THIRD-PARTY COST-SHARING AGREEMENT

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

The

United Nations Development Programme (UNDP)
One United Nations Plaza
New York, NY 10017
USA

- hereinafter referred to as “UNDP” or "the Recipient"-

and

Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH
Dag-Hammarskjöld-Weg 1 - 5
65760 Eschborn
Federal Republic of Germany

- hereinafter referred to as the ‘GIZ: –

hereinafter both referred to as ‘Parties’

herewith enter into the following Third-Party Costs-Sharing Agreement (hereinafter referred to as the ‘Agreement’) for the GIZ project:

Transformative Low-carbon and Climate Resilient Pathways of Costa Rica (TRANSFORMA)

Country:

Communication details	**(Please quote in all correspondence)**
Agreement number:	81291181
Project processing number:	20.9089.2-002.00
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The basis for the Grant for **UNDP** is the commission from Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety (hereinafter referred to as 'Commissioning Party') dated 30.09.2021. GIZ shall provide the Grant pursuant to this Agreement exclusively on behalf of and for the account of the Commissioning Party.

Article I. Amount and Purpose of the Grant

1. GIZ shall make available to UNDP a Grant of

up to EUR 941,500.00
inclusive of standard 8 per cent General Management Support costs
and inclusive **1 per cent coordination levy** (hereinafter to as the 'Grant' or the 'Contribution')

2. a) After entering into the Agreement, but no later than with the first request for disbursement, UNDP shall submit a schedule of financial requirements drawn up in EUR for the entire term of the Agreement. In accordance with the schedule of financial requirements, UNDP shall request **annual disbursements** (including the 1 per cent coordination levy, if applicable), in EUR to the amount of the expected financial requirement for the following year, taking into account any funds still available. The call for each disbursement shall be submitted as a signed original or as a digitally signed copy and must include the project number, the Agreement number and the specific amount of coordination levy (if applicable). UNDP shall submit a receipt of the amount that has been credited in USD for the funds disbursed by GIZ.

(b) The transfer of each installment will be made within two weeks upon receipt by the GIZ of a written payment request by UNDP with e-mail confirmation to UNDP when the contribution is paid at the following address: contributions@undp.org.

3. All financial accounts and statements shall be expressed in USD. The value of the payment, if made in a currency other than USD, shall be determined by applying the United Nations' operational rate of exchange in effect on the date of payment. Should there be a change in the United Nations operational rate of exchange prior to the full utilization by the UNDP of the payment, the value of the balance of funds still held at that time will be adjusted accordingly. If, in such a case, a loss in the value of the balance of funds is recorded, UNDP shall inform GIZ with a view to determining whether any further financing could be provided by GIZ. Should such further financing not be agreed upon by the parties, the assistance to be provided to the project/programme may be reduced, suspended or terminated by UNDP.

4. The schedule of financial requirements mentioned in Article 2 takes into account the requirement of the project/programme and shall be made in advance of the implementation of planned activities. The schedule may be amended to be consistent with the progress of project/ programme delivery.

5. UNDP shall use the Grant exclusively for actual costs to be incurred within the scope of the Project described in Article II and in the Project Proposal, attached hereto as **Annex 1** and as attributed to the GIZ Grant according to the Project Budget which sets out details of the Project expenditures, attached hereto as Annex 2. The Project Proposal and the Project Budget form an integral part of the Agreement.

6. The Grant is made available for the period of **01.12.2022** to **30.11.2025**. Only actual costs incurred during this period and relating to activities carried out during this period may be financed from this Grant. Otherwise written approval of the GIZ is required.

7. Standard Coordination levy

a) Pursuant to paragraph 10(a) of United Nations General Assembly Resolution 72/279 of 31 May 2018, GIZ agrees that an amount corresponding to 1% of the Contribution to UNDP shall be paid to fund the United Nations Resident Coordinator System. This amount, hereinafter referred to as the 'coordination levy or levy' will be held in trust by UNDP until transfer to the United Nations Secretariat for deposit into the United Nations Special Purpose Trust Fund for the reinvigorated Resident Coordinator system, which has been established to fund the UN Resident Coordinator System and is managed by the United Nations Secretariat.

b) GIZ acknowledges that once the coordination levy has been transferred by the Recipient to the United Nations Secretariat, UNDP is not responsible for the use of the coordination levy and does not assume any liability. The fiduciary responsibility lies with the United Nations Secretariat as the manager of the Resident Coordinator System.

c) The coordination levy does not form part of the UNDP's cost recovery and is additional to the costs of UNDP to implement the activity or activities covered by the Contribution. Accordingly, there is no normal obligation for UNDP to refund the levy, in part or in full, even where the activities covered by the Contribution are not carried out in full by UNDP. As deemed necessary by GIZ - and especially where the scale of the resources concerned or reputational risk justify the refund transaction costs – GIZ can submit a request for refund to the United Nations Secretariat directly or through the United Nations entity. The responsibility to refund the levy lies with the United Nations Secretariat, and not with the concerned entity of the United Nations.

d) The levy is calculated at the time a new agreement is signed and will not be revised up or down, when the Agreement is subsequently amended except where that amendment exceeds 20% of the initially agreed budget on which the original levy calculation was made. In the event that the downward revision of the Agreement exceeds 20% of the initially agreed budget on which the original levy calculation was made and provided that the coordination levy has been paid in full, the United Nations Secretariat will refund the exceeding portion of the levy directly to GIZ. In case of upward revision exceeding 20%, within this agreement the levy has to be adapted in writing and UNDP will collect the additional levy from the GIZ and transfer it to the United Nations Secretariat. These conditions do not preclude any other circumstances where the GIZ may choose to submit a request for refund to UNDP.

e) The coordination levy for this Agreement is up to **EUR 9,321.78**. The payment schedule, refer to Article I (2), provides the breakdown of the disbursements of the coordination levy and the payments of the Contribution.

Article II. Utilization of the Contribution

The primary aim of the Land Use Change Monitoring and Monitoring Reporting and Verification for Livestock, Coffee and Musacea Nationally Appropriate Mitigation Actions (hereinafter referred to as the 'Project') financed by the Grant is upgrading the MRV Systems of the NAMA Coffee, NAMA lifestock and designing and aligning the MRV system for the NAMA Musaceae, as well as exploring further usages of the MRV systems.
Details are laid down in the Project Proposal in **Annex 1**.

1. UNDP shall be entitled to spend up to 20% more than the budget item amount specified in Annex 2 for any budget item (except for GMS costs and coordination levy if these items are contractually

agreed) provided that the actual costs are reduced by the same amount in one or more of the other budget items (except for GMS costs and coordination levy if these items are contractually agreed).

2. The implementation of the responsibilities of UNDP pursuant to this Agreement and the Project Proposal shall be dependent on receipt by UNDP of the Contribution in accordance with the schedule of payment as set out in Article I, paragraph 2, above, and shall be carried out in accordance with UNDP regulations and rules for managing a project/programme.

3. If unforeseen increases in expenditures or commitments are expected or realized (whether owing to inflationary factors, fluctuation in exchange rates or unforeseen contingencies), UNDP shall submit to the GIZ on a timely basis a supplementary estimate showing the further financing that will be necessary. The GIZ will decide whether the amount of the Grant will be increased accordingly.

4. If the payments referred to in Article I, paragraph 2, above are not received in accordance with the payment schedule, or if the additional financing required in accordance with paragraph 5 above is not forthcoming from the GIZ or other sources, the assistance to be provided to the project under this Agreement may be reduced, suspended or terminated by UNDP.

5. Any interest income attributable to the contribution shall be managed in accordance with UNDP's Financial Regulations and Rules.

6. GIZ shall be invited to the Project Board discussions to participate in the project decisions.

7. The GIZ Grant may be used only for expenditures not already financed under subsidies or long-term loans (either from GIZ or from other donors). Subject to the foregoing, GIZ acknowledges and agrees that the Project may be financed by multiple donors, including GIZ.

Article III. Administration and reporting

1. Project management and expenditures shall be governed by the regulations, rules, policies and procedures of UNDP as well as by the annexed project document, and where applicable, the regulations, rules and policies of the Executing Entity/Implementing Partner.

2. UNDP headquarters and country office shall provide to the GIZ all of the following reports prepared in accordance with UNDP accounting and reporting procedures. Reporting from the country office (see below) shall include information on the use of the project budget; the expenditures shall be broken down according to the expenditure categories or measures as specified in the annexed project document.

3. UNDP shall provide to GIZ all the following reports prepared in accordance with the UNDP's accounting and reporting procedures:
   a. A semi-annual **interim narrative progress report** and an annual **financial statement of account** including the approved budget by main budget/expenditure classification, related expenditures and unused budget balances, not later than two (2) months after the reporting period.
   b. Upon completion of the Project, but not later than six (6) months after the completion of the Project, UNDP shall submit to the GIZ:
      - A final narrative report describing the implementation and results of Project in the light of the aims set out in the Project Proposal and

- a final financial statement in accordance with the UNDP's Financial Regulations and Rules, policies and procedures. Any funds remaining from the Grant, shall be returned to the GIZ in USD at the United Nations operational rate of exchange.

4. UNDP shall keep for seven years after submission of the final financial statement all books, records and the originals of the supporting documents, clearly identifying all actual costs for the services and supplies for the Project and those services and supplies as well as sub-grants financed from the Grant, or up to the date of the limitation period of any claim pursuant to the applicable law governing the Agreement and any procurement contracts or sub-grants concluded, if the latter lasts longer.

5. In any publication on the Project, UNDP shall acknowledge in an appropriate manner and in accordance with the rules and policies applicable to UNDP that it is conducting or has conducted its activities within the framework of a project financed or cofinanced by the GIZ commissioned by the Government of the Federal Republic of Germany and with funding provided by the third-party funder (if applicable).

6. All rights in the work, including ownership of the original work and copyright thereof, shall be vested in UNDP. UNDP hereby grants the GIZ and the Federal Republic of Germany a royalty-free, non-exclusive license to use and reproduce the work for the GIZ's educational, scientific, research or project purposes, including the right of publication thereof, subject to an appropriate acknowledgement of UNDP 's copyright unless UNDP indicates that it does not wish to be associated with any such publication. Should UNDP, in exceptional cases and due to third party agreements, not be entitled to grant to GIZ and the Federal Republic of Germany the above - mentioned rights of use to the full extent, UNDP will inform GIZ in written form about any restrictions regarding the right to use the work.

8. If special circumstances so warrant, UNDP may provide more frequent reporting at the expense of GIZ. The specific nature and frequency of this reporting shall be specified in a supplement of the Agreement.

9. The Contribution shall be subject exclusively to the internal and external auditing procedures provided for in the financial regulations, rules and directives of UNDP. Should an Audit Report of the Board of Auditors of UNDP to its governing body contain observations/information relevant to the contributions, such information shall be made available to the GIZ.

Article IV. Administrative and support services

1. In accordance with the decisions and directives of UNDP's Executive Board reflected in its Policy on Cost Recovery from Other Resources, the Contribution shall be subject to cost recovery for indirect costs incurred by UNDP headquarters and country office structures in providing General Management Support (GMS) services. To cover these GMS costs, the contribution actually utilized for the implementation of the Project shall be charged a fee equal to **8%**. All direct costs as well as the GMS fee (if applicable), shall be identified in the project budget.

2. The aggregate of the amounts budgeted for the programme/project, together with the estimated costs of reimbursement of related support services, shall not exceed the total resources available to the programme/project under this Agreement as well as funds which may be available to the programme/project for project/programme costs and for support costs under other sources of financing. The contribution made available according to Article I shall not be exceeded and shall, therefore, include all costs and fees under Article IV.

Article V. Purchasing of Goods and Services

1. Procurement of supplies and services shall be made according to the UNDP's internal rules and regulations for procurement and contracts, including international competitive bidding when applicable. Written documentation shall be kept of all decisions regarding invitations to tender and placement of order. UNDP shall upon request assist in providing GIZ with information within the limit of the United Nations privileges and immunities, the United Nations Single Audit Principle and the UNDP Regulations and Rules.

2. Ownership of equipment, supplies and other properties financed from the contribution shall vest in UNDP. Matters relating to the transfer of ownership by UNDP shall be determined in accordance with the relevant policies and procedures of UNDP.

Article VI. Sub-grants to the final recipients

1. UNDP is entitled to forward parts of the grant as sub-grants to third parties ('final recipients') if this procedure is foreseen by the Project Proposal and Estimated Budget (**Annexes 1 and 2**).

2. Prior to any forwarding of funds, however, UNDP shall perform appropriate due diligence processes to assess the integrity and capacity of each final recipient, while taking into account the non-profit objective of the Project and select each final recipient based on a positive assessment of that final recipient's capacity to carry out the measure that is being assigned to it.

3. In cases where goods, construction works or services are purchased by the final recipient using grant funds, Article V shall apply.

Article VII. Evaluation

All UNDP programmes and projects are evaluated in accordance with UNDP Evaluation Policy. UNDP and the Government of Costa Rica in consultation with GIZ and other stakeholders will jointly agree on the purpose, use, timing, financing mechanisms and terms of reference for evaluating the project including an evaluation of its contribution to an outcome, which is listed in the Evaluation Plan. UNDP shall commission the evaluation, and the evaluation exercise shall be carried out by external independent evaluators.

UNDP will promptly make available the evaluation reports to the GIZ.

Article VIII. Data protection

1. GIZ shall process personal data in connection with this Agreement exclusively in accordance with the General Data Protection Regulation of the European Union (GDPR). Such data shall be processed solely for the purpose of implementing, managing and monitoring this Agreement. The Parties acknowledge and agree that the GDPR will not be applicable to UNDP.

2. UNDP shall ensure an appropriate protection of personal data in accordance with its applicable rules and procedures. Personal data shall be:
   a. processed fairly, for legitimate purposes and in a transparent manner in relation to the data subject;
   b. collected for specified, explicit and legitimate purposes and not further processed in a manner that is incompatible with those purposes;
   c. adequate, relevant and limited to what is necessary in relation to the purposes for which they are processed;
   d. accurate and, where necessary, kept up to date;
   e. kept in a form which permits identification of data subjects for no longer than is necessary for the purposes for which the personal data are processed; and
   f. processed in a manner that ensures appropriate security of the personal data.

Article VIX. Completion of the Agreement

1. UNDP shall notify the GIZ when all activities covered by this agreement have been completed.

2. Notwithstanding the completion of the project/programme, UNDP shall continue to hold unutilized payments to the extent and until all commitments and liabilities incurred in the implementation of the project/programme have been satisfied and project activities brought to an orderly conclusion.

3. If the unutilized payments prove insufficient to meet such commitments and liabilities, UNDP shall notify the GIZ and consult with the GIZ on the manner in which such commitments and liabilities may be satisfied.

4. Any balance that remains unexpended after such commitments and liabilities have been satisfied shall be returned to the GIZ upon a request from GIZ providing bank account details for reimbursement. UNDP shall inform GIZ promptly about any remaining balances.

Article X. Sanction list

1. Sanction List
   (1) The Recipient (UNDP) represents that it does not maintain any business relationship or has not engaged in any other activity (i) with or in favour of persons, organisations or entities which are listed on a sanctions list issued by the United Nations Security Council ("**Sanctions Lists**"), or (ii) which would constitute a breach of embargoes regulating foreign trade or of so-called financial sanctions issued by the aforementioned institution (together "**Sanctions**").
   (2) The Recipient will not enter into or continue any business relationship with persons, organisations or entities listed on any of the Sanctions Lists and will not engage in any other activity that would constitute a breach of Sanctions.
   (3) The Recipient will inform GIZ, promptly and of its own accord, of the occurrence of any event which results in (i) the Recipient, (ii) any member of its management bodies or (iii) other governing bodies or any of its shareholders, being listed on a Sanctions Lists.
   (4) With regard to sanctions obligations the Recipient will, subject to and in accordance with the status, privileges and immunities of the United Nations and its applicable rules, policies and procedures, provide GIZ, as soon as the respective relevant information is available, with a list detailing the partners who will receive funds in connection with the implementation of the Project (the "GIZ List") and with a funding schedule listing the amounts of contributions. The GIZ list

contains the following information: Name of the contractor/supplier/implementing partner and country of registration. The recipient will notify GIZ of any changes to the GIZ list without undue delay. To the extent required by GIZ, and subject to and in accordance with the status, privileges and immunities of the United Nations and its applicable rules, policies and procedures, the Recipient will make reasonable endeavours to provide additional details in order to assist GIZ to establish the identity of specific contractors/suppliers/implementing partners on the GIZ List. If, from the perspective of GIZ, an entry in the GIZ List presents any concerns, GIZ will inform the Recipient accordingly. In this case, GIZ will inform the Recipient accordingly and, in that event, GIZ will not issue a Non-Objection Letter to the contract award (with GIZ funding) to that specific contractor/supplier/implementing partner. However, considering the Recipient as the ultimate and final procurement authority in the procurement process, the Recipient will be free to proceed under its own responsibility with the award with funding from other source (donors) and not GIZ funding.

Article XI. Suspension of Disbursements and Repayment, Termination of the Agreement

1. After consultation with UNDP and the opportunity to remedy the specific circumstance cited below, GIZ shall be entitled to either suspend disbursements or terminate this Agreement in part or in full, if:

   a) UNDP is not able to furnish evidence (according to Article III) proving the use of the Grant for the purposes stipulated in this Agreement;
   b) goods purchased by UNDP for the project and financed from the Grant are not used for the purpose of the Agreement;
   c) UNDP has engaged in material breach of any other provision of this Agreement;
   d) before conclusion of the Agreement or during its execution, UNDP has given false information or withheld relevant information affecting the allocation or disbursement of the Grant;
   e) any extraordinary circumstances have arisen which preclude or seriously jeopardize the purpose of the Grant, the implementation of the Project or the performance of the obligations assumed by UNDP under this Agreement, or
   f) the Government of the Federal Republic of Germany or the third-party funder (if applicable) terminates, suspends or modifies the relevant contract with the GIZ which is the basis for this Agreement.

2. GIZ shall be entitled to demand repayment of all or part of the Grant, if any of the circumstances referred to in Article XI 1. (a) to (f) arise. This includes any unused or reflowed funds, for which no further disbursements, liabilities or costs are due to be made or paid in the implementation of the project.

   When the circumstances referred to in Article XI a) to d) apply, repayment can only be demanded if the circumstances have not been remedied within a period to be agreed upon by GIZ and UNDP, which shall, however, be not less than 30 days. Repayment will be limited to (a) the amounts that UNDP manages to recover and (b) the unspent amounts. Where Article XI 2. (a) applies, only those amounts shall be repaid for which UNDP is unable to furnish evidence of the use for the purpose stipulated in this Agreement. Where Article XI 2. (b) applies, only the amounts recovered from those amounts relating to the goods concerned shall be repaid.

   In the event that the total amount demanded by GIZ is not recovered, UNDP and GIZ will enter into a dialogue to arrive to a mutually agreed solution.

3. Any disbursed amount of the financial Contribution that has neither been used nor committed by the Recipient for the stipulated purpose under Article 2 until the end of the Implementation Period as stipulated in Article 1 shall be repaid to GIZ within ninety (90) days of the final report, unless otherwise agreed in writing between the Parties.

4. UNDP shall, consistent with the internal regulations, rules, policies and procedures, attempt to recover any funds found to be misused. UNDP shall, in consultation with GIZ, credit any funds so recovered to the Project Budget or, in case the Project was completed or terminated, shall dispose of such funds as agreed with GIZ.

Article XII. Force Majeure

1. 'Force majeure' is an unavoidable event (e.g. natural disaster, outbreak of diseases and epidemics, serious un-rest, war or terrorism) which is unforeseeable by human judgement and experience, cannot be avoided or rendered harmless by reasonable economic means and under application of the utmost care, and which prevents one of the Parties' from fulfilling any of their obligations under this Agreement. If an event originates from the sphere of responsibility of one of the Parties', this shall not constitute an event of force majeure.

2. Neither Party to this Agreement shall be held liable for a breach of its obligations under this Agreement if it is prevented from fulfilling such obligations by reason of Force Majeure, provided that the Party affected by such an event has taken all reasonable precautions, due care and sought out reasonable alternative measures with the objective of carrying out the terms and conditions of this Agreement as applicable.

3. A Party affected by an event of Force Majeure shall notify the other Party of this as soon as possible and no later than fifteen (15) days upon becoming aware of the implications of the occurrence of the event on the project measure, providing evidence of the nature and cause of the event, which shall include information about the possibility of returning to normal conditions as soon as possible.

Article XIII. Conflict of Interest

1. UNDP shall avoid conflicts of interest in connection with this Agreement. A conflict of interest may arise in particular from economic interests, political affinities or national ties, family or friendships or other ties or interests

2. In connection with the implementation of the Project UNDP must not conclude any contract in which a conflict of interest is to be expected due to the nature of the contract or due to personal or financial connections of UNDP to a third party.

3. UNDP undertakes to notify GIZ without delay of any facts that constitute a conflict of interest or could lead to such a conflict. The further procedure shall be coordinated with GIZ.

Article XIV. Final Provisions

1. Arbitration Clause :

   1.1 Amicable Settlement
   The Parties shall use their best efforts to settle amicably any dispute, controversy or claim arising out of, or relating to this Agreement or the breach, termination or invalidity thereof. Where the Parties wish to seek such an amicable settlement through conciliation, the conciliation shall take place in accordance with the UNCITRAL Conciliation Rules then in force, or according to such other procedure as may be agreed between the parties.

   1.2 Arbitration
   Unless, any such dispute, controversy or claim between the Parties arising out of or relating to this Agreement or the breach, termination or invalidity thereof is settled amicably under the preceding paragraph of this Article within sixty (60) days after receipt by one Party of the other Party's request for such amicable settlement, such dispute, controversy or claim shall be referred by either Party to arbitration in accordance with the UNCITRAL Arbitration Rules then in force. The arbitral tribunal shall have no authority to award punitive damages. The Parties shall be bound by any arbitration award rendered as a result of such arbitration as the final adjudication of any such controversy, claim or dispute.

   1.3 This Agreement shall be governed by general principles of law to the exclusion of any national system of law. Such general principles of law are deemed to be reflected in the UNIDROIT Principles of International Commercial Contracts 2004, in addition to general principles of international law.

2. Nothing in this Agreement or in any document relating thereto shall be deemed a waiver, express or implied, of the privileges and immunities of UNDP.

3. In accordance with the UNDP's Staff Regulations and Rules, UNDP will require that its staff will not accept any honour, decoration, favour, gift or remuneration from any third parties if such acceptance is incompatible with his or her status as an UN staff. Similarly, UNDP will require that its staff and will not at any time and in any way use information known to them by reason of their official position, to their private advantage and that they will not accept, hold or engage in any office or occupation which is incompatible with the proper discharge of their duties with UNDP.

4. UNDP shall make reasonable efforts to ensure that the persons it entrusts with the preparation and implementation of the Project and the awarding of contracts for the provision of materials and services to be financed under this Agreement do not demand, accept, provide, grant, promise or accept promises for illegal payments or any other unfair advantages in connection with these tasks.

5. UNDP shall promote the respect of human rights and respect applicable environmental legislation including applicable multilateral environmental agreements, as well as applicable internationally agreed core labour standards. UNDP shall not support activities that contribute to money laundering, terrorism financing, tax avoidance, tax fraud or tax evasion.

6. In the event a provision of this Agreement is established to be invalid, this shall not affect the validity of the remaining provisions. Any deficiency in consequence thereof shall be remedied by a provision consistent with the purpose and intent of this Agreement.

7. In the event that provision of this Agreement does not support the efficient achievement of the objective defined in Articles I and II above and corresponding major changes of the planning are necessary, GIZ and UNDP may adjust or amend these provisions by mutual consent at any stage during the implementation of the Project. Amendments and changes to this Agreement must be made in writing to be valid.
'Major change' means any substantial change of the scope, structure, design, or objectives of the Project that substantially alters the purpose or benefit of the Project.
Amendments and changes to this Agreement as well as any statements and notices which shall be made under this Agreement shall only be valid in writing.

8. The Agreement shall be signed in duplicate and enter into force on the date it is signed by the authorized representatives of the Parties hereto.

Article XV Annexes

Annex 1: Project Proposal of 12.10.2022
Annex 2: Project Budget of 12.10.2022

Eschborn, date: 01.12.2022

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
Contract Management/Financing

.....
Katrin Ladwig
Head of Section, E2B0

.....
Sari Max
Senior Contract manager, E2B0

New York, date:

United Nations Development Programme

.....

VB

Annex 1

PROJECT PROPOSAL

for Financing Contribution

UNDP - Costa Rica
kifah.sasa@undp.org, elena.vargas@undp.org

DocuSigned by:
Elena Vargas
6779E17F02EF4DC...
03-Dec-2022

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LIST OF ABBREVIATIONS AND DEFINITIONS

CENIGA: National Centre for Geo-Environmental Information (MINAE)

CNP: Costa Rican National Council of Dairy Production

CORBANA: National Banana Corporation of Costa Rica

CORFOGA: National Livestock Corporation of Costa Rica (leader in meat production)

ICAFE: Costa Rican Coffee Institute

MINAE: Costa Rican Ministry of Environment and Energy

MOCUPP: Costa Rican Monitoring System for Land Use Change within Productive Landscapes

MRV: Monitoring, Reporting and Verification

NDC: Nationally Determined Contributions

SIMOCUTE: National system for monitoring land cover and land use and ecosystems (MINAE)

SINAC: Costa Rican National System of Protected Areas

SINAMECC: Climate Change Metrics Information System of Costa Rica (MINAE)

SNIT: National System of Territorial Information

UNDP: United Nations Development Program

SDG: Sustainable Development Goals

1. General Information

Project Title	Land Use Change Monitoring and Monitoring Reporting and Verification for Livestock, Coffee and Musacea Nationally Appropriate Mitigation Actions
Geographical Area	Costa Rica

2. Executive Summary

UNDP will partner with two prestigious academic institutions: the University of Costa Rica and the National University to implement this grant to generate the technical outputs described below. Actions will be conducted in close coordination with CATIE as part of the interventions of the TRANSFORMA-INNOVA project, Component 2.

The grant will update the existing Land Use Change Monitoring System (MOCUPP) with the publication of fourteen new geospatial data layers corresponding to total "land cover", "gain and loss of forest cover" and "gain and loss of forest cover on a buffer strip of two kilometers width from the edge of the polygon that reports the crop areas monitored by MOCUPP of the agricultural NAMAs for coffee, livestock and Musaceae. This will strengthen data generation, governance and knowledge management of three agricultural NAMAS in the country.

Activities will improve monitoring of sustainable production; adoption of low carbon strategies, and conservation of tree cover associated with Musaceae, Livestock and Coffee landscapes and supply chains. The intervention will explore different usages, for example, in the context of marketing of differentiated low-carbon products for domestic and international markets and establish a verification system of production units that comply with NAMA mitigation actions, and help maintain tree cover associated with commodities production.

Further, actions will update and consolidate the Monitoring Reporting and Verification (MRV) systems for the 3 NAMAs of the above-mentioned commodities. The MRV systems will be aligned to the government's Agro-environmental agenda targets, the UNFCCC guidance, and will be aligned to any Carbon standards that may be identified as part of this process, in order to facilitate future trading of the target agricultural commodities as "deforestation-free" through jurisdictional approaches. The MRV systems will be incorporated into the National Climate Change metrics information system (SINAMECC) that adheres to IPCC guidelines and COP decisions.

The grant will fund activities to ensure long term sustainability of MOCUPP and MRV systems. This will entail technical assistance to ensure that MRV system data sets are incorporated and managed through the National System for Climate Change Metrics SINAMECC; providing advise and advocacy to ensure that new funding will cover new data layers for the selected commodities for the years 2023 and 202 and providing capacity building to agricultural sectors on the use of the geospatial data layers produced by MOCUPP. This might, inter alia, contribute with the market differentiation efforts lead by GIZ.

3. Background

Costa Rica is committed to the Sustainable Development Goals (SDG), and is aiming to become a resilient, inclusive, and carbon neutral economy by 2050. The country is considered an ambitious international climate leader, and a natural ally to contribute to the climate ambitions of the European Union. The country is working towards the achievement of its Paris Agreement goals and its Nationally Determined Contribution (NDC) targets. The Ministry of Environment and Energy and Ministry of Agriculture and Livestock established an Agro-environmental agenda to reduce emissions from key commodities. As part of these efforts the government has prioritized Nationally Appropriate Mitigation Actions (NAMAs) and deforestation-free jurisdictional approaches for commodities sectors. The NAMA coffee is the most advanced NAMA in that is already in full implementation, the NAMA livestock (including beef and milk production), is at an intermediate stage of implementation with only an initial pilot phase having been implemented; and NAMA Musaceae is still at an early stage of development and formulation.

The country's economy was affected by the COVID-19 pandemic, significantly reducing economic output, and tourism revenue, particularly in rural regions. Despite this, the Costa Rican government is still committed to its NDC pledges and to promote the environmental and climate agenda. Decarbonization of the economy, carbon neutrality of rural production, and resilience agendas are central to the new administration's agenda (2022-2026) if these issues contribute with post COVID-19 economic recovery.

The NDC set the country´s net emission ceiling of GHG at 9.4 Mt CO2 eq. for the year 2030. This requires a 25% reduction of the emissions corresponding to 2012, equivalent to a reduction of 170,500 t of GHG per year. The last Greenhouse Gas Emissions (GGE) inventory (MINAE, 2019) identifies the Agriculture, Forestry and Land Use Sector (AFOLU) as the largest contributor to GHGs. Therefore, the government recognizes the crucial importance of reducing emissions within the agricultural sector. Emissions of this sector are estimated at 7.2 Mt CO2 eq., carbon sequestration in forests and forest products, estimated at 6.5 Mt CO2 eq. The forestry sector alone constitutes a carbon sink. The adoption of low carbon agricultural production strategies has a considerable potential for reducing GGE emissions. As a result, the production of deforestation-free commodities or carbon neutral commodities and commodities "with forest cover" has become national priority.

Agriculture continues to be an important economic sector in Costa Rica. In 2018 it accounted for 4.1% of GDP and 25% of exports. The most important segments of export are banana 36%, pineapple 34%, coffee 11% and livestock production (30% milk and 19% meat) (Procomer, 2018). This economic relevance makes it an important priority in the governmental climate agenda. Strategies need also to favor biodiversity conservation as a country that is considered a biodiversity hotspot, and where eco-tourism is crucial for the national economy.

The governments Agro-environmental agenda established a target to reduce emissions in the range of 30-45 kg of carbon dioxide equivalent (CO2e) per agricultural unit by 2030. Costa Rica's National Decarbonization Plan establishes the acceleration and upscaling of activities to transform the largest GHG emitting agricultural activities as one of its five priority actions and sets the target that the value chains of coffee, livestock, bananas, and other agricultural commodities must use emission reduction technologies by 2030.

To promote sustainable, resilient, low-carbon production practices and conservation of tree cover, the country has some limitations, such as insufficient economic and market incentives, as well as limitations to develop appropriate and innovative solutions with producers, suppliers, the processing industry and consumers. In addition, there is a need to develop capacities within the relevant institutions and production sectors on how to establish a robust MRV system to guide the effective implementation of low carbon actions.

Currently, some commodities have ongoing sustainable production initiatives. Such is the case of the coffee sector, that, according to data from ICAFE (2012) 70% of coffee production in Costa Rica is done under following GHG adaptation and mitigation actions. In the case of the livestock sector, a Low Carb Livestock Strategy was launched in 2015. Nevertheless, other the most common production and processing practices for other commodities still do not reflect progress in emission reductions. This calls for the need to implement and innovate low carbon production and consumption practices.

4. Purpose and Objectives

The over-arching project goal as reflected in the desired outcome of the TRANSFORMA-INNOVA project logframe is: '*Stakeholders in relevant sectors have changed their agricultural and blue production systems towards sustainable, biodiverse, low-carbon and climate-resilient value chains contributing to Costa Rica's NDC and its Decarbonization Plan'*. This intervention will contribute to the desired long-term impact that has been stated as: '*Costa Rica will be an emission-free country in 2050 through the contributions of the agricultural sector, sustainable blue value chains and the conservation of coastal and marine ecosystems´*.

As stated on the TRANSFORMA-INNOVA Project **Offer 1.4**: UNDP will help consolidate the Monitoring, Reporting and Verification (MRV) systems of all mitigation actions for the Musaceae, Livestock and Coffee sectors in compliance with the goals of the NDC of Costa Rica and the Agreement between MINAE and the MAG for the Reduction of Emissions in the agricultural sector (Agro-environmental Agreement for the Reduction of Emissions). UNDP will ensure that the proposed MRV measures are complementary to each other and consistent with the National Greenhouse Gas Inventory. UNDP will ensure that the MRV system is incorporated into the existing National Climate Change Metrics System (SINAMECC) and that it adheres to the guidelines of the Intergovernmental Panel on Climate Change (IPCC) and the decisions of the Conference of the Parties (COP) and the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA). UNDP will provide technical assistance and advice, and the assigned team will act as technical secretariat for discussions on MRV and NAMA between the sectors and institutions mentioned.

In addition, UNDP will continue to support the current Land Use Change Monitoring System for Productive Landscapes (MOCUPP), a low-cost, methodical and standardized tool, based on the use of free satellite images for the annual monitoring of productive landscapes to generate data layers of a) extension of the total area of specific crops, (to date pineapple, oil palm and pasture and b) the loss or increase of annual tree cover, either within or around the areas of crop.

All of these interventions will result in making relevant sectors to shift their agricultural and blue production systems towards sustainable, low-carbon and climate-resilient value chains, contributing to Costa Rica's NDC and its Decarbonization Plan. The target, according to **Result Indicator 01** is that NAMAs for coffee, livestock and Musaceae, emissions have reduced emissions by a total of 40,000 t

of CO2 eq. by 09/2026. UNDP interventions will contribute towards this target by consolidating sound MRV systems and land use change monitoring mechanism. This indicator will be verified by data recorded in the national GHG emission reporting system (SINAMECC) and the project's MRV system which will report the adoption of Good Agricultural Practices (GAPs) and Good Manufacturing Practices (GMPs) and their corresponding emission reductions. Further contributions will also be reflected in Outcome indicator 0.3 which measures the progress in leveraging additional financing (at least 10 Mio USD by 09/2026) for the implementation of climate-smart actions for transforming the agricultural value chains and the blue-carbon component of the project. By providing technical inputs for defining and promoting NAMA-relevant financing options, UNDP will also contribute towards the latter indicator.

UNDP will co-lead **Output II**: *Implementation of low-carbon and resilient agricultural production practices.* This will be done in coordination with CATIE and GIZ as the consortium coordinator, the three partners sharing responsibilities regarding the achievement of three targets for specific indicators: **Indicator II.1**: Expanding the Coffee NAMA to 3,750 additional coffee farmers, including small farmers, youth and women, and 56 coffee processing plants. **Indicator II.2** The livestock NAMA is implemented in an additional 1,569 ha, including an additional 150 ranchers and dairy producers (milk, meat and dual purpose, applying low-emission GAP/GMA). **Indicator II.3**: A Musaceae NAMA is established in 5,600 ha of 50 pilot farms.

Contribution to Work Packages

UNDP technical contributions will support NAMA implementation process according to the needs and potentials of each NAMA with respect to the work packages of TRANSFORMA-INNOVA specified in the project offer submitted to the BMUV:

- Activity (A II.I.5): Upgrading the coffee MRV system (part of the Work Package WP II.I)
- Activity (A II.II.5): Upgrading the livestock MRV system (part of the Work package WP II.II)
- Activity (A II.III.5): Design and align the MRV system for Musaceae (part of the Work package WP II.III).

In this context, the following Milestone mentioned in the Project Offer is also relevant for the present proposal:

Milestone II.2: MRV-System for the NAMA-coffee has been upgraded and at least 30% of the beneficiary producers and processors are implementing at least 2 low emission GAPs or GMPs, respectively (12/2023).

Additional to the activities, indicators and milestones mentioned before UNDP will explore usages of the MRV systems. Thus UNDP will identify synergies for contributing to *inter alia* Activity (A II.IV.4): "Develop a marketing strategy for positioning products related to sustainable and resilient production models on national and international markets", which is part of the Work Package WP II.IV.

UNDP Role:
The first role of UNDP in the project will be to update and consolidate the Monitoring, Reporting and Verification (MRV) systems of mitigation actions for Musaceae, Livestock and Coffee sectors in

compliance with the goals of the NDC of Costa Rica and the Agreement between the Ministry of Environment and Energy and the Ministry of Agriculture and Livestock for the Reduction of Emissions (Agro-environmental Agreement on Reduction of Emissions). The proposed MRV measures will complement each other and be consistent with the National Inventory of Greenhouse Gases. Also, UNDP will ensure that the MRV system is incorporated into the SINAMECC and that it adheres to the IPCC guidelines and the decisions of the COP. UNDP will provide technical assistance and advisory, and the assigned team will act as technical secretariat for the sectors and institutions participating in the activities described, generating meeting minutes, designing methodologies for the meetings and workshops. The UNDP team will prepare technical reports and facilitate expert consultation.

The MRV development process will include: i) analysis of current state of NAMA MRV systems; ii) a critical reflection of current governmental vision for carbon neutral commodities at a territorial level in order to ensure alignment with territorial interventions and national Carbon accounting; iii) review of existing carbon and relevant standards to use as reference and potential guide for MRV formulation; iv) identification of information gaps and institutional barriers that need to be addressed before selecting the most relevant, feasible and strategic MRV actions; v) design MRV systems for the three target commodities (including 150 carbon analysis in soil, digital application for farmers to register MRV data) vi) testing the designed MRV system through the completion of three baseline studies of emission estimation (one per sub-sector for 2023); vii) completion of three end of project MRV measurements (one per sub-sector for 2025), viii) Final Monitoring, Reporting and Verification (MRV) systems registered with the UNFCCC Secretariat, meeting relevant international standards and incorporated to SINAMECC.

The second role of UNDP will be to develop new layers of the MOCUPP land use change system. This will contribute to the SIMOCUTE (System for monitoring land use change) which contributes to the SINAMECC. Further, other contributions of the MOCUPP can be towards differentiating production units that are free from forest cover loss. This production unit differentiation is basis of the certification “Grass-fed beef without forest cover loss” that is being developed through the SCALA project of UNDP and can leverage synergies with the TRANSFORMA-INNOVA Project. UNDP will update the Land Use Change Monitoring System within production landscapes (MOCUPP) through publication of fourteen new geospatial data layers for “total land cover”, “gain and loss of forest cover” and “gain and loss of forest cover on a buffer strip of two kilometers width from the edge of the polygon that reports the crop areas monitored by MOCUPP” for i) coffee, ii) pasture for cattle and iii) Musacea at a national level. This will strengthen data generation, governance, and knowledge management for the three agricultural NAMAS (Livestock, Musacea and coffee), and help consolidate their MRV systems. Technical assistance will be provided to ensure MRV systems are aligned to national NDC commitments, national metric systems (SINAMEC) and Carbon or related Standards, which will help production units differentiate their products in domestic and international markets. UNDP will coordinate within the consortium so that the production units identified as “Free from land use change” may be differentiated in the markets. . The consolidation of the MOCUPP system will allow producers to obtain information on the extension and agricultural dynamics of the monitored crops, with the aim of demonstrating sustainable production so that buyers and consumers my identify the sustainability of the commodities coming from specific production units. MOCUPP makes it possible to monitor and report the reductions in GHG emissions linked to the conservation of tree cover associated with production. This is advantageous for the MRV systems of the three NAMA systems being serviced. All the work carried out will be compatible and integrated into the organizational framework of the Costa Rican government, by incorporating it to

existing tools such as the SINAMECC. The data layers of MOCUPP are freely accessible and will be disseminated through the geospatial viewer of the National Territorial Information System (SNIT) of the National Geographic Institute (IGN). This platform allows users to view, consult and download data for free, and to relate data layers with official information such as property record maps. This makes it possible to identify what commodities are being produced in each property, and if production takes place with or without maintenance of tree forest cover, every year. MOCUPP geospatial data layers contribute to the establishment of Monitoring, Reporting and Verification (MRV) systems by allowing annual monitoring of land use dynamics at low cost.

The third role of UNDP is to implement an exit strategy to ensure long term sustainability of the above-mentioned investments. In the case of the MRV System, UNDP will ensure the MRV systems developed are aligned and operational through the National Climate Change Metric Information System (SINAMECC). This will allow for alignment of the MRV systems to reporting standards of the UNFCCC; and ensure close engagement with potential trade partners and international commodities buyers to align market demand with what the future MRV systems may help report. With regards to the exit strategy for the consolidation of MOCUPP Land use change system, UNDP has been working with the Ministry of Environment and Energy, and members of parliament to include for discussion a bill to modify the Biodiversity Law. The modification will change the destiny of the tax collected from trading wood so to finance land use change monitoring. The grant will be used to invest in spatial data layers for the up to the moment when the expected layers covered by government of partners income are in place. In addition, institutional funding will be mobilized to generate 2024-2025 geospatial data layers for livestock, Musaceae and coffee through student internship arrangements with State universities, and new funding from vertical funds (GEF or GCF).

4.1. Project Outputs

The present project proposal will generate the following outputs:

OUTPUT II.A The Land Use Change Monitoring System (MOCUPP) is updated with the publication of fourteen new geospatial data layers corresponding to “total land cover”, “gain and loss of forest cover” and “gain and loss of forest cover on a buffer strip of two kilometers width from the edge of the polygon that reports the crop areas monitored by MOCUPP of the agricultural NAMAs for coffee, livestock and Musaceae.

OUTPUT II.B Monitoring, Reporting and Verification (MRV) systems for the three agricultural NAMAS of coffee, livestock and Musaceae are operational.

OUTPUT II.C Long term sustainability for MRV and Land Use Change Monitoring Systems.

Table 1: Output indicators

Outputs	Output Indicator
II.A The Land Use Change Monitoring System (MOCUPP) is updated with the publication of fourteen new geospatial data layers corresponding to total “land cover”, “gain and loss of forest cover” and “gain and loss of forest cover on a buffer strip is monitored by MOCUPP of the agricultural NAMAs for coffee, livestock and Musaceae.	II.A.1 Number of Geospatial Data Layers published in the National Territorial Information System (SNIT): Target 2025: (14 new layers, as described below): Coffee: a. Geospatial data layer (shape file) for total land cover of coffee for the year 2021 published in the National Territorial Information System (SNIT) b. Geospatial data layer (shape file) for total land cover of coffee for the year 2022 published in the National Territorial Information System (SNIT) c. Geospatial data layer (shape file) for Loss and Gain of forest cover associated to coffee land cover for the years 2021-2022 published in the National Territorial Information System (SNIT) d. Geospatial data layer (shape file) for Loss and Gain of forest cover on a buffer strip of two kilometers width from the edge of the polygon that reports to coffee land cover for the years 2021-2022 published in the National Territorial Information System (SNIT) Pasture for Cattle: e. Geospatial data layer (shape file) for total land cover of pasture for cattle for the year 2020 published in the National Territorial Information System (SNIT) f. Geospatial data layer (shape file) for total land cover of pasture for cattle for the year 2021 published in the National Territorial Information System (SNIT) g. Geospatial data layer (shape file) for Loss and Gain of forest cover associated to pasture for cattle land cover for the years 2020-2021 published in the National Territorial Information System (SNIT) h. Geospatial data layer (shape file) for Loss and Gain of forest cover on a buffer strip of two kilometers width from the edge of the polygon that reports to pasture for cattle land cover for the years 2020-2021 published in the National Territorial Information System (SNIT) Musacea i. Geospatial data layer (shape file) for total land cover of Musacea for the year 2021 published in the National Territorial Information System (SNIT) j. Geospatial data layer (shape file) for total land cover of Musacea for the year 2022 published in the National Territorial Information System (SNIT) k. Geospatial data layer (shape file) for Loss and Gain of forest cover associated to Musacea land cover for the years 2021-2022 published in the National Territorial Information System (SNIT) l. Geospatial data layer (shape file) for Loss and Gain of forest cover on a buffer strip of two kilometers width from the edge of the polygon that reports to Musacea land cover for the years 2021-2022

	published in the National Territorial Information System (SNIT) m. Geospatial data layer (shape file) for total land cover of Musacea for the year 2022 published in the National Territorial Information System (SNIT) n. Geospatial data layer (shape file) for total land cover of Musacea for the year 2023 published in the National Territorial Information System (SNIT)
II.B Monitoring, Reporting and Verification (MRV) systems for the three agricultural NAMAS of coffee, livestock and Musaceae are operational.	II.B.1 Three MRV systems responding to the needs of the three subsectors detected in the participatory workshops II.B.2 Percentage of ICAFE affiliated coffee growers using online and cell phone application as an MRV tool that provides information to SINAMECC has increased. Current baseline: <1% Target 2023: 60%; Target 2025: 90% II.B.3 Percentage of livestock farmers using online and cell phone application as an MRV tool that provides information to SINAMECC Target 2023: 10%; Target 2025: 80% II.B.4 Percentage of Musacea farmers using online and cell phone application as an MRV tool that provides information to SINAMECC Target 2023: 10%; Target 2025: 80% II.B.5 Baseline Studies for 3 MRVs establish 2023 emissions per sector Target 2023: 3 (Coffee, Livestock, Musaceae). II.B.6 End of project MRV measurement establish 2025 emissions per sector Target 2025: 3 (Coffee, Livestock, Musaceae). II.B.7 Final Monitoring, Reporting and Verification (MRV) systems registered with the UNFCCC Secretariat, meeting relevant international standards and incorporated to SINAMECC. Target 2025: 3 (Coffee, Livestock, Musaceae).
II.C Long term sustainability for MRV and Land Use Change Monitoring Systems	II.C.1 Sustainability of MRV system metrics monitoring is achieved through formal agreements of incorporation of MRV data components into SINAMECC. Target 2025 (3: ICAFE 1, CORFOGA 1, Corbana 1) II.C.2 Institutional funding mobilized to generate 2024-2025 geospatial data layers for livestock, Musaceae and coffee through i) student internship arrangements with State universities, ii) Advisory task for modification of Biodiversity Law so that proceeds of the wood tax law are channeled to land use

	change monitoring, iii) new funding from vertical funds (GEF or GCF). II.C.3 Number of technical staff from chambers of producers from the coffee, livestock and banana sectors trained in the use of MOCUPP to differentiate production units generating deforestation-free or “with forest cover” production in national and international markets. Target 2025 (60: 20 ICAFE, 20 CORFOGA, 20 Corbana) II.C.4 Report on exploring other possible uses and synergies (for example in the context of marketing strategies produced together with SCALA project).

This management of information and knowledge will complement agricultural technical processes that are being carried out with support from CATIE. Interventions will help differentiate production units that market commodities “with forest cover” or “deforestation-free” in domestic and international markets for two consecutive periods. Information generated will allow buyers to show end-consumers the forms of production of marketed products in alignment with the three NAMAs.

Progress towards these output indicators will be monitored by reaching the following milestones included in Table 2, as well as in Table 3 which includes the overall activities in relation to the outputs and Table 4 which includes the subactivties and a timeline.

Table 2. Milestones of the project

Outputs	Milestones	Expected date of completion
A. The Land Use Change Monitoring System (MOCUPP) is updated with the publication of fourteen new geospatial data layers corresponding to total "land cover", "gain and loss of forest cover" and "gain and loss of forest cover on a buffer strip of two kilometers width from the edge of the polygon that reports the crop areas monitored by MOCUPP of the agricultural NAMAs for coffee, livestock and Musaceae	Milestone A.1: Baseline Geospatial Data Layers developed and published in the National Territorial Information System (SNIT)	Y2Q1
	Milestone A.2: Second Geospatial data layers for total land cover of coffee, Musaceae and Pasture for Cattle and published in the National Territorial Information System (SNIT)	Y3Q1
	Milestone A.3: Final Geospatial Data Layers for Gain and Loss of Forest cover adjacent areas or within the studied productive landscapes and in a larger area of influence 2 km and published in the National Territorial Information System (SNIT)	Y3Q4
B. Monitoring, Reporting and Verification (MRV) systems for the three agricultural NAMAS of coffee, livestock and Musaceae are operational.	Milestone B.1: MRV systems designed and validated by the three subsectors.	Y1Q2
	Milestone B.2.: Base line studies for carbon emission for the three subsectors.	Y2Q1
	Milestone B.3: End of project studies for carbon emissions for the three subsectors	Y3Q2
C. Long term sustainability for MRV and Land Use Change Monitoring Systems	Milestone C.1: Formal agreements of incorporation	Y3Q3

	of MRV signed by the three subsectors.	
	Milestone C.2: Funds for new data layers for MOCUPP secured and implemented	Y3Q4
	Milestone C.3: Technical staff is trained on the use of MOCUPP.	Y3Q4
	Milestone C.4: Report of on exploring other possible uses and synergies completed.	Y2Q4

Table 3. Activities per Output

Output	Activities
A. The Land Use Change Monitoring System (MOCUPP) is updated with the publication of fourteen new geospatial data layers corresponding to total "land cover", "gain and loss of forest cover" and "gain and loss of forest cover on a buffer strip of two kilometers width from the edge of the polygon that reports the crop areas monitored by MOCUPP of the agricultural NAMAs for coffee, livestock and Musaceae	A.I. Download and process remote Sensor image download and processing
	A.II. Verify in the field geospatial data by specialized teams.
	A.III. Review of data by an expert team
	A.IV. Meta-analysis review with National centre for environmental Geo-information (CENIGA) and SNIT publication of layers
B. Monitoring, Reporting and Verification (MRV) systems for the three agricultural NAMAS of coffee, livestock and Musaceae are operational.	B.I. Analysis of relevant documentation to comply with national and international requirements
	B.II. Designing and applying MRV systems using a participatory approach, for baseline and end of the project studies of emissions
	B.III. Analyse and systematice results for MRV systems
C. Long term sustainability for MRV and Land Use Change Monitoring Systems	C.I. Facilitation of National Agreements for MRV system
	C.II. Develop a financing strategy for future data layer development
	C. III. Explore other possible uses and synergies (including marketing).

The work plan is aligned to be completed within 36 months (Gannt Chart is planned in Quarters) and will be coordinated by UNDP. This work plan incorporates the activities and subactivities oriented to meet the outputs of the project.

Table 4. Gannt Chart for the timeline of the project per subactivity.

Output	Activities	Subactivities	Y1Q1	Y1Q2	Y1Q3	Y1Q4	Y2Q1	Y2Q2	Y2Q3	Y2Q4	Y3Q1	Y3Q2	Y3Q3	Y3Q4
A. The Land Use Change Monitoring System (MOCUPP) is updated with the publication of fourteen new geospatial data layers corresponding to total "land cover", "gain and loss of forest cover" and "gain and loss of forest cover on a buffer strip of two kilometers width from the edge of the polygon that reports the crop areas monitored by MOCUPP of the agricultural NAMAs for coffee, livestock and Musaceae	A.I. Download and process remote Sensor image download and processing	a. Support procurement process for aquiring sensor images	x											
		b. Bilateral meetings with Univeristy teams		x	x	x	x	x	x	x	x			
	A.II. Verify in the field geospatial data	c. Organize field trips for data verification together with			x	x	x	x	x	x	x			

Output	Activities	Subactivities	Y1Q1	Y1Q2	Y1Q3	Y1Q4	Y2Q1	Y2Q2	Y2Q3	Y2Q4	Y3Q1	Y3Q2	Y3Q3	Y3Q4
	by specialized teams.	University Team associated with coffee land cover												
		d. Organize field trips for data verification together with University Team associated with Musacea land cover			x	x	x	x	x	x	x			
		e. Organize field trips for data verification together with University Team associated with pastures land cover			x	x	x	x	x	x	x			
	A.III. Review of data by an expert team	f. Review data associated with coffee land cover by an expert team			x	x	x	x	x	x	x			
		g. Review data associated with Musacea land cover by an expert team			x	x	x	x	x	x	x			
		f. Review data associated with pasture land cover by an expert team			x	x	x	x	x	x	x			
	A.IV. Meta-analysis review with National centre for environmental Geo-information (CENIGA) and	g. Publish Geospatial data layer (shape file) 1, 3, 5 in the SNIT (see Table 4)				x								

Output	Activities	Subactivities	Y1Q1	Y1Q2	Y1Q3	Y1Q4	Y2Q1	Y2Q2	Y2Q3	Y2Q4	Y3Q1	Y3Q2	Y3Q3	Y3Q4
	SNIT publication of layers													
		h. Publish Geospatial data layer (shape file) 2, 4, 6 in the SNIT (see Table 4)								x				
		i. Publish Geospatial data layer (shape file) 7, 8, 9, 10, 11 ,12 in the SNIT (see Table 4)											x	
B. Monitoring, Reporting and Verification (MRV) systems for the three agricultural NAMAS of coffee, livestock and Musaceae are operational.	B.I. Analysis of relevant documentation to comply with national and international requirements	a. Analyse current state of NAMA, MRV systems, UNFCCC and Standard Guidance and governmental vision (including for carbon neutral commodities at a territorial level) in order to ensure alignment with territorial interventions and national Carbon accounting.	x											
		b. Identification of information gaps, institutional barriers that need to be addressed before selecting the most relevant, feasible and strategic MRV actions		x										

Output	Activities	Subactivities	Y1Q1	Y1Q2	Y1Q3	Y1Q4	Y2Q1	Y2Q2	Y2Q3	Y2Q4	Y3Q1	Y3Q2	Y3Q3	Y3Q4
	B.II. Designing and applying MRV systems using a participatory approach, for baseline and end of the project studies of emissions	c. Organize consultation workshops with key stakeholders for MRV design		x										
		d. Design draft MRV systems for the three target NAMAs for validation with the three subsectors, including the scope of the baseline studies.			x									
		e. Selection of sites and farmers that will participate in the pilot test and baseline study			x									
		f. Apply the designed MRV system through the completion of pilot tests and three baseline studies of emission estimation (one per sub-sector) using the designed MRV metrics				x	x							

Output	Activities	Subactivities	Y1Q1	Y1Q2	Y1Q3	Y1Q4	Y2Q1	Y2Q2	Y2Q3	Y2Q4	Y3Q1	Y3Q2	Y3Q3	Y3Q4
		g. Complete the three end of project studies of emissions estimation (one per sub-sector) using the designed MRV metrics								x	x			
	B.III. Analyse and systematice results for MRV systems	h. Analyze the results of the baseline studies					x	x						
		i. Analyze the results of the end of project studies.										x		
		j. Inclusion of MRV data generation process in the SINAMECC metric system.											x	x
C. Long term sustainability for MRV and Land Use Change Monitoring Systems	C. I. Facilitation of National Agreements for MRV system	a. Facilitate meetings for negotiating MRV agreements with the three subsectors					x	x	x					
		b .Produce communication material to disseminate MRV system							x					
		c. Disseminate MRV system tools to producers										x		
	C.II. Develop a financing strategy for future data	d. Advice and support for modification of biodiversity law			X	X	X	X						

Output	Activities	Subactivities	Y1Q1	Y1Q2	Y1Q3	Y1Q4	Y2Q1	Y2Q2	Y2Q3	Y2Q4	Y3Q1	Y3Q2	Y3Q3	Y3Q4
	layer development	to finance data layers with wood tax.												
		e. Produce new data layers beyond 2023 of "land cover", "gain and loss of forest cover" and "gain and loss of forest cover on a buffer strip for the three target commodities											x	x
		f. Include data components into SINAMECC. Target 2025 (3: ICAFE 1, CORFOGA 1, Corbana 1)											x	x
		g. Organize training workshops for technical staff from chambers of producers of the three subsectors in the use of MOCUPP and MRV. Target 2025 (60: 20 ICAFE, 20 CORFOGA, 20 Corbana)											x	x
	C.III. Explore other possible uses and synergies (including marketing).	h. Participate in meetings and workshops with key stakeholders, lead by GIZ for exploring further usage and synergies, inter					x							

Output	Activities	Subactivities	Y1Q1	Y1Q2	Y1Q3	Y1Q4	Y2Q1	Y2Q2	Y2Q3	Y2Q4	Y3Q1	Y3Q2	Y3Q3	Y3Q4
		alia for marketing strategies.												
		i. Present SCALA Project results to key stakeholders and articulate strategy with GIZ					x							
		j. Facilitate alliances between key stakeholders of SCALA Project and other relevant actors					x							
		k. Systematize relevant lessons and recommendations into a report.							x					

5. Regional Scope and Target Group

5.1. Regional Scope

The project has a national scope, since the monitoring of the MOCUPP and MRV is implemented throughout the country, and the data generated will help strengthen governance and knowledge management for the advancement and implementation of the three agricultural NAMAs (coffee, livestock, banana) and also allows the development and placement of differentiated low-carbon products in the markets and free of loss of tree cover. Considering the estimates of approximately 90,000 ha of coffee, more than 50,000 ha of Musaceae, mainly in the Caribbean and the South Pacific region, and around 1,044,901 ha of pasture for cattle (meat/milk), the project will be impacting more than 1,184,901 ha of production combining the three NAMAs in Costa Rica.

All technical information will be made available freely so that other countries can consult and replicate it, which will allow them to strengthen capacities to monitor land use change, as well as low-carbon actions and the conservation of natural resources. tree cover, under sustainable production practices.

5.2. Target Group

This project will have as a target group the chambers of producers ICAFE, CORFOGA, CNPL, CORBANA, which lead the NAMA implementation processes, as well as the public sector will be part of the group, starting with MINAE and MAG and its government institutions such as SINAC and INTA that monitor the work of the NDC and NAMA, as well as the SDGs.

The project will also benefit all the producers and processors that are linked to the production of Musaceae, coffee and pastures for livestock, considering the different sizes of farms that exist by crop. In the case of coffee plantations, the majority are medium or small producers, it is estimated that 92% of the producers have an area planted with coffee of less than 5 hectares, 6% have surfaces between 5 and 20 hectares and the 2% have plantations of more than 20 hectares. As for the beneficiary coffee processing plants, they consist mainly of small family or community-scale facilities with an average processing capacity of a few hundred bags of coffee of around 46 kg. The geographical area of coffee cultivation is distributed in all the provinces of the country, however, the province of San José has the largest area planted (36.7%) in the country, the province of Alajuela has 29, 8%; Carthage with 13%; Puntarenas has 12%; Heredia with 5.5%; Guanacaste with 1.9% and Limón reported (0.3%).

Livestock activity dedicated to both meat and milk is distributed like coffee plantations in all provinces of the country, with the northern region of the country having the highest percentage of pasture area with 26% and the area with the smallest area is the Central Pacific with 8%. It is considered that beef production corresponds to 2.7% to beef cattle, 15.4% to dairy cattle, 21.7% to dual purpose and 0.2% is used exclusively for work such as preparation of the land and regarding the cattle farms, the majority of the farms (57%) have a size between 5 - 50 ha.

The plantation of Musaceae estimates 56,872 hectares and is distributed in 164 farms owned by 70 individual producers and four transnational companies (DOLE, Chiquita, Fyffes and Del Monte), also 75% of the areas are planted with Musaceae, 75% corresponds to Banana. Export Cavendish. Production is concentrated mainly in the Province of Limón, specifically in the cantons of Matina, Siquirres and Pococí, covering 63.51% of the total cultivated area nationwide and with approximately 155 farms (Vallejo and Blanco, 2020). In addition, according to the MAG, in Costa Rica there are around 8,000 producers of plantains, dates and Creole bananas.

All buyers and consumers will also benefit, since they will have accurate and up-to-date information on their agricultural practices in relation to low-carbon actions and the conservation of their tree cover carried out by these crops, and all verification will be freely accessible at no cost. additional economic.

Finally, it should be noted that the UNDP, as well as the possible academic partners that will be implementing the MOCUPP, such as the University of Costa Rica (UCR) and the National University of Costa Rica (UNA), will lead the implementation, generation of technical inputs and follow up on the project, promoting the fulfillment of the proposed goals and thus benefiting the productive sector, buyer and consumer.

6. Roles of personnel and subgrants, resource allocation

The activities associated with the personnel, workshops, equipment and subgrants included in the budget, are detailed in the following table. The supervision on the subgrants (two universities of Costa Rica) will be executed by UNDP personnel. The administrative assistant will be providing support for all the project and for the subgrants.

Roles:

MRV expert: will coordinate all activities for this project, coordinate with the consortium partners, meet with key stakeholders, supervise subgrants with universities, reach for additional support from other UNDP projects (for example SCALA, Mocupp legal specialist, NCE Program Analyst).

Technical advisor: will support the MRV expert in all its roles, carry field trips to verify data on farms, supervise subgrants with universities and implement actions to ensure long term sustainability.

Livestock fieldworker: will provide support on site, for MRV systems relating to cattle diet, handling, and practices during baseline study and implementation period.

Lab Assistant: will analyze soil samples and methane yield samples, during baseline studies and end of project studies.

The two subgrants will have the role of processing imagery and producing meta-data

Function & Estimated Person-Months	Estimated # Workshops*	Estimated Equipment & material	Estimated. # Trips*	Start Date*	End Date*
A.I Download and process remote Sensor image download and processing					
Developed by the Universities that will received the subgrant (30 months)	NA	Satallite imagery and high performance computer	NA	Y1Q1	Y3Q3
A.II. Verify in the field geospatial data by specialized teams.					
Technical advisor (2 months) and MRV expert (2 months) and experts from the universities.	1	Satallite imagery and high performance computer	50	Y1Q1	Y3Q3
A.III. Review of data by an expert team					
Technical advisor (1 months) and MRV expert (2 months) and experts from the universities	1	Satallite imagery and high performance computer	NA	Y1Q1	Y3Q3
A.IV. Meta-analysis review with National centre for environmental Geo-information (CENIGA) and SNIT publication of layers					
Technical advisor (1 months) and MRV expert (2 months) and the experts from the universities	1	Satallite imagery and high performance computer	NA	Y3Q1	Y3Q3
B.I. Analysis of relevant documentation to comply with national and international requirements					
Technical advisor (2 months) and MRV expert (3 months)	1	NA	NA	Y1Q1	Y1Q3
B.II. Designing and applying MRV systems using a participatory approach, for baseline and end of the project studies of emissions					
Technical advisor (4 months) and MRV expert (6 months), Livestock Fieldworker (13 months) and Lab Assistant (6 months)	3	Office materials, Gas measure module, Lyophiliasation Machine, SF6 equipment, Laboratory Equipment for Methane yield analysis kit, Cameras for nitrogen oxide, Animal Feed, Nitrogen Gas, Hidrogen Gas, Argon Gas, Dumas Carbon in Soil Analysis Machine, Chromatography services, Services for Designing Digital Tools (apps, platform)	300	Y1Q2	Y3Q2
B.III. Analyse and systematice results for MRV systems					
Technical advisor (1 months) and MRV expert (4 months), and Lab Assistant (6 months)	3	NA	NA	Y1Q2	Y3Q2
C. I. Facilitation of National Agreements for MRV system					

Technical advisor (1 months) and MRV expert (4 months), Communication consultant (10), and other human resource financed by UNDP	4	Communication products	15	Y2Q1	Y3Q3
C.II. Develop a financing strategy for future data layer development					
Technical advisor (2 months) and MRV expert (3 months), and other human resource financed by UNDP	NA	NA	NA	Y1Q2	Y3Q3
C.III. Explore other possible uses and synergies (including marketing).					
Technical advisor (1 month) and MRV expert (2 month), Communication consultant (2 months), and other human resource financed by UNDP	2	Support by UNDP with SCALA project	NA	Y2Q1	Y3Q1

7. Complementarities and Synergies

The project will be led by a UNDP team who will be in charge of implementing, generating technical inputs and following up on the project, promoting that the proposed goals are met and thus benefiting the productive sector, both public and private, as well as government institutions, the academy, among others.

There will also be other institutions that will be an important part in the execution of the project, such as the country's public universities, which have trained human resources, technological resources, and institutional experience, to support projects on earth observation issues. The universities that will be collaborating in the mapping of MOCUPP are the UCR from the School of Geography (EG) and UNA from the Institute of Research and Forest Services (INISEFOR).

The School of Geography (EG) of the UCR has a history of 25 years, in addition, the EG focuses on different areas of work, among which the area of Geographic Information Systems (GIS) and Remote Sensing stands out, currently it has a Research Program in Applied Geomatics and Cartography, where currently 8 different projects and/or activities are carried out from this program. In addition to these, the EG has a teaching staff with knowledge of GIS, spatial analysis, satellite image analysis, GIS applications, spatial databases, remote sensing, cartography photointerpretation, environmental impact, field spectroradiometry, among others. LA EG has three Geographic Information Systems (GIS) and Remote Sensing Laboratories, which have 75 Windows computers with Internet access, specialized software for geographic data processing and analysis (proprietary, free), 4 workstations, 1 central server, GNSS receivers, a collection of aerial photographs and maps in analog and digital format of Costa Rica, several Remotely Piloted Aircraft Systems (RPAS) and a field radio spectrometer (Spectral resolution 325-1075 nm).

The Forest Research and Services Institute of the National University carries out research, extension, teaching and production activities, in order to generate knowledge and new and applied technologies, which contribute to the socio-economic and environmental development of the country, through integrated management of forest ecosystems, with the participation of actors from the national and international forestry sector. In addition, this institute has an Ecosystem Remote Sensing Laboratory (LabTEC), which is a center for the exploitation, use and analysis of advanced remote sensing technologies for forest and land use monitoring, which provides the basis for knowledge to a wide range of scientific and technological disciplines.

Also, Directorate of Real Property Registration (Dirección de Registro Inmobiliario-DRI) which belongs to the National Registry is involved in the project. DIR maintains the land tenure information that can be related to the maps MOCUPP generates when these are published through the National Land Information System. It should be noted that not all private property may be identifiable through SNIT. This is because of a costly registration process to be gradually implemented throughout the country with contributions from the national budget and international support, such as the Cadaster and Registry Regularization Program. Coordination with the DRI is strategic for MOCUPP's correct functioning. The role of DRI is to continue its regular registration work while at the same time coordinating with MOCUPP so that strategic districts producing the commodities to be monitored are registered.

The National Geographic Institute (Instituto Geográfico Nacional-IGN), specifically the unit that manages the National Geo-Environmental Information System (SNIT), also has synergies in the project. SNIT has information node with an online viewer enabling MOCUPP maps layers interaction with tenure records. This is crucial for the differentiation of deforestation-free production units and production sustainably. The role of IGN-SNIT will be to provide viewer services on the web for maps generated by MOCUPP so these may be related to land tenure.

MINAE's National Geo-Environmental Information Center (CENIGA) will has synergies with project. The role of liaison, quality control and adherence to criteria for generating geospatial maps. This entity has institutional responsibility for the National Environmental Information System, and will serve as MOCUPP's institutional referent.

Given the central roles of the public sector and government agencies for fostering the adoption of NDC- and NAMA-relevant actions, it is imperative that decision makers and technical staff at policy and sector level (MINAE, MAG, National Institute of Innovation and Transfer in Agricultural Technology (INTA), SINAC) are involved in the project. The UNDP will be strategic support for improving their capacities to steer, implement, monitoring and validation production sustainably, differentiation of deforestation-free production units and low-carbon.

8. Risks

A series of risks have been identified that may affect the development of the project, therefore, UNDP must monitor the risks and the development of possible mitigation actions will be coordinated and communicated to all project partners and collaborating stakeholders. The most significant risks and anticipated mitigation strategies are listed in the table below.

Table 6. Project risks and mitigation measures

Risk	Mitigation Measure

The consequences of the COVID-19 pandemic can reduce public budgets, affecting the services provided by government institutions. This may affect the functions that the government fulfills in terms of decarbonization and sustainable production.	This is a low-level risk, since the publication of MOCUPP is not dependent yet on public budgets. Nevertheless, UNDP will ensure throughout the project implementation to make the business case to government that MOCUPP actually reduces costs to institutions as the verification of forestry law compliance is made cheaper through satellite monitoring when compared to other methods of compliance. Convictions for forestry law no-compliance can generate funds to institutions too.
Change in government priorities or readjustment of government institutions may currently affect sectoral policies for decarbonization and sustainable production in Costa Rica.	This could have a low risk, since Costa Rica currently has international commitments. The Markets are shifting, and commodities must show they are deforestation-free so this is an element that governments will consider. UNDP will implement communication strategy to ensure government counterparts are aware of these market requirements, so support is continued for MRV
Opposition of producers to have a monitoring and verification of sustainable production, low carbon actions and free of loss of tree cover	The risk is medium, for this the UNDP will carry out a dialogue on the benefits of the monitoring and verification system carried out by the MOCUPP tool and other MRV tools, and will train the producers and the production chambers sector so that they can know, visualize and manipulate the data and understand its importance.
End consumers may be unwilling to pay higher prices for low-carbon and/or deforestation-free products, which discourages farmers as well as processors and other actors within value chains from carry out sustainable production	This is a medium-level risk. A communication campaign and informative texts will be generated through social networks or other means that allow consumers to become aware of the benefits of making sustainable, low-carbon, climate-resistant and biodiversity-conserving products.
Opposition from GIS and information technology (IT) departments of institutions or organizations to publishing GIS maps through SNIT	The level of risk is low, since all MOCUPP data is currently being published in the SNIT. In addition, UNDP through the implementation of the project will actively involve the GIS and IT departments of the relevant institutions or organizations to ensure that all parties understand the advantages of linking land tenure records with GIS environmental information generated by these entities. The emphasis will be to explain that MOCUPP and SINIA do not replace the GIS work of different institutions that by law have their mandate to generate specific geospatial information.

Gaps in access to technology and technical equipment to train producers, organizations and institutions involved in the project to learn how to download and manage MOCUPP data, and MRV tools and how to use the information to generate reports and demonstrate sustainable production.	The level of risk is medium, however, UNDP together with social organizations will ensure that training spaces are inclusive and with capacities so that all people can have access to the internet, software and technological equipment, it will be promoted that trainings are carried out from the GIS laboratories available in the academy such as the UCR and UNA.

9. Budget

A detailed breakdown of budget lines can be found in Annex 2

10. References

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Annex 1: Methodology used for MOCUPP and MRV

Monitoring of Land Use Change in Productive Landscapes (MOCUPP) is a strategy of institutional coordination and generation of annual maps (layers) on the total coverage of specific agricultural products as pineapple, oil palm, grass for livestock, also Musaceae and coffee plantations soon and the mapping of loss or gain of tree cover for land uses changes generate these commodities. It entails the generation of geospatial data layers for total land cover of specific commodities, as well as the geospatial data layers of “gain” or “loss” of forest cover associated to specific land covers on an annual or biannual basis depending on the commodity sector being monitored. Geospatial data layers are generated by academic institutions that will publish the information, with no political interference, and disregarding how controversial this information may to ensure transparency. All data layers are published in the geospatial viewer of the National Territorial Information System of the Geographical Institute (SNIT: www.snitcr.go.cr).

MOCUPP tools is low-cost, innovative, and technological. This is due to the application of satellite images to monitor changes in land use and cover and to identify deforestation processes associated with agricultural dynamics in the country. In addition, MOCUPP has high-quality methodological standards that provide precision in monitoring and comparison of data an annual basis. Also, is open and transparent access tool as it publishes the data on open access platform of the National Territorial Information System.

MOCUPP is based on several premises. First, that inexpensive or free satellite images can be used to identify whether agricultural commodities land cover has increased or decreased, or to ascertain compliance or noncompliance with the tree cover. Second, annual processing of these images can be done by national professionals through neutral, specialized institutions such as with public universities processing the images. Third, a system of information about total agricultural commodities area and tree cover loss or gain of consequence dynamic of crops, MOCUPP, can become a land management tool if those maps are linked to land tenure layers which are published periodically and public. Fourth, MOCUPP generate two mapping principals: 1) Layers of land cover of specific commodities; 2) Layers of forest cover loss and gain adjacent areas or within the studied productive landscapes and in a larger area of influence 2 km in relation to commodities.

The method used for mapping MOCUPP is based on different processes, are a) access and download of satellite images, b) pre-processing of images, c) identification crop cover areas, d) field work for validation (‘ground-truthing’) points collecting of the crops, e) mapping areas each crop, through digitization of polygons, applying technique of remote sensing and Geographic Information Systems (GIS), f) validation of results g) publication layers in the SNIT.

Geospatial data layer development will cover the years 2021 and 2022 for the production landscapes with coffee or Musaceae and the years 2020 and 2021 for the land cover of pasture for cattle. The time period of two years is necessary to allow detecting the “loss, gain and no change of tree cover” associated with the selected crops. The specific years to be analyzed were selected for coffee and Musaceae (2021-2022) because the MOCUPP methodology requires the selection of satellite images for an entire year, in order to have the largest number of images possible. This requires mappings to cover a year prior to the current one. Therefore, assuming that the mapping exercise is to start in 2023, satellite images will be available for all months of the years 2021 and 2022 at a country level. Previous meetings with ICAFE and CORBANA have confirmed these requirements of data. In the case of pastures for cattle, it is proposed to analyze the information for the years 2020 and 2021, since the MOCUPP tool has previously mapped the years 2018 and 2019. The aim is to have annual and continuous iterations according to the technical guidelines established by MOCUPP.

According to the latest agricultural census of Costa Rica, the mapping will cover over 90,000 ha of coffee in the country, more than 50,000 ha of Musaceae, mainly in the Caribbean and the South Pacific region, as well as 1,044,901 ha of pasture for cattle (beef and/or milk). For this mapping, medium resolution and multispectral images will be used, to be downloaded from the Sentinel platform and LANDSAT 8 using various spatial resolutions of up to 10 meters per pixel. This allows mapping of a Minimum Mappable Unit of 0.5 ha.

Currently, the MOCUPP tool has annually monitored the pineapple crop for 2015 to 2019, for palm oil and pasture for livestock it has developed layers for 2018 and 2019.

For mapping of layers of forest cover loss and gain in relation to coffee, Musaceae and pasture for cattle (beef and/or milk), MOCUPP will evaluate the total land cover extension of coffee, Musaceae and pastures for cattle (beef and/or milk), to determine gains, losses or no changes in tree cover over Layers of forest cover loss and gain adjacent areas or within the studied productive landscapes and in a larger area of influence 2 km in relation to two consecutive periods (2021-2022 for coffee and Musaceae, and 2020-2021 for livestock).

Additionally, MOCUPP detects changes in tree cover associated with the mentioned commodities land use systems (gain, loss and no changes in tree cover) between consecutive years. In order to carry out this analysis it is necessary to generate a vectorial layer of tree cover, based on a buffer strip of two kilometers width from the edge of the polygon that reports the crop areas monitored by MOCUPP. Mapping tree cover in a 2 km-wide buffer strip around the agricultural areas allows detecting potential changes in tree cover in a larger area of influence, and not only in the adjacent areas or within the studied productive landscapes. The width of the strip is based on the study of NASA-DEVELOP (2020), which recommended a width of 2 km based on the fact that the probability of appearance of new crop areas is directly proportional to the proximity to

previously cultivated areas. Therefore, MOCUPP allows detecting changes of tree cover both within crop lands as well as in the vicinity of 2 km.

For validation this mapping (results), it necessary to conduct field work for validation ('ground-truthing') of the satellite data and maps corresponding to coffee, Musaceae and pastureland for cattle (beef and/or milk). A number of representative field verification visits (20.200 points of pastureland for cattle, 300 points f Musaceae and 500 points of coffee approximately) are required to verify the precision and reliability of the cartographic data and to capture complementary points for mapping land under coffee, Musaceae and pastures for livestock, as well as tree cover within and adjacent to these systems. The validation is based on the methodology established by Chuvieco (2010), which allows to identify randomly chosen sites and uses the following formula to define the sample size:

$n = z2pqL2$

Where:

n= sample size

z= Area under the normal curve

p= Estimated percentage of correct answers

q= Percentage of errors (q= 1-p)

L= Allowable level of error

This sampling will be carried out approximately during 30 days for each crop for each year, for a total of 6 months throughout the mapping project (36 months). These ground-truthing exercises require 2 to 3 people to participate.

Also, it is necessary to publish geospatial data layers and cloud storage. Therefore, it is envisioned that the project will produce up to fourteen technical reports for all the generated vector layers (Table 4) that describe and discuss methodologies, results, and interpretations according to MOCUPP guidelines.

In order to comply with standards established by the National Territorial Information System (SNIT) of the National Geographic Institute (IGN) of Costa Rica, the data and layers have to be published in compliance with ISO/TC 211: Geographic information/Geomatics and ISO 19100 Geographical Regulations.

In addition, Web map servers will be required. These include software packages that allow the visualization and consultation of geographic attributes remotely, and the production of spatial data maps dynamically from geographic data, which can be found on servers of different institutions. A map server basically uses the capabilities of the software (package developed as a map server) and the hardware (physical server) together to achieve the publication of geographic information on a network (Internet and/or Intranet) and in this way, enable users to interact with it. Relevant details can be consulted in the documentation of the National Geographic Institute NTIG_CR05_01.2016: Standards for the Web Publication of Geographic Information of Costa Rica.

Table 4. List of layers and technical reports

N°	Title
1	Mapping of coffee extension 2021
2	Mapping of coffee extension 2022
3	Mapping of the extension of Musaceae 2021
4	Mapping of the extension of Musaceae 2022
5	Mapping of the extension of pastureland for cattle 2020
6	Mapping of the extension of pastureland for cattle 2021
7	Mapping of gain, loss, or no change in tree cover associated with coffee 2021-2022
8	Mapping of gain, loss, or no change in tree cover associated with Musaceae 2021-2022
9	Mapping of gain, loss, or no changes in tree cover associated with pastures for livestock 2021-2022
10	Mapping of tree cover in a buffer strip of 2 km associated with pasture for livestock, 2020
11	Mapping of tree cover in a buffer strip of 2 km associated with pasture crops for livestock, coffee and Musaceae 2021
12	Mapping of tree cover in a buffer strip of 2 km associated with coffee and Musaceae 2022

The project will require data training, this includes training for the organizations and institutions involved in the project to learn how to download and manage MOCUPP data, and how to use the information to generate reports.

MOCUPP provides a complex technology and facilitated monitoring and land management strategies that are practical, low-cost and replicable. MOCUPP data monitoring complies with the Sustainable Development Goals and commitments under the Conventions on Climate Change, on Biodiversity and for Combat of Desertification and Land Degradation.

For MRV baseline and end of project studies of emission estimation, a total of 150 soil samples will be analyzed for carbon content using Duma's procedure. Food diet will be compared in laboratory and farm cattle animals to determine the emissions from urine, excretes and digestive gases. This will allow us to determine the best diet combination for reduction of emissions from cattle, taking into consideration factors such as: altitude, race, purpose (diary, meet, double purpose) and applying into a sample of farms implementing NAMA.

A participatory process with Chambers of Producers (ICAFE, CORFOGA, CNPL, CORBANA) will take place for each of the three subsectors, to gather their perspective, needs, opportunities and obstacles related to MRV. The results of these processes will enable us to design and implement a digital tool for farmers, to register data relevant for the SINAMECC report, for the three sub-sectors. Such digital tools may include mobile apps, digital forms or other digital technologies, which will be developed, tested and escalated. A series of training workshops on the use of all tools (MOCUPP, MRV tools, mobile apps) will be developed, targeting chambers of producers of the three subsectors.

To ensure the long term sustainability of MOCUPP, UNDP will continue to work with the Ministry of Environment and Energy, and members of parliament to discuss a bill that proposes to modify the Biodiversity Law, so that a percentage of tax collected from wood trading could finance land use change monitoring. In addition, institutional funding will be mobilized to generate 2024-2025 geospatial data layers for livestock, Musaceae and coffee through student internship arrangements within State Universities, and promote new funding from vertical funds (GEF or GCF). To that aim, UNDP will coordinate its actions within of the governance framework of TRANSFORMA-INNOVA.

Annex 2: Estimated Budget

Date: 12.10.2022

Name of the Recipient: UNDP

Description	Quantity (up to)	Unit (e.g. person, vehicle, room, unit, …)	Quantity	Unit (e.g. months, days, trainings, unit, …)	Eligible up to in EUR	Total GIZ Contribution in EUR (up to)	Own Funds / Third party financing in EUR (up to)	TOTAL in EUR (up to)
1. Staff / Personnel (Job Title)						**268.000,00 €**		**268.000,00 €**
MRV Senior Expert	100%	person	30	months	5.000,00 €	150.000,00 €		150.000,00 €
Tools long term sustainability Technical Advisor	100%	person	15	months	4.000,00 €	60.000,00 €		60.000,00 €
Administration assitant	100%	person	29	months	2.000,00 €	58.000,00 €		58.000,00 €
2. External Experts / Consultant (Job Title)						**49.000,00 €**		**49.000,00 €**
Livestock Field Worker for Methane Yield	1	person	13	months	1.000,00 €	13.000,00 €		13.000,00 €
Lab assitant for Methane Yield	1	person	12	months	1.500,00 €	18.000,00 €		18.000,00 €
Comunications Campaign Consultant	1	person	12	months	1.500,00 €	18.000,00 €		18.000,00 €
3. Transportation / Travel Costs						**46.300,00 €**		**46.300,00 €**
Domestic travel costs (Daily Subsistence Allowance, per-diem/overnight accommodation allowance, means of transport: vehicle rental, fuel rented vehicle)	1	unit	65	travels	320,00 €	20.800,00 €		20.800,00 €
Fuel for field missions: Carbon in Soil Sample Taking and SF6 Methane yield analysis	1	unit	300	tanks	85,00 €	25.500,00 €		25.500,00 €
4. Training costs / Workshop						**26.600,00 €**		**26.600,00 €**
Trainings MRV Meals	14	Training	25	person	40,00 €	14.000,00 €		14.000,00 €
Trainings MRV Location	14	WS Room	1	unit	300,00 €	4.200,00 €		4.200,00 €
Trainings MRV Transportation	14	Service	1	transfer	300,00 €	4.200,00 €		4.200,00 €
Trainings MRV Office Materials	14	Materials	25	unit	12,00 €	4.200,00 €		4.200,00 €
5. Procurement of Goods / Service						**243.227,98 €**		**243.227,98 €**
Gas measure module	1	equipment	1	units	14.000,00 €	14.000,00 €		14.000,00 €
Lyophiliasation Machine	1	equipment	1	units	40.000,00 €	40.000,00 €		40.000,00 €
SF6 equipment	12	equipment	1	units	700,00 €	8.400,00 €		8.400,00 €
Laboratory Equipment for Methane yield analysis kit	12	equipment	1	units	1.000,00 €	12.000,00 €		12.000,00 €
Cameras for nitrogen oxide	18	unit	1	units	50,00 €	900,00 €		900,00 €
Animal Feed	7	packages	1	units	1.000,00 €	7.000,00 €		7.000,00 €
Nitrogen Gas	3	tank	1	units	500,00 €	1.500,00 €		1.500,00 €
Hidrogen Gas	3	tank	1	units	500,00 €	1.500,00 €		1.500,00 €
Argon Gas	2	tank	1	units	1.200,00 €	2.400,00 €		2.400,00 €
Dumas Carbon in Soil Analysis Machine	1	equipment	1	units	80.000,00 €	80.000,00 €		80.000,00 €
Audits and spot checks FUNDEVI and FUNDAUNA	2	unit	1	unit	7.013,990 €	14.027,98 €		14.027,98 €
Services for Chromatography Analysis	1	unit	1	unit	28.500,00 €	28.500,00 €		28.500,00 €
Services for Audiovisual products	1	unit	1	unit	5.000,00 €	5.000,00 €		5.000,00 €
Services for Designing Digital Tools (apps, platform)	1	unit	1	unit	28.000,00 €	28.000,00 €		28.000,00 €
6. Other costs / Consumables						**0,00 €**		**0,00 €**
					0,00 €	0,00 €		0,00 €
7. Sub-grants to final recipients						**230.000,00 €**		**230.000,00 €**
FUNDEVI	1	unit	1	unit	150.000,00 €	150.000,00 €		150.000,00 €
FUNDAUNA	1	unit	1	unit	80.000,00 €	80.000,00 €		80.000,00 €
Subtotal - Direct costs						**863.127,98 €**		**863.127,98 €**
8. Administration costs						**78.372,02 €**		**78.372,02 €**
General Management Costs (8%)	8%	unit			863.127,98 €	69.050,24 €		69.050,24 €
Coordination Levy (1%)	1%	unit			932.178,22 €	9.321,78 €		9.321,78 €
Total UNDP						**941.500,00 €**		**941.500,00 €**
Own Funds / Third party financing						0,00 €		0,00 €
Own Funds / Third party financing						0,00 €		0,00 €
Grand Total (up to)						**941.500,00 €**		**941.500,00 €**

Annex 2: Estimated Budget

Name of the Sub-recipient: FUNDEVI

Description	Quantity (up to)	Unit (e.g. person, vehicle, room, unit, …)	Quantity	Unit (e.g. months, days, trainings, unit, …)	Eligible up to in EUR	Total GIZ Contribution in EUR (up to)	Own Funds / Third party financing in EUR (up to)	TOTAL in EUR (up to)
1. Staff / Personnel (Job Title)						**49.938,00 €**		**49.938,00 €**
First Professional GIS and Remote Sensing	30%	person	20	months	2.114,00 €	12.684,00 €		12.684,00 €
Second Professional GIS and Remote Sensing	30%	person	20	months	2.114,00 €	12.684,00 €		12.684,00 €
Professional in Geography	25%	person	20	months	2.114,00 €	10.570,00 €		10.570,00 €
Accounting (FDI)	25%	person	20	months	1.400,00 €	7.000,00 €		7.000,00 €
Financial-Administrative (FDI)	25%	person	20	months	1.400,00 €	7.000,00 €		7.000,00 €
2. External Experts / Consultant (Job Title)						**87.800,00 €**		**87.800,00 €**
Computer and informatics engineer (100%)	1	person	20	months	1.200,00 €	24.000,00 €		24.000,00 €
Professional in Business Administration (50%)	1	person	20	months	850,00 €	17.000,00 €		17.000,00 €
Professional in Geography (100%)	1	person	20	months	1.060,00 €	21.200,00 €		21.200,00 €
GIS technician (100%)	1	person	20	months	640,00 €	12.800,00 €		12.800,00 €
Second GIS technician (100%)	1	person	20	months	640,00 €	12.800,00 €		12.800,00 €
3. Transportation / Travel Costs						**5.012,00 €**		**5.012,00 €**
Domestic travel costs (Daily Subsistence Allowance, per-diem/overnight accommodation allowance, means of transport: fuel vehicle)	4	person	8	travels	156,6250 €	5.012,00 €		5.012,00 €
4. Training costs / Workshop						**5.000,00 €**		**5.000,00 €**
Trainings MRV Meals	10	Training	25	person	20,00 €	5.000,00 €		5.000,00 €
5. Procurement of Goods						**2.250,00 €**		**2.250,00 €**
Computer equipment	1	Equipment	1	unit	2.250,00 €	2.250,00 €		2.250,00 €
6. Other costs / Consumables						**0,00 €**		**0,00 €**
						0,00 €		0,00 €
7. Sub-grants to final recipients						**0,00 €**		**0,00 €**
	1	unit	1	unit		0,00 €		0,00 €
Subtotal - Direct costs						**150.000,00 €**		**150.000,00 €**
7. Supporting cost / Administration costs						**0,00 €**		**0,00 €**
Administration costs FUNDEVI	0%	unit			150.000,00 €	**0,00 €**		0,00 €
Total FUNDEVI						**150.000,00 €**		**150.000,00 €**
Own Funds / Third party financing								
Own Funds / Third party financing						**0,00 €**		
Grand Total (up to)						**150.000,00 €**		**150.000,00 €**

Annex 2: Estimated Budget

Name of the Sub-recipient: FUNDAUNA

Description	Quantity (up to)	Unit (e.g. person, vehicle, room, unit, …)	Quantity	Unit (e.g. months, days, trainings, unit, …)	Eligible up to in EUR	Total GIZ Contribution in EUR (up to)	Own Funds / Third party financing in EUR (up to)	TOTAL in EUR (up to)
1. Staff / Personnel (Job Title)						**69.660,00 €**		**69.660,00 €**
First Professional GIS and Remote Sensing	80%	person	36	months	1.500,00 €	43.200,00 €		43.200,00 €
Second Professional GIS and Remote Sensing	33%	person	36	months	1.500,00 €	17.820,00 €		17.820,00 €
Financial Administrative Assistant	20%	person	36	months	1.200,00 €	8.640,00 €		8.640,00 €
2. External Experts / Consultant (Job Title)						**0,00 €**		**0,00 €**
					0,00 €	0,00 €		0,00 €
3. Transportation / Travel Costs						**9.440,00 €**		**9.440,00 €**
Domestic travel costs (Daily Subsistence Allowance, per-diem/overnight accommodation allowance, means of transport: vehicle rental, fuel rented vehicle)	1	person	36	travels	262,2221 €	9.440,00 €		9.440,00 €
4. Training costs / Workshop						**900,00 €**		**900,00 €**
Trainings MRV Meals	1	Training	30	person	30,00 €	900,00 €		900,00 €
5. Procurement of Goods						**0,00 €**		**0,00 €**
					0,00 €	0,00 €		0,00 €
6. Other costs / Consumables						**0,00 €**		**0,00 €**
					0,00 €	0,00 €		0,00 €
7. (Sub-grants to final recipients)						**0,00 €**		**0,00 €**
	1	unit	1	unit	0,00 €	0,00 €		0,00 €
	1	unit	1	unit	0,00 €	0,00 €		0,00 €
Subtotal - Direct Costs						**80.000,00 €**		**80.000,00 €**
8. Administration costs						**0,00 €**		**0,00 €**
Administration Costs FUNDAUNA	0%	unit			80.000,00 €	**0,00 €**		0,00 €
Total FUNDAUNA						**80.000,00 €**		**80.000,00 €**
Own Funds / Third party financing								0,00 €
Own Funds / Third party financing						**0,00 €**		0,00 €
Grand Total (up to)						**80.000,00 €**		**80.000,00 €**

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Signing Complete	Security Checked	12/3/2022 9:50:33 AM
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