別　添　資　料

1：　合同終了時評価報告書
2：　プロジェクト・デザイン・マトリック（PDM）
3：　プラン・オブ・オペレーション（PO）
4：日本側投入実績（専門家）
5：日本側投入実績（供与機材）
6：日本側投入実績（本邦／第三国研修）
7：日本側投入実績（現地活動費）
8：　インドネシア側投入実績（カウンターパートリスト）
9：　インドネシア側投入実績（ローカルコスト）
10：面談者リスト
11：中間レビューの提言に対する対応状況
12：評価グリッド
13：収集資料リスト

MINUTES OF MEETING
BETWEEN THE GOVERNMENT OF THE REPUBLIC OF INDONESIA AND JAPAN INTERNATIONAL COOPERATION AGENCY ON THE JOINT TERMINAL EVALUATION OF THE PROJECT FOR DEVELOPMENT OF INTERNATIONALLY STANDARDIZED MICROBIAL CENTER TO PROMOTE LIFE SCIENCE RESEARCH AND BIOTECHNOLOGY

The Japanese Terminal Evaluation Team (hereinafter referred to as "the Japanese Team"), organized by Japan International Cooperation Agency (hereinafter referred to as "JICA") led by Mr. Kei JINNAI, visited the Republic of Indonesia from 25 October to 14 November, 2015 for the purpose of conducting a terminal evaluation of the technical cooperation project "The Project for Development of Internationally Standardized Microbial Center to Promote Life Science Research and Biotechnology" (hereinafter referred to as "the Project") in the Republic of Indonesia.

The Indonesian Terminal Evaluation Team (hereinafter referred to as "the Indonesian Team"), organized by the Government of the Republic of Indonesia represented by Dr. Danang Waluyo, joined the Japanese Team from 3rd to 12th November 2015.

This evaluation was conducted by the Joint Terminal Evaluation Team (hereinafter referred to as "the Team"), which consists of the Japanese Team and the Indonesian Team. As a result of a series of surveys and discussions, the Team agreed on the contents of the joint terminal evaluation report (hereinafter referred to as "the Report") attached hereto.

Cibinong, 11 November 2015

Mr. Kei JINNAI
Leader of the Japanese Terminal Evaluation Team /
Director, Forestry and Nature Conservation Division 1
Forestry and Nature Conservation Group
Global Environment Department
Japan International Cooperation Agency
JAPAN

Dr. Danang Waluyo
Representative of the Indonesian Terminal Evaluation Team /
Head, Technology Services Division, Biotech Center, Agency for the Assessment and Application of Technology (BPPT)
REPUBLIC OF INDONESIA

Joint Terminal Evaluation Report

on

Project for Development of Internationally Standardized Microbial Center to Promote Life Science Research and Biotechnology

Joint Terminal Evaluation Team

12th November 2015

Contents

Abbreviations

ACM	The Asian Consortium for the Conservation and Sustainable Use of Microbial Resources
BAPPENAS	Ministry of National Development Planning
BRC	Biological Resource Center
CBD	Convention on Biological Diversity
FMIPA	Fakultas Matematika dan Ilmu Pengetahuan Alam (Faculty and Mathematics and Natural Sciences)
FORDA	Forestry Research and Development Agency
FORKOMIKRO	Communication Forum for Indonesian Culture Collection Curators
IBSAP	Indonesian Biodiversity Strategy and Action Plan
IDR	Indonesian Rupiah
InaCC	Indonesian Culture Collection (Indonesia Microbial Collection)
IPB	Institut Pertanian Bogor (Bogor Agricultural University)
JCC	Joint Coordinating Committee
JCM	Japan Collection of Microorganisms
JICA	Japan International Cooperation Agency
JPY	Japanese Yen
JST	Japan Science and Technology Agency
LIPI	Lembaga Ilmu Pengetahuan Indonesia (Indonesian Institute of Sciences)
MOU	Memorandum of Understanding
NBRC	Biological Resource Center, NITE
NITE	National Institute of Technology and Evaluation
OECD	Organization for Economic Cooperation and Development
PDM	Project Design Matrix
PO	Plan of Operation
RCB	Research Center for Biology – LIPI
RC Biotech	Research Center for Biotechnology – LIPI
RPJMN	Rencana Pembangunan Jangka Menengah Nasional (the National Mid-Term Development Plan)
RPJPN	Rencana Pembangunan Jangka Panjang Nasional (the National Long-Term Development Plan)
RS	Research Subject – Groups organized to achieve the Project Purpose
SATREPS	Science and Technology Research Partnership for Sustainable Development
SOP	Standard Operation Procedure
UGM	Universitas Gadjah Mada (Gadjah Mada University)
UI	Universitas Indonesia (University of Indonesia)
USD	United States Dollar
UT	The University of Tokyo
WFCC	World Federation for Culture Collections
WDCM	World Data Center for Microorganisms

1. Outline of the terminal evaluation

1-1. Purpose of the terminal evaluation

About four years and seven month have passed since commencement of the Project for Development of Internationally Standardized Microbial Center to Promote Life Science Research and Biotechnology (hereinafter referred to as "the Project") launched in April 2011. Considering the fact that the Project is to be completed in April 2016, Japan International Cooperation Agency (JICA) dispatched a terminal evaluation team and conducted the terminal evaluation survey from 25 October to 14 November 2015.

1-2. Methodology of Review

1-2-1. Process of the Terminal Evaluation

The Terminal Evaluation was conducted based on the Project Design Matrix (PDM) and Plan of Operation (PO). In accordance with the JICA Project Evaluation Guideline of June 2011, the Terminal Evaluation of the Project was conducted in the following manner;

(1) To review the Project Performance with focus on (i) the results of Inputs and Outputs implemented and (ii) the degree of achievement of Outputs, Project Purpose and Overall Goal based on the indicators set in the PDM;
(2) To analyze factors that promoted and/or inhibited the Project performance including matters related to both the Project design and project implementation process;
(3) To evaluate the Project based on the five evaluation criteria: "relevance", "effectiveness", "efficiency", "impact", and "sustainability";
(4) To analyze outcomes of the Project support for development of internationally standardized microbial center to promote life science research and biotechnology
(5) To make recommendations to stakeholders of the Project and derive lessons from the Project for improving planning and implementation of similar technical cooperation project in the future;
(6) To make a terminal evaluation report by joint evaluation team and get endorsement from the Joint Coordinating Committee.

1-2-2. Criteria of Evaluation

Table 1 shows the five evaluation criteria established by the Development Assistance Committee (DAC), Organization for Economic Co-operation and Development (OECD), which are to be applied in the Terminal Evaluation.

Table 1: Five Evaluation Criteria

Criterion	Description
Relevance	Degree of compatibility between the development assistance and priority of policy of the target group, the recipient, and the donor.
Effectiveness	A measure of the extent to which an aid activity attains its objectives (Project Purpose).
Efficiency	Efficiency measures the outputs in relation to the inputs. It is an economic term which is used to assess the extent to which aid uses the least costly resources possible in order to achieve the desired results. This generally requires comparing alternative approaches to achieving the same outputs, to see whether the most efficient process has been adopted.
Impact	The positive and negative changes produced by a development intervention, directly or indirectly, intended or unintended. This involves the main impacts and effects resulting from the activity on the local social, economic, environmental and other development indicators.
Sustainability	Sustainability is concerned with measuring whether the benefits of an activity are likely to continue after donor funding has been withdrawn Projects need to be environmentally as well as financially sustainable.

Source: JICA Guideline for Project Evaluation

1-2-3. Data Collection Method

Both quantitative and qualitative data were collected and utilised for analysis. Data collection methods used for the Terminal Evaluation were as follows:

- Literature/document reviews
- Questionnaires
- Key informant interviews
- Direct observation at project sites

1-3. Member of the Terminal Evaluation Team

Both sides had agreed to establish the Joint Terminal Evaluation Team (hereinafter referred to as "the Team"). The Team members of both Japanese and Indonesians sides are shown below.

(Japanese Side)

Designation	Name	Organization
Leader	Mr. Kei Jinnai	Director, Natural Environment Team 1 Forestry and Nature Conservation Group Japan International Cooperation Agency
Evaluation Planning	Ms. Satomi Tanaka	Technical Advisor, Natural Environment Team 1 Forestry and Nature Conservation Group Japan International Cooperation Agency
Evaluation Analysis	Mr. Teppei Okano	Consultant, Icons Inc.

Observer (JST Research Supervisor)	Dr. Shuichi Asanuma	Professor emeritus, Nagoya University Research Supervisor, Japan Science and Technology Agency
Observer (JST Research Evaluation)	Mr. Masayuki Sato	Principal Associate Research Supervisor, Department of International Affair (SATREPS Group), Japan Science and Technology Agency

(Indonesian Side)

Name	Organization
Dr. Yulin Lestari	Associate Professor, Department of Biology, Faculty and Mathematics and Natural Sciences (FMIPA), Bogor Agricultural University (IPB)
Dr. Danang Waluyo	Head, Technology Services Division, Biotech Center, Agency for the Assessment and Application of Technology (BPPT)

1-4. Schedule of the terminal evaluation survey mission

The terminal evaluation was conducted from 25 October to 14 November 2015. During the period, the team exchanged their views and had a series of discussions with researchers of the concerned organizations. Detailed schedule is shown in Table 2.

Table 2: Schedule of terminal evaluation

dd/mm	Day	Indonesian Side	Mr.Okano (Consultant)	Ms.Tanaka (JICA)	Dr.Asanuma (JST) Mr.Sato (JST)	Mr.Jinnai (JICA), Leader
26-Oct	Mon	Dr.Ir.Witjaksono M.Sc (PD) Dr.Achmad Dinoto(PM)	Discussion with JICA Indonesia Office Coming to InaCC, Courtesy visits(Director of RCB-LIPI)			
27-Oct	Tue	All RS Leaders and Sub leaders Dr.Atit Kanti, M.Sc and RS1 Members	9:00 Initial Meeting at InaCC with Project Members 14:00～ Interview with RS 1 Group			
28-Oct	Wed	RS2 Sub-leaders and RS2 Members	9:00～ Interview with RS 2 Group (RS2-A), (RS2-B), (RS2-C), (RS2-D),(RS2-E)			
29-Oct	Thu	Prof. I Made Sudiana and RS3 Members Dr. Achmad Dinoto and RS4 Members	9:00～ Interview with RS 3 Group 14:00～ Interview with RS 4 Group			
30-Oct	Fri	RS2 Sub-leaders and RS2 Members	9:00～ Interview with RS 2 members			
31-Oct	Sat	---	Documentation			
1-Nov	Sun	---	Documentation			
2-Nov	Mon	---	9:00 Discussion with JICA Indonesia Office			
		Dr.Ir.Witjaksono M.Sc (PD) Dr.Achmad Dinoto(PM)	14:00 Visit to InaCC, Courtesy call to Director of RCB-LIPI, Project Manager			
3-Nov	Tue	All Project Members	Project Progress Report Seminar at Meeting Room, RCB-LIPI, Cibinong			
4-Nov	Wed	Japanese Experts	Interview with Japanese Project Experts			
5-Nov		Prof. I Made Sudiana, Dr.Atit Kanti	Observation of RCB and InaCC Facility			
		Dr.Achmad Dinoto, Dr.Atit Kanti, Dr.Puspita Lisdiyanti,	Interview with PM and RS1, RS2 leaders			
6-Nov	Fri	---	Drafting Joint Evaluation Report			
7-Nov	Sat	---	Drafting Joint Evaluation Report			
8-Nov	Sun	---	Drafting Joint Evaluation Report for Joint Evaluation Meeting			
9-Nov	Mon	Dr. Achmad Dinoto (PM) Indonesian Reviewers	9:00-16:00 Joint Evaluation Meeting			
10-Nov	Tue	Dr. Achmad Dinoto (PM) Indonesian Reviewers	Drafting Joint Evaluation Report			Drafting Joint Evaluation Report
11-Nov	Wed	Dr. Achmad Dinoto (PM) Indonesian Reviewers	9:00-16:00 Joint Evaluation Meeting			9:00-16:00 Joint Evaluation Meeting

12-Nov	Thu	Indonesian Reviewers and Project Members	9:00 Signing for Joint Evaluation Report		9:00 Signing for Joint Evaluation Report
		Dr.Ir.Witjaksono M.Sc (PD) Dr.Achmad Dinoto(PM) Dr.Atit Kanti, Dr.Puspita Lisdiyanti and Sub Leaders Indonesian Reviewers	14:00 JCC Meeting		14:00 JCC Meeting
13-Nov	Fri		Report to JICA Indonesia Office		Report to JICA Indonesia Office

2. Outline of the Project

2-1. Project framework

The Project commenced on 7 April 2011 and will be terminated on 6 April 2016 at RCB-LIPI in Cibinong, Indonesia. It has been implemented based on PDM and PO as agreed in JCC on 11 March 2014.

The Project has been implemented with the aim to develop the internationally standardized microbial center to promote life science research and biotechnology in Indonesia. Toward the achievement of the Project Purpose and Overall Goal, the Project is designed in such a way that it develops functions of microbial resource center (InaCC) in LIPI (Output 1), isolates and identifies the new microbial resources originated from Indonesia (Output 2), isolates and characterizes the soil microorganisms (Output 3), isolates and identifies animal gut microbiota and selects for probiotics (Output 4). The Project framework shown in Table 3 is based on the Project Design Matrix (PDM) approved in March 2014 (See Annex 1).

Table 3: Overall Goal, Project Purpose and Outputs

Project Period: April 2011 to April 2016 (5 years)
Target Area: Cibinong, Bogor
Target Group: Indonesian Institute of Sciences
Overall Goal: Microbial resources at InaCC are utilized for sustainable economic development of Indonesia and improvement of quality of life globally in compliance with Convention on Biological Diversity (CBD).
Project Purpose: Internationally standardized microbial resource center (InaCC) as a core of Biological Resource Center in Indonesia to promote life science research and biotechnology is established.
Output 1: Functions of microbial resource center (InaCC) in LIPI are developed, to be a national reference collection and to serve as a center for researches, ex-situ conservation, training and sustainable utilization of microbial resources. **Output 2:** Isolation and identification of new microbial resources originated from Indonesia, which is beneficial to human welfare, food production, agriculture, and environmental restoration is conducted. **Output 3:** Soil microorganisms that have beneficial effects on agriculture, ecosystem conservation, and environmental restoration are isolated and characterized. **Output 4:** Animal gut microbiota are isolated, identified and selected for probiotics.

2-2. Implementation Structure of the Project

(1) Indonesian Institute of Sciences (LIPI)

Currently the Director of Research Center for Biology (RCB)-LIPI, bears overall responsibility for the Project as the Project Director. Head of InaCC, RCB-LIPI is responsible for the managerial and technical matters of the Project as the Project Manager. Besides, totally 65 members are assigned for implementation of the Project.

(2) JICA Experts

The JICA experts give necessary technical guidance, advice and recommendations to counterparts on any matters pertaining to the implementation of the Project.

(3) Joint Coordinating Committee (JCC)

The main functions of JCC are:

1) To approve the annual work plan of the Project.
2) To review the overall progress of the Project activities as well as the achievement of the above-mentioned annual plan; and
3) To review and exchange views on major issues arising from or in connection with the Project, and to recommend corrective measures.

3. Project Performance and Implementation Process

3-1. Inputs

3-1-1. Inputs by the Japanese Side

Table 4 shows the comparison of the planned as per PDM approved on 11th March 2014 and actual inputs from the Japanese side.

Table 4: Inputs by the Japanese Side

Planned	Actual (as of October 2015)
A. Japanese Experts Long term - Project Coordinator Short term (less than 12 months) - Chief advisor - Management of Biological Resource Center Database of Biological Resource Center Research on Filamentous Fungi, Yeasts, Lactic Acid Bacteria, Methane Producing Archaea, Bacteriophages, Bioremediation Bacteria, Actinobacteria, Microalgae, Soil Bacteria, Ectomycorrhizal Fungi, Probiotic for Chicken, Probiotic for Cattle, Chemical Analysis	A. Japanese Experts (See Annex 3) Long term - 1 long term expert (Project Coordinator) have been engaged Short term (less than 12 months) - Totally 32 short term experts have been dispatched. Output 1:5 / National Institute for Technology Evaluation (NITE) Output 2: 14 / NITE, 1 /Riken, 1 / J Power Output 3:7 / University of Tokyo (UT) Output 4: 4 / Riken - As of the end of October, 198 times of visit have been conducted (Total 1516 days, 50.02 M/M)

<table>
<tr>
<td>B. Counterpart training
- In Japan, and/or other countries</td>
<td>B. Counterpart Training in Japan and other countries (See Annex 4)
- The trainings in Japan and other countries have been provided. The total number of the counterpart personnel having participated in training in Japan is 69 persons and in other countries is 23 persons.
<table>
<tr><th></th><th>No of Days</th><th>No of participants</th></tr>
<tr><td>Japan</td><td>1012</td><td>69</td></tr>
<tr><td>Australia</td><td>7</td><td>1</td></tr>
<tr><td>China</td><td>16</td><td>4</td></tr>
<tr><td>Korea</td><td>19</td><td>4</td></tr>
<tr><td>Malaysia</td><td>24</td><td>6</td></tr>
<tr><td>Thailand</td><td>26</td><td>5</td></tr>
<tr><td>Vietnam</td><td>15</td><td>3</td></tr>
<tr><td>Total</td><td>1119</td><td>92</td></tr>
</table>
</td>
</tr>
<tr>
<td>C. Equipment
- Equipment for preservation of microorganisms
- Equipment for information technology
- Equipment for microscopic observation
- Equipment for isolation and cultivation of microorganisms
- Equipment for cellular component analysis
- Equipment for microbial activity analysis
- Equipment for genetic analysis</td>
<td>C. Equipment (See Annex 5)
- Equipment has been provided as planned. Totally 6,064,876,023 IDR (Approximately 49,792,6432 JPY) and 941,165 USD have been spent for the equipment such as Seamless mass spectrometer, Clean bench, Deep Freezer and Computers
- The value of equipment provided for LIPI and Gajah Mada University (UGM) is summarized as bellow
<table>
<tr><th></th><th>LIPI</th><th>UGM</th></tr>
<tr><td>IDR[1]</td><td>5,962,303,870
(Approx.48,950,515 JPY)</td><td>102,572,153
(Approx.842,117 JPY)</td></tr>
<tr><td>USD[2]</td><td>941,165
(Approx.112, 273,332 JPY)</td><td>0</td></tr>
</table>
</td>
</tr>
<tr>
<td>D. Total expenses
Part of the expenses related to the Project activities</td>
<td>D. Total expenses (See Annex 6)
- Totally 8,321,948,721 IDR have been executed as the Project operational cost (operating expenses, travel and meeting expenses etc.)
<table>
<tr><th>Fiscal Year</th><th>Total expense in IDR</th></tr>
<tr><td>2011</td><td>2,287,503,594</td></tr>
<tr><td>2012</td><td>1,698,178,137</td></tr>
<tr><td>2013</td><td>1,946,289,441</td></tr>
<tr><td>2014</td><td>1,781,442,164</td></tr>
<tr><td>2015(As of August)</td><td>608,535,386</td></tr>
<tr><td>Total</td><td>8,321,948,721
(Approx. 68,323,198 JPY)</td></tr>
</table>
</td>
</tr>
</table>

3-1-2. Inputs from the Indonesian side

Table 5 shows the comparison of the planned as per PDM approved on 11th March 2014 and actual inputs from the Indonesian side.

Table 5: Inputs by the Indonesian Side

Planned	Actual (as of October 2015)
A. Personnel - Project Director - Project Manager	A. Allocation of Counterpart Personnel (See Annex 7) The Project Director, the Project Manager and 65 counterpart personnel have been assigned for the Project.

[1] 1 IDR = 0.00821 JPY (JICA Rate in October 2015)
[2] 1 USD = 119.77 JPY (JICA Rate in October 2015)

<table>
<tr>
<td>- Management of Biological Resource Center
- Database for Biological Resource Center
- Equipment for Biological Resource Center
- Research on Filamentous Fungi
- Research on Yeasts
- Research on Lactic Acid Bacteria
- Research on Methane Producing Archaea
- Research on Bacteriophages
- Research on Bioremediation Bacteria
- Research on Actinobacteria
- Research on Microalgae
- Research on Soil Bacteria
- Research on Ectomycorrhizal Fungi
- Research on Probiotic for Chicken
- Research on Probiotic for Cattle</td>
<td>- Project Director: Director of RCB-LIPI
- Project Manager: Head of InaCC, RCB-LIPI (Head of Microbiology Division, until June 2014)
- Counterpart personnel
Output 1: 8 / RCB-LIPI, 1 / UGM, 1 / IPB, 1 / University of Indonesia (UI), 1 / Research Center for Biotechnology (RC Biotech)-LIPI
Output 2: 12 / RCB-LIPI, 14 / RC Biotech-LIPI, 2 / UI, 1 / IPB, 2 / UGM,1 / RC Oceanography, 1 researcher form Fisheries academy
Output 3: 8 / RCB-LIPI, 1 / IPB, 1 / FORDA(Forestry Research and Development Agency), 1 researcher form RD unit for Biomaterial-LIPI
Output 4: 5 / RCB-LIPI, 3 / RC Biotech-LIPI</td>
</tr>
<tr>
<td>B. Land, buildings and Facilities
- The buildings and facilities necessary for the performance of duties by the Japanese Experts and office space are located at Research Center for Biology LIPI buildings in Cibinong.
- Facilities such as electricity, water, sewerage system, telephones, internet and furniture necessary for the Project activities and operational expenses for utilities.
- Other facilities mutually agreed upon as necessary.</td>
<td>B. Land, buildings and Facilities
Followings have been provided by Indonesian side.
- Facility and equipment, including InaCC building
- Office space and necessary facilities for the Japanese experts
- Rooms and space necessary for installation and storage of equipment
- Spaces for seminars and conferences as necessary.
- Office equipment and facility
- Operational expenses
- Other expense as necessary</td>
</tr>
<tr>
<td>C. Operational expenses, counterpart budget, needed for the Project activities</td>
<td>C. Operational expenses, counterpart budget, needed for the Project activities (See Annex 8)
- Totally 40,460,766,100 IDR have been executed as the Project operational cost (Construction of InaCC building, provision of the equipment, operating expenses, travel and meeting costs etc.)
<table>
<tr><th>Fiscal Year</th><th>Expense</th></tr>
<tr><td>2012</td><td>9,608,000,000</td></tr>
<tr><td>2013</td><td>12,240,213,000</td></tr>
<tr><td>2014</td><td>17,892,250,500</td></tr>
<tr><td>2015</td><td>720,302,600</td></tr>
<tr><td>Total</td><td>40,460,766,100
(Approx. 332,182,889JPY)</td></tr>
</table>
</td>
</tr>
</table>

3-2. Progress of Activities

The activities have been conducted according to PO. There were some issues in the first half of the Project, such as 1) lack of the budget for field visit by Indonesian side, 2) unclear role of UI and 3) limited space for experiment. However, these issues have been solved already by the effort of the Project member. From the beginning of the Project, in general, the preliminary research has been conducted by the Indonesian researchers and further studies have been carried out by the Japanese experts for enhancement and validation. By the close technical guidance and instruction, necessary

skill and knowledge has been effectively transferred to Indonesian members. Currently most of activates related to Output 2, 3 and 4 are implemented without significant delay. As to Output 1, although some activities are slightly delayed due to the extension of the construction period of InaCC building and, all the activities are expected to be completed by the end of the Project.

The procedures of the application and distribution including the document preparation were developed by the assistance of the Project aiming at establishment of an international standardized gene bank. However, actual process of distribution has not been practiced by InaCC at this point. Therefore the Project plans to carry out a practical trial for the whole distribution process of the strains from the public collection in collaboration with other SATREPS project[3].

The strategies of implementation of each activities are reviewed as necessary based on the finding of research and external conditions. As for the additional activities, the research for the growth of microalgae in the waste water of shrimp pond has been launched (RS-2). The candidates of new taxa of mycorrhizal fungi were discovered through the sample collection and the implementation of further taxonomic research of the species is under consideration (RS-3-B). On the other hand, several activities under RS-3 slightly changed from original plan. Since the inoculation trial implemented with FORDA had not derived expected results, the Project continues the experiment with newly developed facility in RCB-LIPI aiming at capacity building of Indonesian researchers (RS-3-B). Also a part of the analysis of functional genes and the accumulation experiment have been abandoned due to the limitation of analytical equipment in Indonesia, however it has not affected to the achievement of outputs (RS-3-A).

3-3. Achievement of Outputs

3-3-1.Achievment of Output 1

Output 1:
Functions of microbial resource center (InaCC) in LIPI are developed, to be a national reference collection and to serve as a center for researches, ex-situ conservation, training and sustainable utilization of microbial resources.

Most indicators of the Output 1 have been achieved at the time of terminal evaluation and the remaining indicators are expected to be achieved by the end of the Project. The activities under Output 1 are mainly related to the operation and management of InaCC. Although the activities has started from the beginning of the Project, there is a slight delay in the implementation of activities from the

[3] "Project on Innovative Bio-Production in Indonesia : Integrated Bio-Refinery Strategy to Promote Biomass Utilization using Super-microbes for Fuels and chemicals Production" (2013 - 2018)

original timeline because the activities have been transferred to the new building of InaCC from the RCB-LIPI building after completion of its construction in September 2014. Since the commencement of the activities in the new building, the Project members have accelerated the process of registration of microbial isolates and so all the activity are expected to be completed by the end of the Project.

The role and function of the microbial resource center were explained to the counterpart in the various seminars and technical workshops. The same was explained to the members of the Communication Forum for Indonesian Culture Collection Curators (FORKOMIKRO). Regarding to the operation procedure of InaCC as a national reference collection, the Project prepared operation manual in reference to the OECD best practice guideline for biological resource center and a guideline for World Federation for Culture Collections (WFCC) which stipulates the procure of approval, deposition and quality control, RCB LIPI obtained ISO 9001:2008 certificate for InaCC together with the zoological museum and herbarium in February 2014. Since the InaCC's documents for ISO certification, including operation manual were prepared before the starting operation in new building, therefore it is necessary to adjust the operation manual to the current operation system.

About the establishment and operation of database, it still requires more time to be completed. Although most of result obtained by the activities under Output 2, 3 and 4 are ready to be included into the database, the Project needs to follow careful process of application and approval for deposition in order to secure the accuracy and the reliability of database. With the same reason, not only for the database establishment and its operation, but also the securing the accuracy and the reliability in the operation as the international standardized microbial resource center is very essential and needs to be carefully achieved. The detailed observation of the achievement of each verifiable indicator is as follows.

Indicators	Achievement
1-1. InaCC Operation Manual[4] is prepared and officially approved.	The indicator has been achieved. ・ InaCC operation manual has been prepared in Indonesian language and officially approved by LIPI headquarters and certified as ISO 9001: 2008. English version of manual needs to be prepared before the end of the Project. ・ Since the manual was developed before starting the operation at new InaCC building, the manual should be adjusted to the new work flow.
1-2. The microbial resource center (InaCC) is equipped with necessary facilities and equipment.	The indicator has been achieved. ・ The building of InaCC was constructed by the funds from Indonesian side. The necessary facility and equipment for the gene bank has been equipped.
1-3. Acquisition of 2,000 strains is	The indicator is expected to be achieved by the end of the Project.

[4] The Operation Manual will include 1) administration, 2) maintenance, 3) database management system, and 4) quality management in consideration with the OECD best practice guidelines for biological resource center.

completed in InaCC and relevant information is stored in the database based on the Operation Manual.	· At the time of terminal evaluation, 1098 strains have been deposited to the InaCC collection with relevant information. Although information of remaining strains are ready to store to the database of InaCC, the process of application and authorization for acquisition by InaCC takes time. All the Project members realize the importance and purpose of deposition of isolates, and currently accelerate the process of the application for the deposition.
1-4. InaCC registration numbers[5] are issued for the 2,000 acquisition based on the Operation Manual.	The indicator is expected to be achieved by the end of the Project. · Registration number for 1098 strains are already issued based on the operation manual. As with the description of indicator 1-3, the process of application and authorization takes time.
1-5. Database contains necessary data as defined in the Operation Manual for the internal and external users.	The indicator has been achieved. · The system of database have been established considering the minimum requirement of OECD guideline and referring the database of the Biological Resource Center, NITE (NBRC). · The database include 1) database of academic information of microorganisms, 2) database for stock management, 3) customer information and 4) procedures and application forms for the deposition and the delivery.
1-6. The stock preparations of at least 100 strains for distribution are made and opened to the public.	The indicator is expected to be achieved by the end of the Project. · Although the target number of stock preparation have not yet achieved, main strains which were used for the publication of papers are expected to be ready to distribute by the end of the Project.
1-7. InaCC obtains ISO9001 certification.	The indicator has been achieved. · The certification of ISO was obtained in February 5, 2014 by RCB-LIPI. InaCC staff were involved in the preparation of application in consult with the local consultant and the Research Center for Standardization and Quality Control System, LIPI. Thus their experience will be utilized at the time of renewal of ISO 9001:2008 in 2017. · RCB-LIPI plans to apply ISO 17025 (General requirements for the competence of testing and calibration laboratories) and when it was obtained, the renewal of ISO 9001:2008 shall be in line with ISO 17025.
1-8. The Post Project Management Plan for InaCC is prepared	The indicator is expected to be achieved by the end of the Project. · The plan has not yet been prepared. The operation plan of InaCC should be in line with National Medium-Term Strategic Development Plan (RPJMN) 2015- 2019 and strategy of RCB-LIPI. · The InaCC needs continued support of NITE, both parties have started the discussion considering the renewal of Memorandum of Understanding (MOU) and related documents between LIPI and NITE.

3-3-2.Achievment of Output 2

Output 2:
Isolation and identification of new microbial resources originated from Indonesia, which is beneficial to human welfare, food production, agriculture, and environmental restoration is conducted.

[5] InaCC Registration Number is the systematic serial number given to the strains preserved at InaCC.

Almost all of the indicators of Output 2 have been achieved. The wide range of research activity has been conducted under the Output 2. The research activities were carried out for the purpose to enrich the national collection of InaCC. At this point, totally 4289 strains have been isolated and identified. Nine hundred and ninety seven (997) strains have been registered as the public collection. Members of this research group are currently making effort to compile information to prepare the application forms for the registration for the database. At least 2,000 strains which already registered in the project collection will be deposited to the public collection by the end of the Project to achieve the indicators. As of October 2015, totally 4 papers were published, 3 papers accepted, 5 papers submitted and 13 papers in preparation.

Thirty three (33) Indonesian researches have joined to this research group and most of them realized the improvement of their knowledge and skills by the collaboration research with the Japanese experts. In particular, the guidance and instruction in writing scientific paper provided by Japanese experts are highly appraised by young researchers as really effective technical transfer to improve the skill of paper writing. In addition, 5 curators, who are in charge of the custody of the collection, have been assigned and trained by the Project. The detailed observation of the achievement of each verifiable indicator is as follows.

<table>
<tr><th>Indicators</th><th>Achievement</th></tr>
<tr><td>2-1. At least 50 candidates of new taxa of microorganisms are discovered.</td><td>The indicator has been achieved.
・ To date, 40 candidates of new taxa of yeast were discovered in base sequence of rRNA. 56 candidate of new taxa of actinomycetes also discovered.</td></tr>
<tr><td>2-2. At least 8 researchers are able to isolate and identify microorganisms belonging to five groups.(1. fungi, 2. yeasts, 3. actinomycetes, 4. bacteria, archaea, and bacteriophages, 5. microalgae).</td><td>The indicator has been achieved.
・ Fourteen (14) researchers became to be able to isolate and identify microorganisms through the collaborative research. These members acquired the skill and knowledge through the training in Japan as well.
<table>
<tr><th>Group</th><th>No.</th><th>Group</th><th>No.</th></tr>
<tr><td>Fungi</td><td>2</td><td>Archaea</td><td>1</td></tr>
<tr><td>Yeasts</td><td>1</td><td>Bacteriophages</td><td>1</td></tr>
<tr><td>Actinomycetes</td><td>3</td><td>Microalgae</td><td>3</td></tr>
<tr><td>Bacteria</td><td>3</td><td>Total</td><td>14</td></tr>
</table></td></tr>
<tr><td>2-3. At least 2,000 strains of microorganisms, belonging to the five groups, are collected, identified and preserved.</td><td>The indicator has been achieved.
・ Totally 4287 isolates were collected and identified. These isolates were stored as the project collection.
・ Among the project collection, at least 2000 strains are expected to be registered as the public collection by the end of the Project.
<table>
<tr><th>Group</th><th>No. of project collection</th><th>No. of public collection</th></tr>
<tr><td>Fungi</td><td>927</td><td>100</td></tr>
<tr><td>Yeasts</td><td>1445</td><td>351</td></tr>
<tr><td>Actinomycetes</td><td>800</td><td>275</td></tr>
<tr><td>Bacteria, Archaea, Bacteriophages</td><td>928</td><td>271</td></tr>
<tr><td>Microalgae</td><td>187</td><td>-</td></tr>
</table></td></tr>
</table>

	Total | 4287* | 997* *The number of strain is from RS 2 only. · All members of RS 2 realize the importance of registration of collected and identified isolates on the public collection. Researchers currently make effort to compile information to prepare application forms for the registration. Most of them are planning to complete the process by the end of 2015.
2-4. At least 10 potentially useful microorganisms for human welfare, food production, agriculture, and environmental restoration are obtained.	The indicator is expected to be achieved by the end of the Project. · Seven (7) types of potentially useful microorganisms (Yeast: 3, Actinomycetes: 2, Microalgae: 2) for human welfare, food production, agriculture, and environmental restoration are obtained. · Other microorganisms such as Fungi, Archaea are on the process to compile the result.

3-3-3. Achievement of Output 3

Output 3:
Soil microorganisms that have beneficial effects on agriculture, ecosystem conservation, and environmental restoration are isolated and characterized.

Most of the indicators of Output 3 have been achieved. Although some of the indicators have not yet completely achieved, it is expected to be attained the target goal by the end of the Project. As to research for bacteria, more than 50 strains which have beneficial function for agriculture and ecosystem restoration were isolated. The accumulation experiment on ammonium oxidizing bacteria of Indonesian soils had to be abandoned due to the limitation of facility, though the target of the activity was achieved in satisfactory level as set in the indicators. Regarding research for fungi, 54 strains of mychorrhizal were isolated and identified by the genetic analysis. Through the sample collection of fungi in the forest field survey, the candidates of new taxa of mycorrhizal fungi were discovered. The research group is eager to continue the implementation of further taxonomic research of the species. The detailed observation of the achievement of each verifiable indicator is as follows.

Indicators	Achievement
3-A. Bacteria	
3-A-1. At least 50 strains of soil bacteria that have beneficial function are isolated.	The indicator has been achieved. · The RS 3-A team isolated more than 50 strains of free-living nitrogen fixing bacteria which has beneficial function for agriculture and ecosystem restoration. · The accumulation experiment on ammonium oxidizing bacteria of Indonesian soils was abandoned due to the limitation of facility, though there was no significant impact to the achievement of the indicator. · Several candidate types of new taxa were discovered and the experiment for their identification will be continued in the remaining term of the Project.
3-A-2. Data on the activities of denitrification, nitrogen fixation, methane oxidization, and phosphate	The indicator has been achieved. · Data on denitrification, nitrogen fixation, methane oxidization, and phosphate solubilization of selected isolates were obtained

solubilization of selected isolates (or enriched cultures) under culture conditions are obtained.	
3-A-3. Data on the quantity and diversity of functional genes in soil relating to the denitrification, nitrogen fixation, ammonia oxidization, methane oxidization, and phosphate solubilization are obtained.	The indicator has been achieved. ・ The research for the genetic diversity of nitrite reductase and nitric oxide reductase in paddy field soils in Indonesia has been conducted based on the system analysis of their amino acid sequence. ・ Although the analysis of functional genes in soil was abandoned due to the limitation of the analytical instrument in Indonesia, the data on the quantity and diversity of nitrite reductase and nitric oxide reductase have been obtained.
3-A-4. Data on the diversity of functional genes in soil relating to the denitrification, nitrogen fixation, methane oxidization, and phosphate solubilization are obtained.	The indicator has been achieved. ・ Based on the classification and identification mentioned in 3-A-1, data on the diversity of functional genes in soil relating to the denitrification, nitrogen fixation, methane oxidization, and phosphate solubilization were obtained. ・ In particular, the large number of denitrifying bacteria were isolated and the research elucidates the existence of new group of denitrifiers was elucidated. The physiological test for the isolates will be completed by the end of the Project.
3-B. Fungi	
3-B-1. At least 50 strains of mycorrhizal are isolated and identified.	The indicator has been achieved. ・ Fifty four (54) strains of mychorrhiza were isolated and identified by the genetic analysis.
3-B-2. Ectomycorrhizal fungal diversity in major Indonesian forests is estimated quantitatively.	The indicator has been achieved. ・ Ectomychorrhizal diversity in major Indonesian forest (Sumatra pine forest, Dipterocarp forest and Tristaniopsis forest) was estimated, and the mychorrhizal diversity was compared between Indonesian and Japan isolates mychorhizal diversity are obtained. ・ The data is deemed as the most comprehensive of the tropical fungi group.
3-B-3. Molecular database (a hundred of species) and culture collection (at least ten species) of ectomycorrhizal fungi is prepared.	The indicator has been partially achieved and expected to be acomplished fully by the end of the Project. ・ More than 160 species of mycorrhizal fungi and spores in major Indonesian forests and more than 50 species of basidiocarp of mycorrhizal fungi (totally more than 210 species) were identified. The database of their base sequence has been developed and will be opened to public in parallel with the publication of papers. ・ Ten (10) ectomycorrhizal fungi were selected from isolated strains for culture collection. Currently the research group prepares for deposition according to InaCC and NBRC format. The research is conducted by The University of Tokyo in collaboration with LIPI, FORDA and IPB
3-B-4. Knowledge about the ecology and physiology of Indonesian ectomycorrhizal and endomychorhizal fungi are obtained.	The indicator has been achieved. ・ Inoculation trial using the Indonesian soils under controlled environment was conducted in FORDA and the contamination was considered as one of key factors. Since the project was aiming at the capacity building of Indonesian researchers, further experiment was conducted using newly developed facility in RCB-LIPI. ・ Indonesian researchers proved that they obtained knowledge about the ecology and physiology of Indonesian ectomycorrhizal and endomychorhizal.

3-3-4. Achievement of Output 4

Output 4:
Animal gut microbiota are isolated, identified and selected for probiotics.

All indicators of Output 4 have been achieved. As to animal gut microbiota of chicken, 60 strains are isolated and identified. Nine (9) of them are deposited to public collection and 51 of them are in the process. The taxonomical study for 9 strains of 3 species was conducted by the research group. Two (2) papers were submitted to International Journal of Systematic and Evolutionary Microbiology and 1 of them was accepted. Fifteen (15) candidates of probiotic were selected from 120 strains of lactic acid bacterium isolated from the intestine of chicken. Regarding gut microbiota of cattle, 84 strains were isolated and identified. All of them are in the process to deposit to the public collection. The taxonomical study for 6 strains of 3 species was conducted and several papers are in the preparation. More than 200 strains of lactic acid bacteria were isolated from the animal feed silage in Indonesia. It is found that 8 strains have an antibacterial activity against colon bacillus. Datasets on microbial diversity in intestine of chicken and rumen of cattle were obtained through the analysis by the molecular biological method. The detailed observation of the achievement of each verifiable indicator is as follows.

Indicators	Achievement
4-A. Chicken	
4-A-1. At least 50 strains are isolated and identified.	The indicator has been achieved. · Sixty (60) strains were isolated and identified. Nine (9) of them are deposited to the project collection and 51 of them are in the process. · More than 1000 strains were obtained from the intestine of chicken inhibit in Indonesia. Among those strains, 568 were deemed as the candidates of new taxa according to the identification of bacterial species by the result of 16S rRNA gene sequence. .
4-A-2. At least 3 candidates of new taxa are discovered.	The indicator has been achieved. · The taxonomical study for 9 strains of 3 species was conducted. Two (2) papers have been submitted to International Journal of Systematic and Evolutionary Microbiology and 1 of them was accepted. Another paper is in submission.
4-A-3. At least 10 candidates of probiotic are selected.	The indicator has been achieved. · Fifteen (15) candidates of probiotic were selected from the screening of 120 strains of lactic acid bacterium isolated from the intestine of chicken. · Administration test of 6 candidates was conducted using broiler chicken, it was found that administration of when the lactic acid bacterium is as effective as the antibiotics which are usually used for broiler chicken.
4-A-4. A set of data on microbial diversity in intestine of chicken is obtained.	The indicator has been achieved. · A set of data on microbial diversity in intestine of chicken was obtained through the analysis by the molecular biological method, such as T-RFLP method, Clone library method and quantitative PCR method.

4-B. Cattle	
4-B-1. At least 50 strains are isolated and identified.	The indicator has been achieved, ・ Eighty four (84) strains were isolated and identified. All of them are in the process of deposit to the public collection. ・ Eight hundred and twenty-seven (827) strains were are obtained from the rumen of cow inhibit in Indonesia. Among those strains, 532 were stored in the minus 80 degrees deep freezer. Twenty-one (21) deemed as the candidate of new taxa according to by the result of 16S rRNA gene sequence. Several papers will be submitted to International Journal of Systematic and Evolutionary Microbiology by the end of the Project.
4-B-2. At least 3 candidates of new taxa are discovered.	The indicator has been achieved. ・ The taxonomical study for 6 strains of 3 species was conducted.
4-B-3. At least 4 candidates of probiotic strains are selected.	The indicator has been achieved. ・ More than 200 strains of lactic acid bacteria were isolated from the animal feed silage in Indonesia. It was found that 8 strains have an antibacterial activity against *E. coli* Moreover, 6 strains among above 8 strains showed 66 to 70 % forage digestibility.
4-B-4. A set of data on microbial diversity in rumen of cattle is obtained.	The indicator has been achieved. ・ A set of data on microbial diversity in rumen of cow was obtained through the analysis by the molecular biological method such as Clone library method.

3-4. Achievement of Project Purpose

Project Purpose:
Internationally standardized microbial resource center (InaCC) as a core of Biological Resource Center in Indonesia to promote life science research and biotechnology is established.

All the indicators are expected to be achieved by the end of the Project. More than 2000 isolates have already been deposited as the project collection and those isolated are on the way to be deposited into the public collection. At the time of the terminal evaluation, 1098 isolates have been deposited to the public collection (Indicator a). The procedure for application, authorization and distribution of strains deposition has been arranged (Indicator b). As to database, the data entry is in the process. The database of the microbial resources which already published in the journals is open to the public and available for researches and development (Indicator c and d). Regarding compliance of the management system to ISO9001:2008, internal and external audits were conducted in December 2014 and no major violation against the quality management procedure was found.

Although the Project Purpose is expected to be achieved by the indicators set in the PDM, it is necessary to keep in mind that the InaCC's role as "internationally standardized microbial resource center". InaCC obtained ISO 9001:2008 and follows operational procedure of minimum standard of OECD best practice guideline, WFCC guideline and procedure of NBRC. The present operation manual and Standard Operation Procedure (SOP) were made before the starting of the operation at the new InaCC building for ISO 9001:2008 application. Therefore, they have to be adjusted to the

operation of building. Furthermore, since the present manual is written in Indonesian language, its English version needs to be produced to make the explanation of the procedure easy to the concerned bodies in other countries.

A well-equipped building was constructed by the funds of Indonesian government and adequate number of distinguished researchers belongs to the center. A MOU regarding the registration to the World Data Center for Microorganisms (WDCM) was exchanged with WCFF at The Asian Consortium for the Conservation and Sustainable Use of Microbial Resources (ACM) in 2015. However the establishment of the "internationally standardized microbial resource center" is still on the way. Since InaCC is newly established institute, the Project assists the operation according to the capacity of the Indonesian side considering the social and regal environment. It is unfeasible to achieve the same standard with other International microbial resource center such as NBRC at this point. Thus, although the target set by the Project Purpose is expected to be achieved by the end of the Project, InaCC is required to continue the operation securing accuracy and reliability under the procedure prepared by the Project and make effort to raise the degree of recognition of the center by national and international partners.

Indicators	Achievement
a) At least 2,000 strains of valuable Indonesian microbial resources are preserved in proper condition in microbial resource center (InaCC) in LIPI.	The indicator is expected to be achieved by the end of the Project. · One thousand and ninety-eight (1098) isolates have been deposited to InaCC Public collection at the time of terminal evaluation. · Over 4000 isolates have already been deposited as the Project collection from which totally 2000 isolates will be selected. So, the numerical target of the indicator is expected to be achieved by the end of the Project. · Since the Project put priority to keep accuracy and reliability of the collection of InaCC, the process of the deposition, such as preparation of the application and obtaining the authorization, needs to be carried out with very regulatory manner.
b) At least 100 strains are ready to be distributed following the approved procedure of InaCC.	The indicator is expected to be achieved by the end of the Project. · The establishment of procedure for application, authorization and distribution has been completed. The system of distribution has been developed for the public collection. The numerical target, at least 100 strains will be ready to be distributed by the end of the Project in parallel with preparation of database and the papers.
c) The database of microbial resources is used for internal management of InaCC.	The indicator is expected to be achieved by the end of the Project. · The data entry is in the process. InaCC has allocated a proper amount of human power for the entry work so as to smooth handling is possible. · The procedure and manuals for the quality management of InaCC were prepared in hard copy for the use by the researchers and technicians whenever necessary.
d) The database of microbial resources is made available and actually used for research & development by public.	The indicator has been partially achieved. However it is challenging to achieve the indicator completely by the end of the Project. · Regarding database of the microbial resources which already published in the paper are open to the public and available for

	research / development. The number of strain in the database is 864 at the time of terminal evaluation. ・ Database of the microbial resources have been available for external users. The procedure of the distribution was prepared. However, InaCC does not have experience to conduct actual distribution.
e) The internal audit reports show the compliance of the management system to ISO9001.	The indicator has been achieved. ・ Internal and external audits were conducted on December 2014. As a result of the both audits, no violation against ISO was found. ・ Since the ISO 9001:2008 was obtained before starting the operation on new InaCC building. The related document required for ISO 9001:2008 certification, has to be modified and the record of the modification should be compiled based on the protocol of ISO 9001:2008.

3-5. Prospective on Achievement of the Overall Goal

Overall Goal:
Microbial resources at InaCC are utilized for sustainable economic development of Indonesia and improvement of quality of life globally in compliance with Convention on Biological Diversity (CBD).

The indicators of the Overall Goal are expected to be achieved in 3 to 5 years after the completion of the Project by the effort of Indonesian partners. The basic techniques technology of isolation and handling of useful microbial resources have been transferred to Indonesian side through the collaborative research between by Indonesian and Japanese researchers under the Project. The Indonesian researchers have been acquired adequate skill and knowledge to conduct the application studies towards creation of social benefit in the country. Also the microorganisms which isolated and identified by the Project are expected to have high potential to be utilized for agriculture, environment conservation, fishery and many other industries. Therefore, it is important to promote the collaborative work with national and international partners after completion of the Project to create the social profits.

Indicators	**Achievement**
a) Microbial resources are distributed for economic development and scientific purposes.	It is expected to be achieved in 3 to 5 years after the completion of the Project by the effort of Indonesian partners. ・ The collaborative research between Indonesian researchers and Japanese researchers under the Project has discovered the wide range of possibility of their isolates for sustainable economic development of Indonesia and improvement of quality of life. ・ The Project has isolated and identified various microorganisms and these can be utilized for the problem solving in the Agriculture sector, environment conservation sector, fishery sector and other industries. ・ It is essential to make efforts to prove the function of the center reliable to the national and international partners.

b) Technologies are developed for economic and social development purposes based on the microbial resources at InaCC.	It is expected to be achieved in 3 to 5 years after the completion of the Project by the effort of Indonesian partners. · The basic techniques of isolation and handling of useful microbial resources have been transferred to Indonesian side. The Indonesian researchers have been acquired adequate skill and knowledge to conduct application studies of isolates towards creation of social benefit in the country.

3-6. Implementation Process

The Project members communicated in day to day basis while Japanese experts stayed in Indonesia and communicated by e-mail when the experts are out of the country. Also whenever Indonesian researchers faced the challenge on the Project activity, Japanese experts and the Project members discussed about the issues and tried to lead the solution. On the top of the communication among research groups, Joint Coordinating Committee (JCC) was established and played supervising role. In addition, the Project held annual meetings to report the progress in the activity and share the experience and issues to be solved. To date, JCC had been held 6 times as shown in Table 6 and annual meeting held ~~in~~ 5 times as shown in Table 7. The details of each JCC and annual meeting are as follows.

Table 6: Date and agenda of JCC

	Date	Venue	Agenda
1st	1 June 2011	Jakarta	Report on Kick off Meeting, Approval of Master plan
2nd	26 July 2012	Jakarta	Progress report on the Project activities, Confirmation and approval of the Project members
3rd	25 November 2013	Cibinong	Report on the Mid-term review
4th	11 March 2014	Cibinong	Approval of PDM and PO
5th	4 December 2014	Cibinong	Confirmation and approval of the Project members, Progress report on the Project activities, Report on the acquisition of ISO 9001:2008
6th	12 November 2015	Cibinong	Report on the terminal evaluation report

Table 7: Date and agenda of Annual Meeting

FY	Date	Venue	Agenda
2011	15 March 2012	Cibinong	Progress report of 4 research subjects by13 research groups, Training report.
2012	1 March 2013	Cibinong	Progress report on the Project activities, Discussion about the plan for next year etc.
2013	20 November 2013	Bogor	Report on the Mid-term review by the evaluators from JICA and JST.
2014	20 January 2015	Tokyo (Japan)	Progress report on the Project activities, Discussion and sharing the issues to be solved by each Research subject team, Operation plan of InaCC etc.
2015	3 November 2015	Cibinong	Progress report on the Project activities by each Research subject leader.

3-7. Contributing and Constraining Factors

The followings were revealed as main contributing and constraining factors of the Project implementation.

3-7-1. Contributing Factors

(1) Good communication and coordination among the Project members

Japanese experts established a good relationship with counterpart researchers and that contributed to the smooth implementation of the Project activities and effective technology transfers. Counterparts were encouraged to participate collaborative researches and accumulate knowledge and skills throughout the implementation of activities. In addition to the communication among the researches in the each research subject, the Project assigned a project coordinator as a long-term expert. Since a large number of Japanese experts, researchers and technicians have been involved in the Project (total 18 persons from Japanese side and 65 persons from Indonesian side), the coordination and arrangement by the project coordinator greatly contributed to the smooth implementation of the Project activities.

(2) Construction of InaCC building

There is a huge impact of the construction of InaCC building. The visit of the policy makers of BAPPENAS and LIPI to Japan in 2012 promoted the understanding of the necessity and importance of the biological resource center among the Indonesian decision makers. The construction of InaCC building was completed and inaugurated in September 2014. The building has enough space to install adequate facility and necessary equipment. The construction of InaCC building contributed to the effective implementation of the activities under the Project and at the same time, the ownership and motivation of Indonesian project members are increased.

(3) Long term involvement of the Indonesian researchers

Many Indonesian researchers have been involved in the Project activities from the beginning of the Project and they did experience the collaborative research with Japanese expert. Since the knowledge and skills have been accumulated in the each Indonesian member, their continued involvement secured the effectiveness of the Project and prevented the loss of the experience in InaCC, resulting in building a solid human resource base for InaCC.

3-7-2. Constraining Factors

(1) Turnover of the personnel

One of the most important inputs in any technical assistance projects is the allocation of counterpart personnel. The frequent changes in human resources may cause partial or considerable loss of technical knowledge and skills transferred without sufficient handovers. As to the Project, several member left from the Project for the study in abroad. Moreover, the project manager and project director were changed twice, respectively, during the Project period. It required time for the newly appointed leaders to understand the contents of the Project and operation procedure set up by the Project. The frequent turnover in the management position has constrained the leadership of Indonesian side and

management of the Project.

4. Evaluation Results

4-1. Relevance: High

The Project is intended to develop an internationally standardized microbial resource center to promote life science research and biotechnology in Indonesia. The contents and approach of the Project are highly consistent with the national policy and development needs of Indonesia. The Project is also consistent with Japan's cooperation policy for Indonesia.

(1) Priority in National Policy

Indonesia is a member country of CBD since 1993 and ratified the Cartagena Protocol on bio-safety in 2005 and the Nagoya Protocol in 2013. In the context, the establishment of national biological resource center was the important intervention area in the Indonesian Biodiversity Strategy and Action Plan (IBSAP 2003- 2020) which was developed by BAPENNAS. Also the Indonesian government recognized the importance of conservation of biodiversity in the National Long-Term Development Plan (RPJPN 2005-2025). The Project aims to promote life science research and biotechnology in Indonesia for sustainable economic development of Indonesia and improvement of quality of life globally in compliance with CBD. Therefore the Project is in line with these national strategy and development plan in Indonesia.

(2) Appropriateness of Project Approach

There was no national culture collection center complying with the international standard that could preserve biological resources and provide them for industrial and academic purposes in Indonesia. The Project has provided technical assistance to the area through collaboration research and technical transfer to the counterpart personnel of LIPI, including operation and management of culture collection in refer to NBRC. InaCC has been appointed to play roles on preserving the identified and characterized microbes that benefit for human welfare, technological transfer and dissemination in the National Medium-Term Development Plan 2015-2019 Book II (RPJMN 2015-2019 Buku II). The Project has assisted InaCC to serve their function. Thus, the approach of the Project is deemed as appropriate.

(3) Consistency with Assistance Policy of Japanese Government

Japan has consistently identified environment and biodiversity conservation as one of the primary areas for assistance for Indonesia in the Japan's ODA policy. Biodiversity conservation has also been identified in JICA's Country Analytical Work for Indonesia (2012) as a key area of the assistance. Therefore, the Project is consistent with Japanese aid policy and JICA's assistance policy for Indonesia.

4-2. Effectiveness: Relatively High

All the indicator are expected to be achieved by the end of the Project, though the indicators of the Project Purpose have not yet been achieved at the time of terminal evaluation. The Project Purpose will be achieved by the attaining Output 1 to Output 4. The relationship between Project Purpose and outputs is appropriate.

(1) Achievement of the Project Purpose

As mentioned in "3-4. Achievement of the Project Purpose", the Indicator e) of the Project Purpose has been achieved at this time and it is found that the other Indicators a), b) and c) are achievable by the end of the Project.

The remained Indicator d) is to measure the situation of database preparation and utilization. The database have been established and its online catalogue has been opened to the public. InaCC has distributed strains in the public collection to the external users on their requests, though neither the database nor the online catalogue were utilized in the process. As the system and procedure of the distribution have been set up already, the actual utilization of the database and the online catalogue is expected to fulfil the indicator. Therefore it would be important to promote the use of the Project outcomes for potential users through the public relation

As mentioned above, there is high possibility to achieve most of the indicators of the Project Purpose by the end of the Project, though InaCC is required to continue its operation in proper manner prescribed in the operation manual and SOP produced and prepared by the Project. To upgrade the capacity of InaCC and to enhance the function as an internationally standardized microbial resource center, continued effort to improve its accuracy and reliability would be essential through their operation of the culture collection.

(2) Relation between Project Purpose and Outputs

All outputs were designed to contribute to achievement of the Project Purpose aiming at the establishment of an internationally standardized microbial resource center as a core of Biological Resource Center in Indonesia. Output 2, 3 and 4 are mainly activities related to the collaborative research for new microbial resources originated from Indonesia (RS 2), soil microorganisms (RS 3), and animal gut microbiota (RS 4). All the results of each output have been aggregated into the activities related to Output 1 which enhance the function of InaCC as a culture collection of Indonesia (RS 1). These outputs are indispensable for achieving the target of the Project.

(3) Important Assumptions Affecting Achievement of Project Purpose

Important Assumption to achieve the Project Purpose described in PDM "Indonesian legal environment remains conducive" is expected to be satisfied. For the collaborative research conducted by the multinational researchers, it is quite important to follow the procedure stipulated in the law and regulation in the countries. As the Project carries out the activities according to the agreement following the Indonesian regulation, the legal environment is sufficiently conducive up to date.

4-3. Efficiency: High

The quality, volume and timing of the Project inputs by Japanese side and Indonesian side were adequate and led to achievement of outputs. The Project activities have been implemented by efficient project management and with addressing the situation change such as turnover of the counterpart personnel.

(1) Efficiency of Input by Japanese side

For the achievement of outputs, Japanese experts have been dispatched properly and committed to the project activities with high degree of expertise. Even though Japanese experts visited Indonesia with limited frequency, once a year or few times, the Project members communicated by e-mail before their visit and made the short stay effective and meaningful. Equipment have been procured according to the necessity of each research subject. These equipment were procured and installed in InaCC building or UGM. All the equipment were properly managed by Indonesian side. Training in Japan and other countries were provided to enhance the skill and knowledge of Indonesian members. As of October 2015, totally 92 persons participated to the training and contribute to the attainment of the each outputs. All these inputs have been effectively transferred into outputs.

(2) Efficiency of Input by Indonesian side

In the beginning of the project, there was lack of budget for travel expenses for the Indonesian researchers to conduct field research. The budget allocation has been improved and no major problem is found in input by Indonesian side such as budget allocation, human resources and facilities at this time. Especially the budget allocation for InaCC building and actual construction contributed greatly to the achievement of each outputs.

(3) Experience and equipment provided by the previous project

RCB and RC Biotech have experience to take a role as a counterpart of JICA's technical cooperation project. A part of necessary equipment to conduct the research activities were already provided by previous project.

(4) Achievement of Outputs

Output 1 has not been fully achieved yet and is expected to be achieved in the remaining period of the Project. Output 2, 3 and 4 have been mostly achieved as seen in "3.3 Achievement of Outputs".

4-4. Impact: High

(1) Prospect of Achievement of Overall Goal

The Project established a foundation of microbial resource center and transferred technology of isolation and handling of useful microbial resources to Indonesian side. The indicators of the Overall Goal is expected to be achieved in 3 to 5 years after the completion of the Project by the effort of Indonesian partners. The microorganisms isolated and identified by the Project are expected to have high potential to be utilized for agriculture, environment conservation, fishery and many other industries and expected to create the social profits.

(2) Awareness raising for values of the microbial resources by Indonesian side

A remarkable impact of the Project is the awariness raising for values of the microbial resources by Indonesian side. The Indonesian government has recognized the necessity of microbial resource center to promote the utilization of microbial resources for sustainable economic development and improvement of quality of life in Indonesia. For this reason, InaCC building with adequate equipment was constructed by Indonesian government. The Vice President of Indonesia and the Chairman of LIPI participated to the inauguration ceremony of InaCC building in September 2014 and it showed the high recognition in this sector by the Indonesian government. The Project largely contributed the process of the establishment of the center and it is considered as one of the significant achievement of the Project.

4-5. Sustainability: Relatively High

The political and technical sustainability will be secured as the Project has already been aligned with the existing policies and conducted careful technology transfer for the Indonesian partners. For the financial and organizational aspect of sustainability, adequate budget allocation and continuous capacity building of counterparts are required.

(1) Political Aspect

Indonesian government recognized the importance of conservation of biodiversity and utilization of microbial resources for sustainable development. Also sustainable operation of the microbial resource center is put high priority. Thus, the related policy is expected to be continued and there is no constraining factor securing sustainability from political aspect. The role of InaCC will be clearly stipulated in the Presidential decree which is in the process of preparation, and when the decree were

enforced, the sustainability would be further enhanced.

(2) Financial Aspect

Indonesian government secured 125,458,861,000 IDR for the overall budget for RCB-LIPI in 2015 of which 860 million IDR was allocated for InaCC. The budget for InaCC is supposed to be expensed for the procurement of consumables such as reagents, solvents and other chemicals. As to the budget for 2016, the overall budget of RCB-LIPI will be 124,210,550,000 IDR and 560 million IDR will be allocated to InaCC mainly for the procurement of consumables. The amount of budget of InaCC is reduced in 2016 compared with 2015.

The budget for 2016 is the minimum for the operation and maintenance cost of the national depository. Since InaCC has function to conduct research activities, depositing microbial resources, training, public awareness, and scientific services, therefore, InaCC should seek more budget to enhance its functions as national microbial genetic resources center.

(3) Organizational Aspect

InaCC obtained ISO 9001:2008 through RCB-LIPI. The documentations for the application of ISO 9001:2008 were designed for managing the institution in systematic manner and these documentations help to secure the sustainability from organizational aspect. The manual and procedure prepared by the Project will be updated before the completion of the Project and used for the future operation of InaCC. Internal audit and external audit were conducted in December 2014 and no major problem have been observed at the time. InaCC is required to comply with the procedure regulated by the ISO 9001:2008 in the post project period as well.

LIPI has recognised the importance of human resources for sustainable activities of InaCC. RCB-LIPI recruited 6 new graduates as the permanent research staff of InaCC in 2014 to enhance organizational capacity. They have been appointed to work on 1) yeast, 2) bacteria, 3) actinomycetes, 4) bacteriophage and archaea, 5) microalgae, and 6) microbial screening groups. Also 2 permanent technical staffs were appointed to help the works on preparation and preservation of microorganism. The reinforcement of the staff system is a positive factor to secure the sustainability from organizational aspect.

It was observed the issue on the procurement of the high quality consumables in proper timing due to the absence of suppliers in Indonesia. To keep the efficient implementation of the research at InaCC after the completion of the Project, the Indonesian side is required to collect information of supplier to secure the procurement route for timely procurement of high quality consumables.

(4) Technical Aspect

Most of Indonesian members have been involved in the Project activities since the beginning and accumulated the technology and knowledge including method for the experiment, handling of the microorganisms and preparation of the papers transferred by Japanese experts.

RCB already has general training program to maintain and upgrade the capacity of human resources, not specialized for InaCC. Therefore, InaCC needs to develop its own program in order to upgrade the transferred technology, knowledge and skill to enhance the function of InaCC as national microbial genetic resources center.

(5) Research Aspect

The function of InaCC as a national genetic resource center is secured by the core budget of RCB-LIPI as mentioned in "(2) Financial Aspect". The researchers obtain regular research budget from integrated research program. In addition, the budget for the research can also be obtained by several competitive funds and cooperation with national/international partners to secure the opportunity to conduct their researches according to their necessity. Since the researchers have experiences to continue the research activity under these circumstances, it is expected the researchers are able to secure the budget from competitive funds to carry out further study utilizing the outcome of the Project.

4-6. Conclusions

From the perspective of the five evaluation criteria, the relevance of the Project is assessed as High since the conservation of biodiversity and utilization of microbial resources are one of the high priorities area for the Indonesian government and the Project's target is in line with the national development plan.

The effectiveness of the Project is deemed as Relatively High. The Project Purpose are expected to be achieved all in all by the end of the Project.

The efficiency of the Project is assessed as High. Most inputs that are necessary for the implementation of activities have been allocated as planned and the timing, quality and volume of input were appropriate both by Indonesian side and Japanese side.

The Project's impact is deemed as High since there is possibility to achieve the Overall Goal by the continued effort by the Indonesian side. Also the external conditions have to be fulfilled.

The Sustainability of the Project is assessed as Relatively High. The political, technical and financial sustainability is expected to be secured. On the other hand, organizational sustainability remains some minor issues.

For further improvement of the Project in the remaining term of the Project and the post project period, the Team recommends the measures presented in "5-1. Recommendations".

5. Recommendations and Lessons Learned

5-1. Recommendations

5-1-1 Recommendation for the Project (Both Japanese side and Indonesian side)

(1) Achievement of the indicators of the Project Purpose

The Project shall achieve the indicators of the Project Purpose that have not yet accomplished at the time of terminal evaluation by the end of the Project. Although the number of the strains deposited in the project collection is around 5000, only 1098 strains of them have been registered to the public collection at the time of terminal evaluation. The Project shall accelerate the registration to the public collection from the project collection to fulfil the indicator, at least 2000 strains before the completion of the Project.

(2) Verification of InaCC's function in response to the third party's request for the public collection through distribution practice

Internationally standardized microbial resource centers are obliged to distribute their collection to the third parties. To verify this function of InaCC, the Project is recommended to conduct the distribution practice of strains of the public collection in response to the request from the SATREPS Project for Innovative Bio-Production in Indonesia: Integrated Bio-Refinery Strategy to Promote Biomass Utilization using Super-microbes for Fuels and Chemicals Production by the end of the Project.

(3) Enhancement of the distribution systems of the public collection

The Project is necessary to prepare various strain distribution systems such as lyophilized ampules in certified quality. In addition, it is necessary to secure human resources for maintenance of the public collection and experienced and skilful technicians to assist curators. At the same time, it is necessary to conduct the further capacity building of the curators and technicians.

(4) Adjustment of InaCC operation manual

The present InaCC operation manual was prepared in Indonesian language in November 2013. The Project shall adjust the present InaCC operation manual for the new work flow at the InaCC building by the end of the Project. In addition, it is advisable to prepare an English document that is required by global users to understand the InaCC's operation according to the internationally standardized quality and services.

(5) Establishment of "Research and Development Collection" and its utilization

The isolates of the Project were stored as the project collection, some portion of them were registered into the public collection after authentication, but reasonable numbers of isolates have been

remained in the project collection. Although RCB-LIPI and NBRC, NITE have agreed on the close of the project collection at the end of the Project, the Project shall consider to utilize those remained project collection for further use.

(6) Development of Post Project Management Plan for InaCC

The Project shall develop the Post Project Management Plan for InaCC by the end of the Project to sustain the InaCC after the termination of the Project considering following six points;

1) To work as the national deposit organization assigned in the strategic plan of LIPI and RPJMN.
2) To develop the annual budget plan to sustain InaCC's activities.
3) To develop the five years plan for recruitment of staff such as researchers, technicians, etc. for securing necessary human resources.
4) To develop the capacity of staff such as curators, researchers, technicians, etc.
5) To maintain the facility and equipment properly.
6) To enhance the function of InaCC as a National culture depository in supporting national/international scientific activities.

(7) Promotion of the Project outcomes for sustainable economic development

The Project shall promote the use of the Project outcomes for potential users through the public relation such as seminar, workshop, website, online catalogue etc.

Each research outcomes are expected to have high potentials for sustainable economic development such as agriculture, environment conservation, fishery etc. For instance, in this Project, microalgae was tested for waste water treatment of shrimp ponds aiming at the future production of various substances. Mycorrhiza is useful for restoration of Dipterocarp forest. Probiotics could be used by poultry industry for the replacement of antibiotics. Thus, the isolates of the Project are expected to be used for sustainable economic development in future.

The Project is also expected to collaborate with other SATREPS projects such as Bio-Refinery Project for distribution of strains from the public collection.

5-1-2 Recommendation for InaCC, RCB-LIPI

(1) Preparation and utilization of laboratory manual

The experiment procedures such as handling techniques of microorganisms, reagents volume measurement , L-drying ampule preparation of microorganisms and other laboratory techniques are needed to be compiled in the SOP based on the ISO9001:2008 for quality assurance and continuation of work of RCB-LIPI and InaCC.

(2) Appointment of person-in-charge of operation and maintenance for the equipment

InaCC has been equipped with instruments for specified analysis purposes. InaCC should assign person-in-charge for operation and maintenance of such equipment in proper manner.

(3) Renewal of ISO9001:2008 in 2017

The certification of ISO9001:2008 was obtained in 5th February 2014. RCB-LIPI is necessary to carry out their daily activities in compliance with ISO9001:2008 with necessary improvement to the change in work environment caused by the transfer of InaCC activities from Botany-Microbiology building to new InaCC building in September 2014 to fulfil the next renewal of certification in 2017.

(4) Obtainment of ISO17025 for certification as internationally standardized laboratory

RCB-LIPI is making an effort to obtain ISO17025 for quality control of analysis and laboratory work (experimentation). RCB-LIPI is expected to obtain ISO17025 at early stage for higher recognition as internationally standardized microbial resource center. InaCC shall take measure to manage its resources, so both research and service activities can be conducted effectively.

5-1-3 Recommendation for LIPI

(1) Policy making for Access and Benefit-sharing (ABS) of Nagoya Protocol

LIPI, Scientific Authority of ABS for Indonesia, is expected to act in collaboration with the Indonesian focal point[6] for the acceleration of making policy regarding ABS of Nagoya Protocol. The bio-resources of Indonesia are widely recognized to be a valuable asset for the sustainable economic development of Indonesia and improvement of quality of life globally.

5-2. Lessons Learned

(1) Great efforts of the Project members for construction of InaCC

Deputy of BAPPENAS, Chairman, Deputy Chairman for Life Sciences and Principal Secretary of LIPI visited NBRC to observe the advanced Biological Resource Centers (BRC) in Japan and they clearly recognised the importance of the microbial resource center in Indonesia. The Japanese experts and RCB-LIPI researchers took a great effort to convince them and coordinate their visit to Japan. As the results of their visit, budgets for construction of InaCC had been secured and InaCC was set up finally. Thus, the Project members' great effort led to the realization of the construction of InaCC.

[6] Dr. Tachrir Fathoni / Directorate General of Natural Resources and Ecosystem Conservation, Ministry of Environment and Forestry

Annex 1: Project Design Matrix

Project Title: Project for Development of Internationally Standardized Microbial Resources Center (InaCC*) to Promote Life Science Research and Biotechnology
Project Site: Cibinong, Indonesia
Project Period: April 7, 2011 to April 6, 2016 (five years)
Principal Organizations: Japanese Side: Biological Resource Center, National Institute of Technology and Evaluation (NITE-BRC)
Indonesian Side: Research Center for Biology, Indonesian Institute of Sciences (RCB-LIPI)

As of 11 March, 2014

Narrative Summary	Objectively Verifiable Indicators	Means of Verifications	Important Assumptions
Overall Goal: Microbial resources at InaCC are utilized for sustainable economic development of Indonesia and improvement of quality of life globally in compliance with Convention on Biological Diversity(CBD).	a) Microbial resources are distributed for economic development and scientific purposes. b) Technologies are developed for economic and social development purposes based on the microbial resources at InaCC.	a) Annual Report of InaCC b) Annual Report of InaCC	International legal environment remains conducive.
Project Purpose: Internationally standardized microbial resource center (InaCC) as a core of Biological Resource Center in Indonesia to promote life science research and biotechnology is established.	a) At least 2,000 strains of valuable Indonesian microbial resources are preserved in proper condition in microbial resource center (InaCC) in LIPI. b) At least 100 strains are ready to be distributed following the approved procedure of InaCC. c) The database of microbial resources is used for internal management of InaCC. d) The database of microbial resources is made available and actually used for research & development by public. e) The internal audit reports show the compliance of the management system to ISO9001.	a-1) Database a-2) Documentation of the strains b-1) Database b-2) Documentation of the strains c) Database/ Homepage d) Database/ Homepage e) Internal Audit Report	Indonesian legal environment remains conducive.
Outputs: 1. Functions of microbial resource center (InaCC) in LIPI are developed, to be a national reference collection and to serve as a center for researches, ex-situ conservation, training and sustainable utilization of microbial resources.	1-1. InaCC Operation Manual** is prepared and officially approved. 1-2. The microbial resource center (InaCC) is equipped with necessary facilities and equipment. 1-3. Acquisition of 2,000 strains is completed in InaCC and relevant information is stored in the database based on the Operation Manual. 1-4. InaCC registration numbers*** are issued for the 2,000 acquisition based on the Operation Manual. 1-5. Database contains necessary data as defined in the Operation Manual for the internal and external users. 1-6. The stock preparations of at least 100 strains for distribution are made and opened to the public. 1-7. InaCC obtains ISO9001 certification. 1-8. The Post Project Management Plan for InaCC is prepared	1-1. Operation Manual 1-2. List of equipments 1-3. Database/ Deposit Form 1-4. Database/ Notice of Registration Number 1-5. Database/ Homepage 1-6. Database/ Homepage/ Certificate of Availability 1-7. Certificate 1-8.Strategic Plan	

Annex 1: Project Design Matrix

2. Isolation and identification of new microbial resources originated from Indonesia, which is beneficial to human welfare, food production, agriculture, and environmental restoration is conducted.	2-1. At least 50 candidates of new taxa of microorganisms are discovered. 2-2. At least 8 researchers are able to isolate and identify microorganisms belonging to five groups*. *(1. fungi, 2. yeasts, 3. actinomycetes, 4. bacteria, archaea, and bacteriophages, 5. microalgae). 2-3. At least 2,000 strains of microorganisms, belonging to the five groups, are collected, identified and preserved. 2-4. At least 10 potentially useful microorganisms for human welfare, food production, agriculture, and environmental restoration are obtained.	2. Publication (MoV for all indicators) 2-1. Report by the project 2-2. Report by the project 2-3. Report by the project 2-4. Report by the project	
3. Soil microorganisms that have beneficial effects on agriculture, ecosystem conservation, and environmental restoration are isolated and characterized.	3-A. Bacteria 3-A-1. At least 50 strains of soil bacteria that have beneficial function are isolated. 3-A-2. Data on the activities of denitrification, nitrogen fixation, methane oxidization, and phosphate solubilization of selected isolates(or enriched cultures) under culture conditions are obtained. 3-A-3. Data on the quantity and diversity of functional genes in soil relating to the denitrification, nitrogen fixation, ammonia oxidization, methane oxidization, and phosphate solubilization are obtained. 3-A-4. Data on the diversity of functional genes in soil relating to the denitrification, nitrogen fixation, methane oxidization, and phosphate solubilization are obtained. 3-B. Fungi 3-B-1. At least 50 strains of mycorrhizal are isolated and identified. 3-B-2. Ectomycorrhizal fungal diversity in major Indonesian forests is estimated quantitatively. 3-B-3. Molecular database (a hundred of species) and culture collection (at least ten species) of ectomycorrhizal fungi is prepared. 3-B-4. Knowledge about the ecology and physiology of Indonesian ectomycorrhizal and endomychorhizal fungi are obtained.	3.A Publication (MoV for all indicators) 3-A-1. Report by the project 3-A-2. Report by the project 3-A-3. Report by the project 3-A-4. Report by the project 3.B Publication (MoV for all indicators) 3-B-1. Report by the project 3-B-2. Report by the project 3-B-3. Report by the project 3-B-4. Report by the project	

Annex 1: Project Design Matrix

4. Animal gut microbiota are isolated, identified and selected for probiotics.	4-A. Chicken 4-A-1. At least 50 strains are isolated and identified. 4-A-2. At least 3 candidates of new taxa are discovered. 4-A-3. At least 10 candidates of probiotic are selected. 4-A-4. A set of data on microbial diversity in intestine of chicken is obtained. 4-B. Cattle 4-B-1. At least 50 strains are isolated and identified. 4-B-2. At least 3 candidates of new taxa are discovered. 4-B-3. At least 4 candidates of probiotic strains are selected. 4-B-4. A set of data on microbial diversity in rumen of cattle is obtained.	4.A Publication (MoV for all indicators) 4-A-1. Report by the project 4-A-2. Report by the project 4-A-3. Report by the project 4A-4. Report by the project 4.B Publication (MoV for all indicators) 4-B-1. Report by the project 4-B-2. Report by the project 4-B-3. Report by the project 4-B-4. Report by the project	
Activities: 1-1. Develop an organizational structure of InaCC 1-2. Prepare an Operation Manual** in consideration with the ISO 9001 Quality Management System and the OECD Best Practice Guidelines for biological resource center, as well as in compliance with the Indonesian laws and regulations. 1-3. Procure the necessary facilities and equipment to operate the microbial resource center. 1-4. Train the technical staffs based on the Operation Manual. 1-5. Socialize the staffs with the InaCC Management System. 1-6. Develop and improve the existing database of microorganisms preserved in the microbial resource center (InaCC), based on the information obtained during the project. 1-7. Develop a home page of InaCC that is accessible by public. 1-8. Accept the deposit of strains from Output 2, 3, and 4 at InaCC. 1-9. Preserve the received strains from Output 2, 3, and 4 at InaCC. 1-10. Prepare the stock for distribution of InaCC strains. 1-11. Confirm the procedure of acquisition and quality management by using the strains obtained from outside of the Project. 1-12. Prepare The Post Project Management Plan 2.1. Isolate and identify microorganisms belonging to fungi, yeasts, bacteria, archaea, bacteriophages and microalgae. 2.2. Preserve the microorganism studied, using long term preservation approach. 2.3. Conduct chemotaxonomy analysis, molecular identification, preservation methods, and other methods in accordance to the international standard procedures. 2.4. Conduct microbial assay for evaluating beneficial microorganism to human welfare. 2.5. Carry out training for capacity building on microbiological taxonomy in collaboration with microbiologist communities. 2.6. Publish research findings through various channels.	**Inputs:** **Japan** **Experts** Long term - Project Coordinator Short term(less than 12 months) - Chief advisor - Management of Biological Resource Center - Database of Biological Resource Center - Research on Filamentous Fungi - Research on Yeasts - Research on Lactic Acid Bacteria - Research on Methane Producing Archaea - Research on Bacteriophages - Research on Bioremediation Bacteria - Research on Actinobacteria - Research on Microalgae - Research on Soil Bacteria - Research on Ectomycorrhizal Fungi - Research on Probiotic for Chicken - Research on Probiotic for Cattle - Research on Chemical Analysis **Machinery and Equipment** - Equipment for preservation of microorganisms - Equipment for information technology - Equipment for microscopic observation - Equipment for isolation and cultivation of microorganisms - Equipment for cellular component analysis - Equipment for microbial activity analysis - Equipment for genetic analysis	**Indonesia** **Project Participants** - Project Director - Project Managers - Management of Biological Resource Center - Database for Biological Resource Center - Equipment for Biological Resource Center - Research on Filamentous Fungi - Research on Yeasts - Research on Lactic Acid Bacteria - Research on Methane Producing Archaea - Research on Bacteriophages - Research on Bioremediation Bacteria - Research on Actinobacteria - Research on Microalgae - Research on Soil Bacteria - Research on Ectomycorrhizal Fungi - Research on Probiotic for Chicken - Research on Probiotic for Cattle **Land, Buildings and Facilities** - The buildings and facilities necessary for the performance of duties by the Japanese Experts and office space are located at Research Center for Biology LIPI buildings in Cibinong. - Facilities such as electricity, water, sewerage system, telephones, internet and furniture necessary for the Project activities and operational expenses for utilities. - Other facilities mutually agreed upon as necessary.	

Annex 1: Project Design Matrix

2.7. Deposit the selected strains at InaCC. 3.A. Soil Bacteria 3-A-1. Isolate the denitrifying, nitrogen fixing (including nodule-forming), and phosphate solubilizing bacteria from arable soil, and carry out identification. 3-A-2. Establish enriched cultures of methane oxidation bacteria. 3-A-3. Analyze the activities of denitrification, nitrogen fixation (or nodulation effect), phosphate solubilization, and methane oxidation of selected isolates/enriched cultures. 3-A-4. Conduct functional gene analysis of the isolates/enriched cultures involved in denitrification, phosphate solubilization, and methane oxidation. 3-A-5. Publish research findings through various channels. 3-A-6. Deposit the selected strains to InaCC. 3-B. Ectomycorrhizal Fungi 3-B-1. Collect mycorrhizal fungi from tropical rainforest and carry out phylogenetic and diversity analysis. 3-B-2. Select mycorrhizal fungi potentially effective to promote the growth of trees. 3-B-3. Analyze the effects of mycorrhizal fungi to enhance the growth of trees. 3-B-4. Publish research findings through various channels. 3-B-5. Deposit the selected strains at InaCC. 4-A. Chicken 4-A-1. Isolate and identify the intestinal bacteria of chicken. 4-A-2. Screen the bacteria isolated for probiotics. 4-A-3. Evaluate the effects of probiotic bacteria on chicken productivity. 4-A-4. Carry out molecular ecological study of chicken intestine. 4-A-5. Publish research findings through various channels. 4-A-6. Deposit the selected strains at InaCC. 4-B. Cattle 4-B-1. Isolate and identify lactic acid bacteria of cattle rumen and silage. 4-B-2. Screen lactic acid bacteria for probiotics. 4-B-3. Evaluate the effects of probiotic bacteria on cattle productivity. 4-B-4. Carry out molecular ecological study of cattle rumen. 4-B-5. Publish research findings through various channels. 4-B-6. Deposit the selected strains at InaCC.	**Training of Indonesian Project Participants in Japan**		

* InaCC stands for Indonesian Culture Collection and interchangeably indicated as "microbial resource center".

**The Operation Manual will include 1) administration, 2) maintenance, 3) database management system, and 4) quality management in consideration with the OECD best practice guidelines for biological resource centers.

*** InaCC Registration Number is the systematic serial number given to the strains preserved at InaCC.

ANNEX 2 : PLAN OF OPERATION

25 Nov 2013

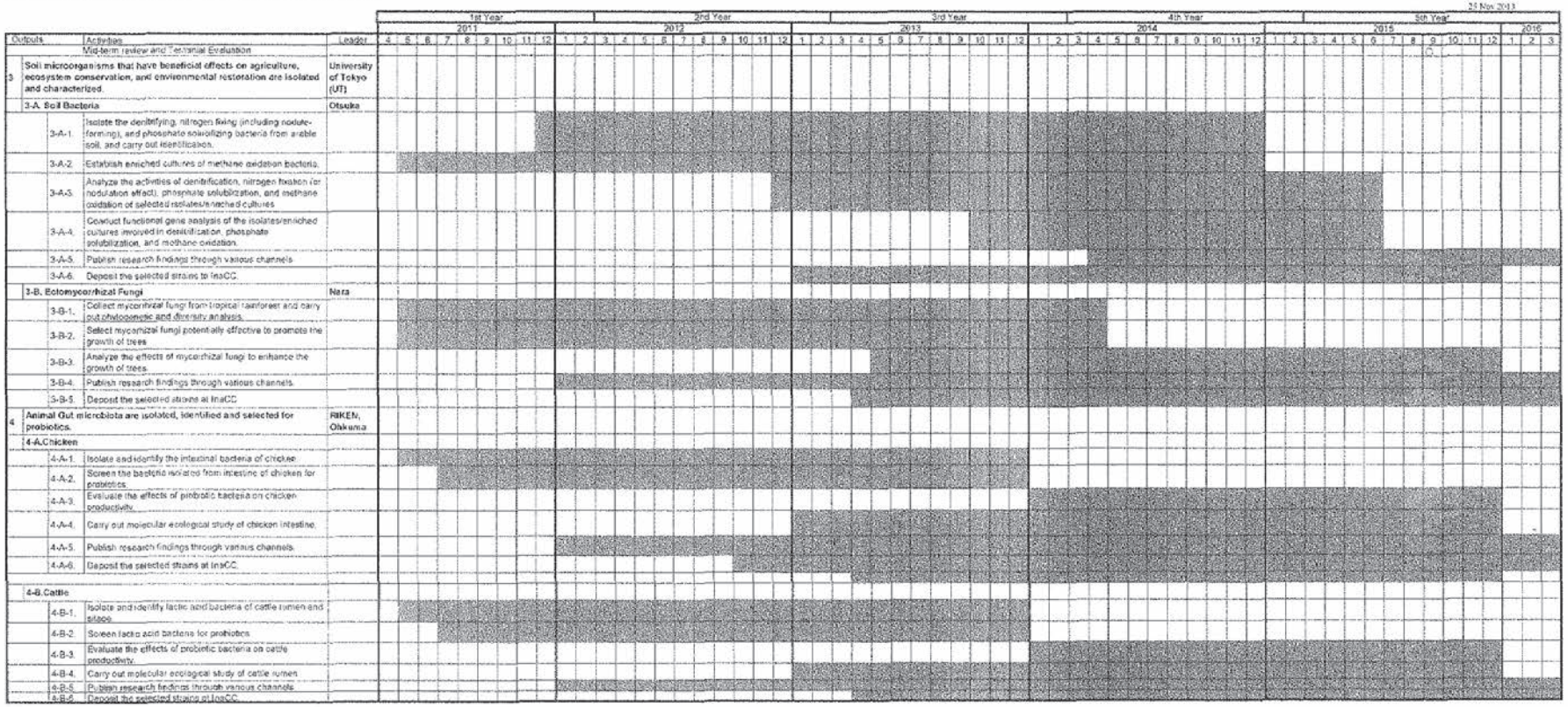
Outputs		Activities	Leader	1st Year 2011 4 5 6 7 8 9 10 11 12	2nd Year 2012 1 2 3 4 5 6 7 8 9 10 11 12	3rd Year 2013 1 2 3 4 5 6 7 8 9 10 11 12	4th Year 2014 1 2 3 4 5 6 7 8 9 10 11 12	5th Year 2015 1 2 3 4 5 6 7 8 9 10 11 12	2016 1 2 3
		Mid-term review and Terminal Evaluation							
1		**Functions of microbial resource center in LIPI are developed to serve as a center for researches, ex-situ conservation, training and sustainable utilization of microbial resources.**	NITE, Suzuki						
	1-1.	Develop an organizational structure of InaCC.							
	1-2.	Prepare an Operation Manual** in consideration with the ISO 9001 Quality Management System and the OECD Best Practice Guidelines for biological resource center, as well as in compliance with the Indonesian laws and regulations.							
	1-3.	Procure the necessary facilities and equipment to operate the microbial resource center.							
	1-4.	Train the technical staffs based on the Operation Manual							
	1-5.	Socialize the staffs with the InaCC Management System							
	1-5.	Develop and improve the existing database of microorganisms preserved in the microbial resource center (InaCC), based on the information obtained during the project.							
	1-6.	Develop a home page of InaCC that is accessible by public.							
	1-7.	Accept the deposit of strains from Output 2, 3, and 4 at InaCC.							
	1-8.	Preserve the received strains from Output 2, 3, and 4 at InaCC.							
	1-9.	Prepare the stock for distribution of InaCC strains.							
	1-10.	Confirm the procedure of acquisition and quality management by using the strains obtained from outside of the Project.							
	1-11.	Prepare the Post Project Management Plan.							
2		**Isolation and identification of new microbial resources originated from Indonesia, which is beneficial to human welfare, food production, agriculture, and environmental restoration is conducted.**	NITE, Kawasaki						
	2-1.	Isolate and identify microorganisms belonging to fungi, yeasts, bacteria, archaea, bacteriophage and microalgae							
	2-2.	Preserve the microorganisms studied, using long term preservation approach.							
	2-3.	Conduct chemotaxonomy analysis, molecular identification, preservation methods, and other methods in accordance to the international standard procedures							
	2-4.	Conduct microbial assay for evaluating beneficial microorganism to human welfare.							
	2-5.	Carry out training for capacity building on microbiological taxonomy in collaboration with microbiologist communities.							
	2-6.	Publish research findings through various channels.							
	2-7.	Deposit the selected strains at InaCC.							

Continuous Revision and Maintenance of the contents

別添資料 1

ANNEX 2 : PLAN OF OPERATION

25 Nov 2013



ANNEX 3: Input by Japanese side (Expert)

As of November 2015

List of Japanese Members

(1) Project Leader
Current Project Leader

Name	Position in the Organization	Project Assignment Period
Dr. Ken-ichiro Suzuki	Senior Director, NITE	April 2011 – March 2016

(2) Research Subject Personnel
a. Research Subject 1 (RS1)
a-1 Current project members

	Name	Position in the Organization	Project Assignment Period	Responsible Activities of PDM
1	Dr. Ken-ichiro Suzuki	Senior Director, NITE	April 2011 – March 2016	Leader of RS1 in Japanese side
2	Dr. Hiroko Kawasaki	Director, NITE	June 2012 – March 2016	Member of Management group
3	Ms. Hitoe Fukawa	Manager, NITE	April 2011 – March 2016	Member of Management group
4	Dr. Yasuyoshi Nakagawa	Director, NITE	April 2011 – March 2016	Member of Management group
5	Mr. Hajime Sato	Chief, NITE	April 2011 – March 2016	Member of Database group
6	Mr. Masami Ichihara	Director, NITE	April 2011 – March 2016	Member of Database group
7	Ms. Sayaka Ban	Chief, NITE	April 2011 – March 2016	Member of Database group

b. Research Subject 2 (RS2)
b-1 Current project members

	Name	Position in the Organization	Project Assignment Period	Responsible Activities of PDM
1	Dr. Hiroko Kawasaki	Director, NITE	April 2011 – March 2016	Leader of RS2 in Japanese side and Subleader of RS2-B
2	Dr. Izumi Okane	Visiting researchers, NITE	April 2011 – March 2016	Subleader of RS2-A
3	Dr. Akira Nakagiri	Visiting researchers, NITE	April 2011 – March 2016	Member of RS2-A
4	Dr. Gen Okada	Research Scientist, RIKEN	April 2011 – March 2016	Member of RS2-A
5	Dr. Shigeki Inaba	Chief, NITE	April 2011 – March 2016	Member of RS2-A
6	Mr. Atsushi Yamazaki	Chief, NITE	April 2011 – March 2016	Member of RS2-B
7	Dr. Ryuichi Kobayashi	Research Staff, NITE	April 2013 – March 2016	Member of RS2-B
8	Dr. Tomohiko Tamura	Manager, NITE	April 2011 – March 2016	Subleader of RS2-C
9	Dr. Moriyuki Hamada	Chief, NITE	April 2011 – March 2016	Member of RS2-C

ANNEX 3: Input by Japanese side (Expert)

As of November 2015

10	Dr. Yoshihito Uchino	Chief, NITE	April 2011 – March 2016	Member of RS2-C
11	Dr. Atsushi Yamazoe	Chief, NITE	August 2013 – March 2016	Member of RS2-C
12	Dr. Hideaki Nojiri	Professor, Univ. Tokyo	August 2013 – March 2016	Member of RS2-C
13	Dr. Koji Mori	Chief, NITE	April 2011 – March 2016	Subleader of RS2-D
14	Ms. Mika Miyashita	Chief, NITE	April 2011 – March 2016	Member of RS2-D
15	Dr. Katsutoshi Fujita	Chief, NITE	April 2011 – March 2016	Member of RS2-D
16	Dr. Yuki Muramatsu	Chief, NITE	June 2013 – March 2016	Member of RS2-D
17	Mr. Akira Hosoyama	Senior Chief, NITE	April 2014 – March 2016	Member of RS2-D
18	Dr. Hiroshi Sekiguchi	Chief, NITE	April 2011 – March 2016	Subleader of RS2-E
19	Mr. Kazuya Okada	Staff, NITE	October 2012 – March 2016	Member of RS2-E
20	Dr. Mitsufumi Matsumoto	Researcher, Wakamatsu Institute, Electric Power Development Co., ltd.	December 2014 – March 2016	Member of RS2-E
21	Mr. Daichi Sumida	Project Staff, Wakamatsu Institute, Electric Power Development Co., ltd.	November 2015 – March 2016	Member of RS2-E

**RS2-A:Fungi, RS2-B:Yeast, RS2-C:Actinomycetes and Bioremediation Microbes, RS2-D:Archaea, Lactic Acid Bacteria, Bacteriophages and Rhizobium, RS2-E:Microalgae*

b-2 Former project members

	Name	Position in the Organization	Project Assignment Period	Responsible Activities of PDM
1	Dr. Misa Otoguro	Chief, NITE	April 2011 – March 2012	Member of RS2-C
2	Mr. Junya Seita	Chief, NITE	April 2011 – March 2013	Member of RS2-D
3	Dr. Hisayuki Komaki	Senior Chief, NITE	April 2012 – March 2014	Member of RS2-C

C. Research Subject 3 (RS3)

c-1 Current project members

	Name	Position in the Organization	Project Assignment Period	Responsible Activities of PDM
1	Dr. Shigeto Otsuka	Associate Professor, Univ. Tokyo	April 2011 – March 2016	Leader of RS3 in Japanese side and Subleader of RS3-A
2	Dr. Kazuo Isobe	Assistant Professor, Univ. Tokyo	April 2011 – March 2016	Member of RS3-A
3	Dr. Yuki Muramatsu	NITE	April 2011 – March 2016	Member of RS3-A
4	Dr. Kazuhide Nara	Associate Professor, Univ. Tokyo	April 2011 – March 2016	Subleader of RS3-B
5	Dr. Masao Murata	Project Researcher, Univ. Tokyo	April 2011 – March 2016	Member of RS3-B

ANNEX 3: Input by Japanese side (Expert)

As of November 2015

6	Dr. Yumiko Miyamoto	Project Researcher, Univ. Tokyo	April 2013 – March 2016	Member of RS3-B

c-2 Former project members

	Name	Position in the Organization	Project Assignment Period	Responsible Activities of PDM
1	Dr. Akihiko Kinoshita	Visiting Researcher, Univ. Tokyo	April 2011 – March 2013	Member of RS3-A
2	Dr. Megumi Tanaka	Project Researcher, Univ. Tokyo	April 2011 – September 2014	Member of RS3-B

D. Research Subject 4 (RS4)

d-1 Current project members

	Name	Position in the Organization	Project Assignment Period	Responsible Activities of PDM
1	Dr. Moriya Ohkuma	Head of Microbe Division, RIKEN	April 2011 – March 2016	Leader of RS4 in Japanese side and Sub leader of RS4-A & B
2	Dr. Mitsuo Sakamoto	Research Scientist, RIKEN	April 2011 – March 2016	Member of RS4-A & B
3	Dr. Tomohiro Irisawa	Assistant Professor, Tokyo University of Agriculture	April 2011 – March 2016	Member of RS4-A & B
4	Dr. Yoshimi Benno	Invited Senior Scientist, RIKEN	April 2011 – March 2016	Member of RS4-A & B

c-2 Former project members

	Name	Position in the Organization	Project Assignment Period	Responsible Activities of PDM
1	Dr. Maki Kitahara	Cooperating Scientist, RIKEN	April 2011 – March 2015	Member of RS4-A & B

ANNEX 4: Input by Japanese Side (Training in Japan and other countries)

Name	RS	Institution	Accepting Organization	Place	JFY	Date of Arrival	Date of Departure
Dr. Iman Hidayat	RS2	RCB-LIPI	AMC	AMC2011,Korea	2011	6-Aug-2011	12-Aug-2011
Dr. Achmad Dinoto	RS4	RCB-LIPI	IUMS,NBRC,RIKEN	NBRC, Japan	2011	5-Sep-2011	15-Sep-2011
Dr. Yantyati Widyastuti	RS4	RCBiotech-LIPI	IUMS,NBRC,RIKEN	NBRC, Japan	2011	5-Sep-2011	15-Sep-2011
Dr. Heddy Julistiono	RS2	RCB-LIPI	IUMS,NBRC	NBRC, Japan	2011	5-Sep-2011	15-Sep-2011
Mr. Arif Nurkanto	RS2	RCB-LIPI	IUMS,NBRC	NBRC, Japan	2011	5-Sep-2011	15-Sep-2011
Dr. Wellyzar Siamsuridzal	RS2	UI	IUMS,NBRC	NBRC, Japan	2011	5-Sep-2011	15-Sep-2011
Dr. Puspita Lisdiyanti	RS2	RCBiotech-LIPI	IUMS,NBRC	NBRC, Japan	2011	5-Sep-2011	17-Sep-2011
Ms. Atit Kanti	RS2	RCB-LIPI	IUMS,NBRC	NBRC, Japan	2011	5-Sep-2011	17-Sep-2011
Dr. Iman Hidayat	RS2	RCB-LIPI	IUMS,NBRC	NBRC, Japan	2011	5-Sep-2011	17-Sep-2011
Dr. Uway W Mayhar	RS1	RCB-LIPI	NBRC	NBRC, Japan	2011	12-Sep-2011	15-Sep-2011
Dr. Achmad Dinoto	RS4	RCB-LIPI	ACM	ACM,Malaysia	2011	9-Oct-2011	12-Oct-2011
Dr. Yantyati Widyastuti	RS4	RCBiotech-LIPI	ACM	ACM,Malaysia	2011	9-Oct-2011	12-Oct-2011
Ms. Atit Kanti	RS1	RCB-LIPI	ACM	ACM,Malaysia	2011	9-Oct-2011	12-Oct-2011
Dr. Puspita Lisdiyanti	RS2	RCBiotech-LIPI	ACM	ACM,Malaysia	2011	9-Oct-2011	12-Oct-2011
Dr. Iman Hidayat	RS2	RCB-LIPI	ACM	ACM,Malaysia	2011	9-Oct-2011	12-Oct-2011
Prof.Dr. I Made Sudiana	RS3	RCB-LIPI	Univ.of Tokyo	UT, Japan	2011	7-Nov-2011	12-Nov-2011
Dr. Yopi	RS2	RCBiotech-LIPI	NBRC	NBRC, Japan	2011	20-Feb-2012	2-Mar-2012
Ms. Atit Kanti	RS1	RCB-LIPI	Hanoi Univ	Hanoi, Vietnam	2012	25-Apr-2012	29-Apr-2012
Dr. Puspita Lisdiyanti	RS1	RCBiotech-LIPI	Hanoi Univ	Hanoi, Vietnam	2012	25-Apr-2012	29-Apr-2012
Prof.Dr. Endang Trisye	RS1	UGM	Hanoi Univ	Hanoi, Vietnam	2012	25-Apr-2012	29-Apr-2012

ANNEX 4: Input by Japanese Side (Training in Japan and other countries)

Name	RS	Institution	Accepting Organization	Place	JFY	Date of Arrival	Date of Departure
Ms. Atit Kanti	RS2	RCB-LIPI	NBRC	Kazusa, Japan	2012	14-May-2012	26-May-2012
Mr. Dian Alfian	RS2	RCB-LIPI	NBRC	Kazusa, Japan	2012	14-May-2012	26-May-2012
Ms. Atit Kanti	RS1	RCB-LIPI	WDCM	Beijing, China	2012	6-Jun-2012	9-Jun-2012
Prof.Dr. Lukman Hakim	---	LIPI Chairman	NBRC	Kazusa, Japan	2012	20-Jun-2012	23-Jun-2012
Prof.Dr. Bambang Prasetya	---	LIPI Deputy Chairman	NBRC	Kazusa, Japan	2012	20-Jun-2012	23-Jun-2012
Dr.Ir. Djusman Sajuti	---	LIPI Secretary General	NBRC	Kazusa, Japan	2012	20-Jun-2012	23-Jun-2012
Dr. Prasetijono Widjojo	---	BAPPENAS Deputy	NBRC	Kazusa, Japan	2012	20-Jun-2012	23-Jun-2012
Mr. Rachmat Mulianda.M.Mar	---	BAPPENAS Director	NBRC	Kazusa, Japan	2012	20-Jun-2012	23-Jun-2012
Mr.Ir. Achmad Jauhar Arief.M.Sc	RS1	RCB-LIPI	NBRC	Kazusa, Japan	2012	20-Jun-2012	23-Jun-2012
Dr. Puspita Lisdiyanti	RS1	RCBiotech-LIPI	NBRC	Kazusa, Japan	2012	20-Jun-2012	23-Jun-2012
Prof. Endang Sutriswati Rahayu	RS2	UGM	NBRC	Kazusa, Japan	2012	26-Aug-2012	9-Sep-2012
Dr. Dwi Susilaningsih	RS2	RCBiotech-LIPI	NBRC	Kazusa, Japan	2012	3-Sep-2012	26-Sep-2012
Ms. Delicia Yunitarachman	RS2	RCBiotech-LIPI	NBRC	Kazusa, Japan	2012	3-Sep-2012	29-Sep-2012
Ms. Elvi Yetti	RS2	RCBiotech-LIPI	NBRC	Kazusa, Japan	2012	3-Sep-2012	29-Sep-2012
Mr. Achmad Jauhar Arief	RS1	RCB-LIPI	NBRC	Kazusa, Japan	2012	17-Sep-2012	22-Sep-2012
Mr. Muhamd Ridwan	RS1	RCB-LIPI	NBRC	Kazusa, Japan	2012	17-Sep-2012	22-Sep-2012
Mr. Dian Alfian	RS2	RCB-LIPI	NBRC	Kazusa, Japan	2012	11-Oct-2012	24-Oct-2012

ANNEX 4: Input by Japanese Side (Training in Japan and other countries)

Name	RS	Institution	Accepting Organization	Place	JFY	Date of Arrival	Date of Departure
Ms. Atit Kanti	RS1	RCB-LIPI	ACM	Changmai, Thailand	2012	24-Oct-2012	27-Oct-2012
Dr. Puspita Lisdiyanti	RS1	RCBiotech-LIPI	ACM	Changmai, Thailand	2012	24-Oct-2012	27-Oct-2012
Mr. Achmad Jauhar Arief	RS1	RCB-LIPI	ACM	Changmai, Thailand	2012	24-Oct-2012	27-Oct-2012
Prof.Dr. I Made Sudiana	RS3	RCB-LIPI	Univ.of Tokyo	Tokyo, Japan	2012	13-Dec-2012	21-Dec-2012
Dr. Sri Widawati	RS3	RCB-LIPI	NBRC	Kazusa, Japan	2012	13-Dec-2012	22-Dec-2012
Mr. Sugiono Saputra	RS4	RCB-LIPI	RIKEN	Tsukuba, Japan	2013	10-Jun-2013	5-Jul-2013
Mr. Muhammad Ilyas	RS2	RCB-LIPI	Univ.of Tsukuba	Tsukuba, Japan	2013	2-Sep-2013	26-Oct-2013
Ms. Rohmatussolihat	RS2	RCBiotech-LIPI	NBRC	Kazusa, Japan	2013	17-Sep-2013	31-Oct-2013
Dr. Puspita Lisdiyanti	RS1	RCBiotech-LIPI	ACM, ICCC	Beijing, China	2013	21-Sep-2013	26-Sep-2013
Dr. Bambang Sunarko	RS1	RCB-LIPI	ACM, ICCC	Beijing, China	2013	21-Sep-2013	23-Sep-2013
Mr. Achmad Jauhar Arif, M.Sc	RS1	RCB-LIPI	ACM, ICCC	Beijing, China	2013	21-Sep-2013	23-Sep-2013
Ms. Atit Kanti	RS2	RCB-LIPI	NBRC	Kazusa, Japan	2013	17-Oct-2013	9-Nov-2013
Dr. Puspita Lisdiyanti	RS2	RCBiotech-LIPI	NBRC	Kazusa, Japan	2013	17-Oct-2013	9-Nov-2013
Ms. Shanti Ratnakomala	RS2	RCBiotech-LIPI	NBRC	Kazusa, Japan	2013	17-Oct-2013	9-Nov-2013
Mr. Arif Nurkanto	RS2	RCB-LIPI	NBRC	Kazusa, Japan	2013	17-Oct-2013	9-Nov-2013
Ms. Wulansih Dwi Astuti	RS4	RCBiotech-LIPI	RIKEN	Tsukuba, Japan	2013	28-Oct-2013	27-Nov-2013
Dr. Bambang Sunarko	RS1	RCB-LIPI	NBRC	Kazusa, Japan	2013	5-Nov-2013	9-Nov-2013
Mr. Achmad Jauhar Arif, M.Sc	RS1	RCB-LIPI	NBRC	Kazusa, Japan	2013	5-Nov-2013	9-Nov-2013
Ms. Delicia Yunitarachman	RS2	RCBiotech-LIPI	NBRC	Kazusa, Japan	2013	27-Nov-2013	21-Dec-2013
Mr. Dian Alfian	RS2	RCB-LIPI	NBRC	Kazusa, Japan	2013	2-Dec-2013	21-Dec-2013

ANNEX 4: Input by Japanese Side (Training in Japan and other countries)

Name	RS	Institution	Accepting Organization	Place	JFY	Date of Arrival	Date of Departure
Ms. Akhirta Atikana	RS2	RCBiotech-LIPI	NBRC	Kazusa, Japan	2013	2-Dec-2013	21-Dec-2013
Dr. Maman Turjaman	RS3	FORDA	Univ.of Tokyo	Chiba, Japan	2013	13-Jan-2014	12-Feb-2014
Dr. Puspita Lisdiyanti	RS1,2	RCBiotech-LIPI	NBRC	Chiba, Japan	2013	27-Feb-2014	8-Mar-2014
Ms. Atit Kanti	RS1,2	RCB-LIPI	NBRC	Chiba, Japan	2013	27-Feb-2014	8-Mar-2014
Ms. Dwi Ningsih Susilowati	RS3	ICABIOGRD, Agriculture Department	Univ.of Tokyo	Tokyo, Japan	2013	12-Mar-2014	18-Mar-2014
Prof. I Made Sudiana	RS3	RCB-LIPI	Univ.of Tokyo	Tokyo, Japan	2013	12-Mar-2014	18-Mar-2014
Dr. Dwi Susilaningsih	RS2	RCBiotech-LIPI	NBRC	Chiba, Japan	2014	19-May-2014	31-May-2014
Ms. Wulansih Dwi Astuti	RS4	RCBiotech-LIPI	RIKEN	Tsukuba, Japan	2014	9-Jun-2014	4-Jul-2014
Ms. Titin Yulinery	RS4	RCB-LIPI	RIKEN	Tsukuba, Japan	2014	9-Jun-2014	4-Jul-2014
Dr. Dwi Susilaningsih	RS2	RCBiotech-LIPI	ISAP	Sydney, Australia	2014	22-Jun-2014	28-Jun-2014
Mr. Pesigihastmadya Normakristagaluh	RS1	RCB-LIPI	NBRC.JCM	Chiba&Tsukuba, Japan	2014	15-Jul-2014	19-Jul-2014
Mr. Achmad Jauhar Arif, M.Sc	*RS1*	*RCB-LIPI*	*NBRC.JCM*	*Chiba&Tsukuba, Japan*	*2014*	15-Jul-2014	19-Jul-2014
Mr. Muhammad Ilyas	RS2	RCB-LIPI	IMC10	Bangkok, Thailand	2014	3-Aug-2014	9-Aug-2014
Ms. Nilam Wulandari	RS2	RCB-LIPI	IMC10	Bangkok, Thailand	2014	3-Aug-2014	9-Aug-2014
Ms. Akhirta Atikana	RS2	RCBiotech-LIPI	NBRC	Chiba, Japan	2014	24-Sep-2014	18-Oct-2014
Prof.Dr. Enny Sudarmonowati		Deputy of Life Science	ACM	Seoul, Korea	2014	29-Oct-2014	1-Nov-2014

ANNEX 4: Input by Japanese Side (Training in Japan and other countries)

Name	RS	Institution	Accepting Organization	Place	JFY	Date of Arrival	Date of Departure
Dr. Achmad Dinoto	RS4	RCB-LIPI	ACM	Seoul, Korea	2014	29-Oct-2014	1-Nov-2014
Mr. Muhammad Ilyas	RS2	RCB-LIPI	ACM	Seoul, Korea	2014	29-Oct-2014	1-Nov-2014
Prof.Dr. I Made Sudiana	RS3	RCB-LIPI	Univ.of Tokyo	Tokyo, Japan	2014	10-Dec-2014	17-Dec-2014
Mr. Arwan Sugiharto	RS3	RCB-LIPI	Univ.of Tokyo	Tokyo, Japan	2014	10-Dec-2014	17-Dec-2014
Prof.Dr. Enny Sudarmonowati		Deputy of Life Science	Annual Meeting, etc	Tokyo,Kyushu,Kobe	2014	19-Jan-2015	24-Jan-2015
Dr. Achmad Dinoto	RS4	RCB-LIPI	Annual Meeting, etc	Tokyo,Kyushu,Kobe	2014	19-Jan-2015	24-Jan-2015
Prof.Dr. I Made Sudiana	RS3	RCB-LIPI	Annual Meeting, etc	Tokyo,Kyushu,Kobe	2014	19-Jan-2015	24-Jan-2015
Dr. Dwi Susilaningsih	RS2	RCBiotech-LIPI	Annual Meeting, etc	Tokyo,Kyushu,Kobe	2014	19-Jan-2015	24-Jan-2015
Prof.Dr. Endang Sutriswati Rahayu	RS2	UGM	Annual Meeting, etc	Tokyo,Kyushu,Kobe	2014	19-Jan-2015	24-Jan-2015
Dr. Witjaksono	Director	RCB-LIPI	Annual Meeting, etc	Tokyo	2014	19-Jan-2015	22-Jan-2015
Dr. Atit Kanti	RS1	RCB-LIPI	Annual Meeting, etc	Tokyo	2014	19-Jan-2015	22-Jan-2015
Dr. Puspita Lisdiyanti	RS2	RCBiotech-LIPI	Annual Meeting, etc	Tokyo	2014	19-Jan-2015	22-Jan-2015
Mr. Arif Nurkanto	RS2	RCB-LIPI	NBRC	Chiba, Japan	2014	26-Jan-2015	14-Feb-2015
Ms.Hani Susanti	RS2	RCB-LIPI	NBRC	Chiba, Japan	2014	23-Feb-2015	21-Mar-2015
Dr. Gayuh Rahayu	RS2	IPB	Tsukuba Univ.	Tsukuba, Japan	2015	13-Apr-2015	25-Apr-2015
Mr. Muhammad Ilyas	RS2	RCB-LIPI	Tsukuba Univ.	Tsukuba, Japan	2015	15-Apr-2015	25-Apr-2015
Dr. Roni Ridwan	RS4	RCBiotech-LIPI	RIKEN	Tsukuba, Japan	2015	10-Aug-2015	19-Sep-2015
Ms. Zahra Noviana	RS4	RCB-LIPI	RIKEN	Tsukuba, Japan	2015	10-Aug-2015	19-Sep-2015
Dr. Atit Kanti	RS1	RCB-LIPI	UPM Serdang	Malaysia	2015	16-Aug-2015	19-Aug-2015

ANNEX 5: Input by Japanese Side (List of equipment)

List of Equipment IDR 6,064,877,023 USD 941,165

Name	Model	Qty	Unite Price	Currency	Total Price	Currency	Date	Place/Section in Charge	Place/Section in Charge after Project
Digital Copier	Kyocera TA-C250CI	1	45,500,000	IDR	45,500,000.00	IDR	10-May-2011	Project Office	InaCC-LIPI
Compurter	HP SLIM LINE 5589D	1	9,329,000	IDR	9,329,000.00	IDR	26-May-2011	Project Office	InaCC-LIPI
Manufactured Desk		2	6,932,000	IDR	13,864,000.00	IDR	27-Jun-2011	InaCC-LIPI	InaCC-LIPI
Compound Microscope	Olympus CX41	1	48,000,000	IDR	48,000,000.00	IDR	1-Jul-2011	InaCC-LIPI	InaCC-LIPI
Laminar Flow Clean Bench	ESCO LVC-4A1	1	49,500,000	IDR	49,500,000	IDR	11-Jul-2011	InaCC-LIPI	InaCC-LIPI
Compound Mcroscope	Olympus CX41	1	30,800,000	IDR	30,800,000	IDR	1-Aug-2011	InaCC-LIPI	InaCC-LIPI
Anaerobic jar(3.5l)	OXOID	2	9,315,000	IDR	18,630,000	IDR	2-Aug-2011	Bioremediation Lab.(RCB-LIPI)	Bioremediation Lab.(RCB-LIPI)
DNA Electrophoresis System	Mupid-exU	2	4,800,000	IDR	9,600,000	IDR	10-Aug-2011	InaCC-LIPI	InaCC-LIPI
Micropipette(Multichannel)	Finnpipette F1 8-channel 5-50ul	1	6,950,000	IDR	6,950,000	IDR	25-Aug-2011	InaCC-LIPI	InaCC-LIPI
Stereo Microscope	Olympus SZX7	2	49,900,000	IDR	99,800,000	IDR	27-Sep-2011	InaCC-LIPI	InaCC-LIPI
Inverted Microscope	Olympus CKX4	1	48,000,000	IDR	48,000,000	IDR	27-Sep-2011	InaCC-LIPI	InaCC-LIPI
Mechanical Stage	Olympus	1	6,000,000	IDR	6,000,000	IDR	27-Sep-2011	InaCC-LIPI	InaCC-LIPI
Degital Camera for Stereo Microscope	Olympus E620	1	15,000,000	IDR	15,000,000	IDR	27-Sep-2011	InaCC-LIPI	InaCC-LIPI
Vaccum Pump	DOA-P504-BN	1	5,372,800	IDR	5,372,800	IDR	14-Oct-2011	InaCC-LIPI	InaCC-LIPI
Filter Funnel Set		1	19,462,740	IDR	19,462,740	IDR	14-Oct-2011	InaCC-LIPI	InaCC-LIPI
Computer	Lenovo AIO B320-065B	1	5,150,000	IDR	5,150,000	IDR	17-Oct-2011	InaCC-LIPI	InaCC-LIPI
GPS	Garmin 62S	1	4,800,000	IDR	4,800,000	IDR	17-Oct-2011	InaCC-LIPI	InaCC-LIPI
pH/EC/TDS/°C Meter	HANNA INSTRUMENTS HI-991301	1	8,300,000	IDR	8,300,000	IDR	24-Oct-2011	Bioremediation Lab.(RCB-LIPI)	Bioremediation Lab.(RCB-LIPI)
Micropipette(8-Channel)	Finnpipette F1 8-channel 5-50ul	1	6,950,000	IDR	6,950,000	IDR	28-Oct-2011	InaCC-LIPI	InaCC-LIPI
Refrigerator		1	6,750,000	IDR	6,750,000	IDR	4-Nov-2011	Bioremediation Lab.(RCB-LIPI)	Bioremediation Lab.(RCB-LIPI)
DNA Electrophoresis System	Mupid-exU	2	4,800,000	IDR	9,600,000	IDR	4-Nov-2011	InaCC-LIPI Applied Microbiology Lab.(RCBiotech-LIPI)	InaCC-LIPI Applied Microbiology Lab.(RCBiotech-LIPI)
Multi Gas Detector	Graywolf DSTVOC-Plus	1	63,000,000	IDR	63,000,000	IDR	15-Dec-2011	Bioremediation Lab.(RCB-LIPI)	Bioremediation Lab.(RCB-LIPI)
High Output Vacuum/Pressure Pump	Millipore	1	18,870,000	IDR	18,870,000	IDR	22-Dec-2011	InaCC-LIPI	InaCC-LIPI
Bench-Top Micro Centrifuge	Tomy KITMAN-T24	1	57,500,000	IDR	57,500,000	IDR	18-Jan-2012	InaCC-LIPI	InaCC-LIPI
PH Meter	Mettler Toledo FiveEasy FE20	1	6,300,000	IDR	6,300,000	IDR	20-Jan-2012	InaCC-LIPI	InaCC-LIPI

ANNEX 5: Input by Japanese Side (List of equipment)

List of Equipment IDR 6,064,877,023 USD 941,165

Name	Model	Qty	Unite Price	Currency	Total Price	Currency	Date	Place/Section in Charge	Place/Section in Charge after Project
Vacumm Pump for Mo isture Laden Glass	LABOPORT SD Vacumm Pump	1	27,601,552	IDR	27,601,552	IDR	30-Jan-2012	InaCC-LIPI	InaCC-LIPI
Refrigerated & Heating Circula	VIVO RT 4	1	34,444,800	IDR	34,444,800	IDR	30-Jan-2012	InaCC-LIPI	InaCC-LIPI
Digital Vertical Package	IKA RV 10	1	23,264,000	IDR	23,264,000	IDR	30-Jan-2012	InaCC-LIPI	InaCC-LIPI
Vehicle	Isuzu Panther Grand Touring	1	263,070,000	IDR	263,070,000	IDR	31-Jan-2012	Project Office	InaCC-LIPI
Camera for Microscope	Olympus E620	1	15,000,000	IDR	15,000,000	IDR	31-Jan-2012	InaCC-LIPI	InaCC-LIPI
High Speed Refrigerated Micro Centrifuge	Tomy MX-305	1	175,246,521	IDR	175,246,521	IDR	7-Feb-2012	InaCC-LIPI	InaCC-LIPI
Drying Oven	JISICO J-300M	1	30,798,000	IDR	30,798,000	IDR	7-Feb-2012	InaCC-LIPI	InaCC-LIPI
Anaerobic Chamber	Whitley DG250 Workstation	1	184,821,000	IDR	184,821,000	IDR	10-Feb-2012	Bioprospecting Lab.(RCB-LIPI)	Bioprospecting Lab.(RCB-LIPI)
PCR Machine	Eppendorf MasterCycler Fradient with Heated Lid	1	149,187,000	IDR	149,187,000	IDR	20-Feb-2012	InaCC-LIPI	InaCC-LIPI
DNA Beat Bitter	Tomy MS-100	1	109,800,000	IDR	109,800,000	IDR	21-Feb-2012	InaCC-LIPI	InaCC-LIPI
Balance	Tomy H-050	1	5,127,375	IDR	5,127,375	IDR	21-Feb-2012	InaCC-LIPI	InaCC-LIPI
Water Purification System	Millipore ZRQS-VP0 30, Direct Q3	1	155,400,000	IDR	155,400,000	IDR	23-Feb-2012	InaCC-LIPI	InaCC-LIPI
Control Incubator Shaker	IKA KS4000i	1	62,750,000	IDR	62,750,000	IDR	24-Feb-2012	InaCC-LIPI	InaCC-LIPI
Heated Incubator	SANYO MIR-262	2	48,500,000	IDR	97,000,000	IDR	29-Feb-2012	InaCC-LIPI	InaCC-LIPI
Hydrocarbon Gas Detector	CROWCON	1	150,000,000	IDR	150,000,000	IDR	19-Mar-2012	Bioremediation Lab.(RCB-LIPI)	Bioremediation Lab.(RCB-LIPI)
PCR Machine	Thermoscientific Arktik Thermal Cycler, TCA0001-TCA4848	1	105,000,000	IDR	105,000,000	IDR	2-Apr-2012	InaCC-LIPI	InaCC-LIPI
Microscope System	Olympus BX-53+DP26	1	20,425	USD	20,425	USD	30-Apr-2012	InaCC-LIPI	InaCC-LIPI
Microscope System with fluorescence attachment	Olympus BX-53+DP72	1	60,420	USD	60,420	USD	30-Apr-2012	InaCC-LIPI	InaCC-LIPI
Ultra Low Temperature Freezer	SANYO MDF-394	2	210,515,625	IDR	421,031,250	IDR	4-May-2012	InaCC-LIPI	InaCC-LIPI
Biomedical Freezer	SANYO MDF-137	1	45,843,750	IDR	45,843,750	IDR	4-May-2012	InaCC-LIPI	InaCC-LIPI
Bio Clean Bench	SANYO MCV-B91F	3	182,062,500	IDR	546,187,500	IDR	4-May-2012	Bioremediation Lab.(RCB-LIPI) Bioprospecting Lab.(RCB-LIPI) InaCC-LIPI	Bioremediation Lab.(RCB-LIPI) Bioprospecting Lab.(RCB-LIPI) InaCC-LIPI

ANNEX 5: Input by Japanese Side (List of equipment)

List of Equipment IDR 6,064,877,023 USD 941,165

Name	Model	Qty	Unite Price	Currency	Total Price	Currency	Date	Place/Section in Charge	Place/Section in Charge after Project
Growth Chamber	SANYO MLR-351H	1	264,375,000	IDR	264,375,000	IDR	4-May-2012	InaCC-LIPI	InaCC-LIPI
Bio Safety Cabinet	SANYO MHE-130AB	1	436,218,750	IDR	436,218,750	IDR	4-May-2012	InaCC-LIPI	InaCC-LIPI
Microplate Reader	Thermo Scientific Varioskan Flash	1	545,000,000	IDR	545,000,000	IDR	11-May-2012	InaCC-LIPI	InaCC-LIPI
Gel Documentation System	Bio-Rad GEL DOC EZ	1	130,750,856	IDR	130,750,856	IDR	11-May-2012	InaCC-LIPI	InaCC-LIPI
PH/NO3/Eh meter	Fujiwara Scientific PRN41	1	17,000,000	IDR	17,000,000	IDR	25-Jun-2012	Bioremediation Lab.(RCB-LIPI)	Bioremediation Lab.(RCB-LIPI)
Gradient maker, 50ml	GE Healthcare SG-50	1	6,099,000	IDR	6,099,000	IDR	23-Jul-2012	Bioremediation Lab.(RCB-LIPI)	Bioremediation Lab.(RCB-LIPI)
Gas Chromatograph Mass Spectrometer (GCMS) With Auto Injector and Auto Sampler	SHIMADZU GCMS-QP2010 ULTRA	1	159,000	USD	159,000	USD	28-Sep-2012	InaCC-LIPI	InaCC-LIPI
Automated Spectrophotometer	SHIMADZU BioSpec Nano	1	18,840	USD	18,840	USD	28-Sep-2012	InaCC-LIPI	InaCC-LIPI
High Performace Liquid Chromatography (HPLC)	SHIMADZU LC-20A Prominence	1	47,880	USD	47,880	USD	28-Sep-2012	InaCC-LIPI	InaCC-LIPI
MALDI/TOF	SHIMADZU AXIMA Performance - SARAMIS	1	507,600	USD	507,600	USD	28-Sep-2012	InaCC-LIPI	InaCC-LIPI
Anaerobic jar(3.5l)	OXOID	2	9,350,000	IDR	18,700,000	IDR	1-Nov-2012	Bioremediation Lab.(RCB-LIPI)	Bioremediation Lab.(RCB-LIPI)
Computer	HP Pavilion SLIMLINE S5-1420D	1	9,679,000	IDR	9,679,000	IDR	14-Jan-2013	InaCC-LIPI	InaCC-LIPI
Waterbath	Merk:MEMMERT, Type:WNB7w/Ring, Cap:7l	1	9,700,000	IDR	9,700,000	IDR	22-Feb-2013	Agriculture Technology Dept.UGM	Agriculture Technology Dept.UGM
Incubator	Merk:MEMMERT, Type:INB300, Cap:39l	1	14,600,000	IDR	14,600,000	IDR	22-Feb-2013	Agriculture Technology Dept.UGM	Agriculture Technology Dept.UGM
Thermal Cycler	Bio-Rad T100	1	78,273,153	IDR	78,273,153	IDR	20-Mar-2013	Agriculture Technology Dept.UGM	Agriculture Technology Dept.UGM
Sterilizer	AS ONE 5-1056-01	1	16,800,00	IDR	16,800,000	IDR	27-Mar-2013	InaCC-LIPI	InaCC-LIPI
UV Lamp	AS ONE 1-5479-08	1	7,700,000.	IDR	7,700,000	IDR	27-Mar-2013	InaCC-LIPI	InaCC-LIPI
Ultrasonic Cleaner	AS ONE 1-2160-02	1	12,311,600	IDR	12,311,600	IDR	28-Mar-2013	InaCC-LIPI	InaCC-LIPI

ANNEX 5: Input by Japanese Side (List of equipment)

List of Equipment

IDR 6,064,877,023 USD 941,165

Name	Model	Qty	Unite Price	Currency	Total Price	Currency	Date	Place/Section in Charge	Place/Section in Charge after Project
Vial Kit	AS ONE 5-113-01	1	13,300,000	IDR	13,300,000	IDR	15-Apr-2013	InaCC-LIPI	InaCC-LIPI
DGGE KIT	Bio-Rad 1709125	1	17,795,376	IDR	17,795,376	IDR	26-Apr-2013	InaCC-LIPI	InaCC-LIPI
Incubator	WINA Instruments,Type : 801	1	5,600,000	IDR	5,600,000	IDR	6-May-2013	InaCC-LIPI	InaCC-LIPI
Block Heater, 2Block, 130-C	STUART SBH130	1	10,800,000	IDR	10,800,000	IDR	15-May-2013	InaCC-LIPI	InaCC-LIPI
Block Heater, 2Block, 200-D	STUART SBH200	1	10,900,000	IDR	10,900,000	IDR	15-May-2013	InaCC-LIPI	InaCC-LIPI
Alumunium Block,96-well Plate	STUART SHT1/96	1	7,050,000	IDR	7,050,000	IDR	15-May-2013	InaCC-LIPI	InaCC-LIPI
Pocket-sized pH Meter	ISFETCOM S2K922	1	5,250,000	IDR	5,250,000	IDR	4-Jun-2013	InaCC-LIPI	InaCC-LIPI
Liquid Dryer for Microbe	Freezemobile 25 EL	1	127,000	USD	127,000	USD	2-Jul-2013	InaCC-LIPI	InaCC-LIPI
Incubator	WINA Instruments,Type : 801	1	5,600,000	IDR	5,600,000	IDR	25-Oct-2013	InaCC-LIPI	InaCC-LIPI
Label Printer	AS ONE 2-7121-09	1	25,700,000	IDR	25,700,000	IDR	9-Jan-2014	InaCC-LIPI	InaCC-LIPI
Refrigerator	LG GN-M492GLH	1	6,029,000	IDR	6,029,000	IDR	24-Oct-2014	Bioremediation Lab.(RCB-LIPI)	Bioremediation Lab.(RCB-LIPI)
Real Time PCR System	CFX CONNECT SYSTEM with C1000 Touch thermal cycler	1	308,800,000	IDR	308,800,000	IDR	2-Dec-2014	InaCC-LIPI	InaCC-LIPI
Clean Booth	AIRTECH JAPAN SSCB1800F	1	49,500,000	IDR	49,500,000	IDR	12-Jan-2015	Bioremediation Lab.(RCB-LIPI)	Bioremediation Lab.(RCB-LIPI)
Ultra Low Temperature Freezer	PANASONIC MDF-394	1	204,750,000	IDR	204,750,000	IDR	16-Mar-2015	InaCC-LIPI	InaCC-LIPI
Bio Clean Bench	PANASONIC MCV-B91F(T)	2	222,000,000	IDR	444,000,000	IDR	16-Mar-2015	InaCC-LIPI	InaCC-LIPI
Spectrophotometer	OPTIMA SP300	1	30,000,000	IDR	30,000,000	IDR	19-Mar-2015	Sekolah Tinggi Perikanan Kampus Serang	Sekolah Tinggi Perikanan Kampus Serang
Horizontal Water Sampler	WILDCO 1120-G45	1	18,500,000	IDR	18,500,000	IDR	26-Mar-2015	Sekolah Tinggi Perikanan Kampus Serang	Sekolah Tinggi Perikanan Kampus Serang
Refrigerator	LG GC-B572HLCL	1	6,029,000	IDR	6,029,000	IDR	27-Mar-2015	Bioremediation Lab.(RCB-LIPI)	Bioremediation Lab.(RCB-LIPI)
Stereo Microscop	Olympus SZX7	1	49,500,000	IDR	49,500,000	IDR	30-Mar-2015	InaCC-LIPI	InaCC-LIPI
Customized Microscope Stand Purchase	Olympus SZX2-ILLB	1	45,800,000	IDR	45,800,000	IDR	31-Jul-2015	InaCC-LIPI	InaCC-LIPI
Lamp for Microscope Purchase	Olympus LG-PS2	1	18,165,000	IDR	18,165,000	IDR	18-Aug-2015	InaCC-LIPI	InaCC-LIPI

別添資料 1

ANNEX 6: Input by Japanese Side (Local cost)

Item of Expenditure	Description of Expenditure	Currency = IDR
	Fiscal year 2011	
Air ticket	Air ticket	186,164,286
Personnel cost	Staff salary	4,531,500
Operational cost	General affairs , miscellaneous expenses	131,382,188
	DNA sequencing costs	102,978,250
	Consumables , reagent costs	593,147,714
	Car Rental and administrative expenses	83,638,544
	Seminar expenses	24,926,000
	Small equipment and items cost	944,715,167
	Travel expenses	4,234,945
Meeting expenses	Meeting expenses	15,000,000
Allowance and accommodation	Daily allowance and accommodation expenses	196,785,000
	Sub Total	**2,287,503,594**

	Fiscal year 2012	
Air ticket	Air ticket	278,877,622
Personnel cost	Staff salary	26,179,000
Operational cost	General affairs , miscellaneous expenses	49,388,467
	DNA sequencing costs	155,455,195
	Consumables , reagent costs	572,196,580
	Car Rental and administrative expenses	58,030,288
	Seminar expenses	1,650,000
	Small equipment and items cost	281,879,646
	Travel expenses	9,339,339
Meeting expenses	Meeting expenses	10,500,000
Allowance and accommodation	Daily allowance and accommodation expenses	254,682,000
	Sub Total	**1,698,178,137**

	Fiscal year 2013	
Air ticket	Air ticket	278,461,403
Personnel cost	Staff salary	34,336,500
Operational cost	General affairs , miscellaneous expenses	57,271,299
	DNA sequencing costs	200,291,600
	Consumables , reagent costs	571,084,741
	Car Rental and administrative expenses	82,959,533
	Seminar expenses	42,410,000
	Small equipment and items cost	246,538,100
	Travel expenses	9,234,516

ANNEX 6: Input by Japanese Side (Local cost)

Meeting expenses	Meeting expenses	81,909,000
Allowance and accommodation	Daily allowance and accommodation expenses	341,792,749
	Sub Total	**1,946,289,441**

	Fiscal year 2014	
Air ticket	Air ticket	332,985,900
Personnel cost	Staff salary	44,830,000
Operational cost	General affairs , miscellaneous expenses	97,587,049
	DNA sequencing costs	107,674,000
	Consumables , reagent costs	520,969,551
	Car Rental and administrative expenses	75,465,600
	Seminar expenses	6,103,000
	Small equipment and items cost	254,802,200
	Travel expenses	5,287,700
Meeting expenses	Meeting expenses	61,525,000
Allowance and accommodation	Daily allowance and accommodation expenses	274,212,164
	Sub Total	**1,781,442,164**

	Fiscal year 2015 (As of August 2015)	
Air ticket	Air ticket	60,922,210
Personnel cost	Staff salary	25,042,500
Operational cost	General affairs , miscellaneous expenses	31,650,977
	DNA sequencing costs	21,815,900
	Consumables , reagent costs	257,298,699
	Car Rental and administrative expenses	25,394,400
	Repair costs	30,640,100
	Seminar expenses	17,345,000
	Small equipment and items cost	64,223,000
	Travel expenses	1,678,600
	Other expenses	3,630,000
Allowance and accommodation	Daily allowance and accommodation expenses	68,894,000
	Sub Total (As of August 2015)	**608,535,386**
	Grand Total	**8,321,948,721**

ANNEX 7: Input by Indonesian Side (List of counterpart)

As of November 2015

List of Indonesian Members

(1) Project Director

1 Current Director

Name	Position in the Organization	Assignment Period
Dr. Ir.Witjaksono M.Sc	Director, RCB-LIPI	June 2014- March 2016

2 Former Director

Name	Position in the Organization	Assignment Period
Dr. Bambang Sunarko	Director, RCB-LIPI (until Jun 2014)	January 2013- June 2014
Dr. Siti Nuramaliati Prijono	Director, RCB-LIPI (until Jan 2013)	April 2011- January 2013

(2) Project Manager

1 Current Manager

Name	Position in the Organization	Project Assignment Period
Dr. Achmad Dinoto	Head of Microbiology Division(InaCC), RCB-LIPI	June 2014-March 2016

2 Former Manager

Name	Position in the Organization	Project Assignment Period
Ir. Ahmad Jauhar Arief, M.Sc	Head of Research facility and collection Management, RCB-LIPI (until Jun 2014)	August 2012-June 2014
Dr. Heddy Julistiono	Former Head of Microbiology Division, RCB-LIPI	April 2011-July 2012

(3) Research Subject Personnel

a. Research Subject 1 (RS1)

a-1 Current project members

	Name	Position in the Organization	Project Assignment Period	Responsible Activities of PDM
1	Dr. Atit Kanti, M.Sc	Researcher, RCB-LIPI	April 2011-March 2016	Leader of RS1
2	Dr. Achmad Dinoto	Head of Microbiology Division(InaCC), RCB-LIPI	Dec.2014-March 2016	Management
3	Mr. Arif Nurkanto, M.Si	Researcher, RCB-LIPI	April 2011-March 2016	Management
4	Mr. Dian Alfian Nurcahyanto, S.Si	Technician, RCB-LIPI	April 2011-March 2016	Management
5	Prof. Dr. Endang S. Rahayu	Professor, UGM	April 2011-March 2016	Management
6	Dr. Gayuh Rahayu	Lecturer, IPB	April 2011-March 2016	Management
7	Mr. Muhammad Ilyas, M.Si	Researcher, RCB-LIPI	April 2011-March 2016	Management
8	Dr. Puspita Lisdiyanti	Researcher, RCBiotech-LIPI	April 2011-March 2016	Management
9	Dr. Wellyzar Sjamsuridzal	Researcher, UI	April 2011-March 2016	Management
10	Ir. Ahmad Jauhar Arief, M.Sc	Head of Research facility and collection Management, RCB-LIPI	August 2012-March 2016	Sub leader of Database
11	Mr. Muhamad Ridwan, S.Kom	Database Staff, RCB-LIPI	August 2012-March 2016	Database
12	Mr.Pesigrihastamadya Normakristagaluh	Database Staff, RCB-LIPI	June 2014-March 2016	Database

ANNEX 7: Input by Indonesian Side (List of counterpart)

As of November 2015

a-2 Former project members

	Name	Position in the Organization	Project Assignment Period	Responsible Activities of PDM
1	Drs. Uway W Mayhar	Head of Research facility and collection Management, RCB-LIPI	April 2011-Feb.2012	Management
2	Dr. Iman Hidayat	Researcher, RCB-LIPI	April 2011-May 2012	Database
3	Mr. Agustinus Joko Nugroho, M.Si	Researcher, RCB-LIPI	April 2011-Sep.2014	Management
4	Mr. Ahmad S Surapermana, S.Si	Database Staff, RCBiotech-LIPI	April 2011-Dec.2016	Database

b. Research Subject 2 (RS2)

b-1 Current project members

	Name	Position in the Organization	Project Assignment Period	Responsible Activities of PDM
1	Dr. Puspita Lisdiyanti	Researcher, RCBiotech-LIPI	April 2011-March 2016	Leader of RS2, RS2-C/D
2	Mr. Muhammad Ilyas, M.Si	Researcher, RCB-LIPI	April 2011-March 2016	Sub leader of RS2-A
3	Dr. Kartini Kramadibrata	Researcher, RCB-LIPI	April 2011-March 2016	RS2-A
4	Drs. Nandang Suharna	Researcher, RCB-LIPI	April 2011-March 2016	RS2-A
5	Ms. Dewi Susan, S.Si	Researcher, RCB-LIPI	April 2011-March 2016	RS2-A
6	Dr. Gayuh Rahayu	Lecturer, IPB	April 2011-March 2016	RS2-A
7	Ms. Nilam F. Wulandari, M.Sc	Researcher, RCB-LIPI	April 2011-March 2016	RS2-A
8	Dr. Atit Kanti, M.Sc	Researcher, RCB-LIPI	April 2011-March 2016	Sub leader of RS2-B
9	Dr. Wellyzar Sjamsuridzal	Lecturer, UI	April 2011-March 2016	RS2-B
10	Ms. Shanti Ratnakomala, M.Si	Researcher, RCBiotech-LIPI	April 2011-March 2016	Sub leader of RS2-C
11	Mr. Arif Nurkanto, M.Si	Researcher, RCB-LIPI	April 2011-March 2016	RS2-C
12	Dr. Andria Agusta	Researcher, RCB-LIPI	April 2011-March 2016	RS2-C
13	Dr. Heddy Julistiono	Researcher, RCB-LIPI	April 2011-March 2016	RS2-C
14	Ms. Elvi Yetti, M.Si	Researcher, RCBiotech-LIPI	April 2011-March 2016	RS2-C
15	Dr. Jaka Widada	Lecturer, UGM	Feb.2013-March 2016	RS2-C
16	Ms. Ariani Hatmanti, M.Si	Researcher, RC Oceanography-LIPI	Aug.2013-March 2016	RS2-C
17	Dr. Yopi	Researcher, RCBiotech-LIPI	April 2011-March 2016	Sub leader of RS2-D
18	Ms. Akhirta Atikana, M.Sc	Researcher, RCBiotech-LIPI	April 2011-March 2016	RS2-D
19	Ms. Nanik Rahmani, M.Si	Researcher, RCBiotech-LIPI	April 2011-March 2016	RS2-D
20	Ms.Rohmatussolihat,	Researcher,	April 2011-March	RS2-D

ANNEX 7: Input by Indonesian Side (List of counterpart)

As of November 2015

	Name	Position in the Organization	Project Assignment Period	Responsible Activities of PDM
	S.Si	RCBiotech-LIPI	2016	
21	Prof. Dr. Endang S. Rahayu	Professor, UGM	April 2011-March 2016	RS2-D
22	Ms. Harmastini, M.Agr	Researcher, RCBiotech-LIPI	February 2013-March 2016	RS2-D
23	Ms. Sylvia Lekatompessy, M.Si	Researcher, RCBiotech-LIPI	August 2013-March 2016	RS2-D
24	Mr. Dian Alfian Nurcahyanto, S.Si	Technician, RCB-LIPI	April 2011-March 2016	RS2-D
25	Ms. Achirul Nditasari, M.Sc	Researcher, RCB-LIPI	April 2011-March 2016	RS2-D
26	Ms. Tri Ratna, S.Si	Researcher, RCB-LIPI	April 2011-March 2016	RS2-D
27	Dr. Dwi Susilaningsih	Researcher, RCBiotech-LIPI	April 2011-March 2016	Sub leader of RS2-E
28	Ms. Delicia Yunita Rahman, M.Si	Researcher, RCBiotech-LIPI	April 2011-March 2016	RS2-E
29	Ms. Hani Susanti, M.Si	Researcher, RCBiotech-LIPI	April 2011-March 2016	RS2-E
30	Mr.Swastika Praharyawan,M.Si	Researcher, RCBiotech-LIPI	March 2014-March 2016	RS2-E
31	Dr. Nining Prihantini	Lecturer, UI	April 2011-March 2016	RS2-E
32	Dr. Tb Haeru Rahayu	Researcher, Sekollah Tinggi Perikanan (Fisheries Academy)	Dec.2014-March 2016	RS2-E
33	Ms. Dian Noverita Widyaningrum	Researcher, RC-Biotechnology LIPI	Dec.2014-March 2016	RS2-E

**RS2-A:Fungi, RS2-B:Yeast, RS2-C:Actinomycetes and Bioremediation Microbes, RS2-D:Archaea, Lactic Acid Bacteria, Bacteriophages and Rhizobium, RS2-E:Microalgae*

b-2 Former project members

	Name	Position in the Organization	Project Assignment Period	Responsible Activities of PDM
1	Dr. Iman Hidayat	Researcher, RCB-LIPI	April 2011-August 2013	Sub leader of RS2-B
2	Mr. Agustinus Joko Nugroho, M.Si	Researcher, RCB-LIPI	April 2011-Sep. 2014	RS2-C

c. Research Subject 3 (RS3)

c-1 Current project members

	Name	Position in the Organization	Project Assignment Period	Responsible Activities of PDM
1	Prof. Dr. I Made Sudiana	Professor, RCB-LIPI	April 2011-March 2016	Leader of RS3, Sub leader of RS3-A&RS3-B
2	Dra. Diah Supriati	Researcher, RCB-LIPI	April 2011-March 2016	RS3-A
3	Ms. Dwi Ningsih Susilowati, M.Si	Researcher, Agriculture of Agriculture ICABIOGRAD	April 2011-March 2016	RS3-A
4	Dra. Sri Widawati	Researcher, RCB-LIPI	April 2011-March 2016	RS3-A
5	Ir. Suliasih	Researcher, RCB-LIPI	March 2014 –	RS3-A

ANNEX 7: Input by Indonesian Side (List of counterpart)

As of November 2015

	Name	Position in the Organization	Project Assignment Period	Responsible Activities of PDM
			March 2016	
6	Ms. Senline Octaviana	Researcher, RCBiotech-LIPI	November 2015-March 2016	RS3-A
7	Mr. Arwan Sugiharto, S.Si	Researcher, RCB-LIPI	April 2011-March 2016	RS3-B
8	Dr. Atik Retnowati	Researcher, RCB-LIPI	April 2011-March 2016	RS3-B
9	Mr. YB. Subowo, M.Si	Researcher, RCB-LIPI	April 2011-March 2016	RS3-B
10	Dr. Maman Turjaman	Researcher, Forest Research and Development Agency (FORDA)	April 2011-March 2016	RS3-B
11	Dr. Nampiah Sukarno	Researcher, IPB	April 2011-March 2016	RS3-B
12	Mr. Maman Rahmansyah	Researcher, RCB-LIPI	April 2011 – March 2016	RS3-B
13	Mr. Helbert, S.Si	Researcher, RD Unit for Biomaterial-LIPI	April 2011-March 2016	RS3-A

**RS3-A:Soil Bacteria, RS3-B:Ectomycorrhizal Fungi*

c-2 Former project members

	Name	Position in the Organization	Project Assignment Period	Responsible Activities of PDM
1	Dr. Jaka Widada	Researcher, UGM	April 2011-February 2013 (Moved to RS-2)	RS3-A
2	Ms.Harmastini, M.Agr	Researcher, RCBiotech - LIPI	April 2011-February 2013 (Move to RS-2)	RS3-A

d. Research Subject 4 (RS4)

d-1 Current project members

	Name	Position in the Organization	Project Assignment Period	Responsible Activities of PDM
1	Dr. Achmad Dinoto	Head of Microbiology Division(InaCC), RCB-LIPI	April 2011-March 2016	Leader of RS4, Sub leader of RS4-A
2	Ms. Sulistiani, M.Kes	Researcher, RCB-LIPI	April 2011-March 2016	RS4-A
3	Dra. Titin Yulineri	Researcher, RCB-LIPI	April 2011-March 2016	RS4-A
4	Ms. Zahra Noviana	Researcher, RCB-LIPI	March 2014-March 2016	RS4-A
5	Mr. Sugiyono Saputra, S.Si	Researcher, RCB-LIPI	April 2011-March 2016	RS4-A
6	Dr. Yantyati Widyastuti	Researcher, RCBiotech-LIPI	April 2011-March 2016	Sub leader of RS4-B
7	Mr. Roni Ridwan, M.Si	Researcher, RCBiotech-LIPI PI	April 2011-March 2016	RS4-B
8	Ms. Wulansih Dwi Astuti, M.Si	Researcher, RCBiotech-LIPI PI	April 2011-March 2016	RS4-B

**RS4-A: Animal gut microbiota (Chicken), RS4-B: Animal gut microbiota (Cattle)*

ANNEX 7: Input by Indonesian Side (List of counterpart)

As of November 2015

d-2 Former project members

	Name	Position in the Organization	Project Assignment Period	Responsible Activities of PDM
1	Mr. Ahmad Sofyan, M.Si	Researcher, Technical Implementation Unit for Development of Chemical Engineering Process ,LIPI	April 2011-March 2014	RS4-4 *Inactive (study abroad)

ANNEX 8: Input by Indonesian Side (Local cost)

別添資料 1

Item of Expenditure	Description of Expenditure	Currency = IDR
	Fiscal year 2012	
Travel Cost	Travel Cost for Sampling	33,000,000
Travel Cost	Supporting Indonesian VIP to Visit NBRC	150,000,000
Operation Cost	Banner and Refreshments for Annual Meeting	25,000,000
Construction Cost	InaCC Building	9,400,000,000
	Sub Total	9,608,000,000

	Fiscal year 2013	
Construction Cost	InaCC Building	11,196,000,000
Temporary service Cost	Consultant for InaCC	277,420,000
Travel Cost	Travel Cost for Sampling	195,858,000
Purchase Cost	Consumables/Others	570,935,000
	Sub Total	12,240,213,000

	Fiscal year 2014	
Purchase Cost	Reagent & Consumable	219,402,000
Transportation Cost	Relocated of Microbes Collection	23,300,000
Purchase Cost	Neon Box for Exhibition	27,400,000
Purchase Cost	Replica of Microbes for Exhibition	8,160,000
Travel Cost	Sampling to West Java	4,900,000
Travel Cost	Sampling to Bali	27,648,500
Travel Cost	Sampling to Bali	46,840,000
Construction Cost	installation of gas pipeline	34,600,000
Purchase Cost	Equipment for InaCC	17,500,000,000
	Sub Total	17,892,250,500

	Fiscal year 2015	
Purchase Cost	Reagent & Consumable	260,678,000
Temporary service Cost	Fumigation	80,000,000
Purchase Cost	Equipment Calibration	30,000,000
Seminar	ACM	150,900,000
Purchase Cost	Equipment for InaCC	198,724,600
	Sub Total	720,302,600
	Grand Total	**40,460,766,100**

ANNEX 9: Evaluation Grid

Project for Development of Internationally Standardized Microbial Resources Center (InaCC) to Promote Life Science Research and Biotechnology (SATREPS)

I. Achievements of the Project

Evaluation Item		Indicator / Evaluation Questions	Source of Information
Main Category	**Sub Category**		
1. Inputs	Are the inputs from Japanese side (Experts, Equipment, Training and Budget) implemented as planned?	1) Japanese Experts Long term expert and Short term expert	· Input of the Project · List of Expert
		2) Counterparts training Training of counterpart personnel in Japan and other countries	· Input of the Project · List of trainee (Training report)
		3) Equipment	· Input of the Project · List of Equipment
		4) Local cost of project activities	· Input of the Project
	Are the inputs from Senegalese side (CP, Office space / facility, Budget) implemented as planned?	1) Allocation of counterpart personnel	· Input of the Project · List of Counterpart
		2) Provision of the project office and facilities necessary for the project implementation.	· Input of the Project · Direct observation
		3) Other cost	· Input of the Project · Budget plan of Indonesian side
2. Achievement of Outputs	**Output 1** Functions of microbial resource center (InaCC) in LIPI are developed, to be a national reference collection and to serve as a center for researches, ex-situ conservation, training and sustainable utilization of microbial resources.	Indicators 1-1. InaCC Operation Manual** is prepared and officially approved.	· Operation Manual · Reports of the Project, Self-Evaluation Sheet
		1-2. The microbial resource center (InaCC) is equipped with necessary facilities and equipment.	· List of Equipment · Reports of the Project, Self-Evaluation Sheet
		1-3. Acquisition of 2,000 strains is completed in InaCC and relevant information is stored in the database based on the Operation Manual.	· Database · Reports of the Project, Self-Evaluation Sheet
		1-4. InaCC registration numbers*** are issued for the 2,000 acquisition based on the Operation Manual.	· Database · Reports of the Project, Self-Evaluation Sheet
		1-5. Database contains necessary data as defined in the Operation Manual for the internal and external users.	· Database、Web site · Reports of the Project, Self-Evaluation Sheet
		1-6. The stock preparations of at least 100 strains for distribution are made and opened to the public.	· Database、Web site · Reports of the Project, Self-Evaluation Sheet

ANNEX 9: Evaluation Grid

Evaluation Item		Indicator / Evaluation Questions	Source of Information
Main Category	**Sub Category**		
		1-7. InaCC obtains ISO9001 certification.	· Certification · Reports of the Project, Self-Evaluation Sheet
		1-8. The Post Project Management Plan for InaCC is prepared	· Post Project Management Plan
	<u>Output 2</u> Isolation and identification of new microbial resources originated from Indonesia, which is beneficial to human welfare, food production, agriculture, and environmental restoration is conducted.	2-1. At least 50 candidates of new taxa of microorganisms are discovered.	· Reports of the Project, Self-Evaluation Sheet · Publications
		2-2. At least 8 researchers are able to isolate and identify microorganisms belonging to five groups*. *(1. fungi, 2. yeasts, 3. actinomycetes, 4. bacteria, archaea, and bacteriophages, 5. microalgae).	
		2-3. At least 2,000 strains of microorganisms, belonging to the five groups, are collected, identified and preserved.	
		2-4. At least 10 potentially useful microorganisms for human welfare, food production, agriculture, and environmental restoration are obtained.	
	<u>Output 3</u> Soil microorganisms that have beneficial effects on agriculture, ecosystem conservation, and environmental restoration are isolated and characterized.	3-A-1. At least 50 strains of soil bacteria that have beneficial function are isolated.	· Reports of the Project, Self-Evaluation Sheet · Publications
		3-A-2. Data on the activities of denitrification, nitrogen fixation, methane oxidization, and phosphate solubilization of selected isolates(or enriched cultures) under culture conditions are obtained.	
		3-A-3. Data on the quantity and diversity of functional genes in soil relating to the denitrification, nitrogen fixation, ammonia oxidization, methane oxidization, and phosphate solubilization are obtained.	
		3-A-4. Data on the diversity of functional genes in soil relating to the denitrification, nitrogen fixation, methane oxidization, and phosphate solubilization are obtained.	
		3-B-1. At least 50 strains of mycorrhizal are isolated and identified.	· Reports of the Project, Self-Evaluation Sheet · Publications
		3-B-2. Ectomycorrhizal fungal diversity in major Indonesian forests is estimated quantitatively.	
		3-B-3. Molecular database (a hundred of species) and culture collection (at least ten species) of ectomycorrhizal fungi is prepared.	

ANNEX 9: Evaluation Grid

Evaluation Item		Indicator / Evaluation Questions	Source of Information
Main Category	Sub Category		
		3-B-4. Knowledge about the ecology and physiology of Indonesian ectomycorrhizal and endomychorhizal fungi are obtained.	
	<u>Output 4</u> Animal gut microbiota are isolated, identified and selected for probiotics.	4-A-1. At least 50 strains are isolated and identified.	· Reports of the Project, Self-Evaluation Sheet · Publications
		4-A-2. At least 3 candidates of new taxa are discovered.	
		4-A-3. At least 10 candidates of probiotic are selected.	
		4-A-4. A set of data on microbial diversity in intestine of chicken is obtained.	
		4-B-1. At least 50 strains are isolated and identified.	· Reports of the Project, Self-Evaluation Sheet · Publications
		4-B-2. At least 3 candidates of new taxa are discovered.	
		4-B-3. At least 4 candidates of probiotic strains are selected.	
		4-B-4. A set of data on microbial diversity in rumen of cattle is obtained.	
3. Achievement of Project Purpose	<u>Project Purpose</u> Internationally standardized microbial resource center (InaCC) as a core of Biological Resource Center in Indonesia to promote life science research and biotechnology is established.	a) At least 2,000 strains of valuable Indonesian microbial resources are preserved in proper condition in microbial resource center (InaCC) in LIPI.	· Database, Records · Reports of the Project, Self-Evaluation Sheet
		b) At least 100 strains are ready to be distributed following the approved procedure of InaCC.	· Database, Records · Reports of the Project, Self-Evaluation Sheet
		c) The database of microbial resources is used for internal management of InaCC.	· Database, Web site · Reports of the Project, Self-Evaluation Sheet
		d) The database of microbial resources is made available and actually used for research & development by public.	· Database, Web site · Reports of the Project, Self-Evaluation Sheet
		e) The internal audit reports show the compliance of the management system to ISO9001.	· Internal audit report
4. Prospective on Achievement of the Overall Goal	<u>Overall Goal</u> Microbial resources at InaCC are utilized for sustainable economic development of Indonesia and improvement of quality of life globally in compliance with Convention on Biological Diversity (CBD).	a) Microbial resources are distributed for economic development and scientific purposes.	· InaCC Annual Report · Interview with stakeholders
		b) Technologies are developed for economic and social development purposes based on the microbial resources at InaCC.	

ANNEX 9: Evaluation Grid

II. Process of the Project Implementation

Evaluation Item		Evaluation Questions	Source of Information
Main Category	**Sub Category**		
1.Implementation of planned activities	Activities of output 1	- Progress of the activities related to output 1	· Project document · Interview with Indonesian and Japanese scientists
	Activities of output 2	- Progress of the activities related to output 2	· Project document · Interview with Indonesian and Japanese scientists
	Activities of output 3	- Progress of the activities related to output 3 (Soil Bacteria) - Progress of the activities related to output 3 (Ectomycorrhizal Fungi)	· Project document · Interview with Indonesian and Japanese scientists
	Activities of output 4	- Progress of the activities related to output 4 (Chicken) - Progress of the activities related to output 4 (Cattle)	· Project document · Interview with Indonesian and Japanese scientists
2.Technical transfer	Method of technical transfer	- Are there any problems in technical transfer?	· Project document · Interview with Indonesian and Japanese scientists
3.Change of activities	Addition and deletion of activities	- Validity of activity change	· Project document · Interview with Indonesian and Japanese scientists
4.Relationship with stakeholders	Relationship among the Project team, between project team and stakeholder	- Have regular meeting and/or JCC held at regular interval and worked for issue resolution? - Have the Project team and counterpart sufficiently communicated with each other to share information? - Have the system for chain command and division of roles been established?	· Records of Meeting and JCC · Interview with Indonesian and Japanese scientists
5. Ownership	Ownership of CP organizations	- Have the counterparts actively participated to the Project activities? - Has the Indonesian Government allocated sufficient budget for the Project activities?	· Project document · Interview with Indonesian and Japanese scientists · Budget plan of Indonesia
6. Monitoring and evaluation	Result of monitoring and evaluation, achievement of the Project	- Are there monitoring and feedback system?	· Project document · Interview with Indonesian and Japanese scientists
7. Inhibiting and constraining factors	Factors affecting the Implementation Process	- Are there any factor affecting the implementation of the Project? (Implementation structure, policy, social environment, etc.)	· Project document · Interview with Indonesian and Japanese scientists

ANNEX 9: Evaluation Grid

III. Five evaluation criteria

Evaluation Items: Category	Evaluation Items	Evaluation Questions	Source of Information
Relevance	1. Priorities in relevant national policies of Indonesia	Consistency with policies and plans of Indonesia	- Consistency with following policies and plans - Indonesian Biodiversity Strategy and Action Plan - Long term National Development Plan	· Interview with Indonesian and Japanese scientists · Policy document of Indonesia
	2.Nesseity	Needs of target area and beneficiaries	- Needs of LIPI, InaCC and beneficiaries.	· Interview with Indonesian and Japanese scientists
	3. Appropriateness of the project approaches	Appropriateness of selection of CPs	- Is the number and capacity of CP appropriate? - Do they have adequate experiences and capacity for the Project activities?	· Interview with Indonesian and Japanese scientists · List of Counterpart
		Superiority of Japanese technology	- Example that use of superiority Japanese technology.	· Interview with Japanese scientists
	4. Conformity to ODA policies of the Japanese government	Consistency with the priorities in Japanese ODA	- Japanese ODA policy for Indonesia and Country Assistance Program for the Republic of Indonesia	· Japanese ODA policy for Indonesia (2012) · Country Assistance Program for the Republic of Indonesia(2004)
Effectiveness	1. Achievement of the Project purpose	Achievement of the Project purpose	- Probability of achievement of the project purpose when referring to a status of the objectively verifiable indicators	· Project Documents · Interview with Indonesian and Japanese scientists
			- Constraints to hinder achievement of the project purpose, if any	· Project Documents · Interview with Indonesian and Japanese scientists
	2. Causal relation "from outputs to project purpose"	Contribution of outputs for achieving the project purpose	- Contribution of outputs on the basis of achievement of the verifiable indicators for achieving the project purpose	· Project Documents · Interview with Indonesian and Japanese scientists
		External conditions to affect achievement of the project purpose	- Is external condition satisfied?	· Interview with Indonesian and Japanese scientists
			- Other external conditions	· Interview with Indonesian and Japanese scientists
Efficiency	1. Progress of the inputs	Situation of the progress of the inputs	- Japanese side : Dispatch of the experts, Provision of equipment, Training in Japan, Local cost	· Input of the Project · Records of dispatch of Japanese Expert
			- Indonesian side: Allocation of CP, Project cost	· Input of the Project
		Appropriateness of the inputs	- Appropriateness of the field of the experts, Satisfaction level of participants of the trainings, utilization of result of the Project	· Input of the Project · Training Report
	2. Achievement of the output	Achievement of the output	- Situation of achievement of the output	· Reports of the Project, Self-Evaluation Sheet · Interview with Indonesian and Japanese scientists
	3. Causal relationship between the inputs and the outputs of the activates	Appropriateness of Inputs for achieving outputs	- The excess and deficiency in resources of the Project such as human resources.	· Input of the Project · Interview with Indonesian and Japanese scientists
		Do the situations in outside of the Project have any effects?	- Are the external conditions?	· Interview with Indonesian and Japanese scientists

ANNEX 9: Evaluation Grid

Evaluation Items	Category	Evaluation Items	Evaluation Questions	Source of Information
	4. Coordination with other projects	Collaboration with other JICA project and other cooperation project.	- Cooperation and synergy effects with other JICA project	· Interview with Japanese scientists
			- Cooperation and synergy effects with projects implemented by other donors	· Interview with Japanese scientists
Impact	1. Probability of achievement of the overall goal	Probability of achievement of the overall goal	- Prospect of achievement of the overall goal	· Reports of the Project, Self-Evaluation Sheet
		Factors that may promote or hinder generation of the overall goal	- Is there high possibility that the external conditions are satisfied?	· Interview with Japanese scientists
		Constraining factor for achievement of Overall goal	- Factors inhibit or promote the achievement of overall goal	· Interview with Indonesian and Japanese scientists
	2. Casual relationship	Relationship between overall goal and project purpose	- Isn't there significant gap between the Overall Goal and the Project purpose? Does the achievement of the Project purpose contribute the achievement of the Overall Goal?	· Project Documents · Interview with Indonesian and Japanese scientists
	3. Spillover effects: positive	Positive impact	- Are there any positive impacts of the Project?	· Project Documents · Interview with Indonesian and Japanese scientists
	4. Spillover effects: negative	Negative impact	- Are there any negative impacts of the Project?	· Project Documents · Interview with Indonesian and Japanese scientists
Sustainability	1. Political aspect	Policies in the post project stage	- Possibility of continuation of political assistance in post project stage.	· Interview with Indonesian and Japanese scientists
	2. Institutional aspect	Institutional capacity of CPs continue the activities in the post project stage	- Structure to continue the activities by InaCC and in post project stage.	· Interview with Indonesian and Japanese scientists
	3. Financial aspect	Cost estimation for undertaking the necessary activities that should be continued in the post project stage	- Possibility of continuation of budget allocation for the activities in post project stage.	· Interview with Indonesian and Japanese scientists
	4. Technical aspect	Technical capacity of the CP staff to undertake necessary tasks that should be continued in the post project stage	- Situation of utilization of techniques and result of the Project.	· Interview with Indonesian and Japanese scientists