

**Republic of Indonesia
Project for Developing
Electronic Testing Laboratories
and LED Industry
Project Completion Report**

January 2024

**Japan International Cooperation Agency (JICA)
Economic Development Department**

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Project Completion Report

I. Basic Information of the Project

1. Country

Republic of Indonesia

2. Title of the Project

Project for Developing Electronic Testing Laboratories and LED Industry

3. Duration of the Project (Planned and Actual)

Planned: 5th November 2019 - 4th November 2022 (3 years)

Actual: 5th November 2019 - 4th December 2023 (4 years and 1 month)

Due to the delay in progress of project activities by Covid-19 pandemic, it was agreed on 4th October 2021 that the project duration would be 4 years.

And to prepare for and organize the Wrap-up Seminar and the 4th JCC, it was agreed on 30th October 2023 that the project duration would be 1 month.

4. Background

The government of the Republic of Indonesia (hereinafter referred to as "GOI") has promoted measures for energy conservation. In this situation, lighting products using Light Emitting Diode (hereinafter referred to as "LED") representing energy saving device are prevailing. Accordingly bad quality LED products are increasing in Indonesian domestic market. The Ministry of Industry (hereinafter referred to as "MOI") and The Ministry of Energy, Mineral and Resources (hereinafter referred to as "MOEMR") have developed Standard National Indonesia (hereinafter referred to as "SNI") of LED products based on international standards. At present SNIs of LED products are partially mandated, but bad quality LED products can be freely distributed in Indonesia domestic market. In this background, it is planned to strengthen the SNI system of LED products. In order to strengthen the SNI system, laboratories need to have the capacity to conduct appropriate testing based on SNI. MOI has two testing laboratories i.e., Balai Besar Bahan dan Barang Teknik (hereinafter referred to as "B4T") and Balai Riset dan Standardisasi

Industri Surabaya (hereinafter referred to as "BARISTAND Surabaya"), which don't have system and operation focused on testing LED products. Furthermore, market surveillance function is also important to strengthen the SNI system. Also, it is essential for GOI to implement measures for promoting prevalence of LED products.

In addressing above mentioned situation and issues, GOI requested the government of Japan (hereinafter referred to as "GOJ") to implement the technical cooperation project for Developing Electronic Testing Laboratories and LED Industry (hereinafter referred to as "the Project"). In response to this request, JICA conducted the Detailed Planning Survey in July 2016.

5. Overall Goal and Project Purpose (from Record of Discussions(R/D))

Overall Goal: LED products with high energy saving and high safety performance are prevailed.

Project Purpose: Operation for system of standards and conformity assessment and environment of promoting prevalence of LED products is improved.

6. Implementing Agency

Center for Material and Technical Product (B4T), Ministry of Industry

II. Results of the Project

1. Results of the Project

1-1 Input by the Japanese side (Planned and Actual)

(1) Amount of input by the Japanese side:

120 million Japanese Yen

(2) Expert dispatch:

3 persons (Japanese Short-term Experts / LED Market Surveillance, LED Promotion, LED Testing)

2 persons (Foreign Short-term Experts / Guidance on installation and operation of Goniophotometer)

(3) Receipt of training participants:

- Total of 15 persons (Online Training Course / LED Products Standards,

LED Products Testing, LED Product Market Surveillance, LED Product Promotion, Cases of LED Product Accidents / 1 time)

- Total of 8 persons (Site-visit Study in Thailand and Vietnam / LED Products Standards, LED Products Testing, LED Product Market Surveillance, LED Product Promotion / 1 time)

(4) Equipment Provision:

105 million Japanese Yen (Goniophotometer)

(5) Overseas activities cost:

2 million Japanese Yen (Site-visit study to electric product testing Institutions in Thailand and Vietnam: Feb. 2023, Project Wrap-up Seminar: Sep. 2023 scheduled)

Detailed information is described in Annex 1.

1-2 Input by the Indonesian side (Planned and Actual)

(1) Assignment of Counterpart

Counterpart personnel has been assigned in the following each period;

<5th Nov. 2019 – 4th Oct. 2021>

- Project Director: Head of Agency for Research and Development of Industry (BPPI)
- Project Manager: Head of Center for Industrial Standardization, BPPI

<4th Oct. 2021 – Current>

- Project Director: Director of B4T, Agency for Research and Development of Industry (BPPI)
 - Project Manager: Acting Head of Standardization Division, B4T
- Except for Project Director and Project Manager, 8 engineering staffs in the Electricity and Battery Testing Section of B4T were assigned as target persons of technology transfer.

(2) Contribution by MOI budget

The specific building equipped with light path tunnel and full air conditioning system, which satisfies the requirements for installing Goniophotometer, was newly constructed by MOI budget.

(3) Contribution by B4T initiative

Under the difficult circumstances caused by Covid-19, the Project activities were carried out under the leadership of the counterpart (B4T) as Model Program, and contributed to the achievement of each Output of the Project. The activities of Model Program are listed in “III-3. Evaluation on the results

of the Project Risk Management”.

(4) Others

Since this project did not implement a long-term expert dispatch, there was no supply of office space.

Detailed information including a comparison between planned inputs and actual inputs are described in Annex 1.

1-3 Activities (Planned and Actual)

From the PDM at the start of the Project, the changed activities are as follows;

- Activity 1-2: To draft standards of LED products
 Due to changes in inputs on the Indonesian side (changing of Project Director from Head of BPPI (currently BSKJI) to Director of B4T), this activity was deleted in the MM on 23 June 2023. B4T does not have the authority to approve draft standards as MOI.
- Activity 4-4: To organize business matching opportunity between Indonesian and Japanese manufacturers. Example of the dialogue topics is “necessary support measures for Indonesian manufactures”
 Due to changed situation from the start of the Project, it became difficult to implement Business Matching between Indonesia and Japan, and this activity was deleted in MM on 4 October 2021.

Detailed information including a comparison between planned activities and actual activities are described in Annex 1.

2. Achievements of the Project

2-1 Outputs and indicators

(Target values and actual values achieved at completion)

Output 1: Capability of developing standards of LED products is improved.
Objectively Verifiable Indicators: Practical examples "how to effectively utilize the standards" of other countries including Japan are shared within the counterparts.
Achievements: [High (80%)] B4T, the CP in latter half of the Project, had no authority to finalize the draft SNI as MOI, and four SNIs of LED products had already been established.

Therefore, the activities directly related to revise current SNIs were not conducted (→ PDM activities/indicators were revised).
 Since B4T had enough knowledge of SNI and international standard of LED product, activities in Output 1 was focused on capacity building to learn specific practices in the development and utilization of LED product standards in Japan and other countries. In this regard, through the online training in June 2021 and the site visit survey to Thailand and Vietnam in February 2023, detailed and practical knowledge and information on the development and utilization of LED product standards in Japan, Thailand, and Vietnam were successfully shared with counterparts.
 Based on the above, the achievement status of Output 1 was judged as "High".

In the PDM at the start of the Project, in addition to the above Objectively Verifiable Indicator, "SNI drafts of LED products are approved by BSN" in February 2023 was set as the Objectively Verifiable Indicator of Output 1. However, it was deleted in the MM on 23 June 2023 for the following reasons;

- At the start of the project, four standards of LED products had already been established: LED Lamp / Performance, LED Luminaire / Performance, LED Lamp / Safety, and LED Luminaires / Safety.
- Due to changes in inputs on the Indonesian side, Project Director was changed from Head of BPPI (currently BSKJI) to Director of B4T. B4T does not have the authority to approve a draft SNI as MOI.

Output 2: Capability of testing LED products is improved.
Objectively Verifiable Indicators: 2-1 The number of tests of LED products in the testing laboratories is increased. 2-2 The number of test items for LED products in the testing laboratories is increased
Achievements: <u>[High (80%)]</u> 2-1 This indicator has been achieved. As shown below, the number of tests has increased dramatically since 2022 when Goniophotometer was launched into operation. 2018: 12 times 2019: 12 times

2020: 9 times
 2021: 8 times including 0 times by Goniophotometer
 2022: 25 times including 15 times by Goniophotometer
 2023: 43 times including 23 times by Goniophotometer (by Nov. 2023)

2-2 It was achieved with the installation of Goniophotometer which increased the number of test items related to the performance of LED products. It became possible to conduct "light intensity distribution tests" and "LED luminaire performance tests overall" with the installation of Goniophotometer.

Output 2 was achieved with both soft and hard inputs from the Japanese and Indonesian sides, including the providing Goniophotometer.

Output 3:
 Capability of market surveillance for LED products is improved

Objectively Verifiable Indicators:
 The rate of defective LED lamps in domestic market, as well as the actual market surveillance activities, will be acknowledged.

Achievements: [Fair (60%)]
 Objectively Verifiable Indicators were achieved with the Model Program by B4T, such as the LED Lamp Market Sampling Survey and Test and the Research activities on confirming the LED products market surveillance situation with MOEMR. On the other hand, the achievement of Output 3 was limited because B4T, as the counterpart after the change, does not have the authority to conduct market surveillance.

In the PDM at the start of the project, "New approaches and/or checkpoints are applied in the market surveillance" was set as Objectively Verifiable Indicator of the Output 3. However, due to changes of inputs on the Indonesian side (changing of Project Director from Head of BPPI (currently BSKJI) to Director of B4T), this Objectively Verifiable Indicator and Means of Verification were deleted in the MM on 23 June 2023. B4T does not have the authority to implement market surveillance of LED products.

Output 4:
 Capability of promoting prevalence of LED products is improved

Objectively Verifiable Indicators: 4-1 Seminars on LED products are conducted
Achievements: [High (80%)] Output 4 was achieved with the Seminar on "Utilization of Goniophotometer to Support Implementation of Performance-Standards and Promotion of Domestic LED Products" on 20 November 2023, and the effective inputs from Indonesian and Japanese sides, such as Japanese Experts and Online Training Course on LED Promotion, as well as Consultations with local governments on facilitating the installation of LED street lighting by using Goniophotometers (Model Program by B4T).

In the PDM at the start of the project, "Business matching between Indonesian and Japanese manufactures is conducted" was set as Objectively Verifiable Indicator of the Output 4. However, due to changed situation from the start of the Project, it became difficult to implement Business Matching between Indonesia and Japan, and this Objectively Verifiable Indicator was deleted in MM on 4 October 2021.

In 2021, the Government of Indonesia (MOEMR) released the "Roadmap on Development of High-Efficiency Lightings for Indonesia" including the survey and analyze on the current situation and future prospects of LED product prevalence. Accordingly, Activity 4-1 "To make survey and analyze present situation related to promoting prevalence of LED products" has been implemented outside of the Project activities.

2-2 Project Purpose and indicators

(Target values and actual values achieved at completion)

Project Purpose: Operation for system of standards and conformity assessment and environment of promoting prevalence of LED products is improved.
Objectively Verifiable Indicators: Laboratories of testing LED products are accredited by Komite Akreditasi Nasional (KAN).
Achievements: [High (80%)] With regard to LED product standards in Indonesia, the following 4 standards have been stipulated as SNI. The accreditation by KAN of B4T in each SNI for LED products is as follows;

(1) LED Lamp / Safety (SNI IEC 62560: 2015)

- B4T had been accredited by KAN before starting the Project.

(2) LED Luminary / Safety (SNI 60598-1: 2016 *Mandatory SNI)

- B4T has plan to obtain accreditation, although new testing equipment needs to be procured.
- At the same time, B4T believes that it is necessary to consider the fact that there are already 4 laboratories in Indonesia that can provide this test.
- B4T will decide whether or not to be accredited by KAN after examining the situation of demand and supply of this test.

(3) LED Lamp / Performance (SNI IEC 62612: 2016)

- B4T was accredited by KAN in 2022 during the project period.

(4) LED Luminary / Performance (SNI IEC / PAS 62717: 2015)

- B4T is preparing to obtain accreditation by KAN, and it will be accredited in the end of 2023, one month after the project completion, in accordance with annual assessment procedure by KAN.
- There are no testing laboratories accredited by KAN for this SNI test, thus B4T will be the first testing laboratory (certification body) of LED Luminaires Performance Test in Indonesia to be accredited by KAN.

With regard to “(2) LED Luminary / Safety” test, as a public testing institution, B4T's thought is quite reasonable. Therefore, in evaluating the achievement of the Project Purpose, it is not appropriate that B4T's non-accreditation for this test is a negative factor. As for “(3) LED Lamp / Performance” test and “(4) LED Luminary / Performance” test, installation and utilization of Goniophotometer contributed to these accreditations by KAN significantly.

From the above, Objectively Verifiable Indicators of the Project Purpose was achieved.

In the PDM at the start of the Project, “SNIs of LED products are made obligatory” was set as Objectively Verifiable Indicator of the Project Purpose. However, due to changes in inputs on the Indonesian side (changing of Project Director from Head of BPPI (currently BSKJI) to Director of B4T), this Objectively Verifiable Indicator and Means of Verification were deleted in the MM on 23 June 2023. B4T does not have the authority to approve draft standards including obligatory SNIs as MOI.

3. History of PDM Modification

The PDM was modified 2 times, in October 2021 and in June 2023.

The first modification by the MM on 4 October 2021

Before	Amended Version
(Project Director) Head of Agency for Research and Development of Industry (hereinafter referred to as "BPPI") will be responsible for overall administration and implementation of the Project.	(Project Director) Director of Center for Material and Technical Product (hereinafter referred to as "B4T") will be responsible for overall administration and implementation of the Project
Reason: To have optimal implementation of this cooperation, the position mentioned above are transferred to the institution in charge of technical matters. *In February 2021, after the original Record of Discussion was signed, BPPI was transformed to Agency for Industrial Standardization and Services Policy (BSKJI), and Head of Center for Formulation, Application and Enforcement of Industrial Standardization (PUSTAND) was transformed to Head of Center for Formulation, Application and Enforcement of Industrial Standardization (P4SI).	

Before	Amended Version
(Project Period) 3 years from the arrival of the first expert	(Project Period) 4 years from the arrival of the first expert
Reason: Because of the global spread of the coronavirus disease 2019 (COVID-19), some of the project activities have been suspended. In order to achieve the project purpose after the project team resume the activities, project duration needs to be extended.	

Before	Amended Version
(Objectively Verifiable Indicators for Output 4) Business matching between	(Objectively Verifiable Indicators for Output 4) None.

<p>Indonesian and Japanese manufactures is conducted</p> <p>(Activity 4-4) 4-4 To organize business matching opportunity between Indonesian and Japanese manufacturers and discuss possible support programs for Indonesian manufactures</p>	<p>(Activity 4-4) None.</p>
<p>Reason: Due to the situation changed from the start of the Project, it became difficult to implement Business Matching between Indonesia and Japan.</p>	

The second modification by the MM on 23 June 2023

Before	Amended Version
<p>(Objectively Verifiable Indicators for Project Purpose) SNIs of LED products are made obligatory.</p> <p>(Means of Verification for Project Purpose) Ministerial degree on SNIs.</p>	<p>(Objectively Verifiable Indicators for Project Purpose) None.</p> <p>(Means of Verification for Project Purpose) None.</p>
<p>Reason: Due to changes in inputs on the Indonesian side (changing of Project Director from Head of BPPI (currently BSKJI) to Director of B4T), this Objectively Verifiable Indicator and Means of Verification were deleted in the MM on 23 June 2023. B4T does not have the authority to approve draft standards including obligatory SNIs as MOI.</p>	

Before	Amended Version
<p>(Objectively Verifiable Indicators for Output 1) SNI drafts of LED products are approved by BSN.</p>	<p>(Objectively Verifiable Indicators for Output 1) None.</p>

(Means of Verification for Output 1) Ministerial degree on BSN.	(Means of Verification for Output 1) None.
Reason: Due to changes in inputs on the Indonesian side (changing of Project Director from Head of BPPI (currently BSKJI) to Director of B4T), this Objectively Verifiable Indicator and Means of Verification were deleted in the MM on 23 June 2023. B4T does not have the authority to approve draft standards as MOI.	

Before	Amended Version
(Means of Verification for Output 2) Testing reports by B4T and BARISTAND Surabaya	(Means of Verification for Output 2) Testing reports by B4T
Reason: Due to changes in inputs on the Indonesian side (changing of Project Director from Head of BPPI (currently BSKJI) to Director of B4T), "BARISTAND Surabaya" in the Means of Verification of 2-1 and 2-2 were deleted in the MM on 23 June 2023.	

Before	Amended Version
(Objectively Verifiable Indicators for Output 3) New approaches and/or checkpoints are applied in the market surveillance	(Objectively Verifiable Indicators for Output 3) None.
(Means of Verification for Output 3) Market surveillance reports of MOI and MOT	(Means of Verification for Output 3) None.
Reason: Due to changes in inputs on the Indonesian side (changing of Project Director from Head of BPPI (currently BSKJI) to Director of B4T), this Objectively Verifiable Indicator and Means of Verification were deleted in the MM on 23 June 2023. B4T does not have the authority to market	

surveillance.

Before	Amended Version
(Activity 1-2) 1-2 To draft standards of LED products	(Activity 1-2) None.
Reason: Due to changes in inputs on the Indonesian side (changing of Project Director from Head of BPPI (currently BSKJI) to Director of B4T), this activity was deleted in the MM on 23 June 2023. B4T does not have the authority to approve draft standards as MOI.	

4. Others

4-1 Results of Environmental and Social Considerations (if applicable)
none in particular

4-2 Results of Considerations on Gender/Peace Building/Poverty Reduction, Disability, Disease infection, Social System, Human Wellbeing, Human Right, and Gender Equality (if applicable)
none in particular

III. Results of Joint Review

1. Results of Review based on DAC Evaluation Criteria

(1) Relevance: <High>

Based on the following points, the relevance of the Project, which supports capacity building of relevant SNI operations and testing with a view to promoting high-quality LED products, is considered to be high.

- MOI Strategic Plan (2020-2024)

“MOI Strategic Plan of (2020-2024)”, the MOI's medium-term

development plan revised in January 2022, sets as a development issue the “strengthening economic resilience”, namely “improving the capacity to produce high value-added products that can fulfill the domestic market and develop foreign markets. One of the MOI's three key policies to address the above development issues is the “Industrial Baseline Development Policy,” and within this policy, the “Development of standards in the industrial sector”, the “Strengthening of conformity assessment (testing) institutions”, and the “Strengthening of surveillance on standards in industrial sector” are clearly identified.

- Government Regulation No. 33 in 2023 concerning Energy Conservation, Regulation of the Minister of Energy and Mineral Resources No. 14 in 2021 for Application of Minimum Energy Performance Standards (MEPS) for Energy Utilizing Equipment

The above Government Regulation aims to conserve domestic energy resources and improve the efficiency of energy use. It stipulates the following programs to promote energy conservation: Energy conservation labeling system, Special financing for energy conservation, Raising public awareness for energy saving, Fostering human resources for energy conservation, and Increasing R&D capabilities in related industries. The energy conservation labeling system has already been launched by the above Minister Regulation as Minimum Energy Performance Standards (MEPS) system targeting LED products also. Under MEPS system, B4T was accredited as a product certification testing laboratory and Goniophotometer is used for LED product testing.

- Roadmap on Development of High-Efficiency Lightings for Indonesia (2021)

"Roadmap on Development of High-Efficiency Lightings for Indonesia" was formulated in 2021 led by Ministry of Energy and Mineral Resources, and MOI also participated as a member of the steering committee to formulate Roadmap. This Roadmap aims to reduce electricity consumption and greenhouse gas emissions in Indonesia by promoting the use of high-efficiency lighting products, as represented by LED lighting products. Roadmap pointed out the importance of promoting the growth of the domestic lighting industry and making it possible to produce high-quality, energy-efficient lighting products in Indonesia.

In addition, Roadmap shows several action plans, including short-term,

medium-term, and long-term measures to be taken by relevant Ministries and Agencies. The action plans by MOI are as follows, and they include the enhancement of Standards and TKDN (domestic component rate) for LED products.

- Short-term: 2022-2025

Development and diffusion of LED products that conform to SNI safety standards and MEPS (Minimum Energy Performance Standard) as well as meet the minimum requirements of TKDN 40%.

- Medium-term: 2026-2030

Mandatory SNI safety standards for lighting products in government procurement; investment promotion and investment incentives for LED chip or semiconductor industry.

- Long-term: 2031-2035

Issue certificates for LED products that conform to SNI safety standards and MEPS as well as meet the minimum requirements of TKDN 40%. Increase the minimum requirements of TKDN of street lighting in government procurement to 60%.

(2) Coherence: <Fair>

● Coherence with Development Cooperation Policy of Japan

This Project is coherent with Japan's Development Cooperation Policy, since the Project is consistent with the "Country Development Cooperation Policy for Republic of Indonesia" and the "Rolling Plan for Republic of Indonesia".

- Country Development Cooperation Policy for Republic of Indonesia

In the Project Summary Sheet of the Project Implementation Plan, the coherence of this Project with the "Country Development Cooperation Policy for Republic of Indonesia (September 2017)" was confirmed. Priority Area 1 "Support for Enhancing International Competitiveness" of this Country Development Cooperation Policy stated that in order to achieve economic growth through the enhancement of international competitiveness of private companies, Japan will support the development of business and investment environments through the improvement of high-quality infrastructure and various regulations and systems, as well as the development of human resources.

At the time of the Project Completion Evaluation, the above "Country

Development Cooperation Policy for Republic of Indonesia (September 2017)” is still in effect, and thus the coherence of this Project is maintained.

- Rolling Plan for Republic of Indonesia

In the Project Summary Sheet of the Project Implementation Plan, the coherence of this Project with the ”Rolling Plan for Republic of Indonesia (April 2018)” was confirmed. Priority Area 3 “Assistance for the enhancement of capacity to address issues of Asian region and international society” of this Rolling Plan stated that the realization of a low-carbon society through the introduction of energy-saving technologies, etc. is also recognized as requiring further efforts.

At the time of the Project Completion Evaluation, the above “Rolling Plan for Republic of Indonesia (April 2018)” is updated to the April 2021 version, but there is no change in the above description, and thus the coherence of this Project is maintained.

● Collaboration with JICA's other projects

Since long-term experts were not dispatched for this Project, the Industrial Development Advisor (individual expert), who facilitates overall cooperation activities between MOI and JICA, supported the implementation of project activities as part of his duties, and contributed significantly to the smooth implementation of the Project.

● Collaboration with organizations outside of JICA, coordination with international frameworks, etc.

Collaboration with organizations outside of JICA and coordination with international frameworks are out of scope of evaluation because none of them were planned both in the preliminary evaluation and during the implementation of the Project.

(3) Effectiveness: <High>

The Effectiveness of the Project is judged to be high based on the achievement of the Objectively Verifiable Indicator of the Project Purpose and the achievement of the 4 Outputs.

● Evaluation of the achievement of the Objectively Verifiable Indicator "Laboratories of testing LED products are accredited by Komite Akreditasi Nasional (KAN)" of the Project Purpose

It is judged that the Objectively Verifiable Indicator of the Project

Purpose was achieved.

As mentioned in "2-2 Project Purpose and indicators" above, among the 4 LED product tests under SNI, B4T was accredited by KAN for "LED Lamp Performance Test" in 2022 after the installation of Goniophotometer.

Furthermore, "LED Luminaires Performance Test" is scheduled to be accredited by KAN in December 2023 (one month after the completion of the Project). The installation and utilization of Goniophotometer made a significant contribution to these accreditations.

The "LED Lamp Safety Test" has already been accredited by KAN before the starting of the Project.

Therefore, the only test not yet accredited by KAN is the "LED Luminaire Safety Test". B4T has a plan to obtain accreditation for this test as well, but at the same time, B4T believes that it is necessary to consider the fact that there are already 4 laboratories in Indonesia, including private companies, that can provide this test. B4T will examine the situation of the demand and supply of this testing service first, and after that, decide whether or not to obtain accreditation by the KAN.

B4T's thought on the accreditation of "LED Luminaire Safety Test" are appropriate. As a public testing laboratory, duplication with other testing laboratories, especially in terms of squeeze private industry, is a matter which must be carefully considered. In addition, Goniophotometer provided under this Project is used for performance test of LED products and not used for "LED Luminaire Safety Test". Therefore, it is not appropriate to identify the fact that B4T has not been accredited for "LED Luminaire Safety Test" as a negative factor in assessing the achievement of the Project Purpose.

● Contribution of Outputs to the Achievement of Project Purpose

This Project set the following 4 Outputs corresponding to the Project Purpose "Operation for system of standards and conformity assessment and environment of promoting prevalence of LED products is improved".

1. Capability of developing standards of LED products is improved.
2. Capability of testing LED products is improved.
3. Capability of market surveillance for LED products is improved.

4. Capability of promoting prevalence of LED products is improved.

The above 4 Outputs are directly associated with the Project Purpose, and the structure of the Project Purpose and Outputs is appropriate. In the following, the status of achievement of "i) Improvement of the operation for system of LED products standards", "ii) Improvement of the operation for system of LED products conformity assessment test", and "iii) Improvement of the environment of promoting prevalence of LED products" which are referred to in the Project Purpose, will be evaluated in terms of the results Outputs.

i) Improvement of the operation for system of LED products standards

"i) Improvement of the operation for system of LED products standards" referred in the Project Purpose was achieved through the activities in Outputs 1 and 2.

In the "operation of LED product standards", it is essential that the establishment of standards and the conformity assessment of established standards (testing to confirm whether products meet the standards or not) must be operated as two sides of the same coin. The B4T's testing capability has been greatly enhanced through a series of activities that were input from the Japanese and Indonesian sides, including the introduction of Goniophotometer, in Output 2.

Furthermore, through the series of inputs from the Japanese and Indonesian sides in Output 1, the counterpart could obtain detailed and specific knowledge and information on the establishment situation and operation system of LED product standards in Japan, Thailand, and Vietnam. B4T, the counterpart in the latter half of the Project, does not have the authority to approve draft standards as MOI, and 4 national standards (SNIs) for LED products have already been established. Therefore, this project did not include activities to establish new SNI or to make existing SNIs mandatory. However, the knowledge and experience obtained by B4T through the activities in Output 1 (detailed and specific information and knowledge on the operation system of LED product standards in Japan, Thailand, and Vietnam) can be practically utilized when Indonesia develops LED product standards with a more detailed classification in the future.

ii) Improvement of the operation of the system for conformity assessment test of LED products

"ii) Improvement of the operation for system of LED products conformity assessment test" referred in the Project Purpose was achieved through the activities in Output 2.

As a result of the provision of Goniophotometer and related inputs from Japan, as well as B4T's proactive activities for utilizing Goniophotometer, the performance (capacity and number of tests) of B4T's LED products conform assessment test has been significantly improved.

iii) Improvement of the environment of promoting prevalence of LED products.

"iii) Improvement of the environment of promoting prevalence of LED products" referred in the Project Purpose was achieved mainly through Output 4.

As for activities under Output 4, as part of the activities under the B4T's initiative (Model Program), seminar on "Utilization of Goniophotometer to Support the Standards for LED Products and Enhance Industrial Services" was held in September 2023, and furthermore, B4T has proceeded a series of consultations with several local governments, which are major users of LED products, in order to facilitate the introduction of LED street lighting by utilizing Goniophotometer. These activities led by B4T's initiative contribute to "Improvement of the environment of promoting prevalence of LED products" effectively. After installing Goniophotometer, B4T and the Lighting Engineering Department of Bandung Institute of Technology (ITB) have continued activities for knowledge and experience sharing on the utilization of Goniophotometer, thus contributing to enhance the technical knowledge and capabilities of the students in ITB's Lighting Engineering Department. After graduation, these students will work in Indonesia's lighting engineering industry and LED manufacturing companies, and will contribute to improving the quality and competitiveness of Indonesian national LED products. The development of these young technical personnel will contribute to "the development of an environment that promotes the spread of LED products" in the LED product supply side.

The logical linkage between Output 3 and this Project Purpose is that "the number of defective products circulating in the domestic market will

be reduced through market surveillance activities, and consequently, the prevalence of LED products will be promoted". With regard to Output 3, B4T, the counterpart in the latter half of the Project, does not have the authority to conduct market surveillance, and therefore, it must be said that the guidance on market surveillance systems and case study of LED products and mandatory standardization, which was implemented through inputs from Japan, was limited for B4T in its effectiveness. However, since market surveillance activities to enforce LED products that do not conform to SNI and testing to verify whether they conform to SNI are two sides of the same coin, the inputs from Japan in Output 3 were also instructive for B4T.

(4) Efficiency: <High>

The planned Project duration was three years (November 2019-November 2022) and the actual Project duration was four years and 1 month (November 2019 - December 2023). The extension of the project period was caused by the delay in project activities due to the long-term temporarily return to Japan of JICA personnels and the measures restricting social activities in Indonesia as well as significant restrictions on international movement of persons, as a result of the expansion of Covid-19.

In March 2020, JICA HQ decided the temporarily evacuation of all JICA Experts and Project Formulation Advisers (PFA) to Japan. As a result, the Industrial Development Advisor who has facilitated this Project in MOI and the PFA in charge of this Project in JICA Indonesia Office were forced to work remotely from Japan for a long period (about 1 Year). With regard to their evacuation period in Japan, the Industrial Development Advisor lasted about 13 months from March 2020 to April 2021, and the PFA in charge of this Project lasted about 12 months from March 2020 to February 2021.

Furthermore, in Indonesia, the Indonesian Government commenced "Large-Scale Social Restriction (PSBB: Pembatasan Sosial Berskala Besar)" measure to prevent Covid-19 infection in April 2020, and it had been continued until December 2022 with a cycle of intensification and relaxation. During this period, there were several restrictions on work attendance for government offices, private companies, and foreign organizations including JICA, as well as domestic movement, severe immigration control, and quarantine measures for Covid-19 positive individuals, etc., thus, social and

economic activities in Indonesia including JICA activities were severely disturbed. Therefore, after the first half of 2021 when the Industrial Development Advisor and the PFA returned to Indonesia, the difficult circumstance for Project activities was continued.

The most serious impact on the Project activities suffered was the delay in the installation of Goniophotometer. In the initial plan, specification determination, procurement, and installation of Goniophotometer were to be completed in the first year of the Project. However, due to significant difficulties in international movement of persons, there was no prospect of dispatching engineers to determine technical specifications and provide technical guidance after installation. As a result, the installation of Goniophotometer was delayed by about 1 year from the initial plan.

The planned Project budget was 131 million yen, and the actual Project expense was 120 million yen. The actual project expense was within the planned budget due to the fact that training course in Japan was replaced by online training course due to Covid-19, and that the latter half of the project activities were primarily implemented by the initiative of the counterpart, B4T as Model Program.

The following describes the linkage between the four outputs and inputs of the project.

- Output 1: Capability of developing standards of LED products is improved.

Since the counterpart of this project, the Electrical Product Testing Section of B4T, had knowledge of the Indonesian National Standard (SNI) for LED Products and related international standards, the activities in Output 1 were focused on obtaining detailed and specific knowledge and information on the contents and practical examples of usage of LED product standards in Japan and other countries.

In the online training course in June 2021, “Related Organizations and their Roles in LED Industry in Japan”, Japanese Expert (International Electrotechnology Standardization Division, METI) gave a lecture to share the case studies of development and utilization of LED product standards in Japan. In this lecture, the Energy Efficiency Labeling System in Japan was introduced, and MOEMR in particular showed strong interest in this system. Since the “MOEMR Degree No. 135-07 / 2022 concerning Minimum Energy Performance Standards and Energy

Efficiency Labels for LED Lighting” had been established in 2022 in Indonesia. It is assumed that the content of this lecture contributed to prepare this Ministerial Decree. This online training course was attended by 15 participants from MOI and other related ministries, as well as private LED product associations.

Furthermore, in the “Site-visit Study to Electric Product Testing Institutions in Thailand and Vietnam” held in February 2023, 8 counterparts from B4T visited the electric product testing institutions in Thailand and Vietnam. Through discussions between professional testing engineers in both countries and practical on-site observations, the participants could obtain detailed and specific knowledge and information on the status of development and utilization of LED product standards in Thailand and Vietnam.

From the above, the necessary inputs were appropriately provided, and it contributed to achieve Output 1.

- Output 2: Capability of testing LED products is improved.

The main focuses of Output 2 are the provision of Goniophotometer and the increase of B4T’s LED product testing performance with Goniophotometer.

As mentioned in “2-1 Outputs and indicators”, the number of LED product tests has increased significantly since 2022 when the Goniophotometer was put into service. In addition, the installation of Goniophotometer has made it possible to conduct test items that were not possible in the past, and thus, the number of test items has increased. With regard to the increase in the number of tests by Goniophotometer, B4T’s proactive efforts to socialize to local governments, which are large users of LED products, and private LED manufacturers have also contributed significantly.

Other than the provision of Goniophotometer, as inputs from Japan, the Japanese expert from Japan Electrical Safety and Environment Technology Laboratories was dispatched in November 2019, and worked with counterparts to adjust detail specifications of Goniophotometer. In addition, the Online Training Course “Related Organizations and their Roles in the LED Industry in Japan” was organized in June 2021. In this training course, Japanese expert from NITE (National Institute of Technology and Evaluation, Japan) provided a lecture on “Performance

testing of LED Products to assure reliability of LED product performance”. Furthermore, when installing the Goniophotometer, engineers from Germany were dispatched to the Project to ensure the smooth installation and operation of Goniophotometer.

On the other hand, as for the inputs from the Indonesian side, the specific building equipped with light path tunnel and full air conditioning system, which satisfies the requirements for installing Goniophotometer, was newly constructed at B4T by MOI budget as scheduled, and it was contributed to the smooth implementation of the Project. After the installation of Goniophotometer, as part of the activities under B4T’s initiative (Model Program), SOPs for the tests using Goniophotometer at B4T were developed based on the results of the visits and surveys to other institutions with Goniophotometer in Indonesia and abroad. This contributed to the implementation of stable testing at B4T (increase of test reproducibility).

From the above, regarding Output 2, both soft and hard inputs were appropriately provided from the Japanese and Indonesian sides, and contributed to the achievement of Output 2.

- Output 3: Capability of market surveillance for LED products is improved.

With regard to the input from Japan in Output 3, Japanese short-term expert was dispatched from JLMA (Japan Lighting Manufacturers Association) at the “Policy Dialogue of LED Standard and LED Industry” in November 2019, and situation and method of market surveillance in Japan, especially the case of “Trial Purchase Survey” was explained. In the online training “Related Organizations and their Roles in the LED Industry in Japan” held in June 2021, a Japanese lecturer from NITE explained about LED product accidents and their causes and countermeasures in Japan, where LED products are widespread and related standards are regulated as mandatory. The lecturer also pointed out the fact that defective products and accidents were increased along with the expansion of LED products in Japan. These dialogue and online training course were attended by MOI Main Office officials who have the authority of market surveillance of LED products, and the importance of market surveillance and mandatory standardization of LED products was highlighted to them.

After that, in October 2021, the Project Director was changed from the Director of BPPT of MOI Main Office to the Director of B4T. Since B4T does not have the authority to conduct market surveillance of LED products, the main focus of Output 3 was to estimate the defective LED products circulating in the domestic market and to understand the situation of market surveillance implementation. The situation of these matters was made clear through Model Program by B4T, such as the LED Lamp Market Sampling Survey and Test and the Research activities on confirming the LED products market surveillance situation with MOEMR. The guidance on market surveillance and mandatory standardization of LED products inputted from Japanese side was enough useful for B4T as institution to conduct conformity assessment test of LED products. However, since B4T is not an institution to conduct market surveillance, the inputs in output 3 were not always high in terms of efficiency.

- Output 4: Capability of promoting prevalence of LED products is improved.

As for input from the Indonesian side, seminar on “ Utilization of Goniophotometer to Support Implementation of Performance-Standards and Promotion of Domestic LED Products ” was held in November 2023 as part of activities under the B4T initiative (Model Program). Under the model program, furthermore, the consultations with several local governments seeking to introduce LED street lighting, and the knowledge sharing activities with the Department of Lighting Engineering, Bandung Institute of Technology (ITB), have been conducted. With regard to the former, discussions to adopt the submission of performance test results by B4T’s Goniophotometer as a bidding requirement for LED street lighting installations by local governments are underway with several local governments. By adopting the test results of Goniophotometer, which can conduct high-precision performance tests, as part of the bidding requirements, the quality of bidder’s LED products can be guaranteed. Goniophotometer can also perform illuminance simulations, and thus, it makes accurate and easy for local governments to estimate the specifications, scale, layout, and budget amount of LED street lighting facilities. Facilitating the installation of LED street lighting by local governments through the use of Goniophotometers is a significant contribution for promoting prevalence of LED products. Regarding the

latter, B4T's Goniophotometers are used for testing and verification of test items that cannot be measured with ITB's own simple Goniophotometers, and B4T has accepted students from ITB's Lighting Engineering Department as interns, contributing to the improvement of ITB students' technical knowledge and capacities. After graduation, these students are human resources who will contribute to improving the quality and competitiveness of Indonesian national LED products in the Indonesian lighting engineering societies and/or LED manufacturing industries. In order to expand the use of LED products in Indonesia, it is necessary to stimulate domestic demand and at the same time, expand the production and supply of high-quality national LED products. Thus, fostering such young technical personnel will contribute to promote prevalence of LED products from its supply side.

As for input from the Japanese side, at "Dialogue of LED Standards and LED Industries" held in November 2019, Japanese expert (Panasonic) gave a presentation on "Introduction of Japanese LED lighting products' promotion" and explained the history of the diffusion of LED products in Japan and the "LED Lighting Vision 2030" which aims to replace 100% of lighting in Japan with LEDs by 2030. Since there was a lot of interest in the "LED Lighting Vision 2030" from the participants, in the Online Training Course "Related Organizations and their Roles in the LED Industry in Japan" held in June 2021, its details were explained by Japanese lecturer (JALMA: Japan Lighting Manufacturers Association).

From the above, the necessary inputs were appropriately provided from Indonesian and Japanese side, and it contributed to achieve Output 4.

(5) Impact: <Fair>

The Overall Goal is expected to be achieved with the effect of this project as one of the important factors. At the same time, it should be noted that the effect of this project is one of the factors to achieve the Overall Goal, because the measures required for the diffusion of high-quality LED products equipped with high energy-saving performance and safety are quite wide-range.

In order to promote the diffusion of high-quality LED products, the Indonesian government is required to steadily implement a broader range of policies on the both demand side (expansion of LED product adoption) and

supply side (expansion of production of high-quality domestic LED products).

These measures will no doubt continue to be actively implemented as part of the decarbonization policy, but it will take a certain period of time for their effects to be realized.

In Indonesia, as shown in the domestic demand forecast for LED products in “Roadmap on Development of High-Efficiency Lightings for Indonesia”, it is almost certain that the replacement of conventional lighting products with energy-efficient LED products will expand.

The enhancement of capabilities of B4T in this Project, namely “Strengthening the Utilization of SNI System”, is an essential factor to secure the diffusion of high-quality products in the expanding LED product market in Indonesia.

(6) Sustainability: <High>

The Sustainability of the Project is judged to be high from the following confirmations including the high capacity and ownership of the Counterpart institution, B4T.

- Policy and institutional aspect

As mentioned in the “(1) Relevance”, the Project Purpose, Outputs, and Activities are consistent with “Medium-Term Development Plan of the Ministry of Industry (2020-2024)”, “Government Regulation No. 33 of 2023 on Energy Conservation”, and “Roadmap on Development of High-Efficiency Lightings for Indonesia (2021)” including action plans until 2030. The development issues behind the above policies and regulations, “Strengthening the competitiveness of domestic industry” and “Efforts toward decarbonization (the Indonesian Government has declared to achieve carbon neutrality by 2060)” are matters for which continuous, medium- and long-term efforts have been announced. From the above, the Sustainability in policy and institutional aspects is high.

- System and capacity of implementation institution aspect

“Electricity and Battery Testing Section” in B4T, which is in charge of testing electrical products including LED products, has 8 engineering staffs including the Section Chief. This Section was not prepared for the implementation of this Project, but it is a permanent organization of B4T. B4T’s ownership of this project is very high, and after the installation of

Goniophotometer, a series of activities utilizing Goniophotometer have been actively formulated and implemented by the B4T's initiative. In addition, the staff of Electricity and Battery Testing Section are all engineers, consisting of science and engineering graduates from outstanding universities in Indonesia and those who have obtained Master's degrees in engineering from abroad. They have sufficient knowledge and expertise in the operation and utilization of Goniophotometers. Thus, the Sustainability in system and capacity of implementing institution aspects is high.

- Financials of implementation institution aspect

B4T has the status of UPT (Unit Pelayanan Teknis / Technical Service Unit) in the Indonesian Government, and is an organization that can earn fees for providing testing services for industrial products and materials. This fee income is used to maintain B4T's testing equipment. In addition, with the installation of Goniophotometer, the number of fee-paid tests on LED products has increased significantly. Thus, B4T, a testing institution for industrial products and materials, has an original structure that enables to cover the maintenance costs of its testing equipment including Goniophotometers. The Sustainability in Financials of implementation institution aspect is high.

2. Key Factors Affecting Implementation and Outcomes

This project was strongly affected by the long period of temporary return of JICA personnel and restrictions on social activities in Indonesia caused by Covid-19. To address the delay of the Project's progress, the Project period was extended by one year (from 3 years in the original plan to 4 years in the revised plan). In addition, in consideration of the situation in which the movement of people between Indonesia and Japan has become difficult, after the installation of Goniophotometer, the Project focused on the formulation and implementation of activities based on the B4T's initiative by utilizing Goniophotometer (Model Program).

3. Evaluation on the results of the Project Risk Management

Under the difficult circumstances caused by Covid-19, the Project activities were carried out under the leadership of the counterpart (B4T) focusing on the utilization of Goniophotometers as Model Program. As for the Model Program,

the following activities were formulated and implemented through the active commitment of B4T, and contributed to the achievement of each Output of the Project.

- Site-visit Study to Electric Product Testing Institutions in Thailand and Vietnam (Output 1, 2, 3, and 4)
- SOP (Standard Operation Procedure) for the test with Goniophotometer conducted at B4T was developed, and it contributed to the stable implementation (increase in reproducibility) of the test at B4T (Output 2).
- LED Lamp Market Sampling Survey and Test was conducted to understand the situation of LED lamps in the retail market in terms of performance and labeling problems (Output 3).
- Research activities on confirming the LED products market surveillance situation with MOEMR, and the usage, performance & testing methods with the four (4) institutions owning Goniophotometer. (Outputs 2 and 3).
- Consultations on facilitating the installation of LED street lighting using Goniophotometers were held with local government (Output 4).
- Knowledge and experience sharing activities for the effective utilization of Goniophotometer were conducted with ITB. It contributed for fostering future professional engineers of LED products (Output 4).
- Seminar on “Utilization of Goniophotometer to Support Implementation of Performance-Standards and Promotion of Domestic LED Products” was held in September 2023 (Output 4).

4. Lessons Learnt

In this Project, there was a change of Counterpart (Project Director) from MOI Main Office to B4T due to circumstances on the MOI side. In accordance with this change, some indicators related to the enhancement of national standards (SNIs) system under the jurisdiction of MOI Main Office (e.g., establishment of LED products SNI, making LED products SNI mandatory, conducting market surveillance for LED products) was revised.

The enhancement of national standards (SNIs) and improvement of certification testing to ensure their operation are integral to each other. However, the above revisions were not a major obstacle for this Project because the basic SNIs for LED products had already been established.

On the other hand, in general, the enhancement of national standards system, especially mandatory standards, usually involves very sensitive issues in

relation to domestic industries. When considering similar projects in the future, it is necessary to fully confirm the counterpart's intention and motivation in the aspect of strengthening national standards system, in addition to the aspect of improving certification testing capacity.

IV. For the Achievement of Overall Goals after the Project Completion

1. Prospects to achieve Overall Goal

The Overall Goal "LED products with high energy saving and high safety performance are prevailed" is expected to be achieved with the effect of this Project as one of the essential factors.

At the same time, it should be noted that the effect of this project is one of the factors to achieve the Overall Goal, because the measures required for the diffusion of high-quality LED products equipped with high energy-saving performance and safety are quite wide-range.

The diffusion of high-quality LED products requires wide-ranging efforts on the both demand side (expansion of LED product introduction) and supply side (expansion of production of high-quality domestic LED products). Demand-side initiatives include the replacement of conventional lighting with LED lighting in residential homes, public facilities such as street lighting, and private offices / factories, as well as the introduction of LED lighting in those new buildings and facilities. As for supply-side initiatives, it is most important that the domestic LED manufacturing industry be able to produce and supply high-quality LED products. In this Project, activities to promote the introduction of LED products (demand side), including activities to facilitate the introduction of LED products to street lighting by local governments, are being implemented, and it will be continued to implement after the project completion. In addition, B4T's original activities of conducting high-precision quality tests of LED products using Goniophotometer will contribute to improving the quality and competitiveness of the domestic LED industries and products in Indonesia (supply side). However, the activities of this Project and B4T's original work will contribute to the "Strengthening the Utilization of SNI System", which is one of the efforts required in the demand and supply sides as mentioned above. In order to guarantee the realization of the Project Overall Goal, it is required that the wide range of policies will be implemented effectively and steadily by the Indonesian Government.

In fact, as mentioned in “(1) Relevance” above, the Indonesian government has been developing initiatives to conserve energy resources, improve efficiency of energy use, and promote high-efficiency lighting technology such as LED lighting through the enactment of Government Regulation No. 33 of 2023 and the formulation of the Roadmap on Development of High-Efficiency Lightings for Indonesia. These initiatives incorporate a variety of measures to address both the demand and supply sides. There is no doubt that these initiatives will be implemented continuously and actively as part of the decarbonization policy, but it will take a certain period of time for their effectiveness to be realized.

In Indonesia, it is almost certain that the replacement of conventional lighting products (fluorescent lamps, mercury lamps, etc.) with energy-efficient LED products will expand in the future due to the increase of national income and the Government’s initiatives to promote LED products through the “Roadmap on the Development of High-Efficiency Lightings for Indonesia”. Roadmap estimates that the domestic market for LED products will expand from 3.8 million units in 2020 to 7.4 million units in 2025, 17.3 million units in 2030, and 88.9 million units in 2035. The B4T’s functions including the testing capabilities enhanced in this Project are directly related to the “Enhancement of the Utilization of SNI System of LED Products”, and it is an essential factor to assure the high-quality LED products diffusion in the expanding domestic LED product market in the future.

2. Plan of Operation and Implementation Structure of the Indonesia side to achieve Overall Goal

As mentioned above, in order to achieve the Overall Goal, wide-ranging efforts by the Indonesian Government to expand high-quality LED products in the both supply and demand side are necessary. This project contributes to “Strengthening the Utilization of SNI System” which is one of the essential factors for achieving the Overall Goal.

As for “Strengthening the Utilization of SNI System”, B4T, the Counterpart institution of this Project, can continue to take necessary measures. B4T does not have the authority in establishing new SNI, making SNI mandatory, and market surveillance, but operation and implementation structure for these 3 items already existed.

As for the Indonesian Government’s wide-range efforts including

“Strengthening the Utilization of SNI System”, operation and implementation structure has been prepared through “Roadmap on Development of High-Efficiency Lightings for Indonesia”.

3. Recommendations for the Indonesia side

- Under the social activity restriction by Covid-19, we would like to express our gratitude to B4T for its proactive initiative to complete this project successfully.
- With regard to the utilization of Goniophotometer, in addition to SNI based certification testing, we hope that it will be actively used to strengthen the capabilities of LED industry in Indonesia and to improve the quality of Indonesian LED products through cooperation with LED industry and universities.

4. Monitoring Plan from the end of the Project to Ex-post Evaluation

(If the Project will be continuously monitored by JICA after the completion of the Project, mention the plan of post-monitoring here.)

N.A.

ANNEX 1: Results of the Project

(List of Dispatched Experts, List of Counterparts, List of Trainings, etc.)

ANNEX 2: List of Products (Report, Manuals, Handbooks, etc.) Produced by the Project

ANNEX 3-1~3-3: PDM (All versions of PDM)

ANNEX 4-1~4-4: R/D, M/M, Minutes of JCC (copy) (*)

ANNEX 5: Monitoring Sheet (copy) (*)

(Remarks: ANNEX 4 and 5 are internal reference only.)

ANNEX 1: Results of the Project

(List of Dispatched Experts, List of Counterparts, List of Trainings, etc.)

1-1 Input by the Japanese side

■ List of Dispatched Experts

1. Dialogue of LED Standards and LED Industries

1) Period

From 5 to 9 November 2019

2) Subjects and Experts

Subject	Name	Organization
LED Market Surveillance	Yasufuku Masayuki	Japan Lighting Manufacturers Association (JLMA)
LED Promotion	Taguchi Hiroya	Panasonic
LED Testing (Equipment Specs)	Hasegawa Kazuo	Japan Electrical Safety and Environment Technology Laboratories

3) Participants

A total of 45 participants of public and private sectors attended from the following organizations.

- Ministry of Industry (MOI)
- Ministry of Energy and Mineral Resources (MEMR)
- Ministry of Trade (MOT)
- Indonesian Integrated Lamp Manufacturing Industry Association (GAMATRINDO)
- Indonesian Electrical Appliance Industry Association (APERLINDO)
- Indonesian Luminaire and Electrical Industry Association (AILKI)
- Indonesian Luminaire Association (ALINDO)

2. Guidance on Installation and Operation of Goniophotometer

1) Period

From 6 to 19 November 2021

2) Subjects and Experts

Subject	Name	Organization
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Install of Goniophotometer	Dr. Carsten Diem	LMT
Install of Goniophotometer and Operation Training	Mr. Zulkifli Tanu	LMT

■ List of Counterparts

Counterpart personnels have been assigned in the following each period;
<5th November 2019 – 4th October 2021>

- Project Director:
Head of Agency for Research and Development of Industry (BPPI),
Ministry of Industry (MOI)
- Project Manager:
Head of Center for Industrial Standardization, BPPI, MOI
* In February 2021, after the initial Record of Discussion was signed, BPPI was transformed to Agency for Industrial Standardization and Services Policy (BSKJI), and Head of Center for Formulation, Application and Enforcement of Industrial Standardization (PUSTAND) was transformed to Head of Center for Formulation, Application and Enforcement of Industrial Standardization (P4SI).

<4th October 2021 – Current>

- Project Director:
Director of Materials and Technical Products Center (B4T), MOI
- Project Manager:
Acting Head of Standardization Division, B4T, MOI

■ List of Trainings

Training course in Japan for LED Industry Promotion originally scheduled in September 2020 was cancelled due to Covid-19. Instead, the following training programs were conducted.

1. Online Training Course “Related Organizations and their Roles in LED Industry in Japan”
 - 1) Period
From 22 (Tue) to 25 (Fri) June 2021
 - 2) Subjects and Lectures

Subjects	Lectures' Organization
About Goniophotometer which is installed to B4T	LMT
Establishment of consumer counters and supports for users with relevant organization	CAA (Consumer Affairs Agency)
Efforts to address the standard of LED lighting	International Electrotechnology Standardization Division, METI
Lighting Vision 2030 and latest trends of LED promotion	JLMA (Japan Lightning Manufacturers Association)
LED performance test and its certification - Reliability of LED performance display -	NITE (National Institute of Technology and Evaluation)
Product Safety Technology Center's efforts	NITE (National Institute of Technology and Evaluation)

3) Participants: 15 persons (7 from Ministry of Industry / 2 from Ministry of Energy and Mineral Resources / 1 from Ministry of Trade / 1 from National Standardization Agency / 4 from private LED products association)

No	Name	Position	Division / Organization
1	Andreas Kristianto	Staff	P4SI, BSKJI / MOI
2	Risdianto	Staff	P4SI, BSKJI / MOI
3	Yoseinaita BR Pelawi	Staff	P4SI, BSKJ / MOI
4	Revantino	Engineer	B4T / MOI
5	Addry Murphy Harari	on behalf of Testing Section Head	B4T / MOI
6	Lukman Hanafi	Researcher of Industrial Technology	Industrial Standardization Center (Baristand) Surabaya / MOI
7	Ihsan Andika Lubis	Industry Analyst	Directorate of Electronics and Telematics Industry, ILMATE / MOI
8	Angga Ari Kurniawan	Technical Manager of Lamp Laboratory	Directorate of Standardization and Quality Control / MOT
9	Ashary Teguh	Young Policy Analyst	Directorate of Engineering and

	Winoto		Environment of Electricity / MEMR
10	Ear Marison	Electrical Inspector	Directorate of Electric Power Engineering and Environment / MEMR
11	Yudha Septi Prasaja	Analyst of Standard Setup Implementation	Directorate of Standard Implementation & Conformity Assessment System / BSN
12	C. Triharso	Executive Director	GAMATRINDO
13	John Bastari Manoppo	Chairman	APERLINDO
14	Nasrullah	Section Chief	PT PANASONIC GOBEL, Life Solutions Manufacturing Indonesia
15	Taufik Saepudin	Sales, Research & Development Staff	PT SOLARENS LEDINDO

2. Site-visit study to electric product testing Institutions in Thailand and Vietnam

1) Period

From 20 (Mon) to 24 (Fri) February 2023

2) Visit Institutions in Thailand and Vietnam

- Thailand: Electrical and Electronics Institute (EEI), Ministry of Industry
- Vietnam: Vietnam Metrology Institute (VMI), Ministry of Science and Technology

3) Discussion Subjects

- Business process & scope of service provided.
- Testing and/or calibration methods which applied in the laboratories for LED products measurements.
- Standardization/regulations and market surveillance activities for LED products in Thailand and Vietnam.
- Capability of local LED industries to fulfill the market demand and comply/conform the requirements of standards.
- Opportunity for cooperation with B4T in the future regarding technical of industrial standardization and testing/calibration.

4) Participants

No	Name	Position	Division
1	Ms. Elis Sofianti	Coordinator of Technical Service Development	Materials and Technical Products Center (B4T), MOI
2	Mr. Revantino	Sub-coordinator of Testing	Materials and Technical Products

		for Electrical and Batteries	Center (B4T), MOI
3	Mr. M. Solih Indra Lesmana	Testing Technician especially for Goniophotometer	Materials and Technical Products Center (B4T), MOI
4	Mr. Cahya Priadi	Testing Technician for LED safety and performance	Materials and Technical Products Center (B4T), MOI
5	Mr. Alfany Surya Permana	Testing Technician for LED safety and performance	Materials and Technical Products Center (B4T), MOI
6	Mr. Daniel Fajar Puspita	Testing Engineer / PIC of Electrical laboratory	Materials and Technical Products Center (B4T), MOI
7	Mr. Deni Supangkat	Testing Technician for Electrical and Batteries	Materials and Technical Products Center (B4T), MOI
8	Mr. Agust Supriyadi	Functional Officer for Industrial Development	Directorate of Access for Industrial Resources & International Promotion (ASDIPI), MOI

■ List of Provided Equipment

Goniophotometer C-Type, (105 million Japanese Yen)

Made by LMT, Germany

The C-Type goniophotometers are absolute measurement systems measuring photometric quantities of lamps, luminaires and SSL products angularly resolved.

1-2 Input by the Indonesia side

Planned (from initial RD)	Actual
(a) Services of MOI's counterpart personnel and administrative personnel as referred to in II-2	(a) Counterpart personnel has been assigned in the following each period; [5 th Nov. 2019 – 4 th Oct. 2021] - Project Director: Head of Agency for Research and Development of Industry (BPPI) - Project Manager: Head of Center for Industrial Standardization, BPPI [4 th Oct. 2021 - Current]

<p>(b) Suitable office space with necessary equipment</p> <p>(c) Supply or replacement of machinery, equipment, instruments, vehicles, tools, spare parts and any other materials necessary for the implementation of the Project other than the equipment provided by JICA;</p> <p>(d) Credentials or identification cards;</p> <p>(e) Available data (including maps and photographs) and information related to the Project;</p> <p>(f) Running expenses necessary for the implementation of the Project;</p> <p>(g) Expenses necessary for operation of the equipment referred to in II-1 (1) as well as for maintenance thereof; and</p> <p>(h) Necessary facilities to the JICA experts for the remittance as well as utilization of the funds introduced into Indonesia from Japan in connection with the implementation of the Project</p>	<p>- Project Director: Director of B4T</p> <p>- Project Manager: Acting Head of Standardization Division, B4T</p> <p>Except for Project Director and Project Manager, 8 engineering staffs in Electricity and Battery Testing Section of B4T were assigned as a target persons of technology transfer.</p> <p>(b) It was not necessary since JICA long-term experts were not dispatched.</p> <p>(c) The specific building equipped with light path tunnel and full air conditioning system, which satisfies the requirements for installing Goniophotometer, was newly constructed by MOI budget.</p> <p>(d) It was not necessary since JICA long-term experts were not dispatched.</p> <p>(e) Data and information related to the Project were enough supplied.</p> <p>(f) Necessary running expenses for the Project were enough supplied.</p> <p>(g) Necessary expenses for operation and maintenance of Goniophotometer were enough supplied.</p> <p>(h) It was not necessary since JICA long-term experts were not dispatched.</p>
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	(i) Under the difficult circumstances caused by Covid-19, the Project activities were carried out under the leadership of the counterpart (B4T) as Model Program, and contributed to the achievement of each Output of the Project. The activities of Model Program are listed in “III-3. Evaluation on the results of the Project Risk Management”.
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1-3 Activities (Planned and Actual)

Planned	Actual
Output 1: Capability of developing standards of LED products is improved.	
<p>1-1: Reviewing standards of LED products were completed by Indonesian counterparts.</p> <p>1-2: To draft standards of LED products</p> <p>1-3: To conduct dialogues between Indonesian and Japanese relevant organizations. Example of the dialogue topics is "influences on LED industry from obligatory SNIs and the development policy of LED industry".</p>	<p>1-1: It was done outside of the project.</p> <p>1-2: Due to changes in inputs on the Indonesian side (changing of Project Director from Head of BPPI (currently BSKJI) to Director of B4T), this activity was deleted in the MM on 23 June 2023. B4T does not have the authority to approve draft standards as MOI.</p> <p>1-3: The dialogue related activity 1-3 was implemented by the Policy Dialogue in November 2019 “LED Standard and LED Industries”, and the Online Training Course in June 2021 “Related Organizations and their Roles in LED Industry in Japan”.</p>

1-4: To implement model programs discussed at dialogues.	1-4: The model program related to activity 1-4 was implemented by "Site-visit Study to Electric Product Testing Institutions in Thailand and Vietnam" in February 2023.
Output 2: Capability of testing LED products is improved.	
<p>2-1: To grasp present situation of testing LED products.</p> <p>2-2: To set up testing equipment for LED products</p> <p>2-3: To implement technical training for improving capability of testing LED products</p> <p>Possible training themes include:</p> <ul style="list-style-type: none"> - Safety standards of LED products - Testing based on safety standards of LED products - Performance standards of LED products - Testing based on performance standards of LED products 	<p>2-1: The present situation of testing LED products was grasped by Indonesian counterparts in 2020.</p> <p>2-2: The testing equipment for LED products, Goniophotometer, was installed at B4T in November 2021.</p> <p>2-3: Technical training related to activity 2-3 was implemented by the Online Training Course in June 2021 "Related Organizations and their Roles in LED Industry in Japan", and "Site-visit Study to Electric Product Testing Institutions in Thailand and Vietnam" in February 2023.</p> <p>Except for above, "Guidance on installation and operation of Goniophotometer" was implemented by LMT engineers in November 2021 when the Goniophotometer was installed.</p>
Output 3: Capability of market surveillance for LED products is improved.	
3-1: To conduct dialogues between Indonesian and Japanese relevant organizations. Example of the dialogue topics is "the method of sample test conducted in Japan".	3-1: The dialogue related activity 3-1 was implemented by the Policy Dialogue in November 2019 "LED Standard and LED Industries", and the Online Training Course in June 2021 "Related Organizations and their Roles in LED Industry in Japan".

<p>3-2: To implement model programs discussed at dialogues Example of the model programs is a sample test in Indonesian market.</p>	<p>3-2: The model program related activity 3-2 was implemented by “LED Lamp Market Sampling Survey”, and “LED Products Market Research Report” including the following items;</p> <ul style="list-style-type: none"> - Current situation of LED products diffusion in Indonesia - Prospect for Mandatory SNI of LED Lamp Safety Standard - Actual conditions and methods of market surveillance activities for LED Luminaires Safety Standard
<p>Output 4: Capability of promoting prevalence of LED products is improved.</p>	
<p>4-1: To make survey and analyze present situation related to promoting prevalence of LED products</p> <p>4-2: To conduct dialogues between Indonesian and Japanese relevant organizations. Example of the dialogue topics is "necessary support measures for Indonesian manufactures"</p> <p>4-3: To conduct seminars on LED products for Indonesian manufactures</p> <p>4-4: To organize business matching opportunity between Indonesian and Japanese manufacturers and</p>	<p>4-1: The activity 4-1 was covered by the “ LED Products Market Research Report” in activity 3-2.</p> <p>4-2: The dialogue related activity 4-2 was implemented by the Policy Dialogue in November 2019 “LED Standard and LED Industries”, and the Online Training Course in June 2021 “Related Organizations and their Roles in LED Industry in Japan”.</p> <p>4-3: The Seminar on "Utilization of Goniophotometer to support the standards for LED products and enhance industrial services" was conducted in September 2023.</p> <p>4-4: This activity was deleted by the MM on 4 October 2021. Due to the situation changed from the start of</p>

discuss possible support programs for Indonesian manufactures	the Project, it became difficult to implement Business Matching between Indonesia and Japan.
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List of Products

The following documents are estimated as products;

- SOP for the test with Goniophotometer conducted at B4T
- Result of LED Lamp Market Sampling Survey and Test
- Others

Project Design Matrix

Project Title: Project for Developing Electronic Testing Laboratories and LED Industry

Implementing Agency: Agency for Industrial Research and Development (BPPJ), Ministry of Industry (MOI)

Target Group: MOI, Ministry of Energy, Mineral and Resources (MOEMR), Ministry of Trade (MOT), National Standardization Agency (BSN)

Period of Project: 3 years from the arrival of the first expert

Project Site: Jakarta, Bandung, Surabaya

Model Site: none

Version 0

Dated 11th April 2019

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption	Achievement	Remarks
Overall Goal LED products with high energy saving and high safety performance are prevailed.	The number of LED products which satisfy standard requirements is increased. The number of LED products inspected by the market surveillance is increased.	Testing reports by B4T and BARISTAND Surabaya Market surveillance reports of MOI and MOT	The importance on policies of energy saving and developing system of standards and conformity assessment is not decreased in Indonesia.		
Project Purpose Operation for system of standards and conformity assessment and environment of promoting prevalence of LED products is improved.	Laboratories of testing LED products are accredited by Komite Akreditasi Nasional (KAN). SNIs of LED products are made obligatory.	Certificates from KAN Ministerial decree on SNIs	The roles of government agencies related to policies of energy saving and system of standards and conformity assessment are not changed.		
Outputs 1 Capability of developing standards of LED products is improved.	SNI drafts of LED products are approved by BSN Practical examples "how to effectively utilize the standards" of other countries including Japan are shared within the counterparts.	Ministerial decree of BSN Minutes of meetings of dialogues between Indonesian and Japanese relevant organizations	Policies of energy saving and system of standards and conformity assessment is maintained in Indonesia.		
2 Capability of testing LED products is improved.	The number of tests of LED products in the testing laboratories is increased. The number of test items for LED products in the testing laboratories is increased.	Testing reports by B4T and BARISTAND Surabaya Interview and questionnaire with/to B4T and BARISTAND Surabaya Testing reports by B4T and BARISTAND Surabaya Interview and questionnaire with/to B4T and BARISTAND Surabaya			
3 Capability of market surveillance for LED products is improved.	New approaches and/or checkpoints are applied in the market surveillance.	Market surveillance reports of MOI and MOT			
4 Capability of promoting prevalence of LED products is improved.	Seminars on LED products are conducted. Business matching between Indonesian and Japanese manufactures is conducted	Project monitoring sheet Project monitoring sheet			

Activities	Inputs		Important Assumption
	The Japanese Side	The Indonesian Side	
<p>1-1 To review standards of LED products for setting obligatory SNIs</p> <p>1-2 To draft standards of LED products</p> <p>1-3 To conduct dialogues between Indonesian and Japanese relevant organizations Example of the dialogue topics is "influences on LED industry from obligatory SNIs and the development policy of LED industry".</p> <p>1-4 To implement model programs discussed at dialogues</p>	<p>1. Dispatch of Japanese Experts - LED testing - LED market surveillance</p> <p>2. Provision of Machinery and Equipment</p> <p>3. C/P Training in Japan and/or Indonesia covering the following subjects: - Safety standards of LED products - Testing based on safety standards of LED products - Performance standards of LED products - Testing based on performance standards of LED products</p> <p>4. Support for Local Cost</p> <p>5. Others</p>	<p>1. Assignment of C/PS - Project Director - Project Manager - Other Staff - Testing - Production</p> <p>2. Facilities for the Project (utilities including power and water supply, and project offices etc.)</p> <p>3. Local Cost</p> <p>4. Others</p>	
<p>2-1 To grasp present situation of testing LED products</p> <p>2-2 To set up testing equipment for LED products</p> <p>2-3 To implement technical training for improving capability of testing LED products Possible training themes include: - Safety standards of LED products - Testing based on safety standards of LED products - Performance standards of LED products - Testing based on performance standards of LED products</p>			<p>Pre-Conditions</p> <p>The Project receives cooperation from government agencies related to policies of energy saving and system of standards and conformity assessment.</p>
<p>3-1 To conduct dialogues between Indonesian and Japanese relevant organizations Example of the dialogue topics is "the method of sample test conducted in Japan".</p> <p>3-2 To implement model programs discussed at dialogues Example of the model programs is a sample test in Indonesian market.</p>			
<p>4-1 To make survey and analyze present situation related to promoting prevalence of LED products</p> <p>4-2 To conduct dialogues between Indonesian and Japanese relevant organizations Example of the dialogue topics is "necessary support measures for Indonesian manufactures".</p> <p>4-3 To conduct seminars on LED products for Indonesian manufactures</p> <p>4-4 To organize business matching opportunity between Indonesian and Japanese manufacturers and discuss possible support programs for Indonesian manufactures</p>			<p><Issues and countermeasures></p>

Project Design Matrix

Project Title: Project for Developing Electronic Testing Laboratories and LED Industry

Implementing Agency: Center for Material and Technical Product (B4T), Ministry of Industry (MOI)

Target Group: MOI, Ministry of Energy, Mineral and Resources (MOEMR), Ministry of Trade (MOT), National Standardization Agency (BSN)

Period of Project: 4 years from the arrival of the first expert

Project Site: Jakarta and Bandung


Model Site: none

Version 3

Dated 30th August, 2021

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption	Achievement	Remarks
Overall Goal LED products with high energy saving and high safety performance are prevailed.	The number of LED products which satisfy standard requirements is increased. The number of LED products inspected by the market surveillance is increased.	Testing reports by B4T and BARISTAND Surabaya Market surveillance reports of MOI and MOT	The importance on policies of energy saving and developing system of standards and conformity assessment is not decreased in Indonesia.		
Project Purpose Operation for system of standards and conformity assessment and environment of promoting prevalence of LED products is improved.	Laboratories of testing LED products are accredited by Komite Akreditasi Nasional (KAN). SNIs of LED products are made obligatory.	Certificates from KAN Ministerial decree on SNIs	The roles of government agencies related to policies of energy saving and system of standards and conformity assessment are not changed.		
Outputs 1 Capability of developing standards of LED products is improved.	SNi drafts of LED products are approved by BSN Practical examples "how to effectively utilize the standards" of other countries including Japan are shared within the counterparts.	Ministerial decree of BSN Minutes of meetings of dialogues between Indonesian and Japanese relevant organizations	Policies of energy saving and system of standards and conformity assessment is maintained in Indonesia.		
2 Capability of testing LED products is improved.	The number of tests of LED products in the testing laboratories is increased. The number of test items for LED products in the testing laboratories is increased.	Testing reports by B4T and BARISTAND Surabaya Interview and questionnaire with/to B4T Testing reports by B4T and BARISTAND Surabaya Interview and questionnaire with/to B4T			
3 Capability of market surveillance for LED products is improved.	New approaches and/or checkpoints are applied in the market surveillance.	Market surveillance reports of MOI and MOT			
4 Capability of promoting prevalence of LED products is improved.	Seminars on LED products are conducted.	Project monitoring sheet			

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Activities	Inputs		Important Assumption
	The Japanese Side	The Indonesian Side	
1-1 To review standards of LED products for setting obligatory SNIs 1-2 To draft standards of LED products 1-3 To conduct dialogues between Indonesian and Japanese relevant organizations Example of the dialogue topics is "influences on LED industry from obligatory SNIs and the development policy of LED industry". 1-4 To implement model programs discussed at dialogues	1. Dispatch of Japanese Experts - LED testing - LED market surveillance 2. Provision of Machinery and Equipment 3. C/P Training in Japan and/or Indonesia covering the following subjects: - Safety standards of LED products - Testing based on safety standards of LED products - Performance standards of LED products - Testing based on performance standards of LED products	1. Assignment of C/Ps - Project Director - Project Manager - Other Staff : - Testing - Production 2. Facilities for the Project (utilities including power and water supply, and project offices etc.) 3. Local Cost 4. Others	
2-1 To grasp present situation of testing LED products 2-2 To set up testing equipment for LED products 2-3 To implement technical training for improving capability of testing LED products Possible training themes include: - Safety standards of LED products - Testing based on safety standards of LED products - Performance standards of LED products - Testing based on performance standards of LED products	4. Support for Local Cost 5. Others		Pre-Conditions The Project receives cooperation from government agencies related to policies of energy saving and system of standards and conformity assessment.
3-1 To conduct dialogues between Indonesian and Japanese relevant organizations Example of the dialogue topics is "the method of sample test conducted in Japan". 3-2 To implement model programs discussed at dialogues Example of the model programs is a sample test in Indonesian market.			
4-1 To make survey and analyze present situation related to promoting prevalence of LED products 4-2 To conduct dialogues between Indonesian and Japanese relevant organizations Example of the dialogue topics is "necessary support measures for Indonesian manufactures". 4-3 To conduct seminars on LED products for Indonesian manufactures			 <Issues and countermeasures>

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Project Design Matrix

Project Title: Project for Developing Electronic Testing Laboratories and LED Industry

Implementing Agency: Center for Material and Technical Product (B4T), Ministry of Industry (MOI)

Target Group: MOI, Ministry of Energy, Mineral and Resources (MOEMR), Ministry of Trade (MOT), National Standardization Agency (BSN)

Period of Project: 5th November 2019 - 4th November 2023 4 years from the arrival of the first expert


Project Site: Jakarta and Bandung

Model Site: none

Version 4

Dated 11th April, 2023

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption	Achievement	Remarks
Overall Goal LED products with high energy saving and high safety performance are prevailed.	The number of LED products which satisfy standard requirements is increased.	Testing reports by B4T and BARISTAND Surabaya	The importance on policies of energy saving and developing system of standards and conformity assessment is not decreased in Indonesia.	Due to the installation of a goniophotometer, the number of LED lamps inspected is increasing. This would contribute to an increase in the number of LED products which satisfy standard requirements. Difficult to achieve because B4T does not have the authority to implement market monitoring associated with mandatory standards.	Due to changes in inputs on the Indonesian side (due to absence of BARISTAND Surabaya and BSKJI), it became necessary to change the Objectively Verifiable Indicators and Means of Verification.
	The number of LED products inspected by the market surveillance is increased.	Market surveillance reports of MOI and MOT			
Project Purpose Operation for system of standards and conformity assessment and environment of promoting prevalence of LED products is improved.	Laboratories of testing LED products are accredited by Komite Akreditasi Nasional (KAN).	Certificates from KAN	The roles of government agencies related to policies of energy saving and system of standards and conformity assessment are not changed.	The Objectively Verifiable Indicators was achieved because Laboratories of testing LED products are accredited by KAN in 2022 (related to performance of LED lamps). Already achieved outside the project.	Due to changes in inputs on the Indonesian side, it became necessary to change the Objectively Verifiable Indicators and Means of Verification.
	SNIs of LED products are made obligatory.	Ministerial decree on SNIs			
Outputs 1 Capability of developing standards of LED products is improved.	SNI drafts of LED products are approved by BSN Practical examples "how to effectively utilize the standards" of other countries including Japan are shared within the counterparts.	Ministerial decree of BSN Minutes of meetings of dialogues between Indonesian and Japanese relevant organizations	Policies of energy saving and system of standards and conformity assessment is maintained in Indonesia.	Already achieved outside the project. The Objectively Verifiable Indicators was achieved because of a dialogue in November 2019 and training in June 2021. In addition to those, ASEAN study tour will be held in 2023.	Due to changes in inputs on the Indonesian side (due to absence of BSKJI), it became necessary to change the Objectively Verifiable Indicators and Means of Verification.
2 Capability of testing LED products is improved.	The number of tests of LED products in the testing laboratories is increased.	Testing reports by B4T and BARISTAND Surabaya Interview and questionnaire with/to B4T		Objectively verifiable indicators was achieved with the installation of the goniophotometer, which increased the number of LED products tested in the laboratory.	Due to changes in inputs on the Indonesian side (due to absence of BARISTAND Surabaya), it became necessary to change the Means of Verification.
	The number of test items for LED products in the testing laboratories is increased.	Testing reports by B4T and BARISTAND Surabaya Interview and questionnaire with/to B4T		Objectively verifiable indicators was achieved with the installation of goniophotometers, which increased the number of test items related to the performance of LED products.	
3 Capability of market surveillance for LED products is improved.	New approaches and/or checkpoints are applied in the market surveillance. The rate of defective LED lamps in domestic market, as well as the actual market surveillance activities, will be acknowledged.	Market surveillance reports of MOI and MOT Project completion report		The indicators will be achieved through the LED lamp market sampling survey planned to be conducted.	Due to changes in inputs on the Indonesian side (due to absence of BSKJI), it became necessary to change the Objectively Verifiable Indicators and Means of Verification.
4 Capability of promoting prevalence of LED products is improved.	Seminars on LED products are conducted.	Project monitoring sheet Project completion report		The indicator will be achieved through a seminar planned for implementation in 2023.	

Activities	Inputs		Important Assumption
	The Japanese Side	The Indonesian Side	
<p>1-1 To review standards of LED products for setting obligatory SNIs</p> <p>1-2 To draft stadards of LED products</p> <p>1-3 To conduct dialogues between Indonesian and Japanese relevant organizations Example of the dialogue topics is "influences on LED industry from obligatory SNIs and the development policy of LED industry".</p> <p>1-4 To implement model programs discussed at dialogues</p>	<p>1. Dispatch of Japanese Experts - LED testing - LED market surveillance</p> <p>2. Provision of Machinery and Equipment</p> <p>3. C/P Training in Japan and/or Indonesia covering the following subjects: - Safety standards of LED products - Testing based on safety standards of LED products - Performance standards of LED products - Testing based on performance standards of LED products</p> <p>4. Support for Local Cost</p> <p>5. Others</p>	<p>1. Assignment of C/Ps - Project Director - Project Manager - Other Staff : - Testing - Production</p> <p>2. Facilities for the Project (utilities including power and water supply, and project offices etc.)</p> <p>3. Local Cost</p> <p>4. Others</p>	
<p>2-1 To grasp present situation of testing LED products</p> <p>2-2 To set up testing equipment for LED products</p> <p>2-3 To implement technical training for improving capability of testing LED products Possible training themes include: - Safety standards of LED products - Testing based on safety standards of LED products - Performance standards of LED products - Testing based on performance standards of LED products</p>			<p>Pre-Conditions</p> <p>The Project receives cooperation from government agencies related to policies of energy saving and system of standards and conformity assessment.</p>
<p>3-1 To conduct dialogues between Indonesian and Japanese relevant organizations Example of the dialogue topics is "the method of sample test conducted in Japan".</p> <p>3-2 To implement model programs discussed at dialogues Example of the model programs is a sample test in Indonesian market.</p>			
<p>4-1 To make survey and analyze present situation related to promoting prevalence of LED products</p> <p>4-2 To conduct dialogues between Indonesian and Japanese relevant organizations Example of the dialogue topics is "necessary support measures for Indonesian manufactures".</p> <p>4-3 To conduct seminars on LED products for Indonesian manufactures</p>			<p style="text-align: center;"></p> <p><Issues and countermeasures></p>