



The Acorn Framework

***for Voluntary, Ex-Post, Agroforestry
Carbon Removal Units***

Version 1.0 - September 2021



Growing
a better world
together.

Rabobank

Acorn

*Agroforestry **CRUs** for the **Organic** Restoration of **Nature***

Carbon
Removal
Units



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1. Introduction

Acorn – Agroforestry CRUs for the Organic Restoration of Nature – is an agroforestry program that unlocks the international voluntary carbon market for smallholder farmers. Acorn’s mission is to combat climate change, land degradation and food insecurity with an inclusive agroforestry solution. This solution balances competing land use demands in a way that benefits both human well-being and the environment. This means land use that has a positive impact on food supply and livelihoods, the economy, environmental restoration, climate targets and development goals.

1.1. The Acorn program

To do this, Acorn has built a global, transparent and technology-enabled marketplace for carbon sequestration. This marketplace provides entry to the international carbon market for smallholder farmers who are realizing agroforestry projects for carbon sequestration through biomass growth, predominantly through trees, which is measured with the help of satellite monitoring. Acorn supports the initiation and development of these agroforestry projects and facilitates the subsequent trade of the so-called carbon removal units (CRUs) that are generated from the sequestered carbon. As such, the program:

- is accessible for smallholder farmers on a large scale
- ensures suitable agroforestry systems which capture sufficient carbon and provide decent income to smallholder farmers
- embraces innovative technologies
- encourages the sale of ex-post carbon removal units

In the coming years, Acorn will support hundreds of projects, helping individual smallholder farmers make the switch to agroforestry by compensating them for their contribution to our world’s ecosystem. By 2025, Acorn aims to support millions of such farmers. To do this, Acorn is partnering with dozens of local organizations around the globe: NGOs, farmers’ co-ops, trading companies, big processors (e.g. coffee, cocoa), governments, funds and more.

1.2. The agroforestry concept

Agroforestry is the intentional combination of agriculture with forestry, such as planting trees and bushes on pastureland. This traditional farming principle offers farmers significant ecological and economic benefits, including improved soil fertility, crop protection from wind damage and increased yields.

In developing economies, agricultural value chains often suffer from inefficiencies and low yields, and are disproportionately sensitive to climate change. These conditions affect some five hundred million smallholder farmers around the world. As a significant part the world’s food is produced by smallholder farmers, the role they play is a vital one^{1,2}. Agroforestry can help these farmers overcome some of the challenges they face in their work to support our world’s food security.

¹ [Story, et al., 2016](#)

² [Lowder, et al., 2021](#)

Three agroforestry systems can be distinguished³:

- Agrisilvicultural systems entail a mix of crops and trees, such as shade systems (like coffee with citrus trees) or border planting.
- Silvopastoral systems combine trees and animals, such as cattle grazing in coconut groves.
- Agrosilvopastoral systems integrate all three: trees, crops and animals, such as home gardens involving animals or woody hedges grown for fodder.

1.3. Carbon sequestration with Acorn

A core principle of the Acorn program is the trade of CRUs based on actual sequestration, in other words on already realized, ex-post carbon sequestration rather than credits based on sequestration that is expected to occur in the future (i.e. ex-ante credits).

At Acorn, carbon sequestration is calculated by measuring aboveground biomass (AGB). This value is multiplied by a factor to include belowground biomass (BGB). Together, AGB and BGB represent approximately two-thirds of the sequestered biomass, and soil roughly represents one-third of the carbon sequestration potential^{4,5}. The latter is not included in Acorn's calculations for conservativeness (see Figure 1).

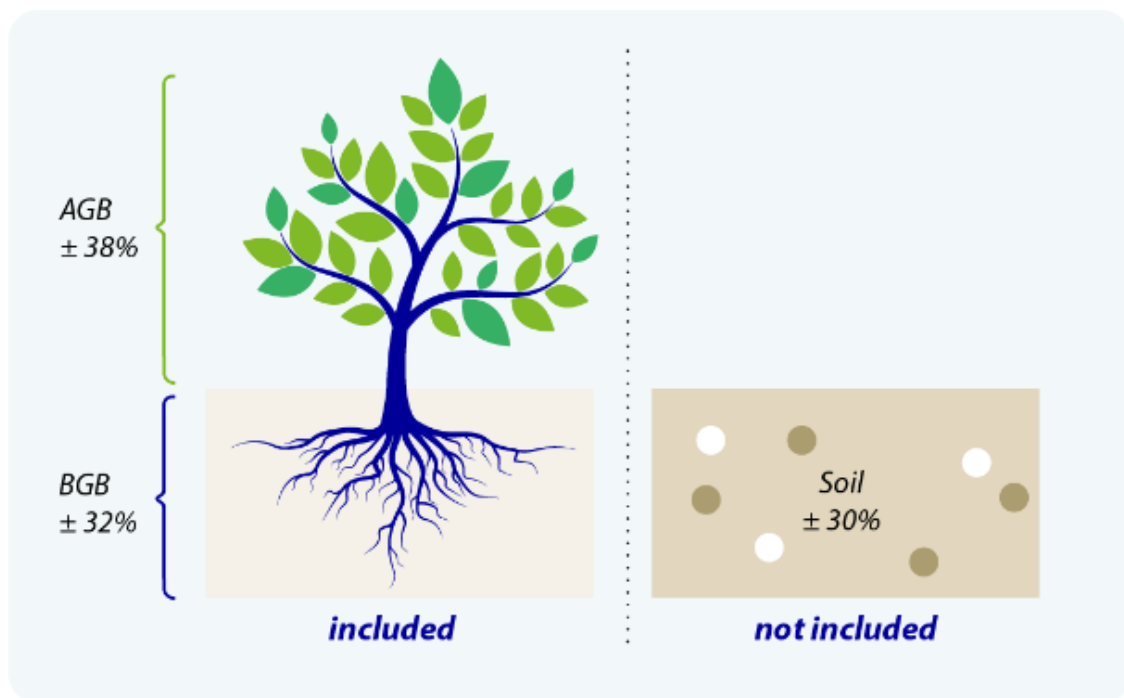


Figure 1. Schematic overview of carbon sequestration values for agroforestry

Acorn's carbon sequestration framework is specifically tailored to the needs and economics of the smallholder farmer, working from the bottom-up to support their role in our global food supply. The Framework supports farmers in improving soil and crop health, building resilience to climate change and weather events, increasing yields, and diversifying their income. The Framework also

³ [FAO, 2015](#)

⁴ [Kim, Kirschbaum, & Beedy, 2016](#)

⁵ [Ravindranath & Ostwald, 2008](#)

works to keep the costs of carbon sequestration and carbon market participation low. For the farmer, the increased annual income from both agricultural production and carbon sequestration needs to exceed the costs associated with the transition to agroforestry and the generation and trading of CRUs. Through scale, Acorn aims to limit the costs of CRU monitoring and certification. Accurate satellite monitoring technologies, including satellite imagery, and a transparent measurement methodology are crucial to the economic viability of the Acorn program. The sales of CRUs provide smallholders with a more sustainable and diverse source of income throughout the year and an income that is not necessarily limited to crop seasonality only. This additional source of income is necessary for smallholder farmers to rapidly adopt more sustainable farming techniques, enabling them to become more climate resilient and contribute to a healthier ecosystem.

1.4. The purpose and scope of this document

Acorn aims to give smallholder farmers cost-efficient access to international carbon markets and enable them to transition to agroforestry at scale. To do this, Acorn has laid out a robust Framework that ensures a scalable and accessible approach to carbon certification, which is complemented by the Methodology. “The Acorn Framework for Voluntary, Ex-Post, Agroforestry Carbon Removal Units”, hereafter referred to as the Framework, articulates Acorn’s requirements for participating projects and describes the processes and methodologies it applies for its carbon quantification measurements. The “Methodology for Quantifying Carbon Benefits from Small-Scale Agroforestry”, hereafter referred to as the Methodology, presents the procedures, models and calculations that ensure that the Acorn program applies to quantify its carbon benefits.

As illustrated in Figure 2, this document serves as a guide for local partners (A), remote sensing partners (B), verifiers, validators and certifiers (C), purchasers (D) and others interested in understanding the process of Acorn’s CRU origination to validate its quality, transparency and credibility.

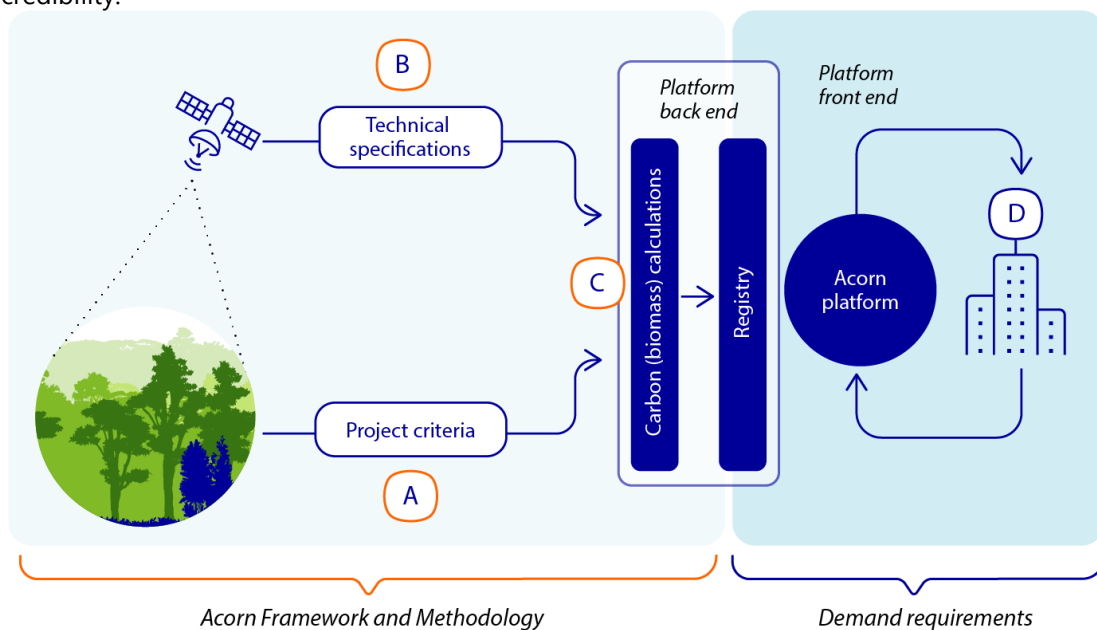


Figure 2. The Acorn program (the scope of this document)

By publishing this Framework for agroforestry projects at the smallholder level, Acorn aims to stimulate substantive dialogue and knowledge exchange towards a highly trustworthy and more accessible carbon removal market. Acorn also hopes to contribute to accelerating the development of market standards that incorporate cutting-edge technology solutions for measurement accuracy – building a carbon removal market that is consistent and recognizable for all stakeholders.

In the Framework, the following terminology is used to assess compliance. This terminology corresponds with international standards that are applied by the International Carbon Reduction and Offset Alliance.

- **Shall** indicates a requirement must be strictly followed in order to conform to the Framework.
- **Should** indicates a certain course of action is preferred but not strictly required.
- **May** indicates a certain course of action is permissible.
- **Can** indicates a possible or suitable situation that is actual or conceivable.

2. Governance

The governance structure is built around several groups of stakeholders. The supply side of the proposition consists of local communities and individual smallholder farmers who are connected to one of Acorn’s local partners in its intermediary network. Local partners could be NGOs, farmers’ co-ops, trading companies or corporations. To join the network, they must outline a clear implementation and monitoring plan that ensures solid agroforestry systems at farm level. As Acorn’s on-site representatives, they play an important role as Acorn’s field advocates, responsible for active farmer engagement, farmer (platform) registration and data collection, and together with the farmers are key stakeholders in ensuring sustainable implementation⁶. One way to enhance smallholder farmer capacities is to equip them with the requisite knowledge to participate in the Acorn program. Acorn therefore provides smallholder farmers with the possibility to represent and amplify their voices through project councils, where they can be actively involved in project design and decision-making.

For monitoring and measurement, Acorn cooperates with a technical network of remote sensing partners (RSPs) that specialize in vegetation monitoring, machine learning, and biomass and carbon stock estimation. Together with these partners, Acorn is developing algorithms to measure biomass growth in a scalable and iterative manner.

To ensure high-quality and credible CRUs, Acorn closely collaborates with the Plan Vivo Foundation, agroforestry scientists and other (market) experts. Together, they form Acorn’s Standards Committee, a sounding board which supports Acorn’s proposition by sharing comprehensive market knowledge and advice.

Acorn also interacts with the demand side of the carbon market, encouraging corporations to offset their emissions through Acorn’s platform, which provides traceability and transparency throughout the supply chain.

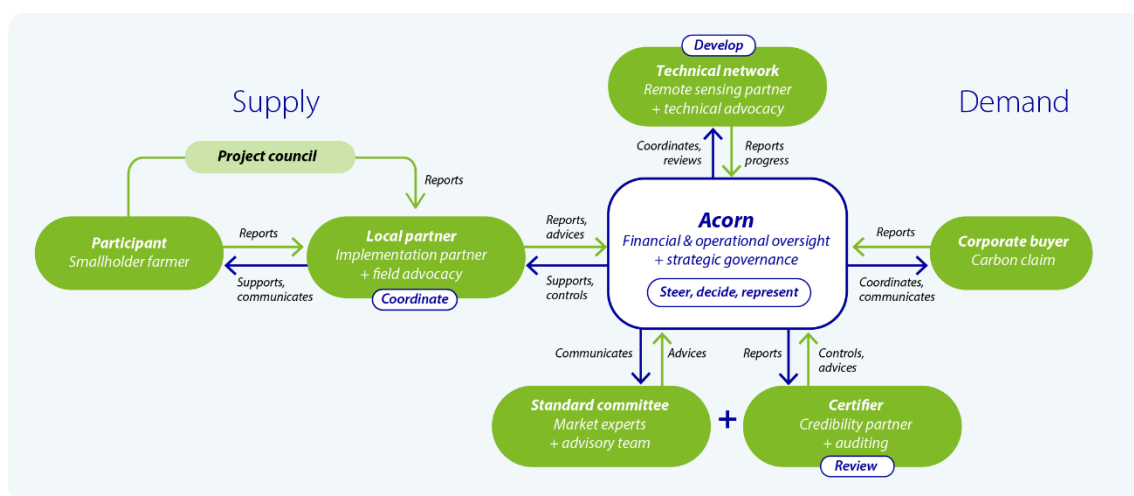


Figure 3. Governance

⁶ [Di Sacco & Hardwick, 2021](#)

3. Principles, contribution to SDGs, and KPIs

Acorn strives to contribute to the global Sustainability Development Goals (SDGs) and realize short-term as well as long-term benefits for individual smallholder farmers, local communities and society as a whole.

3.1 Principles

To realize its ambition, the Acorn Framework is based on ten guiding principles. These principles provide direction for Acorn stakeholders to ensure high-quality projects and CRUs. Further elaboration of these principles can be found in Section 4, where the requirements for each are detailed.

1. All Acorn projects meet the eligibility requirements and actively involve smallholder farmers in the transition to agroforestry to improve their livelihood and that of their community.
2. All of Acorn's local partners have clear responsibilities and are compliant with international and national legislation.
3. All Acorn CRUs are generated with integrity by additional and real project interventions.
4. All Acorn projects realize ex-post carbon sequestration, as well as demonstrable socioeconomic and environmental improvement compared to the baseline.
5. All Acorn CRUs are ex-post, science-based and data-driven in their quantification and measurement, and these are demonstrated to be accurate and verifiable.
6. All Acorn projects take mitigating actions for potential CO₂ emissions that are attributable to the project.
7. All Acorn CRUs are traceable, uniquely registered and accounted for.
8. All Acorn projects deliver CRUs that are based on durable sequestration and come with an appropriate durability period.
9. All Acorn projects adopt robust solutions for reversal risk.
10. All data acquired by Acorn is handled with the highest level of integrity and with stakeholder consent.

3.2 Contribution to SDGs

In addition to carbon removal, Acorn also brings other ecosystem advantages. The project intervention, agroforestry, has the potential to contribute to 8 of the UN's 17 Sustainable Development Goals (SDGs). The table below summarizes the SDGs to which the Acorn agroforestry program contributes. In Appendix 7.1, a more extensive overview of Acorn's contributions to the SDGs can be found.

SDG	Target⁷	Acorn contribution
1	End poverty in all its forms everywhere	Acorn contributes to and increases farmer income and makes farmers more resilient to market and environmental shocks
2	End hunger, achieve food security and improved nutrition and promote sustainable agriculture	Acorn indirectly enriches the diet of rural populations in emerging economies. Acorn directly contributes to long-term soil health and combats desertification and erosion
6	Ensure available and sustainable management of water and sanitation for all	Acorn indirectly improves groundwater quality
8	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	Acorn incentivizes farmer productivity and employs innovative technologies for a scalable approach
9	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	Acorn accelerates innovative and scalable climate-smart solutions
13	Take urgent action to combat climate change and its impacts	Acorn contributes to resilience to climate change effects and the availability of nature-based solutions, allowing corporations to claim and report ecosystem impacts results.
15	Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	Acorn combats desertification and enhances biodiversity
17	Strengthen the means of implementation and revitalize the global partnership for sustainable development	Acorn provides additional financial resources for agroforestry projects and program participants

Table 1. SDG contributions

⁷ [United Nations, n.d.](#)

3.3 KPIs

For progress monitoring purposes, the following KPIs are defined and visualized in the table below (see Table 2). To maintain simplicity in the Acorn Framework, only a few impact indicators are defined and monitored.

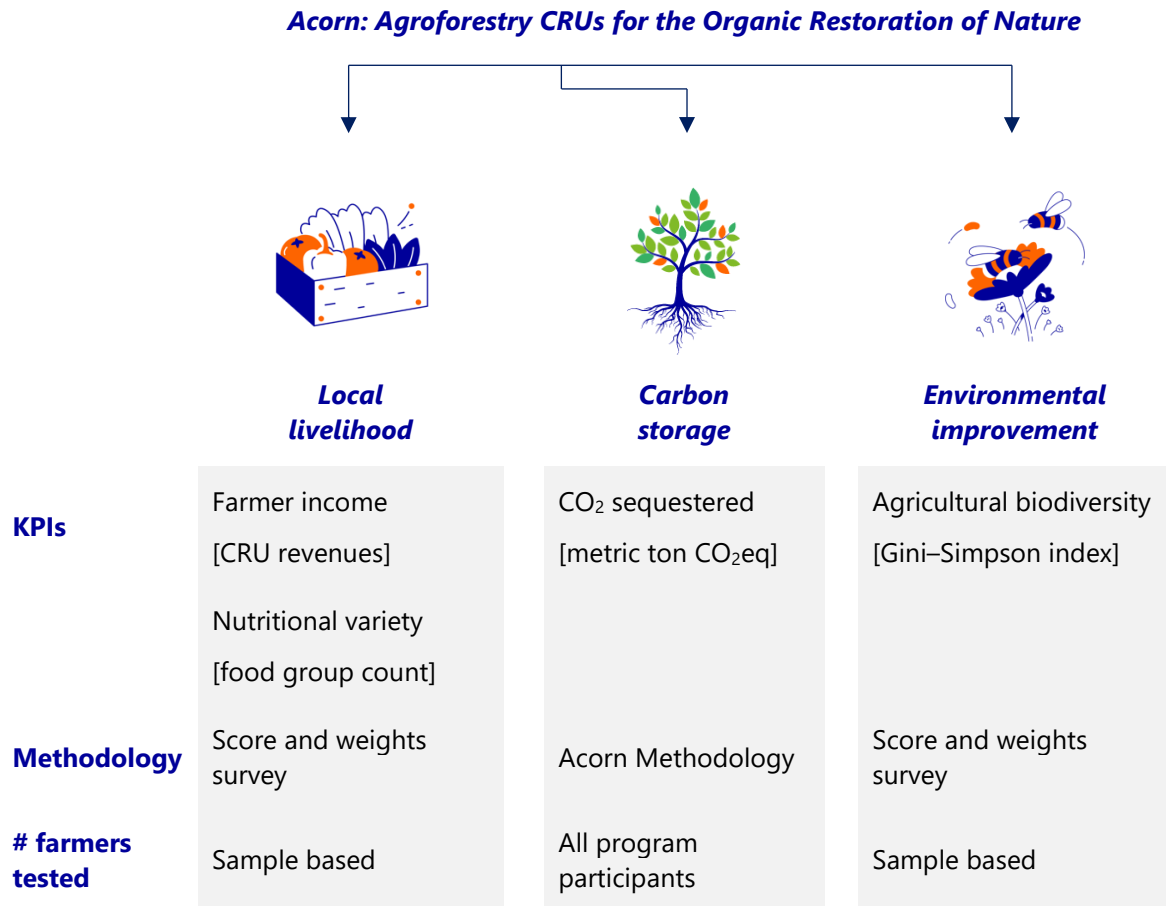


Table 2. Acorn's KPIs to monitor the program's impact

4. Requirements

While the guiding principles represent Acorn's values, there are a number of specific requirements and conditions that support these principles. These requirements relate to eligibility, responsibilities, additionality, the baseline, carbon quantification, leakage, double counting, durability, the buffer pool and data integrity. They set out clear guidelines to which projects and the associated CRUs must adhere.

4.1 Eligibility

Any and all tree planting activities are not necessarily eligible for the Acorn program. In order to preserve the integrity of the program, Acorn conducts a diligent project selection process.

All carbon standard systems set out specific eligibility criteria to identify the kinds of projects that can be certified. These systems tend to apply "base standards" that focus solely on the quantification of emissions reductions and which exclude additional criteria for social, economic and environmental impact. Acorn, however, applies "quality standards" which do include such additional benefits in the quantification of carbon emissions reduction. Therefore, Acorn sees eligibility as a collective term that refers to an accumulation of conditions, including social ecosystem impact and assessment of potential adverse impacts, that determine which projects and partners can be registered for the Acorn CRUs.

Principle 1: All Acorn projects meet the eligibility requirements and actively involve smallholder farmers in the transition to agroforestry to improve their livelihood and that of their community.

Eligible land

- 4.1.1 Acorn projects shall only be pursued in countries without any formal legislative carbon restrictions that prevent the participant-ownership and trading of carbon sequestration generated on smallholder land from agroforestry activities.
- 4.1.2 Acorn projects can provide evidence of land cover over the past five years from the project start date to prevent potential perverse incentives for tree planting⁸. Evidence can be provided using satellite monitoring plot imagery or other forms of proof (e.g. oral or documented) that demonstrate that the land was not cleared prior to the project intervention with the intention to claim CRUs⁹.

Eligible project interventions

- 4.1.3 Acorn projects should emphasize agroforestry practices that include a food and/or medicinal component, whether agrisilvicultural, silvopastoral or agrosilvopastoral. See Appendix 7.2 for an agroforestry analysis.
- 4.1.4 Acorn projects should contribute to the enhancement and/or restoration of degraded, damaged or destroyed land, and improve land use activities.

⁸ [Ebeling & Vallejo, 2011](#)

⁹ [Merger & Williams, 2008](#)

- 4.1.5 Acorn projects should strive to not contribute, or to do their utmost to avoid, environmental or (agricultural) biodiversity harm (e.g. reduction of long-term food security, water pollution, deforestation, soil erosion). All potential negative effects are identified, mitigated and monitored. These negative effects are detailed in annual reports to Acorn and the certifier.
- 4.1.6 Acorn projects should demonstrate that the project intervention increases, or at least does not detriment, the impact KPIs which measure project performance on social, economic and environmental benefits, and that the KPIs are measured over a period that is of sufficient length to provide an adequate representation of the long-term impact of the project intervention.
- 4.1.7 Acorn projects should plant tree species that are native or naturalized, and draw on local and expert knowledge for agroforestry designs. Naturalized species will only be integrated into the design if:
- a. There are livelihood benefits that make the use of the species preferable to any alternative native species.
 - b. The use of the species will not have a negative impact on biodiversity or other provision of key ecosystem services in the project and surrounding areas.

4.2 Responsibilities

Principle 2: All of Acorn's local partners have clear responsibilities and are compliant with international and national legislation.

Smallholder farmer

- 4.2.1 Acorn projects shall exclusively emphasize agroforestry practices at the smallholder or community level, where clear land tenure has been agreed upon and understood by the individual(s) involved, either by means of formal titling, informal titling and/or land mapping.
- 4.2.2 Acorn projects shall involve individual farmers ("participants") with up to ten hectares (ha) of cultivated land to guarantee Acorn's emphasis on smallholder farmers alone.
- 4.2.3 Acorn projects shall have a defined project council governance structure at the start of a project intervention, in which participants or community groups collectively, (i) nominate project representatives who have the capacity to operate on their behalf, and (ii) determine a decision-making mechanism for the project council. At a minimum, project councils should be organized twice per year.
- 4.2.4 Acorn projects shall not exclude participants on the basis of gender, age, income or social status, ethnicity or religion, or any other discriminatory basis, and shall onboard participants in chronological order of registration.
- 4.2.5 Acorn projects shall not employ workers below the ILO minimal age convention on child labor¹⁰.
- 4.2.6 Acorn projects should strive not harm or negatively influence local communities (e.g. reinforce gender inequalities). Where negative socioeconomic impacts are identified, these will be reported, mitigated and monitored to Acorn and the certifier.

¹⁰ [*International Labour Organization, n.d.*](#)

Local partner

- 4.2.7 The local partner is a legal entity, whether NGO, local co-op or trader, that shall take responsibility for on-the-ground practices and adherence to the Acorn Framework throughout the duration of the project.
- 4.2.8 The local partner's responsibilities shall be governed by a formal Partnership Agreement ("Partnership Agreement for the Trade in Carbon Removal Units") signed by Acorn and the local partner. See Appendix 7.3 for contract structure overview.
- 4.2.9 The local partner shall be known by Rabobank, pass a CDD conducted by Rabobank, meet the bank's sustainability requirements, and be onboarded by the Acorn program.
- 4.2.10 The local partner shall comply with GDPR or local data and privacy regulations. For more details on data integrity, see Section 4.10 and the Partnership Agreement.
- 4.2.11 The local partner shall provide a formal Participant Agreement ("Project Implementation and Carbon Removal Unit Purchase Agreement") for each project participant, including a consent for data sharing and confirmation of payment arrangements.
- 4.2.12 The local partner shall be responsible for annual and traceable carbon benefit payments to the participants, as detailed in the "Standard Terms to Project Implementation and Carbon Removal Unit Purchase". At least 80% or more of the proceeds from CRU sales should accrue to participants as either cash payments or individual in-kind contributions. See Appendix 7.4 for a list of in-kind contributions that may be used in Acorn projects and detail or cash payment criteria.
- 4.2.13 The local partner shall have a separate account or earmarked funds for the sole purpose of participant finance, separate to the local partner's operational finances.
- 4.2.14 The local partner should be aware of local, national and international laws and regulations, align project activities to comply accordingly, and integrate proper employment law.
- 4.2.15 The local partner should provide information in an applicable language and/or format that suits all participants and avoid discrimination of illiterate groups.
- 4.2.16 The local partner should provide a stakeholder map to identify key communities, organizations, and local and national authorities that are likely to be affected by or have a stake in the project. See Appendix 7.5 for a stakeholder map template. The local partner is responsible for taking appropriate steps to inform these stakeholders about the project and seek their views, and secure approval where necessary.
- 4.2.17 The local partner should coordinate and provide a business case, including a financial analysis, monitoring and implementation plan, at the start of the project.
- 4.2.18 The local partner should actively inform and involve participants about/in the decision-making process throughout the project, from design, to monitoring, to implementation, to field management, and to payments, by organizing regular project council meetings. Participants should actively contribute to the selection and design of activities, considering:
- a. Local livelihood needs and opportunities
 - b. Local customs
 - c. Land availability and tenure
 - d. Food security
 - e. Inclusion of marginalized groups
 - f. Opportunities to enhance (agricultural) biodiversity

- 4.2.19 The local partner shall be available to handle grievances and provide feedback mechanisms on the project design, in a transparent, fair and timely manner and should organize regular council meetings to provide participants and their local community with a setting in which they can raise any concerns or grievances about the project to the local partner.
- 4.2.20 The local partner should ensure that a proper grievance mechanism is developed, described in detail in the project documentation, communicated to the local communities and followed-up. A summary of grievances received, the manner in which these are dealt with and details of outstanding grievances shall be reported to an Acorn representative(s) within 35 working days. These grievance are detailed by Acorn in annual reports to the certifier.
- 4.2.21 The local partner shall be responsible for the secure storage of project information, including project designs, business case details, proof of payments, records of participant events and monitoring results.
- 4.2.22 The local partner shall follow the Acorn monitoring plan as outlined in the Methodology and contribute to on-the-ground data collection, validation, and verification activities while coordinating the support of participants and local communities on this monitoring plan.
- 4.2.23 The local partner should address and is expected to make efforts to provide equal opportunities to fill employment positions in the project for women and members of marginalized groups where job requirements are met or for roles where they can be cost-effectively trained.

Remote sensing partner (RSP)

- 4.2.24 The RSP's responsibilities shall be written in a formal "Remote Sensing Agreement" which is agreed upon by both the RSP and Acorn.
- 4.2.25 The RSP shall comply with GDPR regulations. For more details on data integrity, see Section 4.10.
- 4.2.26 The RSP shall provide the required input for the Acorn monitoring plan as outlined in the Methodology and contribute to data collection and validation.
- 4.2.27 The RSP shall provide the carbon estimates of the total AGB of an agroforestry project based on satellite information on an annual basis.
- 4.2.28 All RSPs should apply the same methodology for:
- I.) Performance indicators
 - II.) Minimal frequency of monitoring
 - III.) Duration of monitoring
 - IV.) Type of carbon pool
 - V.) Data collection method of inventory plots

See Section 5.1.1 for more details on the eligibility requirements and Appendix 7.6 for an overview of roles and responsibilities.

4.3 **Additionality**

An agroforestry project with Acorn is considered to be additional if the net greenhouse gas (GHG) sequestration benefits are greater than what would have occurred in the business-as-usual scenario, i.e., without the intervention of the project.

Given the evolution and further refinements of the existing additionality assessments observed in the voluntary carbon market and the inherent project characteristics of Acorn – smallholder involvement, agroforestry practices, and the sales of actual sequestration – this Framework further simplifies additionality for small-scale projects by using an Agroforestry Positive List similar to the Gold Standard AGR Positive List, version 2020¹¹. Where needed, further clarification can be provided by the Barrier Analysis corresponding with the Approved Approach for Additionality by Plan Vivo 2015¹². (Please note that the positive list can only be used as a standalone approach after a separate approval of the Plan Vivo Foundation on this list. Until then projects are expected to apply both approaches to help further build proof of applicability.)

Principle 3: All Acorn CRUs are generated with integrity by additional and real projects interventions.

- 4.3.1 Acorn projects shall demonstrate additionality at the start of the project intervention. Projects that wish to expand into a new country should reassess additionality prior to such expansion.
- 4.3.2 Acorn projects shall be additional, i.e. would not have been implemented without the additional revenues generated through the sale of CRUs. At minimum, the local partner shall demonstrate:
- a. Proof of regulatory surplus, meaning it is not required by any form of existing laws or regulations. Exceptions can be made for projects that support laws that are not enforced or commonly met in practice.
 - b. Compliance with the Agroforestry Positive List requirements OR robust proof of at least one barrier as defined in the Acorn Additionality Assessment (Section 5.2). Please note that the Agroforestry Positive List can only be used as a standalone approach after separate approval of the Plan Vivo Foundation. Until then, projects are expected to demonstrate adherence to both criteria to prove applicability.

4.4 **Baseline**

To quantify the actual carbon benefits of a project, estimating the carbon baseline is a crucial step at the start of each project. Only the changes in a carbon stock between $t=0$ and $t=n$ represents the additional carbon sequestered which is eligible for sale. In Acorn's ambition to generate high-quality CRUs, the project baseline is also measured, emphasizing the additional benefits that arise from agroforestry interventions.

¹¹ [The Gold Standard Foundation, 2013](#)

¹² [Plan Vivo Foundation, 2015](#)

Principle 4: All Acorn projects realize ex-post carbon sequestration, as well as demonstrable socioeconomic and environmental improvement compared to the baseline.

- 4.4.1 The local partner should describe the current land use and habitat species within a project area, and explain how these are most likely to change over a period of ten years without the project intervention.
- 4.4.2 As part of the carbon baseline, project areas should identify species with a high local environmental and social conservation value and describe how these species are likely to be affected by the project intervention, and how these effects are monitored. The conservation value of species can be determined by local Indigenous knowledge and/or by referring to the *IUCN red list*¹³ or the *Forest Stewardship Council*¹⁴.
- 4.4.3 At the start of a project intervention, the RSPs shall be responsible for the delivery of plot-level biomass measurements for the carbon baseline.
- 4.4.4 All land within the project area should be either cultivated land or degraded at the start of the project intervention (i.e. baseline).
- 4.4.5 No corrections are to be made for theoretical reductions of the carbon baseline (e.g. for avoided deforestation).
- 4.4.6 The annual delta of existing biomass over a ten-year period should be limited to <10%. All biomass present more than five years prior to the start of the project intervention is considered existing biomass.

Example

A given plot already includes a few trees. After the transition to agroforestry, the farmer has an increase in biomass from trees that are newly planted (C-A) and trees which were already there (A-B). The baseline for CRU calculation is B. As stated in requirement 4.4.6, the A-B share is excluded if older than five years.

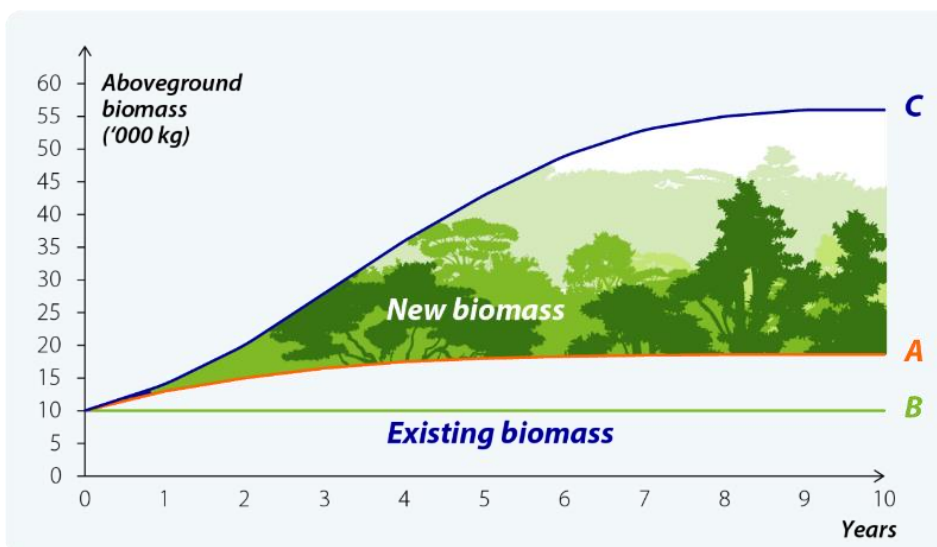


Figure 4. Example of a baseline calculation

¹³ [IUCN, 2021](#)

¹⁴ [Forest Stewardship Council, n.d.](#)

- 4.4.6. In addition to the carbon baseline, a project baseline should be provided by local partners on a project level at the start of a project intervention. This project baseline should describe the current socioeconomic conditions and explain how these conditions are most likely to develop over time (positively and/or negatively) as a result of the project intervention.
- 4.4.7. At least every three years, based on a random sampling, projects shall be verified on carbon and project contributions by an independent auditor.

See Section 5.3 for details on the carbon baseline assessment, and Section 5.4 for details on the project baseline assessment.

4.5 Carbon quantification

To ensure a proper and solid carbon quantification model, Acorn has developed the Methodology in conformance with Principle 5 and the related requirements for carbon quantification.

Principle 5: All Acorn CRUs are ex-post, science-based and data-driven in their quantification and measurement, and these are demonstrated to be accurate and verifiable.

- 4.5.1 All Acorn CRUs shall be generated based on the applicability conditions addressed in the Methodology. See appendix 7.7 for the related responsibilities of the local partner.
- 4.5.2 All Acorn CRUs shall incorporate AGB and BGB. In this version of the Framework, soil is excluded for conservativeness (see Figure 1).
- 4.5.3 All Acorn projects should be monitored by satellite monitoring technologies to calculate the available CRUs per plot per year according the Methodology.
- 4.5.4 All Acorn CRUs shall be adjusted, if required, for uncertainty in the AGB estimates derived from the carbon model. Acorn aims for conservative estimates that take model error and sampling error into account. Further details can be found in the Methodology.
- 4.5.5 Acorn shall check the accuracy of the satellite measurements on a sample basis every year, and satellite measurements shall be verified every three years by an independent and qualified verification body.

4.6 Leakage

Leakage refers to the loss of carbon storage, primarily as woody biomass, in non-project areas caused by shifting land use activities in the project area or by market forces. Leakage emissions in agricultural projects can be considered zero if the project intervention does not lead to a reduction in livestock grazing or a reduction in agricultural production within the project area¹⁵.

In general, agroforestry emits lower levels of CO₂ and requires less fertilizer, energy and water, compared to more intensive agricultural practices, meaning that a switch to agroforestry will have a positive environmental impact¹⁶. Along with the land cover requirements for project areas

¹⁵ [UNFCCC, 2013](#)

¹⁶ [Platis, et al., 2019](#)

(cropland or degraded land)¹⁷, Acorn deems it reasonable to assume that the risk of leakage in its projects is negligible to non-existent¹⁸. Nevertheless, to diminish or avoid any negative forms of leakage, the below requirement should be applied to Acorn projects.

Principle 6: All Acorn projects take mitigating actions for potential CO₂ emissions that are attributable to the project.

- 4.6.1 All Acorn projects should identify potential sources of negative leakages and the location(s) where this leakage may occur. See the leakage assessment in Section 5.5.
- 4.6.2 Where leakage is likely to be significant, a specific leakage mitigation and monitoring plan should be established and a conservative adjustment factor should be applied to the CRU calculations according to the Methodology.

4.7 Double counting

Although Article 6 of the Paris Agreement is very explicit that double counting should be avoided, this topic is approached differently by each market, and double counting risks inevitably arise¹⁹. Acorn echoes the German Environment Agency²⁰ with project designs that are truly additional and do not discourage local governments from increasing their climate mitigation efforts. Rather, Acorn aims to support local governments' own efforts by demonstrating positive social and economic impact through a clear double counting policy.

Principle 7: All Acorn CRUs are traceable, uniquely registered and accounted for.

- 4.7.1 In order to prevent double counting, issuance, use or claim of project emissions reductions, all CRUs shall be registered in a public register with a unique serial number, highlighting when (year), where (country, GPS coordinates) and by whom (local partner) the CRUs were generated.
- 4.7.2 An Acorn project shall not be incorporated by any other accounting program (e.g. compliance, voluntary or national GHG program) unless upon Acorn approval and with official agreement that demonstrates that no double counting is taking place.

4.8 Durability

Commonly used in current market standards is the concept of permanence. Considering Acorn's inherent characteristics, permanence will be difficult to guarantee. Crops and trees are part of the Earth's natural carbon cycle, and therefore, by definition, carbon storage is not permanent²¹. For carbon removal, Acorn thus refers to the concept of durability. Durability is defined as the twenty-year retention of the level of sequestered CO₂ that was sold as a CRU²².

¹⁷ [Schwarze, et al., 2002](#)

¹⁸ [Roshetko, et al., 2002](#)

¹⁹ [Verra, 2020](#)

²⁰ [Fearneough, et al., 2020](#)

²¹ [Roshetko, et al., 2002](#)

²² [Watson, et al., 2000](#)

Principle 8: All Acorn projects deliver CRUs that are based on durable sequestration and come with an appropriate durability period.

- 4.8.1 Acorn CRUs shall come with a durability period of at least twenty years, commencing the year the CRU is generated.
- 4.8.2 All Acorn projects shall be monitored on their durability commitment at least every five years until the durability period is completed (see Example 1 below). If a negative biomass measurement occurs in the durability period, annual monitoring will be applied until the negative biomass is compensated (see example 2 below).

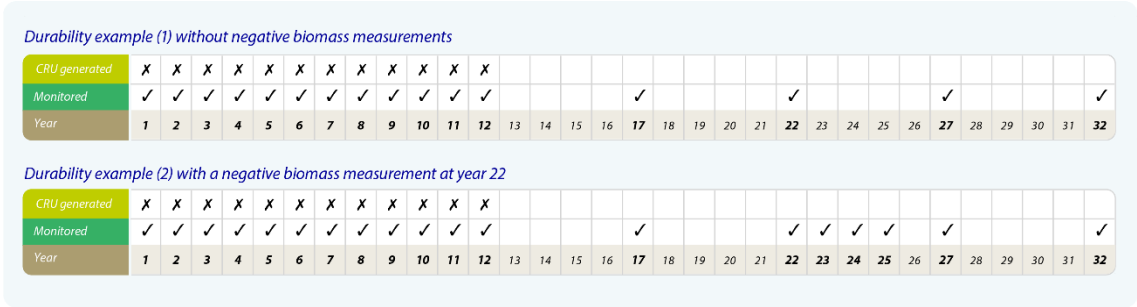


Figure 5. Example of requirement 4.8.2. (for illustration purpose only)

4.9 Buffer pool

To guarantee durability, Acorn has created a buffer pool by setting aside a part of the CRUs issued. In case of unexpected, premature release of carbon stock (e.g. through forest fires or illegal logging), CRUs are replaced from the buffer pool. These replacement CRUs are referred to as buffer pool carbon removal units (BCRUs). The risk of reversal is directly related to the durability period (see Figure 6).

The buffer pool is visible on a public registry and exists solely for the purpose of replacing sold CRUs from Acorn projects, and as such Acorn can guarantee a buyer that their CRUs are always nature-based and ex-post. The buffer pool is managed by Rabobank with third-party oversight from the Plan Vivo Foundation. Acorn shall provide Plan Vivo with annual performance updates of the buffer pool.

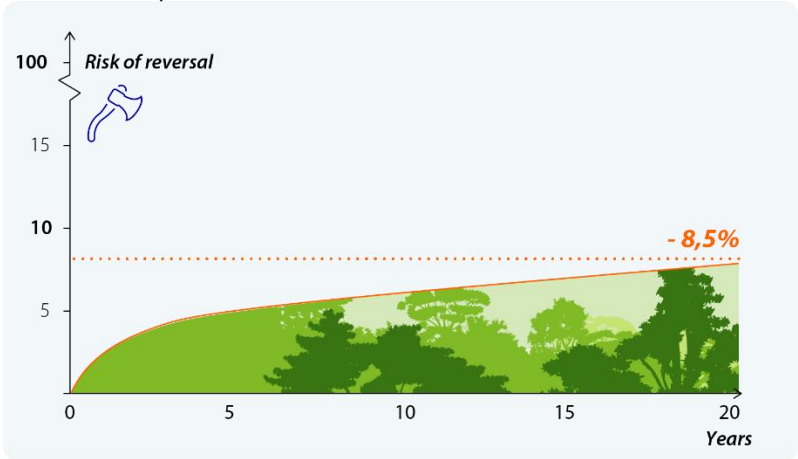


Figure 6. Relationship between the buffer pool and durability – for illustrative purposes only

Principle 9: All Acorn projects adopt robust solutions for reversal risk.

- 4.9.1 Acorn projects shall supply 15% of generated CRUs to the buffer pool for the duration of the project to cover unforeseen premature loss of carbon stock.
- 4.9.2 Acorn projects should review their reversal risks by making use of the reversal risk assessment (see Appendix 7.8), and high-risk areas should be mitigated with appropriate actions and be monitored closely. At least every five years, local partners should reevaluate their reversal risks and report this to Acorn, who again submits this to the certifier for oversight.
- 4.9.3 Every two to five years, the buffer pool percentages should be assessed on coverage ratio and adjusted accordingly.
- 4.9.4 If premature reversal is not recovered within five years, BCRUs should be provided from the buffer pool.

Example of durability and buffer pool scenarios (for illustrative purposes only)

1. Only positive growth in absolute biomass results in the generation of CRUs. For example, year 4 (2022) to year 5 (2023) has an absolute growth of 1 metric ton CO₂eq, equaling 1 CRU, and resulting in the 4th CRU of this project area.
2. If in year 7 (2025) a total biomass of 8 metric tons CO₂eq is measured, in year 8 (2026) a decrease of 2 metric tons CO₂eq, and in year 9 (2027) an increase of 1 metric ton CO₂eq, this means a total biomass of 7 metric tons CO₂eq and no additional CRU generated in this period. A new CRU will only be generated in year 11 (2029), when the metric tons CO₂eq exceeds the highest previous measurement, or 8 metric tons CO₂eq.
3. If the decrease of 2 metric tons CO₂eq is restored within 5 years, no BCRUs are cancelled.
4. If the absolute value of existing biomass is below the absolute value of the related CRU, and if it does not recover within 5 years, the CRU is considered reversed and BCRUs are cancelled to ensure climate integrity.

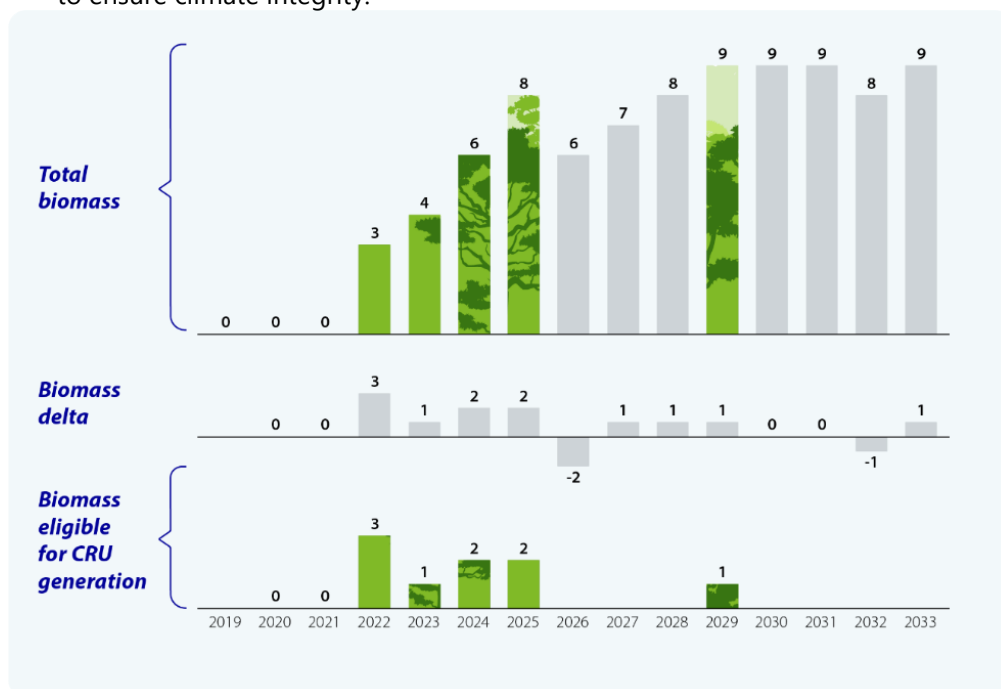


Figure 7. Example of requirement 4.8.2. (for illustration purpose only)

4.10 Data integrity

Rabobank emphasizes careful data handling, and as such Acorn has adopted four of the bank's core data handling values. These values guide the choices Acorn makes and help ensure that its solutions are secure.

Principle 10: All data acquired by Acorn is handled with the highest level of integrity and with stakeholder consent.

4.10.1 All project participants should give permission to share (provide and receive) data relevant for the project (e.g. name and GPS coordinates), either via the local partner or directly with Acorn. A participant's consent is provided at the start of a project intervention in a new area.

4.10.2 All Acorn project data shall comply with GDPR or local legislation.

4.10.3 Acorn should apply the following data handling values from Rabobank:

- Acorn's use of data creates value for its stakeholders.
- Acorn is transparent about the data it uses.
- The customer has control over its data.
- Privacy and security are always self-evident.

5. End-to-end process

The Acorn process follows eight steps, as shown in Figure 8 below. This Section details these steps and explains how stakeholders are expected to adhere to the requirements set out in Section 4.

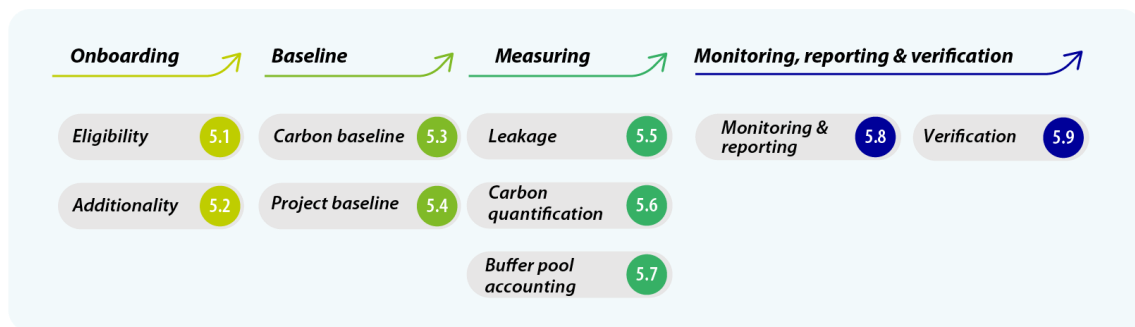


Figure 8. Steps of the Acorn approach

5.1 Eligibility checks

5.1.1 Eligibility checklist

As Acorn projects involve smallholder farmers, information is sometimes difficult to obtain or is unavailable. Acorn therefore selects local partners that work on the ground with the participants and their communities, and understands local needs, cultures and societal nuances. Together with the Acorn team, they play an important role in establishing project eligibility and implementing the project intervention in a sustainable way. The following eligibility checklist should support the local partner in selecting participants eligible for the Acorn program.

Participant eligibility checklist			
<i>Topic</i>	<i>Sub-topic</i>	<i>Requested information</i>	<i>Result</i>
Organizational capacity	Smallholder labor force	Participants are not structurally dependent on permanent hired labor, and manage their land mainly by themselves with the help of their families.	
	Smallholder farm size	The cultivated land of participants does not exceed 10 ha.	
	Resources	The participant has the ability to mobilize the necessary resources to implement the project.	
	Data collection	The participant can allow reliable data to be collected for the project (i.e. GPS polygons, phone numbers, other KYC data).	
	Condition (i)	The participant is aware that their decision to participate in the project is entirely voluntary.	
	Participant identity	The participant is able to provide proof of their identity.	
Land-tenure and carbon rights	Land-tenure and carbon rights (i)	A description of how land tenure is organized.	
	Land-tenure and carbon rights (ii)	The project applies to land over which the participant/community has (formal/informal) ownership or long-term user rights.	

Sustainable land use activity	Land use*	A description of the current land use activities within the project.
	Deforestation*	The participant confirms that no deforestation has taken place five years before the start of the project intervention (project baseline). If this cannot be confirmed, a description of the cause of the deforestation is provided, including the measures that have been taken to prevent deforestation from happening again.
	Additionality	The participant ensures project additionality and is aware that the project has a durability period of 20 years.
	Existing agroforestry (i)	Agroforestry at the farm level has been implemented less than 5 years ago.
	Existing agroforestry (ii)	The participant confirms that previously sequestered CO ₂ on the land has not yet been monetized.
	Existing agroforestry (iii)	The participant has received donor/grant funding for a significant part of their existing agroforestry practices.
	Current habitat*	The current ecosystem and species of the project area is described.

* Applicable for a selected sample of participants/RSPs

Table 3. Participant eligibility checklist

Acorn itself should complete the following checklist in its selection of local partners eligible for the Acorn program.

Local partner eligibility checklist			
<i>Topic</i>	<i>Sub-topic</i>	<i>Requested information</i>	<i>Result</i>
Organizational capacity	Organizational capacity	Organizational structure and “on the ground” capacity are adequate to undertake long-term community-led project(s) and agroforestry implementation.	
	Sustainability	The local partner agrees with the Rabobank’s sustainability policy.	
	GDPR	The local partner’s current data handling policies are compliant with GDPR regulations.	
	Participant organization	The project is organized, or in the process of being organized, into cooperatives, associations, community-based organizations or other organizational forms able to contribute to the social and economic development of the participants and their communities, and which is democratically controlled by the participants.	
	Project effects	The project strives to not contribute, or does its utmost to avoid, environmental or (agricultural) biodiversity harm.	
	Entity	The local partner is an established legal entity that takes responsibility for the project and for meeting the requirements of the Acorn Framework for the duration of the project.	
	Local presence	The local partner has a strong in-country presence and the respect and experience required to work effectively with local participants and their communities.	
	Local policies	The local partner has a solid understanding of local policies and can confirm that the country’s policy allows individual CRUs to be sold.	
	Influence	The local partner is capable of negotiating and dealing with government, local organizations and institutions.	
	Resources	The local partner is focused and has the organizational capability and ability to mobilize the necessary resources to develop the project (e.g. including access to seedlings, inputs, agronomic knowledge, monitoring and technical support).	

	Data collection	The local partner can provide reliable data (i.e. GPS polygons, phone numbers, other KYC data).
	Training	The local partner has the ability to mobilize and train participants, and implement and monitor project activities.
	Condition (i)	The local partner recognizes that the participant's involvement in the project is entirely voluntary.
	Condition (ii)	The local partner recognizes that participants own the carbon benefits of the project intervention.
	Participant payments (i)	The project coordinator ensures that payments are made in a transparent and traceable manner.
	Participant payments (ii)	The project coordinator ensures that mobile payments to participants are either already possible or there are no foreseeable obstacles for this in the near future.
	Contributions	The local partner does not draw more than 10% of sales income for ongoing coordination, administration and monitoring costs. Exceeding this percentage is only possible in exceptional circumstances where justification is provided and Acorn formally approves a waiver.
	Participant identity	The local partner is able to collect and provide proof of participant's identity.
Land-tenure and carbon rights	Land-tenure and carbon rights (i)	A description of how land tenure is organized amongst the target project participants.
	Land-tenure and carbon rights (ii)	The project applies to land over which the participant/community has (formal/informal) ownership or long-term user rights.
	Land use	A description of the current land use activities, before the start of the project intervention, within the project is provided.
	Project design	The project is designed to promote sustainable land-use and has a feasible business case underwritten by agronomist(s) and community representatives.
	Deforestation	The local partner confirms that no deforestation has taken place five years before the start of the project intervention (project baseline). If this cannot be confirmed, a description of the cause of the deforestation is provided, including the measures that have been taken to prevent deforestation from happening again.
Sustainable land use activity	Additionality	The local partner ensures project additionality and ensures a durability period of 20 years.
	Existing agroforestry (i)	Agroforestry at the farm level has been implemented less than 5 years before the start of the project intervention.
	Existing agroforestry (ii)	Participants and local partners confirm that previously sequestered CO ₂ on the land has not yet been monetized.
	Existing agroforestry (iii)	Existing agroforestry has been funded largely by donors/grants.
	New agroforestry	There is sufficient supply of seedlings, inputs, water and other required resources.
	Naturalized species	The local partner promotes the use of native species. The use of naturalized species is acceptable under the conditions outlined in the Framework.
	Current habitat	The current ecosystem and species of the project area is described.

Table 4. Local partner eligibility checklist

5.1.2 Land cover

To demonstrate the state of the land cover at the start of the project (requirement 4.1.4) and the land cover status of five years before the start of the project (requirement 4.1.2.), one of the following should be provided as evidence²³:

- Aerial photographs or satellite imagery, complemented with ground reference data
- Land use or land cover information from maps or digital spatial datasets
- Ground-based surveys
- A written testimony from the local partner, that is supported by participants and local communities, when none of the above can be provided

5.1.3 Land tenure

For Acorn, land tenure is understood as a legal regime or an informal custom, administered by traditional authorities, which defines who owns or holds the right to use the land. A project is only eligible if the local partner can prove clear land tenure that has been agreed upon and understood by the participating smallholder or communities. This can be proven using one of the three approaches;

- *Formal titling* – Preferably legal landownership or user rights documentation or agreements should be provided. Documentation should include boundary maps and formal land titles, and should demonstrate a formal right to transact, make decisions and implement agroforestry activities on the land.
- *Informal titling* – Where no official documentation exists, the local partner can develop a locally relevant method for checking the existence and stability of the land use rights of the project participant(s). Documentation should include boundary maps and land titles, and should demonstrate a right to transact, make decisions and implement agroforestry activities on the land.
- *Land mapping* – Only when neither formal nor informal titling is available, participants and the local partner provide an outline of the land boundaries and allow the wider community to sign-off or reach consensus on these boundaries. This can be done in periodic project councils and/or by making the maps publicly available for anyone to object.

By confirming land tenure in one of these three ways, Acorn aims to prevent potential dishonesty and/or land grabbing through social control amongst participants and the local community.

²³ [Watson, et al., 2000](#)

5.2 Additionality assessment

The following is the additionality assessment form that local partners need to complete in consultation with the project participants and Acorn.

Project details	Name of local partner		
	Project location		
	Date of assessment		
Positive list	<i>Demonstrate that the project meets requirements (a) and (b) and at least one of the requirements (c) and (d).</i>		
	(a) The project area is located in a country or region with a recent UNDP Human Development Indicator ²⁴ below or equal to 0.8.	<add indicator value>	
	(b) The project shall not be mandatory by any law or regulation, or if mandatory, the local partner shall demonstrate that these laws and regulations are systematically not enforced.	<attach proof of regulatory surplus, i.e. NDC and/or National Forestry Policy, or statement from official governing body>	
	(c) The project is located in a region with a mean annual precipitation of less than 600 mm ²⁵ .	<add precipitation value>	
	(d) The project area is (predominantly) located in a country or region with a recent UNDP Human Development Indicator below 0.6.	<add indicator value>	
Barrier analysis	<i>Demonstrate that the project intervention would not have taken place due to a least one of the following barriers.</i>		
<i>Type of barrier</i>	<i>Examples of barrier</i>	<i>Situation without project</i>	<i>Situation with project</i>
Financial/ economic barrier	<ul style="list-style-type: none"> Insufficient financial resources to develop a project No payment system for ecosystem services in place No access to carbon market due to real or perceived risks associated with domestic or foreign direct investment in the country where the project intervention is to be implemented 	<describe what financial/economic barriers (if any) are being experienced>	<describe how barrier will be overcome by project intervention and climate finance>
	Technical barrier	<ul style="list-style-type: none"> Lack of infrastructure for implementation of the technology Lack of access to planting materials 	<describe what technical barriers (if any) are being experienced>
Institution al/ political barrier	<ul style="list-style-type: none"> Lack of regulations regarding agroforestry and land use management, or poor enforcement of such regulations. 	<describe what institutional/political barriers (if any)>	<describe how barrier will be overcome by

²⁴ [United Nations Development Programme, n.d.](#)

²⁵ [Nasa,2021](#)

	<ul style="list-style-type: none"> • Risk related to changes in government policies or laws 	<i>are being experienced></i>	<i>project intervention and climate finance></i>
Ecological barrier	<ul style="list-style-type: none"> • Degraded soil (e.g. water/wind erosion, salinization) • Catastrophic natural and/or human-induced events (e.g. landslides, fire) • Unfavorable meteorological conditions (e.g. early/late frost, drought) • Unfavorable course of ecological successions • Biotic pressure in terms of grazing, fodder collection, etc. 	<i><describe what ecological barriers (if any) are being experienced></i>	<i><describe how barrier will be overcome by project intervention and climate finance></i>
Social barrier	<ul style="list-style-type: none"> • Poor mobilization of local communities due to remoteness or poor infrastructure • Demographic pressure on the land (e.g. increased demand for land due to population growth) • Social conflict among interest groups in the region where the project intervention takes place • Widespread illegal practices (e.g. illegal grazing, non-timber product extraction and tree felling) 	<i><describe what social barriers (if any) are being experienced></i>	<i><describe how barrier will be overcome by project intervention></i>
Cultural barrier	<ul style="list-style-type: none"> • Lack of skilled and/or properly trained labor force • Lack of organization of local communities 	<i><describe what cultural barriers (if any) are being experienced></i>	<i><describe how barrier will be overcome by project intervention and climate finance></i>
Overall conclusion:			
<i><summary of findings></i>			

Table 5. Additionality assessment form

5.3 Carbon baseline assessment

The following is the carbon baseline assessment form that local partners need to complete in consultation with the project participants or a representative of the participants.

Participant & project details	Name of local partner		
	Name of representative		
	Project location		
	Date of assessment		
	Requested information	Format	Answer
General	Eligibility of the land has been demonstrated	Yes, formal; Yes, informal; Unknown	
	Description of current land use	Text	<i>[How is the land used? By whom, and is there any cultivation? If so, what type of trees/crops are currently cultivated on the farm? How are pests controlled, and what is the fertilizer intensity? How is land use expected to change without project intervention (hypothetically)?]</i>
Carbon baseline*	Description of current habitat species	Text	<i>[What species are observed on the land? What change in habitat species (biodiversity) would be expected without project intervention (i.e. increase/decrease)?]</i>
	Description of deforestation potential**	Text	<i>[Has any deforestation taken place in the last 5 years? If so, what was the cause? What measures are taken to prevent deforestation from happening?]</i>
	Number of existing trees	Number	
	Number of existing trees older than 5 years	Number	
	Coverage percentage of existing trees older than 5 years	%	

*Actual AGB baseline value will be provided utilizing satellite measuring techniques and, where needed, supported by field measurements.

** The information is supportive to the T-5 check performed by RSPs.

Table 6. Carbon baseline assessment form

5.4 Project baseline assessment

The project baseline in terms of socioeconomic and environmental concerns is established by the local partner at the start of the project intervention. This is similar for existing projects, where CRUs are calculated retroactively. At least every three years, project impact is evaluated along the same metrics of this baseline, based on a random sampling of projects, which is then audited by an independent party.

Given the large geographical variety of the Acorn projects and the opportunity to collect data from a range of participants which operate in different time zones, ecoregions, and social and political contexts, Acorn aims to contribute to the development of global and harmonized reporting on agroforestry projects and their impact. Socioeconomic and environmental benefits are of growing importance for carbon offsetting, and are central to the Acorn proposition, making impact monitoring key to every project. To build a comprehensive understanding of the benefits agroforestry can bring to society and the environment, Acorn has developed a flexible and scalable approach to impact monitoring as part of its project baseline assessment.

This approach monitors three fixed indicators (highlighted in grey Table 7 below) and up to eight discretionary indicators that address additional effects on farmer livelihood and the environment. The metrics for the fixed indicators are predetermined for all Acorn projects to safeguard data uniformity and quality, but these leave room for projects to define how individual values are collected. At a minimum, one additional indicator should be selected for the project assessment. The discretionary indicators are chosen by the program participants; projects will design the metrics themselves.

Sample size for a project baseline assessment equals 1% of the participants, with a minimum sample size of thirty participants and a maximum of one hundred participants per project. This minimum statistically substantiates that the sample standard deviation is a sufficient estimate for the population standard deviation, allowing Acorn to assume a change over time of the project impact indicators.²⁶

²⁶ [Corder & Foreman, 2009](#)

Area	Indicator	Metric	Source	SDG	Result
Local livelihood	Farmer income from carbon finance	Revenue from CRU sales	Survey (information collected on the Acorn platform)	1, 2, 8	
	Agricultural land use productivity*	Farm output value per hectare per crop type [kg/ha/crop]	Survey (information collected on the Acorn platform), FAO TAPE Tool ²⁷	1, 2, 8	
	Farmer income*	(Carbon revenues + farm revenues) – operating expenses	Survey (information collected on the Acorn platform), FAO TAPE Tool	1, 2, 8	
	Farmers bankability*	Score and weights of risk indicators	Survey	9, 17	
	Nutritional variety	Number of food groups in the diet (see Appendix 7.9)	Household Dietary Diversity Score (HDDS) index survey ²⁸	1, 2	
	Pesticides exposure*	Cost reduction of pesticides (organic and synthetic)	Survey, FAO TAPE Tool	2, 3, 6, 14, 15	
	Women's empowerment*	Score and weights of empowerment indicators	Survey (e.g. women employed by local partner or women in project councils), FAO TAPE Tool	5	
	Youth employment opportunities* (15-24 yrs.)	Score and weights of education, training or employment	Survey, FAO TAPE Tool	8	
Environmental improvement	Agricultural biodiversity	Crop/animal/pollinators count	Gini-Simpson Index survey ²⁹	2, 15	
	Land restoration*	Desertification rates	Survey, WaPOR	13, 15	
	Water productivity*	Score and weights of water-saving equipment and retention	Survey, WaPOR, or LEAP Guidelines	6, 14, 15	

*Metrics and sources provided are suggestions only; projects are allowed to select other, more suitable metrics if they wish.

Table 7. Project baseline assessment and impact measurement list

5.5 Leakage assessment

For the leakage assessment, see the Acorn Methodology.

5.6 Quantification methodology

For the carbon quantification, see the Acorn Methodology.

²⁷ [FAO, 2019](#)

²⁸ [Swindale & Bilinsky, 2006](#)

²⁹ [Izsák & Papp, 2000](#)

5.7 Buffer pool process

In the event of a long-term shortfall (more than 5 years), in measured CO₂eq sequestered, from both force majeure or either mismanagement, a claim will be made on the buffer pool. 1 BCRU is equal to 1 CRU, both represent one metric ton of CO₂eq.

1. A reversal is detected (see 4.8.2.)
2. In case, within five years the reversal has not recovered the buyer is notified that the climate benefit associated with the CRU no longer exists
3. A BCRU is allocated to the cancelled CRU
4. Annually the BCRU cancellations are shared with the Plan Vivo Foundation

5.8 Monitoring & reporting

See Appendix 7.10 for a monitoring and reporting overview, including frequency, duration and auditor.

5.8.1 Monitoring durability

Acorn projects guarantee a durability of twenty years. Annual carbon monitoring is performed during the CRU generation period, and after the last generated CRU, every five years a check is executed to ensure that the captured CO₂ is still stored.

5.8.2 Monitoring project performance

Acorn projects undergo initial sample-based assessments conducted by independent, sometimes local organizations. These so-called validators assess the project set-up and accuracy using the Acorn Methodology, taking into account potential local differences.

All Acorn projects gather data and information on various carbon and socioeconomic elements and are asked to keep a record of the sources of this data and information so that they can be checked in the validation process. The validation assessment usually assesses criteria such as additionality, eligibility and baseline calculations – information that is not included in future verification assessments. The elements of the projects that are reviewed at validation are set in an Acorn-specific validation Terms of Reference following the best practice procedures of the certifier.

5.8.3 Reporting – Annual reports

From the start of a project intervention, the local partner is asked to provide annual reports on the project's progress. At a minimum, the following information should be provided in these annual reports:

- Total number of farmers participating*
- Number of new farmers participating*
- Average hectares per farmer*
- Number of CRUs generated (metric ton CO₂eq sequestered)*
- Number of CRUs sold*
- Total payments to participants
- Local partner expenditure
- Any significant updates in the project

*provided by Acorn

5.8.4 Reporting – Registry

All CRUs are reported and registered in a public registry with the following information:

- Issuance date
- Status
- Identification
- Project GPS location
- Project type
- Project developer
- Country
- Certifier
- Standard reference
- Methodology reference
- Co-benefits: Sustainable Development Goals
- GHG reduction type
- Method
- CO₂eq kg
- Storage method
- Durability
- Expiration date
- Retirement date
- Purchase date
- Buyer
- Beneficiary
- Purchase reference
- Corresponding adjustments
- Replacement CRU

5.9 Verification

For quality assurance, projects are validated by local bodies that have appropriate experience in the local ecosystem, and are then verified by approved organizations with documented experience in auditing GHG projects and which are accredited by a proper authority such as the UNFCCC's Clean Development Mechanism (CDM), the Forest Stewardship Council (FSC) or by an IAF member compliant with ISO14064 and ISO14065. Note that verification does not include reporting and evaluation of socioeconomic benefits.

Verification assessments are conducted at least every three years by independent and qualified verifiers. Based upon a set of conditions following the best practice procedures of the certifier. Local partners are asked to keep a record of their data and information sources for the purposes of verification.

6. Glossary

6.1 Abbreviations

AGB	Aboveground biomass
BCRU	Buffer pool carbon removal unit
BGB	Belowground biomass
CDD	Commercial due diligence
CO ₂	Carbon dioxide
CO ₂ eq	Carbon dioxide equivalent
CRU	Carbon removal unit
GDPR	EU's General Data Protection Regulation
GHG	Greenhouse gas
ha	Hectare
HDDS	Household Dietary Diversity Score
kg	Kilogram
LiDAR	Laser imaging, detection and ranging
RSP	Remote sensing partner
SDG	Sustainable Development Goal

6.2 Definitions

Aboveground biomass

The total mass of living matter above the ground, expressed as dry weight.

Additionality

An agroforestry project with Acorn should prove that CO₂ sequestration benefits increase above the baseline scenario with the intervention of the project and would not occur without the additional revenues generated through the sale of CRUs.

Adjustment factor

An adjustment factor of 1.0 is used for the carbon quantification model, unless in the event of high leakage around the project area, signification about of pre-existing biomass and/or low accuracy of the measurement results.

Agricultural biodiversity

The variety of crop species, livestock breeds and other organisms that support agriculture and food production.

Agroforestry

Land-use systems and technologies in which woody perennials (e.g. trees, shrubs, palms or bamboos) and agricultural crops or animals are used deliberately on the same parcel of land in some form of spatial and temporal arrangement.

Baseline scenario

The most likely future scenario for land use and land management in a project area in the absence of project intervention(s).

Belowground biomass

The total mass of living matter below the ground, expressed as dry weight.

Buffer pool

A pool of replacement CRUs, referred to as BCRUs, that are reserved for unforeseen reversal risks associated with the project. BCRUs are not eligible to be sold.

Buyer

A third party which has acquired CRUs offered for sale by the local partner and Acorn on behalf of participants through the Acorn marketplace.

Carbon baseline

The change in carbon stocks and greenhouse gas emissions expected in the baseline scenario.

Carbon benefit

An increase in carbon stock relative to the carbon baseline as a result of a project intervention.

Carbon quantification model

The calculation from biomass data to a precise number of CRUs.

Carbon removal unit (CRU)

Represents one metric ton of CO₂eq, removed from the atmosphere as a result of a project intervention, additional to any carbon reduction that would occur in the absence of the project intervention, and intended to be stored or otherwise sequestered during the durability period. CRUs are only generated based on the delta in biomass accrued in the past year (ex-post) measured by satellite monitoring technologies, in particular by satellite monitoring, complemented by LiDAR (air or terrestrial) and/or ground calculations.

Carbon sequestration

The process of direct (biological) removal of carbon dioxide equivalents from the atmosphere and its capture in aboveground biomass and partly belowground biomass. CRUs are only generated based on the delta in biomass accrued in the past year (ex-post) measured by satellite monitoring technologies, in particular by satellite monitoring, complemented by LiDAR (air or terrestrial) and/or ground calculations.

Carbon stock

The quantity of carbon in a carbon pool.

Certifier

The Plan Vivo Foundation is the certifier of the Acorn program. Plan Vivo is internationally recognised as the leading organization for community land-use projects. Certification under Plan Vivo demonstrates that a project is sustainable over the long-term, truly benefits people's livelihoods and provides vital climate and environmental benefits.

CO₂ equivalent

Carbon sequestered corrected for additional GHG emissions, net sequestered carbon dioxide as a result of a project intervention.

Coverage ratio

An indicator of how well the current buffer pool percentage covers the actual level of CRUs for potential replacement.

Deforestation

Deforestation is defined as the, non-natural, removal of trees compared to the forest baseline. The forest baseline is defined at T-5, which is 5 years prior to the start of biomass predictions (T0), also known as carbon baseline. An area is considered 'forest' when it has been forest since the

year 2000. Forest in the year 2000 is determined by selecting areas with more than 60% tree cover in the Global Forest Watch tree cover dataset³⁰.

Double claim

An instance in which multiple parties claim the same emissions reduction unit to reach mitigation targets: once by the hosting country and once by the entity using the CRUs (= double claiming with international targets – cross-country). Domestic double claiming could potentially occur with emissions trading systems (ETS) or carbon tax programs.

Double counting

An instance in which one removal unit is accounted for more than once. Double counting is a collective term and can occur through double issuance, double use and double claim (for international and domestic mitigation targets). Double issuance and use should be avoided in all instances.

Durability period

The period during which the CO₂ represented by a CRUs is expected to remain removed from the atmosphere or sequestered in the carbon pool. The reversal obligation of Acorn projects will remain in effect and shall be subject to a minimum term of 20 years commencing the year a CRU is created.

Ecoregion

A large area of land and/or water, ecologically and geographically characterized by distinct ecosystems, flora and fauna. Acorn applies the “terrestrial scheme” defined by the WWF, which splits the world’s land surface into 867 ecoregions.

Eligibility

A collective term that refers to an accumulation of conditions that determine which projects and partners can be registered under the Acorn Framework.

Ex-post credits

Credits that are issued after the project intervention has taken place, and when carbon has already been sequestered and monitored.

Food security

Access to sufficient, safe, nutritious food that meets dietary needs for maintaining a healthy lifestyle.

Land cover

The observable physical materials, vegetation and man-made features that cover the Earth’s surface.

³⁰ [Global forest watch, 2019](#)

Land tenure

A legal regime or an informal custom which defines who owns or holds the right to use a given plot of land.

Leakage

An unintended reduction in carbon stocks or increase in CO₂eq emissions outside a Project Area, as a result of Project activities.

Local community

A group of people interacting with each other and living in the same area.

Local partner

A legal entity that takes responsibility for on-the-ground practices and adheres to the Acorn Framework throughout the duration of a project. In formal contracts local partners are referred to as Project Coordinator.

Native species

Plant or animal species that occurs naturally within the project area and was not introduced as a result of human activity.

Naturalized species

A non-native species that reproduces consistently and sustains populations over more than one life cycle without direct human intervention.

Participant

A smallholder farmer (or a community group) who meets the eligibility criteria set out in the Acorn Framework that is participating in a project to develop and implement agroforestry practices.

Project

Overarching term that refers all activities that are somewhat linked to each other, often through the local partner at a particular location.

Project area

A discrete area within which one or more project intervention(s) is applied.

Project intervention

A set of activities designed to restore or improve management of land, increase carbon storage or reduce greenhouse gas emissions, which has a positive impact on local livelihoods and ecosystems.

Satellite monitoring

A collective term for monitoring techniques that do not have direct contact with the surface, like satellites or LiDAR instruments that are used to scan areas to obtain data and information.

Reversal

An escape or release into the atmosphere during the durability period, as a result of a reversal event, of any stored or otherwise sequestered CO₂.

Reversal event

Any event or circumstance occurring after transfer of any CRU and during the durability period, whether intentional or unintentional, that results, or that is reasonably likely to result, in a reversal.

Smallholder farmer

A farmer who manages a small area of land (no more than 10 ha) to cultivate crops and/or livestock, and whose primary income comes from their land management activities.

Validation

An initial assessment of project arrangements and organization to confirm its compliance with the Acorn Framework.

Verification

Periodic evaluations by a verification body to ensure the credibility and integrity of projects.

Validation or verification body

The third party instructed by Rabobank to perform the validation and/or verification that has appropriate accreditation and expertise to complete such audits.

7. Appendices

7.1 SDG targets applicable to Acorn

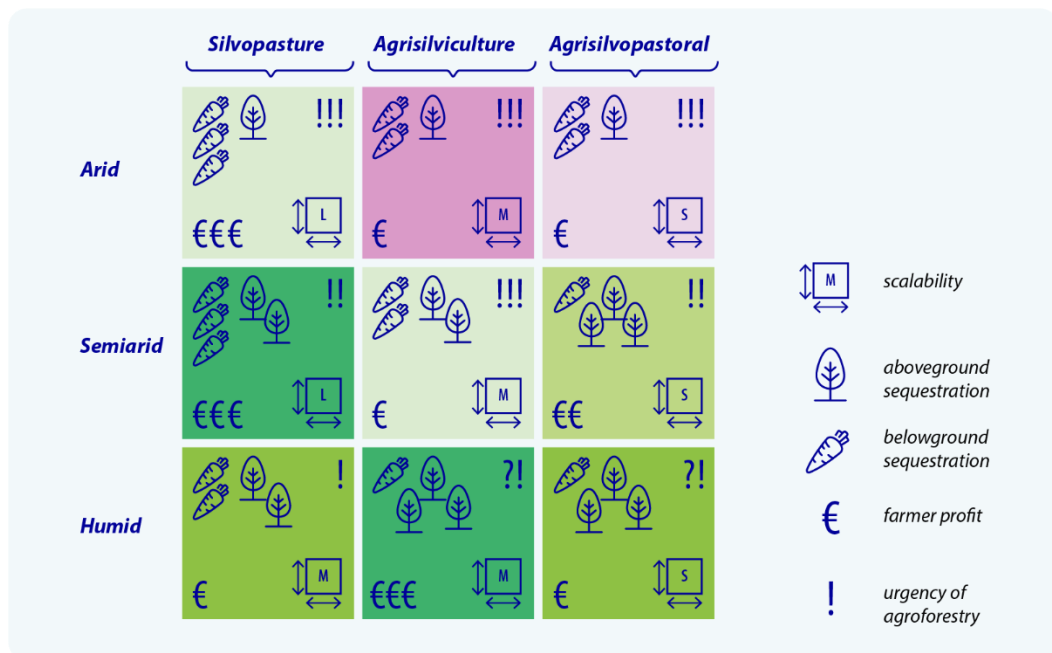
SDG	Target ³¹	Contributions
1.1	By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day	Agroforestry contributes to and increases farmer income .
1.2	By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions	
1.5	By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters	Agroforestry makes farmers more resilient to market and environmental shocks.
2.1	By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round	Agroforestry enriches the diet of rural populations in emerging markets.
2.3	By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment	Agroforestry contributes to the increasing demand for food by diversifying and increasing the yield per hectare in a sustainable manner. Agroforestry indirectly contributes to long-term soil health and prevents desertification and erosion.
2.4	By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality	
6.3	By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally	Agroforestry indirectly contributes to the decreasing need for fertilizers and to groundwater quality and infrastructure.
8.1	Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labor-intensive sectors	Agroforestry contributes to farmer productivity , and its technology allows for a scalable approach.
9.1	Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all	Satellite monitoring technology contributes to the scalability of practices and accessibility of finance for all, including smallholder farmers.
9.3	Increase the access of small-scale industrial and other enterprises, in particular in developing countries, to financial services, including affordable credit, and their integration into value chains and markets	
9.6	Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing States 18	
13.1	Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries	Agroforestry contributes to resilience to climate change effects , like flooding.

³¹ [United Nations, n.d.](#)

13.5	Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle	Acorn contributes to the availability of nature-based solutions, allowing corporations to claim and report noteworthy results .
15.1	By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally	Agroforestry continuously contributes to afforestation rates and combats desertification .
15.3	By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world	
15.5	Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	Agroforestry contributes to biodiversity .
15.10	Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems	Acorn contributes to a fair and accessible carbon market for everyone.
17.3	Mobilize additional financial resources for developing countries from multiple sources	Acorn contributes to additional financial resources for developing countries.

Table 8. SDG contributions sub level

7.2 Agroforestry analysis



Figure

9. Overview of agroforestry systems

1. Arid silvopastoral:

- Lots of root development, but negligible aboveground biomass
- Easily scalable system, requires little expertise or management, only some water
- Any arable addition will yield more money for farmers in this climate
- Dry climates desperately need trees

2. Arid agrisilvicultural:

- Some root development, but negligible aboveground biomass
- Somewhat scalable system, depending on the total number and variety of plants
- Crops need rain; arid regions are too dry for crop-based agroforestry
- Dry climates desperately need trees

3. Arid agrosilvopastoral:

- Some root development, but negligible aboveground biomass
- Hard system to scale due to the management of animals: cut and carry fodder or separation of crops
- Crops need rain; arid regions are too dry for crop-based agroforestry
- Dry climates desperately need trees

4. Semiarid silvopastoral:

- Lots of root development, but negligible aboveground biomass
- Easily scalable system, requires little expertise or management, only some water
- Additional revenue from tree production for food, combined with more animal food
- Semiarid regions are in danger of desertification, so the need for their protection is urgent

5. Semiarid agrisilvicultural:

- Some root development, some aboveground biomass growth
- Somewhat scalable system, depending on the total number and variety of plants
- Crops most associated with agri-activities do best in humid regions, but tree planting does improve drier regions for cash crops
- Semiarid regions are in danger of desertification, so the need for their protection is urgent

6. Semiarid agrosilvopastoral:

- Mostly tree production for food and fodder, negligible belowground storage
- Hard system to scale due to the management of animals: cut and carry fodder or separation of crops
- Crops most associated with agri-activities do best in humid regions, but there is opportunity for grassland grazing and cropping
- Semiarid regions are in danger of desertification, so the need for their protection is urgent

7. Humid silvopastoral:

- Some root development, some aboveground biomass growth
- Somewhat scalable system; grasslands are uncommon, so different species need to be added
- Humid climate is not ideal for grazing because the land is very valuable and fertile. This system thrives in drier regions
- Humid regions with classic grasslands are rare, but adding trees is always a good investment

8. Humid agrisilvicultural:

- Mostly tree production for food and harvest crops, negligible belowground storage
- Somewhat scalable system, depending on the total number and variety of plants
- Additional revenue from tree production for food, combined with cash crops that benefit from trees
- Humid regions are notorious for deforestation for agriculture; this might compete with forests

9. Humid agrosilvopastoral:

- Mostly tree production for food and harvest crops, negligible belowground storage
- Hard system to scale due to the management of animals: cut and carry fodder or separation of crops
- Additional revenue from tree production for food, combined with crops and more animal food
- Humid regions are notorious for deforestation for agriculture; this might compete with forests

7.3 CRU issuance & trading

Following confirmation of eligibility of a smallholder farmer, the new participant and the local partner enter into a standard Project Implementation and Carbon Removal Unit Purchase Agreement, which is adapted to the applicable host country and specificities of the participant and their farm. This agreement governs the obligations of the participant with respect to the farm, ensuring compliance with the requirements of this Framework and promoting the sequestering of CO₂ on the farm in alignment with agreed milestones, as well as payment to the participant. The agreement also outlines the obligations regarding the issuance of CRUs, whereby title to the CRUs is properly transferred to the local partner and later to the buyer, the monitoring of farm compliance with the Framework and achievement of the milestones, and cooperation between the participant and the local partner, including in the event of actual or threatened reversal events or reputational damage.

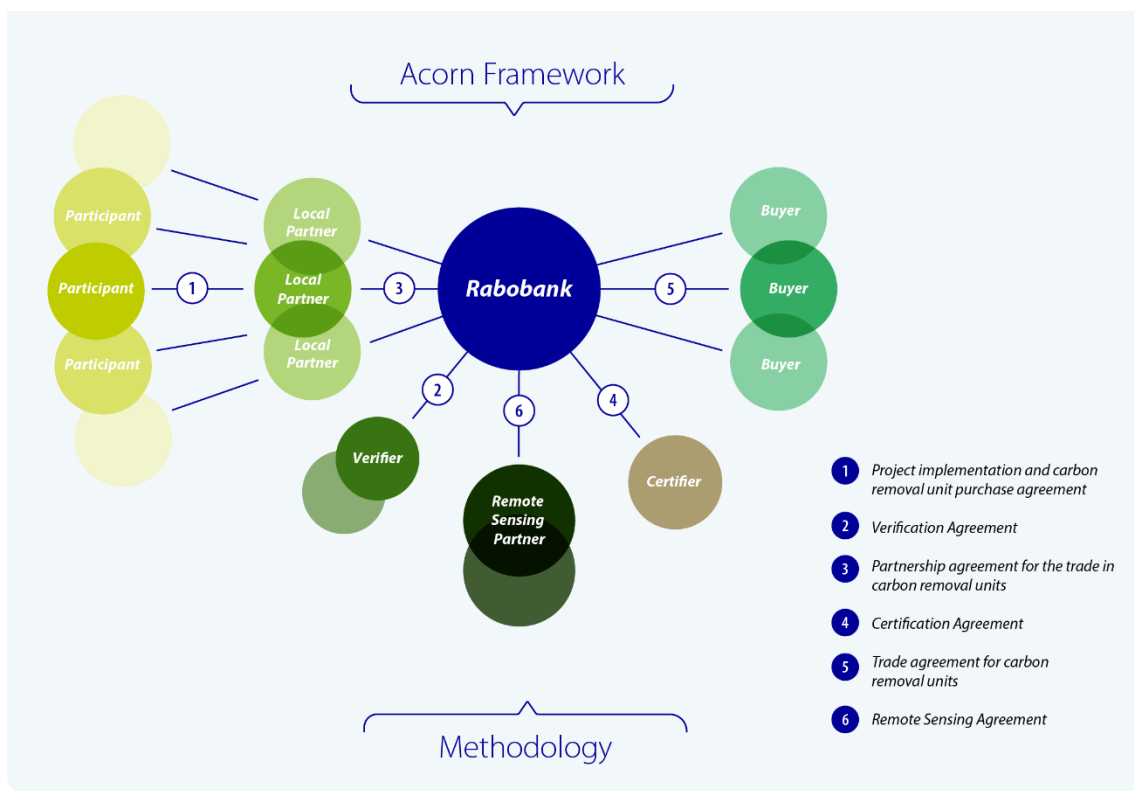


Figure 10. Overview contract set up

7.4 Payments & in-kind contributions

From the CRU sales revenue 90% is paid out by Acorn to the local partner. After, this transaction the local partner is allowed to withhold up to 10% from the CRU sales revenue to cover organizational operational costs. From the remaining 80-90% of the CRU sales revenue, the program participant is paid out at least once a year. Payments from the local partner to the participant can be split by in i.) detail/cash payments and ii.) in-kind contributions. See Table 9 for an overview of individual in-kind contributions considered applicable within the Acorn program. Other in-kind contributions may be suggested by the local partner and will be added to the list of in-kind contributions upon approval from Acorn. These forms of in-kind contributions should always be traceable to the individual participant, therefore community in-kind contributions are not considered applicable within Acorn.

Ideally, payments are made directly into the participant’s bank account via a digital payment system. In the absence of the participant having a bank account or access to another form of a digital payments system, cash payments are handed out. In the event of payments being completed by cash handouts, an appropriate mechanism shall be organized by the local partner to record the receipt of payment (i.e. a form saying who has been paid, what date, how much, their farmer ID and the farmer's signature to acknowledge payment).

Contributions	
Inputs	<ul style="list-style-type: none"> Seedling costs Sapling costs Fertilizer
Education	<ul style="list-style-type: none"> Training costs Agronomist consultation costs
Operation	<ul style="list-style-type: none"> Mobile communication costs Mobile payment costs
Livelihood	<ul style="list-style-type: none"> Land tenure consultation costs

Table 9. Set of in-kind contributions.

7.5 Stakeholder map

This stakeholder map can service project in various ways, i) prevent local conflict, ii) secure authority approval, and iii) create project awareness. Please include any stakeholder who can be affected by the implementation of an Acorn project.

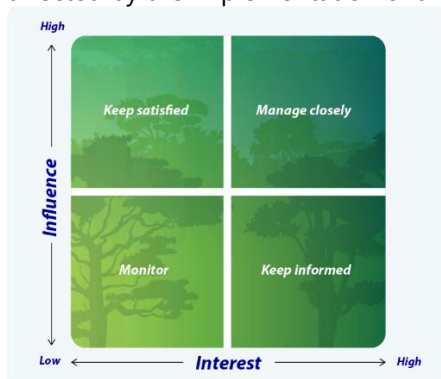


Figure 11. Stakeholder map

7.6 Roles & responsibilities

	Local partner	Acorn	Validator/verifier
Project selection	<ul style="list-style-type: none"> Performs eligibility checks and provides required data 	<ul style="list-style-type: none"> Provides eligibility guidance and selects eligible projects 	
Project preparation	<ul style="list-style-type: none"> Recruits individual farmers for the project Supports creation of project council governance structure Facilitates local agronomist for agroforestry advice, including education for farmers Uploads project documentation to the platform Identifies additional local support (e.g. nurseries, project funds), as required Communicates with and secures commitment from political partners, as required Develops viable business case 	<ul style="list-style-type: none"> Provides general agronomist advice Determines financing need Supports business case development Organizes/supports select financial structures and project funds (note: does not provide complete financing) Facilitates input on roles and responsibilities 	
Project start	<ul style="list-style-type: none"> Onboards farmers and collects details (e.g. field coordinates, land ownership and farmer consent form) Signs agreement with participants (including data consent form) Facilitates regular council meetings and necessary training Organizes logistics and availability of agroforestry designs Assists in tree planting and sustainable implementation of agroforestry designs Supports general monitoring of carbon and project indicators Uploads project documentation and copies of signed agreement to the platform Organizes transparent farmer payout 	<ul style="list-style-type: none"> Provides technical infrastructure for farmer onboarding Monitors delta in biomass and carbon sequestration Connects farmers to CRU buyers (note: does not commit to offtake) Facilitates payment Registers CRUs Reports to Plan Vivo Foundation (annually) 	<ul style="list-style-type: none"> Validator conducts initial validation assessment within one year of the project start
Project maturity	<ul style="list-style-type: none"> Assists validators and verifiers in their regular assessments Prepares and submits annual progress reports Follow described grievance resolution mechanism if grievances made Supports participants in accessing relevant project documentation (e.g. agreements, agroforestry designs, consent forms) 	<ul style="list-style-type: none"> Arranges appropriate validating and verifying bodies Oversees CRU carbon accounting Follow described grievance resolution mechanism if grievances made 	<ul style="list-style-type: none"> Verifier: Conducts random carbon verification checks at least every 3 years
Project completion	<ul style="list-style-type: none"> Provides farmer aftercare 	<ul style="list-style-type: none"> Retires CRUs 	

Table 10. General overview of roles & responsibilities. More details can be found the local partner partnership agreements

7.7 Methodology applicability conditions

In Table 11, the responsibilities of local partners that are related to the Methodology are described. Note that this overview only represents the applicability condition as design by 16-09-2021.

Applicability condition	Responsibility local partner	Comment
The Project Intervention meets the Agroforestry and any trees planted are Native or Naturalized Species.	Local partners should consult the advice of an agronomist to safeguard this applicability condition. The agroforestry design should provide proof of proper execution.	Definition agroforestry: Land-use systems and technologies in which woody perennials (e.g. trees, shrubs, palms or bamboos) and agricultural crops or animals are used deliberately on the same parcel of land in some form of spatial and temporal arrangement.
Project Areas must not have been cleared of native vegetation within 5 years of the start of the Project Intervention.	Initially check by the RSPs with a T-5 check, but the local partner is responsible for confirming this condition by consulting participant on this eligibility criteria.	
Individual Project Areas are between 0.1 and 10 ha and are not on wetlands.	Local partners should check this eligibility criteria for each individual participant at the start of project intervention. RSPs will provide confirmation when checking the GPS coordinates.	
All land within the Project Area is either cropland or degraded land under the Baseline Scenario.	Similar to above part of the eligibility check a local partner performs at participant level	
Project Interventions must not include the planned harvesting of planted trees during or after the Crediting Period, and the risk that unplanned harvesting may take place should be assessed and mitigating actions should be employed to lower the risk where appropriate.	The local partner is responsible for properly informing the participants about this requirement	
Heavy machinery must not be used for site preparation or management.	The local partner is responsible for properly informing the participants about this requirement	
Project Interventions must not increase the use of synthetic (nitrogen-containing) fertilizers relative to the Baseline Scenario.	The local partner is responsible for properly informing the participants about this requirement	

Table 11. *Applicability condition methodology*

7.8 Reversal risk assessment

Project phase	Drivers behind reversal risk	Risk level	Potential mitigating measures	Justification
Project adoption/start	Limited education or inadequate understanding of agroforestry	<High, Medium, Low>	<ul style="list-style-type: none"> • Build on local culture, traditions and markets³² • Ensure accessible training • Secure agronomist assistance 	
	Marginal community support or low community involvement	<High, Medium, Low>	<ul style="list-style-type: none"> • Explore farmer needs • Promote program • Demonstrate positive impact on social and economic well-being 	
	Inadequate operational capacity (limited experience, no local presence)	<High, Medium, Low>	<ul style="list-style-type: none"> • Use the train-the-trainer principle 	
	Insufficient (local) nurseries	<High, Medium, Low>	<ul style="list-style-type: none"> • Make upfront arrangements • Negotiate purchasing power 	
	Animal or human interference	<High, Medium, Low>	<ul style="list-style-type: none"> • Erect fencing (natural, etc.) • Help mediate disagreements between perceived land boundaries 	
Project progress	Negative project cash flow	<High, Medium, Low>	<ul style="list-style-type: none"> • Ensure adequate financial planning • Ensure local financing for unforeseen events 	
	Poor agroforestry schemes	<High, Medium, Low>	<ul style="list-style-type: none"> • Encourage species and genetic diversity • Secure agronomist assistance 	
	Change of land ownership and coverage	<High, Medium, Low>	<ul style="list-style-type: none"> • Involve one entity to manage/track rights status 	
	Political instability (e.g. war, economic crisis)	<High, Medium, Low>	<ul style="list-style-type: none"> • Keep up-to-date on local and national political conditions 	
	Natural risks: <ul style="list-style-type: none"> - Fires - Pests & disease - Extreme weathers - Other events 	<High, Medium, Low>	<ul style="list-style-type: none"> • Perform historical risk analysis and apply applicable preventive measures • Training in effectively containing natural risks 	
Project maturity	Logging risk	<High, Medium, Low>	<ul style="list-style-type: none"> • Ensure alternative fuel for wood • Ensure food productivity of trees 	
	Waning or short-lived local partner commitment	<High, Medium, Low>	<ul style="list-style-type: none"> • Facilitate continuous dialogue and evaluation • Sign commitment agreements 	

Table 12. Reversal risk assessment

³² [Leakey, 2013](#)

7.9 Household Dietary Diversity Index

The Household Dietary Diversity Score (HDDS) will be estimated as described in the HDDS Indicator Guide³³. Participants are randomly be asked to indicate how many different food groups they have consumed over the last 24 hours. Information on the types of food groups monitored and used to calculate the HDDS is provided below.

Food group	Examples of foods	Consumed Food type
1 Cereals	Corn/maize, rice, wheat, sorghum, millet or any other grains or foods made from these (e.g. bread, noodles, porridge or other grain products) or other local foods (e.g. ugali, nshima, porridge or pastes or other locally available grains)	Yes/no
2 Root and tubers	Any potatoes, yams, manioc, cassava or any other foods made from roots or tubers	Yes/no
3 Vegetables	Any other vegetables including wild vegetables	Yes/no
4 Fruits	Fresh or dried fruits	Yes/no
5 Meat, poultry, offal	Beef, pork, lamb, goat, rabbit wild game, chicken, duck, or other birds, liver, kidney, heart, or other organ meats	Yes/no
6 Eggs	Chicken, duck, guinea hen or any other egg	Yes/no
7 Fish and seafood	Fresh or dried fish or shellfish	Yes/no
8 Pulses, legumes, nuts and seeds	Beans, peas, lentils, nuts, seeds or foods made from these	Yes/no
9 Milk and milk products	Milk, cheese, yogurt or other milk products	Yes/no
10 Oils and fats	Oil, fats or butter added to food or used for cooking	Yes/no
11 Sweets	Sugar, honey, or sugary foods such as chocolates, candies, cookies and cakes	Yes/no
12 Spices, condiments and beverages	Spices(black pepper, salt), condiments (soy sauce, hot sauce), coffee, tea, sweetened soda, alcoholic beverages OR local examples	Yes/no

Table 13. The twelve food groups with examples

³³ [Swindale & Bilinsky, 2006](#)

7.10 Monitoring & reporting overview

	Monitoring frequency	Monitoring duration	Monitored by	Audited by	Scope
Biomass delta during crediting period	Annually	Until end of crediting period	RSP's of Acorn	Verification body	Plot level
Biomass delta after crediting period	At least every five years	Until end of durability period	RSP's of Acorn	Certifier	Plot/Project level
Project impact indicators	At least every three years	Until end of crediting period	Local partner	Verification body	Project level
Buffer pool coverage ratio	Every two to five years	Until program ends	Acorn	Certifier	Program level
Risk reversal	At least every five years	Until end of crediting period	Local partner	Certifier	Project level
Leakage	At the start of the project intervention	One off	Local partner	Acorn	Project level

Table 14. Monitoring & reporting overview

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