

Country Name	Project on Enhancement of Metalworking Capacity for Supporting Industries of Construction Machinery
Republic of Indonesia	

I. Project Outline

Background	Indonesia had the largest market for the construction machine industry in Southeast Asia. Despite decreasing the demand on construction machinery in the country, the total annual domestic demand reached 21,000 machineries in 2011. Furthermore, it was projected that it was going to increase to 50,000 machinery in 2013 due to the high demand on infrastructure. Therefore, the government of Indonesia had a policy to promote export of construction machinery and localization of machine parts. The development of supporting industries of construction machinery which were able to process the machine parts became a key challenge for the country. At the same time, it was essential to improve technical capacity for the supporting industries of construction machinery sector.												
Objectives of the Project	Through delivering trainings and extension services on casting and production management for supporting industries of construction machinery as well as drafting a future action plan for service provision on metalworking for supporting industries of construction machinery, the project aimed at providing improved technical services for supporting industries of construction machinery by targeted working organizations, thereby contributing to improvement of metalworking technology of supporting industries of construction machinery.												
	<ol style="list-style-type: none"> Overall Goal: Metalworking technology of supporting industries of construction machinery will be improved. Project Purpose: Technical services with improved quality for supporting industries of construction machinery will be provided by targeted metalworking organizations. 												
Activities of the project	<ol style="list-style-type: none"> Project site: Jakarta and Bandung (Extension services), Ceper, Tegal, and suburb areas of Jakarta (Bekasi, Karawang and Bogor) (metal processing) Main activities: 1) Trainings and extension services on casting for supporting industries of construction machinery, 2) Trainings on production management for supporting industries of construction machinery, 3) Drafting a future action plan for service providing on metalworking for supporting industries of construction machinery, and so on. Inputs (to carry out above activities) <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">Japanese Side</td> <td style="width: 50%;">Indonesian Side</td> </tr> <tr> <td>1) Experts from Japan: 11 persons</td> <td>1) Staff allocated: 69 persons</td> </tr> <tr> <td>2) Training in Japan: 64 persons</td> <td>2) Land and facilities: Office space for Japanese experts, MIDC's vehicle</td> </tr> <tr> <td>3) Equipment: Heat treatment furnace for steel making, office furniture, and so on.</td> <td>3) Local cost: Administration costs, operation and maintenance costs, costs for training programs, costs for extension services, costs for materials for casting training, etc.</td> </tr> <tr> <td>4) Local cost: Cost for training programs, remuneration and travel expenses for external lecturers, materials for casting trainings, etc.</td> <td></td> </tr> </table> 			Japanese Side	Indonesian Side	1) Experts from Japan: 11 persons	1) Staff allocated: 69 persons	2) Training in Japan: 64 persons	2) Land and facilities: Office space for Japanese experts, MIDC's vehicle	3) Equipment: Heat treatment furnace for steel making, office furniture, and so on.	3) Local cost: Administration costs, operation and maintenance costs, costs for training programs, costs for extension services, costs for materials for casting training, etc.	4) Local cost: Cost for training programs, remuneration and travel expenses for external lecturers, materials for casting trainings, etc.	
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Project Period	May 2014 to March 2017	Project Cost	(ex-ante) 290 million yen, (actual) 378 million yen										
Implementing Agency	Ministry of Industry (ILMATE: Directorate General of Metal, Machinery, Transportation Equipment & Electronic Industries), Metal Industry Development Center (MIDC), Politeknik Manufaktur Negeri Bandung (POLMAN Bandung), Heavy Equipment Manufacturer Association of Indonesia (HINABI), DINAS Perindustrian dan Tenaga Kerja Kabupaten Tegal (Agency of Industry and Manpower of Tegal Regency: DINAS Tegal), Politeknik Manufaktur Negeri Ceper (POLMAN Ceper)												
Cooperation Agency in Japan	UNICO International Corporation, Japan Development Service Co., Ltd.												

II. Result of the Evaluation

<Constraints on the Ex-Post Evaluation>

Because of the outbreak of COVID-19, information was collected through a questionnaire survey and phone interviews in order to make evaluation judgement in the ex-post evaluation. The data collection process took longer than expected since COVID-19 limited accesses to the information, which might have not been the challenge if the interview respondents were not working from home. Site visits were not conducted. The responses are based on the experience mainly up to 2019 where the business activities were conducted normally without the effect of COVID-19. Follow-up interviews were mainly gathered from HINABI and POLMAN Ceper who had relatively better accesses to the internet connection and working from home environment. Challenges were faced when collecting information due to the change and retirement of the staff in charge of the construction industry within the relevant directorates of ILMATE, Ministry of Industry.

<Special Perspectives Considered in the Ex-Post Evaluation>

(Verification of Continuation Status of the Project Effects)

For verifying the continuation of the project effects, the ex-post evaluation did not use the verifiable indicator 3 for the Project Purpose because those indicators were not applicable to verify the current technical level of the target companies on casting. The technical level of the target companies was analyzed as key factors for the achievement level of the Overall Goal to improve metalworking technologies in Indonesia and for sustainability of the project effects.

1 Relevance

<Consistency with the Development Policy of Indonesia at the time of Ex-ante Evaluation>

The project was consistent with the Indonesia's development policies such as "the National Industrial Policy" (2008) aiming at development of industrial clusters composed of supporting and related industries including the machinery industry and "the Ministry of Industry Strategic Plan" (2010-2014) for growth and enhancement of the heavy machinery industry. In addition, the "Country Assistance

Policy for the Republic of Indonesia" (April 2012) prioritized "Support for Further Economic Growth" including the business and investment environment and human resource development at higher level.

<Consistency with the Development Needs of Indonesia at the time of Ex-ante Evaluation>

The project was consistent with the Indonesia's development needs for localization of machine parts for construction machinery in order to promote export of construction machinery through improvement of technical capacity of the supporting industries for construction machinery.

<Consistency with Japan's ODA Policy at the time of Ex-ante Evaluation>

The project was consistent with the Japan's ODA policy for Indonesia. The "Indonesia-Japan Economic Partnership Agreement (IJEPA)" (2008) prioritized support manufacturers in the 14 prioritized industrial sectors under the Initiative for Manufacturing Industry Development Center (Initiative for MIDECE). In addition, in November 2011, the government of Japan agreed to support for improvement of metalworking technologies in supporting industries to supply parts for construction machinery at the high level meeting of MIDECE.

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement for the Project Purpose at the time of Project Completion>

The Project Purpose was achieved by the time of project completion. According to the results of the feedback surveys on the training programs for both of casting and production management, the targeted companies were highly satisfied with the training programs since all the responses to the questions in the surveys were the top two levels scaled by three to five levels (Indicator 1). In total, 43 companies received the technical services on casting (Indicator 2). The technical level of target casting partially reached to the target level: one of six samples passed the quality assessment by HINABI and all the six samples met the chemical composition and mechanical properties (Indicator 3). 31 companies received technical services on production management (Indicator 4).

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have partially continued. The technical services have been continuously provided by four out of five implementing agencies of MIDC, Tegal regency¹, POLMAN Bandaung, POLMAN Ceper and HINABI. In terms of casting, HINABI and POLMAN Ceper have provided technical services to 4 companies and 15 companies in 2019, respectively. The responses were not obtained for 2020 due to the decreased economic activities as a result of the COVID-19 pandemic. For production management, the number of companies receiving the technical services increased from 10 in 2017 to 26 in 2019. HINABI responded that since these training were well-received by their member companies as it helps motivating and setting disciplines among their sub-contractors, the provision of technical services for the supporting industries of construction machinery has been continued. On monthly basis, sub-contractor development activities for casting and production management have been continued. The objective of these activities is to maintain the quality standard. In Ceper metal industry, the increase was because technicians attained education and training though some of the companies are still asking for new technicians with higher education to meet the latest market demand. The sustainment of the technical level of the targeted companies on casting was verified as a key factor for the Overall Goal and sustainability from the technical aspect.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal has been partially achieved at the time of ex-post evaluation based on the data collected for three indicators.

Indicator 1 was achieved the target except 2020. However, it was reported by HINABI, who were in position of setting the standard and evaluating the firms against the standards, for casting and metal work companies since the project completion, that the number of casting companies producing acceptable parts for construction machinery manufacturers did not change. The number of the firms supported by POLMAN Bandung, but not evaluated by HINABI, ranged from 3-6 for the period from 2017 to 2020. According to POLAMN Bandung, the COVID-19 pandemic in the country constrained the growth of the casting companies in Bandung as well as in Indonesia since 2020. .

Indicator 2 was achieved the target except 2020. Only one company started producing steel casting parts for construction machinery industry in Ceper in 2017. HINABI reported that the number of the firms who met the standard by HINABI was one firm at the time of the project completion and the number did not change over the three years. HINABI reported that the result was due to the fluctuated growth of the steel casting for construction machinery market and the sufficient capacity of the existing sub-contractors to meet the market demand. On the other hand, the number of companies producing steel casting in Bandung increased to 5 from 2017 to 2018 and decreased to none in 2020. In Bandung, it was because of the adequate quality and delivery time fitting to the production and processing capacity but the decrease in 2020 was probably attributed to the pandemic of COVID 19.

Indicator 3 was achieved the target in 2019 only. The number of steel casting parts newly produced for construction machinery manufacturers, such as collar, transmission system for lite part and so on, has been increased from 4 in 2017 to 6 in 2019. The government policy supported the domestic production of cast iron parts for the heavy equipment industry but the industry has been experiencing the downtime due to the COVID 19 pandemic. According to DINAS of Tegal Regency, in terms of the technical level of metal working technologies, the small and medium size companies have more experience about good production system and production management. It is because the number of companies with the technical services on production management has increased from 5 in 2017 to 8 in 2020. While only one company has produced acceptable casting products for the period from 2017 to 2020, 5-8 companies have produced acceptable metalworking products for the same period.

<Other Impacts at the time of Ex-post Evaluation>

Some positive impacts have been observed at the time of ex-post evaluation. According to HINABI, employees became more disciplined and their capability to improve has increased through the technical services. POLMAN Ceper reported that small and medium firms were more clean, efficient and used more modern melting furnaces. POLMAN Bandung has a plan to produce small heavy vehicles (tractor) with functions such as for land clearing, digging and transporting. This idea came after attending in training and visits to the industry in Japan and Indonesia as well (the construction machine manufacturers in Indonesia such as Komatsu and so on.) In addition, according to the DINAS of Tegal Regency, the project has contributed to develop and promote the technical service programs, including 5R application system².

¹ The activities conducted by Tegal Regency were part of the SMI support activities at large conducted by the Regency

² 5R (reduce, reuse, recycle, recovery, dan repair) program development: advisory on the implementation of 5R on the SMI development

No negative impact on natural and social environment has been observed.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is fair.

Achievement of the Project Purpose and Overall Goal

Aim	Indicators	Results																																										
(Project Purpose) Technical services with improved quality for supporting industries of construction machinery will be provided by targeted metalworking organizations.	1. Satisfaction level of companies in supporting industries of construction machinery with the technical services provided by the Project (will be measured by feedbacks from the targeted companies of extension services)	<p><u>Status of achievement: Achieved (Not verified).</u> (Project Completion)</p> <ul style="list-style-type: none"> - In the feedback surveys on the training programs for both of casting and production management, positive answers were obtained for all question items to satisfaction. According to the survey results, those trainings achieved generally high levels of satisfaction. <p>(Ex-post Evaluation)</p> <ul style="list-style-type: none"> - Not verified. 																																										
	2. Number of companies which receive technical services on casting:30 companies	<p><u>Status of achievement: Achieved (Partially continued).</u> (Project Completion)</p> <ul style="list-style-type: none"> - Number of companies which received technical services on casting reached 43 companies in total. <p>(Ex-post Evaluation)</p> <p>[No. of companies receiving technical services]</p> <table border="1"> <thead> <tr> <th>Type</th> <th>2017</th> <th>2018</th> <th>2019</th> </tr> </thead> <tbody> <tr> <td>Casting</td> <td></td> <td></td> <td></td> </tr> <tr> <td>HINABI</td> <td>2</td> <td>4</td> <td>4</td> </tr> <tr> <td>POLMAN Ceper</td> <td>13</td> <td>15</td> <td>15</td> </tr> </tbody> </table>	Type	2017	2018	2019	Casting				HINABI	2	4	4	POLMAN Ceper	13	15	15																										
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3. Technical level of target casting which targeted metalworking organizations can develop (will be measured by JICA experts and feedbacks from the construction machinery manufacturers having been supplied target castings)	<p><u>Status of achievement: Achieved (Continued).</u> (Project Completion)</p> <ul style="list-style-type: none"> - 1 of 6 samples passed the quality assessment set by HINABI. All the 6 samples met the chemical composition and mechanical properties. - A total 6 target castings were developed at MIDC and PALMAN Bandung. 5 samples were evaluated the trial products by Sumitomo Construction Machinery Co., which provided drawings. The other one was evaluated by Komatsu Construction Machinery which provided the drawings for it. <p>(Ex-post Evaluation)</p> <p>Refer to the Overall Goal and Sustainability.</p>																																											
4. Number of companies which receive technical services on production management: 30 companies	<p><u>Status of achievement: Achieved (Continued).</u> (Project Completion)</p> <ul style="list-style-type: none"> - Number of companies which received technical services on production management was 31. - Participation in the trainings was obliged to the companies to receive the extension services. <p>(Ex-post Evaluation)</p> <p>[No. of companies receiving technical services]</p> <table border="1"> <thead> <tr> <th>Type</th> <th>2017</th> <th>2018</th> <th>2019</th> </tr> </thead> <tbody> <tr> <td>Production Management</td> <td></td> <td></td> <td></td> </tr> <tr> <td>HINABI</td> <td>10</td> <td>15</td> <td>26</td> </tr> <tr> <td>Tegal Regency</td> <td>5</td> <td>6</td> <td>7</td> </tr> </tbody> </table>	Type	2017	2018	2019	Production Management				HINABI	10	15	26	Tegal Regency	5	6	7																											
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(Overall goal) Metalworking technology of supporting industries of construction machinery will be improved.	1. Number of supporting industry companies which the metalworking technology and management is high evaluated* by construction machinery manufacturers and/or user companies of construction machinery: 5 casting companies/10 metalworking companies. *Items of evaluation assume to be amount of productions and delivery, rejection rate and so on.	<p><u>Status of achievement: Partially achieved.</u> (Ex-post Evaluation)</p> <p>[No. of companies in supporting industry for producing acceptable parts for construction machinery manufacturers]</p> <table border="1"> <thead> <tr> <th>Implementing Agency</th> <th>Target</th> <th>2017</th> <th>2018</th> <th>2019</th> <th>2020</th> </tr> </thead> <tbody> <tr> <td>Casting</td> <td>5</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>HINABI</td> <td></td> <td>3</td> <td>3</td> <td>3</td> <td>N.A.</td> </tr> <tr> <td>POLMAN Bandung</td> <td></td> <td>4</td> <td>4</td> <td>6</td> <td>3</td> </tr> <tr> <td>Tegal Regency</td> <td></td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> </tr> <tr> <td>Metalworking</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>N.A.</td> </tr> <tr> <td>HINABI</td> <td></td> <td>5</td> <td>6</td> <td>8</td> <td>5</td> </tr> </tbody> </table>	Implementing Agency	Target	2017	2018	2019	2020	Casting	5					HINABI		3	3	3	N.A.	POLMAN Bandung		4	4	6	3	Tegal Regency		1	1	1	1	Metalworking	10	10	10	10	N.A.	HINABI		5	6	8	5
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2. Number of companies in supporting industries which can newly produce steel casting parts that meet the needs of construction machinery industry: 4 companies	<p><u>Status of achievement: Achieved.</u> (Ex-post Evaluation)</p> <p>[No. of companies which started producing steel casting parts for construction machinery industry]</p> <table border="1"> <thead> <tr> <th>Implementing Agency</th> <th>Target</th> <th>2017</th> <th>2018</th> <th>2019</th> <th>2020</th> </tr> </thead> <tbody> <tr> <td>HINABI</td> <td>4</td> <td>1</td> <td>1</td> <td>1</td> <td>N.A.</td> </tr> <tr> <td>POLMAN Ceper</td> <td></td> <td>1</td> <td>1</td> <td>1</td> <td>-</td> </tr> </tbody> </table>	Implementing Agency	Target	2017	2018	2019	2020	HINABI	4	1	1	1	N.A.	POLMAN Ceper		1	1	1	-																									
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		POLMAN Bandung		4	5	3	0
3. Number of kinds of steel casting parts which can be newly produced by supporting industries and which meet the needs of construction machinery industry: 6 kinds of parts.	Status of achievement: Partially Achieved. (Ex-post Evaluation)						
	[No. of kinds of steel casting parts newly produced for construction machinery manufacturers]						
	Implementing Agency	Target	2017	2018	2019	2020	
HINABI	6	3	3	5	None		
POLMAN Ceper		1	1	1	-		

Source: Project Completion Report and responses for questionnaire surveys to HINABI, POLMAN Bandung and Tegal Regency

3 Efficiency

Although the project period was within the plan (ratio against the plan: 97%), the project cost exceeded the plan (ratio against the plan: 130%). Outputs were produced as planned. Therefore, the project efficiency is fair.

4 Sustainability

<Policy Aspect>

The government policy supported the domestic production of cast iron parts for the heavy equipment industry. "NATIONAL INDUSTRIAL DEVELOPMENT MASTER PLAN" for the period of 2015-2035 mentions that the machinery and equipment Industry as one of the priority industries. In addition, in Tegal Regency, the programs, including 5R program development, K3 program³ development, Cost calculation program⁴, Basic Manufacture Management⁵ and ISO program development⁶, have enhanced the promotion of the technical services to the supporting industries.

<Institutional/Organizational Aspect>

There have been limited changes in the organizational structure/setting to promote the technical services for the supporting industry of construction machinery introduced by the project. Due to the budget constraint, technical service provision through MIDC did not continue. ILMATE was not well informed about the extension work through MIDC, HINABI, POLMANs and Tegal Regency due to the change and retirement of the staff in charge of the construction industry within ILMATE. The major activities of technical service provisions have been continuously offered by two POLMANs and newly provided through a training center supported by HINABI. Three organizations are expected to continue providing the technical service provisions to the supporting industries of construction machinery. POLMAN Ceper will continue to apply the strategy of the industrial development by applying 30% of theory and 70% of practice. They have 8 teaching staff who manage promoting the technical services for the supporting industries; however, it was informed that there are additional staffing needs to meet the market needs. POLMAN Bandung will focus the improvement of precision casting for the future plan of the technical services. They have 2-3 lecturers in the Department of Foundry Engineering and the number of staff has been sufficient. HINABI has a training centre called "Takumi" which is accessible for their member companies. There are 4 technical staff working at Takumi today and one of their program is in partnership with JITCO (Japan International Trainee & Skilled Worker Cooperation Organization). The DINAS of Tegal Regency has 20 staff members to promote the technical services to SMEs in the regency.

<Technical Aspect>

The staff and the members of POLMAN Bandung have sustained their necessary skills by knowledge sharing and brainstorming between lecturers and students. POLMAN Bandung has tried to maintain and to improve skills and knowledge of the lecturer to meet the standard of education program. However, they have not used the training materials developed by the project because the revisions have been needed to meet the present requirement.

On the other hand, MIDC has utilized the manuals as training materials for casting technology and POLMAN Ceper also responded that the manual produced by the project remains relevant, supplemented by international standard handbooks as a reference to achieve the project target. HINABI has used for the manuals developed by the project for work reference.

At the regency level, 5S⁷ trainings have been conducted for the staff of the DINAS of Tegal Regency in order to sustain skills and knowledge to promote the technical services for the supporting industries.

<Financial Aspect>

According to HINABI, the member companies have kept their budgets for human resource development, including not only specific technical services but also trainings related to the technical capacity development. Also, the two POLMANs of Bandung and Ceper have made efforts to secure their budget for the provisions of the technical services. However, MIDC have not secured the budget for the provision of the technical services because there has been lack of coordination between MIDC and ILMATE regarding the provision of technical service of this project. ILMATE could allocate budget for technical services, if MIDC delivers a proposal for the technical services needed. For the DINAS of Tegal Regency, the budget for the technical service has been allocated from the Regional Revenue and Expenditure Budget of the government of Tegal Regency.

<Evaluation Result>

In the light above, there have been some issues in the institutional/organizational, technical and financial aspects. Therefore, the sustainability of the effects is fair.

5 Summary of the Evaluation

The project achieved the Project Purpose and partially achieved the Overall Goal to improve the metalworking technologies of the supporting industry for construction machinery industry through the improved technical services. Regarding sustainability, although there has been a financial constraint to continue the extension work through MIDC, HINABI and two POLMANs as well as Tegal Regency have

³ Introduction on the application of K3 (Occupational Health and Safety/OHS) program.

⁴ Technical training on how to do cost calculation and business management

⁵ Introduction on supply chain of the component in the manufacture industry ecosystem.

⁶ Advisory in the formulation of quality document (pre ISO certification)

⁷ "sort", "set in order", "shine", "standardize", and "sustain"

sustained the necessary knowledge and skills and secured budgets. As for efficiency, the project cost exceeded the plan. Considering all of the above points, this project is evaluated to be partially satisfactory.

III. Recommendations & Lessons Learned

Recommendations for Implementing agency:

While HINABI and two POLMANs of Bandung and Ceper have continued the technical services for the supporting industries of construction machinery, MIDC ceased the provision of the technical service. On the other hand, the coverages of the firms by HINABI and POLMANs have been limited by the membership or the geographical demarcation. It is expected that MIDC could play a role in strengthening the standardization and quality control of the parts for construction machinery industries covering across the different geographical locations. Therefore, it is recommended MIDC request ILMATE necessary budget for the technical services for the industries in order to enhance the coverage of the service provision.

Lessons Learned:

While the technical service provisions discontinued at MIDC, the provisions were continued by the two educational institutions and an industry association which had been working closely with the end-beneficiaries. It was anticipated that MIDC would have had difficulty to continuously provide the technical service due to the chronic budget constraint at the time of project planning and the implementing arrangement to deliver the technical service was flexibly changed through the participation of the DINAS of Tegal Regency during the project implementation. That arrangement enhanced effectiveness and sustainability of the technical service delivery. Those institutions have self-generating revenue sources, aside from the governmental support, to continue their activities after the project completion. Thus, it is essential to carefully conduct the stakeholder analysis on the technical service providers at the project formulation and planning stage in order to come up with the sustainable implementing arrangement for the useful technical services for the industries based on the market demand under the ideal collaboration among the key parties, including government authorities, educational institutions, and industrial stakeholders.



Training for Custom Officers at HINABI



Annual Summit of HINABI in 2019