatch of experts was started in 1979 by the Japan Overseas Development Corporation (JODC). In 2012, these two organizations merged to form HIDA. Currently the number of HIDA personnel is 125 people (as of April 2016) and the scale of its projects is 9 500 million yen (budget of FY 2016). It accepts 3732 technical trainees from various countries, while dispatching 328 Japanese experts abroad (program results of FY 2015).³²

When looking at the number of technical trainees accepted and experts dispatched from 2012 to 2015, in both categories Thailand is almost continuously at the top. In terms of the total number of technical trainees accepted from 2008 to 2014, and the number of experts dispatched from 2007 to 2015, Thailand is also at the top among Asian countries, which shows that interactions between Japan and Thailand are very active. As mentioned earlier, Japan is the top investor to Thailand, and as many Japanese companies are expanding into Thailand, for HIDA, which considers supporting Japanese companies as one of the pillars of its activities, compared to other countries it is easier to accept technical trainees from and dispatch experts to Thailand, which is one of the reasons behind the high numbers of trainees dispatched to and from Thailand

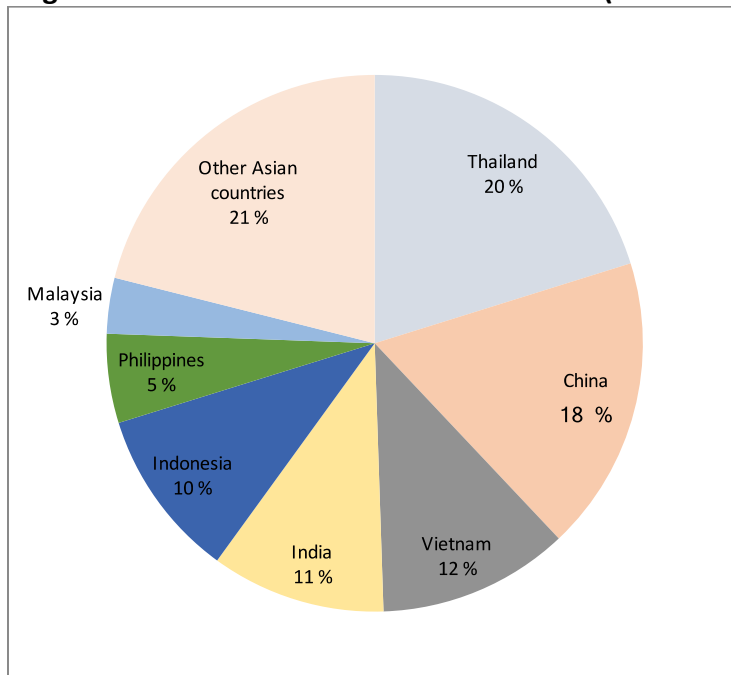
³² HIDA Website (<http://www.hidajapan.or.jp/hida/jp/about/overview.html>) Accessed on 15 December 2016.

Figure 22 Number of technical trainees accepted



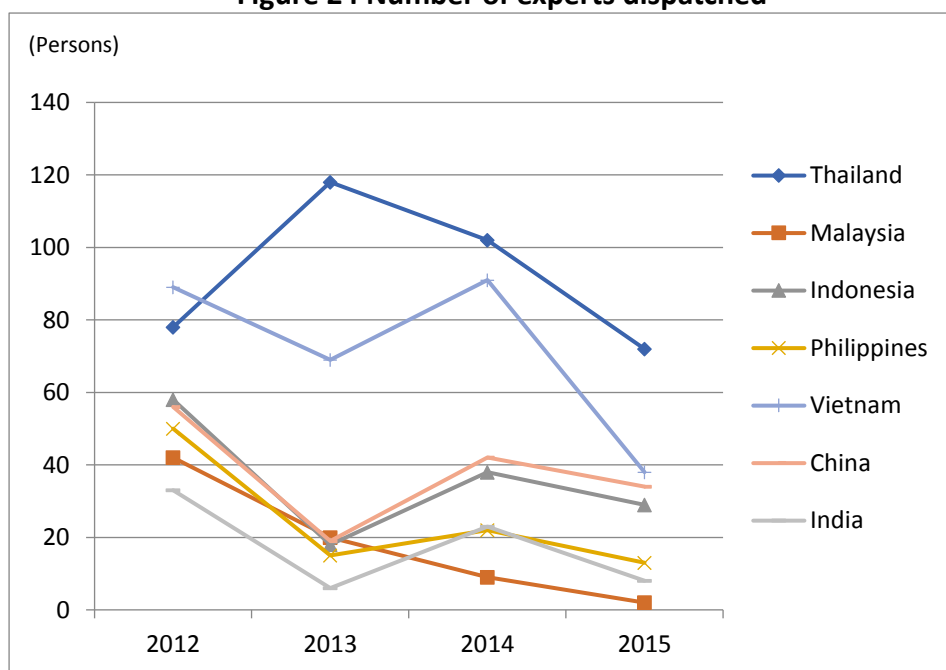
Source: Produced by Mitsubishi Research Institute based on HIDA annual reports

Figure 23 Total number of trainees received (2008-2014)



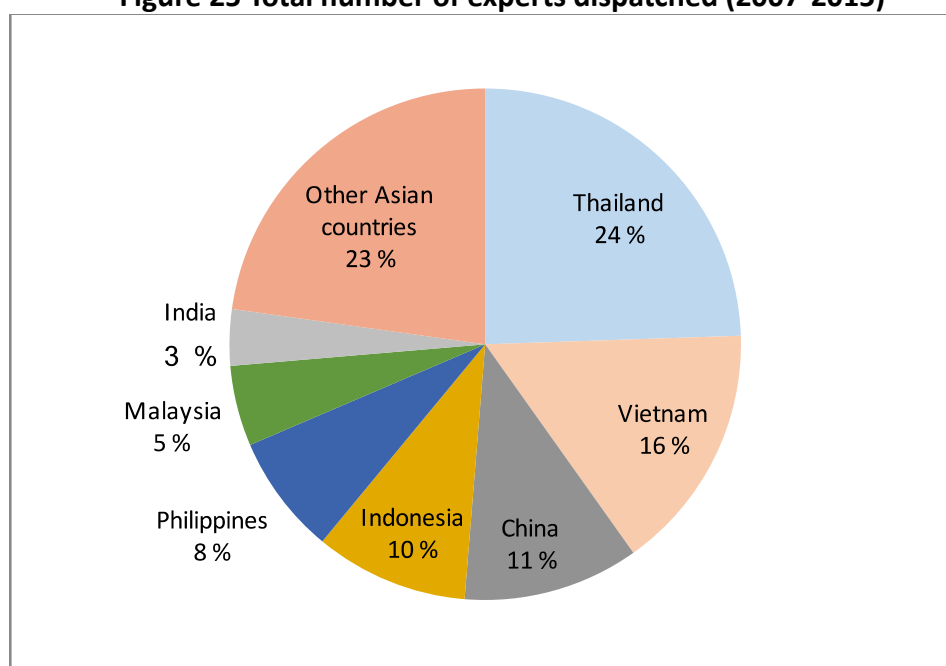
Source: HIDA, *Tai ni okeru HIDA no sangyo jinsai ikusei kyoryoku – Hito ga kigyō wo tsukuri, shakai wo tsukuri, kokka wo tsukuru* [HIDA's industrial human resource development cooperation in Thailand: People build companies, societies and countries] (2016): 6.

Figure 24 Number of experts dispatched



Source: Produced by Mitsubishi Research Institute based on HIDA annual reports

Figure 25 Total number of experts dispatched (2007-2015)



Source: Produced by Mitsubishi Research Institute based on JODC and HIDA annual reports

Another important point to be mentioned in relation to HIDA, is the existence of the AOTS Alumni Societies. The AOTS Alumni Society is an organization where the former technical trainees of the predecessor of HIDA's training program division, AOTS, gather after returning to their home countries. These associations have been established all over the world. A distinctive feature of the AOTS Alumni Societies is that in addition to personal interactions they work together on projects with HIDA (collaborative activities between HIDA and the AOTS Alumni Societies) and for example

the participants of the training programs implemented by HIDA are selected by the AOTS Alumni Societies.

Activities of the AOTS Alumni Society have been particularly vibrant in Thailand, where, led by Mr. Sommai Huntrakul, who was Deputy Minister of Finance at the time, the Technology Promotion Association (TPA) was founded in 1973, with the aim of "supporting the industrial development of Thailand through Thai-Japanese cooperation." At first TPA was managing a language school and engaged in publishing activities in order to promote transfer of technology; later it established the Technology Promotion Institute (TPI) and began to conduct training seminars, business consulting, business support services and IT projects.³³ Currently TPA employs 300 people,³⁴ and is thus a larger organization than HIDA. On the basis of equal cooperation with JTECS,³⁵ TPA is involved in the training of *shindan-shi* (SME management consultants, for details see footnote 66) and other private sector based Japan-Thailand projects related to industrial human resource development, and is considered to be performing an important role.³⁶

In addition, in 2007 TPA established the Thai-Nichi Institute of Technology (TNI), which consists of three faculties: Engineering, Information Technology and Business Administration, and a graduate school. Under the motto "developing science, contributing to the promotion of industry, contributing to the economy and society,"³⁷ TNI is striving to develop industrial human resources that would be valuable to both Japanese and Thai industries. The curriculum is composed in a way that responds to the needs of both Japanese and Thai companies: in addition to having Japanese as a compulsory subject, it focuses on "Japanese *monodzukuri* [manufacturing] education" and incorporates Problem-Based-Learning (PBL).³⁸

In addition, fourth-year students are offered internships mostly at Japanese companies, and experiencing Japanese corporate culture and practical work experience helps develop the students' ideas about employment.³⁹ In addition, the institute also actively promotes interactions with Japan. It has formed partnerships with 50 research and educational institutions in Japan, and every year approximately 200 students go to Japan on short and long term exchanges, while through summer programs it also accepts many students from Japan.⁴⁰

Since opening its doors in 2007, TNI has been steadily increasing the number of its students, from 433 students at the beginning to 4394 students, approximately ten times more, in 2014.⁴¹ Since producing its first graduates in 2011, the institute has maintained an employment rate of 100% for job-seeking graduates, and in the 2013 career path questionnaire approximately half of the employed graduates had been employed by Japanese companies.⁴² Furthermore, when looking at the graduates divided by faculty, out of those who graduated from the Faculty of Engineering and

³³ JICA, *Heisei 13 nendo Taikoku chūshō kigyō fukkō bunya projekuto keisei chosa hōkokusho*: 33-35.

³⁴ TPA Guide: 3 (http://j.tpa.or.th/files/2016/finalTPA_Guide_Japan41158.pdf, accessed 15 December 2016)

³⁵ JTECS was established in 1972 at the initiative of the Government of Japan, with the motto "work that truly benefits Thailand".

³⁶ JICA, *Heisei 13 nendo Taikoku chūshō kigyō fukkō bunya projekuto keisei chosa hōkokusho*: 33.

³⁷ TNI Homepage <http://www.tni.ac.th/web/tni2014-jp/index.php?option=contents&category=21&id=40> Accessed 15 December 2016

³⁸ TNI, *Monodzukuri kyoiku – TNI sutoorii* [Monodzukuri education: TNI story] (2015): 6-7,9.

³⁹ Ibid., 15.

⁴⁰ Ibid., 17.

⁴¹ Ibid., 3.

⁴² Ibid. 16.

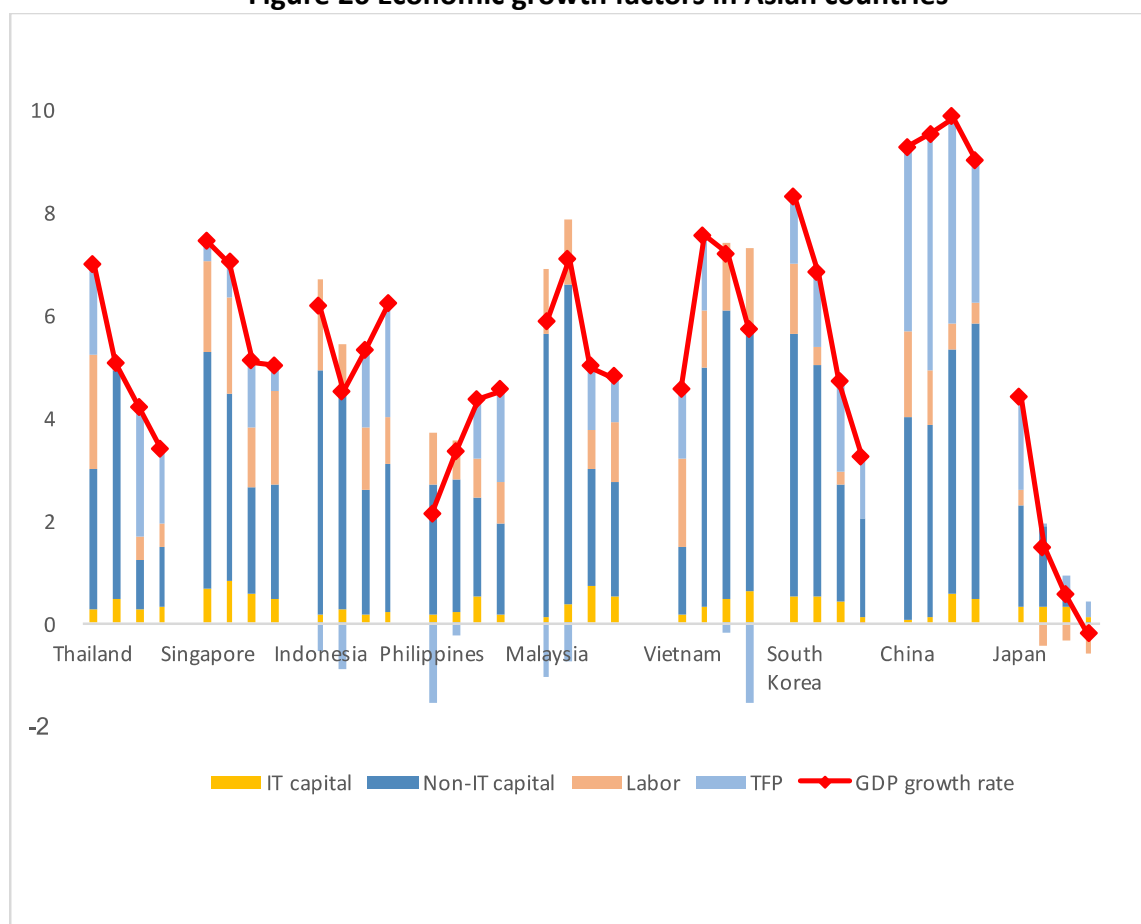
the Faculty of Business Administration, almost 60% were working at Japanese companies, and thus it can be said that TNI has achieved a certain level of success in producing human resources wanted by Japanese companies.

Based on the above, it can be stated that Japanese technical training and dispatch of experts conducted through HIDA, as publicly funded assistance to private companies, has supported the building of exchange networks, and contributes to the vitalization of personal interactions between Japan and Thailand.

2-3 The current situation and issues concerning industrial human resource development

This section will look at the situation concerning industrial human resource development in Thailand and the related future issues will be examined in more detail. First, the competitiveness of Thailand as an investment destination will be assessed. As was indicated in 2-2, in recent years workers' wages have been rising in Thailand, and as Figure 21 showed, compared to neighboring countries the wage level is relatively high. As a result, the current situation is that Thailand is gradually losing its competitiveness as an investment destination for labor-intensive industries compared to its neighboring countries. And as it can be observed from Figure 26, compared to other Asian countries, from 1990 onwards in Thailand labor input no longer functions as a driver of economic growth as effectively as it did before. Consequently, for Thailand to achieve further economic development, it needs to transition from its current dependency on old labor-intensive industries into an economic structure centered on industries that require higher technical abilities.

Figure 26 Economic growth factors in Asian countries

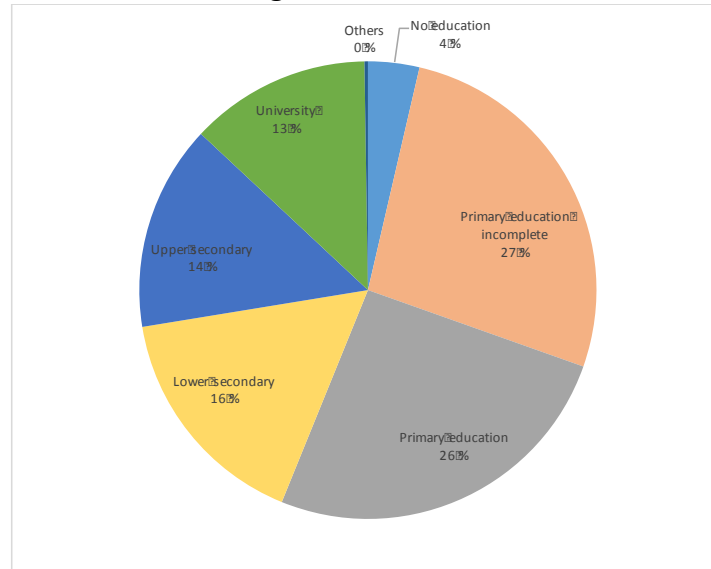


Based on the yearly average of four periods 1)1980-1989 2)1990-1999 3) 2000-2009 4)2008-2012

Source: Produced by Mitsubishi Research Institute based on data from APO Productivity Database

The first issue that can be raised regarding industrial human resource development in Thailand, is that its quality has not reached the required level. Looking at the breakdown of the educational background of employees in Thailand, in fact almost 60% of Thai employees have only completed primary education, or not even that. This implies that many employees have not acquired the basic knowledge necessary for skill acquisition, and consequently have no choice but to remain unskilled workers. In 2-1 it was indicated that the percentage of workers engaged in agriculture, forestry and fisheries is extremely high compared to the sector's contribution to GDP, and this low education level can be considered one of the factors behind it.

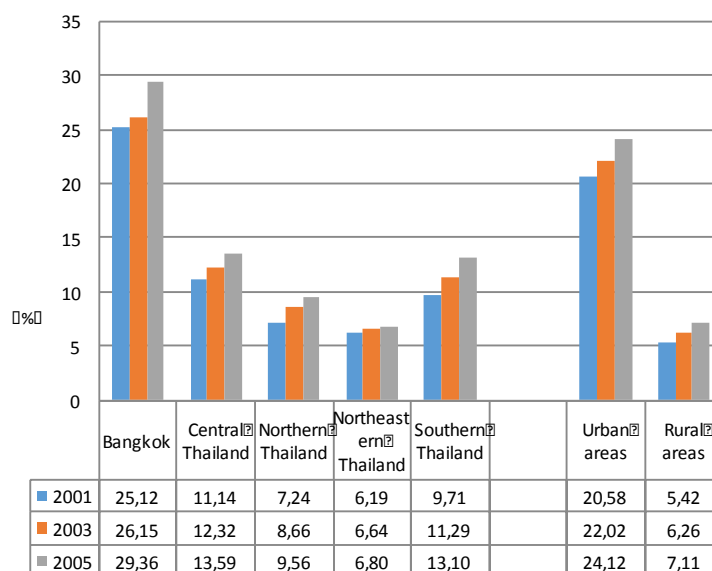
Figure 27 Educational background of the labor force in Thailand (2015)



Source: National Statistical Office, Labor Force Survey

Additional research was conducted on the distribution of educational attainment. Although a bit old, Figure 28 compares participation rates in higher education by region and area in 2001, 2003 and 2005. This figure shows that there is a big gap in higher education participation rates between Bangkok and other areas, and between cities and rural areas. This demonstrates that low education level is a serious problem especially in provincial (rural) areas, and suggests that in addition to nationwide macro-level policies, micro-level policies targeting each region and area are also needed.

Figure 28 Participation rates in higher education by region

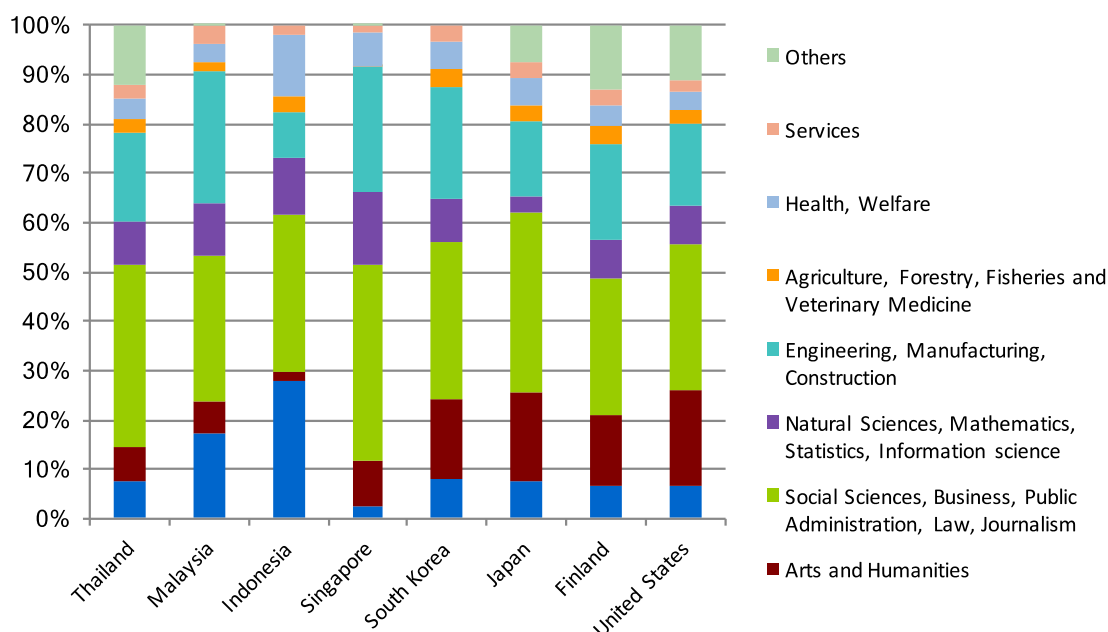


Source: World Bank (2009), "Thailand: Toward a Competitive Higher Education System in a Global Economy," p. 39, Table 3-3.

We will also refer to the breakdown of different majors in higher education. Figure 29 compares the majors selected at universities in Thailand and other countries. From the figure it is possible to observe that in Thailand the percentage of students who select engineering, manufacturing, or construction as a major is not only lower than in developed nations, but also lower than in Malaysia

and other neighboring countries. Based on this it can be stated that in addition to the general lack of high-level human resources, the pool of trained engineering personnel to support the manufacturing industry, which is the driving force of the Thai economy, is not big enough.

Figure 29 University majors by country



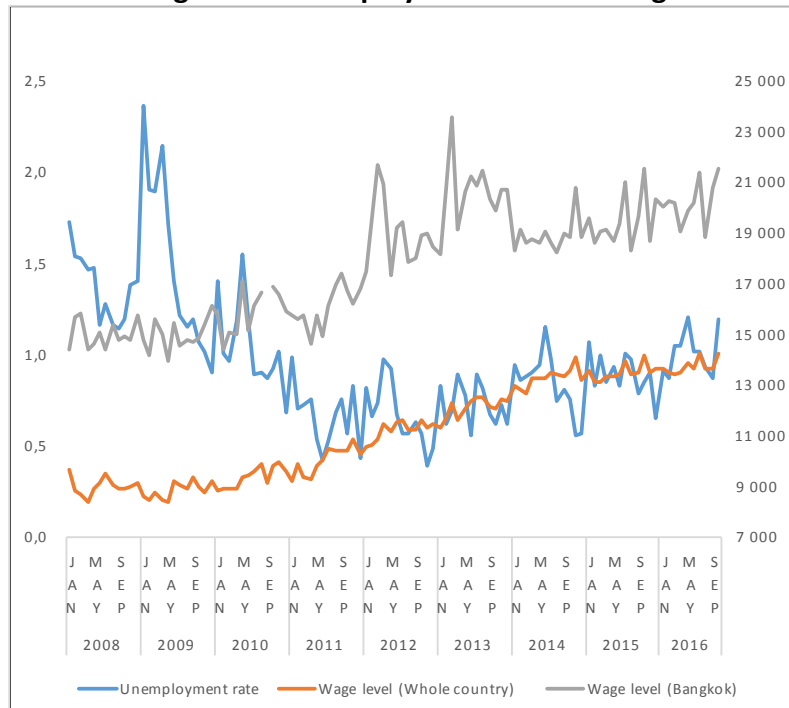
Source : Produced by Mitsubishi Research Institute based on data from UNESCO Institute for Statistics Data Center

Another additional factor characterizing Thailand is the lack of volume of industrial human resources. One point that should be considered is that birth-rate has already fallen in Thailand, and compared to its neighboring countries the unemployment rate is low. Figure 30, which shows the changes in the unemployment rate and wages from 2008 onwards, shows that average wages have been steadily rising both in Bangkok and the country as a whole, and that the unemployment rate is also extremely low. Although the unemployment rate of 2009 was higher than other years due to the considerable effects of the Lehman Brother's bankruptcy and the economic crisis that followed, it was still barely over 2%, and since 2011 it has been roughly around 1%. The fact that the unemployment rate is low means that there is a lot of demand for labor and the competition in the labor market is sluggish. In a situation like this, even if a worker's abilities or skills are low, his chances of obtaining employment are high, and his motivation to develop his skills decreases. This is one of the significant issues concerning industrial human resources in Thailand.

Related to this is the distribution of the Thai workforce by sector. Figure 31 shows the percentages of workers employed in the primary, secondary and tertiary sectors in Thailand and its neighboring countries. Generally, the distribution of the workforce among the sectors changes with economic growth, and as the industrial structure becomes more sophisticated the workforce shifts from the primary sector to the secondary, and from the secondary sector to the tertiary sector. This phenomenon is known as Petty-Clark's Law. On the other hand, looking at the figure below we can see that compared to the country's level of economic development, the ratio of workers employed in the primary sector in Thailand is still high. Even in the case of factory workers it is still not rare for them to leave their posts in order to go back home and inherit the family's fields. Combined with

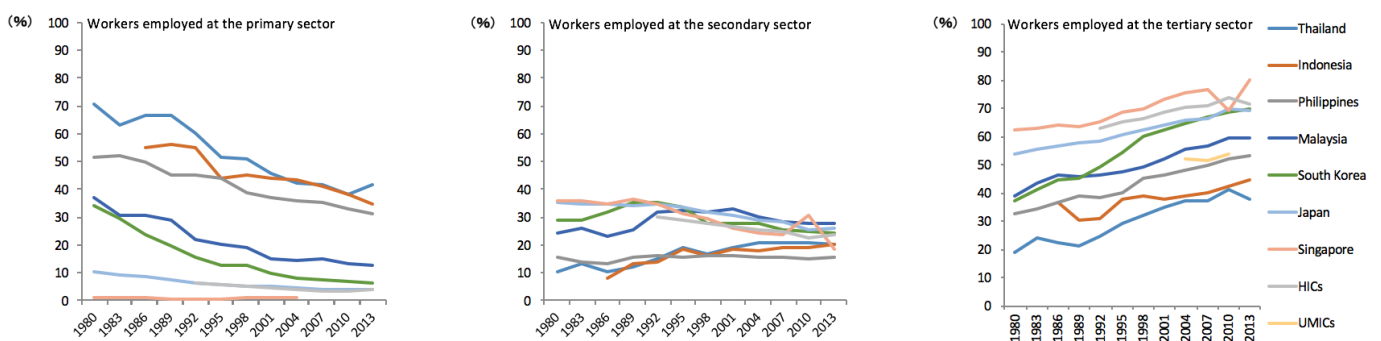
the aforementioned high fluidity of the labor market this makes it difficult to implement a human resource development program where personnel are carefully trained over a long period of time at a single location.

Figure 30 Unemployment rate and wages in Thailand



Source: BOT Labor Force Survey, Average wage classified by Industry, Average wage classified by Industry in Bangkok

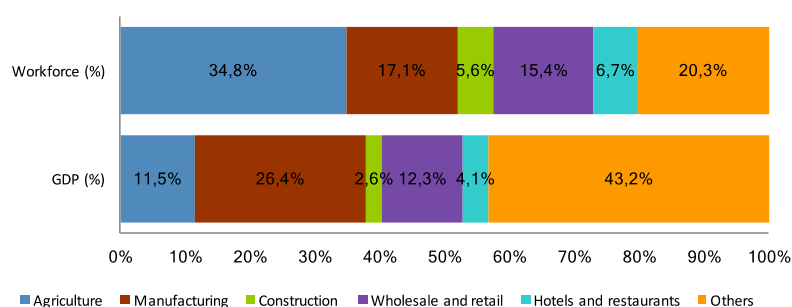
Figure 31 Distribution of workforce by sector



Source : Produced by Mitsubishi Research Institute based on data from the World Development Indicator Database

Currently Thailand is precisely facing the "middle-income trap," as it is reaching the limits of economic growth driven by the labor-intensive industries that it accumulated by using low costs as a weapon.

Figure 32 The industrial structure of Thailand



Source: Produced by Mitsubishi Research Institute based on NESDB statistics

In Thailand, redistribution of the workforce has not occurred sufficiently following the economic growth of the country so far, and as Figure 29 demonstrates, while over 30% of the workforce is employed in agriculture, forestry and fisheries, that sector only contributes approximately 1% to the Thai GDP. Furthermore, in Thailand the birthrate is declining and the population aging even more rapidly than in Japan, and the country is also driven by the need to heighten the productivity of each worker in the future. In a situation like this, for the Thai economy to keep growing, developing its high skilled human resources, both in terms of quality and quantity, is an important measure for solving those issues. In order for Thailand to transition into a higher value-added economy, strengthening industrial human resources is one of the most important tasks, and could be the key to the country's future industrial development.

Chapter 3 Evaluation Results

3-1 Relevance of policies

3-1-1 Consistency with Japan's high-level policies

(1) Bilateral assistance policies towards Thailand

(A) Japan's ODA Charter and Development Cooperation Charter

The importance of human resource development has continuously been inscribed clearly in Japan's ODA Charters. First, in the basic principles of the so-called previous ODA Charter that was approved by cabinet decision in 1992, it is mentioned that Japan would engage in measures to "extensively build human resources "for the sake of economic development. Furthermore, one of the five priority issues established was "human resource development and the improvement and dissemination of technologies through research cooperation and other efforts." Great emphasis was placed on human resource development, as it is said to be "in the long-term, the most significant element of self-help efforts" and "the basis of nation-building."

Whilst going through adjustments vis-à-vis changes in international aid policies, the importance of aid for human resource development has been emphasized in later high-level policies as well. In the ODA Charter of 2003, that was formulated by revising the old ODA Charter, one of the five basic policies mentioned is "supporting self-help efforts of developing countries". In it, while referring to the concept of ownership that was beginning to gain international attention at the time, the importance of supporting human resource development in assisting the self-help efforts of developing countries is clearly inscribed. Moreover, in another basic policy of "perspective of 'Human Security'" as well, cooperation to "strengthen the capacity of local communities through human resource development" is mentioned. In addition, "sustainable growth" of developing countries was established as one of the priority issues, and for this purpose also human resource development in the form of "accepting foreign exchange students" and "cooperation for research" is described as being important.

These policies have been carried on in the Development Cooperation Charter that was established in 2015 when the ODA Charter of 2003 was revised. For example, "cooperation aimed at self-reliant development through assistance for self-help efforts as well as dialogue and collaboration based on Japan's experience and expertise", which includes human resource development cooperation, is established as one of the basic policies. And in the paragraph on "quality growth" and poverty eradication through such growth", which was set as one of the priority issues, which includes assistance in the form of "vocational training and industrial human resources development", the importance of human resource development cooperation is also indicated.

In addition, in the section of "priority policy issues by region" related to the Association of Southeast Asian Nations (ASEAN) region, it is specifically mentioned that Japan will "continue its assistance to countries that have already achieved a certain level of economic growth for them to avoid the 'middle income trap' through assistance to promote increased productivity and technical innovations such as human resources development."

(B) Country Assistance Program for Thailand

The orientation for aid and its Priority Areas are both specified In the Country Assistance Program for Thailand (2000). The orientation for aid is specified in four points: “assistance to promote self-reliant development” “assistance for medium- and long-term recovery from the Asian economic crisis” “further assistance in the five priority areas” and “strengthening human resource development.” In the guiding principles of “human resource development” “fostering of businessmen, engineers and experienced workers in small businesses, including supporting industry that can respond to an increasingly sophisticated industry structure” is mentioned as an issue, and in addition, regarding the “assistance for medium- and long-term recovery from the Asian economic crisis” “human resource development in the financial and other sectors” is mentioned.

The five Priority Areas enlisted are; “support for the social sector”, “environmental protection”, “rural and regional development”, “improvement of economic infrastructure” and “regional cooperation.” Among these Priority Areas, “higher education, particularly the fostering of engineers in the fields of science and technology by providing technical cooperation for vocational training and loans for overseas students” is given priority in the education section of “support for the social sector”. In addition, the need to develop human resources that can contribute to the adjustment of the industrial structure and the need to improve the labor market are mentioned in the “improvement of economic infrastructure”.

(C) Japan’s Economic Cooperation Program for Thailand

Japan’s Economic Cooperation Program for Thailand (2006) indicates that its basic stance is to provide assistance by collaborating with various bodies based on “a new cooperative relationship” with Thailand. The assistance policy is also indicated separately for each aid modality (technical cooperation, ODA loans, and grant aid). In the area of technical cooperation the paragraph on “enhancement of competitiveness for sustainable growth”, mentions industrial human resource development, where it is stated that “in pursuit of strengthening industrial competitiveness, Japan provides cooperation in institution-building e.g. international standardization, increasing the efficiency of logistics and information-communication technology, as well as human resource development related to these issues.”

(D) Country Assistance Policy for Thailand

According to the Country Assistance Policy for Thailand (2012) the Basic Policy of Assistance is “promotion of mutual benefit and contribution to regional development based on strategic partnership” and the three Priority Areas enlisted are “sustainable development of economy and coping with maturing society”, “coping with common issues in ASEAN countries” and “promotion of cooperation towards counties outside the ASEAN region.” Among these three, industrial human resource development is mentioned in the section on “promotion of mutual benefit and contribution to regional development based on strategic partnership.”

As can it be confirmed from the aforementioned documents on aid towards Thailand, so far industrial human resource development has not been viewed as an independent aid sector within Japanese assistance policies towards Thailand, but as a means to achieve the objectives of various aid sectors (especially policies supporting industrial revitalization). For this reason, within aid policies towards Thailand, industrial human resource development has not been referred to as a

direct target of aid up to now, and unified objectives and specific assistance policies for the sector have not been clearly formulated.

(2) Policies related to industrial human resource development

In addition to MOFA, various government agencies have been providing aid related to industrial human resource development through individual bilateral initiatives. Aside from MOFA, METI has been particularly active in providing support in this sector. Behind this is the importance given to industrial human resource development within METI's industrial revitalization policy. The difference between the policies of MOFA and METI is in their objective. In the case of the former, the support is implemented in the form of ODA, which means that the primary objective is to contribute to the development of Thailand, and the assistance has been implemented as one approach to Thailand's development issues. Because it is ODA, the support is targeted at the public institutions of the recipient country. On the other hand, in the case of METI, one of its major objectives is to support the activities of Japanese companies in Thailand. As a result, the targets of its support have been private companies: Japanese companies, the related Thai companies and others.

As the subject of this evaluation is MOFA's ODA policies, METI's policies are not its direct subject. However, it must be noted that until today, in Japan's industrial human resource development assistance in Thailand, the support provided by MOFA which cooperates with public institution from a development cooperation viewpoint, and the support provided by METI to private companies with the aim of promoting industrial revitalization in Japan and Thailand, has been complementing each other

(A) Related policies of METI

In the report "*Wagakuni keizai kyōryoku no seikō keiken wo fumaeta 'Japan ODA moderu' no suishin*" [Promoting the 'Japan ODA model' based on the achievements of Japan's economic cooperation] published in 2005, METI states that it will promote economic activity in the private sector by realizing economic cooperation through ODA. The report, mentions that one of the prioritized area for economic cooperation is "improving the trade and investment environment". Industrial human resource development is thus placed as a concrete measure in one of its sub-areas "soft infrastructure and human resource development." In addition the report "*Ajia ni okeru sangyō jinsai ikusei to 'Ajia hyōjun' no tenkai nit suite*" [Industrial human resource development in Asia and development of the 'Asia standard'], published in 2007, summarizes the issues of industrial human resource development assistance and the direction of the countermeasures.

(B) Industrial Human Resource Development Cooperation Initiative

The Industrial Human Resource Development Cooperation Initiative was announced by Prime Minister Abe in the ASEAN Summit Meeting organized in November 2015. It promised to assist industrial human resource development by training 40,000 people in three years, with the recognition that it is indispensable to advance industry by developing necessary human resources in order for Asia to become the "growth center" and driving force of the world economy in the 21st century.

More specifically the initiative aims to educate personnel to have 1) practical technical skills, 2) design and product development skills, 3) innovation capability and 4) management and planning skills, while also 5) improving basic education focusing on mathematics and science and 6) training

government officials responsible for industrial policies, in order to extend comprehensive support for industrial human resource development. This ranges from manufacturing, research and development all the way to basic education, which contributes to the supply of human resources. In addition, the initiative also announced to establish a liaison meeting for the related government agencies, and it emphasized enhancing cooperation between the various governmental institutions (the seven ministries of MOFA, METI, MEXT, MIC, MHLW, MAFF as well as JICA and other organizations) as a defining characteristic of the new initiative. Until today, industrial human resource development assistance has been provided through individual bilateral initiatives of various government agencies including MOFA, and no unified objectives or specific assistance policies had been formulated by Japan as a whole. Nevertheless, with the formulation of the Industrial Human Resource Development Initiative, it can be expected that government agencies will work together more closely on industrial human resource development.

Furthermore, following the opportunity provided by the Industrial Human Resource Development Cooperation Initiative, the Japanese Embassy in Thailand hosted a Round Table Conference of Human Resource Development in March 2016 and again in July of the same year, where representatives of industry, government and academia of both countries discussed issues related to the current situation in Thailand and future policies. In addition, based on the initiative and the discussion at the round table conference, at the meeting of the Thailand – Japan High Level Joint Commission in December 2016 the “Japan - Thailand Industrial Human Resource Development Cooperation Initiative” was announced. In the future, it is planned that an ODA loan projects are initiated in order to carry out various different measures; training practical engineers and innovative engineers (provisional title: Japan Thailand Industrial Human Resource Cooperation), setting up university lecture courses, conducting training between different corporate groups in the ASEAN region, providing more technical skill tests and other qualification tests, revising regulation related to human resource development by the Government of Thailand, and training of research and development personnel to promote innovation and other initiatives.

3-1-2 Consistency with the needs of Thailand

(1) National Economic and Social Development Plan

Since 1961, under the leadership of the National Economic and Social Development Board (NESDB) Thailand has been formulating National Economic and Social Development Plans every five years to serve as the guideline for development policies.

Originally, the main concern of the National Economic and Social Development Plan was “finding ways to achieve economic development” while aiming for the improvement of citizens’ daily lives and narrowing down the income gap.

However, a significant change in the orientation of economic development could be seen in the Seventh National Economic and Social Development Plan of 1992-96, where a paragraph was devoted to “development of human resources” for the first time, and in the following Eighth National Economic and Social Development Plan of 1997-2001 “developing human potential” was established as a pillar of the development strategy.⁴³

⁴³ Overseas Vocational Training Association, *Kokka keizai shakai kaihatsu keikaku* [National Economic and Social Development Plan] (2004) (<http://www.ovta.or.jp/info/asia/thailand/pdf/03planning.pdf>, Accessed 28 November 2016); DBJ Singapore Limited, *Tai no kōgyōka no gaiyō*.

The reason for this change can be traced to the fact that Thailand had experienced remarkable economic development and industrialization especially in the 1980s,⁴⁴ which pressed them to change its original economic development strategy depending on labor-intensive industries. The later National Economic and Social Development Plans have inherited the nature of the eighth plan up to now.

Following these changes in the nature of the National Economic and Social Development Plans, industrial human resource development came to occupy an important position within Thailand's development plan. The paragraph devoted to the "development of human resources" in the Seventh National Economic and Social Development Plan refers to "the development of skills and vocational abilities of workers"⁴⁵ and similar references were seen in the eighth and ninth plans.⁴⁶ From the Tenth National Economic and Social Development Plan (2007-2011) onwards, the strengthening of technical skills and research (the field of R&D) has also been emphasized.

In the latest, Twelfth National Economic and Social Development Plan, "human resource development" is mentioned in relation to "strengthening economic infrastructure and sustained improvement of competitiveness," and the training of workers with high-level knowledge and skills is prioritized. In addition, implementing job seeking support for the working age population (vocational training and information services) is also inscribed in the plan.

(A) Industrial Restructuring Plan

As a part of the efforts to rebuild the Thai economy after the Asian financial crisis, the Ministry of Industry in Thailand set up a National Industrial Development Committee in August 1997, with the aim of rebuilding the domestic industry in Thailand and strengthening its international competitiveness.

One of the measures proposed in this context was the Industrial Restructuring Plan (IRP), which was approved in June 1998 by Cabinet decision. Transitioning to a high value-added industry, the streamlining of production costs, production processes and logistics, the improvement of knowledge and skills of industrial workers, the forming of strategic partnerships to promote market expansion and the transfer of technology, introduction of new technologies and reduction of industrial pollution through policy intervention, and the distribution of industrial employment between cities and regions form the substance of the plan.

After the approval of the IRP industry-specific institutes targeting the automobile industry and other promising industries, the Thai Automotive Institution (TAI) Electrical and Electronics Institute (EEI), were newly established under the Ministry of Industry.

In continuation, Japan dispatched a JICA expert and provided recommendations on the SME revitalization policy (the Mizutani Plan), which included the introduction of *shindan* (an SME consulting system), training of *shindan-shi* (SME management consultants), and the strengthening

⁴⁴ Kenji Domoto, "Tai no hatten kyokumen to keizai kiki" [Thailand : Its Development Phase and Economic Crisis] in *The Hikone ronso* vol 315 (1998): 210-13.

⁴⁵ *The Seventh Economic and Social Development Plan (1992-1996)*: 15.

⁴⁶ Overseas Vocational Training Association, *Kokka keizai shakai kaihatsu keikaku*.

industry-specific institutes to develop supporting industries, and which formed the basis for the Thai Government's SME Development Master Plan (April 2000).

(B) Master Plan for Automotive Industry

The Master Plan for Automotive Industry is a development plan specializing in the automotive industry. Since 2002, it has been drafted every five years by TAI, which was established in July 1998 by the Ministry of Industry after the adoption of the IRP. The objective of the First Master Plan for Automotive Industry (2002-2006) and the Second Master Plan for Automotive Industry (2007-2011) was to make Thailand grow as the manufacturing base of the automotive industry in Asia, and to raise the level of the supporting industries. This orientation was also emphasized in the Ninth National Economic and Social Development Plan (2001-2006), in which the automotive industry was placed among the five priority sectors to be developed. This national plan is commonly referred to as the "Detroit of Asia Plan." In the third master plan (2012-2016) it is stated that the aim is to become "a global green automotive production base with strong domestic supply chains which create high value added for the country" until 2021 and the following five strategies are listed in the plan:

- 1) Excellence in research and technology development
- 2) Excellence in human resource development
- 3) Enhancing the skills of entrepreneurs
- 4) Developing infrastructure to create a favorable business environment
- 5) Creating a favorable business environment through policy integration

Out of these strategies, the one that is directly related to industrial human resource development is mainly number 2, where the development of human resources with improved learning abilities (knowledge and understanding) and higher efficiency and productivity is set as the objective.

(C) Latest developments in industrial policies

Since 2000, the Thai economy has not experienced growth as to the extent that it had expected, and there is concern that the country might fall into the "middle-income trap", failing to improve its industrial structure and innovate, due to which it is unable to transition to a high-income country.⁴⁷ To overcome this economic situation and to make its transition to a high-income country, the Prayut administration that was formed in August 2014, launched new economic policies. A typical example is the Cluster Policy that came into effect in September 2015. The Cluster Policy designates particular industries as "cluster industries," and aims to support and develop each industry at a designated area, where it is concentrated. Among the industries designated in the Cluster Policy there are "super clusters" (Automotive and Parts Cluster, Electrical Appliances, Electronics and Telecommunication Equipment Cluster, Eco- friendly Petrochemicals and Chemicals, Digital Industries, Aviation, Automation and Robotics)⁴⁸ and "other clusters" (Agriculture, Textile and

⁴⁷ Embassy of Japan in Thailand, *Tai no keizai jōsei to Nichi-tai keizai kankei* [Economic situation in Thailand and economic relations between Japan and Thailand] (2016): 6; Keiichiro Oizumi, "Tai Purayutto seiken no shin keizai seichō senryaku – kokusai kyōryoku kyōka no tame no kurasutaa seisaku wo sutaato" [The new economic growth strategy of Thailand's Prayut administration – The start of a cluster policy to strengthen international competitiveness] in *Nihon Sōken Research Focus* No. 2015-049, (2016): 3-4.

⁴⁸ Aviation, automation and robotics were added on 29 February 2016. See The Board of Investment of Thailand (2016), *Announcement of Board of Investment*, No.7/2559.

Garment). One of the requirements for receiving the benefits of the Cluster Policy is cooperation in industrial human resource development.

In addition, in November 2015, “10 targeted industries” were designated with the aim of avoiding the “middle-income trap” by creating a high value-added industry, and improving the industrial structure. Specifically the 10 industries are 1) Next Generation Automotive 2) Smart Electronics 3) Affluence, Medical & Welfare Tourism 4) Agriculture and Biotechnology 5) Food for the Future 6) Robotics 7) Aviation and Logistics, 8) Biofuels and Biochemical, 9) Digital and 10) Medical Hub. These ten industries are divided into existing industries (1 to 5) and new industries (6–10). The existing industries are expected to help maintain the current economic growth, while the new industries are expected to contribute to rapid economic growth (that will help Thailand become a high-income country).⁴⁹

The orientation of these policies was comprehensively summarized in “Thailand 4.0,” which was announced by the Thai Government around May 2016. In “Thailand 4.0” the agriculture-centered economy is defined as 1.0, the phase where, through industrialization, the country transitioned to an economy centered on light industries prioritizing domestic demand as 2.0, and the phase where through internationalization heavy industries and export promotion became the center of the economy as 3.0. It is a vision that places the current Thai economy in the bracket of 3.0. and aims to overcome the issues Thailand is currently facing, beginning with the “middle-income trap”, by shifting to a knowledge-based economy (4.0). In “Thailand 4.0” the increase of knowledge-workers and skilled workers is listed as one of the conditions for transitioning to a knowledge-based economy, and states that the new Thailand will be people-centric.⁵⁰

Thailand which had achieved continuous robust economic growth especially in the manufacturing industry, is currently under the pressing need to create higher added-value industries in order to avoid the “middle-income trap” and to enhance its development. The Government aims to transition from the accumulation of the old labor-intensive industries to a knowledge-based economy, and rapid development of high-level human resources is urgently required to support such an economy. Especially after the Asian financial crisis, the state’s awareness of this issue has been clearly visible in the industry restructuring plans and development policies of Thailand. The automotive industry, which is the driving force of the Thai industry, aims to raise the level of its human resources in order to increase its international competitiveness as an advanced production base. Thus, the industrial human resource development assistance provided by Japan after the Asian financial crisis corresponded to the needs of Thailand.

3-1-3 Consistency with international aid trends and aid policies of other donors

For a long period of time there were no international norms or core aid philosophies directly targeting industrial human resource development, and all the related guidelines listed below have

⁴⁹ Keiichiro Oizumi, “Tai Purayutto seiken no shin keizai seichō senryaku – kokusai kyōryoku kyōka no tame no kurasutaa seisaku wo sutaato”: 4-5. The Prayut Administration calls this development to a new high-level industrial stage the “New S Curve.”

(See: <https://www.jri.co.jp/MediaLibrary/file/report/researchfocus/pdf/8667.pdf>)

⁵⁰ Suvit Maesincee (2016), “*Thailand 4.0: Thriving in the 21st Century through Security, Prosperity & Sustainability*,” (<http://www.ait.ac.th/news-and-events/2016/news/1thailand-4.0-english-dr.-suvit.pdf> Accessed 17 November 2016.)

only come to be emphasized in international aid in recent years. As will be mentioned later in the section of inputs in 3-2-1, in terms of absolutely quantity, the amount of aid that Japan has provided amounts to such level that no other donor compares. Listed below are approaches related to labor and skills that have come to be emphasized in recent years especially among multi-donor. Though it should also be noted that within the international aid environment, Japan has been the driving force in the sector of industrial human resource development, recognizing the importance of this sector before it began to attract attention internationally.

(1) ILO and Decent Work

At the 87th General Conference of the International Labor Organization (ILO) in 1999, the Director-General Juan Somavía used the concept decent work in his report for the first time, and since then it has been positioned as a major objective of the activities of ILO.

In the aforementioned report, the concept is defined as follows: “decent work means productive work in which rights are protected, which generates an adequate income, with adequate social protection. It also means sufficient work, in the sense that all should have full access to income-earning opportunities.”⁵¹

In the aforementioned report of the Director-General at the 87th ILO General Conference, and the ILO Declaration on Social Justice for a Fair Globalization that was adopted at the 97th general conference of 2008, four strategic objectives for the realization of decent work are listed.

- 1) Promoting employment: ensuring that individuals can develop the capacities and skills needed to make a living through their work; supporting governments and companies so they can create employment
- 2) Developing and enhancing measures of social protection: ensuring safe and healthy working conditions and an environment that also improves productivity. extension of social security
- 3) Promoting social dialogue promoting dialogue between the government, workers and employers for the peaceful resolution of problems and conflicts at the workplace
- 4) Guaranteeing rights at work: guaranteeing and respecting workers’ rights to assure no one has to work in unfavorable conditions

Once again, the importance of developing skills and earning a living through work in order to have one’s social rights as a worker and a citizen guaranteed is mentioned.

(2) Skills development

Skills development is an approach that mainly aims to improve the skills of the poor; not only occupational skills, but skills needed to increase income levels, including knowledge such as learning and communication skills needed to respond to the changing environment. Skills development is a concept similar to Technical and Vocational Education and Training (TVET), and drawing a line between the two is difficult, but aid agencies consider skills development one of the approaches used in implementing TVET.⁵² However, in skills development there are elements such as general

⁵¹ ILO Homepage <http://www.ilo.org/global/topics/decent-work/lang--en/index.htm>

⁵² Shoko Yamada and Noriko Matsuda, *Vocational and Industrial Human Resource Development through TVET in Africa: Changing Assistance Environments and Human Resource Demands* (Japan International

education that are not included in TVET, and skills development is not necessarily a concept that can be subsumed into TVET.⁵³

Skills development has been used as a technical term from the latter half of the 1990s onwards, when international organizations and donors cooperated to establish the Working Group for International Cooperation in Skills Development in 1996.⁵⁴ In addition, in the World Education Forum of 2000, the Dakar Framework for Action was adopted, and while the term skills development is not directly used in that framework, the paragraph on “Ensuring that the learning needs of all young people and adults are met through equitable access to appropriate learning and life skills programs” also heightened interest in skills development.⁵⁵

It has been indicated that the report published by World Bank in 1991 on TVET also had a considerable impact on skills development.⁵⁶ In the report the World Bank suggested that from the perspective of efficiency (low costs) and effectiveness (acquiring skills directly linked to demand) ideally the private, not the public sector, should be in charge of skill training. On the other hand, acknowledging that in low-income countries the environment makes it difficult for the private sector to be in charge of skill training, the report also maintains that along with supporting the private sector, TVET occurring in the public sector should also be optimized by linking it more strongly with the market.⁵⁷ This stance has continued in later World Bank policies.⁵⁸ The Asian Development Bank (ADB) also has a similar position and in skills development prioritizes training provided by the private sector.⁵⁹

As a result of the newly introduced concept of skills development, inter-mixing of educational courses has taken place: vocational training has been included in general education courses, and general education has been included in vocational training courses.⁶⁰ In addition, aid for the skills development of informal sector workers (in addition to skill support, there were also training linked with microfinance and business support and fortification of interindustry relations) also gathered attention.⁶¹

(3) SDGs

Compared to its precedent, the Millennium Development Goals (MDGs), in the Sustainable Development Goals (SDGs) adopted by the United Nations in September 2015, references to themes

Cooperation Agency and GRIPS, 2007). http://jica-ri.jica.go.jp/IFIC_and_JBICI-Studies/english/publications/reports/study/topical/tvet/pdf/tvet_1.pdf

⁵³ Kazuhiro Yoshida, “Saikō suru sukiru diberomento he no kokusai kyōryoku – Old Wine in a New Bottle?” [Revival of International Cooperation in Skills Development: Old Wine in a New Bottle?] in *Kokusai kyōiku kyōryokushū* 10 (3) (2007): 73-4.

⁵⁴ Ibid., 73.

⁵⁵ Hidemi Yoshida, *Sukiru diberomento to hinkon sakugen* [Skills development and eradication of poverty] (JICA Research Institute 2006): 9.

⁵⁶ Kazuhiro Yoshida, “Saikō suru sukiru diberomento he no kokusai kyōryoku – Old Wine in a New Bottle?,” 80-84.

⁵⁷ World Bank, *Vocational and Technical Education and Training*, 1996, World Bank Policy Paper.

⁵⁸ See for example Richard K. Johanson and Arvil V. Adams, *Skills Development in Sub-Saharan Africa*, 2004, Washington: World Bank.

⁵⁹ Asian Development Bank, *Education and Skills: Strategies for Accelerated Development in Asia and the Pacific*, 2008.

⁶⁰ Kazuhiro Yoshida, “Saikō suru sukiru diberomento he no kokusai kyōryoku – Old Wine in a New Bottle?,” 81-82.

⁶¹ Hidemi Yoshida, *Sukiru diberomento to hinkon sakugen*, 22-24.

related to industrial human resource development increased, and their content reflects the rise of the importance of the topic within international aid trends. Specifically, it is goals 4 and 8 that include content related to industrial human resource development.

First, Goal 4: “Ensure inclusive and quality education for all and promote lifelong learning,” unlike the MDGs which placed more emphasis on basic education, emphasizes the importance of providing everyone access to high-quality technical and vocational education. Here, technical and vocational education are mentioned along with the aim to develop human resources with vocational skills by strengthening this kind of education. While aiming to create humane work that is comfortable to commit, the importance of realizing sustainable economic growth through increased productivity and technological innovations is also acknowledged.

In addition, in Goal 8: “Promote inclusive and sustainable economic growth, employment and decent work for all”, the importance of this field is explained from a labor perspective. While the aforementioned “decent work” is a concept advanced by ILO, in the SDGs it is listed as a part of the goals, as a new perspective that had not been mentioned in the MDGs. Here, along with achieving a better quality of life through working in a comfortable work environment, realizing sustainable economic growth through increased productivity and technological innovations is also specified as an objective. Thus, the importance of themes related to industrial human resource development was confirmed anew in the SDGs, which shows that the presence of industrial human resource development within aid tendencies is increasing even further.

(4) Aid by other donors

(A) Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)

After Japan, Germany is the donor that has been most strongly engaged in the industrial human resource development sector in Thailand. With GTZ (which later became GIZ) as the implementing agency, it has focused especially on entrepreneurial education targeting SMEs and micro enterprises, and the training of workers through dual education. The Small Scale Industry Promotion Program (SSIPP) can be mentioned as a typical initiative. This program was implemented in two phases, with the Ministry of Industry acting as the counterpart. The first phase was from 1997 to 2000, and the second from 2001 to 2003. The program consisted of measures to improve management by conducting lectures on related topics during entrepreneurship courses, and of supporting the creation of a network of SME support agencies.

Germany is a strong donor in vocational training due to its own experience within the country. One of the older cases is that of King Mongkut's Institute of Technology Bangkok, which opened in 1959. Support to the institute was the first instance of aid implemented by GIZ in Thailand, as it provided support for expanding vocational training programs. After that in the dual vocational training project (1998-2000), with the Department of Vocational Education (DOVE) at the Ministry of Education as its counterpart, it established a system of courses where students taking classes at vocational schools also work at companies 3-4 days a week. This program targeted 130 vocational institutions all over Thailand, over 2000 companies participated in it and the number of trainees reached a total of 20 000 people.

On the other hand, now that Thailand has become an upper-middle-income country, Germany generally focuses on regional aid, and is engaged in aid exclusively in the environmental sector

(climate change). While it is engaged in bilateral technical cooperation with Thailand by providing support related to operation technology aimed at energy efficiency, there are no projects linked directly to industrial human resource development. This is true of all sectors except the environmental sector, as Thailand is already seen as a hub for triangular cooperation. Currently GIZ aims to spread and expand the kind of dual education it implemented Thailand through the Effective In-company Vocational Training in the Mekong Region -project, while using Thailand as a base.

(B) ADB

ADB sees Thailand, which has the second-largest economy among the ASEAN countries, as a transport and logistics hub for regional cooperation and integration of the ASEAN and Greater Mekong Subregion (GMS). The areas where ADB provides assistance in Thailand are infrastructure development, financial sector development, environmentally sustainable development and regional cooperation and integration. In each area, increasing knowledge and innovation, developing the private sector and regional cooperation and integration are considered the strategic pillars of aid. Especially through the finance++ (finance plus leverage plus knowledge) approach, it provides flexible financing to both the public and private sectors, and engages in assistance that aims to accelerate and maximize development results through policy advice and capacity development.

Regarding initiatives related to industrial human resource development, ADB has engaged in human resource development by providing support to vocational training institutes and higher educational institutions. A typical project was the higher education development project implemented from 1999 to 2006, where it provided 59 million dollars of funds to support the establishment of research centers, research and development, and human resource development in the field of science and technology.

To summarize the above, in international aid trends, industrial human resource development has generally not been listed as a major target area. However, from a labor perspective, ILO has emphasized skill acquisition and employment as a way for people to socially secure their position and rights. The importance of this approach was affirmed when it was also introduced to the SDGs adopted in 2015.

Germany, which among other donors has been the most active in this sector, emphasizes vocational training. Especially in the context of developing supporting industries, that is consistent with improving the quality of company personnel, which is prioritized by Japan.

3-1-4 The comparative advantage and strategic nature of Japanese aid

As discussed in the earlier section in relation to international aid trends and other donors' initiatives, the approach of Basic Human Needs (BHN) and MDGs formed the mainstream of aid philosophy for a long time. In such circumstances, there were not many donors that were actively engaged in industrial human resource development, and the very sector itself can be described as characteristic of Japan's aid.

Figure 33 Amount of aid related to industrial human resources by the primary donors to Thailand (Million USD)

	Donor	Total amount of aid to Thailand	Industrial human resource-related aid to Thailand
Bilateral donors	Japan	2224.47	95.90
	United States	577.72	0
	Germany	169.50	53.71
	Sweden	63.61	0.42
	Australia	53.79	0.19
	United Kingdom	52.24	1.73
Multilateral donors	EU	107.93	0
	Climate Investment Funds	99.50	0
	Global Environment Facility	43.64	0
	UNHCR	22.26	0
	Global Fund	425.33	0

Source: Produced by Mitsubishi Research Institute based on data from the OECD CSR Database

The figure above combines the total amount of aid provided by top donors to Thailand between 2006-2015, with the amount of industrial human resource related aid provided by each. Looking at the figures, the amount of aid related to industrial human resource development provided by Japan stands out amongst the donors. In the case of the other bilateral donors, aside from Germany, which has provided the most industrial human resource development assistance after Japan, even if the total amount of aid is as high as it is in the case of the United States, aid in this sector has been practically nonexistent.

In addition, when we asked the local counterparts for their evaluation of the Japan's aid during the field survey, they mentioned two qualities compared to other donors. Firstly, the fact that it tended to be more systematic and secondly it was also mentioned that the content of cooperation was drawn from the priority assessed through the extensive research on the needs of the counterpart. They said that especially when deciding the content of cooperation, the needs and situation of the recipient country and the target period were examined case-by-case, and that there was careful effort to meet the needs of the recipient country.⁶²

As the comparison with the inputs of other donors also shows, even when there was not much interest within international society in this domain, Japan consistently engaged itself in industrial human resource development, and has been a continuous driving force of aid in this sector. Especially in Thailand, where the income level is already high, many donors have limited their aid modalities and target sectors, and in this regard no other donor compares to Japan. In the light of such history, Japan has a high comparative advantage in this sector of cooperation, especially in Thailand. Regarding the content of the cooperation, particularly the coordination between governmental and private actors and the emphasis on developing industrial human resources that are highly compatible with Japanese companies are its defining characteristics. Furthermore, as the local counterparts rated Japanese aid being superior in terms of being careful and systematic, its advantage can also be confirmed in terms of processes.

⁶² Interviews at TICA and NIMT.

3-2 Effectiveness of Results

3-2-1 Approach to case studies

Making the benefits of human resource development visible is very difficult. Unlike in aid projects like infrastructure development, where there is a physical outcome, the level of skills and abilities in human resources is often inferred through indirect indicators and outcomes. However, just by chasing indirectly visible results, the actual outcome of human resource development cannot be accurately assessed, which can also lead to underestimating its results. Therefore, the approach adopted in this evaluation was to conduct case studies on industrial human resource development in Thailand, and then qualitatively inspect the concrete outcomes. Below is a summary of the five priority areas that were the subjects of the case studies.

(1) Priority Area Case Study 1: Fostering of policy-making personnel

Long-term continuity and consistency are important for effective human resource development. On the other hand, the funds that Japan can devote to aid are limited, and as especially in recent years the ownership of the recipient country has been emphasized, it is necessary to develop human resources and a system that enable the Thai side to implement consistent long-term development with a certain extent of self-sufficiency.

Japanese industrial human resource development initiatives in Thailand have included training the people responsible for the various aspects of human resource policy-making and building and developing the corresponding systems. An exemplary outcome of this is the BSID at the Ministry of Industry. BSID traces back its origin to Metal-Working and Machinery Industries Development Institute (MIDI), that had been established through the Japanese “Development of The Metal Working and Machine Industry in The Kingdom of Thailand” project. The organization was reorganized and expanded into a bureau under the Department of Industrial Promotion at the Ministry of Industry, while receiving support from JICA, by expanding the technical support it provided to companies. As will be explained in relation to the other Priority Areas below, BSID does not engage in the actual day-to-day work of human resource development, but rather plays a central role in the formulation and implementation of the projects themselves. The people and organizations like BSID that for many years served as counterparts of Japanese aid, have afterwards played a significant role in Thai industrial policy-making. In Case study 1) it will be observed how BSID expanded its capacity as a result of Japanese aid, and how it has produced key policy-making personnel.

(2) Priority Area Case Study 2: Human resource development in the supporting industries

From the 1970s onwards Thailand transitioned into export-oriented industrialization, and after the 1985 Plaza Accord, supported by the increase in foreign direct investment caused by the strong Yen, the country industrialized rapidly. On the other hand, around the latter half of 1980s, developing supporting industries, which were centered on SMEs, came to be recognized as an issue for further industrial development. In other words, it was necessary to improve the technical prowess of this group of companies and to develop the parts and components industry, in order to reduce industrial dependence on imports and recover export competitiveness. The negative impact suffered by the SMEs during the Asian financial crisis also contributed to the renewed recognition of the issue of SME development.

In these circumstances aid was provided in this sector, based on the demand of the Government of Thailand, and with the Thai Ministry of Industry as a counterpart. First the Metal-Working and Machinery Industries Development Institute (MIDI), that provided technical guidance to SMEs in the metal-working and machinery industry, was established in Thailand in 1998 through the Japanese “Development of The Metal Working and Machine Industry in The Kingdom of Thailand” project. After that, with the objective of improving the international competitiveness of the die & mold industry even further, MIDI was reorganized into BSID through the “Supporting Industry Center in Thailand” project, and expanded its function of providing technical support to companies. In addition, after the financial crisis, support to the automotive industry, the driving force of Thai manufacturing, was prioritized, and the “Automotive Human Resources Development Project” (AHRDP), which aimed to enhance the functions of TAI by dispatching experts and workers and providing equipment was implemented. Currently, as a follow-up to the AHRDP, the “Automotive Human Resources Development Institute Project” (AHRDIP) is being implemented with the lead of Japan External Trade Organization (JETRO). In case study 2) it will be examined how Japanese aid has contributed to the development of human resources in the supporting industries that have been essential for Thai manufacturing.

(3) Priority Area Case Study 3: Fostering of business support personnel

As mentioned earlier, after Thailand had begun export-oriented industrialization, in the latter half of the 1980s it had been pressed to secure its competitiveness versus its neighboring countries. To respond to this issue, Japan engaged in human resource development from the aspects of productivity and management. While the previous priority area “supporting industries’ human resource development” targeted the personnel working at manufacturing sites of subcontractors, in this case all kinds of SMEs were included, and the assistance was concerned with developing human resources that would support management-related fields, and was defined by its aim to impact more companies.

Specifically, in order to improve the productivity and management of Thai industries, the “Productivity Development Project” and its follow-up projects were implemented, and the establishment of the Thailand Productivity Institute and the expansion of its functions were carried out. After the financial crisis, the support for managerial staff was even more emphasized than it was before, and improving SME management became a subject of considerable interest. In this field, training *shindan-shi* (SME consultants)⁶³ was the flagship aid project. Introduction of *shindan* (an SME consulting system) had been recommended in the previously mentioned Mizutani Plan, and training of *shindan-shi* was conducted in Thailand. Afterwards, insufficient utilization of the trained *shindan-shi* became an issue, and support for further utilization of the *shindan-shi* was realized through two projects: “Strengthening Mechanisms for the Regional SME Promotion and Consultancy Service Quality Development” and “Project for SME Consultant Retraining.” With the aim of providing comprehensive support to SMEs in every region of Thailand, rather than just supporting *shindan* as a one-off system, the “Study on Development of Consulting Services to Promote SME Cluster and Regional Development in the Kingdom of Thailand” was conducted. Currently, it has evolved into the “Project for Enhancing Regional Integrated SME Promotion (RISMEP) Mechanism.” While so far aid has been implemented mostly through the Ministry of

⁶³ “SME Diagnostician,” literally translated from Japanese. *Shindan-shi* is a specialist who diagnoses and gives advice to SMEs concerning their various management issues. *Shindan* is a system that manages registers of *Shindan-shi* with the capability above a certain level so as to make it easy for SMEs to gain proper advice from qualified *Shindan-shi* (from the website of J-SMECA).

Industry, this project aims to provide multilateral support to companies by promoting cooperation with other related government agencies. In Case Study 3) it will be examined how developing human resources and systems that support industry development, and expanding indirect support for SMEs, has contributed to improving SME management.

(4) Priority Area Case Study 4: Developing private sector human resources through higher education and vocational schools

When Thailand as an agricultural country began targeting transition into industrial development, Japan originally provided support for higher education and vocational schools. A exemplary case is the support provided to King Mongkut's Institute of Technology, which has received support in various areas from the 1970s till the 2000s. It was originally a vocational training center, but kept gradually developing with Japanese support, and eventually reached the status of an institute of technology with master's and doctoral programs.

When improving the competitiveness of Thailand's export industries was recognized as an issue, the need for quality engineers grew even higher. For example, in the Seventh National Economic and Social Development Plan (1992), developing human resources in the field of science and technology was emphasized, and increasing the quantity and quality of engineers was set as an objective. To respond to such demand, while continuing the aforementioned support to King Mongkut's Institute of Technology, through initiatives such as the "Project to Enhance the Capacity of the Faculty of Engineering at Thammasat University" and the "Thailand-Japan Technology Transfer Project," further support was provided to other universities. In addition, to support the development of human resources with basic technical skills, vocational schools were also supported through various projects, starting with the "Development of Mechatronics Engineering Course at Bachelor Degree Level in Pathumwan Technical College," and also in the provinces, such as the "Northeast Thailand Vocational Training Center" and "Ubon Ratchathani Vocational Training Center" projects. In Case Study 4), the results of this support provided to educational institutions and vocational training institutions will be examined.

(5) Priority Area Case Study 5: Thailand's emergence as a donor in Triangular Cooperation ▪ South-South Cooperation

By 1993 the GDP per capita of Thailand was well over 2000 dollars, and the country essentially graduated from ODA grant recipient status. Following its smooth economic growth at the time, in the latter half of the 1980s Thailand began South-South Cooperation towards the developing countries around it. In 1994, the Japan Thailand Partnership Program (JTPP) was agreed on as a framework for Japan and Thailand to jointly provide support to the surrounding countries (especially in Indochina). In later official documents, starting with the Country Assistance Program of 2000, the perspective of seeing Thailand as a partner in providing assistance to third countries has been continuously mentioned.

Examples of concrete projects where Japan has cooperated with Thailand acting as a contributor in Triangular Cooperation and South-South Cooperation are "Strengthening of Measurement Standard Institutes of CLMV Countries towards ASEAN Integration" and "Skill Development for Material Processing for Mekong Countries." The previous was a project led by the National Institute of Metrology (Thailand) (NIMT), where support was provided to the CLMV countries (Cambodia, Laos, Myanmar and Vietnam). NIMT is an institution that, as a result of receiving Japanese support during

the “Project on Technical Strengthening of National Institute of Metrology (Thailand) (Phases 1 and 2),” became the flagship institute of its region. The latter one is also a case where an agency that had enhanced its functions through Japanese aid, BSID, played a central role. As for “ASEAN University Network/Southeast Asia Engineering Education Development Network (AUN/SEED-Net) Phases 1-3,” while the aim of the overall project was to build a research network, the role of Thailand has mainly been to receive students and researchers from neighboring countries, and in this regard the project can be considered an example of South-South Cooperation. There are still further examples of projects that have been implemented, such as the “Workshop on Investment Promotion Policy for Mekong Countries towards AEC and Beyond.”

3-2-2 Inputs

The inputs in the evaluation target projects are as follows.

Figure 34 Project inputs

Category	Number	Project title	Scheme	Budget (Thousand Yen)	Start	Finish
Developing human resources in the private sector through higher education and vocational schools	1-1	Nondhaburi Telecommunication Training Center (1960-1965)	Technical cooperation	—	1960	1965
	1-2	King Mongkut's Institute of Technology, faculty of telecommunication laboratory plan	Grant aid	953,000	1972	1974
	1-3	King Mongkut's Institute of Technology Ladkrabang Act	Technical cooperation	—	1978	1982
	1-4	King Mongkut's Institute of Technology Expansion plan	Grant aid	3,690,000	1984	1986
	1-5	King Mongkut's Institute of Technology Ladkrabang Act(KMITL) Expansion plan	Technical cooperation	935,403	1988	1993
	1-6	The Research Center for Communication and Information Technology (ReCCIT), King Mongkut's Institute of Technology, Ladkrabang, (KMITL), The Kingdom of Thailand	Technical cooperation	966,000	1997	2002
	1-7	Follow-up Cooperation for the Project on the Research Center for Communications and Information Technology of KMITL	Technical cooperation	—	2003	2003
	1-8	Project to Enhance the Capacity of the Faculty of Engineering at Thammasat University in the Kingdom of Thailand	Technical cooperation	1,170,000	1994	2001
	1-9	Kasetsart University Research Collaboration (II)NAMC Follow-up	Technical cooperation	—	2003	2004
	1-10	Thailand-Japan Technology Transfer Project	Loan aid	6,444,000	1995	2006
Vocational training • Technical education	2-1	Northeast Thailand Vocational Training Center	Technical cooperation	560,000	1977	1982
	2-2	Ubon Ratchathani Vocational Training Center	Grant aid	2,337,000	1990	1997
	2-3	Development of Mechatronics Engineering Course at Bachelor Degree Level in Pathumwan Technical College in the Kingdom of Thailand	Technical cooperation	232,000	1993	2000
	2-4	Strengthening Vocational and Technical Manpower Production	Loan aid	7,226,000	1994	2002
	2-5	The capacity building on the development of information technology for education	Technical cooperation	511,000	2002	2005
	3-1	Testing and Inspection Technology Upgrading for Textile and Garment Products	Technical cooperation	540,000	1997	2001

Category	Number	Project title	Scheme	Budget (Thousand Yen)	Start	Finish
Human resource development (supporting industries)	3-2	Development of the metal working and machine industry in the Kingdom of Thailand	Technical cooperation	—	1986	1991
	3-3	Supporting Industry Center in Thailand	Technical cooperation	827,000	1999	2004
	3-4	Thailand Automotive Institute EX	Individual project (Expert)	—	1999	2002
	3-5	Supporting The Human Resources Of The Automotive Industries Project In Thailand	Technical cooperation	300,000	2006	2011
	3-6	The Japanese Technical Cooperation Project for Enhancing the Competency of Electrical and Electronics Institute of the Kingdom of Thailand	Technical cooperation	—	2006	2007
	3-7	Technical Cooperation Project for Capacity Development of EEI for the Conformity Assessment	Technical cooperation	—	2007	2009
	3-8	Institutional and Capacity Development in the Targeted Fields of Science and Technology (Establishment of Technology Licencing Office (TLO))	Technical cooperation	—	2006	2009
	3-9	Institutional and Capacity Development in the Targeted Fields of Science and Technology (HRD and standardization project on PV)	Technical cooperation	—	2007	2009
Training of business support personnel	4-1	The Productivity Development Project	Technical cooperation	950,000	1994	1999
	4-2	Follow-up Cooperation for the Productivity Development Project	Technical cooperation	—	1999	2001
	4-3	Small and medium-sized enterprises diagnostic institution-building EX	Individual project (Expert)	—	1999	2001
	4-4	Study on Development of Consulting Services to Promote SME Cluster and Regional Development in the Kingdom of Thailand	Development study	—	2004	2005
	4-5	The Strengthening Mechanisms for the Regional SME Promotion and Consultancy Service Quality Development	TC for Development Planning (Commissioned)	—	2009	2011
	4-6	Project for SME Consultant Retraining	Technical cooperation	—	2010	2010
	4-7	Reinforcement of Thai SME's Activities	Individual project (Expert)	—	2010	2013
	4-8	Project for Enhancing Regional Integrated SME Promotion(RISMEP) Mechanism	Technical cooperation	—	2013	2016
	4-9	Project for Technical Strengthening of National Institute of Metrology (Thailand)	Technical cooperation	180,000	2002	2004
	4-10	Project for Technical Strengthening of National Institute of Metrology (Thailand) Phase 2	Technical cooperation	297,000	2004	2008
	5-1	National Computer Software Training Center Project	Technical cooperation	1,100,000	1991	1996

Category	Number	Project title	Scheme	Budget (Thousand Yen)	Start	Finish
Human resource development (Data processing)	5-2	The Japanese Technical Cooperation for the Project on the Industrial Property Information Center in the Kingdom of Thailand	Technical cooperation	700,000	1995	2000
	5-3	The project of human resource development through utilizing the Information Technology for rural community vitalization	Technical cooperation	—	2009	2011
South-South Cooperation	6-1	Strengthening of Measurement Standards Institutes of CLMV Countries towards ASEAN Integration	Individual project (Third-country training)	—	2013	2016
	6-2	Skill Development for Material Processing for Mekong Countries	Individual project (Third-country training)	—	2015	2020
	6-3	Workshop on Investment Promotion Policy for Mekong Countries towards AEC and Beyond	Individual project (Third-country training)	—	2015	2017
	6-4	ASEAN University Network／Southeast Asia Engineering Education Development Network (AUN／SEED-Net)	Technical cooperation	2,273,790	2003	2008
	6-5	ASEAN University Network／Southeast Asia Engineering Education Development Network (AUN／SEED-Net) Phase 2	Technical cooperation	2,915,000	2008	2013
	6-6	ASEAN University Network／Southeast Asia Engineering Education Development Network (AUN／SEED-Net) 3	Technical cooperation	3,950,000	2013	2018
Others	7-1	Wireless Training Center Project	Technical cooperation	—	1996	1999
	7-2	ICT Private Sector Development & Policy Development Support (EX)	Individual project (Third-country training)	—	2009	2011
	7-3	Distribution Automation Engineer Training Project in the Kingdom of Thailand	Technical cooperation	850,000	1992	1997
	7-4	The Project on the Practical Energy Management Training Center in the Kingdom of Thailand	Technical cooperation	493,000	2002	2005
	7-5	Third country training program on Advance course of Freshwater Aquaculture	Technical cooperation	—	2005	2010
	7-6	Development of the Method of Urban Development	Technical cooperation	708,000	1999	2005
	7-7	The Reforestation and Extension Project in the Northeast of Thailand 2	Technical cooperation	500,000	1999	2004

Category	Number	Project title	Scheme	Budget (Thousand Yen)	Start	Finish
	7-8	Rice Production Technologies for Food Security of African Countries	Individual project (Third-country training)	—	2014	2018
	7-9	Training on Harmonization of Power Distribution System in ASEAN Countries	Individual project (Third-country training)	—	2013	2015
	7-10	Power Distribution System Engineering, Management and Technology	Individual project (Third-country training)	—	2015	2018

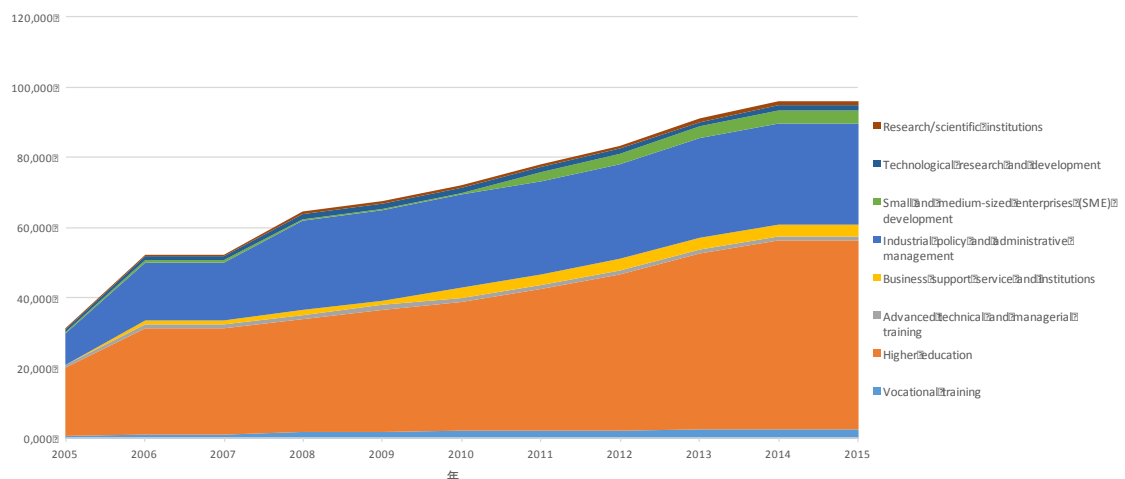
Source: Produced by Mitsubishi Research Institute based on data from the JICA Knowledge Site, Final Reports, and Project Evaluation Reports

※ “-” Undisclosed information or the project is on-going and the budget has not been finalized

The figure below shows the amount of Japanese industrial human resource development assistance from 2005 onwards, using information from the Common Report Standard (CRS) Database of the Organisation for Economic Co-operation and Development (OECD). In the database, the aid programs implemented by donors are divided by target sector. The eight sectors below were designated as corresponding to industrial human resource development.

11330: Vocational training
 11420: Higher education
 11430: Advanced technical and managerial training
 25010: Business support service and institutions
 32110: Industrial policy and administrative management
 32130: Small and medium-sized enterprises (SME) development
 32182: Technological research and development
 43082: Research/scientific institutions

**Figure 35 Amount of Japanese Industrial Human Resource Development Assistance
 (Million USD)**



Source: Produced by Mitsubishi Research Institute based on the OECD CRS Database

From 2005 onwards, the amount of Japanese human resource related aid has consistently been the highest in the category of "higher education" followed by "industrial policy and administrative management," with the total amount of aid from 2005 to 2015 in each category being approximately 54 million dollars and 29 million dollars respectively. However, in the CRS Database it is not possible to categorize the sector-based aid further by scheme. Accordingly it is necessary to remember that the above-mentioned aid includes not only technical cooperation, but also ODA loans and grant aid. (Note: Japanese aid in the sector of higher education also includes funding for the construction of facilities). In recent years an increase can be observed in the amount of aid provided in the sectors of "business support service and institutions" and "small and medium-sized enterprises (SME) development." In each area, compared to the amount in 2005, the total amount of aid from 2005 to 2015 has increased approximately by 3 million dollars.

3-2-3 Outputs

The outputs of the evaluation target projects are as follows.

Figure 36 Project outputs

Category	Number	Project title	Scheme	Start	Finish	Output
Developing human resources in the private sector through higher education and vocational schools	1-1	Nondhaburi Telecommunication Training Center (1960-1965)	Technical cooperation	1960	1965	Terminal evaluation/ex-post evaluation not disclosed
	1-2	King Mongkut's Institute of Technology, faculty of telecommunication laboratory plan	Grant aid	1972	1974	Terminal evaluation/ex-post evaluation not disclosed
	1-3	King Mongkut's Institute of Technology Ladkrabang Act	Technical cooperation	1978	1982	Terminal evaluation/ex-post evaluation not disclosed
	1-4	King Mongkut's Institute of Technology Expansion plan	Grant aid	1984	1986	Terminal evaluation/ex-post evaluation not disclosed
	1-5	King Mongkut's Institute of Technology Ladkrabang Act(KMITL) Expansion plan	Technical cooperation	1988	1993	Various measures were implemented with the aim of improving the level of the university in the four areas of telecommunications, broadcast engineering, data communication and mechanical engineering. In the case of telecommunications, the curriculum was revised and the corresponding textbooks produced (22 textbooks and 10 experiment guidebooks). In addition, the number of research papers increased from 6 in 1988 to 33 in 1991.
	1-6	The Research Center for Communication and Information Technology (ReCCIT), King Mongkut's Institute of Technology, Ladkrabang, (KMITL), The Kingdom of Thailand	Technical cooperation	1997	2002	The number of degrees completed at the ReCCIT research laboratories at the Faculty of Engineering was 9 doctorates and 157 master's degrees between 1998-2002, and after the completion of the project, in 2003-2004 it was 9 doctorates and 139 master's degrees. However, during the five years that the project was implemented and three years after its completion, the percentage of degrees completed at ReCCit research laboratories out of the total number of degrees completed at the Faculty of Engineering rose from 64.3% to 75% in the case of doctorates and from 28.7% to 39.8% in the case of master's degrees.

Category	Number	Project title	Scheme	Start	Finish	Output
	1-7	Follow-up Cooperation for the Project on the Research Center for Communications and Information Technology of KMITL	Technical cooperation	2003	2003	Terminal evaluation/ex-post evaluation not disclosed
	1-8	Project to Enhance the Capacity of the Faculty of Engineering at Thammasat University in the Kingdom of Thailand	Technical cooperation	1994	2001	The number of graduates, which was below 10 in 1997-2000, rose to 72 in 2001-2003. In addition, in 2001-2003, 83 research papers were published, and the number of faculty members with doctorates, which was 28 in 2001, rose to 68 out of 88 faculty members at the Faculty of Engineering.
	1-9	Kasetsart University Research Collaboration (II) NAMC Follow-up	Technical cooperation	2003	2004	Terminal evaluation/ex-post evaluation not disclosed
	1-10	Thailand-Japan Technology Transfer Project	Loan aid	1995	2006	Chulalongkorn University faculty members were provided with the possibility to study in Japan, and 36 people acquired doctorates through the exchange program, while 198 people participated in short-ten exchange programs. In addition, faculty members of Japanese universities were invited to Thailand as visiting professors, and the number of student and faculty members that received instruction or participated in lectures given by those visiting professors reached a total of 11 640 people. Regarding facilities, equipment for educational research, network equipment etc. were installed.
Vocational training • Technical education	2-1	Northeast Thailand Vocational Training Center	Technical cooperation	1977	1982	1008 people went through basic training at the Northeast Thailand Vocational Training Center, with a completion rate of 82%. In addition, a training program for the Thai instructors was organized in Japan, with 21 people participating in the training.
	2-2	Ubon Ratchathani Vocational Training Center	Grant aid	1990	1997	The number of participants in the factory and in-company training was 145 people in FY 1989, 247 in FY 1990, 457 people in FY 1991 and 336 people in FY 1992, with the content of the training also becoming more diversified. Furthermore, technology transfer was conducted with a total of 14 people at the four different courses, which enabled them to instruct trainees themselves.

Category	Number	Project title	Scheme	Start	Finish	Output
	2-3	Development of Mechatronics Engineering Course at Bachelor Degree Level in Pathumwan Technical College in the Kingdom of Thailand	Technical cooperation	1993	2000	20 teachers of the department underwent skill enhancement training. With 1 receiving a doctorate and 6 a master's degree, improvement can be observed in the research skills of the faculty. During the project, the curriculum and syllabus were continuously improved, and they reached a sufficient level for bachelor's degree course. In addition, all fourth-year students (14 students in 1998, 26 in 1999) started to undergo a corporate internship, and several of them were later employed by the companies where they completed their internship.
	2-4	Strengthening Vocational and Technical Manpower Production	Loan aid	1994	2002	Educational equipment was installed at 20 vocational schools and faculty research laboratories, and 7 school buildings were constructed. In addition, training programs were conducted for 589 people in Thailand and 17 people abroad.
	2-5	The capacity building on the development of information technology for education	Technical cooperation	2002	2005	From 2005 to 2007, 11 876 teachers participated in the pedagogic training course developed during the project. During the period four educational training materials that utilize the web were developed, and their use has been continued after continuation of the project. The pedagogic training course has also remained at the curriculum of two life-long education centers.
Human resource development (supporting industries)	3-1	Testing and Inspection Technology Upgrading for Textile and Garment Products	Technical cooperation	1997	2001	The Thai textile industry established six new testing and inspection items, and in 22 testing and inspection items technical improvement can be observed, making it possible to provide a service with better quality. The organizational management system of the project was improved, and the number of training sessions organized increased from five in 1998 to 36 in 2000.
	3-2	Development of the metal working and machine industry in the Kingdom of Thailand	Technical cooperation	1986	1991	Transfer of technology was completed for heat treatment and material testing, and also for molding, except for production control systems and other high-level technologies. In machining the production of a prototype was completed. Counterpart training was also completed as planned. Regarding the operational management of the machinery, while there is some concern regarding the maintenance of some of the more sophisticated equipment, they are in practical use.

Category	Number	Project title	Scheme	Start	Finish	Output
	3-3	Supporting Industry Center in Thailand	Technical cooperation	1999	2004	The objective of the project was to improve the technological capacity of BSID, and improvement could be observed in areas such as design and processing. BSID also conducted 31 technical training courses for private companies, in which 413 people participated. In addition, by the end of 2013 it had provided processing services to 156 companies.
	3-4	Thailand Automotive Institute EX	Individual project (Expert)	1999	2002	Based on IRP, support was provided for the establishment of Thailand Automotive Institute (TAI). In addition, Japanese experts, through TAI, toured factories in teams providing technical consulting and guidance, and organized an improvement team for each company, ensuring that each company would fix their particular issues by the next visit, and in this manner providing guidance to a total of 80 companies helping them improve their management.
	3-5	Supporting The Human Resources Of The Automotive Industries Project In Thailand	Technical cooperation	2006	2011	<p>1) Management and manufacturing training conducted by DENSO: 11 training courses were conducted, with a total of 2703 participants (of whom 60 were trainer course participants and 2643 general trainees)</p> <p>2) Mold & die training conducted by HONDA: Based on 4 curricula, 24 metal processing courses were organized with a total of 2122 people participating in the training (of whom 26 people were trainer course participants, 2096 general trainees)</p> <p>3) Technical examinations and related training conducted by NISSAN: Lecture courses were organized on 17 different topics, with 774 people participating (of whom 132 were participating in examiner training, 189 in trainer training and 435 were general trainees).</p> <p>4) 2002 people participated in five courses related to TOYOTA's production system (of whom 43 were trainer course participants and 1959 general trainees).</p> <p>In total 7601 people participated in the training programs. (Based on TAI materials)</p>

Category	Number	Project title	Scheme	Start	Finish	Output
	3-6	The Japanese Technical Cooperation Project for Enhancing the Competency of Electrical and Electronics Institute of the Kingdom of Thailand	Technical cooperation	2006	2007	Terminal evaluation/ex-post evaluation not disclosed
	3-7	Technical Cooperation Project for Capacity Development of EEI for the Conformity Assessment	Technical cooperation	2007	2009	Terminal evaluation/ex-post evaluation not disclosed
	3-8	Institutional and Capacity Development in the Targeted Fields of Science and Technology (Establishment of Technology Licencing Office (TLO))	Technical cooperation	2006	2009	Terminal evaluation/ex-post evaluation not disclosed
	3-9	Institutional and Capacity Development in the Targeted Fields of Science and Technology (HRD and standardization project on PV)	Technical cooperation	2007	2009	Terminal evaluation/ex-post evaluation not disclosed
Training of business support personnel	4-1	The Productivity Development Project	Technical cooperation	1994	1999	During the cooperation period OJT activities were conducted by FTPI in 96 companies, and as a result, 38 in-company consultants were trained. When training programs related to improving productivity, production process improvement, quality management systems and environmental management systems are included, 480 companies attended. In addition, 294 companies participated in a consulting service with 50 training subjects related to consulting skills and human resource management and development.
	4-2	Follow-up Cooperation for the Productivity Development Project	Technical cooperation	1999	2001	It is expected that 9 senior level personnel capable of conducting business consultation, providing guidance for reforms and instructing their juniors will be trained in consulting skills and 4 in human resource development and labor-management relations.

Category	Number	Project title	Scheme	Start	Finish	Output
	4-3	Small and medium-sized enterprises diagnostic institution-building EX	Individual project (Expert)	1999	2001	The aim of the project was to build a business consulting system (<i>shindan</i>), and the main activity was training <u><i>shindan-shi</i></u> (SME consultants). A training program granting the qualification of <i>shindan-shi</i> to those completing it was created, and approximately 450 <i>shindan-shi</i> were trained through this program. In addition, consulting practice was also conducted, and candidates of <i>shindan-shi</i> provided consulting to approximately 300 companies under the guidance of Japanese instructors.
	4-4	Study on Development of Consulting Services to Promote SME Cluster and Regional Development in the Kingdom of Thailand	Development study	2004	2005	3 pilot projects were chosen and implemented. The Khon Kaen pilot project trained three product coordinators and produced a training manual. In the Chonburi automotive & machinery parts industry pilot project two training sessions were organized for young managers, with a total of 116 people participating in them. In the Surat Thani industrial pilot project a 60-hour training course aimed at beginners was created.
	4-5	The Strengthening Mechanisms for the Regional SME Promotion and Consultancy Service Quality Development	TC for Development Planning (Commissioned)	2009	2011	Two pilot projects were chosen and implemented. In the Chiang Mai pilot project six help desks providing managerial consultation services were set up. The Surat Thani pilot project aimed at creating a network of BDS providers, and among the approximately 40 providers in the province, 31 organizations, that is roughly 80%, participated.
	4-6	Project for SME Consultant Retraining	Technical cooperation	2010	2010	Terminal evaluation/ex-post evaluation not disclosed
	4-7	Reinforcement of Thai SME's Activities	Individual project (Expert)	2010	2013	The capacity of employees and other parties concerned with the Japan Desk at the Business Opportunity Center of the Department of Industrial Promotion, MOI, was enhanced, and in order to strengthen their connection with Japanese SMEs, sharing knowledge and introducing support methods for business matching etc. was also conducted.
	4-8	Project for Enhancing Regional Integrated SME Promotion(RISMEP) Mechanism	Technical cooperation	2013	2016	Terminal evaluation/ex-post evaluation not disclosed

Category	Number	Project title	Scheme	Start	Finish	Output
	4-9	Project for Technical Strengthening of National Institute of Metrology (Thailand)	Technical cooperation	2002	2004	Terminal evaluation/ex-post evaluation not disclosed
	4-10	Project for Technical Strengthening of National Institute of Metrology (Thailand) Phase 2	Technical cooperation	2004	2008	Transfer of technology to NIMT employees was completed concerning 42 measures in 8 areas, out of which for 20 measures they were granted ISO/IEC17025 certification by the end of the project.
Human resource development (Data processing)	5-1	National Computer Software Training Center Project	Technical cooperation	1991	1996	The National Computer Software Training Center (NCSTC) organized training on data processing skills, and the number of participants from 1994 to 2002 reached 5648 people. 70% of them were public servants, which means that the project contributed significantly to raising IT engineers among the employees of government agencies. Furthermore, in a questionnaire targeting 3000 of those who had completed the training, out of the 1055 who responded 73% said that after the training they were “utilizing considerably” the skills they had learned, or “utilizing them to some extent,” which shows that the training was highly effective.
	5-2	The Japanese Technical Cooperation for the Project on the Industrial Property Information Center in the Kingdom of Thailand	Technical cooperation	1995	2000	In this project, Japan provided the necessary opportunities and various types of training for the employees of the Department of Intellectual Property at the Ministry Of Commerce, in order to improve the department’s capacity to manage information related to industrial property rights. Practically all DIP staff members, not only those who directly participated in the training, came to acknowledge the importance of industrial property rights data. In addition, seminars on industrial property rights information aimed at citizens had been organized eight times by the year 2000.
	5-3	The project of human resource development through utilizing the Information Technology for rural community vitalization	Technical cooperation	2009	2011	Terminal evaluation/ex-post evaluation not disclosed
South-South Cooperation	6-1	Strengthening of Measurement Standards Institutes of CLMV	Individual project (Third-country training)	2013	2016	Terminal evaluation/ex-post evaluation not disclosed

Category	Number	Project title	Scheme	Start	Finish	Output
		Countries towards ASEAN Integration				
	6-2	Skill Development for Material Processing for Mekong Countries	Individual project (Third-country training)	2015	2020	Project ongoing
	6-3	Workshop on Investment Promotion Policy for Mekong Countries towards AEC and Beyond	Individual project (Third-country training)	2015	2017	Project ongoing
	6-4	ASEAN University Network／Southeast Asia Engineering Education Development Network (AUN／SEED-Net)	Technical cooperation	2003	2008	19 universities from ASEAN countries participated in the project, and by 2007 132 master's degrees and 8 doctorates had been obtained by graduates. The percentage of participants who stayed on at their universities after returning home is also high at 95%. Forming a network between the member universities and strengthening was also part of the activities. Before the start of the project cooperation between the ASEAN universities was almost inexistent, but through intra-regional student exchange, joint research on 168 topics, and 76 field-specific seminars with 1206 participants, personal and organizational networks were newly constructed. Thailand received 27 doctoral and 113 master's program participants, a total of 140 people.
	6-5	ASEAN University Network／Southeast Asia Engineering Education Development Network (AUN／SEED-Net) Phase 2	Technical cooperation	2008	2013	The number of research papers published by member universities rose considerably during phase 2, from 336 at the time of phase 1, reaching 1230 papers by July 2012, demonstrating an improvement in teaching and research abilities. In addition, through field- and area-specific conferences, and by publishing the ASEAN Engineering Journal, efforts have also been made towards establishing a regional scientific society.
	6-6	ASEAN University Network／Southeast Asia Engineering Education Development Network (AUN／SEED-Net) 3	Technical cooperation	2013	2018	Project ongoing
Others	7-1	Wireless Training Center Project	Technical cooperation	1996	1999	Terminal evaluation/ex-post evaluation not disclosed

Category	Number	Project title	Scheme	Start	Finish	Output
	7-2	ICT Private Sector Development & Policy Development Support (EX)	Individual project (Third-country training)	2009	2011	Terminal evaluation/ex-post evaluation not disclosed
	7-3	Distribution Automation Engineer Training Project in the Kingdom of Thailand	Technical cooperation	1992	1997	Conducting training activities using the DAS simulator had been a principal objective of the project, and as the simulator could not be used after the project, the results were limited. During the duration of the project 374 employees of regional power distribution companies participated in the training and in a questionnaire 67% of the 189 of the participants that responded, said that they needed further training, while 51% said that they were using the techniques and skills acquired through the training.
	7-4	The Project on the Practical Energy Management Training Center in the Kingdom of Thailand	Technical cooperation	2002	2005	An energy management training center was established and provided with staff, budget and facilities. 738 employees in charge of energy management participated in the training course conducted during the project. In addition, while it was only provisional, a national examination system on energy management was implemented, and received favorable reviews from many industry participants.
	7-5	Third country training program on Advance course of Freshwater Aquaculture	Technical cooperation	2005	2010	Terminal evaluation/ex-post evaluation not disclosed
	7-6	Development of the Method of Urban Development	Technical cooperation	1999	2005	During the project a training system was created, and training organized for local government employees as well as for a wide range of other concerned parties. Training of instructors was also conducted, with 63 instructors and 74 auxiliary instructors produced. In addition, at the Department of Town and Country Planning, ten land replotting pilot projects were conducted. With guidance from Japanese experts five proposals on technical standards and one guideline were also created, and the expected objectives were reached.
	7-7	The Reforestation and Extension Project in the Northeast of Thailand 2	Technical cooperation	1999	2004	Between 2000 and 2004, the forest area in the Northeast of Thailand grew by 6%, which can be partly attributed to the fact that the project strived to educate people, and spread information and technical skills related to forestation and sustainable forest management. Technical

Category	Number	Project title	Scheme	Start	Finish	Output
						handbooks and other materials have also been shared with the concerned agencies after the termination of the project.
	7-8	Rice Production Technologies for Food Security of African Countries	Individual project (Third-country training)	2014	2018	Project ongoing
	7-9	Training on Harmonization of Power Distribution System in ASEAN Countries	Individual project (Third-country training)	2013	2015	Terminal evaluation/ex-post evaluation not disclosed
	7-10	Power Distribution System Engineering, Management and Technology	Individual project (Third-country training)	2015	2018	Project ongoing

Source: Produced by Mitsubishi Research Institute based on data from the JICA Knowledge Site, Final Reports, and Project Evaluation Reports

3-2-4 Outcomes

(1) Priority Area Case Study 1: Fostering of policy-making personnel

Related projects

- Development of the metal working and machine industry in the Kingdom of Thailand
- Supporting Industry Center in Thailand
- Supporting the Human Resources Of The Automotive Industries Project In Thailand
- The Strengthening Mechanisms for the Regional SME Promotion and Consultancy Service Quality Development
- Project for SME Consultant Retraining
- Reinforcement of Thai SME's Activities
- Project for Enhancing Regional Integrated SME Promotion(RISMEP) Mechanism
- Skill Development for Material Processing for Mekong Countries

In industrial human resource development, it is necessary to grasp the the changes in industrial development and the business environment, and the respective effect it has on the demand in the human resources. It is also important to formulate and implement appropriate human resource development policies according to such changing demand, as well as to implement measures to ensure the utilization of the human resources that have been produced. In all of this, the role played by administrative employees, that is, policy-making personnel, play a significant role. Below, the outcomes related to the training of policy-making personnel will be examined based on individual cases.

(A) Support of industrial human resource development by personnel with knowledgeable about Japan

Mr. Panuwat Triyangkulsri, Bureau of Supporting Industries, Ministry of Industry
<p>Mr. Panuwat Triyangkulsri, Director of the Bureau of Supporting Industries (from here on referred to as Mr. Panuwat), has been for many years (since the era of the organization preceding BSID, Metal-Working and Machinery Industries Development Institute (MIDI)) working as the person in charge of Japanese aid projects on the Thai side. Mr. Panuwat came to Japan as a Thai government-sponsored exchange student in 1978. After studying Japanese language at a language school for a year, he graduated from a high school affiliated with Tokyo Gakugei University, after which he studied electrical and electronic engineering at the Tokyo Institute of Technology and earned a master's degree. After graduating from university he returned to Thailand and began working at MIDI, which had been founded with support from the project "Development of the metal working and machine industry in the Kingdom of Thailand." While mostly working on projects related to research and development, from early on he began to make use of the experiences and language ability he had gained while studying in Japan, and served as a mediator, interpreting in meetings on Japanese aid to Thailand between the two governments and during on-site investigations. After MIDI was transformed into BSID in 1996, Mr. Panuwat continued to serve as the Thai-side contact person on issues related to Japanese aid. He served as the contact person on projects where MIDI and BSID were counterparts of various Japanese agencies including MOFA, METI, JETRO and the then-JODC. He was also on good terms with Mr. Mizutani, the man who introduced the SME Promotion Masterplan (commonly known as the Mizutani Plan), and was well informed on the big picture of Japanese aid to Thailand. On the Thai side, Mr. Panuwat led policy development related to <i>shindan-shi</i> (SME consultant training) in Thailand. At the time when <i>Shindan</i> (SME consulting system) was being introduced into Thailand, he emphasized the importance of not introducing the established Japanese system directly, but building the basis of a system that would consider the situation in Thailand, and invited the members of the inaugural group of companies that had constructed the Japanese</p>

shindan system in the 1970s to Thailand as visiting experts. Furthermore, the planning of the “Project for Enhancing Regional Integrated SME Promotion (RISMEP)” was conducted based on a request for support submitted by Mr. Panuwat while he was working at the Ministry of Industry.

MIDI, which was established with Japanese support, contributed to industrial development especially in the manufacturing industry, and BSID, which was also established with Japanese support, has been the leading agency in Thai policy development related to industrial human resource development, including the development of supporting industries and the fostering of business support personnel such as *shindan-shi*. In the realization of all this the contribution of Mr. Panuwat, introduced above, has been significant.

While the main focus of the related projects listed above was not the capacity development of administrative employees, this case shows how the presence of personnel familiar with the circumstances both in Japan and Thailand raises the effectiveness of aid and how the process also fosters policy-making personnel.

When planning aid projects, it is important to ensure consistency between the content of the aid provided by the donor and the related policies of the recipient country. An employee who was familiar with Japan, having studied there, helped achieve that, while during aid projects the same person also came to play an even more significant role in Thai industrial human resource development. We find that this process shows the possibilities and effectiveness of utilizing personnel familiar with Japan in aid.

(2) Priority Area Case Study 2: Human resource development in the supporting industries

Related projects

- Development of the metal working and machine industry in the Kingdom of Thailand
- Supporting Industry Center in Thailand
- Thailand Automotive Institute EX
- Automotive Human Resources Development Project (AHRDP)
- Automotive Human Resources Development Institute Project (AHRDIP)⁶⁴

As indicated in Chapter 2, after the Asian financial crisis Thailand proclaimed to become a manufacturing base of the automotive industry, or so-called “the Detroit of Asia” and established the Thailand Automotive Institute and developed its supporting industries. As a result, the country experienced steady economic growth driven by the manufacturing industry. The automotive industry in particular, served as the driving force. Tens of thousands of parts are needed to produce one car. Accordingly, the automotive industry is characterized by its long supply chain that involves primary, secondary and tertiary suppliers. In Thailand, as foreign automotive manufacturers began to accumulate in the country, SMEs supporting the production chain developed at each level, which created employment and contributed to economic growth. From this perspective, the development of supporting industries in Thailand, while contributing to the industrial revitalization of Thailand, also served to improve the production base of Japanese manufactures. Taking the above into account, the outcomes of aid in the supporting industries will be examined, focusing on cases in the automotive industry.

⁶⁴ The project was not conducted by MOFA or JICA, but METI and JETRO. However, as it is a project that follows the earlier AHRDP, its results are inseparable and therefore it is here considered a related project.

(A) Utilizing training results in business activities

Case of Company A (AHRDP/AHRDIP participant company)
<p>Company A is a secondary supplier of a major Japanese car manufacturer. Company A dispatched its workers to the training offered by AHRDP after being introduced to it by its client, the Japanese primary supplier. The training in question was one taught by Toyota, Nissan and Denso workers, though the one that particularly benefited the company was training program on the Toyota Production System (TPS) which made it possible for Company A to save physical space in its factory.</p> <p>Previously the company had had a separate storage facility apart from its factory. This was due to the fact that the scale of its operations were small and it could not purchase a big plot of land. However, after introducing TPS, surplus space was created inside the factory, and the company was able transfer a part of its storage facilities there. While it is difficult to estimate the change in precise figures, the need for space was reduced approximately by 30%.</p>

(B) Organizing a voluntary study group/continuous activities

Case of Company A (AHRDP/AHRDIP participant company)
<p>After the company participated in TPS training in 2014, it formed the Thailand TPS Cooperation Club (TTCC) and began organizing a voluntary study group on the TPS. 40-50 companies have registered as members of the TTCC, of which approximately 10 are companies that have participated in the original TPS training, while the others are companies that wish to learn about TPS by participating in the study group. At TTCC meetings, understanding on the effectiveness of TPS is enhanced through presentations on the TPS initiatives of each company and group discussion. As business conditions differ between companies. The study group does only end with the presentation itself but take time for discussion, where each participant try to apply the content of the presentation to their own company's situation. In addition, as a system was set up to reward the best examples, there is friendly rivalry between the participating companies, and the study group functions as a place to share best practices.</p>

(C) Issues in extending the impact of the training

Case of Company B (AHRDP/AHRDIP participant company)
<p>AHRDP was implemented from 2006 to 2011, and in total 319 trainers were produced. On the other hand, among these trainers there were many who did left their company for another after the training, and the benefits of what they had learned were not shared inside the company to the extent that had been expected. This issue finds its roots to the fact that the participants' labor market value rose through the training, which motivated them to change jobs. It was indicated that as the wage level especially at the SMEs of the Thai manufacturing industry is low compared to other types of jobs, there are many workers who wish to change to a job with better terms.</p> <p>Furthermore, though the production supervisors were the principal targets of the training, it is difficult for others to replace them at the important job that they do, which makes it hard for them to leave the production site for extended periods of time to participate in the training. As a result, other issues that have been pointed out are that the persons who would be in the right position of responsibility to pass on the benefits of the training at their workplace afterwards, cannot participate in the training, or even if they can, they do not have the time to share the benefits with others. In addition, the fostering of master trainers who would train other trainers, and the training of trainers conducted by them have not taken place the way that had originally been expected. During AHRDIP in the years 2012-2015, 8 master trainers were trained, but only one or two of them are actually engaged in training other trainers. Based</p>

on a survey targeting the master trainers, while in a year they instruct about 80 trainer candidates for 15-18 days, they mentioned the heavy burden of conducting the training and the lack of incentives in training participants from other companies. As a result, there are cases where people have suddenly left their jobs after becoming master trainers.

After Japanese manufacturers had rapidly accumulated in Thailand, enhancing production skills at manufacturing sites and increasing the supply of human resources with the necessary technical skills became a pressing issue. The projects that were implemented with the aim of developing the supporting industries were targeted directly at engineers working at the companies, and were expected to have immediate effect on the supply of human resources. Especially the AHRDP and the subsequent AHRDIP projects, during the course of which 1300 people will have been trained during FY 2016 (estimate), have produced necessary human resources at a considerable scale and have had a significant impact. Several governmental and private actors worked together on this project, with JETRO, HIDA and the Japanese Chamber of Commerce, Bangkok cooperating on the Japanese side and the Ministry of Industry, TAI, and the Subcontracting Promotion Association involved from the Thai side, and the effectiveness of directly supporting human resource development in the private sector while also working with public agencies has been acknowledged.

For the companies who participated in these trainings, the benefits are twofold: the cost of human resource development is reduced, and they are provided with the opportunity to develop high-level human resources. Regarding the former, the training provided during the project replaces in-company training, which reduces the costs of human resource development. Regarding the latter, by receiving guidance from Japanese experts, the workers learn the kind of skills and quality control that Japanese manufacturers demand from their subcontractors. The pool of skilled workers used to be small in Thailand, and it was a common issue for many companies to suffer from the lack of personnel capable of providing the needed guidance. By dispatching experts from Japan, techniques and skills could be passed on to a wide range of participants beyond the limits of an individual company, which has contributed to raising the standards of the Thai supporting industries as a whole.

On the other hand, further extension of the impact could not be confirmed to the extent that had originally been aimed for. The impact was primarily seen amongst the direct recipient of the aid and not further. As was mentioned earlier, the high rate of trainers who were supposed to pass on the benefits at their company but left their jobs, the difficulty of securing appropriate candidates for training due to their busy work schedule, and the difficulty of securing opportunities to share the results in-company and the low level of activity on part of the master trainers due to the heavy burden of conducting training were recognized as issues.

(3) Priority Area Case Study 3: Training business support personnel

Related projects

- The Productivity Development Project
- Follow-up Cooperation for the Productivity Development Project
- Small and medium-sized enterprises diagnostic institution-building EX
- Study on Development of Consulting Services to Promote SME Cluster and Regional Development in the Kingdom of Thailand
- The Strengthening Mechanisms for the Regional SME Promotion and Consultancy Service Quality Development
- Project for SME Consultant Retraining

- Reinforcement of Thai SME's Activities
- Project for Enhancing Regional Integrated SME Promotion(RISMEP) Mechanism
- Project for Technical Strengthening of National Institute of Metrology (Thailand)
- Project for Technical Strengthening of National Institute of Metrology (Thailand) Phase 2

In Thailand, where SMEs form 90% of all companies, it is important to increase the all-over productivity of SMEs for industrial development of the country as a whole. The aim of training business support personnel is to train personnel that will support managerial improvement at a wide range of companies, thus supporting raising the level of Thai industry.

The training and utilization of *shindan-shi* (SME consultants), based on a unique Japanese approach of comprehensive management consulting aimed at SMEs (*shindan*), is considered one of the pillars of training business support personnel. Having first supported the establishment of the *shindan*, Japan has continued to work on strengthening government services that provide business support. Whereas the aim of the human resource development in Case Study 2) (human resource development in the supporting industries) was to directly train people working at manufacturing sites, here the aim was to foster personnel that would support the management of SMEs. Taking the above into account, the outcomes in training business support personnel will be examined based on case studies.

(A) Establishing an SME support qualification, its popularization and related issues

Shindan in Thailand was begun as a project of BSID at the Ministry of Industry, with the influence of the recommendations of JICA expert Tanikawa, who was dispatched as an adviser to the Industrial Structure Working Group from March to September 1998 after the financial crisis. Later on, the project was transferred to the Bureau of Industrial Enterprise Development (BIED) and the Bureau of Industrial Management Development (BIMD). The project, which was formed as a part of the Industrial Restructuring Program (IRP) and commonly known by the name *shindan*, was entrusted by the Ministry of Industry to the Technology Promotion Association (TPA), who implemented it in cooperation with experts dispatched by JICA and JODC.⁶⁵ Cooperation from the Japanese side was implemented mostly by dispatching experts. JICA dispatched experts for the building of *shindan* and the drafting of the project's implementation plan, while JODC dispatched experts to work both long and short term on conducting *shindan* and training *shindan-shi*. Drafting of the management guidelines of the *shindan* project was entrusted to the Thailand Productivity Institute. The figure below shows the number of *shindan-shi* trained in course of the seven classes of the *shindan-shi* training project. Japan provided support until the fourth class, from the fifth one onwards only consultation practice for evening course students who had already attended the lectures was organized.

⁶⁵ Mostly the Miyazawa Fund was used as funding accompanying implementation by the Thai side. (JICA, *Heisei 13 nendo Taikoku chūshō kigyō fukkō bunya projekuto keisei chosa hōkokusho*, 35-38.)

Figure 37 The number of *shindan-shi* trained during the *shindan-shi* training project

Round	Period	Graduates	Japanese assistance	
			Long-term JODC experts	Short-term experts
I	June – December 1999	28	10	None
II	December 2000 – September 2001	98	9	28
III	November 2001- September 2002	95	5	32
IV-1	November 2002 – September 2003	108	5	Unclear
IV-2	Evening and weekend course students + 6 company consultations	50		
V	Evening and weekend course students + 6 company consultations	50		
VI	Evening and weekend course students + 6 company consultations	32		
VII	Evening and weekend course students + 6 company consultations	18		
Total		479	29	60

Source: JICA, Taikoku chiho chusho kigyo fukko seido no kakuritsu keikaku chosa shuuryo hokokusho [Terminal report of The Strengthening Mechanisms for the Regional SME Promotion and Consultancy Service Quality Development], 2-28

As demonstrated by figure 37, through this project, 479 *Shindan-shi* were trained with recommendations and implementation support provided by Japanese experts. Thailand used the support from various Japanese agencies (not only JICA) were used in a complementary manner: for the initial building of the system and formulation of the program experts were dispatched from JICA, and at a later stage, for the implementation of the plan and actual training, experts were dispatched from JODC.

These *shindan-shi* have produced some positive results, mostly within the framework of the system of the Ministry of Industry. For example, it is now compulsory for a company to receive *shindan* if it were to participate in the consulting and skill training programs organized by BSID at the Ministry of Industry. The companies that wish to participate is required to meet *shindan-shi* dispatched from BSID, and undergo consulting for three days. Then, the most suitable program is recommended to them based on the results of the consulting.

On the other hand, when looking at *shindan-shi* as a whole, out of the approximately 100 trained *shindan-shi*, only 20 out them work as full-time consultants. These 20 full-time *shindan-shi* are called “master consultants”.⁶⁶ There are few master consultants in regional areas: for example we were told that in Chiang Mai there were only two master consultants in the prefecture.⁶⁷

This inactiveness of *shindan* stems from the fact that there are very limited opportunities for them to make use of their skills. While in the system of the Ministry of Industry, getting advice from *shindan-shi*

⁶⁶ Interviews at BSID

⁶⁷ Interviews at the Chiang Mai IPC.

was made obligatory as mentioned earlier, other government agencies have not integrated their profession into their system to make use of *shindan-shi*. Specifically, the national qualification system that was originally supposed to be a responsibility of the Office of SMEs Promotion (OSMEP) at the Office of the Prime Minister, was not realized. In addition, use of *shindan-shi* was not included in the general requirements of public procurement set force by the Ministry of Finance. As this profession is still little known amongst private companies, the work opportunities for *shindan-shi* became limited. As a result, it was difficult to make consulting, a full-time job. The lack of work opportunities also obstructed *shindan-shi* from developing their consulting skills through experience, which has led to a vicious circle in where their actual quality of service declined.

In other words, support for *shindan-shi* training was successful in training some who are active within the system of the Ministry of Industry, but beyond that framework, as the situation stands, *shindan* has not taken root in the country as a whole. As will be discussed in the next paragraph, those *shindan-shi* who have had a chance to use their skills, have contributed to the managerial improvement of companies through consulting, and their utility has been confirmed. However there was not a system that would enable the mainstreaming of *shindan-shi*. Thus, the lack of work opportunities can be seen as the main reason for the fact that the system has not spread or taken root to the extent that had been expected.

(B) Managerial improvement at SMEs that received SME consulting support

As was mentioned earlier, while *shindan* was not established as a qualification system, the activities of those *shindan-shi* who work on consulting full-time have contributed to the managerial improvement of SMEs, as the cases below demonstrate.

Company A, which successfully enlarged its market through <i>shindan</i> system
Company A is an SME with 40 employees located in Chiang Mai. The company produces and sells tea, and runs a restaurant that serves its tea. The company approached the SME information service run by the Industrial Promotion Center (IPC), which is a regional branch office of the Ministry of Industry, in 2010, having discovered the service at a trade fair in which the IPC participated. Based on the information it received, the company received consulting from a <i>shindan-shi</i> , and continued to receive management guidance from the same <i>shindan-shi</i> for a year. In addition to receiving guidance from the <i>shindan-shi</i> on basic themes such as internal auditing, 5S and <i>kaizen</i> , the company was advised to acquire certification for international food safety standards such as Good Manufacturing Practice (GMP) Hazard Analysis and Critical Control Point (HACCP). The company participated in training on food safety standards offered by the IPC, and was able to acquire certification for international standards. This made it possible for the company, which had until then been limited to the domestic market, to expand abroad, and in 2016 the 70% of its sales were that from international contracts, with trading partners from China, Taiwan, Malaysia and Singapore. In 2016 the company also initiated business with Japanese companies, and it is expected that it will begin to export to Japan in 2017.

Company B, which was able to cut costs and extend its operations through <i>shindan</i> system
Company B is an SME with 40 employees located in Chiang Mai, that manufactures interior decoration. The company received consulting by a <i>shindan-shi</i> , and as a result, was instructed to apply lean manufacturing and <i>kaizen</i> as measures for managerial improvement. The company was able to receive guidance on both of these two measures through the support menu prepared by IPC. The <i>shindan-shi</i> visited the company a total of eight times, instructing them on lean manufacturing and <i>kaizen</i> .

According to the director of the company, they appreciated that the guidance session was conducted in collaboration with the employees. The sessions were held in a workshop style, starting from the issues raised by the employees themselves followed by a brainstorming process by the participants. This approach was much appreciated.

By receiving consulting and guidance on lean manufacturing and kaizen, the company was able to increase the productivity of its manufacturing process. More specifically, through efficient placement of the worksites of each leg of the process, and optimization of the washing process, which was the most time-consuming, the company was able to reduce its costs by 274,800 bahts per month.

The improved productivity helped the company to greatly expand its production, and its outstanding results were also given recognition by the government. The company received an award at the Seventh SMEs National Awards 2015 organized by OSMEP (out of the 1042 companies that applied 38 received an award). In addition, the director of the company has become one of the central figures in SME promotion in the region, currently serving as the vice-chairman of the Chiang Mai Industrial Association and as an advisor to the Chiang Mai Junior Chamber of Commerce. The *shindan-shi* who was in charge of the company was recognized for his utility and currently serves as a board member of the company.

On the other hand, the director of the company was aware of the issue that *shindan-shi* are not being sufficiently taken advantage of. He was already familiar with *shindan* due to his experiences working at a Japanese company, and that led to him to use IPC's *shindan* service, but he also pointed out that since many SMEs are not aware of such opportunities, it is necessary to make the system more well-known.

Company C, which was able to expand its business through *shindan* system

Company C is an SME located in Chiang Mai that manufactures machine parts. The company received *shindan* service in 2009 through the IPC's introduction. In addition, the director of company C had studied at the MBA course of the Thai-Nichi Institute of Technology in 2009-2013, and as part of that Company C received *shindan* service from the professor in charge of the program and other students.

After receiving the service in 2009, by 2011 the sales of the company had gone up by 35-40%, and since then its sales and profits have continued to grow robustly. According to the director of the company, the advantage of the *shindan-shi* report was that the evaluation was conducted on all management-related components combined. The company had used another business support program run by the Ministry of Industry, where they received guidance on the production process, finances and marketing, but as all fields were dealt with by different experts, there was room for improvement in terms of coordination between those fields and cross-cutting analysis. The *shindan-shi* report, on the other hand, was provided by a single *shindan-shi* and led to a comprehensive improvement plan, which the company valued.

As a result of the *shindan-shi* report, for example in human resources, an employee satisfaction evaluation system was introduced, and the company benefits and welfare services developed in a way that reflected the employees' wishes.

As for finance, whereas earlier the company had only paid attention to the absolute numbers in its

accounting reports, after the *shindan* service they analyzed the distribution ratio of each expenditure item, and were able to use this to evaluate and improve productivity.

Company C sees *shindan* system as extremely valuable, but pointed out that it is little known in other companies. The director himself was familiar with *shindan* system due to his experiences working in a Japanese company, and the lessons at the Thai-Nichi Institute of Technology, and like in the case of company B, this led him to IPC's *shindan* services, but he pointed out that many SMEs do not understand the utility of *shindan-shi*.

As can be seen from these three cases, working in cooperation with the IPC system, which is a part of the Business Development Service (BDS)⁶⁸ of the Ministry of Industry, the *shindan-shi* active in the region contributed to managerial improvement of companies. On the other hand, their use was mostly limited to the companies that had some awareness and understanding regarding *shindan* system. As the directors of each company indicated, creating demand by raising awareness of *shindan-shi* and its system is an issue for the future.

(C) Improving the functionality of administrative services providing business support

In addition to the training of *shindan-shi*, another example of Japanese aid is improving the functionality of local administrative services providing business support. Lack of cooperation between the various administrative services has been an issue in Thai business support mechanisms. Especially in provincial areas, the relevant ministries had all established their own branch offices, but there were not enough cooperation between these agencies. When a company approached for consultation, there was not enough guidance to help them find the appropriate agency for their consultation needs, and mutual support between agencies was lacking. In response to these issues, the RISMEP project, which is a Japanese aid project, was conducted with the aim of strengthening the network between these agencies.

According to the results of a study that investigated the effectiveness of RISMEP, the results of this mechanism in improving the functionality of administrative services are twofold. First, there is the increase in the number of cases where the BDS providers associated with each ministry introduced companies to one another. This point was most prioritized in the RISMEP project as a direct result, and can be considered a result of how in the areas where the RISMEP mechanism was implemented the various agencies providing business support were more tightly integrated.⁶⁹

The second result is that there was an increase in the number of cases where support was provided against a fee. In areas where RISMEP was not implemented, BDS providers, who serve as the first point of contact for inquiries, were generally passive, and mostly offered free support alternatives. As for-profit support comes with costs to the company, when such services are set up, the BDS must actively search for potential demand and promote the services. In this sense, the increase in for-profit support can be seen as a sign of the BDS being activated by the RISMEP project.

⁶⁸ BDS refers to consulting services that aim to expand and improve the business, market access and competitiveness of companies.

⁶⁹ Aya Suzuki and Kengo Igei, Can efficient provision of business development services bring better results for SMEs?: Evidence from a networking project in Thailand, July 2016

Establishment of the RISMEP mechanism was also highly valued by the Government of Thailand. The original JICA project only targeted four prefectures, but in October 2015 the Department of Industrial Promotion at the Ministry of Industry began to build this mechanism in a total of 7 prefectures using its own budget.

As has been explained above, through Japanese support in training business support personnel, a certain number of *shindan-shi* engaged in business consulting and providing instruction on kaizen were trained, and the functionality of administrative services providing business support improved. Regarding the former, while we could confirm several cases where the support of the trained *shindan-shi* led to managerial improvement in SMEs. However, as the number of master consultants who is committed to full-time consulting is limited and they are also unequally distributed among regions, it can be said that *shindan-shi* has not reached a stage of becoming an established profession. It is assumed that this stems from the lack of awareness on part of Thai SMEs regarding the utility of *shindan* system and *shindan-shi* who perform such services professionally, and the resulting limited work opportunities available for *shindan-shi*.

As for improving the functions of administrative services, it was observed that the BDS became more active and cooperation between them was strengthened, which led to an increase of introductions and cases of for-profit support. Triggered by Japanese aid the Government of Thailand decided to continue implementing these measures, and it can be said that they were greatly valued by the Thai side.

(4) Priority Area Case Study 4: Developing private sector human resources through higher education and vocational schools

Related projects

- Nondhaburi Telecommunication Training Center (1960-1965)
- Construction of research laboratory for the Faculty of Telecommunications, King Mongkut's Institute of Technology
- King Mongkut's Institute of Technology Ladkrabang
- King Mongkut's Institute of Technology Expansion Plan
- King Mongkut's Institute of Technology Ladkrabang (KMITL) Expansion Plan
- The Research Center for Communication and Information Technology (ReCCIT), King Mongkut's Institute of Technology, Ladkrabang, (KMITL), The Kingdom of Thailand
- Follow-up Cooperation for the Project on the Research Center for Communications and Information Technology of KMITL
- Project to Enhance the Capacity of the Faculty of Engineering at Thammasat University in the Kingdom of Thailand
- Kasetsart University Research Collaboration (II) NAMC Follow-up
- Strengthening Vocational and Technical Manpower Production
- Thailand-Japan Technology Transfer Project
- The capacity building on the development of information technology for education
- Northeast Thailand Vocational Training Center
- Ubon Ratchathani Vocational Training Center
- Development of Mechatronics Engineering Course at Bachelor Degree Level in Pathumwan Technical College in the Kingdom of Thailand

In addition to the direct training of supporting industries' personnel described in Priority Area Case Study 2: Human resource development in the supporting industries, Japan has provided support for raising

the quality and quantity of the personnel working at the manufacturing industry in Thailand, mainly through universities that provide technical education. This corresponds mostly to the need to train supervisors, technicians and production engineers, who play a central role at the manufacturing site. Below, the outcomes of developing private sector human resources through tertiary education will be examined based on cases.

(A) Strengthening a leading higher technical education institution

Before Japanese support for higher education institutions began in 1960, the only two higher technical education institutions that existed in Thailand were the Faculty of Engineering of Chulalongkorn University (established in 1913) and the Faculty of Irrigation Technology of Kasetsart University (established in 1954). Under the Sarit administration, the government promoted the establishment of institutes of technology in order to respond to the pressing need of human resources at manufacturing sites. The support to King Mongkut's Institute of Technology Ladkrabang (KMITL) began under these circumstances. When the support began, the institute was originally called the Nonthaburi Telecommunications Training Center, and Japan was supporting the training of beginner and mid-level telecommunication engineers at the center. Later on, in order to compensate for the lack of a higher technical education institution in Thailand, the center received support from Japan to build its curriculum and for other measures needed to transition into university status, and became a three-year college. After the rapid expansion of industrial production in the 80s, resulting in a severe shortage of engineers, the center was upgraded to the status of a five-year college. Furthermore, in 1986, with approval from the Government of Thailand, it was relaunched as a university. In addition, in the 90s master's programs and doctoral programs were also founded, and the Research Center for Communications and Information Technology (ReCCIT), which specialized in research, established. Thus the institute became a driving force of technical education in Thailand, a university that provided everything from basic technical education to research functions.

Figure 40 shows the changes in Thai industrial development and the activities of KMITL. The figure demonstrates how the institute has upgraded its functions according to the changing objectives of technical human resource development. As for ReCCIT, during the project and for three years after its termination, it succeeded in increasing the number of degrees obtained, but as it prioritized the number of academic papers and conference presentations, its performance declined in the field of practical research and joint projects with private enterprises. This combined with the university becoming an independent administrative institution made it difficult for ReCCIT to secure funding after the support from JICA ended, and it ended up closing down. For this, it has been pointed out that the project was not sustainable enough.⁷⁰

⁷⁰ At the interviews conducted at KMITL it was indicated that while the center was operating, research projects were advanced, but they did not lead to the birth of projects in cooperation with businesses that could have continued after the center closed its doors. Regarding the fact that the center could not remain in operation and that no projects that could have continued after its closure were created there was a lack of sustainability.

Figure 38 Challenges of Thai Industrialization, objectives of technical human resource development and KMITL activities at different points of time

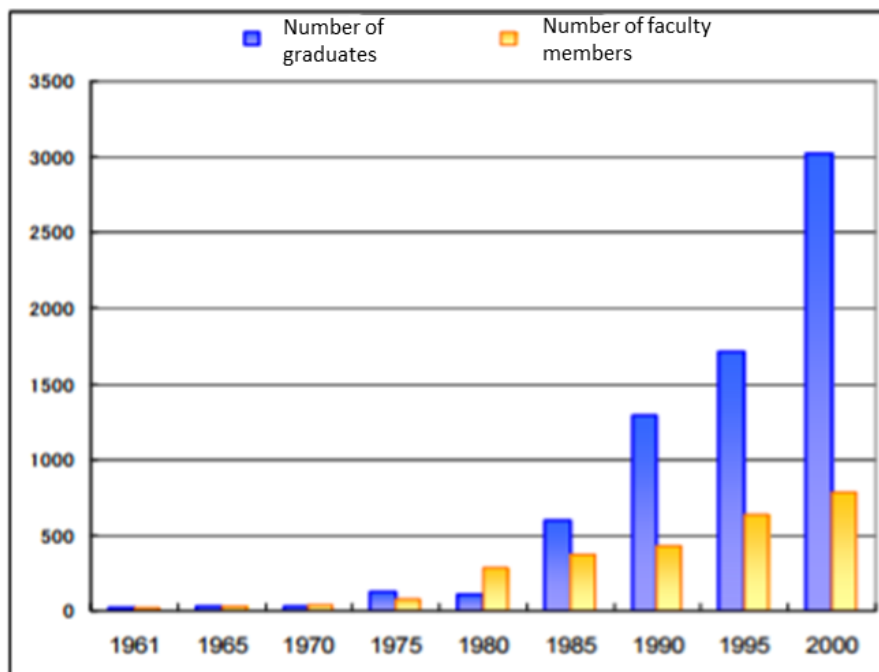
Period of time	Thai industrial policies and results	Objectives and results of technical human resource development	Activities of KMITL	
1960s Import substitution industrialization	Economic development led by the private sector Improving industrial infrastructure	Development of human resources	From training center to university Training “educators” through an exchange program with Tokai University	Establishment of a vocational training center under the initiative of the Ministry of Posts and Telecommunications
1970s - 1985 Export-oriented industrialization	Attracting heavy industries Export-oriented industrial products mostly from the agro industries	Increasing the number of students receiving higher education and vocational schools	Director Kosol’s university reform efforts Training practical engineers with advanced equipment provided by JICA Practically oriented education as a 5-year college Training public-minded teachers in cooperation with Tokai University	Grant aid First expansion of Ladkrabang
1986 – until the financial crisis Expansion of processing and assembly type industries	Shift from agriculture to manufacturing Utilizing the power of the private sector	Start of substantial higher technical education Increased need for practical engineers	Increasing the number of graduates On-the-spot decision-making passed on from teachers to students in student-teacher relations and group work	Second expansion of Ladkrabang
Post financial crisis Sophistication of industry	National reforms by the Thaksin administration Improving scientific technology	Technical human resources with international competitiveness Training IT engineers as a part of the national IT year	Expansion of research activities Becoming an international research and education center Aid to Laos	ReCCIT AUN/SEED-Net Project

Source: *Ajia chiiki tōnan Ajia hitodzukuri senryakuteki sakutei ni muketa jōhō shūshū kakunin chōsa* [Information gathering survey for strategic formulation of human resource development in Southeast Asia]: 2-15.

In addition, as the figure below shows, the expansion of KMITL and the enhancement of its functions through aid have also led the number of its graduates to grow robustly along with the development of the Thai industrial sector.

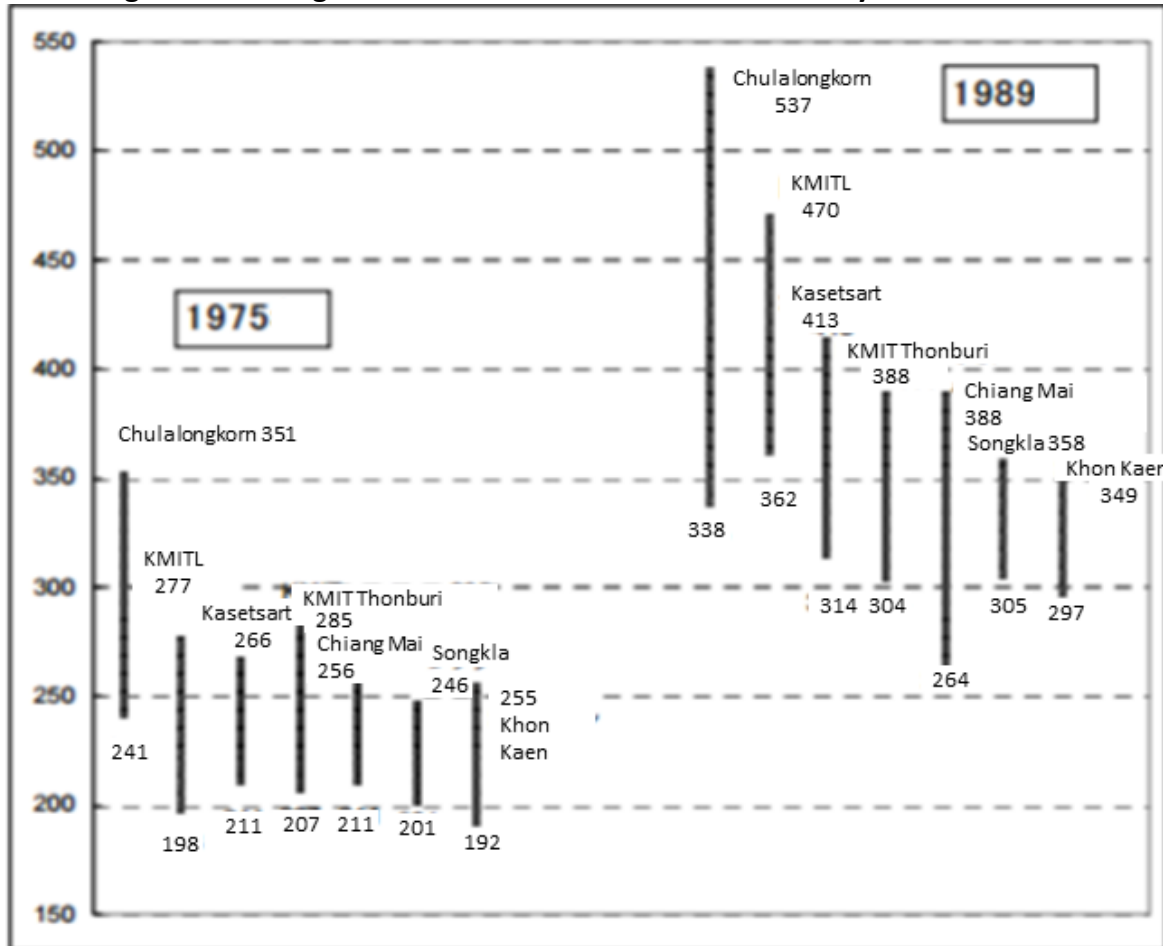
Aid provided to the institute has led to the development of high-level industrial human resources. The figure 40 shows the lowest and highest scores in the national university entrance exams in 1975 and 1989 for those universities with a faculty of engineering. In 1975 KMITL was mid-level or lower, but in 1989 it had established its position as second among technical institutes after Chulalongkorn University.

Figure 39 Number of graduates (blue) and faculty members (yellow) at King Mongkut's Institute of Technology Ladkrabang



Source: *Hitotsu no kokusai kyōryoku – Monkutto Kokuō Kōgaku Daigaku Rakaban 30 nen no sokuseki* [One example of international cooperation – The achievements King Mongkut's Institute of Technology Ladkrabang in 30 years]; Statistical Year Book of Thailand

Figure 40 The highest and lowest entrance exam scores by technical institute



Source: *Hitotsu no kokusai kyōryoku – Monkutto Ō Koka Kōgaku Daigaku Rakaban 30 nen no sokuseki* [One example of international cooperation – The achievements King Mongkut’s Institute of Technology Ladkrabang in 30 years]; Statistical Year Book of Thailand

(B) Strengthening vocational schools for training skilled workers

Japanese aid in the sector of industrial human resource development has often targeted universities, and assistance to vocational training has been limited. While the expansion of Pathumwan Technical College is an example of aid to the vocational training sector, in this case, the objective of the project was also to help the college transform into a university.

On one hand the lack of core skilled workers in Thailand, both in terms of quality and quantity, has been an issue, and to respond to this demand, in addition to strengthening vocational schools with the final goal of transforming into universities, the strengthening of vocational schools that can continue to produce core skilled workers is also required. However, there are not enough people interested in studying at vocational schools, nor is their level high enough, and therefore such measures have not brought satisfactory results.

The fact that the wage structure differs considerably depending on whether a worker has a bachelor’s degree has been indicated as a reason for the insufficient interest in entering vocational training institutions. The wages of university graduates and vocational school graduates at the labor market differ greatly. While the minimum wage was raised considerably in 2013 under Yingluck Shinawatra’s

government, this raise only targeted workers holding at least a bachelor's degree, and the wages of vocational school graduates and other workers with education levels lower than a bachelor's degree were left unchanged. Due to such circumstances both students and their parents generally opt for universities, and as a result, the students entering vocational schools are have relatively lower abilities, leading to a decrease in the level of the education and graduates, which makes universities even more popular, thus creating a vicious cycle. In addition, due to this situation, the aim set by educational institutions for educational improvement tends to be transforming their school into a university, rather than strengthening its functions as a vocational school.

On the other hand, at manufacturing sites, there is a clear demand for practical engineers which stands midway between the skilled workers graduating from vocational schools and the engineers graduating from universities. When considering such demand it is also important to bear in mind that there is more that could be expected of vocational schools, both in terms of quality and quantity. It should be noted that it is these schools which is the basis of training these workers and thus requires more attention. Aside from this, the production of innovative engineers through higher education also requires attention.

(5) Priority Area Case Study 5: Thailand's emergence as a donor in Triangular Cooperation • South-South Cooperation

Related projects

- Project for Technical Strengthening of National Institute of Metrology (Thailand) Phase 1
- Project for Technical Strengthening of National Institute of Metrology (Thailand) Phase 2
- Strengthening of Measurement Standards Institutes of CLMV Countries towards ASEAN Integration
- Development of the metal working and machine industry in the Kingdom of Thailand
- Supporting Industry Center in Thailand
- Skill Development for Material Processing for Mekong Countries
- Workshop on Investment Promotion Policy for Mekong Countries towards AEC and Beyond
- ASEAN University Network / Southeast Asia Engineering Education Development Network (AUN/SEED-Net)
- ASEAN University Network / Southeast Asia Engineering Education Development Network (AUN/SEED-Net) Phase 2
- ASEAN University Network / Southeast Asia Engineering Education Development Network (AUN/SEED-Net) Phase 3

Thailand, which is an upper-middle-income country, is currently providing support to other countries as a donor. Due to their similar socio-economic situation, especially in the neighboring countries of the Mekong Region, Thailand has the advantage of being able to provide aid that corresponds better to the circumstances of the recipient country than the aid of other donors. Taking into account these characteristics of Thailand as an emerging donor, Japan is supporting Thailand's advancement in Triangular Cooperation and South-South Cooperation. Based on the cases below, we will examine how Japanese industrial human resource development assistance has contributed to emergence of Thailand as a donor in Triangular Cooperation • South-South Cooperation.

Ms. A of the National Institute of Metrology, who became a driving force in Triangular Cooperation in the field of measurement standardization

NIMT is a government research institution established to develop standardized measurements in Thailand. Japan has provided both hard and soft assistance to this institution ever since its establishment directly after the Asian financial crisis. The construction of the facility, including the building, was assisted through ODA loans, and technical cooperation for capacity building of the organization began in 2002. Technical cooperation was conducted towards NIMT employees on 42 standard measures. Ms. A, who was working as a measurement technician in NIMT, participated in one of these training sessions. After that Ms. A. was transferred from technical work to a managerial position, and currently he is the head of the international cooperation department, in charge of NIMT's international cooperation projects. Representative of the projects implemented by the international cooperation department is the Triangular Cooperation conducted by NIMT in cooperation with Thailand International Cooperation Agency (TICA) and JICA, targeting the CLMV countries. In this project, the mechanisms used in the aforementioned strengthening of NIMT's capacities by Japanese assistance are applied. NIMT dispatches experts and promotes transfer of technology, and the experiences of Ms. A, director of the international cooperation department, who participated in the training organized with Japanese assistance in the past, are utilized in the overall management of the project. Ms. A also maintains a sound relation with the Japanese experts who were in charge of that training, and commented that she seeks comments from him in the course of Triangular Cooperation.

The benefits of the Triangular Cooperation have been acknowledged by the beneficiaries, and a second phase of the project has been launched last year in the form of bilateral cooperation conducted by Thailand alone. The employee dispatched by NIMT to Laos to conduct training as a part of the bilateral aid to Laos, is a former participant of the training organized with Japanese assistance.

In this case it is possible to observe how the personnel trained with Japanese assistance have earned a significant position domestically in Thailand, and then played an active role in charge of Triangular Cooperation. In addition, through the trained personnel, Japanese assistance policies have been carried on in the content of Triangular Cooperation and bilateral aid conducted by Thailand. In other words, this demonstrates how the impact of Japanese assistance does not end with industrial human resource development in Thailand, but extends to the development of human resources needed by Thailand as it continues to perform the role that is expected of it as a donor, and the transmission of Japanese assistance policies through those people.

As Thailand has developed into an upper-middle-income country, direct aid to the country is expected to decrease, and in the future the effectiveness of aid needs to be improved. This case implies that industrial human resource development assistance is effective as it can be expected to produce results not only in promoting industrial development in Thailand, but also in promoting South-South Cooperation and Triangular Cooperation that carry on Japanese policies.

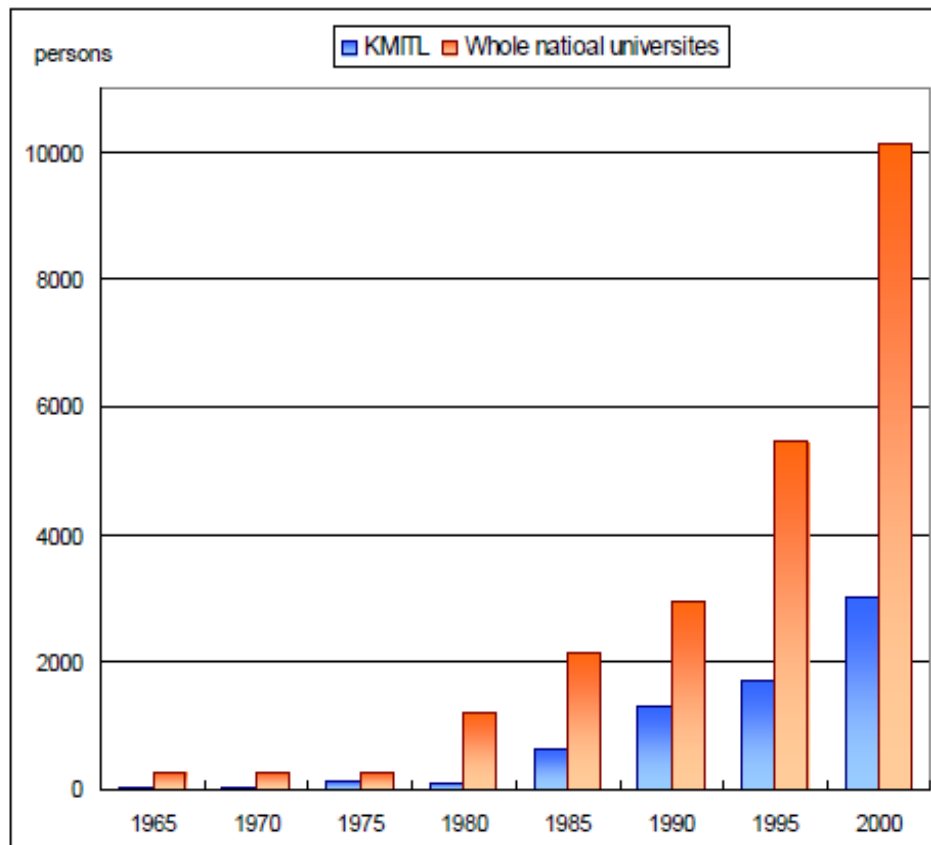
3-2-5 Impact

(1) Improving the foundation of technical human resources through human resource development

Technical human resources have developed in Thailand over the years through various kinds of human resource development projects, to an extent to which can be considered an impact of Japanese assistance. Figure 41 compares the number of graduates of KMITL, which received Japanese assistance, and the number of all bachelor's degrees in engineering received in Thailand. As that shows, in 2000, roughly 30% of students who earned a bachelor's degree in the field of engineering in Thailand were from KMITL. In addition to Japanese assistance, other factors, such as funding from the Government of Thailand and

demand and support from the industry circles, can be seen as having improved the university's performance. Nevertheless, continuous effect has been produced by the Japanese assistance beginning from the earlier Nonthaburi Telecommunications Training Center, through its transformation to King Mongkut's Institute of Technology, up to its upgrading as a functioning university. In addition to KMITL, Japan has provided assistance to the education of bachelors of engineering in Thammasat University and Kasetsart University. Taking that into consideration, the true extent of the effects of Japanese assistance can be assumed to be greater than what is shown in the figure.

Figure 41 The number of KMITL graduates KMITL and the total number of bachelor's degrees in engineering received in Thailand



Source: Thailand National Statistical Year Book. Thailand in Figures.

On the other hand, when observing the supply and demand by skill and industry in Thailand (2015) shown in Figure 42, in the Thai manufacturing industry, the supply of workers at any skill level remains insufficient. Looking at the leading industry of Thai manufacturing, the automotive industry, one can see that the number of workers available at all levels (unskilled workers, semiskilled workers, skilled workers, experts and managers) is only half of the required amount. However, one must also note that these statistics are for small-scale companies with only 1-10 employees.

As Figure 43 shows, in Thailand 80% of all workers are employed in SMEs (in the case of manufacturing approximately 70%). As the data on demand and supply of labor below represents the situation of SMEs, it can be assumed that there are many companies among them for which it is particularly difficult to

secure personnel, but the data is still representative of one side of the issue of insufficient human resources, a problem faced by many manufacturing companies in Thailand.⁷¹

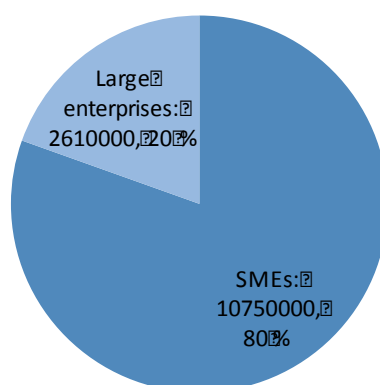
Figure 42 The demand and supply of labor in Thailand by skill and industry (2015)

Company	Unskilled workers (persons)		Semiskilled workers (persons)		Skilled workers (persons)		Experts, managers (persons)		Total (persons)		
	Number required	Lacking	Number required	Lacking	Number required	Lacking	Number required	Lacking	Number required	Lacking	Shortage rate
1.Agriculture, raising livestock, fish culture	23	18	41	37	5	5	6	6	75	66	88.0%
2.Food products and animal feed	816	820	522	522	281	155	9	9	1628	1506	92.5%
3.Mining	27	18	50	41	4	2			81	61	75.3%
4.Textile production	200	201	4	3	4	4			208	208	100.0%
5. Production of Clothing	13	9	114	103	154	170			281	282	100.4%
6. Production of shoes and leather goods	70	40	13	1					83	41	49.4%
7.Jewellery and accessories	12	12	4	6	34	34	2	2	52	54	103.8%
8.Production of wood products (other than furniture)	34	28	33	30	89	89			156	147	94.2%
9.Furniture	19	19	20	20	45	41	2	2	86	82	95.3%
10.Production of paper and paper goods	981	969			2	2			983	971	98.8%
11. Petroleum	41	37	2	1	37	1			80	39	48.8%
12. Petrochemical products	14	14	18	18	5	5			37	37	100.0%
13.Production of chemicals	163	147	3307	3296	122	107			3592	3550	98.8%
14.Production of rubber and rubber goods	6	6	30	30	87	85			123	121	98.4%
15.Resin products	673	217	589	571	171	86			1433	874	61.0%
16.Production of non-metallic goods	55	50	3	3	123	117	12	12	193	182	94.3%
17.Metallics and metalworking items	654	639	248	175	983	928			1885	1742	92.4%
18. Electricity and electronics	60	44	179	83	1282	1260			1521	1387	91.2%
19.Automotives and parts	801	717	727	623	988	930			2516	2270	90.2%
20.Other manufacturing	1348	1259	666	168	729	662			2743	2089	76.2%
21.Construction	659	530	1378	1313	6971	6929	39	39	9047	8811	97.4%
22.Wholesale, retail and repair of cars and bikes	2971	2296	2675	1655	15590	14898	123	98	21359	18947	88.7%
23.Tourism representative	379	379	25	25	296	130			700	534	76.3%
24.Hotel and restaurant services	1741	2945	479	419	307	248	24	24	2551	3636	142.5%
25.Delivery and storage	126	104	108	35	637	245			871	384	44.1%
26.Finance and insurance	583	535	447	322	3041	2991	21	13	4092	3861	94.4%
27.Real estate	11	11	1612	1644	1922	1915			3545	3570	100.7%
28.Health and social services	447	450	344	332	181	41	9	9	981	832	84.8%
29.Other service industry	312	231	4924	2211	1220	585	5	5	6461	3032	46.9%
Total	13239	12745	18562	13687	35310	32665	252	219	67363	59316	88.1%

Source: National Statistical Office Thailand. In 2015, for small-scale companies with up to 10 employees.

⁷¹ OSMEP SME White Paper 2016

Figure 43 The distribution of workers in companies by scale (2015)



Source : OSMEP, SMEs White Paper

Overall, it can be argued that Japan has played an important role in developing the foundation of technical education in Thailand. On the other hand, as each project targeted an individual school, it is difficult for them to have an outstanding impact on the Thai labor market as a whole. The supply of industrial human resources both in terms of quality and quantity continues to be insufficient in Thailand, and further measures to address the issue are needed.

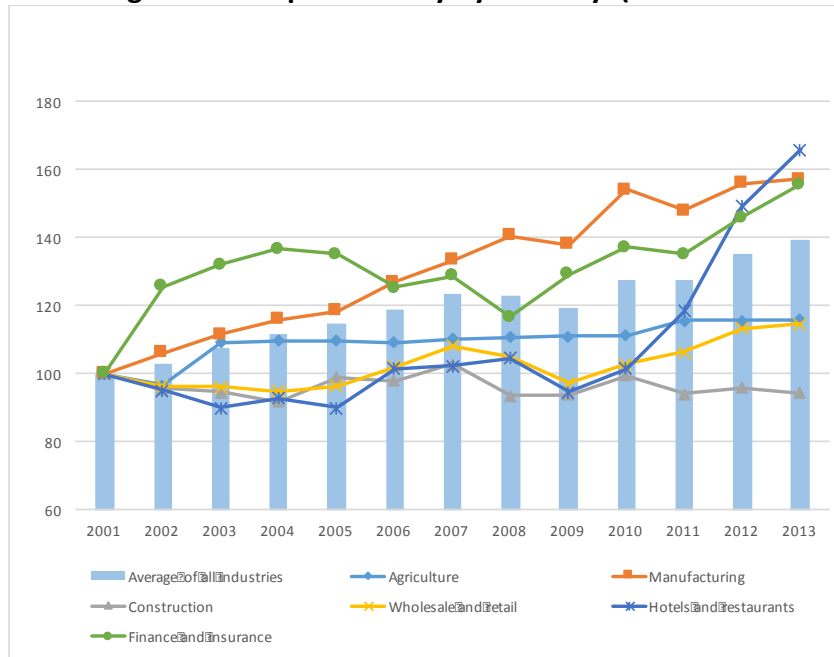
(2) Improving production abilities and raising productivity at manufacturing sites

Japanese assistance has improved production abilities and productivity at Thai manufacturing sites. For Thailand, which had succeeded in industry agglomeration as a production base for the manufacturing industry, improvement of production ability and productivity at manufacturing sites was important in order to secure its superiority as a production base.

Figure 44 shows the changes in the productivity of workers by industry (based on working hours). As with other impact indicators, there are numerous factors affecting the productivity of labor, and therefore the causal relation with Japanese aid is not obvious. But the training of policy-making personnel and its effects on the formulation and implementation of policies, and the managerial improvement and business expansion stemming from the development of supporting industries can be considered as measures that have helped raise labor productivity. Especially in the manufacturing industry, which has been prioritized in Japanese aid, since 2001 labor productivity has been improving almost constantly.

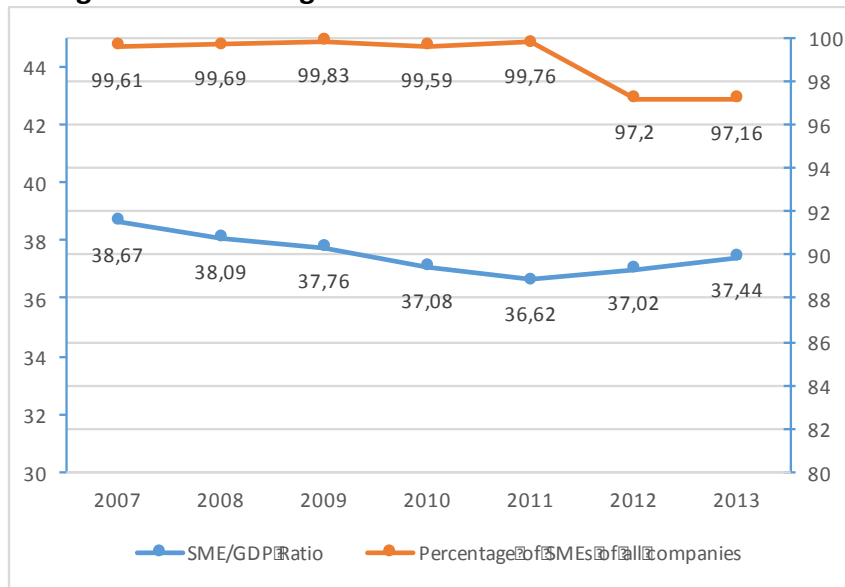
To focus further on SMEs, Figure 45 shows the percentage of SMEs within the total number of companies, and the percentage that their production consist of in the total GDP. According to this figure, the percentage of the total production of SME had been decreasing gradually until 2011, after which it began to increase slightly. Even if the number of companies is taken into consideration, it would be difficult to argue that the presence of SMEs is growing. Japan's assistance targeting SMEs was mainly implemented through industrial human resource development, but it is difficult to observe its effect in macro-level impact indicators. This derives from the fact that, as was shown in 3-2-5 (3), although the utility of *shindan-shi* and its service was recognized, the scale of the effects was limited. After the training of *shindan-shi*, consultations have been conducted and improvements made base on them, but a certain period of time is needed for this to lead to increased productivity. At the moment, since a sufficient period of time has passed since the implementation of aid, to some extent it can also be assumed that the outcomes of aid have not yet spread enough to have a macro-level impact.

Figure 44 Changes in labor productivity by industry (based on working hours)



Source: BOT, Labour Productivity Index per employed persons 1

Figure 45 Percentage of SMEs and their contribution to GDP

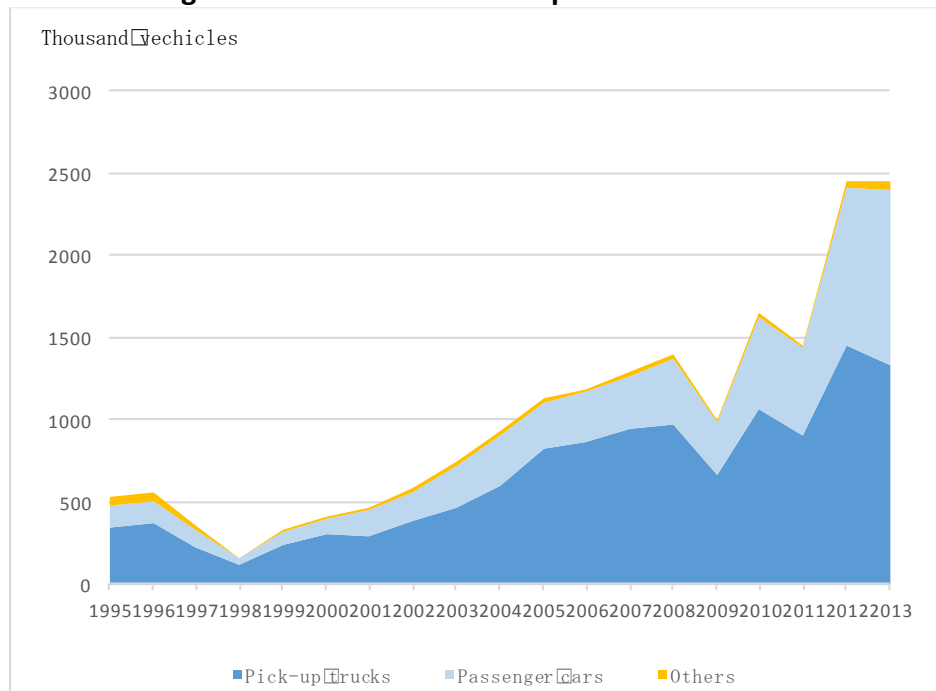


Source: Produced by Mitsubishi Research Institute based on materials of the Thai Ministry of Education

Next, we will observe the impact in the automotive industry, which has been the driving force of Thai manufacturing. Figure 46 shows the changes in the number of cars produced in Thailand. While there are temporary drops due to the effects of the Asian financial crisis (1997), the financial crisis caused by the bankruptcy of Lehman Brothers (2009) and severe flooding (2011), for the most part production has been steadily growing. And, as Figure 47, which presents the export amounts of major Thai manufacturing industries, clearly shows, particularly since the 2000s, the export value of Thai automobiles has been growing significantly, and the percentage it represents of all export products has also been increasing. While there are various reasons for this growth, as mentioned in relation to labor

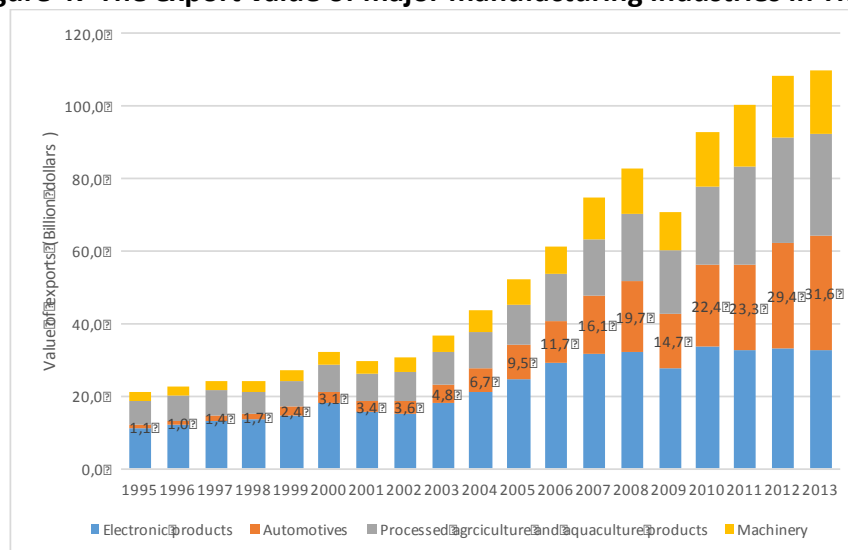
productivity, the training of policy-making personnel and its effects on the formulation and implementation of policies, and the managerial improvement and business expansion stemming from the development of supporting industries can be considered measures that have helped strengthen production capacity.

Figure 46 The number of cars produced in Thailand



Source: Produced by Mitsubishi Research Institute based on data from FTI and the CEIC Database

Figure 47 The export value of major manufacturing industries in Thailand

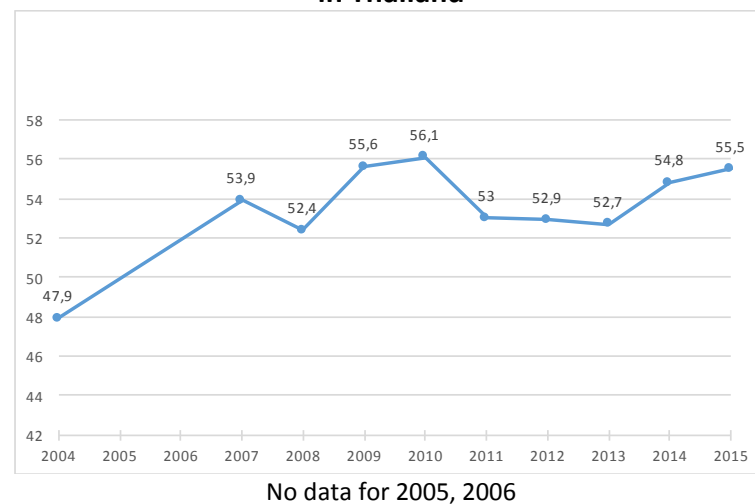


Source: Produced by Mitsubishi Research Institute based on data from Bank of Thailand and the CEIC Database

Figure 48 shows the ratio of Japanese companies in Thailand who primarily procure their materials and parts from local companies. The local procurement ratio is an important indicator of the productive capacity and level of a production base, and while there are fluctuations in the figure, as a whole it

shows that the ratio has been growing. If the improvement in local capacity to produce materials and parts is considered to have led to the rise of the local procurement ratio, which represents the status of the domestic value chain, support for the development of supporting industries can be seen as having contributed to the manifestation of these results. The percentage of material and parts procured from local companies last fiscal year in stands out among ASEAN countries at 55.5%, showing Thailand's clear superiority as a manufacturing base compared to the surrounding countries (Vietnam 32.1%, Malaysia 36.0%, Laos 23.2%, Cambodia 9.2%).⁷²

Figure 48 The ratio of materials and parts procured by Japanese companies from local companies in Thailand



Source: Produced by Mitsubishi Research Institute based on JETRO, *Zai Ajia Oseania Nikkei Kigyō Jittai Chōsa* [Survey on the state of Japanese companies in Asia and Oceania]

As the aforementioned data demonstrates, while there have been several moments of crisis such as the Asian financial crisis, the financial crisis caused by the bankruptcy of Lehman Brothers, and severe flooding, overall Thailand has maintained its growth trend. It can be assumed that timely and continuous support and investment by both Japanese government and private actors following the SME Promotion Master Plan (commonly known as the Mizutani Plan) that was presented promptly after the Asian financial crisis, and the later concrete measures realized based on its cooperation proposals contributed to this.

In addition, when it comes to developing the supporting industries that formed the basis of industrial agglomeration in Thailand, the importance of the establishment of Bureau of Supporting Industries Development (BSID) at the Ministry of Industry must also be emphasized. As has already been mentioned, BSID is a government agency that was established with Japanese assistance, and has played a central role in policy proposals related to providing technical support to companies with the aim of contributing to the development of supporting industries. It was important to foster personnel that could formulate industrial policies in a way that made use of the autonomy of the Thai side. BSID, as an implementing agency of technical cooperation, is in charge of the industry-specific institutes of the automotive, electronic and other sectors, and has also contributed to the founding of business organizations. The role of BSID, which focused on improving the quality of the industry cannot be

⁷² JETRO, *Zai Ajia Oseania Nikkei Kigyō Jittai Chōsa* [Survey on the state of Japanese companies in Asia and Oceania] (2015): 46.

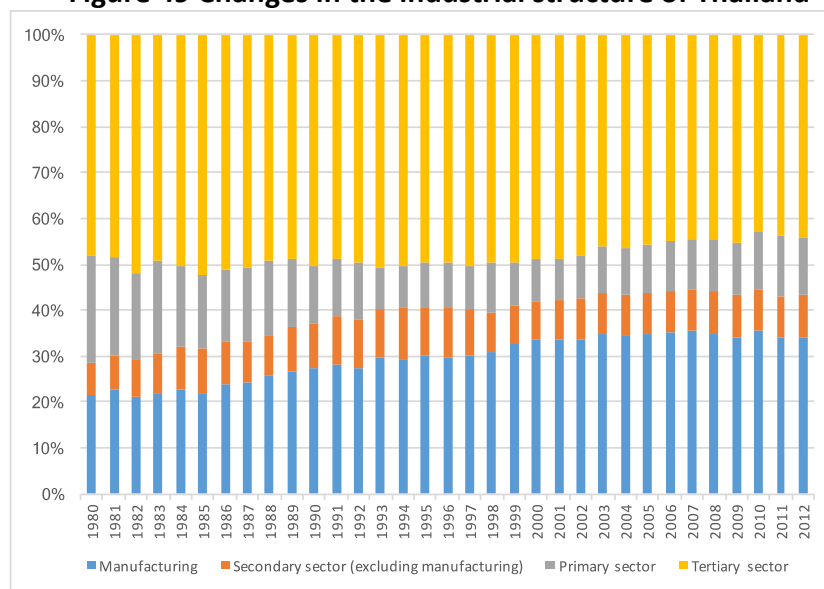
ignored when discussing how Thailand was able to maintain the growth of its supporting industries to a certain extent at a time when it had already begun to lose its comparative advantage in terms of the competitiveness of its workers' wages,. In addition, regarding the automotive industry, Thailand Automotive Institute (TAI), which was founded as a part of *Satabaan* (institute) measure,⁷³ and performs an important function in promoting the Thai automotive industry, was founded based on Japanese advice after the Asian financial crisis. Japan has contributed to the development of the institute since its foundation by dispatching experts and providing equipment. The role played by this support in the development of the Thai automotive industry has been significant.

(3) Impact of promoting higher added-value industry

Figure 49 shows the changes in Thailand's industrial structure. It shows that the ratio of the manufacturing industry is gradually growing from the 1980s until around 2000. The scale of exports, as shown in Figure 50, has been steadily growing until the present.

On the other hand, in the case of impact on macroeconomics and industrial structure, it is even more difficult to prove the causal relation with Japanese aid than with other impact indicators mentioned. Though likewise, it is possible to consider Japanese aid as one of the measures that has supported this growth. As has already been mentioned, Japanese governmental and private actors have particularly supported the growth of the automotive industry. The figure shows the percentage of the automotive industry's output of the total output of the Thai manufacturing industry, which has changed approximately 5-10% since 1990. While it would be difficult to argue that the impact of Japanese aid has influential to the extent that it affected the whole industrial structure of Thailand, at the very least, it can be argued that it has had a significant effect on the growth of the automotive industry, which accounts for 10% of the Thai manufacturing industry.

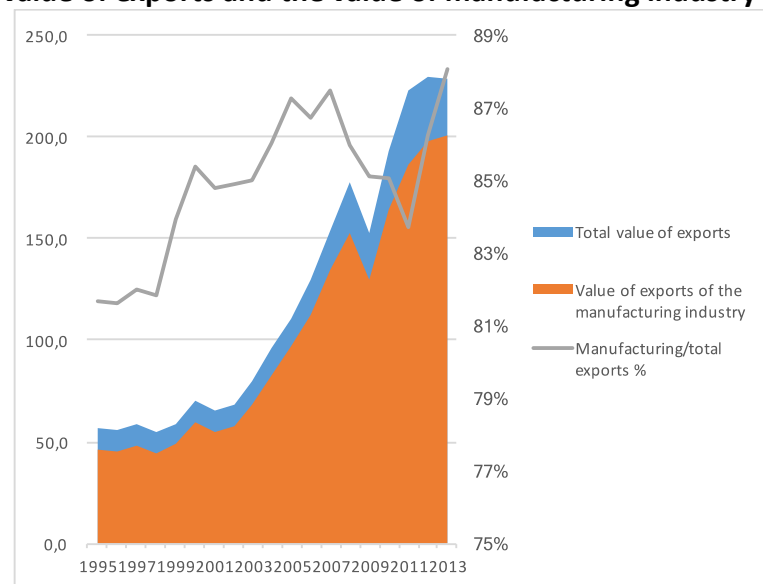
Figure 49 Changes in the industrial structure of Thailand



Source: Produced by Mitsubishi Research Institute based on World Bank's World Development Indicators

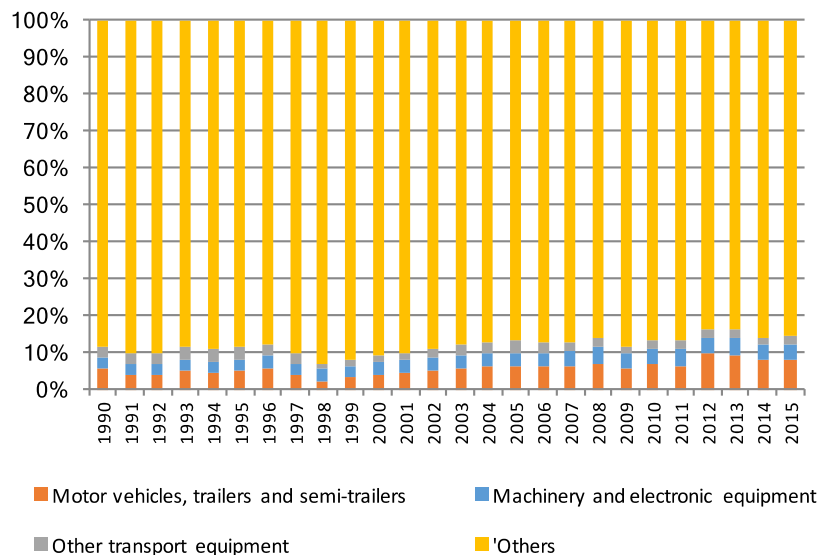
⁷³ A set of policies promoted by Ministry of Industry in Thailand, in which they newly establish an institute shared by the government and private sector, apart from what was formerly owned by the government.

Figure 50 Total value of exports and the value of manufacturing industry exports in Thailand



Source: Produced by Mitsubishi Research Institute based on data from Bank of Thailand and the CEIC Database

Figure 51 Total exports and manufacturing industry exports in Thailand

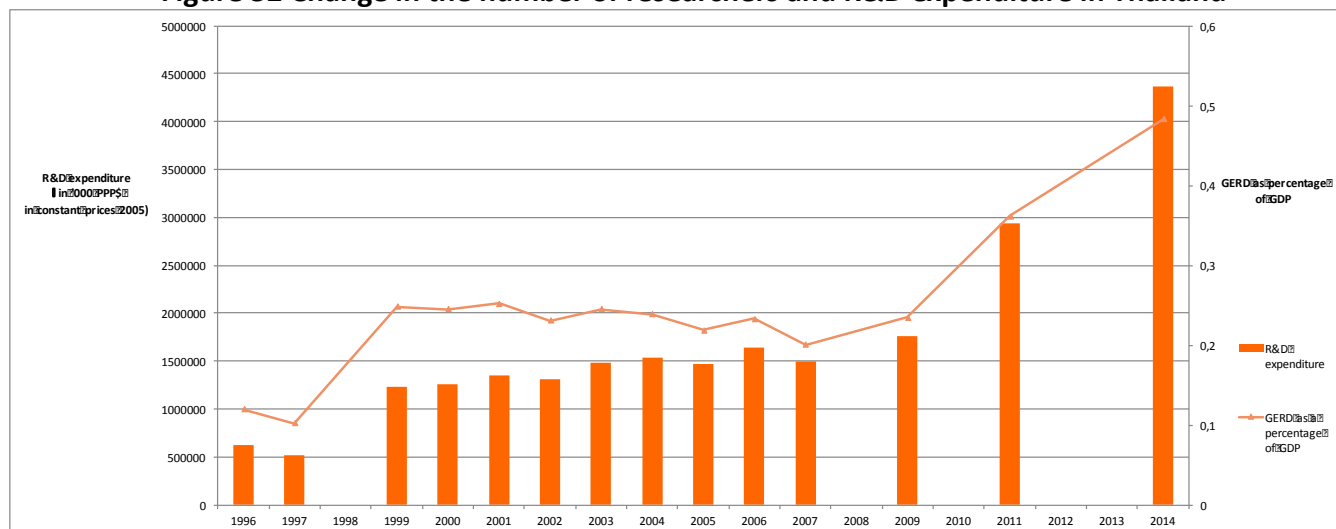


Source: NESDB, National Income of Thailand 2015 Chain Volume Measures

Transforming into a high value-added industry is an important issue for the future economic development of Thailand. For Thailand, where wage level have rose compared to the neighboring countries, to maintain its comparative advantage as a production base, it must produce higher added value. In this respect, strengthening research and development functions is important for the future development of the Thai manufacturing industry. Figure 52 shows the change in the number of researchers and R&D expenditure in Thailand. While the data is limited, one can see that overall the numbers have been increasing. As with other indicators of impact, it is difficult to clearly demonstrate a causal relation between this increase and Japanese aid. Especially regarding R&D expenditure, in recent years the effect of Thai policy can be assumed to have been significant. On the other hand, in recent years, private investment in research has increased, as companies like Toyota Motor Corporation

and Denso have set up R&D facilities in Thailand. While it would be difficult to say that Japanese ODA measures have had a direct effect on R&D expenditure, it is possible to argue that Japanese ODA has been one of the factors supporting the active expansion of Japanese manufacturing in Thailand, and borne fruit in the form of increased R&D expenditure resulting from that expansion.

Figure 52 Change in the number of researchers and R&D expenditure in Thailand



Source: Produced by Mitsubishi Research Institute based on data from OECD CRS database

3-3 Appropriateness of processes

3-3-1 Assessing the development issues of the sector in question

As a general rule Japanese ODA proposals are formulated based on the demand of the recipient country, The case of Thailand also adheres to this principle, and the needs of Thailand were charted through policy dialogues with the Office of the National Economic Development Board at the Office of the Prime Minister and the Ministry of Finance. In addition, when s projects were being formulated, needs were confirmed and adjusted between the Japanese and Thai ministries. After the coup d'état that occurred in 2014 a provisional military administration was established Thailand. However, there has been no significant effect on Japan-Thailand policy dialogues. While a Cabinet reshuffle did take place, Somkid Jatusripitak, former Deputy Prime Minister who had played a central role in earlier governments, remained in the Cabinet as an economic envoy, and there is a continuity in the Thai Government's economic policies. The effects of the coup d'état on government agencies are considered to have been minor, and on the diplomatic front, since the coup d'état there have been six Japan-Thailand summit meetings.

At the implementation stage of the aid, there is an ex-ante evaluation by JICA, where the local environment and needs are assessed. At the interviews conducted during the fieldwork investigation, we were able to confirm that in Japanese aid projects, Japanese experts visit the subjected project region at an early stage and confirm the local needs and issues together with their counterparts.

Thus, regarding the implementation of aid, development issues have been assessed both by the Japanese side, the Government of Thailand and their counterpart agencies. On the other hand, focusing on the characteristics of the target of this evaluation, industrial human resource development, the following two issues were identified in the assessment of development issues.

Firstly, the demand of the labor market must be considered both quantitatively and qualitatively when setting the objective. While there are arguments as to whether the objectives should be short- or long-term, due to the nature of industrial human resource development, it is important to address the needs of the private sector. Nevertheless, in ODA, the aid counterparts are government agencies of the recipient country, and in intergovernmental coordination it is difficult to sufficiently include the viewpoint of industrial circles regarding the current situation and prospects of demand for human resources. During our field survey, we were not able to confirm of such process.

The second issue is related to the coordination between Thai governmental agencies. In industrial human resource development there are many governmental agencies that are involved: the Ministry of Education, which controls the educational institutions that provide human resources; the Ministry of Industry, which controls the industries that employ people and train their employees; the Ministry of Labour, which controls employment and labor, and others, and consistency should be ensured with all of their related policies, but during the field survey we were unable confirm that there was sufficient coordination which includes all parties involved.

Backed by the formulation of the Industrial Human Resource Cooperation Initiative by Japan in 2015, Round Table Conference on Human Resources Development were held in Thailand in 2016 by Ambassador Sadoshima of the Embassy of Japan in Thailand, as one of the pillars of his cross-cutting policy objectives. It was a first time that a conference of such nature was organized by Japan's diplomatic missions. The conference had gathered various participants; from major Japanese and Thai industrial, academic and governmental institutions, who together discussed the substantiation of Japan-Thailand industrial human resource development cooperation. Until then, the assessment of issues in industrial human resource development had been conducted by a limited number of organizations regarding individual projects. However in the future it is expected that this leads to an establishment of a continuous and comprehensive system in which could gather to discuss the developmental needs all together.

3-3-2 Aid implementation structure of the relevant agencies

(1) Coordination between government ministries and agencies

Until today, Japanese aid related to industrial human resource development has been provided separately by each government ministry and agency. Before the formulation of the Industrial Human Resource Development Cooperation Initiative, there was no comprehensive framework for industrial human resource development assistance, and assistance policies were set separately by each ministry and agency. Therefore, the coordination between government agencies in industrial human resource development cannot be said to have been sufficient.

With the Industrial Human Resource Development Cooperation Initiative, coordination between government agencies involved in assistance on the industrial human resource development sector has begun. In November 2015, a liaison conference on industrial human resource development was established calling in department chiefs of the concerned ministries and agencies. This conference have been organized seven times so far. In this liaison conference, the agencies share examples of aid projects they have implemented so far, and discuss comprehensive policy development of the Japanese government. In addition, in these conferences, the participants considered means to initiate a comprehensive initiative with joint efforts of all agencies in the area of industrial human resource

development, which so far had not been treated as a mainstream issue. A primary example was Japan's effort to include industrial human resource in the ASEAN Chairman's Statement. The effort of the discussion flourished as industrial human resource development was included in the Chairman's Statement of the ASEAN summit organized in Vientiane, Laos, in September 2016. Moreover, in regarding Thailand, it was common notion that there is a need to foster more highly trained industrial human resources in order to escape the so-called middle-income trap and to achieve further economic development. Round Table Conferences on Human Resources Development were held in March and June 2016, and as a Japan-Thailand version of the Industrial Human Resource Development Cooperation Initiative, the Japan-Thailand Industrial Human Resource Development Cooperation Initiative was approved in December 2016. As stated above, the coordination between government ministries and agencies that begun in 2015 is expected to remain active in the future, and coordination is expected to take place when implementing concrete policies.

(2) Coordination with other donors

Japan has led the aid in the industrial human resource development sector in Thailand as a leading donor disbursing aid on a constant scale. On the other hand, as was shown in *Chapter 3 3-1-4 The comparative advantage and strategic nature of Japanese aid*, the aid of other donors in this sector is limited, and as Thailand has developed into an upper-middle-income country, other donors are changing their approach, designating Thailand a development cooperation hub for the entire regio, rather than a direct aid recipient country. These circumstances have also contributed to the fact that in aid to Thailand, coordination between Japan and other donors has not been sufficiently implemented. While JICA have organized an opportunity for regular exchange of opinions with the World Bank, as the World Bank like other donors emphasizes the use of Thailand as a hub for the development of other countries in the region. In terms of aid targeting Thailand the need for concrete coordination is limited. However, there are some cases where the area of aid has overlapped with that of other donors. For example Germany, like Japan, has provided aid to the National Institute of Metrology and vocational schools, and, through the Small-Scale Industry Promotion Project (SSIP) conducted entrepreneurial training, provided advice on SME policies, and implemented BDS provider networking projects.

Though activity is limited amongst other donors, more substantial sharing of information and exchange of opinions between donors is considered useful to commit to the efficient use of resource both by the donor and the recipient.

(3) Coordination with the Government of Thailand

Coordination with the Thai counterparts are conducted on a project basis. As for the reception on the Thai side, as was described in *3-2-4 Outcomes (1) Priority Area Case Study 1 Training policy-making personnel*, the director of BSID, who is well-informed about Japan, based on his knowledge of the circumstances of both countries, constantly played a role of making the necessary arrangements between related projects. However, this case is unfortunately limited to activities that fell under the control of the Ministry of Industry. In the future, the Round Table Conferences on Human Resources Development are expected to be utilized as places for coordination with the Government of Thailand, including other ministries and agencies. With the creation of a forum where Japanese and Thai actors can compare and adjust their aid resources and needs, the construction of cross-cutting cooperative relations that go beyond the division of supervision between the related parties.

3-3-3 Implementation of monitoring and follow-up

(1) Implementation of monitoring and follow-up from an industrial human resource development perspective

Until the formulation of the Industrial Human Resource Development Cooperation Initiative by the Japanese Government, no comprehensive policy guidelines regarding industrial human development existed, and so far, industrial human resource development has been considered one of the measures for industrial development. While JICA has included some elements related to industrial human resource development in its issue-specific policies, there are no examples of it having conducted a cross-cutting project evaluation from the viewpoint of industrial human resource development. With the formulation of the Industrial Human Resource Development Cooperation Initiative, the monitoring and follow up of aid projects where the focus is on industrial human resource development, is expected to be conducted in the future.

(2) Issues in the implementation of monitoring and follow-up of industrial human resource development

When evaluating industrial human resource development assistance, there are problems that occur due to the reason listed below, and the occurrence of these problems was confirmed during the course of this evaluation as well.

The first issue is that it takes time for the effects to manifest after the implementation of the project. Generally, time is needed for the outcomes and impact of human resource development to manifest, which makes short-term assessment difficult. In addition, the fact that it takes time for the effects to manifest deems it difficult to distinguish them from effects caused by other factors. In academic research, effects are commonly measured using a test group and a control group, but generally this method is very costly.

The second issue is the difficulty to measure the performance in training programs. When assessing the effects, it is necessary to assess the change in the participants after the training and the resulting indirect effects, but generally it is difficult to confirm the situation of the participants after a certain period of time has passed after the training or other programs have ended. This evaluation also experienced such issue. The Ministry of Industry could not confirm the situation of *shindan-shi* and master trainers that it had trained with Japanese assistance as a part of supporting industry development, as they became entrepreneurs after their training ended. Higher education institutions were also not aware of the situation of their graduates.

While In individual cases follow-up and monitoring through personal relationships between the experts dispatched from Japan and the Thai trainees has occurred, this only amounts to a partial assessment of the situation, and as the situation stands, not enough monitoring takes place for a PDCA cycle of aid to be realized.

(3) Monitoring and follow-up measures by the Ministry of Economy, Trade and Industry

As a positive example of monitoring and follow-up of industrial human resource development, measures implemented by the Ministry of Economy, Trade and Industry will be introduced. Development of industrial human resources by The Ministry of Economy, Trade and Industry has mostly been conducted through JTECS and HIDA, in the form of expert dispatches and training projects. Monitoring and follow-

up of the aid has been implemented by JTECS and HIDA, and they are summarized in their reports. HIDA conducts yearly project evaluations and some surveys on project outcomes. In the case of projects related to the development of human resources in emerging markets, HIDA uses their evaluation system for training project and expert dispatch to conduct a questionnaire for its training participants and the companies accepting trainees. Due to the nature of human resource development, which requires a certain amount of time for the training results to appear after the training has been conducted, HIDA seeks advice from the academia when examining its evaluation methods. However, at this stage the search for a highly appropriate method to evaluate aid results is still a process of trial and error.

As a part of the assessment of cases related to aid outcomes, HIDA organizes conventions to introduce success stories based on training reports written by the trainees after they have returned home. While these conventions are not limited to aid to Thailand, so far two conventions have been organized, in 2009 and 2014, with a total of 400 submissions. The HIDA Research Institute is planning to analyze these examples in the future, with the aim of assessing the effects of aid through the accumulated cases.

Furthermore, Thai personnel that have been trained with the support of JTECS and HIDA have formed an independently run HIDA/AOTS alumni association. There are 71 alumni associations in 43 countries of the world, and the Thai alumni association has is particularly extensive. The alumni association conducts matchmaking between Thai and Japanese corporations and other activities. In 2016 HIDA also created a system to appoint people who have played a leading role in AOTS/HIDA Alumni Associations as "Monodzukuri Human Resource Ambassadors," and as has already been mentioned, four TPA • TNI actives were the first four ambassadors appointed. In the case of JICA, small independent alumni associations (130 groups in 103 countries) have been established by trainees who have returned home after participating in issue-based or country-based training programs or youth training programs, but other JICA project participants, such as foreign exchange students accepted through grant aid or participants of training programs run by the Japan Personnel Development Center have not formed organizations. The HIDA/AOTS alumni association initiative serves as a reference when building a base for monitoring and follow-up of human resource development. However, these alumni associations are formed autonomously by trainees after returning home, and for the activities to be sustainable, it is necessary to deliberate ways to deal with their management costs and to provide incentives for participation.

3-4 Evaluation from diplomatic viewpoints

3-4-1 Diplomatic importance

(1) The strengthening of bilateral diplomatic relations through industrial human resource support

Examples of industrial human resource development initiatives formulated at the government-level are the SME Promotion Act, which was adopted under a comprehensive agreement with the Ministry of Economy, Trade and Industry, and the SME Promotion Master Plan (in Japan commonly known as the Mizutani Plan), which the Government of Thailand approved by cabinet decision during the Asian financial crisis. In addition, in human resource development projects targeting the supporting industries of the automotive sector, Japanese companies trained personnel of local Thai companies under the government's ODA framework, and the trained personnel were employed by Thai companies that served as sub-contractors to the Japanese companies. This benefited both Japanese and local Thai companies. Furthermore, as foreign companies left Thailand during the Asian financial crisis, these projects, together with the training of *shindan-shi*, helped protect Japanese companies which were

already well-established in Thailand. At the same time, it also helped Thailand itself to build the resilience of the industrial sector which it needed to recover from the damages of the financial crisis. In the relationship between Japan and Thailand that has been built in the course of many years of economic activity, industrial human resource development has been an important endeavor that has benefited both countries.

There have also been words of appreciation, or expectations regarding Japanese contribution to industrial human resource development assistance on part of Thailand and ASEAN countries. On 2 May 2016, during the meeting between Foreign Minister Kishida and Deputy Prime Minister Somkid Jatusripitak, Deputy Prime Minister Somkid stated that "Prime Minister Prayut also has high expectations for human resource development. We hope to have Japan's support in this." In addition to Thailand, Cambodia, Vietnam, Myanmar and Malaysia have also expressed appreciation for Japanese human resource development in speeches by important government figures.

It can be assumed that industrial human resource development needs will continue to grow in the ASEAN region in the future. ASEAN Connectivity 2025, the latest version of the Master Plan on ASEAN Connectivity (MPAC) adopted at the ASEAN Summit, mentions the need to narrow the supply and demand gap of vocational skills in the ASEAN labor market is mentioned. The ASEAN 2016 Chairman's Statement also refers to the importance of industrial human resource development. Until today, industrial human resource development projects were implemented separately by individual ministries, but with the drafting of the Industrial Human Resource Development Cooperation Initiative, they can now be conveyed as a comprehensive policy by the Japanese government. By learning from the lessons gained from industrial human resource development initiatives in Thailand, industrial human resource development in the ASEAN region can also be expected to benefit both Japan and the recipient countries.

3-4-2 Diplomatic impact

(1) The activity of Thai personnel well-informed about Japan

The industrial human resource development assistance implemented by Japan so far has produced personnel who are well-informed about Japan and playing an active role in the counterpart organizations. Especially BSID has grown as the principal counterpart of projects related to industrial human resource development, and the contribution of Mr. Panuwat in this respect is extremely significant. He experienced studying in Japan as a foreign student, and having served as the contact person in matters related to Japanese aid since the MIDI era, is extremely well-informed on Japanese aid. Mr. Warapong Chinchoksakulchai, Director of the Advanced Production Department at BSID, came to Japan as one of the initial trainees during the project "Development of the metal working and machine industry in the Kingdom of Thailand," and after completing Japanese language training at Tokyo International Research Center, he learned mechanical design skills and Japanese monodzukuri at a Japanese company. After returning home he participated in the "Supporting Industry Center in Thailand" project as the person in charge of the project on the MIDI side.

In addition to industrial human resource development, long-standing Thai-Japanese relations have led to a lot of interaction in other areas as well. While they might have no direct involvement with Japanese aid projects, there are many people active in the Thai government and private companies, who are well-informed about Japan as a result of studying or training experiences. For example, the former Minister of Finance, Dr. Thanong Bidaya, is a graduate of the Faculty of Economics of Yokohama National University. The former Minister of Finance, Mr. Sommai Huntakul, served as the Chairman of the AOTS

Alumni Association. Minister of Tourism and Sports, Ms. Kobkarn Wattanavrangkul, is an alumna of HIDA/AOTS, and has formerly served as the Chairperson of Toshiba Thailand Co., Ltd. People well-informed about Japan are also active in the Thai industry. For example, Dr. Bandhit Rojarayanont, President of TNI, has received a doctorate from Tokyo Institute of Technology, and is also an alumnus of HIDA/AOTS. While teaching at Chulalongkorn University, he also participated actively in the activities of the predecessor of TNI, TPA. In October 2016, he was among the first Monodzukuri Human Resource Ambassadors appointed by HIDA/AOTS for the leading role he had played in the Thailand Alumni Association.

Mr. Supong Chayutsahakij, Adviser to the ABK-AOTS (Asia Bunka Kaikan – Association for Overseas Technical Scholarship) Thai Alumni Association and Chairman of the Thai-Nichi Institute of Technology, studied at the Nagaoka University of Technology, and later graduated from the Faculty of Engineering at the University of Tokyo. In 2014 Nagaoka University of Technology established a Thailand office on the premises of Thammasat University, and Mr. Supong became its first director. Like Dr. Bandhit, the President of Thai-Nichi Institute of Technology, he was appointed as one of the first Monodzukuri Human Resource Ambassadors.

On the other hand, the organizations that received Japanese assistance also have employees who have studied in Europe and the United States. For example, Mr. Supan Tungjitkusolmun of KMITL, studied biomedical engineering in the United States on a Thai Government scholarship. While Japan has provided assistance to KMITL since the 1970s, Mr. Supan has no direct connection with that assistance. Plawut Wongwiwat of BSID spent eight years studying electrical and electronic engineering in the United States. Among the 60 current employees of BSID, there are six people who have studied abroad: three in Japan, two in England and one in the United States.

The people in the Thai Government and Thai industry who have connections to Japan have friendly relations with each other. For example, Mr. Panuwat, Director of BSID and Mr. Bandhit, President of TNI, both studied at the Tokyo Institute of Technology and have both contributed to industrial human resource development, one in the Government and the other in the private sector, complementing one another. For example, when the Ministry of Industry was training *shindan-shi* with JICA's support, it entrusted the training program to TPA, and when *shindan* system was being reexamined, Mr. Panuwat gave advice to Mr. Bandhit.

The names mentioned here are just a few examples of personnel well-informed about Japan, but in Thailand there are a lot of people with such connections in all areas of industry, academia and government, from government employees to the engineers working in the factories of supporting industries. This is a huge asset to Japan-Thailand relations. At the same time, it is important to think of measures to ensure that personnel well-informed about Japan, who can play a central role in bilateral cooperation, are also fostered among the younger generation.

(2) Activity of the trained personnel in South-South Cooperation

The agencies and personnel that have received support through ODA projects, are playing supporting roles in South-South Cooperation. The National Institute of Metrology has conducted trilateral training programs in cooperation with JICA and TICA (Phase 1: 2010-2013, Phase 2: 2013-2016). In addition, as an independent pilot project, NIMT has begun a bilateral training project with Laos, which carries on the same content as the training that was conducted in 2015 with Japanese assistance. In this training project, people trained with Japanese assistance are acting as teachers. Through the trilateral training

program with JICA and TICA, and the bilateral project it has begun to develop on its own, the presence of NIMT as a metrological institution has risen. Currently the vice-chairperson of NIMT acts as the Chairman of the Developing Economies' Committee of the Asia Pacific Metrology Programme (APMP). In AUN/SEED-Net, Chulalongkorn University, which has been supported by Japan, acts as the office of the network. King Mongkut's Institute of Technology Ladkrabang, which has also received Japanese assistance, is considered an advanced institution among the 26 universities that form AUN/SEED-Net. It is also a base school in the field of IT and communications, and receives students from Laos and Cambodia as a host school, helping them receive bachelor's degrees.

Chapter 4 Summary of the Evaluation and Recommendations

4-1 Summary of the Evaluation

4-1-1 Relevance of Policies

The relevance of policies was evaluated from the following four viewpoints: (1) consistency with Japan's high-level policies (2) consistency with Thailand's development needs (3) consistency with international aid trends and aid policies of other donors and (4) Japan's comparative advantage. Overall, this evaluation found that the relevance of aid policies targeting the industrial human resource development sector in Thailand is high both domestically and externally. However it should be noted that "industrial human resource development" was not defined or communicated as a separate sector with enough clarity. Especially in the context of comparative advantage and international aid trends, it is necessary to communicate information more effectively.

Industrial human resource development is a aid sector in which Japan has been involved for many years as a part of its industrial assistance policies, and in Thailand it is one of the core forms of aid implemented. Especially in the 90s, when Thailand was attempting to recover from the Asian financial crisis while promoting agglomeration of the automotive industry, it was indispensable for the country to develop its human resources in order to increase its international competitiveness. In this regard, industrial human resource development was a perfect match for the needs of the recipient country.

On the other hand, within Japan's policy framework, for many years Japan's assistance policies related to industrial human resource development and specific assistance projects were generally formulated and implemented by individual ministries and agencies. The relevance of policies in this field as an integrated sector in Japanese policy was not clearly expressed. A defining characteristic of this sector is that various agencies have been involved in the implementation of the aid. In addition to MOFA and JICA, various other agencies such as METI, HIDA, JETRO have conducted industrial human development. Government and private actors has been working together and complementing each another. Each of these organizations used industrial human resource development as a means to achieve their respective objectives, rather than defining it as a separate aid sector. In sum, until the Industrial Human Resource Development Cooperation Initiative was presented as a framework in November 2015, no cross-cutting unified objectives or specific aid policies for all government agencies had been laid out.

In the future, as the initiative is implemented, it is expected that the role of the sector within aid policies will be clearly established.

Against this backdrop, Japan has not sufficiently communicated its comparative advantage in this aid sector nor its consistency with international aid trends. As demonstrated by the inputs by Japan in this sector (Chapter 3), Japan is a donor that has been consistently engaged in industrial human resource development. This was true even at times when there was little attention given to this sector by the international community. Especially in Thailand, in terms of quantity there is no other donor who compares to Japan. In recent years, the attention given to industrial human resource development by the international community has augmented and decent work and skills development were mentioned

as related notions in the SDGs. Amid such aid trends, Japan should be able to increase its presence by communicating the initiatives it has implemented to this day, by placing them in this context.

As was stated in *3-1-3 Consistency with international aid trends and aid policies of other donors* in the section on relevance of policies, there is no other donor that would have invested as many resources to the industrial human resource development sector in Thailand as Japan, and Japan possesses a strong comparative advantage in this aid sector. The fact that not many donors are active in this sector can be considered a sign of the division of labor between donors functioning effectively, and it can be said that Japan is selectively investing resources in a sector that plays to its strengths.

On the other hand, the fact that not many other donors are involved in the sector may easily invite the mistaken conception that the activities in question are out of touch with international trends. From that perspective, carefully indicating the position of Japan's endeavors within international trends, is extremely important for Japan to maintain its status and credibility as a donor, and the relevance of its activities externally.

4-1-2 Effectiveness of results

The effectiveness of results was examined through case studies from five different areas: (1) training of policy-making personnel (2) human resource development in supporting industries (3) training of business support personnel (4) developing private sector human resources through higher education and vocational schools and (5) Thailand's emergence as a donor in Triangular Cooperation and South-South Cooperation. Among these the effects were recognized as particularly strong in (1) training of policy-making personnel and (5) Thailand's emergence as a donor in Triangular Cooperation and South-South Cooperation. What these two cases have in common is that they were both engaged in developing establishing systems and human resources needed for their management. In other words, rather than training personnel who would themselves work at manufacturing sites, emphasis was placed on the development of human resources that will support the construction of policies and systems to train such kind of personnel. Japan has been accompanying and supporting Thailand on its path to industrialization for many years. An example was the assistance provided to build a system that would help increase the effectivity of IRP as it was announced, and support for the establishment of the Bureau of Supporting Industries at the Ministry of Industry. The building of these two systems has formed the basis of implementation of policies related to industrial human resources and more broadly industrial promotion in Thailand since the 90s till today, and they have greatly benefited Thailand's independent development. Creating secondary effects that go beyond the direct scope of the input is very important for the sustainability and effectiveness of aid. In the case of industrial human resource development in Thailand, by creating outcomes that affect high-level policies and systems, many programs were formulated and implemented, and had an indirect impact both domestically and externally.

While some impact can be acknowledged in priority areas (2), (3) and (4), the objective of which was to train personnel who are directly employed in the industry, the limitation of their impact must also be pointed out. First, regarding (2) human resource development in supporting industries and (3) training of business support personnel, overall, impact was observed in the people who were the direct targets of the inputs. However secondary impact through the activities of the people trained first-hand, did not manifest to the extent that had been expected. Unlike in the aforementioned cases of policy-making personnel and Thailand's role in Triangular Cooperation, sufficient structures has not been establish to allow the impact to diffuse. In these areas, the limited impact that has manifested were created due to Japan's continuous implementation of aid programs in Thailand. However in the future, as the volume

of aid starts to shrink, an impact that relies on direct input is vulnerable, and raises question in its sustainability.

As for developing private sector human resources through higher education and vocational schools, imbalance of the targets and orientation of the aid can be indicated as an issue. Originally Japan contributed to improving the education level of higher education (especially in universities), and strengthening the mechanisms that supply human resources to industries, but on the other hand, when it comes to vocational training and technological education, the number of projects already shows that input has been insufficient. There are three reasons for this. First, regarding the training of technicians, in order to respond to the rapid industrial agglomeration in Thailand, immediacy was prioritized, and as a result, the preferred style of developing supporting industries was directly training the employees already working at production sites. Second, as a circumstance concerning the educational sector, it can be mentioned that the targeted educational institutions had stronger incentives to upgrade themselves to universities. As explained in the section on the effectiveness of the results, for an educational institution which considers its marketing, utilizing a more sophisticated education to appeal to potential students, is a reasonable strategy that directly affects the number of applicants. Reputation of vocational school is not very high amongst students, their guardians, the companies and the general public. Consequently, educational institutions have no incentives to improve and expand if it is below university education level. As the example of Pathumwan Technical College shows, even when institutions receive assistance they above all prefer to raise their level as universities, and to develop capacities that help them engage in high-level research and development. The third and final reason has to do with the circumstances of the local counterparts. The areas of cooperation are all controlled by different ministries, agencies and sections in Thailand. Japan has traditionally had strong ties with the Bureau of Supporting Industries Development at the Ministry of Industry, and has formulated numerous projects with the bureau, especially from the perspective of supporting industries' development. In higher education, the Commission on Higher Education in the Ministry of Education, among others, has acted as a counterpart. On the other hand, vocational training falls under the control of a separate section at the Ministry of Education, the Vocational Training Council, and that section has practically no experience of acting as a counterpart to Japanese aid, and we were told that so far there had not been enough opportunities for the issues recognized by that section to be reflected in Japanese aid.

In industrial human resource development it is important to approach different areas such as education, industry and labor seamlessly. The effect of skill training at manufacturing sites also depends on the level of the previous stage, the educational institutions. And vice-versa, even if various skills and knowledge are imparted by the educational institutions, this is meaningless if no place exists for those skills to be utilized after graduation. As mentioned earlier this issue was most obvious in the area of education, but it is a point that should be recognized in all areas of industrial human resource development.

In sum, impact can mainly be discussed from the effects related to (1) strengthening the base of technical human resources (2) expanding production capacity and improving productivity at manufacturing sites and (3) developing high added-value industry. Among these, the endeavors of government and private actors in Japan and in Thailand led to synergistic effects particularly in contributing to the agglomeration of industries to Thailand (especially the automotive industry). As a result, this has contributed a certain amount to developing high added-value industry and expanding production capacity and improving productivity at manufacturing sites. However, as for impact, there

are other variables aside from aid, and it must be taken into account that it is difficult to discuss the issue separately from the effect of those variables.

4-1-3 Appropriateness of processes

Appropriateness of processes was evaluated from the three following viewpoints of (1) assessment of the development issues of the sector in question, (2) the aid implementation structure of the relevant agencies and (3) implementation of monitoring and follow-up. Overall, Japan conducts industrial human resource development based on appropriate processes, but it can be concluded that the content of each process is not necessarily sufficient.

As for the assessment of development issues, Japanese ODA is based on the principle of demand, and in the formulation of the projects related to industrial human resource development, which are the target of this evaluation, assessment of development issues was conducted appropriately between the Government of Japan and the Government of Thailand, JICA and other counterpart agencies.

On the other hand, in industrial human resource development, objectives must be set according to the demand in the labor market. However, in ODA the counterparts of aid are government agencies of the recipient country. In this evaluation, we were not able to identify processes that would have sufficiently included the viewpoint of Thai business sector on the current labor situation.

Furthermore, in industrial human resource development, there are various different government agencies that are in charge. This evaluation identified the following as related parties; the Ministry of Education, which controls the educational institutions that supply human resources; the Ministry of Industry, which controls the industries that employ people and train their employees; and the Ministry of Labour, which controls employment and labor; were identified as the main government agencies in charge of human resource development. Japanese ODA is mainly implemented with one Thai government ministry or agency as a counterpart, and the process to ensure consistency with the relevant policies of all Thai ministries and agencies cannot be considered sufficient.

Before the formulation of the Industrial Human Resource Development Cooperation Initiative, Japanese assistance policies and specific aid initiatives related to industrial human resource development were mostly formulated and implemented by individual ministries and agencies. It was BSID, and other Thai agencies that had for many years served as aid counterparts, and the personnel well-informed about Japan who constantly helped make sufficient arrangements of the Japanese aid which were divided between supervising agencies. This coordination was enabled by the fact that the Thai personnel understood the situation surrounding both the issues of Japanese aid and Thai industrial human resource development. However, this relationship with the Thai counterparts is limited to the Thai Ministry of Industry and its related agencies. In the future, it will be necessary to construct a more comprehensive aid implementation structure for Japan and Thailand by including other ministries and agencies relevant to industrial human resource development.

In Japanese aid, until the formulation of the Industrial Human Resource Development Cooperation Initiative, no comprehensive cross-cutting policy guidelines existed which incorporates all government agencies involved. Industrial human resource development was considered as one of the various means to achieve industrial development. Therefore, there was no monitoring or follow-up with the focus placed on industrial human resource development. In the future, the formulation of the Industrial Human Resource Development Cooperation Initiative is expected to lead to the implementation of

cross-cutting supplementation of results and project evaluations between different organizations with the focus specifically on industrial human resource development. However, when assessing the effects of human resource development, a certain period of time is needed from the time of the intervention until the outcomes and impact manifests. Furthermore, in the current aid processes, it has been difficult to stay informed of the later activity of the personnel who have been trained. It is necessary to promote networking of the people supported by JICA. In networking, the organization and other activities conducted by HIDA /AOTS Alumni Association in cooperation with METI can serve as a reference.

In the aid processes of industrial human resource development, it is necessary for both Japanese and Thai government ministries and agencies to engage in cross-cutting cooperation. In the assessment of development issues and follow-up of the targeted human resources, cooperating with industrial circles is indispensable. Following the Industrial Human Resource Development Cooperation Initiative by the Japanese Government in 2015, Thailand roundtable discussions on human resource development were held in 2016 with the initiative of Ambassador Sadoshima of the Embassy of Japan. This created opportunity for multiple Japanese and Thai government ministries and agencies as well as relevant industrial organizations to participate on a common ground. Furthermore, based on roundtable discussions, the Japan-Thailand Industrial Human Resource Development Initiative was formulated in December 2016. In the future, industrial human resource development in Thailand is expected to be conducted with continuity and inclusiveness, utilizing these meetings and initiatives as a foundation.

4-1-4 Evaluation from diplomatic viewpoints

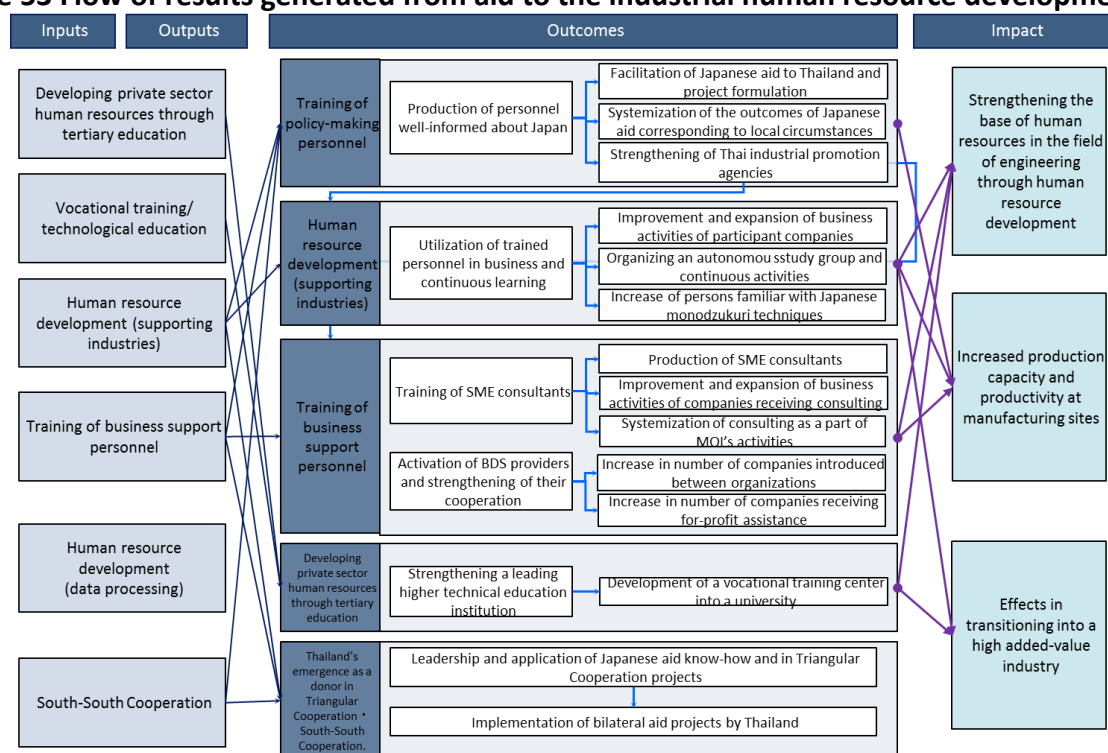
Evaluation from diplomatic viewpoints was conducted based on the two viewpoints of (1) diplomatic importance and (2) diplomatic impact. Japanese aid to Thailand in the field of industrial human resource development has contributed to the increase of Thailand's industrial strength by developing the local Thai companies, as well as the promotion of the activities of Japanese companies that have made inroads into Thailand. This is especially true for manufacturing, which is centered on the automotive industry. From the point of view of economic diplomacy, it can be said that the aid has been beneficial to both countries. As the importance of developing industrial human resources was affirmed in ASEAN 2016, it is likely that industrial human resource development assistance will become more important in the future, not only in Thailand but in the entire ASEAN region.

The diplomatic impact of the industrial human resource development aid implemented by Japan appears in two forms, Firstly as a development of the counterpart agencies in Thailand, and secondly in the the active role of personnel affiliated with Japan. A typical example of this is BSID, originally established as MIDI with Japanese assistance, which is currently the primary counterpart of Japanese aid on the Thai side. Headed by Mr. Panuwat, the existence of Thai government personnel who have been involved in many of the Japanese aid projects is important, and they have played a very significant role on the recipient side. On the level of individual projects, the organizations that have been supported by Japan, their employees have enhanced their functions and abilities. In some organizations, they function as supporting party in South-South Cooperation, implementing human resource development projects in the surrounding Asian countries as a donor. The aid received from Japan in the past acts as an exemplary reference in these projects. As a result of the long-term industrial human resource development through Japanese ODA and economic activity between Japan and Thailand, there are many people well-informed about Japan in all areas of Thai industry, academia and government, from government employees to the engineers working at factories of the supporting industries. This is a huge asset for Japan-Thailand relations. At the same time it is important to consider measures to ensure that

personnel well-informed about Japan, who can play a central role in bilateral cooperation, are also fostered among the younger generation.

Based on the above and the evaluation results of Chapter 3, we have organized the flow of effects of aid to the industrial human resource development sector in Figure 53. The figure demonstrates the inputs, outputs, the generation of results related to direct objectives, and also the results that were produced by strengthening the Thai industrial development agencies by training policy-making personnel, as well as the positive effects between the effects that were generated.

Figure 53 Flow of results generated from aid to the industrial human resource development sector



※The relations shown in the figure were confirmed through the evaluation process and do not necessarily represent strict causal relations. In addition, when interpreting the figure, it is necessary to take into consideration the factors aside from industrial human resource development assistance that may have affected the relation between different items. While there were differences in the strength of the relation between different elements, those differences are not displayed due to limitations of the information collected and limitations in producing the figure.

Source: Produced by Mitsubishi Research Institute

4-1-5 Rating

Excluding the evaluation from diplomatic viewpoints, a rating for the evaluation from development viewpoints was conducted based on the evaluation results of the concrete cases reported so far. The results are below.

Figure 54 Rating results

Viewpoint	Evaluation criteria • content (Example)	Rating
Relevance of Policies	Is it consistent with Thailand's development needs?	Moderate The evaluation results were high in many of the survey items
	Is it consistent with the Development Cooperation Charter (ODA Charter) and the Priority Policy for Development Cooperation?	
	Is it consistent with international industrial human resource development initiatives and aid trends?	
	Is it consistent with other donors (multi-donor trust funds, bilateral aid agencies) assistance policies?	
	Did the aid provided utilize Japan's comparative advantage?	
Effectiveness of Results	Is the ODA invested by Japan in the industrial human resource development sector in Thailand sufficient (inputs)?	High The evaluation results were high in almost all of the survey items
	How big was the contribution to the objectives and indicators of the industrial human resource development sector in Thailand (outcomes)?	
	How was the impact on Thai development policies and international aid trends?	
	Are there signs of Thai ownership, sustainability and development towards self-reliance?	
Appropriateness of Processes	Were the approaches listed in the Development Cooperation Charter (ODA Charter) implemented?	High The evaluation results were high in almost all of the survey items
	Were there continuous efforts to assess the needs of Thailand (policy consultations etc.)?	
	Where global changes in the industrial human resource development sector accurately assessed, followed and/or initiated?	
	Was there a process in place to regularly assess and follow the implementation of aid?	
	Was the cooperation between Japanese aid agencies in Thailand, MOFA and the JICA headquarters etc. smooth?	
	Was there cooperation with other bilateral aid agencies, multi-donor trust funds etc.?	
	Did the concerned parties share the project evaluation results with the Government of Thailand and other donors?	

4-2 Recommendations

4-2-1 Mainstreaming industrial human resource development in Japan's aid and formulating sector-specific development policy

As discussed in *Chapter 3: Evaluation Results*, when considering the scale of aid, the various outcomes it produces, and the implementation of multi-layered aid by governmental and private actors working together, Japanese industrial human resource development assistance is both in terms of quantity and quality substantial compared to other countries. In addition, human resource development was conducted in a manner specific to Japan. An example is *shindan-shi* who focuses on consultation based on a comprehensive business diagnosis report. In this sense, industrial human resource development can be described as an aid sector that is characteristic of Japan.

However, as demonstrated in *3-1-1 Consistency with High-Level Policies*, until today, industrial human resource development has not been identified as an independent aid target sector in bilateral assistance policies, and it was clear that it was implemented primarily as a part of industrial development assistance.

In other words, while Japanese industrial human resource development assistance does possess a comparative advantage, not enough thought had been given to its significance.

On the other hand, noting the rising need of industrial human resource development in Asia, the government formulated the Industrial Human Resource Development Cooperation Initiative, and as aid plans are promoted based on that initiative, it can be predicted that the importance of this sector will grow even further.

Based on the above, in the future, it would be useful to mainstream industrial human resource development in Japanese development cooperation, and give it a clearly designated place in policy papers.

More specifically, it is recommended that the importance of industrial human resource development be continuously specified in the Priority Policy for Development Cooperation, a high-level policy paper published by the Ministry of Foreign Affairs every year. In addition, it is recommended that a sector-specific development policy be formulated. This would provide a common policy to adhere to, not only in the case of Thailand, but for industrial human resource development assistance is provided in any given recipient country in the world.

4-2-2 Developing the institutional environment through intergovernmental dialogue for further sophistication of industrial human resources in Thailand

In *4-1-2 Effectiveness of Results*, it was mentioned that while the personnel who were direct targets of the aid were trained, secondary effects through the activity of the personnel that were trained were not realized to the extent that had been anticipated, and that the main cause of that was the lack of established structures that would have helped the effects spread. In the future, it would be advisable to establish such structures so as to help the effects of Japanese aid to spread wider and thus improve Thai industrial human resources.

More specifically, it is recommended to establish supporting structures through dialogues between the Government of Japan the Government of Thailand. In other words, intergovernmental dialogues should support the development of the institutional environment in Thailand. Based on information gained through this evaluation, concrete examples could include 1) introducing various kinds of incentives to increase applicants in the field of engineering 2) wage reform with the aim of improving the status of vocational schools and the introduction of a transfer admission system to universities 3) effective utilization of *shindan-shi* by employing their skills of in public systems.

4-2-3 Formulating, implementing, monitoring and evaluating a comprehensive and effective aid program

As discussed in 3-2-2 *Inputs*, Japan has implemented wide-ranging and numerous industrial human resource development aid projects. On the other hand, these were not based on a comprehensive aid program that would have taken into account the industrial issues in Thailand, the supply and demand of labor, and the current situation of the educational sector. Each project was implemented separately based on the particular demand at that moment. While they corresponded to Thai needs, considering the scale of Japanese aid in this area, it is important to formulate a comprehensive plan. Then, each project should be put situated within this comprehensive plan and form organic ties between individual projects while aiming to achieve the overall objective of the aid program. It is recommended to establish the overriding objective of Japanese industrial human resource development assistance through dialogues involving the industry, government and academia of the recipient country, and for those three groups to work together in the formulation, implementation, monitoring and evaluation of aid program.

In addition, when formulating individual aid projects, in addition to applying Japanese experience it is extremely important to plan it in a manner that takes the local circumstances into account (localization). An example was raised in 3-2-4 *Outcomes (3) Training business support personnel*, in the project "Construction of an SME consulting system EX," which attempted to introduce the Japanese *shindan* system into Thailand. In this project, there was a case in which appropriate localization was handled by Thai policy-making personnel in the Ministry of Industry well informed about Japanese industrial policy. In this project this personnel linked *shindan* with the existing system, which led to the system gaining a certain level of acknowledgement⁷⁴. In the future it is important that such localization measures are implemented consciously and systematically.

In sum, the formulation, implementation, monitoring and evaluation of a comprehensive aid plan and promotion of systematical localization measures in order to improve the effectiveness and efficiency of individual aid measures in the future is recommended.

4-2-4 Establishing systems and structures to support comprehensive and effective industrial human resource development assistance

In order to realize this kind of comprehensive and effective industrial human resource development, it is necessary to also create the related systems and mechanisms.

⁷⁴ Receiving consulting from a *shindan-shi* became a compulsory requirement for participating in consulting and technical training conducted by the Ministry of Industry. On the other hand, due to the circumstances in Thailand, in the private sector where such localization did not take place, the lack of awareness concerning *shindan-shi* and the resulting lack of work opportunities for them, and the system did not become sufficiently popularized.

Industrial human resource development, by its nature, requires the involvement of various agencies from the government, industry and educational institutions. On the Thai government side, there are; Ministry of Industry, which has served as the main counterpart in industrial human resource development, the Ministry of Education, which controls the educational institutions, and the Ministry of Labor, which controls labor policies. In the Thai private sector there are; industry groups of various sectors, companies and chambers of commerce. Finally in among the Thai educational institutions there are universities and technical colleges. On the Japanese side, Embassy of Japan in Thailand, JICA, HIDA, Japanese companies and the Chamber of Commerce are main parties involved. It is necessary to involve all these organizations in order to implement an effective industrial human resource development.

It must also be emphasized that it is the nature of this domain that involvement of the involvement of industry circles is extremely important. Because they are the actor which indicate their human resource needs, provide the necessary resources for practical education and training, dispatch their employees to these trainings and utilize the skills of those who finish the training,

In the endeavors so far, the necessary agencies were involved in the individual projects, but it is recommended to create a system where all the various agencies from industry, government and academia are involved, to comprehensively and effectively draft, implement, monitor and evaluate an aid program.

Thailand Round Table Conferences of Human Resources Development have been held based on the Industrial Human Resource Development Cooperation Initiative. These meetings have been jointly organized by the Embassy of Japan in Thailand and JICA as first of its kind. The Round Table provides a discussion platform unifying the relevant business, governmental, and academic actors from both countries, and it is an extremely valuable endeavor that could develop into the kind of system that has been mentioned here. In the future, it is recommended to create and utilize a permanent platform like the roundtable discussions as a continuous system for stakeholders from both countries to think about aid. While inviting the participation of increasingly diverse agencies, it is important to construct mechanisms that ensure that the fruits of the discussion are directly reflected in Thai government policies and Japanese aid policies.

In addition, as the participants of each organization in the meetings are from the chairperson level, it is also recommended to set up a working-level supporting organization to connect the policies that are discussed and presented. This is to ensure that policies are followed by concrete programs and that they are implemented, monitored and evaluated. Furthermore, for appropriate program formulation, implementation, monitoring and evaluation, it is recommended to give this working-level organization a research function. This would enable this organization to make an analysis of issues such as; needs in the industrial human resource, supply and demand of the labor market, situations concerning related projects, other donors' initiatives. Such research would support the implementation of industrial human resource development upon evidence-based analysis.

In sum, the creation of a system and structures that bring together industry, government and academia for comprehensive and effective industrial human resource development is recommended.

4-2-5 Strategic utilization and fostering of personnel well-informed about Japan

As discussed in *Chapter 3 Evaluation Results*, the role played by Thai personnel familiar well-informed about Japan in the effectiveness and appropriateness of Japanese aid and in increasing its diplomatic impact is extremely significant.

From the case studies, it was identified that various effects were created by industrial personnel well-informed about Japan. This includes amplifying the benefits of aid after the end of projects, localization of aid, expanding into South-South Cooperation, communicating information related to Japanese contributions.

This considerable accumulation of personnel well-informed about Japan is a valuable asset generated by long-term Japanese aid, and in the future, it is recommended to utilize these human resources more systemically and actively in Japanese aid. It is important to provide these personnel a place where they can use their skills. Specifically, examples of possible measures include participation in industrial roundtable discussions and the aforementioned supporting organization, and providing them a place to use their skills in the course of Triangular Cooperation and South-South Cooperation. To achieve this, one possible measure is to create a list of personnel as one possible measure. It would be useful to construct a system whereby even when persons in charge in the Embassy and JICA change, contact would be maintained with those who are judged to be particularly valuable. Cross-cutting measures in cooperation with HIDA to continuously appoint and utilize "Monodzukuri Human Resource Ambassadors"⁷⁵ should also be considered.

On the other hand, it is also important to systematically foster future generations of industrial human resources well-informed about Japan. There are few specific measures that may be implemented. One possible measure is to organize training projects which seeks to enhance understanding and sympathy for Japan. Another measure would be to create a particular career path for administrative employees to be affiliated with Japan. This second measure must be based on consultations with the Government of Thailand. While asking the Government of Thailand to train and position personnel for this career path, the Japanese side could provide support to enhance interaction between these administrative employees and relevant Japanese agencies.

In addition, regarding the expansion of the range of industrial human resources well-informed about Japan, it is useful to apply the characteristics and strengths of Japanese industry systematically and proactively in each aid project. Specifically, characteristics of Japanese monodzukuri that are applicable to other fields aside from manufacturing; on-the-spot decision-making, just-on-time, 5S, and kaizen could be implemented and emphasized within individual projects. The increase of personnel that have learned such methods and ideas contributes not only to the expansion of the range of industrial human resources well-informed about Japan, but also to increased cooperation between Japanese and local companies.

Considering that various interventions have been conducted over a long period of time in human resource development, it is recommended to create structures to strategically utilize and foster personnel affiliated with Japan. On the Japanese side, it is recommended to identify and utilize

⁷⁵ A system where HIDA honors people who have served as mediators between their countries and Japanese businesses.

competent personnel, passing on information on these personnel between the concerned persons and agencies, across institutions and its jurisdictions.

4-2-6 Strengthening communication on Japan's industrial human resource development assistance

As discussed in *Chapter 3 Evaluation Results*, Japanese industrial human resource development assistance in Thailand has been substantial. Japan has given attention to the importance of industrial human resource development even during times when it was given relatively little importance in international aid trends, and began providing assistance ahead of those trends, staying constant in its endeavors. Thus, Japanese industrial human resource development assistance has a long and special history, though its characteristics and results are sufficiently recognized by the recipient country or other donors.

In the future, as various measures are promoted based on the Industrial Human Resource Development Cooperation Initiative, it is expected that the importance of public communication would rise this area for its would benefit in scenes such as; implementation of projects, preservation of Japan's comparative advantage in this area, as well as in donor coordination in this sector.

When communicating information, in addition to emphasizing the characteristics of Japanese industrial human resource development assistance, it is also useful to communicate to taking into consideration, the relevance of this aid domain with the concepts of decent work and skills development, that were mentioned in *3-1-3 Consistency with international aid trends and with the aid policies of other donors*.

Specifically, a possible measure could be creating a medium summarizing the characteristics of Japanese industrial human resource development, and communicating it to the recipient country in the course of every-day aid activities and also utilizing it in various diplomatic events.

4-2-7 Creating a model from industrial human resource development assistance in Thailand and employing it in other countries

Creating a model based on the experience gained from industrial human resource development in Thailand and utilizing it not only in future aid in Thailand but also in aid in other countries (while making adjustments according to the circumstances of each country) would contribute to improving the effectiveness, efficiency and sustainability of Japanese aid in this sector.

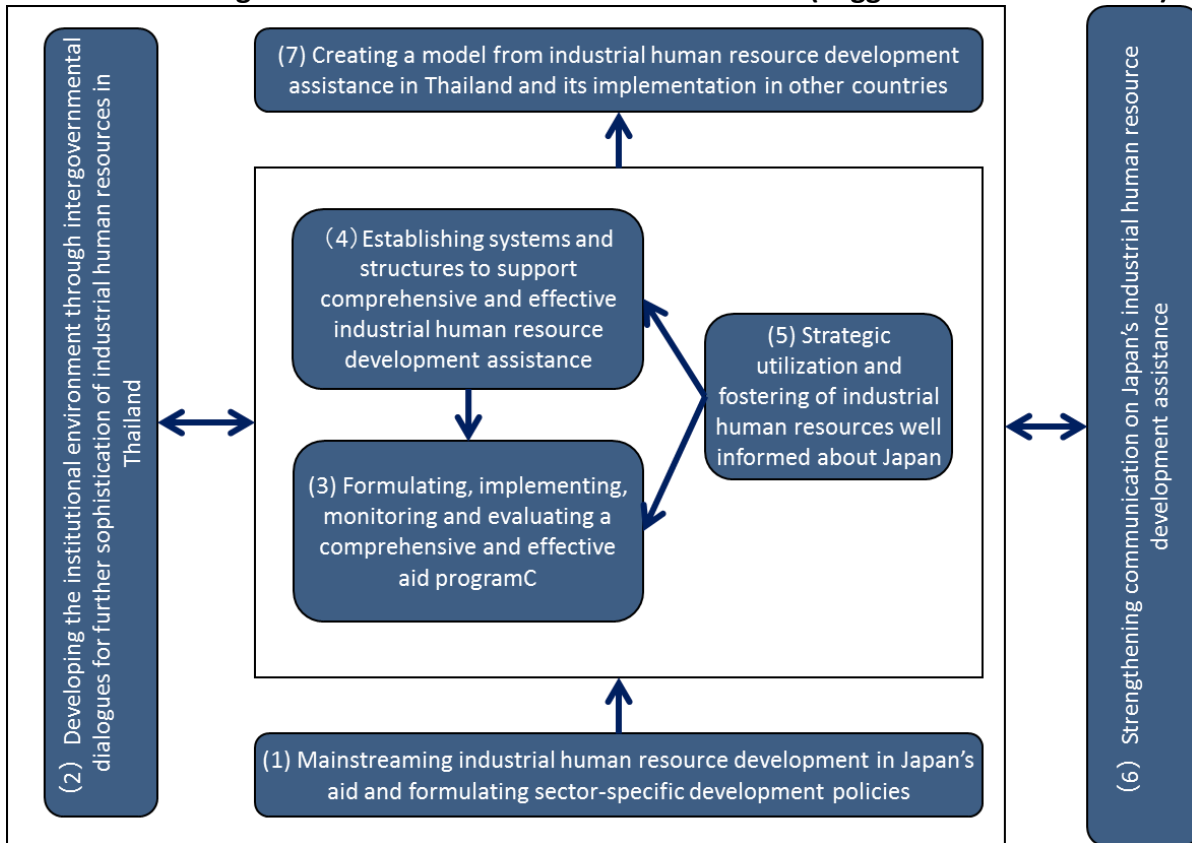
In addition, in the future, Thailand is expected to play an increasingly active role as a donor in South-South Cooperation. By assisting Thailand's understanding of this model, this model could also be applied in other countries through South-South Cooperation.

In addition to implementing the measures mentioned earlier, the factors contributing to success and failure could be examined based on the lessons learned and experiences gained during the process. This would enable creating a model of industrial human resource development that could serve as a reference in other countries as well.

Figure 55 demonstrates the structure of these recommendations. Figure 56 shows how those recommendations link with the primary corresponding agencies and their implementation period. However, it is necessary for the primary agency in charge of the implementation to proceed in close

cooperation with the relevant ministries and agencies, industry circles and educational institutions on the Japanese and Thai sides.

Figure 55 Structure of the recommendations (Suggestions for future aid)



Source: Produced by Mitsubishi Research Institute

Figure 56 Primary implementing agencies and implementation periods by recommendation

Recommendations		Primary agencies in charge				Implementation period ※2
		In Japan		In Thailand		
Main item※1	Sub-items	MOFA	JICA HQ	Embassy of Japan	JICA Office	
(1) Mainstreaming industrial human resource development in Japan's aid and formulating sector-specific development policy	Continuously stating the importance of industrial human resource development assistance in the Priority Policy for Development Cooperation	✓				Mid-term
	Formulating sector-specific development policies related to industrial human resource development	✓	✓			Mid-term
(2) Developing the institutional environment through intergovernmental dialogues for further sophistication of industrial human resources in Thailand	Strengthening policy talks between the Governments of Japan and Thailand	✓		✓		Short-term
	Developing the institutional environment in order to improve Thai industrial human resources	✓	✓	✓	✓	Mid-term
(3) Formulating, implementing, monitoring and evaluating a comprehensive and effective aid program	Formulation, implementation, monitoring and evaluation of a comprehensive and effective aid program	✓	✓	✓	✓	Mid-term
	Systematic localization measures			✓	✓	Short-term
(4) Establishing systems and structures to support comprehensive and effective industrial human resource development assistance	Expanding the Round Table Conferences of Human Resources Development (including a wider variety of actors and continuous organization)			✓		Short-term
	Developing policies based on the outcomes of the Round Table Conferences of Human Resources Development	✓	✓	✓		Mid-term
	Establishing a support organization for the Round Table Conferences of Human Resources Development			✓	✓	Short-term
	Attaching a research function to the support organization of the Round Table Conferences of Human Resources Development			✓	✓	Mid-term (5)
(5) Strategic utilization and fostering of industrial human resources well informed about Japan	Active utilization of personnel well-informed about Japan (participation to the Round Table Conferences of Human Resources Development, offering opportunities to use skills e.g. in Triangular Cooperation)		✓	✓	✓	Short-term
	Building a system for the identification and utilization of personnel well-informed about Japan	✓	✓	✓	✓	Short-term
	Coordination with the utilization of Monodzukuri Human Resource Ambassadors and HIDA	✓		✓		Short-term

Recommendations		Primary agencies in charge				Implementation period ※2
		In Japan		In Thailand		
Main item※1	Sub-items	MOFA	JICA HQ	Embassy of Japan	JICA Office	
	Systematic production of personnel well-informed about Japan (training projects, establishing a career path and implementation support)		✓		✓	Mid-term
	Improving the position of Japanese industrial strengths within the industrial human resource development program		✓		✓	Short-term
(6) Strengthening communication of information related to Japan's industrial human resource development assistance	Producing and utilizing a medium summarizing the characteristics of Japanese industrial human resource development assistance	✓	✓	✓	✓	Short-term
(7) Creating a model from industrial human resource development assistance in Thailand and employing it in other countries	Evaluation and analysis of the factors contributing to success or failure in the measures (1) to (5) for usage in other countries	✓	✓			Mid-term

※1: (1), (6) are items related to all of Japan's aid, while (2), (3), (4), (5), (7) can be categorized as related to aid implemented in Thailand. However, in the long term, the outcomes of (2), (3), (4), (5), (7) can be considered to contribute to the improvement of Japan's aid as a whole.

※2: Short-term items are considered items that should be undertaken urgently and realized approximately in a year; mid-term items in 3-5 years.

※3: While above the organization in charge is listed as either MOFA, JICA Headquarters, Embassy of Japan or JICA office it is essential to proceed in close cooperation with the relevant ministries and agencies, industry circles and educational institutions in Japan and Thailand.