Identification of Technical Practices for Climate-Smart Agriculture (CSA) in Indonesia

Project Reference: CTCN 22-011

Inception Meeting of the Stakeholder Working Group

Date: 12 April 2023 (2.30 pm to 6.00 pm)
Place: JS Luwansa Hotel and Convention Center, Jakarta

Participants:

Present

Dr Ir Dudi Iskandar (Mr)	Project Proponent
Dr M Nasir Rofiq (Mr)	National Research and Innovation Agency (BRIN)
Dr Lukita Devy (Ms)	National Research and Innovation Agency (BRIN)
Sostenes (Mr)	Regency of Sukabumi
Dr Ir Joko Pitoyo (Mr)	Ministry of Agriculture
Fathan Oktisaf (Mr)	Partnership for Indonesia's Sustainable Agriculture (PISAgro)
Rahmad Gunawan (Mr)	Ministry of Agriculture
Haryo Istianto (Mr)	Ministry of Public Works and Housing
Syed Mohazri Syed Hazari (Mr)	DHI Malaysia
Asep Sukmara (Mr)	DHI Indonesia
Francis S.R. (Mr)	DHI Indonesia
Dina Ariani (Ms)	DHI Indonesia
Dr Satyanto Krido Saptomo (Mr)	*IPB University*
Dr A. Faroby Falatehan (Mr)	*IPB University*
Sriwulan Ferindian (Ms)	*IPB University*
Dr Arien Heryansyah (Mr)	*UIKA Bogor*

Absent

Rizki Amelgia (Ms)	NDE
Dra Keo Novi Ariyanti (Ms)	Ministry of Women Empowerment and Children Protection

Agenda:

1. Opening of the meeting
2. Introduction to the project team and working group members
3. Functions and Composition of the Stakeholder Working Group
4. Project briefing, including the selected geographical area in Indonesia to contextualise the technology
5. Monitoring and Evaluation Plan

Meeting material:

Presentation deck by DHI (attached).

Notes:

Item	Discussion Notes	Remarks
1.0	The workshop was conducted in both Bahasa Indonesia and English. The workshop was moderated by Mr Asep Sukmara and started at 2.30 pm (Jakarta time) with introductions of the meeting participants. It was officially opened by Dr Dudi Iskandar of BRIN.	-
2.0	A presentation on the project implementation approach was done by Mr Syed Mohazri with the following main points:	-
	a) Implementation arrangement: • Project Manager: Syed Mohazri Syed Hazari • Deputy Project Manager: Maija Bertule • National Coordinator: Asep Sukmara	-
	b) International and national experts: • CSA design: Dr Satyanto Krido Saptomo • Agriculture finance: Dr A Faroby Falatehan • Gender: Ms Sriwulan Ferindian • Agriculture engineer: Dr Arien Heryansyah • Remote sensing: Dr Radoslaw Marcin Guzinski	-
	c) The national designated entity (NDE) and project proponent (PP) will have a guidance and consultative role.	-
	d) Function and composition of the Stakeholder Working Group: • Members were selected based on a detailed mapping carried out via a literature review • Members composition – 30% must be females • The selection of members is based on their capabilities to make key decisions regarding the design of climate technologies and ensure that these decisions are aligned with Indonesia's strategic priorities • The Working Group comprises 10 members from relevant ministries, agencies, research agencies and the private sector • The main function of the Working Group is to provide a technical overview and high-level guidance at every stage of the project implementation	
	e) The project objective is "to identify and design suitable CSA technologies and associated systems for enhancing climate change adaptation in the agriculture sector in Indonesia". Findings from the TA will facilitate the implementation and replication of CSA	-

Item	Discussion Notes	Remarks
	technologies in Indonesia, supporting the achievement of its National Adaptation Plan (NAP) goals and strategies. Specifically, the TA focuses on the followings: • The use of sensors that can identify water content and soil chemistry on agricultural land • Automation of watering and fertilizing tools according to land requirements.	
	f) The project duration is 12 months. The timeline as per the signed Contract is from 9 November 2023 to 9 November 2024. However, since the Inception Meeting was only conducted on 13 January 2023, the project timeline has been modified to end on 27 December 2024.	-
	g) Mandatory outputs to be submitted are: • Detailed implementation plan • Monitoring and evaluation plan • Initial impact statement • Final impact statement • TA closure plan	-
	h) Main outputs of the project are: • Output 1: Map stakeholders and organize an inception meeting • Output 2: Identify technologies to support the identification of water content and soil chemistry on agricultural land • Output 3: Identify technologies for automatic irrigation and fertilizer application and design an integrated system for the suitable conditions as per the geographic location selected • Output 4: Analyse market potential and cost-benefit of the fully integrated system • Output 5: Train governmental bodies in CSA practices and the fully integrated system	-
3.0	Proposed dates to deliver the deliverables were also presented.	No objections were received from the members.
4.0	The Inception Meeting proceeded with discussing the findings of a geographical area in Indonesia to contextualise the technology (i.e., Sukabumi Regency).	-
5.0	The representative from the Sukabumi Regency informed the meeting that:	-

Item	Discussion Notes	Remarks
	• The Regency is divided into three (3) regions, namely northern, central and southern • Types of commodities for each region: - Northern: vegetables and decorative plants - Central: food crops, paddy, corn and yam - Southern: paddy along the southern coastal areas, coconut, clove, and carrot.	
6.0	The monitoring and evaluation plan was also discussed for each output and activity. • For the indicator for Activity 3.4: - The meeting emphasised that the CSA technology to be proposed by the project should be able to reduce the GHG emission in agriculture to be in line with Indonesia's Nationally Determined Contribution (NDC). • For the indicator for Activity 5.2: - Minimum 10 government participants and five (5) relevant stakeholders to be trained - Five (5) technology supplier participants (in person or virtual)	The members were given a week to comment on the plan, but in principle all indicators were accepted.
7.0	The meeting ended at 6.00 pm (Jakarta time).	-

Identification of Technical Practices for Climate-Smart Agriculture (CSA) in Indonesia

Inception Meeting of the Stakeholder Working Group
12 April 2023 (JS Luwansa Hotel Jakarta)

CTCN
UN Climate Technology Centre & Network
UNFCCC Technology Mechanism

UN environment programme | DHI
UNEP-DHI CENTRE

DHI

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Agenda

- TA Background and Implementation
- Main Outputs
  - Mandatory outputs
  - TA outputs
- Stakeholders Working Group
- Monitoring & Evaluation Plan

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TA Implementation

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Background

- Title of Technical Assistance (TA):
  - **Identification of Technical Practices for Climate-Smart Agriculture (CSA) in Indonesia**
- National Designated Entity (NDE):
  - Directorate General of Climate Change, Ministry of Environment and Forestry
  - Focal point: Ms Rizki Amelgia (Kiki)
- Project proponent
  - Badan Riset dan Inovasi Nasional (BRIN)
  - Focal point: Dr Dudi Iskandar

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Background (cont'd)

- Objectives:
  - To identify and design suitable CSA technologies and associated systems for enhancing climate change adaptation in the agriculture sector in Indonesia
  - Findings from the study will facilitate the implementation and replication of CSA technologies in Indonesia, supporting the achievement of the goals and strategies of its National Adaptation Plan
- Indicative technical interventions:
  - The use of sensors that can identify water content and soil chemistry on agricultural land
  - Automation of watering and fertilizing tolls according to land requirements

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Implementation arrangements

- Lead Implementation Agency: UNEP-DHI Centre on Water and Environment
- Project Manager:
  - Syed Mohazri Syed Hazari (DHI Malaysia)
- Deputy Project Manager:
  - Maija Bertule (UNEP-DHI Centre, Denmark)
- National support and logistics coordination:
  - Asep Sukmara (DHI Indonesia)

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Experts

- Climate-smart agriculture design
  - Dr. Satyanto Krido Saptomo *(Departmen Teknik Sipil dan Lingkungan, Fateta, IPB University)*
- Agriculture finance
  - Dr. A. Faroby Falatehan *(Departemen Ekonomi Sumberdaya dan Lingkungan, FEM, IPB University)*
- Gender
  - Ms Sriwulan Ferindian *(Departemen Komunikasi dan Pengembangan Masyarakat, FEMA, IPB University)*
- Agriculture engineer
  - Dr. Arien Heryansyah *(Fakultas Teknik dan Sains, UIKA Bogor)*
- Remote sensing expert:
  - Dr Radoslaw Marcin Guzinski *(DHI Denmark)*

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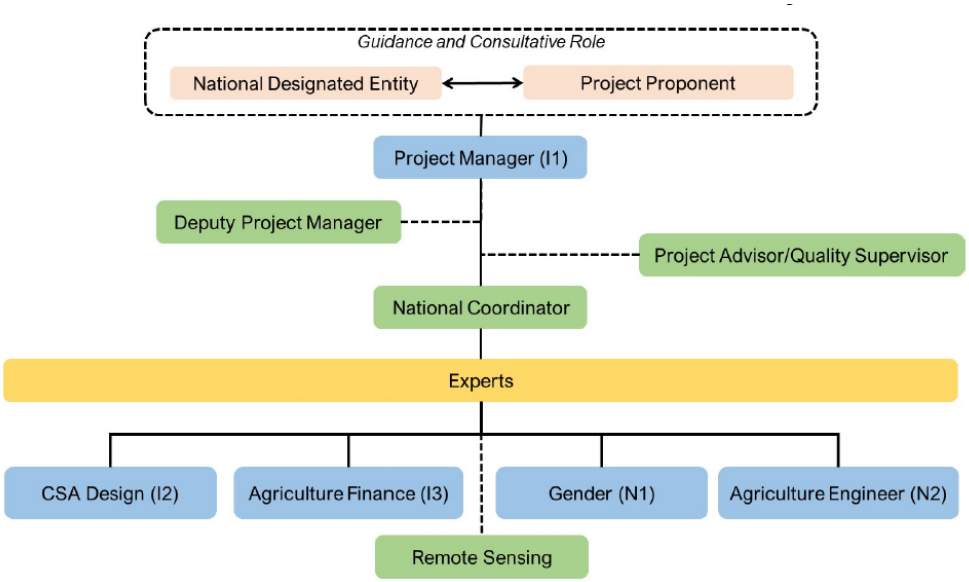
Implementation arrangements



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Implementation Plan

- TA duration:
  - 12 months
- Contract timeline:
  - 9 November 2022 to 9 November 2023
- TA implementation timeline:
  - 9 November 2022 to 27 December 2023

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Main Outputs

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Main Outputs

- Mandatory outputs
- TA outputs

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Mandatory Outputs

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Mandatory Outputs

- Detailed implementation plan
- Monitoring and evaluation plan
- Initial impact statement
- Final impact statement
- TA closure plan

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TA Outputs

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Overall Output

- Output 1: Map stakeholders and organize an inception meeting
- Output 2: Identify technologies to support the identification of water content and soil chemistry on agricultural land
- Output 3: Identify technologies for automatic irrigation and fertilizer application and design an integrated system for the suitable conditions as per the geographic location selected
- Output 4: Analyse market potential and cost-benefit of the fully integrated system
- Output 5: Train governmental bodies in CSA practices and the fully integrated system

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Gender Element

- Gender is considered central to the implementation of the TA project, and will be mainstreamed in all relevant outputs and deliverables:
  - Ensuring a gender balance in the implementation team
  - Ensuring a dedicated gender expert in the project execution activities to ensure that aspects of gender mainstreaming are considered in the selection of technologies
  - Ensuring a gender balance in the project activities relating to the stakeholder working group and training
  - Ensuring gender is considered in main outputs and deliverables

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Approach

- Establish a stakeholder working group
  - Mapping of stakeholders
  - Selection of a suitable geographical location in Indonesia to contextualise the technology analysis
- Literature review
- Feasibility analysis of technologies
- Designing the macrosystem framework
- Identification of technologies for automatic irrigation and fertilizer application
- Market analysis and cost-benefit
- Gender analysis
- Meetings of the WG
  - Face-to-face
  - Virtual
- Workshop

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Output 1

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Output 1

- Map stakeholders and organize an inception meeting
  - Three (3) activities
  - Four (4) deliverables

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Activities for Output 1

- **Activity 1.1:** Map stakeholders that are likely to be involved in CSA deployment in Indonesia
  - D1.1.1: Stakeholder analysis report
- **Activity 1.2:** Establish a stakeholder working group
  - D1.2.1: List of confirmed working group members
- **Activity 1.3:** Organise an inception meeting for the stakeholder working group
  - D1.3.1: Inception meeting
  - D1.3.2: Minutes of the inception meeting

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Output 2

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Output 2

- Identify technologies to support the identification of water content and soil chemistry on agricultural land
  - Five (5) activities
  - Eight (8) deliverables

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Activities for Output 2

- **Activity 2.1:** Identify existing technologies that provide data on water content and soil chemistry on agricultural land (vidiometry/drone/CCTV, etc.)
  - D2.1.1: Report summarising technology review findings
  - D2.1.2: Technology fact sheets
- **Activity 2.2:** Produce a feasibility analysis for the technologies
  - D2.2.1: Technology feasibility analysis report
- **Activity 2.3:** Organise a half-day meeting with the working group
  - D2.3.1: Virtual working group meeting
  - D2.3.2: Minutes of meeting of the working group

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Activities for Output 2 (cont'd)

- **Activity 2.4:** Design the macrosystem framework for the selected technology
  - D2.4.1: Draft report on the design of the macrosystem framework
- **Activity 2.5:** Organise a half-day meeting with the working group
  - D2.5.1: Virtual working group meeting
  - D2.5.2: Minutes of the meeting of the working group

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Output 3

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Output 3

- Identify technologies for automatic irrigation and fertilizer application and design an integrated system for the suitable conditions as per the geographic location selected
  - Four (4) activities
  - Five (5) deliverables

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Activities for Output 3

- **Activity 3.1:** Identify relevant technologies for automatic irrigation and fertilizer application
  - D3.1.1: A catalogue of technology factsheets for automatic irrigation and fertilizer application
- **Activity 3.2:** Produce a feasibility analysis for the integration of the two systems
  - D3.2.1: Report on the feasibility analysis for the integration of the two systems
- **Activity 3.3:** Organise a half-day meeting with the working group
  - D2.5.1: Virtual working group meeting
  - D2.5.2: Minutes of the meeting of the working group

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Activities for Output 3 (cont'd)

- **Activity 3.4:** Finalise the feasibility analysis for the integration of the two systems
  - D3.4.1: Final report on the design of the fully integrated system

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Output 4

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Output 4

- Analyse market potential and cost-benefit of the fully integrated system
  - Three (3) activities
  - Four (4) deliverables

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Activities for Output 4

- **Activity 4.1:** Analyse market potential and cost-benefit of the fully integrated system
  - D4.1.1: Draft report on the market potential analysis for the deployment of the fully integrated system
- **Activity 4.2:** Analyse cost-benefit and financing mechanisms for the deployment of the fully integrated system
  - D4.2.1: Draft report on the cost-benefit and financing mechanisms
- **Activity 4.3:** One-day in-person working group meeting
  - In-person meeting with the working group
  - Minutes of the working group meeting

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Output 5

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Output 5

- Train governmental bodies in the CSA practices and the fully integrated system
  - Two (2) activities
  - Four (4) deliverables

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Activities for Output 5

- **Activity 5.1:** Selection of the best CSA practices and associated financial mechanisms
  - D5.1.1: Consolidated training materials in English and Bahasa Indonesia
- **Activity 5.2:** Organize a two-day in-person workshop with the participation of contextual technology suppliers and the stakeholder working group. The workshop will include case presentations and consolidated findings from the technological analysis and associated financing mechanisms
  - D5.2.1: A two-day in-person workshop
  - D5.2.2: Concluding workshop report
  - D5.2.3: Satisfaction survey results

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Stakeholders Working Group

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Members

- Members were selected based on a detailed mapping carried out via a literature review
- 30% are females
- Comprising of 10 members from:
  - Ministries
  - Agencies
  - Research agencies
  - Private sector

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Main Function of the Working Group

- Provide a technical overview and high-level guidance at every stage of the TA implementation
- Selection of members is based on their capabilities to make key decisions regarding the design of the climate technologies and ensure that these decisions are aligned with Indonesia's strategic priorities

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Monitoring & Evaluation Plan

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Output 1 - Map stakeholders that are likely to be involved in CSA deployment in Indonesia

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Activity 1.1: Map stakeholders that are likely to be involved in CSA deployment in Indonesia

- **Indicator**
  - Number of stakeholder analysis report
- **Expected Results**
  - One (1) stakeholder analysis report, including recommendations on a suitable geographical area in Indonesia to contextualise the technological analysis
- **Methods and Frequency for Data Collection**
  - Literature review following the 5W1H approach by national experts
  - One (1) introductory workshop with NDE and PP
  - Consultations with NDE and PP

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Activity 1.2: Establish a stakeholder working group

- **Indicator**
  - Number of working group members
- **Expected Results**
  - Up to 10 confirmed working group members, which reflect inclusiveness (including gender)
- **Methods and Frequency for Data Collection**
  - Details of the proposed stakeholder working group, with names and contact details of the members, respective institutions, gender, and their roles.
  - A copy of correspondence to potential members of the working group.

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Activity 1.3: Organise an inception meeting for the stakeholder working group

- **Indicator**
  - Number of inception meeting participants
- **Expected Results**
  - One (1) inception meeting with a minimum of 10 participants
- **Methods and Frequency for Data Collection**
  - Minutes of the inception meeting including the participants' list

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Output 2 - Identify technologies to support the identification of water content and soil chemistry on agricultural land

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Activity 2.1: Identify existing technologies that provide data on water content and soil chemistry on agricultural land (vidiometry/drone/CCTV, etc.)

- **Indicator**
  - Number of technology review reports
  - Number of technology fact sheets
- **Expected Results**
  - One (1) technology review report detailing the findings related to existing sensor technology, drone technology, satellite imagery technology, and any other relevant technologies.
  - Minimum of four (4) technology factsheets (for up to four (4) types of technologies)
- **Methods and Frequency for Data Collection**
  - Literature review on existing technologies that can identify water content and soil chemistry on agricultural land, expert inputs, and working group inputs.

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Activity 2.2: Produce a feasibility analysis for the technologies

- **Indicator**
  - Technology feasibility analysis report
- **Expected Results**
  - One (1) technology feasibility analysis report covering technologies identified under the four (4) types of technologies
- **Methods and Frequency for Data Collection**
  - National expert assessment summarizing the possible barriers, challenges, and bottlenecks with respect to the application of the technologies using literature review, interactions with working group members and other information sources

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Activity 2.3: Organize a half-day meeting with the stakeholder working group

- **Indicator**
  - Number of meeting participants
  - Number of technologies prioritized
- **Expected Results**
  - 10 working group meeting participants
  - Max three (3) technologies to be selected priorities for potential future analysis
- **Methods and Frequency for Data Collection**
  - Minutes of the meeting including a summary from the focus group discussion on the identification of priority technology and technologies to be considered for the design of the system.

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Activity 2.4: Design the macrosystem framework for the selected technology

- **Indicator**
  - Draft report on the design of the macro system framework
- **Expected Results**
  - One (1) draft report on the macro system framework
- **Methods and Frequency for Data Collection**
  - Working group inputs, expert inputs, literature review, and project proponent feedback feed into an analysis of two interconnected technologies that are compatible with a system design (i.e., the sensor technology will drive the automatic watering and fertilising)

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Activity 2.5: Organise a virtual half-day meeting with the stakeholder working group

- **Indicator**
  - Number of meeting participants
- **Expected Results**
  - 10 stakeholder working group participants
- **Methods and Frequency for Data Collection**
  - Minutes of the meeting, including participant list and summary of focus group discussion outcomes

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Output 3 - Identify technologies for automatic irrigation and fertilizer application and design an integrated system for the suitable conditions as per the geographic location selected

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Activity 3.1: Identify relevant technologies for automatic irrigation and fertilizer application

- **Indicator**
  - Number of technology factsheets for automatic irrigation and fertilizer application
- **Expected Results**
  - Up to three (3) existing technologies that integrate the automation of watering and fertilizing according to land requirements
- **Methods and Frequency for Data Collection**
  - Literature review, working group discussions, and expert inputs on technologies for automatic irrigation and fertilizer application

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Activity 3.2: Produce a feasibility analysis for the integration of the two systems

- **Indicator**
  - A feasibility analysis report (on the integration of the two systems)
- **Expected Results**
  - One (1) feasibility analysis report including a draft proposed system design and recommendations
- **Methods and Frequency for Data Collection**
  - Literature review, working group discussions, expert inputs

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Activity 3.3: Organise a half-day meeting with the stakeholder working group

- **Indicator**
  - A half-day virtual meeting with the working group
- **Expected Results**
  - 10 working group meeting participants
- **Methods and Frequency for Data Collection**
  - Minutes of the meeting including participants list and summary from the focus group discussion, feedback and recommendations for the two systems for integration

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Activity 3.4: Finalize the feasibility analysis for the integration of the two systems

- **Indicator**
  - Final report on the design of the fully integrated system (with the anticipated XX metric tonnes of CO2 emissions reduced or avoided)
- **Expected Results**
  - One (1) report describing the architecture of the system, system specifications and operating conditions of the fully integrated technologies
- **Methods and Frequency for Data Collection**
  - Analysis based on Activities 3.2 and 3.3, including incorporating inputs from all the stakeholder consultations

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Output 4: Analyse market potential and cost-benefit of the fully integrated system

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Activity 4.1: Analyse the market potential for the deployment of the fully integrated system

- **Indicator**
  - Draft report on the market potential analysis for the deployment of the fully integrated system
- **Expected Results**
  - One (1) draft report
- **Methods and Frequency for Data Collection**
  - Market potential analysis from literature and online source review, expert and stakeholder working group inputs

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Activity 4.2: Analyse cost-benefit and financing mechanisms for the deployment of the fully integrated system

- **Indicator**
  - Draft report on cost-benefit and financing mechanisms
- **Expected Results**
  - One (1) draft report describing a *minimum* of one (1) financing mechanism
- **Methods and Frequency for Data Collection**
  - Cost-benefit analysis and financing mechanism study from literature and online source review, expert and stakeholder working group inputs

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Activity 4.3: One-day in-person stakeholder meeting

- **Indicator**
  - In-person meeting with the stakeholder working group
- **Expected Results**
  - 10 stakeholder working group participants
- **Methods and Frequency for Data Collection**
  - Meeting minutes, participant list and notes on outcomes of the focus group discussions
  - Presentation of the final design of the fully integrated system (Activity 3.4) and the findings of the cost-benefits and financing mechanisms analysis (Activity 4.2)

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Output 5: Train governmental bodies in the CSA practices and the fully integrated system

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Activity 5.1: Selection of best CSA practices and associated financing mechanisms

- **Indicator**
  - One (1) selected fully integrated system and the associated financing mechanisms
- **Expected Results**
  - One (1) training on the final fully integrated system and the associated financing mechanisms
- **Methods and Frequency for Data Collection**
  - Consolidated training materials in English and Bahasa Indonesia

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Activity 5.2: Organize a 2-day workshop with the participation of contextual technology suppliers and the stakeholder working group

- **Indicator**
  - A 2-day in-person workshop with the Government of Indonesia and technological suppliers
- **Expected Results**
  - 10 (minimum) government participants to be trained
  - 5-10 technology supplier participants (in person or virtual)
- **Methods and Frequency for Data Collection**
  - Concluding workshop report including participant lists, case presentations and consolidated findings from the technological analysis and associated financing mechanisms, satisfaction survey results, workshop presentations and meeting minutes

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Activity 4.3: One-day in-person stakeholder meeting

- **Indicator**
  - In-person meeting with the stakeholder working group
- **Expected Results**
  - 10 stakeholder working group participants
- **Methods and Frequency for Data Collection**
  - Meeting minutes, participant list and notes on outcomes of the focus group discussions
  - Presentation of the final design of the fully integrated system (Activity 3.4) and the findings of the cost-benefits and financing mechanisms analysis (Activity 4.2)

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Thank you

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