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

Project Reference: CTCN 22-011

Mandatory Output 1 – Detailed Implementation Plan

Project Title

"Identification of technical practices for climate-smart agriculture (CSA) in Indonesia" (hereby referred to as the "project").

Project Objective

The overall 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 technologies in Indonesia, supporting the achievement of its National Adaptation Plan (NAP) goals and strategies. The project focuses on two of the indicative technical interventions in the agriculture sector included in the NAP, as follows:

- The use of sensors that can identify water content and soil chemistry on agricultural land; and
- Automation of watering and fertilizing tools according to land requirements.

National Designated Entity (NDE)

Directorate General of Climate Change, Ministry of Environment and Forestry Republic of Indonesia

Project Proponent

National Research and Innovation Agency (BRIN)

Implementation Arrangements

The project will be implemented by CTCN Consortium Partner UNEP-DHI, hosted by DHI (here from in text: 'DHI').

Proposed Team Members

The team members are as detailed in Table 1 and the organisation chart is shown in Figure 1.

Table 1 Project team members

Role	Personnel	Citizenship	Years of Experience	Location
Project manager (PM)	Syed Mohazri Syed Hazari (Mr)	Malaysian	18	Malaysia
Deputy PM	Maija Bertule (Ms)	Latvian/Danish	12	Denmark
Project advisor/Quality supervisor	George Foulsham (Mr)	Australian	20	Australia
National coordinator	Asep Sukmara (Mr)	Indonesian	27	Indonesia
Climate-smart agriculture design	Dr. Satyanto Krido Saptomo (Mr)	Indonesian	26	Indonesia
Agriculture finance	Dr. A. Faroby Falatehan (Mr)	Indonesian	21	Indonesia
Gender	Sriwulan Ferindian (Ms)	Indonesian	8	Indonesia
Agriculture engineer	Dr. Arien Heryansyah (Mr)	Indonesian	24	Indonesia
Remote sensing expert	Dr. Radoslaw Marcin Guzinski (Mr)	Polish	16	Denmark

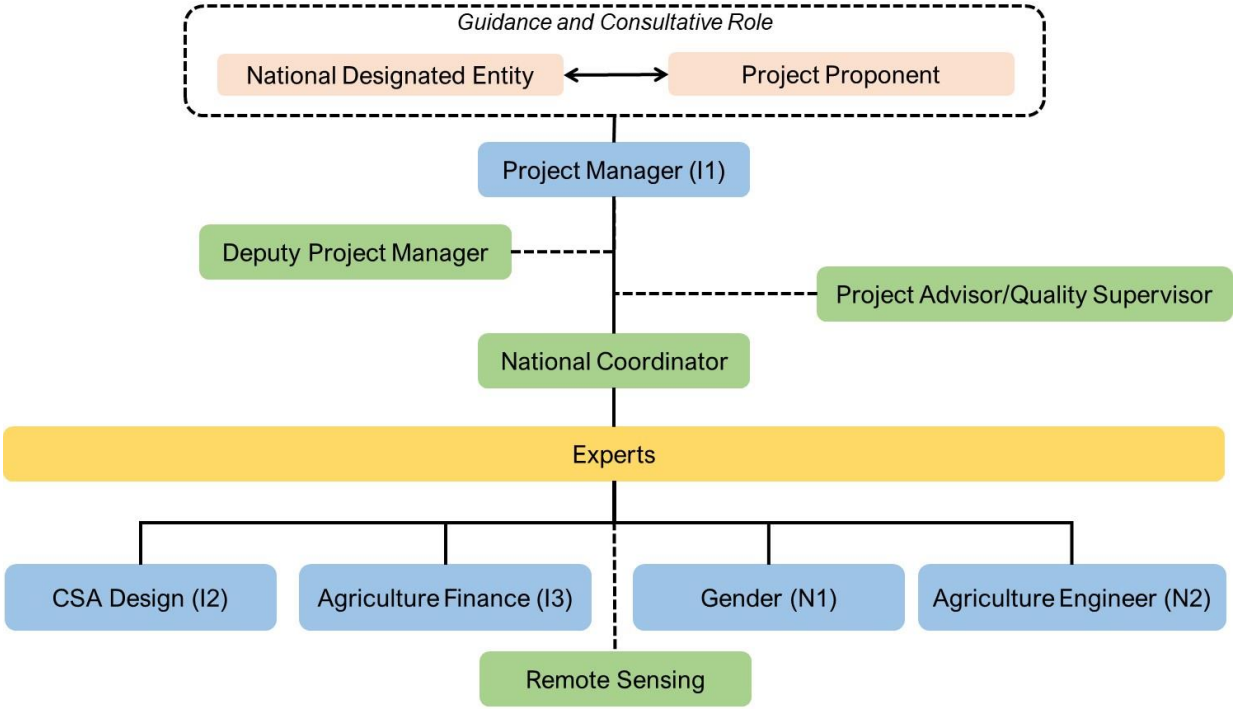


Figure 1 Proposed organisation chart
(Note: boxes in blue mean experts are as per requirements in TA while the green boxes are additional experts considered required for the TA.

Project Timeline

Based on the project cooperation agreement (PCA) signed between DHI and CTCN, the project will be executed for a duration of 12 months from 9 November 2022 to 9 November 2023. However, due to the delayed start date, the project timeline has been adjusted to end on 27 December 2023. The detailed schedule can be viewed in Annex 1.

Outputs and Deliverables

Mandatory Outputs

Mandatory outputs to be delivered are as follows:

1) A *detailed implementation plan (this document)* for all activities, deliverables, outputs, deadlines and responsible persons/organizations, including a gender study and an itemized budget for implementing the Response Plan. The detailed implementation plan and budget are included in this document and its accompanying annexes.

2) Based on the implementation plan, *a monitoring and evaluation plan* with specific, measurable, achievable, relevant, and time-bound indicators has been developed to evaluate the timeliness and appropriateness of implementation. The monitoring and evaluation plan accompanies this document. The indicators selected in the monitoring and evaluation plan are aligned with the technical assistance closure report template (Item v).

3) An *impact statement* of the CTCN technical assistance will be prepared at the start of the CTCN technical assistance and will then be updated at the end of the CTCN technical assistance. This plan will be based on a template that will be provided.

4) A *closure report* will be prepared at the end of the CTCN TA to be prepared using a template that will be provided. This closure plan will be based on the indicators selected in the monitoring and evaluation plan in Item ii.

Deliverables	Delivery date
i) Detailed implementation plan (with budget)	18 April 2023
ii) Monitoring and evaluation plan	18 April 2023
iii) Initial impact statement	18 April 2023
iv) Final impact statement	2 January 2024
v) TA closure report	10 January 2024

TA Implementation Plan

The following sections outline the details of the technical assistance implementation plan.

A Gantt chart outlining all deliverables against the project timeline is attached as Annex 1 to this document while the budget is attached as Annex 2 to this document.

Output 1: Map stakeholders and organize an inception meeting

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

This activity consists of the mapping of the main stakeholders who would be involved in CSA practices in Indonesia. Mapping activity will be carried out with the support of the national expert (i.e., agriculture engineer), the NDE, the focal points of financial mechanisms (e.g., GCF, GEF, Adaptation Fund, etc.), and the proponent (i.e., Agency for the Assessment and Application of Technology). Potential stakeholders include (but are not limited to) relevant Ministries and public institutions, the private sector, NGOs, academia, youth and gender associations, and any entities working in similar or complementary initiatives.

A comprehensive literature review will be carried out to guide the stakeholder mapping, which will be focused on the following themes:

- Identify the implementation of CSA in Indonesia by applying the 5W1H[1] approach
- Gender analysis on CSA at the national level (for relevant technologies in the Indonesian context)
- National policies and programmes related to CSA

A desktop assessment will also be carried out to select a geographical location in Indonesia to contextualise the CSA technology.

Deliverables	Delivery date
D1.1.1 Stakeholder analysis report *The report will include information on (a) the literature review, (b) the mapping of stakeholders, c) brief minutes of virtual meetings held, and (d) desktop assessment to select a geographical location in Indonesia.*	20 March 2023

Activity 1.2: Establish a stakeholder working group

Based on the stakeholders identified in Activity 1.1, a restrictive working group (of up to 10 persons) will be established. The stakeholder working group will be gender-balanced with an adequate representation of vulnerable groups. It will function to provide a technical overview and high-level guidance at every stage of the TA implementation. For this purpose, the members of the stakeholder working group will be selected from personnel with the capability to make key

[1] 5W1H – What, Who, Where, When, Why and How.

decisions regarding the design of climate technologies and ensure that these decisions are aligned with Indonesia's strategic priorities.

Once selected, potential members of the working group will be invited electronically or via letter to ensure that agreement from the respective organisations is received, and clear scope of what is expected from the members. The NDE and PP will provide guidance on the selection process.

Other internal activities will include preparing an inception meeting plan, including preparation of materials to be presented during the stakeholder working group (in English and Bahasa Indonesia), and listing expected documents from stakeholders (like reports, policies, programmes, maps, etc.).

Deliverables	Delivery date
D1.2.1 List of confirmed working group members *The list will include 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 will also be attached to the list, where relevant.*	3 April 2023

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

An inception meeting will be held with the members of the stakeholder working group and the team leader. This meeting is expected to be carried out in Indonesia and in person.

The inception meeting with the working group will have the following objectives:

a) to introduce the team of experts, the goals, milestones and anticipated deliverables of the technical assistance to the members of the working group

b) to iron out the role of the stakeholder working group during the project implementation

c) to present the mandatory outputs (i.e., implementation plan, monitoring and evaluation plan and initial impact statement)

d) to present the selected geographical area in Indonesia to contextualise the technology analysis

To facilitate and formalise the exchange and sharing of knowledge and information on CSA practices, the discussions of the inception meeting will be guided by issues like participants' knowledge of CSA, gender roles in CSA, considerations of gender equity and social inclusion in CSA, etc.

To prepare for this meeting, the team leader will take advantage of his presence in Indonesia to meet with selected members of the stakeholder working groups individually (as many as possible). Short reports of these meetings will be prepared. During these meetings, the governmental bodies will be expected to share the existing and relevant documents such as strategies, policies, maps or other documents that could be relevant to this TA. This will be based on the list of expected documents from stakeholders prepared internally in Activity 1.2. Results

of the inception meeting will also feed into the implementation plan elaborated under Activity (i) of the Mandatory Output.

Deliverables	Delivery date
D1.3.1 Inception meeting *The meeting is expected to be carried out in Jakarta, Indonesia. In case of unforeseen circumstances (e.g., COVID-19-related restrictions), virtual alternatives will be considered.*	12 April 2023
D1.3.2 Minutes of the inception meeting *Minutes will include the inception meeting agenda, a list of participants disaggregated by gender, the material used for the presentation (in English and Indonesian), and any decisions relating to the selection of the area for the contextualization of the project technologies.*	24 April 2023

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

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

A literature review will be carried out on existing technologies that are able to identify water content and soil chemistry on agricultural land. This review will confine itself to the following types of technologies:

- Sensors implanted in the fields
- Drones
- Satellite imagery
- Combination of drone and satellite imagery

This literature review will contribute to developing a catalogue of existing technologies with relevance to the Indonesian context, guided by the four (4) key types of technologies listed above. This catalogue will be comprised of fact sheets of all the technologies reviewed. Each fact sheet will include the following information:

- Name, photo and title of the technology
- Characteristics of the sensors
- Characteristics of the drones or satellites
- Characteristics of the combined systems (drones + sensors)
- Data frequency
- Characteristics of the architecture of communication (how is information stored, transmitted and accessible to the users)
- Characteristics of the transmission
- Does the technology require power backup?

- Geographic Operation-ability/ Performance standard (energy use, safety, reliability, waterproof)
- Additional infrastructure requirement
- Estimated cost

Deliverables	Delivery date
D2.1.1 Report summarizing technology review findings *The report will contain findings related to existing sensor technology, drone technology, satellite imagery technology, sensor–satellite imagery combination technology and any other relevant technologies.*	3 May 2023
D2.1.2 Technology fact sheets *A catalogue containing the factsheets for respective technologies will be provided.*	3 May 2023

Activity 2.2: Produce a feasibility analysis for the technologies

Activity 2.2 will analyse the feasibility of the four (4) types of technologies identified in Activity 2.1 taking into account the identified geographical area or region in Indonesia based on the consensus obtained from the discussions with NDE and PP under Activity 1.3. A gap analysis will be carried out aiming to analyse the feasibility of each identified technology. It will analyse all possible barriers, challenges and bottlenecks that may hinder the implementation of the identified technologies in Indonesia. These barriers, challenges, and bottlenecks will be defined by type (for example, institutional barriers, capacity barriers, technological barriers, gender barriers, financial barriers, etc).

The gap analysis will also identify which of these technologies may potentially be implemented rapidly and possess better efficiency when implemented in the selected area or region, and which technologies may not be deployed immediately in Indonesia or may not provide the best efficiency. The results of the gap analysis will be presented in a matrix.

Based on this matrix, a methodology to prioritize the technologies will be proposed and explained in the report, providing recommendations to the stakeholder group on prioritization, including gender aspect consideration.

Deliverables	Delivery date
D2.2.1 Technology feasibility analysis report *The analysis report will summarize the possible barriers, challenges, and bottlenecks with respect to the application of the four (4) types of technologies. This will include:* • *Barrier and gap analysis* • *Methodology to obtain a preliminary prioritization list of technologies*	31 May 2023

Deliverables	Delivery date
• *Summary of findings and recommendations on the priority technologies*	

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

A virtual meeting with the stakeholder working group will be organised to present the results of the technology feasibility analysis, and findings from Activities 2.1 and 2.2.

Together with the stakeholder working group, the meeting will aim to identify priority technology and technologies to be considered (using the proposed methodology for prioritization) for the design of the system. At this stage, one priority technology combination will be selected for the macrosystem analysis, with a maximum of three technologies to be selected as the following priorities (for potential future analysis).

Deliverables	Delivery date
D2.3.1 Virtual stakeholder working group meeting	7 June 2023
D2.3.2 Minutes of the meeting with the stakeholder working group *Minutes will include the meeting agenda, a list of participants disaggregated by gender, the materials used, and a summary of the discussions held especially on the decision to select the one (1) priority technology combination.*	14 June 2023

Activity 2.4: Design the macrosystem framework for the selected technology

This activity will deliver a proposed design of an integrated system considering 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). The proposal will focus on the example area selected. The system design will include the description of the following considerations:

- Design of architecture of the framework for the selected priority technology
- System technology specifications
- Optimal operating conditions of macrosystem framework

The results of this activity will be summarized in a report that will describe the architecture and provide examples through images and schemes that show the way the system will work.

Deliverables	Delivery date
D2.4.1 Draft report on the design of the macro system framework	5 July 2023

Deliverables	Delivery date
The report will include analysis findings relating to the following aspects: • *Design of architecture of the framework for the selected priority technology* • *System technology specifications* • *Optimal operating conditions of macrosystem framework*	

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

A half-day virtual meeting will be organised with the stakeholder working group, where the design of the system will be presented and explained, and comments will be collected.

Deliverables	Delivery date
D2.5.1 Half-day virtual meeting	12 July 2023
D2.5.2 Minutes of the meeting *Minutes will include the meeting agenda, the list of participants disaggregated by gender, the material used, and a summary of the discussions held.*	19 July 2023

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

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

This activity will involve the preparation of a catalogue of up to three (3) existing technologies that integrate the automation of watering and fertilizing according to land requirements.

A fact sheet will be generated for each of these existing technologies that will include the following information:

- Name, photo, and title of the technology
- Characteristics of the technologies
- Characteristics of the architecture of communication
- Performance standards (energy use, safety, and similar)

Deliverables	Delivery date
D3.1.1 A catalogue of technology factsheets for automatic irrigation and fertilizer application	9 August 2023

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

This activity will utilise the findings of Activity 2.4 and Activity 3.1, which are the design of the macro system and the technologies that enable automatic irrigation and fertiliser application, respectively. A feasibility analysis of the integration of the two technologies will be carried out, using the selected geographic focus area as an application example. The resulting feasibility analysis report will explain the methodology that was used, the results with the conclusions and recommendations based on the analysis obtained.

Deliverables	Delivery date
D3.2.1 Report on the feasibility analysis for the integration of the two systems *The report will include the results of the analysis and a draft proposed system design to be provided as input to the stakeholder meeting discussions.*	30 August 2023

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

The findings of Activity 3.1 and Activity 3.2 will be presented to the stakeholder working group, which will be held virtually. During this virtual discussion meeting, the two systems and the feasibility analysis will be briefly presented. The working group is expected to provide their feedback and recommendations for the two systems that will be considered for integration.

Deliverables	Delivery date
D3.3.1 Virtual half-day stakeholder group meeting	13 September 2023
D3.3.2 Minutes of the meeting *Minutes of the stakeholder working group will include a list of participants disaggregated by gender, materials, and a summary of the discussions held, including feedback and comments on the integrated system.*	20 September 2023

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

Based on the results of Activities 3.2 and 3.3 the architecture of the system, system specifications and operating conditions of the fully integrated technologies will be finalized, incorporating inputs from the stakeholder workshop consultations.

A report will be prepared to summarise the results of Activity 3.4 including the description of the final details of the full architecture, the operating system as well as maintenance procedures, as well a detailed description of components necessary for the use of the system. This report will contain images and schemes that display the way the system works, with appropriate use of technical language and graphics to increase updates.

Deliverables	Delivery date
D3.4.1 Final report on the design of the fully integrated system	11 October 2023

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

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

Activity 4.1 focuses on analysing the recommendations to create the enabling environment for the deployment of the fully integrated technologies in Indonesia. For this purpose, a market potential analysis will be carried out to consider the following items:

- Institutional reforms
- Access to finance
- Needs for capacity building and increase awareness
- Needs to increase research and data on the climate nexus
- CSA

The outcome of the activity will be a draft report that will be shared with the stakeholder group for comments.

Deliverables	Delivery date
D4.1.1 Draft report on the market potential analysis for the deployment of the fully integrated system	8 November 2023

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

Activity 4.2 will include a cost-benefit analysis and a financing mechanism study for the potential integrated system. The cost-benefit analysis will be carried out to estimate the costs and benefits of the deployment of the system in the selected location. Appropriate cost-benefit assessment approach will be selected based on the information available – potential approaches include cost-benefit ratio (CBR), net present value (NPV) and internal rate of return (IRR) for the fully integrated technologies, e.g., using the Business-as-Usual (BAU) vs deployment scenario. Based on the cost-benefit assessment results, potential financing mechanisms will be investigated to identify what financing avenues could be utilised to finance the deployment of fully integrated technologies in Indonesia.

Deliverables	Delivery date
D4.2.1 Draft report on cost-benefit and financing mechanisms *The draft report will include results of the cost-benefit analysis, a description of the methodology and findings in relation to potential financing mechanisms for the deployment of the fully integrated system*	22 November 2023

Activity 4.3: One-day in-person stakeholder meeting

A meeting with the stakeholder working group will be organised to present the report findings from the analysis undertaken under Outputs 3 and 4.

These will cover the presentation of findings and stakeholder working group inputs and comments on the following deliverables:

- The finalized **report on the design of the fully integrated system (produced under Outcome 3)**
- The draft version of the cost-benefits and financing mechanisms analysis.

This meeting will be carried out in Indonesia in the presence of the Project Manager.

Deliverables	Delivery date
D4.3.1 Meeting with the stakeholder working group	29 November 2023
D4.3.2 Minutes of the meeting with the stakeholder working group *Including a list of participants disaggregated by gender, the material used, a summary of the discussion held and a summary of stakeholder feedback and recommendations on the reports.*	6 December 2023

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

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

Activity 5.1 will provide consolidate the findings relating to the CSA practices and associated financing mechanisms investigated under the previous activities of this TA. The results, including stakeholder feedback, will be consolidated and will feed into the development of training materials for government officials (for the workshop in Activity 5.2), also to be used for future training activities of other relevant stakeholders, if necessary.

Deliverables	Delivery date
D5.1.1 Consolidated training materials in English and Bahasa Indonesia	13 December 2023

Activity 5.2: Organize a 2-day 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. The workshop will take place in person.

In addition, the workshop will invite 5-10 technology suppliers (from Indonesia or other countries) to present their technologies to the Government of Indonesia (in person or virtually, depending on availability). After the workshop, a satisfaction survey from participants will be conducted to

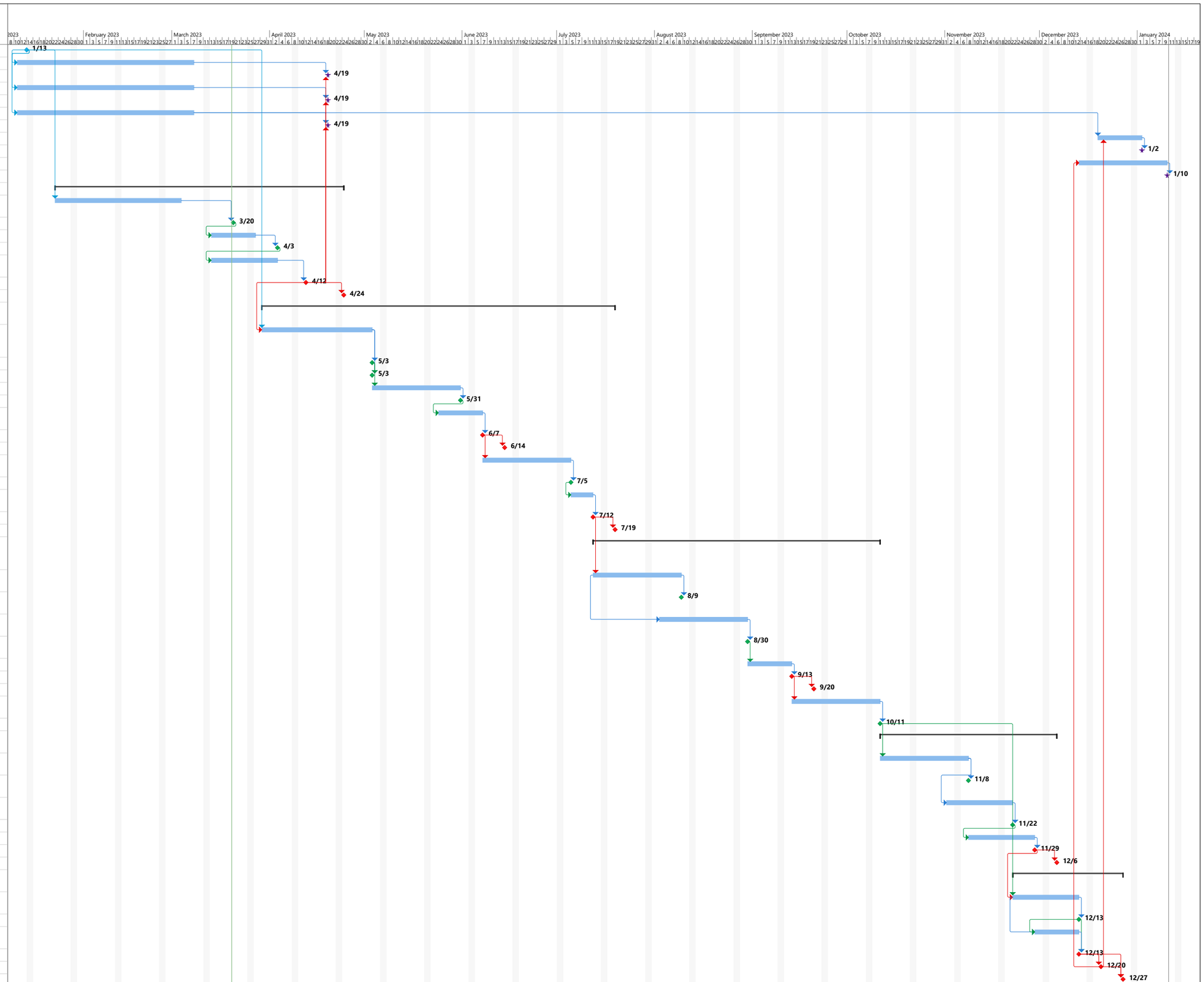
identify the level of their understanding regarding CSA practices and the fully integrated technologies.

Deliverables	Delivery date
D5.2.1 A 2-day workshop (in person)	13 December 2023
D5.2.2 Concluding workshop report *Including agenda, participant lists, minutes and presentation materials.*	20 December 2023
D5.2.3 Satisfaction survey results	27 December 2023

Annex 1

Detailed Schedule

ID	Task Name	Duration
1	**Project start date**	0 days
2	(i) Preparation of detailed implementation plan	8 wks
3	*Detailed implementation plan*	0 days
4	(ii) Preparation of monitoring and evaluation plan	8 wks
5	*Monitoring and evaluation plan*	0 days
6	(iii) Preparation of Initial impact statement	8 wks
7	*Initial Impact Statement*	0 days
8	(iv) Preparation of Final impact statement	2 wks
9	*Final Impact Statement*	0 days
10	(v) Preparation of TA closure report	4 wks
11	*TA Closure Report*	0 days
12	**Output 1: Map stakeholders and organize an inception meeting**	**65.5 days**
13	Activity 1.1 Map stakeholders that are likely to be involved in CSA deployment in Indonesia	6 wks
14	*D1.1.1 Stakeholder analysis report*	0 days
15	Activity 1.2 Establish a stakeholder working group	2 wks
16	*D1.2.1 List of confirmed working group members*	0 days
17	Activity 1.3 Organize an inception meeting for the stakeholder working group	3 wks
18	*D1.3.1 Inception meeting*	0 days
19	*D.1.3.2 Minutes of the inception meeting*	1 wk
20	**Output 2: Identify technologies to support the identification of water content and soil chemistry on agricultural land**	**80 days**
21	Activity 2.1 Identify existing technologies that provide data on water content and soil chemistry on agricultural land (vidiometry/drone/CCTV, etc.)	5 wks
22	*D2.1.1 Report summarizing technology review findings*	0 days
23	*D2.1.2 Technology fact sheets*	0 days
24	Activity 2.2 Produce a feasibility analysis for the technologies	4 wks
25	*D2.2.1 Technology feasibility analysis report*	0 days
26	Activity 2.3 Organize a half-day meeting with the stakeholder working group	2 wks
27	*D2.3.1 Virtual stakeholder working group meeting*	0 days
28	*D2.3.2 Minutes of the meeting with the stakeholder working group*	1 wk
29	Activity 2.4 Design the macrosystem framework for the selected technology	4 wks
30	*D2.4.1 Draft report on the design of the macro system framework*	0 days
31	Activity 2.5 Organize a virtual half-day meeting with the stakeholder working group	1 wk
32	*D2.5.1 Half-day virtual meeting*	0 days
33	*D2.5.2 Minutes of the meeting*	1 wk
34	**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**	**65 days**
35	Activity 3.1 Identify relevant technologies for automatic irrigation and fertilizer application	4 wks
36	*D3.1.1 A catalogue of technology factsheets for automatic irrigation and fertilizer application*	0 days
37	Activity 3.2 Produce a feasibility analysis for the integration of the two systems	4 wks
38	*D3.2.1 Report on the feasibility analysis for the integration of the two systems*	0 days
39	Activity 3.3 Organise a half-day meeting the stakeholder working gr	2 wks
40	*D3.3.1 Virtual half-day stakeholder group meeting*	0 days
41	*D3.3.2 Minutes of the meeting*	1 wk
42	Activity 3.4 Finalize the feasibility analysis for the integration of the two systems	4 wks
43	*D3.4.1 Final report on the design of the fully integrated system*	0 days
44	**Output 4: Analyse market potential and cost-benefit of the fully integrated system**	**40 days**
45	Activity 4.1 Analyse the market potential for the deployment of the fully integrated system	4 wks
46	*D4.1.1 Draft report on the market potential analysis for the deployment of the fully integrated system*	0 days
47	Activity 4.2 Analyse cost-benefit and financing mechanisms for the deployment of the fully integrated system	3 wks
48	*D.4.2.1 Draft report on cost-benefit and financing mechanisms*	0 days
49	Activity 4.3: One-day in-person stakeholder meeting	3 wks
50	*D4.3.1 Meeting with the stakeholder working group*	0 days
51	*D4.3.2 Minutes of the meeting with the stakeholder working group*	1 wk
52	**Output 5 Train governmental bodies in the CSA practices and the fully integrated system**	**25 days**
53	Activity 5.1: Selection of best CSA practices and associated financing mechanisms	3 wks
54	*D5.1.1 Consolidated training materials in English and Bahasa Indo*	0 wks
55	Activity 5.2 Organize a 2-day workshop with the participation of contextual technology suppliers and the stakeholder working group	2 wks
56	*D5.2.1 A 2-day workshop (in person)*	0 days
57	*D5.2.2 Concluding workshop report*	*1 wk*
58	*D5.2.3 Satisfaction survey results*	1 wk



Project: Proposed Schedule_Ve
Date: Mon 3/20/23

Task | Milestone | Project Summary | Inactive Milestone | Manual Task | Manual Summary Rollup | Start-only | External Tasks | Deadline | Manual Progress
Split | Summary | Inactive Task | Inactive Summary | Duration-only | Manual Summary | Finish-only | External Milestone | Progress

Annex 2

Budget

Annex 2: Budget

Project Title: **Identification of technical practices for climate-smart agriculture (CSA) in Indonesia**
Partners Name: DHI A/S (on behalf of UNEP-DHI)

Output	Activity	Budget by Activity / Year / Commitment Class (US$)																Total
		1. Staff and Other Personnel Costs		2. Contractual Services		3. Travel		4. Equipment Vehicles and Furniture		5. Operating and Other Direct Costs		6. Supplies Commodities and Materials		7. Transfers and Grants Issued to Implementing Partner (IP)		8. Grants Out		
		Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	
0	**Mandatory outputs (i-iv)**	18,576																18,576
	Sub-Total	**18,576**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**18,576**
1	**Map stakeholders and organise an inception meeting**																	
	1.1: Map stakeholders that are likely to be involved in CSA deployment in Indonesia	4,351																4,351
	1.2: Establish a stakeholder working group	4,524																4,524
	1.3: Organize an inception meeting for the stakeholder working group to select one geographical area to contextualise the technology choice.	8,901		1,000		5,300												15,201
	Sub-Total	17,776	-	1,000	-	5,300	-	-	-	-	-	-	-	-	-	-	-	**24,076**
2	**Identify technologies for the use of sensors that are able to identify water content and soil chemistry on agricutural land**																	
	2.1: Identify existing technologies that provide data on water content, soil chemistry and other parameters on agricultural land (vidiometry/drone/CCTV, etc.)	19,848																19,848
	2.2: Produce a feasibility analysis for the technologies	14,373																14,373
	2.3: Organize a half-day meeting with the stakeholder working group	2,955				1,000												3,955
	2.4: Design the macro system framework for the selected technology	11,752																11,752
	2.5: Organize a half-day meeting with the stakeholder working group	2,955				1,000												3,955
	Sub-Total	51,883	-	-	-	2,000	-	-	-	-	-	-	-	-	-	-	-	**53,883**
3	**Identify technologies for automatic irrigation and fertilizer application and deign fully intergrated system for the suitable conditions as er the geographic location selected.**																	
	Activity 3.1: Identify relevant technologies for automatic irrigation and fertilizer application	10,716																10,716
	Activity 3.2: Produce a feasibility analysis for the integration of the two systems	14,768																14,768
	Activity 3.3: Organise a half-day meeting the stakeholder working group	9,799		1,000														10,799
	Activity 3.4: Finalize the feasibility analysis for the integration of the two systems	16,833																16,833
	Sub-Total	52,116	-	1,000	-	-	-	-	-	-	-	-	-	-	-	-	-	**53,116**
4	**Analyse market potential and cost-benefit of the fully integrated system.**																	
	Activity 4.1: Analyse the market potential for the deployment of the fully integrated system	7,251																7,251
	Activity 4.2: Analyse cost-benefit and financing mechanisms for the deployment of the fully integrated system	8,569																8,569
	Activity 4.3: One-day in-person stakeholder meeting	7,955		1,000		5,300												14,255
	Sub-Total	23,775	-	1,000	-	5,300	-	-	-	-	-	-	-	-	-	-	-	**30,075**
5	**Train governmental bodies in the CSA practices and the fully integrated system.**																	
	Activity 5.1: Selection of best CSA practices and associated financing mechanisms	11,556		3,000														14,556

Activity 5.2: Organize a 2-day 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. The workshop will take place in person.	12,535		2,000		8,700													23,235
Sub-Total	24,091	-	5,000	-	8,700	-	-	-	-	-	-	-	-	-	-	-	-	**37,791**
Project management																		
Project management costs	4,842		3,000															7,842
Sub-total	4,842	-	3,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7,842
TOTAL	193,059	-	11,000	-	21,300	-	-	-	-	-	-	-	-	-	-	-	-	**225,359**

Commitment Class Name	**Explanation**
Staff and Other Personnel Costs	(i) Includes all costs and entitlements of personnel including staff / consultants/admin staff / UNVs/interns. (ii) Meeting facilitators, interpreters, Evaluation consultants all to be budgeted under this Class.
Contractual Services	(i) Works and services of a commercial nature contracted following procurement procedures. This could include contracts given to NGOs if they are more similar to procurement of services than a grant transfer. (ii) Where meetings/workshops require venue to be hired e.g Hotel, then relevant costs to be budgeted under this Class. (iii) Commercial printing/publication contracts to be budgeted here (iv) In IPSAS terms, its similar to exchange transaction
Travel	i) Includes staff/consultant/meeting participant travel [DSA/Tickets/Terminals as applicable] (ii) Road / train /Fuel and vehicle/boat rental costs for staff, consultants and other project personnel
Equipment Vehicles and Furniture	(i) Procurement of non-consumables e.g. IT equipment, vehicles, furniture etc etc. This would relate to all costs to put asset into service and the cost of disposal of the asset upon reaching its useful life. For those who do donor reports according to IPSAS this would equal depreciation for period.
Operating and Other Direct Costs	(i) Rental of premises/equipment; utilities; cleaning; vehicle maintenance; communication costs; Bank fee;
Supplies Commodities and Materials	(i) Consumable supplies e.g. office stationary/supplies,drugs, tools, etc.; (ii) Costs associated with the delivery, storage and distribution of consumable supplies procured such as transportation, freight, customs, insurance, warehousing and other logistical requirements;
Transfers and Grants Issued to Implementing Partner (IP)	To be used if SSFA/PCA Partner is further sub-contracting work to NGOs. At obligation stage (PO), this can be further broken down into 7 expenditure categories as above.
Grants Out	To be used when grants given without expectation of any reports whatsoever. For now UNEP does not use this modality.