FP192: THE R's (REDUCE, REUSE AND RECYCLE) FOR CLIMATE RESILIENCE WASTEWATER SYSTEMS IN BARBADOS (3R-CReWS)

Caribbean Community Climate Change Centre
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Project Description

The goal of 3R-CReWS is to facilitate the enhancement of the health, wellbeing, and productivity of Barbadians through the use of carbon neutral and climate resilient water and energy management technologies and strategies that ensures water is protected, managed, recycled, reused, and conserved.
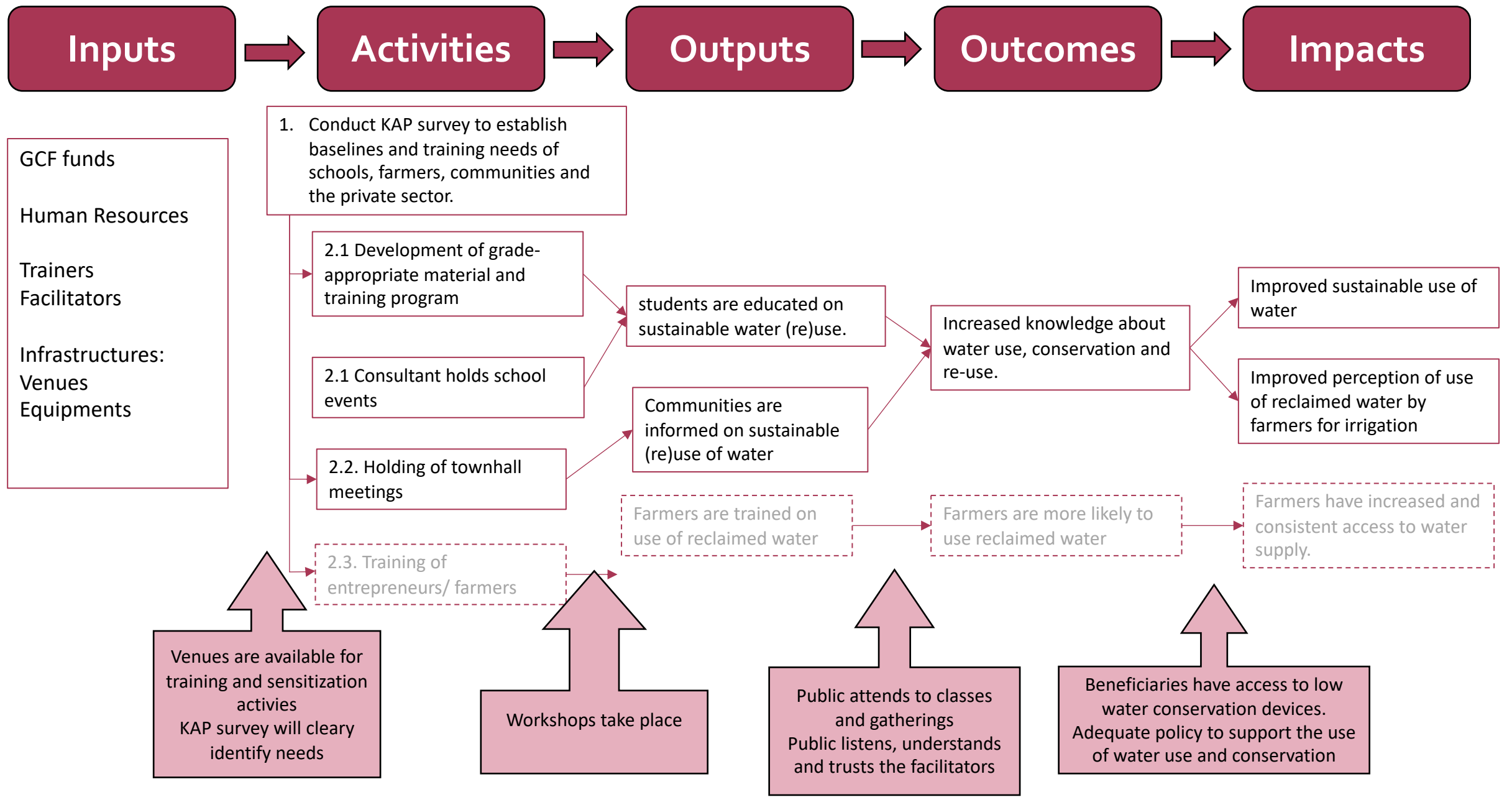
This will be achieved through four outcome level results:

1. Enhanced availability, management and use of tertiary level reclaimed water to improve the water sector's resilience to climate change.

2. Climate resilient low carbon operations achieved at BSTP.

3. Enhanced capacity and capability to support a preventative maintenance (PM) and climate resiliency programme.

4. An enabling environment is created for wastewater technologies and use of reclaimed water.

IMPACT EVALUATION

- Who will receive the project activities? (farmers, households, etc.)
    1. Barbadians within surrounding communities
    2. Students

- How much of the project budget is/will be allocated for impact evaluation? What are the funding sources?
    - KAP STUDY (Baseline) - $72,000

    - M&E (Data Collection)- $160,000

    - Impact Evaluation = $90,000 (Possibility to use contingency funds)

- What do you want to achieve through impact evaluation for your project?
    - To capture change in perception within the communities in Barbados in relation to the use of reclaimed water.

Inputs → **Activities** → **Outputs** → **Outcomes** → **Impacts**

GCF funds

Human Resources

Trainers
Facilitators

Infrastructures:
Venues
Equipments

1. Conduct KAP survey to establish baselines and training needs of schools, farmers, communities and the private sector.

2.1 Development of grade-appropriate material and training program

2.1 Consultant holds school events

2.2. Holding of townhall meetings

2.3. Training of entrepreneurs/ farmers

students are educated on sustainable water (re)use.

Communities are informed on sustainable (re)use of water

Farmers are trained on use of reclaimed water

Increased knowledge about water use, conservation and re-use.

Farmers are more likely to use reclaimed water

Improved sustainable use of water

Improved perception of use of reclaimed water by farmers for irrigation

Farmers have increased and consistent access to water supply.

Venues are available for training and sensitization activies
KAP survey will cleary identify needs

Workshops take place

Public attends to classes and gatherings
Public listens, understands and trusts the facilitators

Beneficiaries have access to low water conservation devices.
Adequate policy to support the use of water use and conservation

Evaluations questions, indicators and data sources

- Did the project implement its expected activities?
  - KAP Survey perform
  - Number of farmer training workshops undertaken
  - Number of teachers trained
  - Use of waster water
  - Number of townhall meetings held

  ] Monitoring system

- Did the project improve knowledge on sustainable water (re)use?
  - Knowledge index on sustainable water use (assessments).

- What impact does the project have on water conservation?
  - Average quantity of water use in shools
  - Average quantity of water use in communities/hh (district-metered areas)
  - HH conservative water-use index

- What impact does the project have on purchase on water conservation devices?
  - Access to water conservation device 1
  - Access to water conservation device 2
  - Access to water conservation device 3
  - ....

- What impact does the project have on the acceptance of reclaimed water?
  - Likert-scale on agreement on use of reclaimed water
  - Likert-scale on likelihood of purchasing crops from farmers using reclaimed water
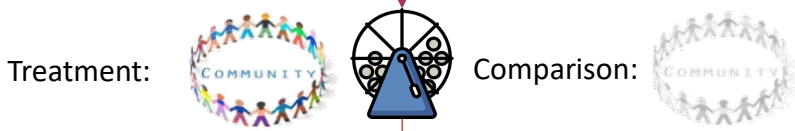
  ] KAP survey (if possible)
  + IE endline survey

Where is the project being implemented?

- 30 Communities within Barbados

Impact Evaluation: Experimental Evaluation Method: Phased-in Random Controlled Trails (RCTs):Randomized Phased-in Design

30 eligible communities
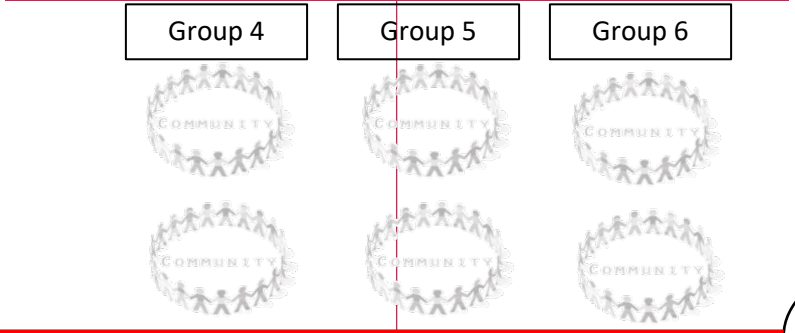(Sample Size: 2,000p: 1,000a + 1,000s)
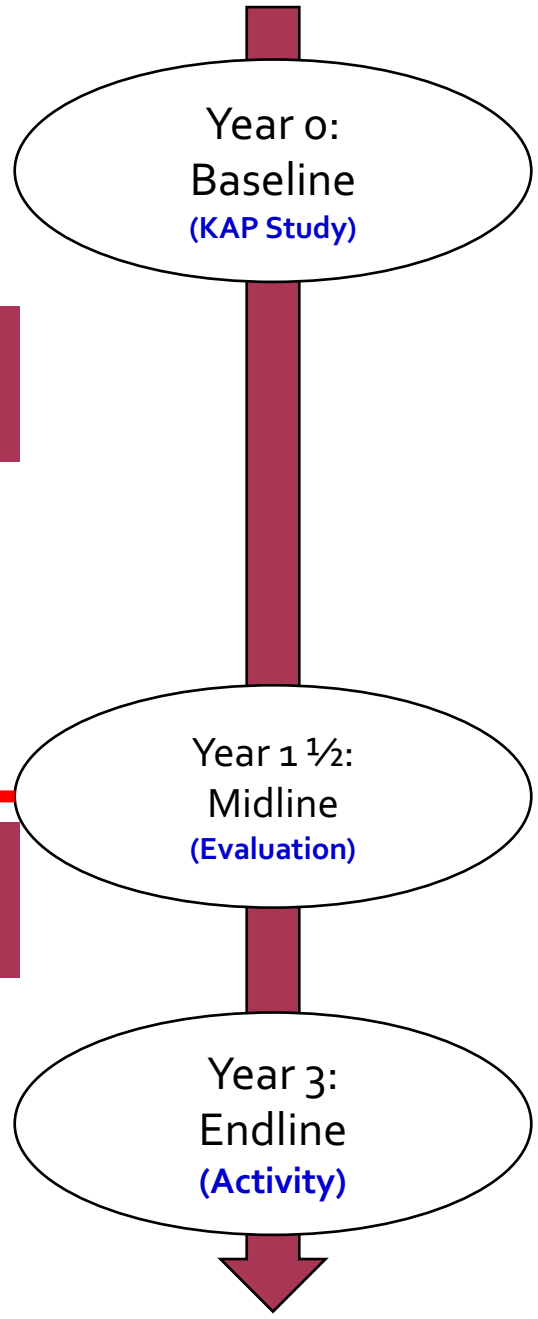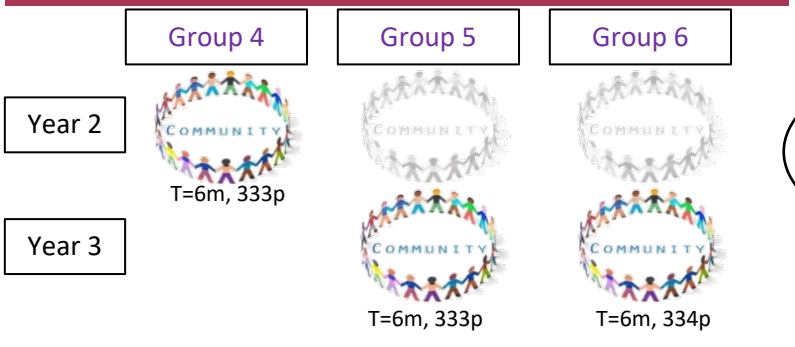
Treatment: Comparison:

Year 0:
Baseline
(KAP Study)

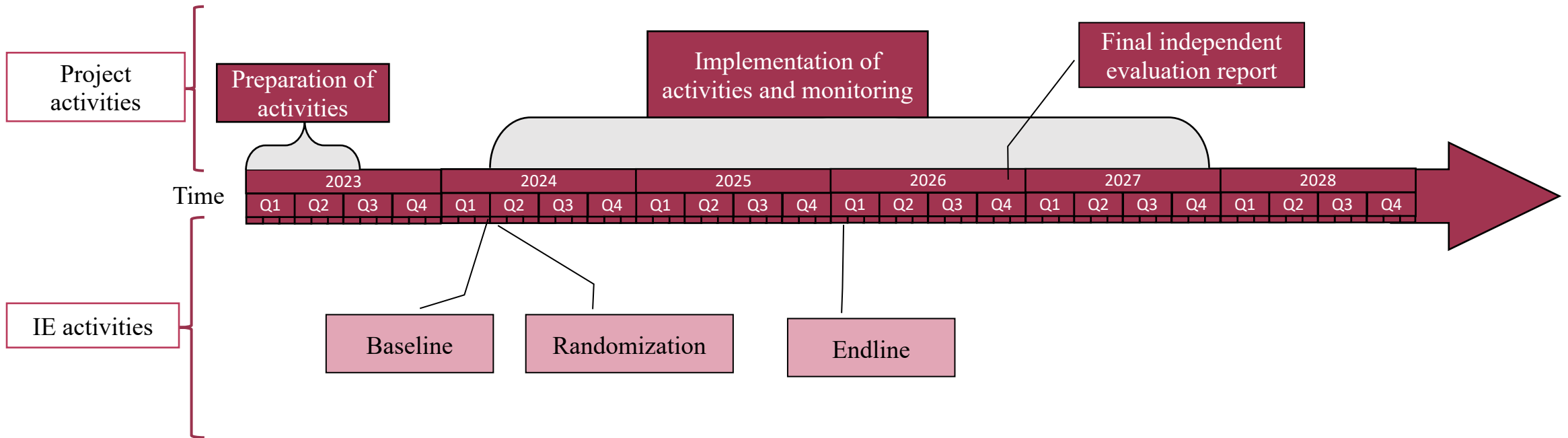Treatment group:
15 communities (1000p = 500a +500s)
[1c = 67p = 33a + 33s + 1]

Control group:
15 communities (1000p = 500a +500s)
[1c = 67p = 33a + 33s + 1]

Group 1   Group 2   Group 3   Group 4   Group 5   Group 6

Year 1

T=6m, 333p   T=6m, 333p

Year 2

T=6m, 334p

Year 1 ½:
Midline
(Evaluation)

Treatment group:
15 communities (1000p = 500a +500s)
[1c = 67p = 33a + 33s + 1]

Group 4   Group 5   Group 6

Year 2

T=6m, 333p

Year 3

T=6m, 333p   T=6m, 334p

Year 3:
Endline
(Activity)

Budget (US `000)

Y0: KAP: $72

Y1: M&E: $32

Y2i: M&E: $16

Y2i: LORTA: $90

Sub-Total: $210

Y2ii: M&E: $16

Y3: M&E: $32

Total: $258

TIMELINE

LORTA Impact
Evaluation Workshop

Introduction

Project: Tanzania Agriculture Adaptation Deployment Project (TACATDP)

- Project beneficiaries will include:
    - Small holder farmers
    - Medium and Corporate farmers
    - The Government for Policy Intervention to unlock climate financing barriers
    - Private and Public Institutions for training and capacity building on adaptation technologies uptake

- Monitoring and Evaluation budget
    - USD 2M will be allocated to M&E including impact evaluation
    - USD 1M will be allocated to the set up of the monitoring system (digital)
    - USD 1M will be allocated to the impact evaluation (including inception phase, data collection, etc)

- Expectations from the impact evaluation is to assess how the project has:
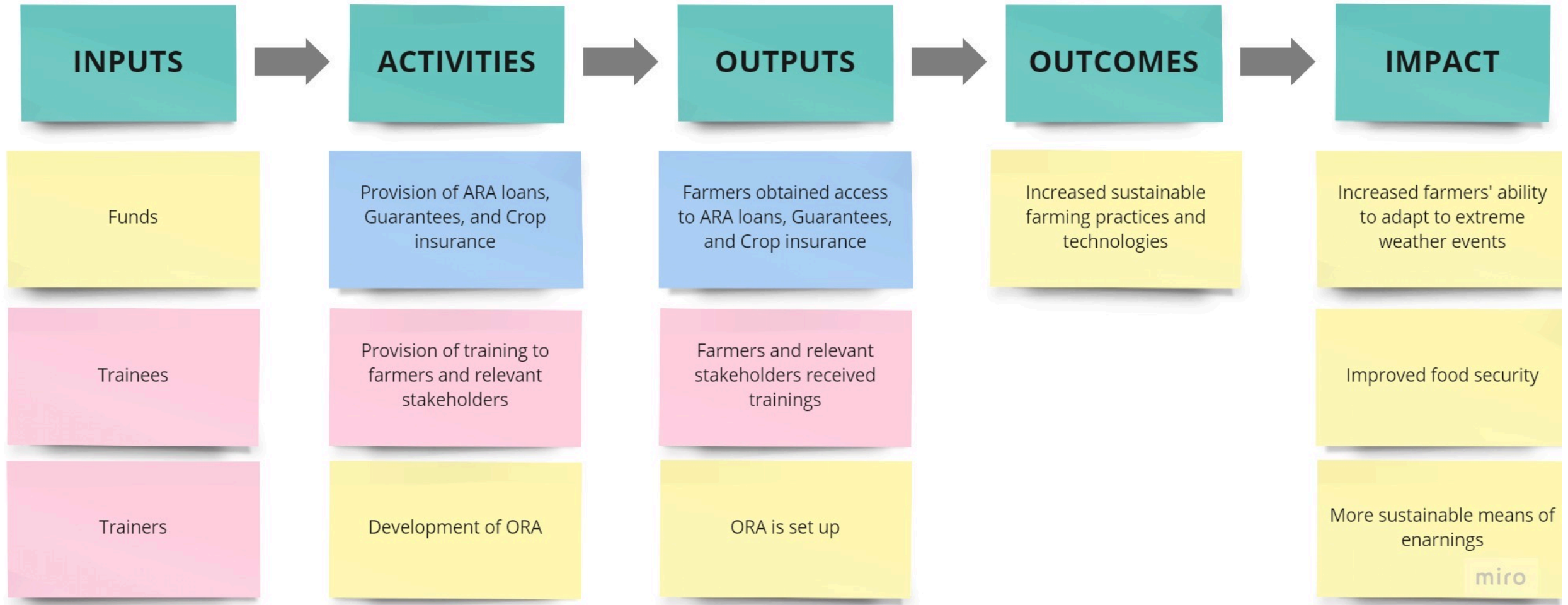   - increased farmers' ability to adapt to extreme weather events
    - Improved food security
    - Achieved more sustainable means of earnings

5 Years
Implementation Period
20 Year Project lifetime

1.2M
Direct Beneficiaries
(~62K/Year)

4.9M
Indirect
Beneficiaries

Theory of Change

INPUTS	ACTIVITIES	OUTPUTS	OUTCOMES	IMPACT
Funds	Provision of ARA loans, Guarantees, and Crop insurance	Farmers obtained access to ARA loans, Guarantees, and Crop insurance	Increased sustainable farming practices and technologies	Increased farmers' ability to adapt to extreme weather events
Trainees	Provision of training to farmers and relevant stakeholders	Farmers and relevant stakeholders received trainings		Improved food security
Trainers	Development of ORA	ORA is set up		More sustainable means of enarnings

miro

Evaluation Questions & Indicators

EQ1: Does the program provide sustainable means of earnings?

- # Income sources
- Steady Cash Flow
- Profitability of (farming) activities
- Loan sources, loan sizes, defaulted on loan etc.

EQ 2: To what extent did the project contribute to farmers' ability to adapt to extreme weather events?

- Availability of weather information; source of information
- Insurance uptake
- Uptake of ARA technologies such as water-efficient (precision) irrigation
- Received training on adaptation technologies
- Use and number of sustainable farming practices and technologies (as defined in the funding proposal), e.g., agroforestry; improved soil and land management practices/techniques; integrated pest management techniques
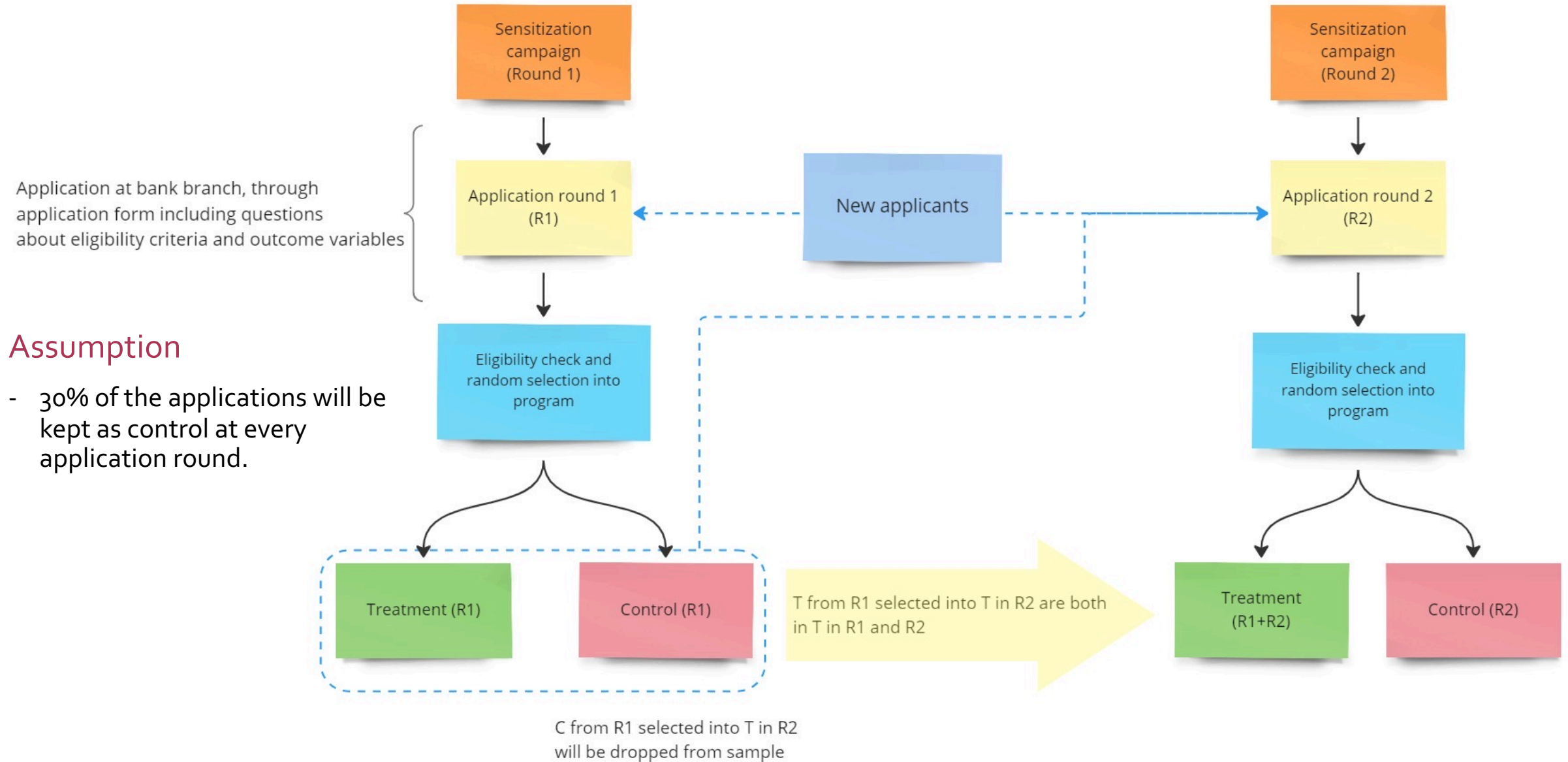
Evaluation Questions & Indicators

EQ3: To what extent did the programme contribute to household food security?
- Household Food Security and Access Scale HFIAS
- Months of Adequate Household Food Provision (MAHFP): Amount of food available to hh measured in volume of food stocks (e.g., kg of rice, kg of cassava)
- Food diversities measured by the amount of food stored in the households; Household Dietary Diversity Scale HDDS

EQ4: What are other positive or negative unexpected effects of the project on farm households?
- **Qualitative Research**

Evaluation Design

Application at bank branch, through application form including questions about eligibility criteria and outcome variables

Assumption

- 30% of the applications will be kept as control at every application round.

Sensitization campaign (Round 1)

Sensitization campaign (Round 2)

Application round 1 (R1)

New applicants

Application round 2 (R2)

Eligibility check and random selection into program

Eligibility check and random selection into program

Treatment (R1)

Control (R1)

T from R1 selected into T in R2 are both in T in R1 and R2

Treatment (R1+R2)

Control (R2)

C from R1 selected into T in R2 will be dropped from sample

Data collection

- The project will cover the entire country, both Tanzania mainland and Zanzibar for a total of 31 regions

- There will be 7 teams made of 1 supervisor and 5 enumerators.

- The 7 teams will be based in the 7 branch offices of the bank and will cover the regions as showed in the map.

- The 7 teams will interview 3,100 respondents in 31 regions in 33 days.

- Two field coordinators will supervise the 7 teams during the data collection.

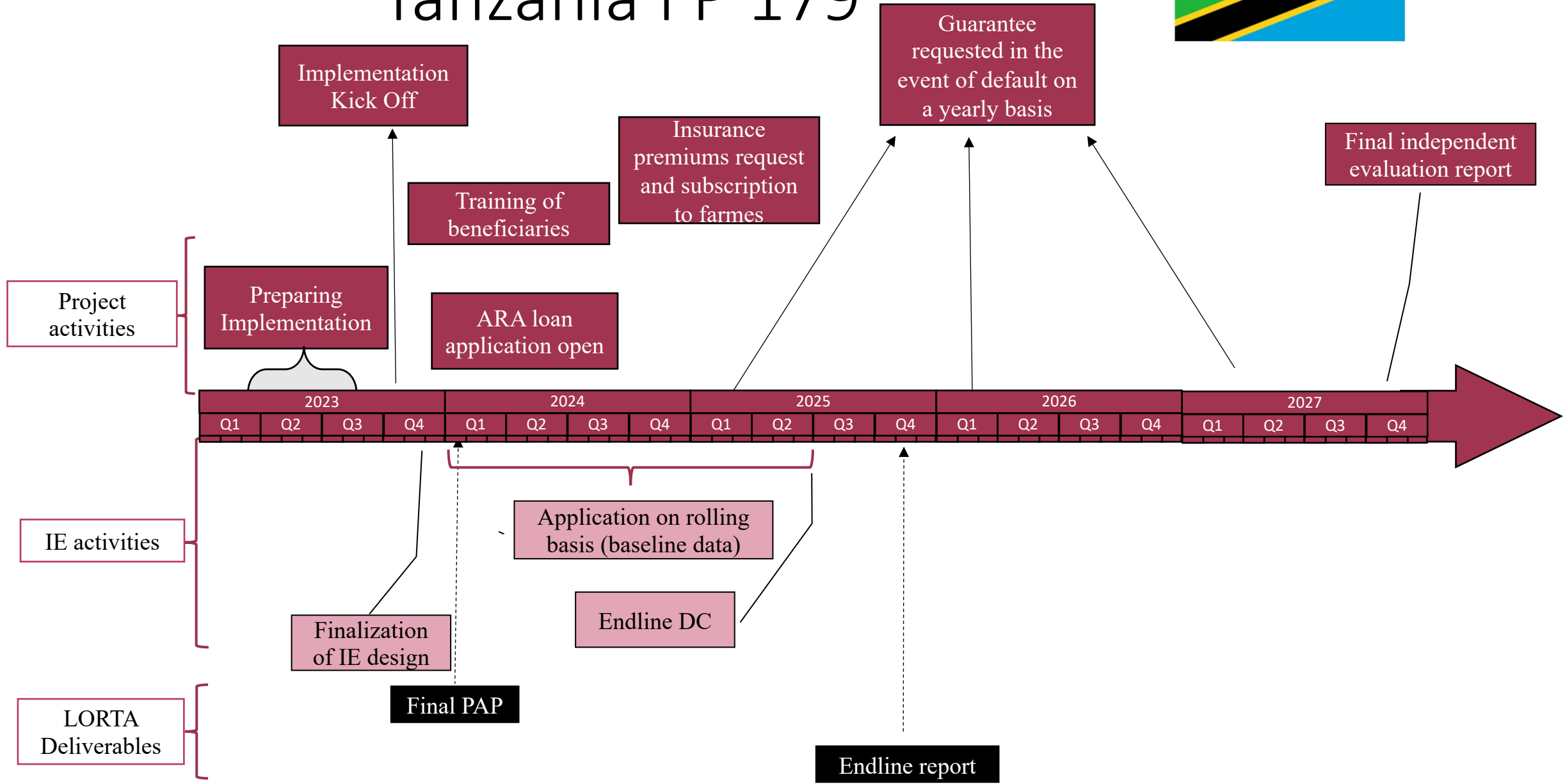- Training will take place at CRDB HQ for 5 days
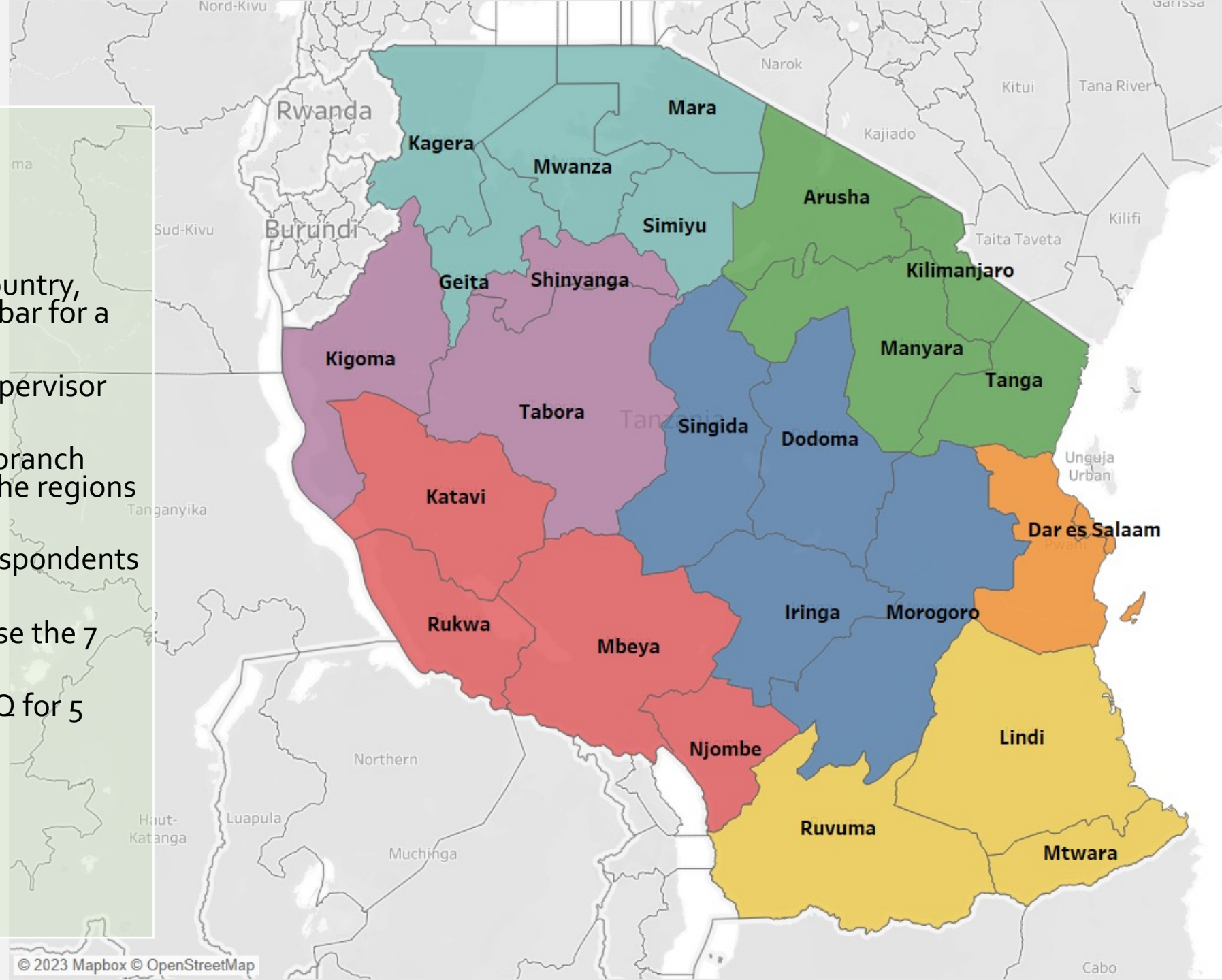
Endline data collection budget

- Budget for data collection of 3100 respondents

- Includes field staff costs (2 FMs, 7 Supervisors, 5 enumerators)

- Includes transportation costs

- Includes training and equipment costs

Salaries	Quantity	Days	Unit	Cost (in USD)	Total Cost (in USD)
Field Manager	2	15	person days	150	4,500.00
Field Supervisors	7	34	person days	55	13,090.00
Translators	1	3	person days	50	150.00
Enumerators	35	34	person days	45	53,550.00
Back checker	2	15	person days	25	750.00
Sub-Total Salaries Cost					**72,040.00**
Travel and Accomodation					
Domestic Travel (Supervisors, Enumerators etc.) during data collection, pretest and pilot	7	36	transport during data collection per day	150	37,800.00
Domestic Travel (Field coordinator) during data collection and to obtain approval from local authorities	2	17	transport during data collection per day	150	5,100.00
Sub-Total Travel and Accomodation					**42,900.00**
Material, Equipment and other cost					
Enumerator Training + Pilot+ pretest (training stipend, refreshments, accommodation, transportation) - Supervisors	7	8	per person and day of training	35	1,960.00
Enumerator Training + Pilot (training stipend, refreshments, accommodation, transportation) - Enumerators	42	6	per person and day of training	25	6,300.00
Catering during training	2	5	per day	10	100.00
Renting of Tablets during training	42	6	per day and tablet	2	504.00
Renting of Tablets	42	36	per day and tablet	2	3,024.00
Printing and supplies	49	1	per person	25	1,225.00
Incentives	3100	1	per person	1.4	4,340.00
Communication	42	36	per person	2.5	3,780.00
Ethical approval	1	1	Lump sum	500	500.00
Sub-Total Material, Equipment and other					**21,733.00**
TOTAL COST BEFORE MGMT FEE and VAT					**136,673.00**
Management fee				5%	6,833.65
TOTAL COST BEFORE VAT					**143,506.65**
VAT				18%	25,831.20
TOTAL COST					**169,337.85**

Tanzania FP 179

Project activities

Implementation Kick Off

Preparing Implementation

Training of beneficiaries

Insurance premiums request and subscription to farmes

ARA loan application open

Guarantee requested in the event of default on a yearly basis

Final independent evaluation report

2023				2024				2025				2026				2027			
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4

IE activities

Application on rolling basis (baseline data)

Endline DC

Finalization of IE design

LORTA Deliverables

Final PAP

Endline report

LORTA Impact Evaluation Workshop Assignment 2023 Day 2

What are the key evaluation questions (KEQs) for your impact evaluation?

- How many number of house hold will be benefit from food security and improved livelihood?

- How many loans (volume) adaptation credits will be provided every 1 year and for entire period of the programme?

- What type of adaptation technologies will be adapted by small holder farmers?

- How many small holder farmers will have subscribed the parametric weather insurance premeums?

- What percentage of loan portfolio will be guaranteed by the guarantee component?

- How many training and seminars will be conducted

What data and indicators do you need to answer the above KEQs?

- Number of household

- The loan book (volume of loans)

- Periodic reports generated

- Yields improvements (food crops) availability

- Adaptation technologies adopted by small holder farmers

- Number of trainings, seminars, workshops and policy dialogue

What data collection methods are you going to use to collect the data you need?

- Simple Survey

- Interview

- Questionnaire

- Focus Group Discussion

Who will conduct the data collection?(AE itself, data collection firm, etc...)

- Monitoring and Evaluation Officers who will be deployed 1 at each region

- Lending Officers or credit staff within the bank

- Specialists from Sustainable Financing Unit who oversee the programme implementation

- The consultant

LORTA Impact
Evaluation Workshop
Assignment 2023 Day 3

1. First, you will analyse your intervention, where it is in its life cycle, the way you select and enrol beneficiaries, the participants you do treat, and the data you already have in place or that you will generate.

2. Secondly, you will review all the methods that you have been introduced to so far.

3. Finally, in the third step, you will **assess the feasibility** of using method(s) in the context of your intervention and **the pros and cons** of it, if its use is possible.

Impact evaluation designs

- **Classical randomized controlled trial**
  - In Classical Randomized Controlled Trial (RCT), the eligible population is randomly assigned to one or more groups that receive an intervention, known as treatment group and control group that does not. The randomized assignment to treatment and control group is the key element of this impact evaluation design.

- **Randomized phase-in design**
  - In phase-in randomization, the roll-out of the intervention is randomized and every unit or cluster in the population of interest will get the programme eventually.

- **Difference-in-differences**
  - The difference-in-differences method is a quasi-experimental approach that compares the changes in outcomes over time between a population enrolled in a program (the treatment group) and a population that is not (the comparison group).

- **Regression discontinuity design**
  - Regression Discontinuity Design (RDD) is a quasi-experimental impact evaluation method used to evaluate programs that have a cutoff point determining who is eligible to participate. RDD allows researchers to compare the people immediately above and below the cutoff point to identify the impact of the program on a given outcome.

- **Matching**
  - Matching is a quasi-experimental method in which the evaluator uses statistical techniques to construct an artificial control group by matching each treated unit with a non-treated unit of similar characteristics. Matching is useful for estimating the impact of a programme or event for which it is not ethically or logistically feasible to randomize.
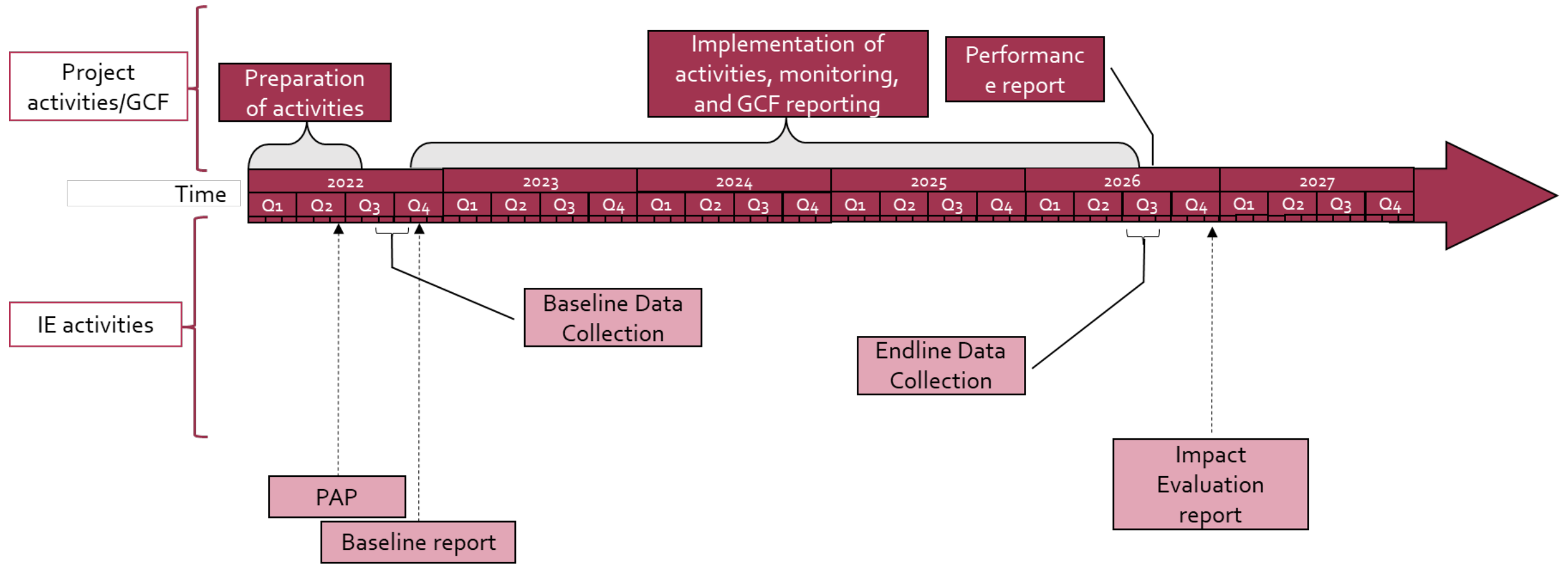
- Classical randomized controlled trial

- Difference-in-differences

LORTA Impact Evaluation Workshop Assignment 2023 Day 4

Long-term Timeline
Example of project/evaluation timeline

- Respect

- Confidentiality

- ==How are you planning to inform selected samples about the risks/benefits of participating in the evaluation?==

- Trainings

- Workshops

- Seminars

# OCRI Impact Evaluation

Ideas and implications

Overview

1. Summary of objectives and TDC

2. Questions to ask with the impact evaluation

3. Key indicators

4. Options for Rigorous Impact Evaluation

5. Implications for project implementation

OCRI Objectives and Components

1. Improving CC-resilient crops production and restoring ecosystem services in the Ouémé basin

2. Support for value chains that provide CC-resistant livelihoods and a source of income for Ouémé producers

3. An institutional and financial environment supporting CC-resilient management in the Ouémé basin
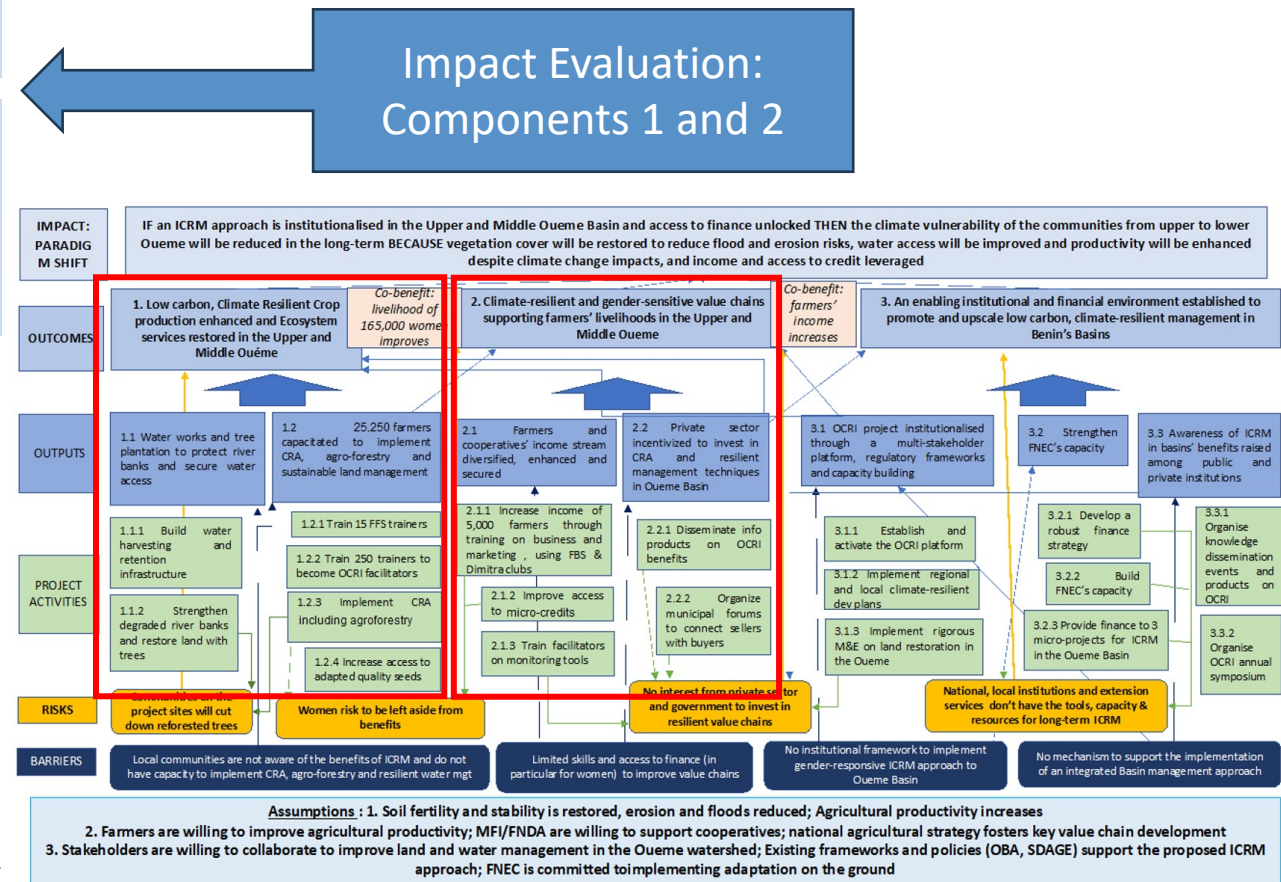
OUTCOME 1

| Improved **access** to water | 95,000 ha landscape **restored** for sustainable land used | **Increased** sustainable productivity | **Improved** resilience of farmers to floods | **Reduced** floods |

Output 1.1

Output 1.2

Trees **protect** the riverbanks

More **operational** infrastructures

Communities are **using** the infrastructures

25,250 farmers **capacitated and implement** climate resilient agriculture, agro-forestry and sustainable land management

Increase **access** of adapted quality seeds and plant propagation material

Build water harvesting and retention infrastructure

Plant trees on degraded river banks on 5,000ha

Encourages communities to maintain and use infrastructure

Train 15 Master Trainers and 250 Facilitators (at least 40% women)

Set up 650 FFS

Provide inputs, tools, seeds and material to farmers

Funds

Expertise

Seedlings

Equipment

OUTCOME 2

Increased income of 5,000 farmers

Farmers and cooperatives' **income diversified**, and **secured** in the face of climate change

Output 2.1

Output 2.2

Improve **access** to micro-credit and investments for agriculture

Improved **access to market** opportunities

Private sector **invests** in climate resilient agriculture and resilient management techniques in Oueme Basin

Training on business and marketing techniques and equipment

Train facilitators on the use of assessment and/or monitoring Instruments for Resilience (FarmTree App)

Set up Farmers business schools

Disseminate information products packaged for private sector

Identify and connect farmers and small businesses to local and regional buyers

Organise field visits to demonstrate the socio-economic benefits of waterworks, CRA and agroforestry to potential buyers

Fund

Training

OUTCOME 1

1) **Have investments in infrastructure (development; irrigation) led to an increase in the number of:**
   - reduce the frequency of floods?
   - increased coverage and planting density?
   - increased agricultural yields?
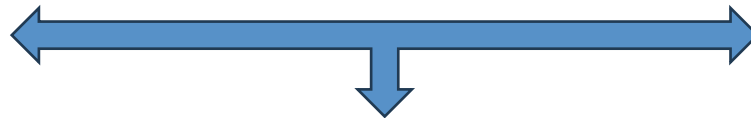
OUTCOME 2

2) **Have the climate-resilient technologies and strategies passed on by the field schools improved farmers' resilience of flooding and drought in the Ouémé basin?**

   Specifically, has the project led to:
   - Strengthening agricultural production resilient to CC?
   - An increase in farm and non-farm income?
   - Adaptation in perceptions of the impacts of climate change and in strategies for coping with them?

Geospatial evaluation

Direct observation

Micro assessment (households/farmers)

1) Geospatial data

- Trees density along the basin (restoration) – NDVI (Normalized Difference Vegetation Index, and others)
- ATLAS-AI (socio-economic level index)
- Quantity and condition of infrastructure along the basin
- Stream width (expected effect: no change)

2) Household and community survey

- Questionnaire with modules:
  - Household demographics
  - Income and source of income
  - Agricultural yields
  - Access to credit
  - Market access
  - Food security (FIES)
  - Perception of the effects of climate change
  - Shocks and frequency (floods etc.)
  - Implementation of CC resilient practices
  - Use of infrastructure
  - Participation in project activities
  - Access to water for irrigation

3) Direct observations (FarmTree)

- Number of trees planted
- Mortality of planted trees
- Infrastructure status
- CEP georeferencing (polygons and vectors)
- Bank erosion (height, depth and width of watercourse) – piezometers

- 5 municipalities identified on the basis of vulnerability criteria climatic (flood , drought)

- Study to see the places interventions
  - list of selected
  - infrastructure

- Communal sessions to confirm participation in field schools

- List of agricultural households answering has some vulnerability criteria _ climate in the municipalities with certain features

Barrages
Perimetres irriges
Amenagement bas-fond
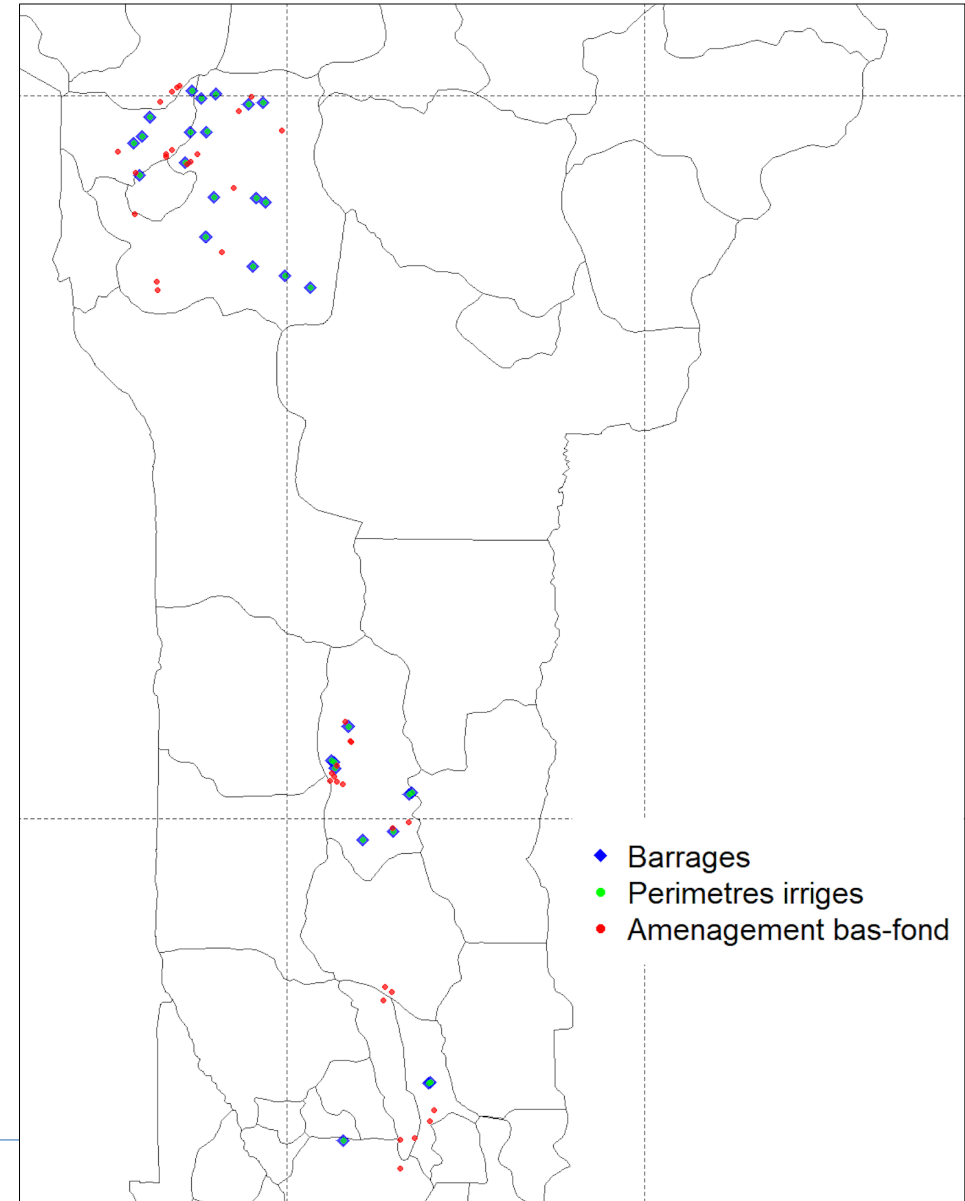
Targeting

Municipality	Construction of dams and micro-dams	Rehabilitation of dams and micro-dams (units)	Development of small irrigated perimeters (ha)	Development for the protection of springs and streams (unit)	Land improvement through water and soil conservation practices (ha)
Copargo	8	5	200	2	20 115
Djougou	11	7	170	00	38,762
Glazoué	8	10	160	00	6,993
Zangnanado	2	1	25	14	11,509
Zogbodomè	1	-	125	40	17,622
Total	30	23	680	58	95,000

Geospatial assessment – trees and infrastructure

Q1. Have the infrastructure investments (developments; irrigation) led to a: reduction in the frequency of floods ? increased coverage and planting density ? increase in agricultural yields ?

Method	Counterfactual	Requirements and Implications
- Regression on Discontinuity (RSD)	Established with: **Geospatial data** on banks not affected by the project **machine learning** technique to ensure comparability between counterfactual and treated area	- **Coordinates** of the places where the dams, facilities will be built (and when), of certain places without project intervention - **Geospatial data** (open: ex. GEE; or paying)

Micro-household/agricultural producer assessment

Q2. Have the climate-resilient technologies and strategies transmitted by the field schools improved the resilience of agricultural producers to floods and droughts in the Ouémé basin?

Method	Counterfactual	Requirements and Implications
1. **Experimental** (randomized): staggered deployment (DID/ TWFE)	Communities that have not **yet benefited from the project** (but will benefit later) → Comparison of first beneficiaries with future beneficiaries	- In **each commune** the deployment of one or more parts of the project should be randomized - e.g. field school training

Baseline	Implementation in the first communities	Follow-up survey	Implementation in the counterfactual	Final survey
T0	T +1	T +2	T +3	T +4
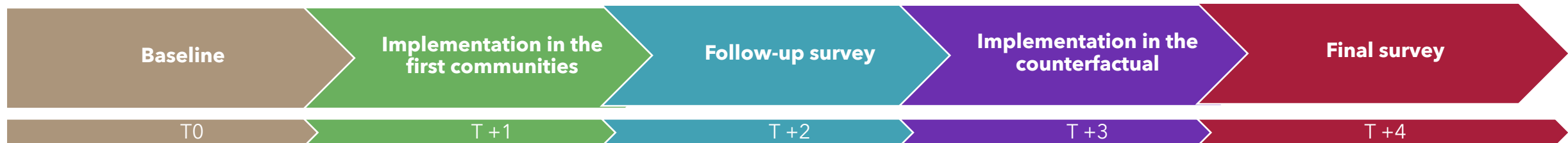
Budget

	USD	
international consultant	**146,090**	Technical assistance for preparation of the roadmap, data collection instruments, identification and selection of the external company, training, monitoring, data analysis, report preparation *includes missions *includes GIS
Data collection	**350,000**	Service Provider
Baseline	125,000	
Follow-up	100,000	
Endline	125,000	
Total impact assessment	**496,090**	

timeline Baseline (2023-2024)

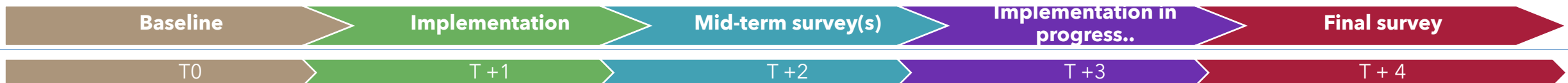| Baseline	2023		2024											
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Preparation of Scoping Mission	■	■												
Scoping mission	■	■												
Desk review	■	■												
Writing of Pre-Analysis Plan	■	■												
Preparation of survey tools			■											
Preparation data collection				■	■									
Pre-test and training						■								
Data collection							■							
Project Implementation to start (earliest)														
Data cleaning									■					
Data analysis										■	■			
Writing of IE Baseline report												■		
Dissemination of findings													■	

Information needs

1. Beneficiary **targeting** criterion identified

2. **places** of all
   - project interventions
   - project communities

3. Implementation **schedule transmitted in detail**
   - Scheduled date for 1.1; 1.2; 2.1, detailed by location

4. Investment in a counterfactual: characterization of places and beneficiaries before the project --> **baseline + monitoring**

Thoughts

- Would it be possible to randomize a component (eg deployment; encouragement) of the implementation?

- Would it be possible to identify the existence of dams outside the project area (in the same municipalities)?

- Can the FarmTree App serve as a source of tracking data (in locations where the App will be used?

Baseline	Implementation	Mid-term survey(s)	Implementation in progress..	Final survey
T0	T +1	T +2	T +3	T + 4

About the PEARL project

Enhance the climate change resilience of smallholder farmers and local communities by increasing their access to growing premium market segments while using their improved market access to incentivize their transition to climate-resilient practices, mainly through effective public-social-private partnerships.

2023 - 2029

42,850,231 (36,231,981 Grant Financing from GCF)

MAFF, MoE, MoWRAM, MoC, MoWA, ARDB

4 provinces, 24 districts, 124 farmer organizations (104 ACs/Associations/Groups, 14 CPAs, 6 CFs

PEARL project intervention

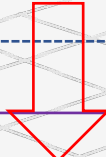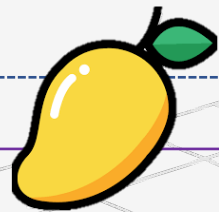| Climate Foresight	Market Incentive	Enabling Environment
Enhancing farmers' capacities to manage climate change impacts and related risks	Increasing smallholder farmers' (especially vulnerable women farmers') and other local value-chain actors' ability to adapt to a changing climate, particularly through market incentives that promote climate-resilient, higher-value, diversified, and sustainable production and processing	Strengthening regulatory and institutional frameworks and capacities for climate-resilient agricultural certification, cross-sectoral coordination for increased public-social-private partnerships (PSPPs) and smallholder financing, and climate-informed investment support
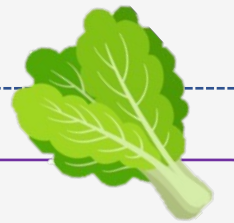
Climate resilient, high value and sustainable agriculture

Evaluation questions and indicators

What are the impacts of certification-based and market-led interventions around specific crops (rice, mango, cashewnut and vegetables) in improving the climate-resilient livelihood and food security of the target communities?

Indicators:
- Resilience Index Measurement and Analysis (RIMA)
- Food Insecurity Experience Scale (FIES)

Project interventions

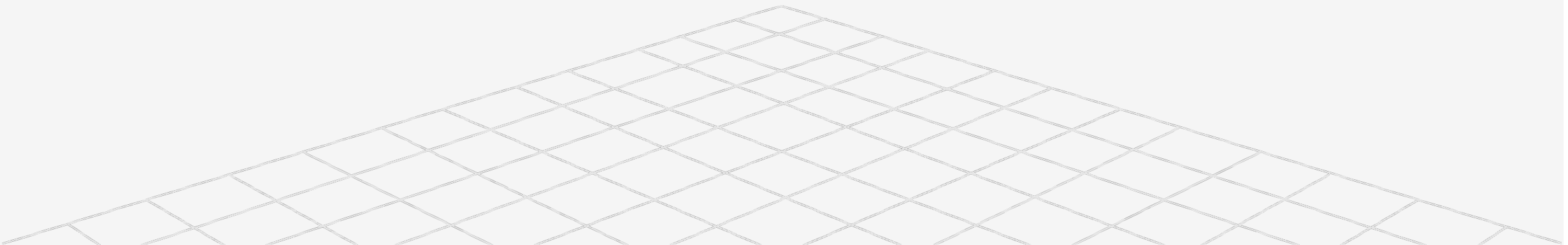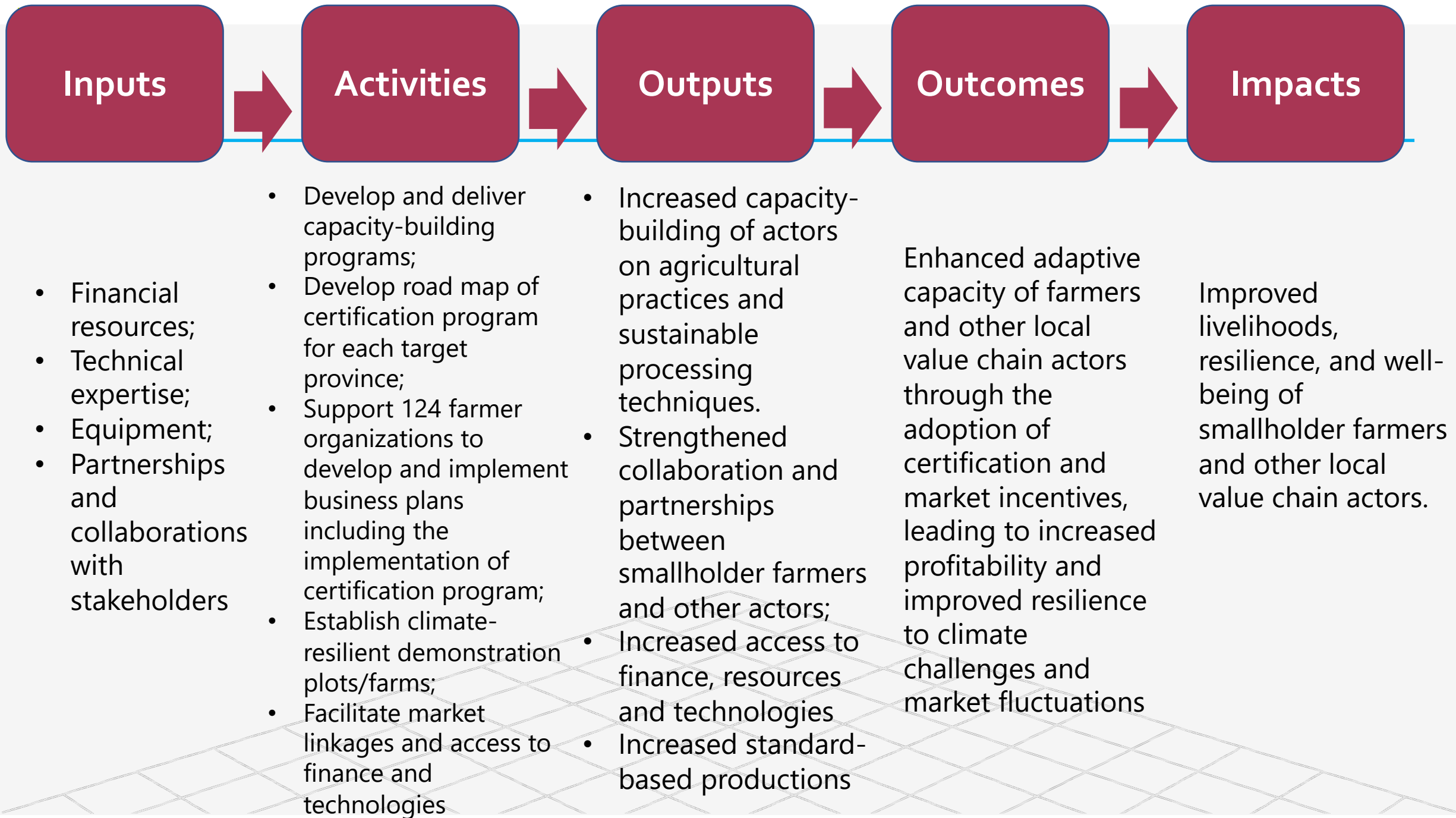- Outside areas (control): farmers receiving only agromet advisory services

- Shade areas (treated): farmers receiving agromet advisory services + targeted extensions and supports (access to market, information and technologies, finance)

Target population

124 farmers organizations (FO) in the treatment areas of which 60 are randomly selected

Look for 60 similar FOs outside the project target areas

Inputs		Activities		Outputs		Outcomes		Impacts

Inputs

- Financial resources;
- Technical expertise;
- Equipment;
- Partnerships and collaborations with stakeholders

Activities

- Develop and deliver capacity-building programs;
- Develop road map of certification program for each target province;
- Support 124 farmer organizations to develop and implement business plans including the implementation of certification program;
- Establish climate-resilient demonstration plots/farms;
- Facilitate market linkages and access to finance and technologies

Outputs

- Increased capacity-building of actors on agricultural practices and sustainable processing techniques.
- Strengthened collaboration and partnerships between smallholder farmers and other actors;
- Increased access to finance, resources and technologies
- Increased standard-based productions

Outcomes

Enhanced adaptive capacity of farmers and other local value chain actors through the adoption of certification and market incentives, leading to increased profitability and improved resilience to climate challenges and market fluctuations

Impacts

Improved livelihoods, resilience, and well-being of smallholder farmers and other local value chain actors.

Evaluation design

- Difference-in-Difference – Counterfactual will be selected in a way that will be comparable as much as possible with the treatment.

- Sample size: 3,000 (1,500 treated group vs. 1,500 control group)

- Data collection: three surveys – baseline, midline and endline survey. Midline: half of the sample (750 each group)

- Detect effect of 31% increased in profit

Timeline
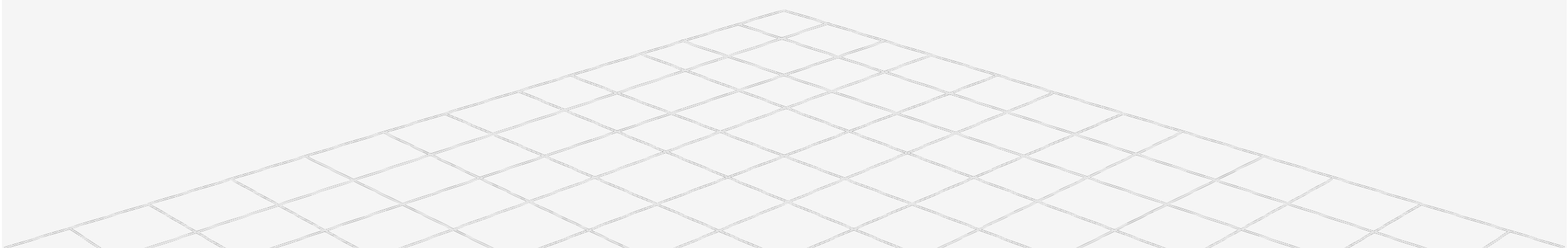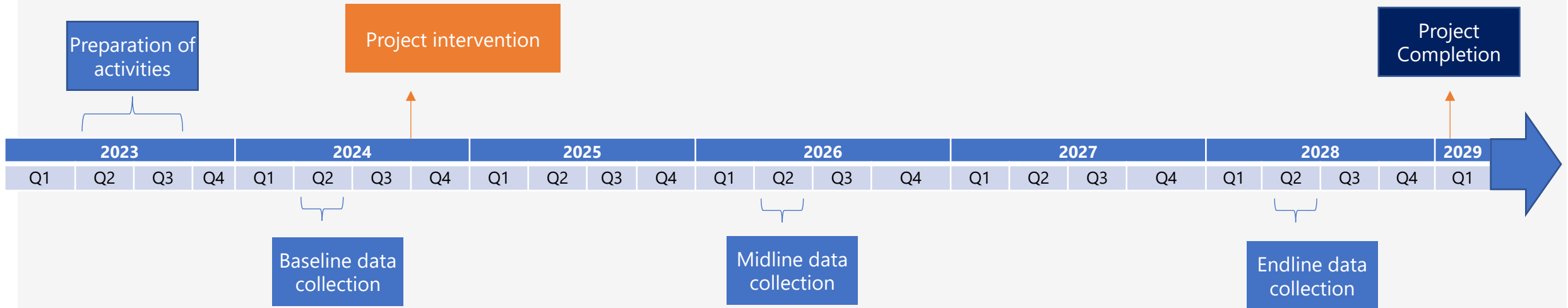
THANK YOU

LORTA Impact Evaluation Workshop Assignment 2023

Project name:
Community-based Landscape Management for Enhanced Climate Resilience and Reduction of Deforestation in Critical Watersheds

Outline

- Summary of Project
- Theory of Change (Whole)
- Outputs & Activities
- ToC (Detailed)
- Component 1
  - Component 2
- Key Evaluation Questions (KEQs)
- Plan about Impact Evaluation
  - Baseline survey
  - Schedule

Summary of Project

Background

 Deforestation and forest degradation in Timor-Leste has continued since 1975. The nationwide forest survey conducted in 2012 by JICA's grant aid has revealed that 184,000 ha was deforested during 10 years from 2003 till 2012 and 171,000 ha of dense forest was converted to sparse forest or agricultural land in the same period.

 The main drivers of deforestation and forest degradation in Timor-Leste are (i) shifting cultivation and unplanned conversion of forests to agricultural land, (ii) overexploitation of fuelwood, (iii) extensive free grazing, and (iv) forest fires caused by human activities mentioned from (i) to (iii). Therefore, to reduce deforestation and forest degradation, it is critical for the community people to change their traditional uses of land, natural resources, and farming practices.

Period

 7 years (2022-2029)

Implementing Agency

 Directorate General of Forest, Coffee and Industrial Crops, Ministry of Agriculture and Fisheries

Finance

 930,000 USD (Gov), 500,000,000 JPY (JICA), 9,990,000 USD (GCF)

Summary of Projects
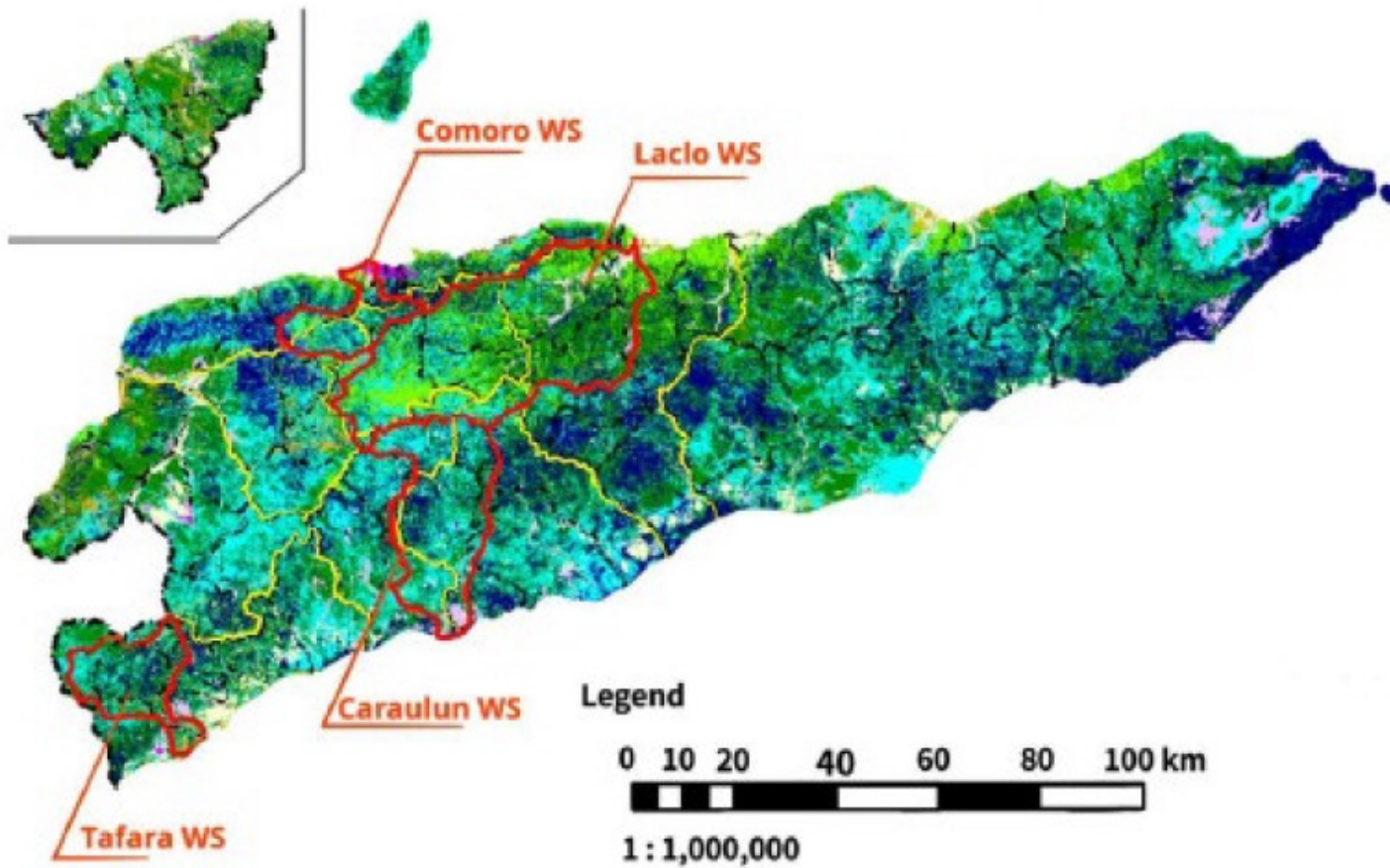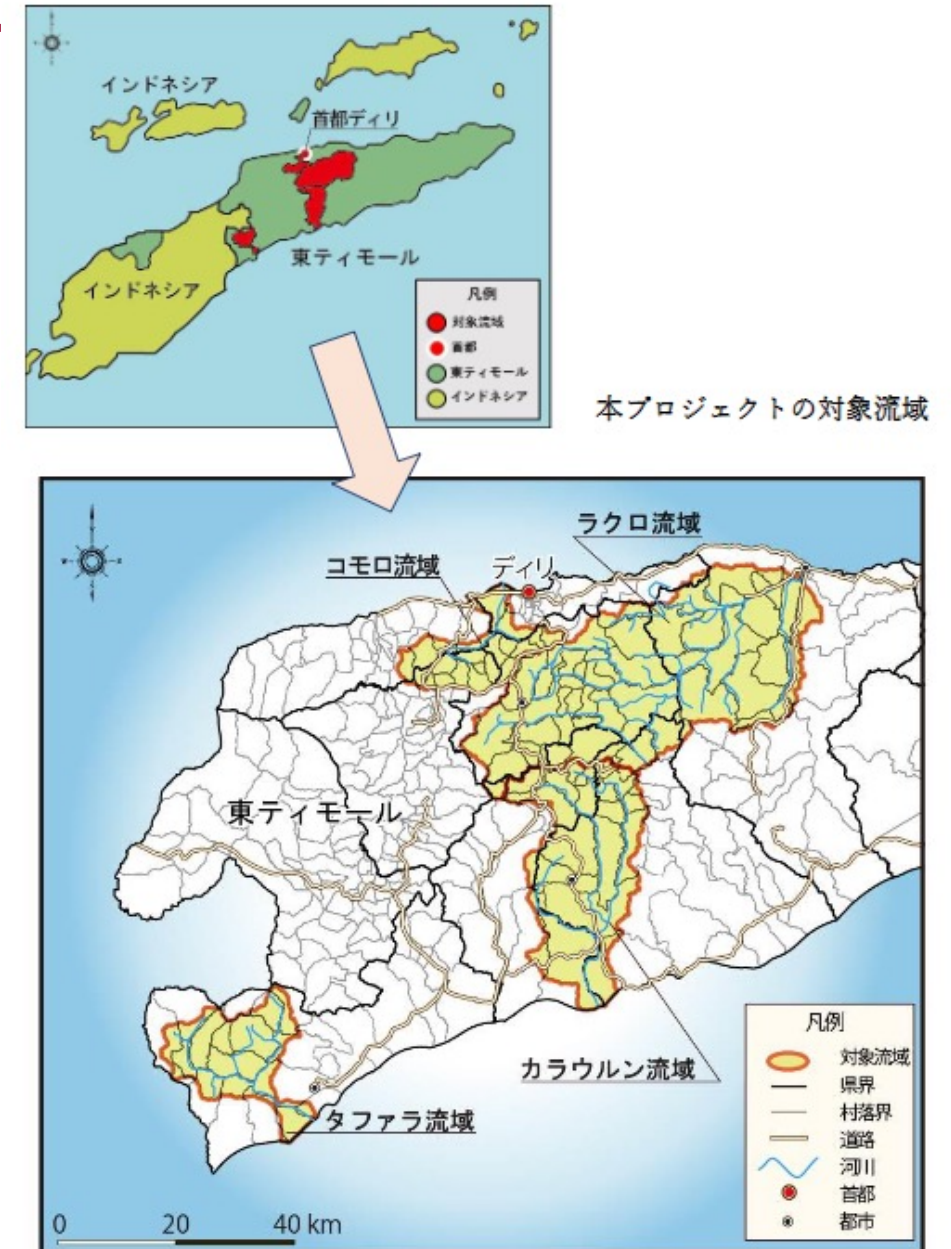
- 4 Watersheds, 74 villages (out of 452)

Figure 1-1: Locations of the Target Watersheds

Theory of Change

Goal Statement

If the existing forests in Timor-Leste, particularly in the 14 priority watersheds, are well managed and protected from further degradation and deforestation through implementation of the CBNRM roadmap with effective use of the CBNRM/ CF approach demonstrated by the proposed project, then the annual CO_2 emission from the LUCF sector are predicted to decline by 80 % compared to the average emission between 2005 and 2010, because of the proposed project with governmental commitment (DGFCIP) to mainstream CBNRM/ CF approach for sustainable forest management, which will: i) reduce and minimize the forest fire occurrence through local leaders' capacity enhancement on NRM with village regulations and coordinating platforms; ii) convert the conventional livelihood practices, e.g., shifting cultivation, into sustainable and climate resilient practices; and iii) develop an enabling environment for further scaling-up the CBNRM mechanism with sufficient policy support, capable human resources, and financial back-up in collaboration with MAF DPs, international funding institutions and private sector.
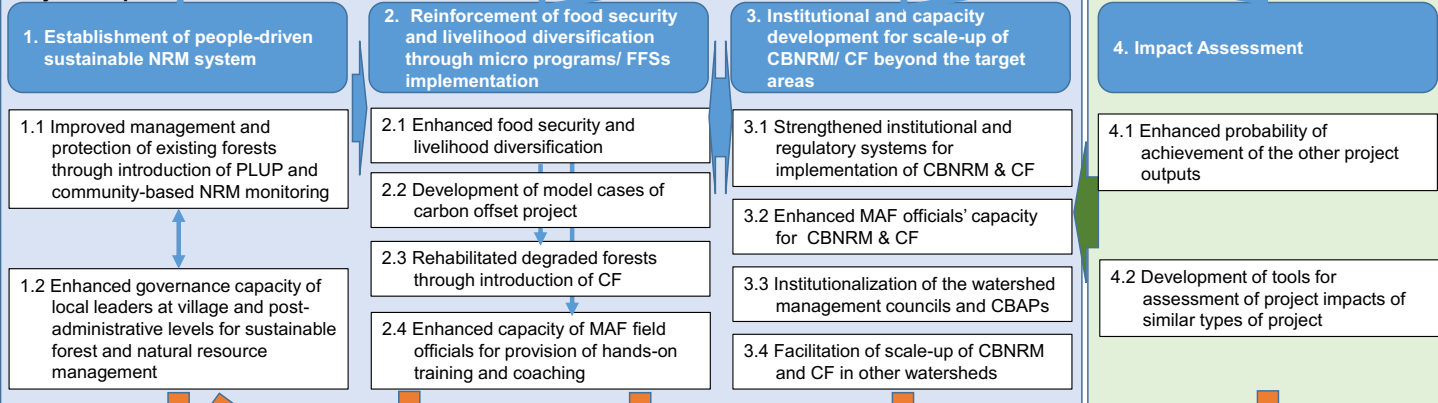
Outcomes

1. Enhanced forest ecosystem services including reduced CO_2 emission in the 4 target watersheds will be demonstrated and confirmed by many stakeholders (government authorities concerned, MAF DPs, and NGOs) at both central and municipal levels.

2. MAF extension officers and NGO field staff working in the 14 watersheds have knowledge and skills to effectively transform farmers' conventional farming and livelihood practices into low-emission, sustainable, productive and climate resilient ones tailored to the respective site conditions.

3. New policy and legislative documents developed by the Project with the project results in the field will enable MAF to mobilize additional financial resources from MAF DPs and international funding institutions by fully use of the DGFCIP's donor coordination committee.

Project Results

1. Local leaders in the target 4 watersheds will protect existing forests from deforestation and forest degradation with the use of village level NRM regulations and sub-watershed level coordination platforms.

2. Local farmers in the 4 target watersheds achieve food-self sufficiency and livelihood diversification through transition from conventional livelihood activities (e.g., shifting cultivation) to sustainable and climate resilient ones.

3. Key MAF technical and field officers will have sufficient experience in the introduction of the CBNRM mechanism and capacity to provide technical assistance to other MAF field officers and NGO technical staff.

4. Necessary legislative documents (e.g., MAF Ministerial Order/ Circular) for scale-up of the CBNRM and CF approach will be issued with the technical guidelines supporting for implementation of the documents.

Project Outputs

1. Establishment of people-driven sustainable NRM system

1.1 Improved management and protection of existing forests through introduction of PLUP and community-based NRM monitoring

1.2 Enhanced governance capacity of local leaders at village and post-administrative levels for sustainable forest and natural resource management

2. Reinforcement of food security and livelihood diversification through micro programs/ FFSs implementation

2.1 Enhanced food security and livelihood diversification

2.2 Development of model cases of carbon offset project

2.3 Rehabilitated degraded forests through introduction of CF

2.4 Enhanced capacity of MAF field officials for provision of hands-on training and coaching

3. Institutional and capacity development for scale-up of CBNRM/ CF beyond the target areas

3.1 Strengthened institutional and regulatory systems for implementation of CBNRM & CF

3.2 Enhanced MAF officials' capacity for CBNRM & CF

3.3 Institutionalization of the watershed management councils and CBAPs

3.4 Facilitation of scale-up of CBNRM and CF in other watersheds

4. Impact Assessment

4.1 Enhanced probability of achievement of the other project outputs

4.2 Development of tools for assessment of project impacts of similar types of project

Major Barriers

Lack of local leaders' capacity and effective regulatory system for sustainable NRM

Lack of local capacity for transformation of conventional farming into sustainable ones

Lack of alternative livelihoods and effective incentive mechanisms to enable local communities to protect forests

Insufficient legislative framework to address deforestation and forest degradation

Budget shortfall for government interventions

Lack of GoTL's officials' experiences in project impact assessment

Limited technical documents for impact assessment in the forestry sector

Key Assumptions

◆ Communities, particularly community leaders, participate in the project activities, particularly PLUP.
◆ MAF municipal technical officers and NGO staff trained by the project keep working in the organizations.
◆ There is no drastic change in government policy frameworks or pro-longed political turbulence.
◆ No extreme climate events, such as prolonged heavy rains, drought, and extreme heats, take place.
◆ Population in target watersheds does not drastically increase.

Outputs & Activities

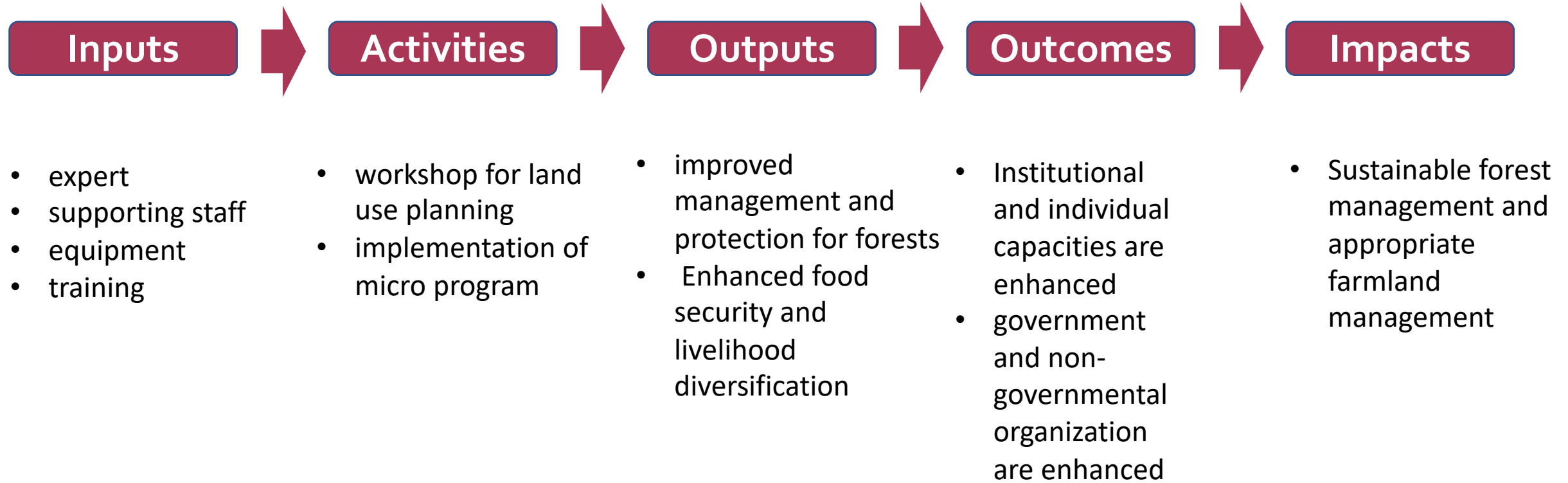|	
1.1	Improved management and protection of existing forests through introduction of PLUP and community-based NRM monitoring
1.1.1	Participatory land use planning (PLUP) with climate change vulnerability assessment (CCVA)
1.2	Enhanced governance capacity of local leaders at village and post-administrative levels for sustainable forest and natural resource management
1.2.1	Enhancement of local governance capacity for sustainable NRM with village level regulations
1.2.2	Formation and operation of watershed management councils as coordination platforms at post-administrative/sub-watershed level.
2.1	Enhanced food security and livelihoods diversification of vulnerable living in hills and mountains in the target watersheds through implementation of micro programs/ FFSs on sustainable and climate resilient livelihood
2.1.1	Implementation of micro programs/ FFSs on productive, sustainable and climate resilient livelihoods (e.g., climate resilient agriculture, horticulture/ agroforestry, CB nurseries and reforestation, coffee rehabilitation, alternative income generation)
2.2	Development and demonstration of model cases of incentive mechanism based on the carbon offsetting scheme in selected villages
2.2.1	Introduction and development of small-scale carbon offset projects and promotion of private investment
2.3.1	Implementation and promotion of community forestry (CF) in the selected areas in the watersheds
2.4.1	Capacity enhancement of MAF field officers (Extension officers, Forest Guards, and Municipal technical officers) concerned with the target watersheds

materials10_en.pdf (jica.go.jp) for Activity 1.1.1-1.2.1

materials06_en.pdf (jica.go.jp) for Activity 2.1.1

Outputs & Activities

3.1	Strengthened institutional and regulatory systems for implementation of the CBNRM and CF approaches in other watersheds
3.1.1	Development of new government legislative and technical documents for effective implementation and promotion of the project activities in and beyond the target watersheds
3.2	Enhanced MAF technical officials' capacity for implementation of the CBNRM and CF approaches, particularly PLUP, CCVA, enhancement of local governance capacity, CF, and climate change adaptation measures
3.2.1	Building of capacity of MAF and NGO field officers working in other priority watersheds
3.3	Institutionalization of the watershed management councils and community-based adaptation plans (CBAPs) as part of the formal institutional set-ups at municipal/post-administrative and village level.
3.3.1	Institutionalization of the project outputs (sub-watershed/ post-administrative level platforms and CBAPs) as the government frameworks
3.4	Facilitation of scale-up of the CBNRM and CF approaches in other watersheds
3.4.1	Knowledge sharing with relevant stakeholders (e.g., key government officials, decision makers and legislators in the GoTL) through international seminars/ conferences
4.1	Enhanced probability of achievement of the other project outputs through improvement of the project approaches, structures, and systems by i) evaluating the effectiveness and efficiency of the proposed project, ii) assessing the project impacts, and iii) drawing lessons from the project implementation.
4.1.1	Establishment of baseline conditions for impact assessment
4.1.2	Evaluation of the project impacts with established methodologies for impact assessment
4.2	Development of tools for assessment of project impacts of similar types of projects
4.2.1	Development of technical references for impact assessment in similar projects in future

Develop TOC for your impact evaluation (before WS)

| Inputs | → | Activities | → | Outputs | → | Outcomes | → | Impacts |

Inputs
- expert
- supporting staff
- equipment
- training

Activities
- workshop for land use planning
- implementation of micro program

Outputs
- improved management and protection for forests
- Enhanced food security and livelihood diversification

Outcomes
- Institutional and individual capacities are enhanced
- government and non-governmental organization are enhanced

Impacts
- Sustainable forest management and appropriate farmland management

*This exercise is to help you review and brainstorm what falls under each component of a TOC for your impact evaluation. (A full-scale TOC for the IE would separate each bullet point under each component and include risks, barriers, and assumptions.) Please provide each input in a brief and simple manner

Develop TOC of Component 1 (Modified after WS)

Component 1: Establishment of people driven sustainable Natural Resource Management (NRM) system

Inputs	Activities	Outputs	Outcomes	Impacts

Inputs
- International Expert
- Supporting staff (e.g. NGOs)
- Materials
- Training
- Workshop

Activities
- Conducting Participatory land use planning (PLUP) with climate change vulnerability assessment (CCVA)
- Making Village Regulation
- Establishing Sub-Watershed Management Council

Outputs
- Raising awareness about NRM concept, land property, and social norm **?**
- Establishing report and settlement system about "illegal" activity

Outcomes
- Decreasing "illegal" activity (e.g. slash, burning, and free grazing) **?**

Impacts

Preventing Deforestation and Forest Degradation **?**

Reducing GHG emissions **?**

Understanding risk for vulnerability

Avoiding vulnerable land use

Adopting Climate Resilient technic->Comp.2

Enhancing Climate Resilience

Develop TOC of Component 2 (Modified after WS)

Component 1: Reinforce food security and livelihood diversification through implementation of micro programs/ FFSs on sustainable and climate resilient livelihoods effective for reducing CO2 emissions

Inputs	Activities	Outputs	Outcomes	Impacts

Inputs
- International Expert
- Supporting staff (e.g. NGOs)
- Materials
- Training
- Workshop

Activities

Implementation of micro programs

- Sustainable Upland Farming Promotion
- Seeding Production and Tree Planting Promotion
- Income Generation and Livelihood Development Support
- Coffee Rehabilitation

Outputs
- Raising awareness about climate resilient farming technics
- Increasing well-managed agricultural land
- Reducing dead tree
- Increasing yield
- Diversifying crops   **?**

Outcomes

Decreasing "illegal" activity ->Comp. 1

Stabilizing food supply   **?**

Developed new/more sources of income   **?**

Impacts

Preventing Deforestation and Forest Degradation

Reducing GHG emissions

Enhancing Climate Resilience

Investment in village facilities (e.g. water supply)   **?**

Key Evaluation Questions (KEQs)

What are the key evaluation questions (KEQs) for your impact evaluation?

-> What is the PLUP & MPs effect on GHG emission and Climent resiliene?

Data

Component 1

- Are the number of "illegal" activity decreasing?
- Is the area of forest or dense forest decreasing?
- Are GHG emissions decreasing relative to trend?
- Is there an improved understanding of village rules and land use?

- # of Report of "illegal" activity
- Satellite/Drone image
- Carbon Storage

Etc.

Component 2

- Are yields and crop types increasing?
- Is production stable when drought or heavy rainfall occurs?
- Are revenues increasing?
- Is investment in public goods increasing?

- Area, Yield, production of each crops
- Income from agricultural activity
- Social capital in village

Etc.

Plan about Impact Evaluation

- IE Design: DID + PSM
    PSM is used for balancing characteristics of villages
- Sample: 74 villages (Treatment) v.s. n villages (Control)
    HHs Survey
- Timing:
- Cost: 0.3million USD

e.g.28,350 USD for Baseline Survey(drone survey)+α??

    6,000 USD for Annual forest monitoring system +α??

    35,000 USD for Midterm Survey(Forest monitoring)   +α??

    122,270 USD for Endline Survey(satellite/drone images, social economics)

Activity 4.1.1 Establishment of baseline conditions for impact assessment	JICA	Monitoring & Evaluation	times	1	USD	28,350	28,350	28,350	-	-	-	-	-	-	28,350
	GCF	Equipment	Equipment	12	USD	500	6,000	-	1,000	1,000	1,000	1,000	1,000	1,000	6,000
Activity 4.1.2 Evaluation of the project impacts with established methodologies for impact assessment	GCF	Monitoring & Evaluation	times	1	USD	122,270	122,270	-	-	-	-	-	-	122,270	122,270
	GCF	International Consultant	Month	4	USD	34,877	139,508	-	17,439	17,439	34,877	17,439	17,439	34,877	139,508

- satellite imageries

- drone survey

- annual monitoring of the forest area

- Baseline of socioeconomic conditions

- _consultant (national and international)

- Local interviewer

- We don't have ethical concerns about our evaluation especially satellite images, but about social survey we might find concerns.

- (Not Ethical ?) If we will conduct random assignment for MPs, it might cause conflicts between village people. However, at the same, we have to limit the number of beneficiaries (almost 120 persons per 1 village) due to budget limitation.

How are you planning to inform selected samples about the risks/benefits of participating in the evaluation?

- _Due attention to rules and regulations on protected area management

- _Follow-up Ensuring of additional benefits to be shared with villagers who are not engaged in the project activities

- _gender

Schedule

Thank you !

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