



Draft Guidance

METHODOLOGY FOR IDENTIFICATION OF PAST HCVS AND ASSESSING HCV LOSS

Draft 0

27/10/2025



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This is the approved official English version of this document. In case of any differences between the English version and any translation of this document, the English version shall prevail.

EXECUTIVE SUMMARY

Background

The need for clarity on assessing high conservation value destruction in the past

There are best practices for assessing existing high conservation values (HCVs) in the present with the goal of protecting and enhancing those values. There is not clear advice on how to assess HCVs when they have already been lost, damaged, or destroyed. FSC has been in communication with the High Conservation Network (HCVN) in the past to receive recommendations on how to address such cases. FSC has identified the need for a formal process to guide experts in determining destruction of HCVs under the Policy for Association (PfA) and determining HCVs for the purpose of restoration under the FSC Remedy Framework. FSC works with a variety of service providers who may have varying understandings and methodologies for achieving the goal. This puts a burden on FSC staff to pass on the knowledge of best practices onto each provider and can lead to results of varying format and quality. The present document seeks to address these issues.

Development process and normative status of work products

Situations such this issue may arise where the FSC Secretariat develops additional materials to support the implementation of normative documents. This may come in the form of frequently asked questions documents, technical clarification documents, audio/visual materials, presentations, service agreements, memorandums of understanding, internal standard operating procedures, guidance, or other materials.

While guidance is acknowledged and defined in PRO-01-001 as “technical information outlining some means of conformity with a set of FSC requirements. Guidance in the FSC system is considered informative only”, there is no set process for developing guidance. Depending on the need and available resources, guidance may be developed with varying degrees of formality and approval. This is not a normative document, meaning its usage is not enforced by a normative requirement.

In late 2024, FSC approached the High Conservation Value Network to collaborate in conversations about best practices, and then on the elaboration of a draft document which could meet FSC’s needs for a guidance document.

This document contains the results of this process. FSC considers this a Draft 0 document, which can serve the intended purpose, but which contains areas identified for further need for clarification. Those areas for clarification are denoted with commentary in this document in **orange text**.

Next steps

The development of this document was envisioned as a two phase project. The FSC Secretariat believes the document is technically sound in its recommendations, but that it can be improved upon in the areas discussed below. It is envisioned that these conversations will take place in a technical working group, followed by a public consultation and final draft. This process will take place in 2026.

Review of the methodology through the lens of PfA investigations

The present draft focuses more heavily on the use case for the FSC Remedy Framework, including some of the specific steps and role involved in that process. Because PfA disassociation cases for destruction of HCV can lead into cases to remedy the harms caused by that destruction according to the Remedy Framework, it is important to have an aligned guidance for all such assessments. There are two possible use cases for PfA investigation, as follows:

- As a desk-based GIS analysis, to gather additional evidence, mainly when a defendant is not cooperative, or has no more control over the area, etc.

- As part of a full investigation, involving the defendant as much as possible, possibly with on-the-ground truthing (though possibly still with some accessibility limits).

For these use cases, however, not all content of this Guidance could be applied. Where fieldwork activities are not part of the investigation work, the following sections of this Guidance are particularly relevant for such desk-based PfA investigations.

- Activities described in PART 2 Section 4.1 Preparatory work phase (sub-section a, b, c and d).
- Assessment themes covered in PART 1 Section 3, Section 4 (including Annex 1 and 2), Section 5, Section 6, and Section 7 - without the sections and their respective content pertaining to field data collection and/or analysis.

Notes are made throughout the document as to where further alignment is needed.

Spectrum of HCV loss versus damage versus destruction

In the FSC normative framework, there are references to loss of HCVs, as well as damage or destruction of HCVs. In the next steps, it would be imperative for this methodology to provide guidance about how to assess these different levels, as there are varying consequences. For example, a loss of HCV could be cause for a corrective action in a forest management scenario, whereas, if it is proven that loss amounts to active destruction, it would be cause for disassociation.

Alignment with existing requirements

This document has undergone a diligent development process. Nevertheless, some of the concepts, specifically related to the Remedy Framework, are complex and evolving. An extensive check has not been done on the document to check for alignment, for example, with the requirements regarding free, prior, and informed consent (FPIC) in determining loss of HCVs in comparison to another piece of draft guidance, the FPIC Implementation in the FSC Remedy Framework. If a misalignment were to be found, that earlier published document would prevail in questions of FPIC.

In addition, the relationship and sequencing of HCV loss assessments within the baseline assessment phase of the Remedy Framework needs clarification. Some of the requirements of the baseline assessments overlap with what the HCV assessment covers—for example natural forest, and land cover and land use, which are in both under environmental baseline assessments; ecosystem services affecting communities, cultural values, and community needs, which are under social baseline assessments. All of them are already covered under HCVs.

Finally, there is a challenge presented in the alignment of impact area and the Area of Assessment regarding the sequencing of the identification of impact areas, especially the verification of FPIC in this phase, which happens prior to the baseline assessment phase, when HCV loss is assessed. Considering that the delineation of Impact Areas occurs at the very beginning of the process, reflecting from HCVN's observation after reviewing over 300 HCV assessment and HCV-HCS assessment reports in last 10 years, the definition and final delineation of the AOI may change as the assessment progresses, particularly when best practice is for the assessors to proactively seek and address stakeholder input, which could directly concern the definition of impact areas.

HCVN recommends FSC explore ways and mechanisms that allow insights and results from the baseline assessments to feed back into the defined Impact Areas, ensuring these areas remain accurate and reflective of all relevant findings.

FSC extends gratitude to all who participated in the development of the document. For questions or concerns, please contact the Alternative Dispute Resolution & Remedy team at remedy@fsc.org.

DRAFT

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INTRODUCTION

Since its inception in October 1993, FSC has maintained a firm stance against the conversion of natural forests. Over the past decade, FSC has developed and updated several key policy and procedure documents, notably the Policy for Association and the Policy to Address Conversion, which ultimately led to the creation of the FSC Remedy Framework.

The Remedy Framework procedures address unacceptable activities as stipulated by the FSC-POL-01-004 V2 Policy for Association, FSC-POL-01-004 V3 Policy for Association, and instances of conversion as stipulated by the FSC-POL-01-007 V1-0 Policy to Address Conversion. One of the key requirements outlined in these procedures is to remedy social and environmental harms caused, in which steps to identify High Conservation Values (HCVs) that have been harmed should be undertaken.

The Remedy Framework procedures require the reliance on best practice guidelines and the use of best available information, particularly in establishing the process to conduct baseline assessments - including assessing HCV Loss covering all six categories of HCVs. Existing best practice guidelines for HCV assessments primarily address HCV identification at the **present**/current time when HCVs are still present, to inform management activities. However, the Remedy Framework requires information resulting from HCV assessments to also determine whether HCVs were present in **the past**; what those HCVs were; and the **extent of HCV loss** incurred. This is estimated by comparing the current HCV presence and condition to the HCV presence and condition(s) prior to the unacceptable activities, and/or conversion of natural forest or other natural ecosystems to other land uses.

Note: Future alignment of the document is needed to better reflect usage in PfA cases.

Over the past years, FSC and the HCV Network Secretariat have engaged in discussions on the topics of loss of HCV, assessment methodology, and on improving the quality of HCV assessments. Later, HCVN was contracted by FSC for the development of this Draft 0 guidance document.

OBJECTIVES

This guidance outlines best practice methodologies in identification of past HCVs that existed at the time immediately before commencement of the unacceptable activities, and in assessment of HCV loss when the current HCV presence and condition is compared to the presence and condition(s) prior to conversion and/or unacceptable activities, as required per Part 2 Section 7 of FSC-PRO-01-004 V1-0 and FSC-PRO-01-007 V1-0

Alongside existing guidance for present day HCV identification, this guide should enable FSC to uphold robust, consistent and credible processes, such as in the case of Remedy Framework cases.

Note: Future alignment of the document is needed to better reflect usage in PfA cases.

SCOPE

The concept of High Conservation Values was first introduced by the Forest Stewardship Council (FSC) in 1999 under Principle 9 of its certification standards, aiming to ensure that areas with exceptional environmental or social importance within forest management units (FMU) were adequately safeguarded. Initially termed as High Conservation Value Forest (HCVF), per FSC-POL-01-004 V2 Policy for Association and FSC-STD-01-002 (V1-0), High Conservation Value Forests are those that possess one or more of the following attributes:

- a) forest areas containing globally, regionally or nationally significant:

- concentrations of biodiversity values (e.g. endemism, endangered species, refugia); and/or
 - large landscape level forests, contained within, or containing the management unit, where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance
- b)** forest areas that are in or contain rare, threatened or endangered ecosystems.
- c)** forest areas that provide basic services of nature in critical situations (e.g. watershed protection, erosion control).
- d)** forest areas fundamental to meeting basic needs of local communities (e.g. subsistence, health) and/or critical to local communities' traditional cultural identity (areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities).

The HCV approach quickly demonstrated relevance beyond forestry. By 2001, tools were developed to apply the concept in non-forest landscapes, and in 2005, the High Conservation Value Resource Network - now the HCV Network, was established to support its consistent and credible application across various sectors. Over time, HCVs have become integral to a range of Voluntary Sustainability Standards and Commodity Initiatives —including those for agriculture, among others in commodities such as palm oil, soy, cotton, sugar and rubber.

An HCV is a biological, ecological, social or cultural value of outstanding significance or critical importance. There are six categories of HCVs, as follows:

HCV 1: SPECIES DIVERSITY

Concentrations of biological diversity including endemic species, and rare, threatened or endangered species, that are significant at global, regional or national levels.

HCV 2: LANDSCAPE-LEVEL ECOSYSTEMS, ECOSYSTEM MOSAICS AND IFL

Large landscape-level ecosystems, ecosystem mosaics and Intact Forest Landscapes (IFL) that are significant at global, regional or national levels, and that contain viable populations of the great majority of the naturally occurring species in natural patterns of distribution and abundance.

HCV 3: ECOSYSTEMS AND HABITATS

Rare, threatened, or endangered ecosystems, habitats and refugia.

HCV 4: ECOSYSTEM SERVICES

Basic ecosystem services in critical situations, including protection of water catchments and control of erosion of vulnerable soils and slopes.

HCV 5: COMMUNITY NEEDS

Sites and resources fundamental for satisfying the basic necessities of local communities or Indigenous Peoples (for livelihoods, health, nutrition, water, etc.), identified through engagement with these communities or Indigenous Peoples.

HCV 6: CULTURAL VALUES

Sites, resources, habitats and landscapes of global or national cultural, archaeological or historical significance, and/or of critical cultural, ecological, economic or religious/sacred importance for the traditional cultures of local communities or Indigenous Peoples, identified through engagement with these local communities or Indigenous Peoples.

NOTE: The HCV concept applies to all ecosystems, including HCV areas in savannahs, grasslands, peatlands and wetlands - not only to natural forests and forest plantations.

REFERENCES

The following documents are indispensable for the application of this document.

For references without a version number, the latest version of the referenced document (including any amendments) applies:

FSC-POL-01-004 V2 Policy for Association
FSC-POL-01-004 V3 Policy for Association
FSC-POL-01-007 V1-0 Policy to Address Conversion
FSC-PRO-01-009 Processing FSC Policy for Association Complaints Procedure
FSC-STD-60-004 V2-1 EN International Generic Indicators
FSC-PRO-01-004 V1-0 FSC Remedy Framework Procedure , enabling association
FSC-PRO-01-007 V1-0 FSC Remedy Framework Procedure , enabling certification and association
FSC-GUI-30-011 FSC Guidance for Stakeholder Engagement
FSC-GUI 30-003 EN V2-0 FPIC Guidelines
FSC-GUI-60-009 V1-0 EN Guidance for Standard Development Groups: Developing National High Conservation Value Frameworks
FSC-GUI-60-009a V1-0 EN Template for National HCV Frameworks
FSC-GUI-30-009 V1-0 EN HCV Guidance for Managers
FSC-GUI-30-010 V1-0 EN IFL Guidance for Managers
Forest management interpretations, INT-STD-60-004_05 (pages 100-101)
Principle of the HCV Approach
Common Guidance for the Identification of HCV
FSC-DIR-20-007_EN_FM_Evaluations , ADV-20-007-02 Certification of Primary Forests
The latest HCV assessment manual

TERMS AND DEFINITIONS

Note: The use of asterisks (*) is related to defined terms found in the FSC Remedy Framework.

Assessment Area, Area of Interest and Impact Area

The identification of HCVs in the present day usually takes place in an assessment area - often equal to an FMU held by an Organization for timber and/or NTFP harvesting purposes, and always includes the consideration of the wider landscape, a practice embodied as one of the Principles of the HCV Approach and Criterion 6.8 in FSC Principles and Criteria. What this wider landscape consideration means is that an extended area surrounding the assessed FMU is considered relevant to the social and/or environmental aspects of the assessment due to the likelihood that presence of and impacts on HCVs do not stop at the FMU boundary. Understanding of the wider landscape context is essential for interpreting historical land cover and for accurately identifying ecosystems that may have been lost or impacts on communities that extended beyond historical concession boundaries.

Note: Forest Management Unit (FMU) is used throughout the document, which was standardly used by FSC in the past. Management Unit (MU) may include non-forest ecosystems. In the next stage of development, the proper alignment of terminology will be determined.

In HCV Approach terms, and in a forestry context, the term assessment area refers to areas within the organisation's FMU(s) assessed for HCV presence. The wider landscape plus the assessment area makes up what is termed **the Area of Interest (AOI)** of the HCV assessment.

On the other hand, FSC Remedy Framework Procedures require maps and inventories of past and current HCVs status in all sites and extended impact areas. In FSC terms, Impact Areas are defined as follows:

Impact Areas: Areas affected by conversion* or unacceptable activities*. (Source: FSC-PRO-01-007 V1) For the purposes of this document, this term refers to areas affected by unacceptable activities*, which includes conversion of natural forest cover*."

Impact Areas may extend beyond the FMU's boundary into the wider landscape, and may also evolve along the timeframe, from the time when unacceptable activities by the Organization began and the present day.

In this sense, for the purpose of assessing HCV loss, the equivalent term for "impact areas" under the HCV Approach is the Area of Interest (AOI).

Affected communities, affected rights-holders and Impacted Rights holders

Furthermore, within the Impact Area, a current HCV assessment following the current HCV Approach terms will consider engagement with "affected communities", defined as Indigenous Peoples and local communities (incl. traditional peoples), and inhabitants with legal or customary ownership and/or usage rights over any of the land and resources that may be (and/or have been) affected directly or indirectly by the operational activities within the FMU. In the context of the Remedy Framework, "affected communities" includes both "Affected right holders" and/or "Impacted right holders" as defined below, whichever applicable.

Affected rights holders* is a term defined in the FSC-STD-60-004 V2-0 International Generic Indicators. This definition is maintained in the FSC Remedy Framework. It refers to individuals or groups with legal or customary rights* whose Free, Prior and Informed Consent* is required to determine management decisions, and who are affected by conversion* and/or unacceptable activities*.

Impacted rights holders* is a new term used in the FSC Remedy Framework to refer to individuals or groups with legal or customary rights* who have suffered harm* caused by conversion* and/or unacceptable activities*. This is a broader group than affected rights holders* because the Free, Prior,

and Informed Consent* of all impacted rights holders* may not be required to determine management decisions. This group includes affected rights holders*.

Assessor and Practitioner

The term “assessor” used in this Guidance refers to the **Independent Assessor*** - an expert entity without conflict of interest who is not subject to *The Organizations* or the corporate group’s’ authority, influence, or control, as defined by the FSC Remedy Framework.

Where the term Practitioner is used in this document, it refers to any person conducting the HCV identification following this guidance and manual for assessing HCV loss, where the FSC Remedy Framework does not require an **Independent Assessor** to conduct the assessment.

Note: Future alignment of the document is needed to better reflect usage in PfA cases.

The Organization

The person or entity holding or applying for certification and therefore responsible for demonstrating compliance with the requirements upon which FSC certification is based (Source: FSC-STD-01-001 V5-2.)

Note: Future alignment of the document is needed to take into account the use of the term “corporate group” in remedy and PfA cases.

Loss of HCV

The term ‘loss of HCV’ refers to the result of conversion* and/or unacceptable activities* causing destruction of HCVs* and resulting in ‘lasting change of HCV* areas’, as defined in the FSC Policy for Association (FSC-POL-01-004 V3-0) and FSC Policy to Address Conversion (FSC-POL-01-007 V1-0):

Conversion

Note: There are different relevant definitions of conversion depending on when the conversion took place and the context of the use of the definition (i.e., for certification or association).

From December 1994-December 2020: For certification purposes, conversion is defined as change from natural forests to plantations or other land uses. (Source: Based on Criterion 6.10 of FSC-STD-01-001 V5-2).

This level of conversion does not presume the destruction of HCVs.

From July 2009-January 2023: In the PfA, conversion is defined as rapid or gradual removal of natural forest, semi-natural forest or other wooded ecosystems such as woodlands and savannahs to meet other land needs, such as plantations (e.g. pulpwood, oil palm or coffee), agriculture, pasture, urban settlements, industry or mining. This process is usually irreversible.

That conversion is considered significant in any case of:

- o Conversion of High Conservation Value Forests
- o Conversion of more than 10% of the forest areas under the organization's responsibility in the past 5 years
- o Conversion of more than 10,000 ha of forests under the organization's responsibility in the past 5 years

From January 2021: For certification purposes, conversion is defined as a lasting change of natural forest cover or High Conservation Value areas* induced by human activity*. This may be characterized by significant loss of species diversity*, habitat diversity, structural complexity, ecosystem functionality or livelihoods and cultural values. The definition of conversion covers gradual forest degradation* as well as rapid forest transformation.

From January 2023, conversion of natural forest is considered an unacceptable activity and defined as a lasting change of natural forest cover induced by human activity. This covers gradual forest degradation as well as rapid forest transformation.

- **Induced by human activity:** In contrast to drastic changes caused by natural calamities like hurricanes or volcanic eruptions. It also applies in cases of naturally ignited fires where human activities (e.g., draining of peatlands) have significantly increased the risk of fire.

- **Lasting change of natural forest cover:** Permanent or long-term change of natural forest cover. Temporary changes of forest cover or structure (e.g., harvesting followed by regeneration in accordance with the FSC normative framework) is not considered conversion of natural forest cover.

Unacceptable Activities: As listed in the Policy for Association V2-0:

- a) Illegal logging or the trade in illegal wood or forest products
- b) Violation of traditional and human rights in forestry operations
- c) Destruction of high conservation values in forestry operations
- d) Significant conversion of forests to plantations or non-forest use
- e) Introduction of genetically modified organisms in forestry operations
- f) Violation of any of the ILO Core Conventions

Unacceptable Activities: As listed in the Policy for Association V3:

- a) Illegal harvesting or illegal trade* in forest products*
- b) Violation of customary* or human rights* within the forestry or forest products sector*
- c) Violation of workers' rights* and principles defined in the International Labour Organization (ILO) Declaration on Fundamental Principles and Rights at Work within the forestry or forest products sector*
- d) Destruction of High Conservation Values* (HCVs) in forests or High Conservation Value areas*
- e) Conversion of natural forest cover*
- f) Use of genetically modified* organisms in forestry operations for any other purposes than research.

Destruction of High Conservation Values and High Conservation Value Forests

Lasting change of any of the High Conservation Values*. This may be characterized by significant loss of species diversity*, habitat diversity, structural complexity, ecosystem functionality or livelihoods and cultural values. Temporary changes that do not negatively and permanently impact the values (e.g., harvesting followed by regeneration in accordance with Principle 9) are not considered a lasting change.

Lasting change of High Conservation Value* areas: Permanent or long-term* change of any of the High Conservation Values*, precluded from naturally reverting back towards pre-conversion conditions. Temporary changes of HCV areas that do not negatively and permanently impact the values (e.g. harvesting followed by regeneration in accordance with Principle 9) is not considered a lasting change.

HOW TO USE THIS DOCUMENT

The first part of this document is the guidance. Each section is organised around the themes or activities covered, why these are necessary or, in some cases, why they may not be appropriate, and how they can be addressed effectively using best practices. This structured approach aims to help users navigate the assessment of loss of HCVs with greater confidence, ensuring the use of best available data and best practices in analysing data to substantiate the assessment results.

Illustrative case scenarios designed to demonstrate optimal applications of the methodology are included and common challenges and problematic applications of the methodology are also addressed.

The second part of this document is a manual for assessors, with a series of sequenced steps to maintain rigour and ensure effective and appropriate stakeholder involvement in the identification of past HCVs and determining the loss of HCVs. The manual also serves as a planning tool to help a user organise the assessment process from start to finish, resulting in final conclusions that are substantiated by evidence, coherent and technically sound.

Note: Future alignment of the document is needed to better reflect usage in PfA cases.

PART 1: GUIDANCE

1. Scope and Context of the Guidance

Understanding the scope of this guidance is essential to ensuring it is applied as intended. Each assessment case will have its own unique context, which should be established through a consistent methodology and best practices before proceeding. The recommended approach will be outlined in this guidance.

It is important to note that this guidance does not cover the full identification of current HCVs, although this is an essential step to assess the loss of HCVs over time. The identification and mapping of current HCVs is conducted in the present-day context—it is a snapshot in time of when the assessment is conducted. It makes HCV data available, enabling decision-making and adaptive management practices to prevent loss, degradation, and restrictions on access to HCVs, thereby facilitating a better understanding of community rights and conservation priorities. The best practice in identification of current HCVs follows the Common Guidance for the Identification of High Conservation Values and its respective HCV Assessment Manual. Further, the FSC-GUI-60-009 is a reference especially to the national HCV Frameworks in the National Forest Stewardship Standards.

To maintain consistency with existing HCV guidance for the use of the HCV Approach, this guidance and manual adopt common terms relevant to HCV assessments for current conditions see **Terms and Definitions**.

1.1 Identification of the past HCVs

The identification of past HCVs is an exercise which blends both desk-based and field-based work to collect data that informs the fullest picture of the past presence, nature, extent and condition of HCVs of all categories in the AOI, at a specific target point in time informed by the case in question. It is based on the best available information gathered following best practices as outlined in this guidance and its corresponding manual.

Note: Future alignment of the document is needed to better reflect usage in PfA cases.

Identification of past HCVs is conducted as a participatory process for identifying social and ecological values that existed in the past. Data used encompasses primary information collected through diverse methods, including field surveys, satellite imagery interpretation, historical timelines and any previously

undertaken participatory mapping exercises prior to the HCVs identification, information exchange with impacted rights holders, relevant experts, the Organization, and other interested stakeholders, as well as space and time-relevant secondary information.

Note: The use of the “Organization” must be aligned in the document. In cases related to the Policy for Association and remedy for violations of the Policy for Association, the use of the term may or may not be applicable to companies included in the scope of the assessment.

1.2 Assessment of HCV Loss

The Assessment of HCV Loss is the next step where potential losses of HCVs as a direct and indirect result of unacceptable activities, including conversion of natural forest cover* are identified by comparing past HCV presence, nature, extent and condition against data on current HCVs.

Assessment of HCV Loss looks at whether and to what extent past values are still present, have been completely lost, altered, degraded, restricted or made inaccessible in some way, and informs where the understanding of their status (in what conditions those HCVs are) may also need to be updated.

Whenever assessments of HCV Loss are conducted in areas currently or previously owned and/or used by Indigenous Peoples, traditional peoples and local communities with legal or customary rights, their free, prior and informed consent (FPIC) is required to conduct the assessment, and they have the right to participate in the assessment activities including information exchange through different methods, including providing historical timeline record, participatory mapping exercises, and the final stakeholders engagement of the applicable process in which the information they provided is used to draw conclusions.

2. Assumptions, limitations, and safeguards of the methodology proposed

The guidance for identifying past HCVs and assessing HCV loss is primarily designed to provide best practices to follow, but due to the variety of scenarios, HCV categories and details to consider, it is not without limitations. The following points outline key constraints, underlying assumptions, and practical safeguards, as well as challenges in applying the guidance.

1. Estimation of loss cannot address ongoing conversion scenarios

The proposed methodology intends to reconstruct past conditions and quantify historical loss of HCV areas. It is not intended to monitor active land-use changes in real time. While ongoing conversion is highly relevant for conservation and management, it requires different monitoring tools and datasets. Attempting to merge historical reconstruction with real-time tracking can compromise clarity and lead to conflated results.

2. Exclusion of harm or liability quantification

This guidance on assessment of loss of HCVs does not address the identification and quantification of harms or liabilities which are outside the scope of this document. This guidance focuses on changes in HCV presence and does not translate these losses to harms. Harm assessment requires separate guidance covering appropriate methodology.

3. Partial coverage of environmental baseline information

While HCV 1, 2, 3, and 4 address environmental values including biodiversity, ecosystems, and ecosystem services, this guidance and its contents are not intended to replace or replicate broader Environmental Baseline Assessments. It will not capture every environmental parameter that might be relevant for impact assessment, such as soil condition, detailed hydrological modelling, or greenhouse gas accounting. The focus remains on HCV category specific attributes.

4. Partial coverage of social and cultural values

Similarly, while HCV 4, 5, and 6 encompass ecosystem services affecting communities, cultural values, and community needs, this guidance does not attempt to cover all aspects typically addressed in Social Baseline Assessments—such as land tenure, social risk analysis, or development trends. These elements require complementary assessments to provide a complete social context.

5. Scientific rigour and practicality, the challenges in obtaining and using the best available data

High scientific standards demand robust, peer-reviewed data, but practitioners often work with mixed-quality datasets, local knowledge, or historical records with gaps. This often results in collected data sources varying widely in nature, quality, format, and completeness.

This guidance assumes use of the best available data, yet “best” may be relative, especially if datasets are difficult or time-consuming to access, scarce, outdated, or inconsistent. This creates a tension between precision and practical feasibility. For example, practitioners may need to rely on stakeholder engagement to surface local knowledge, on extrapolation from similar habitats, or on imperfect historical records when robust scientific data or well-documented records of practices over long periods simply do not exist.

6. Comparability and compatibility of data over time

Older data sets may have been captured using methodologies which have since been improved. Inevitably, this raises the challenge of achieving comparability without excluding valuable, yet imperfect, sources of information. Given an ideal scenario, the methods and datasets used for different time periods would be directly comparable.

Technology evolves—remote sensing resolutions improve, classification systems change, and mapping methodologies shift. This can enhance present-day accuracy but may reduce comparability with older datasets. With the evolving understanding and practices in data collection, it may not be possible to expect and achieve the same level of robustness for every dataset.

However, the processes followed should be as standardised as possible to ensure consistency across assessments wherever possible, balancing accuracy with historical continuity, and sometimes opting for coarser but more comparable data.

It may remain challenging to achieve consistency across all cases, although data sets and analysis techniques are continually growing and improving.

7. Undiscovered or inconspicuous species

Some species, especially rare, cryptic, or recently described taxa, may have gone unrecorded in the available datasets, meaning their historical presence and potential loss could be overlooked. This uncertainty is particularly challenging for HCV 1 assessment. It underscores the importance of using habitat-based proxies and expert judgment to identify likely but lightly studied or undocumented biodiversity values. Knowledge of these values could inform final decision making on the forms of remedy required.

8. Integrating local knowledge into assessments

Global datasets provide comparability but may miss fine-scale ecological patterns and socio-cultural nuances. The guidance therefore emphasizes the importance of combining global baselines with regional, national, sub national and local data for context-specific accuracy.

Assessment Themes Overview



Figure 1. Illustration of the identification of past HCVs and Assessing HCV loss, with all the themes to cover.

3. Defining the Target dates and AOI to assess

3.1 Targeting dates for the assessment

Establishing the target date(s) is essential, as this determines the specific time period(s) for which data must be collected, assessed, and used to draw conclusions.

The date(s) when the Organization obtained legal permit(s) mark the starting point of the Organization's management responsibilities. If multiple permits existed, the earliest permit date should be used as the reference start point.

- Key dates for FSC in assessing HCV loss:
 - **1 January 1999.**
 - **31 December 2020**
 - **31 December 2022**
 - **Any date after 1 January 2023** where conversion and/or other unacceptable activities occurred.

In addition to the above target dates, the assessors and/or practitioners conducting the Assessment of HCV Loss, in consultation with FSC Secretariat will determine other relevant target date(s) to assess.

All subsequent processes of data collection, processing, analysis, and reporting should refer to these target dates to ensure relevance, consistency and accuracy in the findings.

Note: The cut-off date for conversion of natural forest set in the FSC Remedy Framework is after 1 December 1994. While there is no explicit requirement to assess HCV loss between 1 December 1994 and 1 January 1999, considering FSC ADV-20-007-02 outlining how FSC Principle 9 initially referring to certification of primary forests was then subsequently replaced by the term High Conservation Value Forests, and considering that natural forest is a proxy for HCVs, understanding the chronology of natural forest conversion during this period can help explain how such activities correlate with, and may have contributed to the conditions observed in 1999.

3.2 Delineating AOI for the assessment

Before starting the assessment, its geospatial reference must be established by defining the AOI for all the defined target dates.

The AOI for the purpose of assessment of loss of HCVs is determined based on:

- All the historical boundaries of the FMU(s) from the start target date up to the current FMU(s) boundaries. The total combined areas of FMU operations under the control of the Organization over the relevant target dates serve to determine the extent of the case's AOI,
- Ecological characteristics of the landscape(s) in which this operational area sit, considering all the primary and secondary data collected. Naturally pre-existing boundaries such as watersheds and/or sub-watershed), ecoregions and/or smaller bio physio-geographical units within them, large wide-ranging species home range are a few examples of characteristics that might be used to determine the final AOI extent.
- Social characteristics of the landscape(s) in which this operational area sit, considering all the primary and secondary data collected. Location of roads, villages, community lands, cultural sites are a few examples of characteristics that may be used to determine the AOI extent.
- Inputs and validation by impacted and affected rights holders.
- Inputs from all the stakeholder engagement activities.
- Areas studied and/or assessed in other environmental and or social baseline assessments per FSC Remedy Framework requirement.
- Multiple FMUs controlled by the same Organization over the applicable assessment period will extend the size of the final AOI.
- Where other actors also operate in the same or overlapping landscapes, with their own responsibilities and/or liabilities for harms caused by their conversion or unacceptable activities, the AOI should still be defined based on the areas affected by the Organization's FMUs — regardless of whether these areas overlap with or extend into neighbouring FMUs managed by unaffiliated Organizations.
- Inputs and outputs from all the required processes including FPIC in the identification of impact areas as outlined in the FSC Remedy Framework.

Note: For the future alignment of the document for use in PfA cases, the formal complaint by a stakeholder is an important factor for determining the area to review.

Considering all the rationales above, the boundaries of the AOI can, for example, be delineated following naturally existing features (such as watersheds, ecosystem types and associations, etc.), artificially drawn buffers (for example of 5 km extending outwards from the FMU's boundaries), or a combination of both - in order to best capture the socio-environmental characteristics of the landscape affected by the Organizations' conversion and/or unacceptable activities.

The following Figures 2, 3, and 4 are simplified illustrations of different scenarios, showing how these defined areas might look.

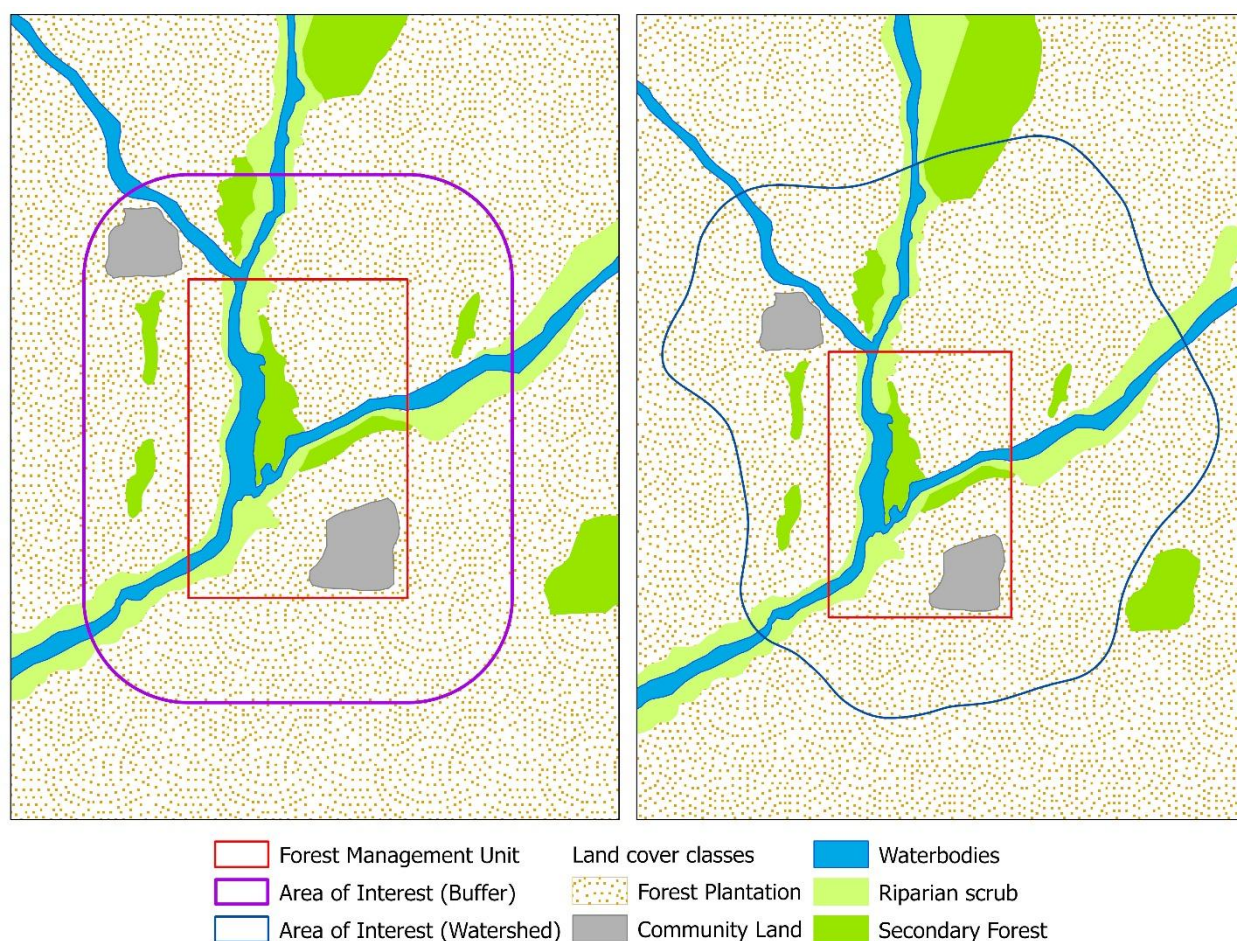


Figure 2. Illustration of the determination of AOI in the case of an individual FMU in the landscape, delineated by establishing a set buffer (left image) and by using naturally existing boundaries such as watershed for AOI delineation around the FMU (right image). A combination of both natural boundaries and artificially set boundaries using buffers can be used to best capture the socio-environmental characteristics of the landscape affected by the Organizations' conversion and/or unacceptable activities.

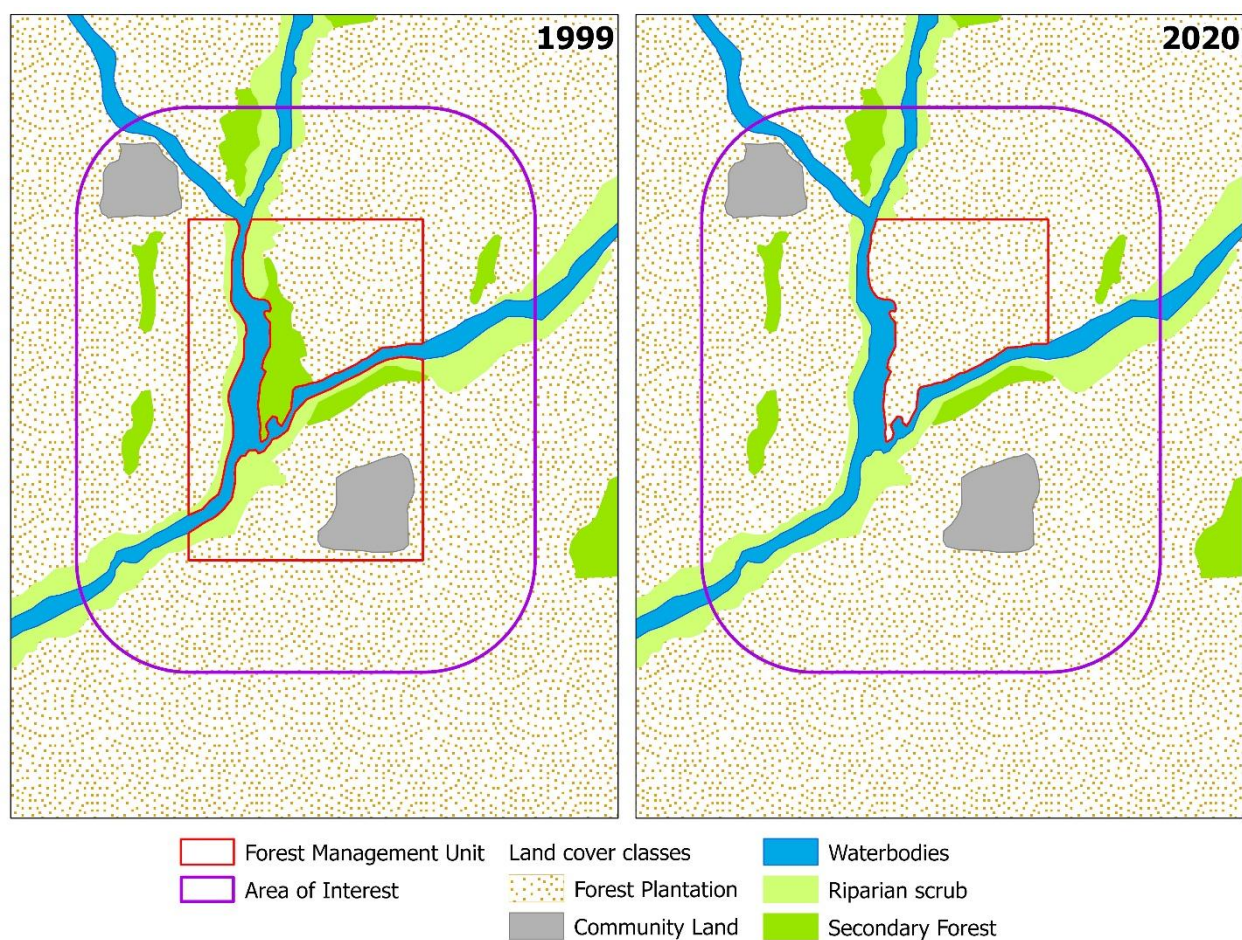


Figure 3. Illustration of AOI for an FMU, where the historical FMU's boundary (left image from 1999) was larger than the more recent and/or current boundary (right image from 2020). In this case, the largest historical FMUs' boundary (which includes the 2020 boundaries) is used to determine the AOI, instead of the smaller, more recent FMU boundary.

Note: For the sake of diagrammatic simplicity, the AOI definition here is exemplified using a buffer around the FMU boundary.

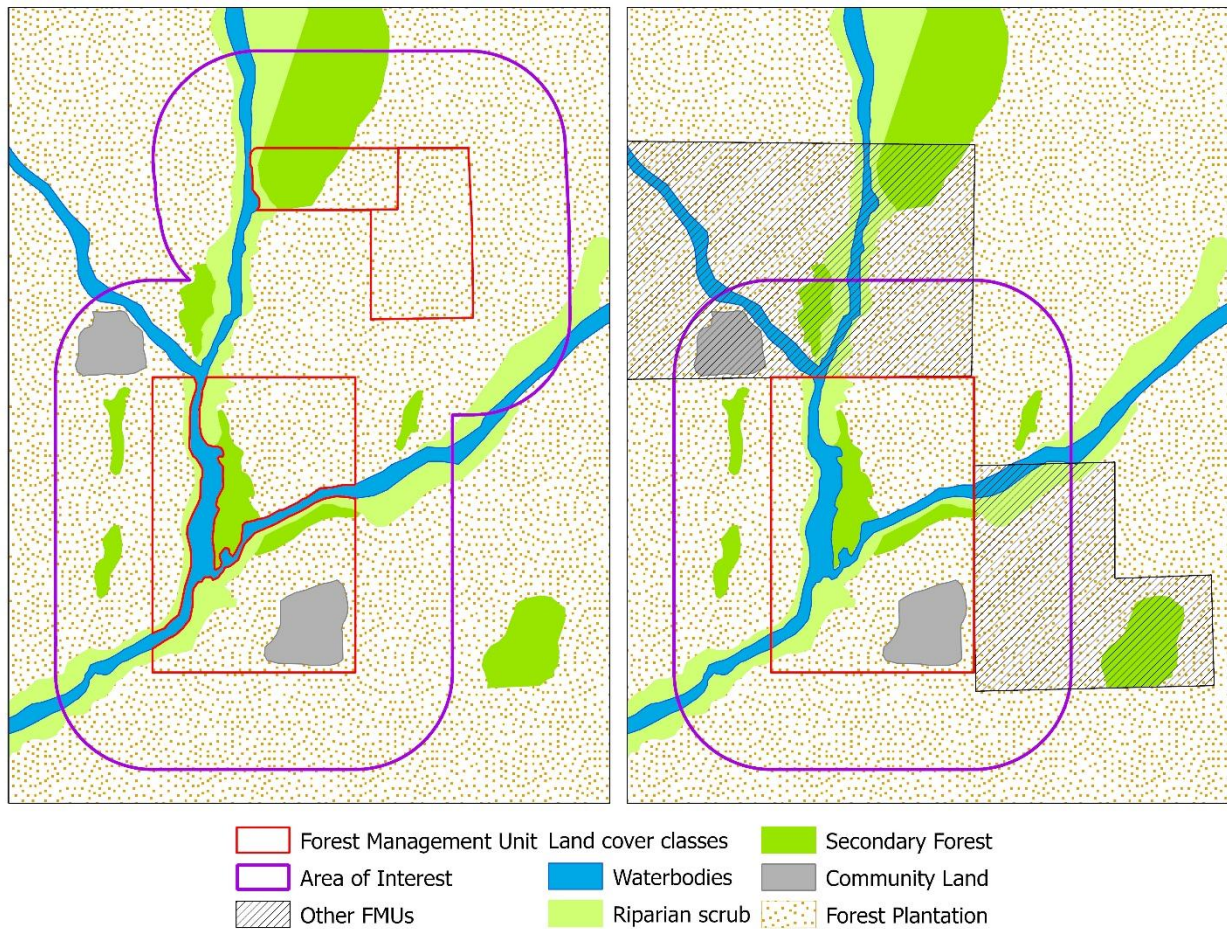


Figure 4. Illustration of AOI where there were multiple FMUs operating in the same landscape.

In the left image, where multiple FMUs occurred in the same landscape and were all managed by the same Organization, the AOI (purple outline) is determined by the combined buffer around the boundaries of all the FMUs managed by the Organization.

In the right image, where the FMU under the Organization's control existed alongside FMUs managed by other unaffiliated Organizations, the AOI (purple outline) is still determined by the buffer around the boundaries of the Organization's own FMU. The extent of the AOI is not limited by the control of other unaffiliated Organizations.

Note: For the sake of simplicity, the AOI definition here is exemplified using a buffer around the FMU boundary.

4. Producing the Land Cover Classification

Land cover classification (LCC) analysis is a fundamental and cross-cutting component in assessing current HCVs, past HCVs and the loss of HCVs for both social and environmental values. By systematically categorising the landscape into distinct land cover types over the defined assessment time period LCC provides the spatial framework to capture the environmental and social elements present in the landscape which are needed to interpret both past and present HCV conditions. This process is not merely a substitute when other historical datasets are missing; it is a central analytical tool.

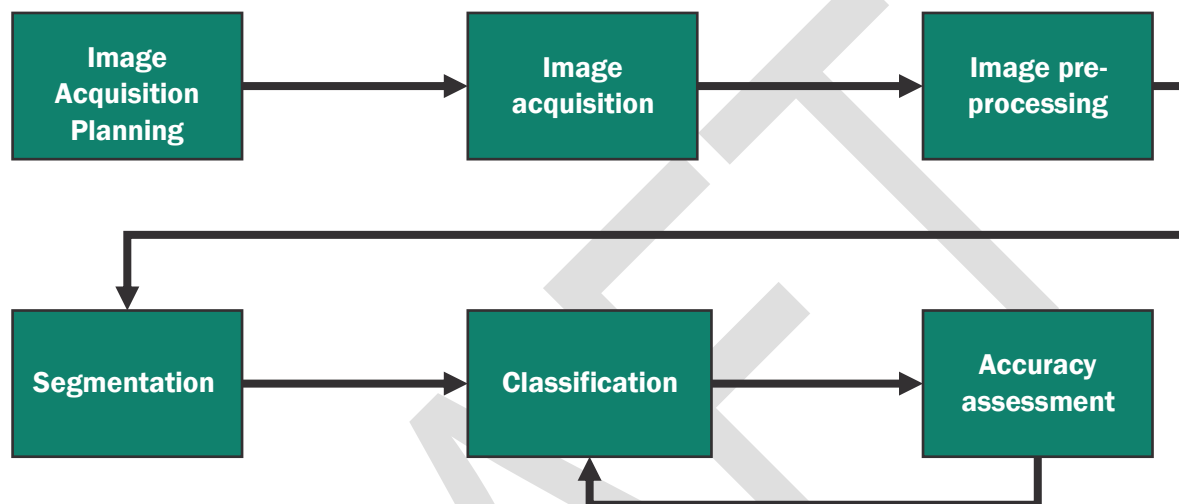


Figure 5. Steps in conducting land cover classification

In environmental terms, LCC enables the detection and mapping of ecosystems such as forests, wetlands, grasslands, riparian zones, and their seral stages, which may correspond to HCVs based on biodiversity value, ecosystem integrity, or critical ecological functions. For example, intact forest patches identified through past LCC can serve as proxies for habitat of Rare, Threatened, or Endangered (RTE) species (HCV 1) or for landscape-level ecosystems (HCV 2).

For social HCVs, LCC can provide both direct and indirect information, the latter in the form of valuable insights into past land use patterns, such as areas historically used for subsistence agriculture, hunting grounds, or culturally significant landscapes associated with Indigenous Peoples and Local Communities (IPLCs). Identifying historical agricultural mosaics, riparian access routes, or forested areas near settlements can inform the location and extent of community needs (HCV 5) and cultural values (HCV 6), especially where direct testimonial evidence is incomplete or unavailable, or when together with testimonials, it can be used for triangulation of available evidence types.

When high-quality historical maps or spatially explicit literature data are lacking, past land cover can be reconstructed from satellite imagery of the AOI at, or slightly prior to, the earliest time period date. Provided the classification process is rigorous and accurate, the resulting LCC can be used to design robust proxies for various HCVs. Comparing past and present land cover enables the clear identification of lost HCVs, their extent, and the degree of landscape transformation over time.

Ultimately, LCC is not an isolated technical step; it is a unifying layer of analysis that connects spatial evidence with ecological, social, and cultural indicators, ensuring that the past HCV identification and assessment of loss of HCVs is comprehensive, transparent, and defensible.

4.1 Land Cover Classification Results

As an example of this workflow the following figures present a Landsat satellite image and its corresponding land cover classification. These illustrate how after completing the steps of image acquisition planning, acquisition, imagery selection, and processing, the methodology results in a classified map that distinguishes the main land cover classes relevant for the assessment of past HCV areas.

An essential part of this process is the accuracy assessment, which ensures that the classification reliably represents the landscape. While more details of the accuracy assessment are provided in Error! Reference source not found., it is important to note that classification results are refined iteratively: segmentation parameters, training data, or class definitions may be adjusted until the classification reaches an acceptable level of accuracy. This iterative approach provides confidence in the final land cover map, which serves as the foundation for subsequent HCV identification and HCV loss assessment.

For more detailed explanation on each of the land cover classification steps, **see** Error! Reference source not found..

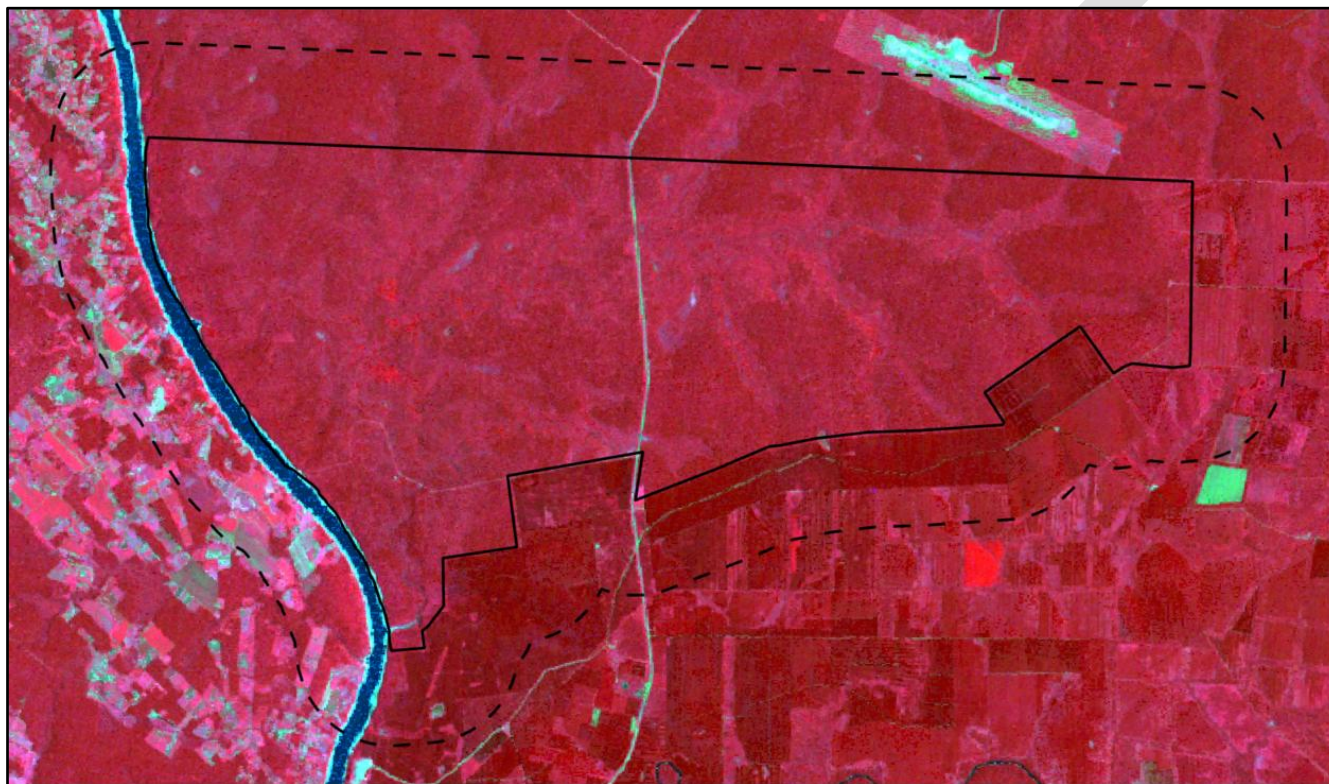


Figure 6. Acquired Satellite image, for example from Landsat 5 (B4-B3-B2) – Date: Jan 1999 with 0% cloud cover

The FMU encompasses 24,966 ha (black line) with an AOI determined using a 5 km buffer around the FMU (dotted line) – The total extent of the AOI is 71,688 ha.

The AOI is fully covered in one satellite image scene; hence it is not necessary to build a mosaic. There is zero cloud cover available images showing few and easily distinguishable landcover classes. The wider landscape presents high representativeness of the natural ecosystems with some pre-existing converted areas.

For the sake of simplicity, the AOI definition here is exemplified by using a buffer around the FMU boundary.

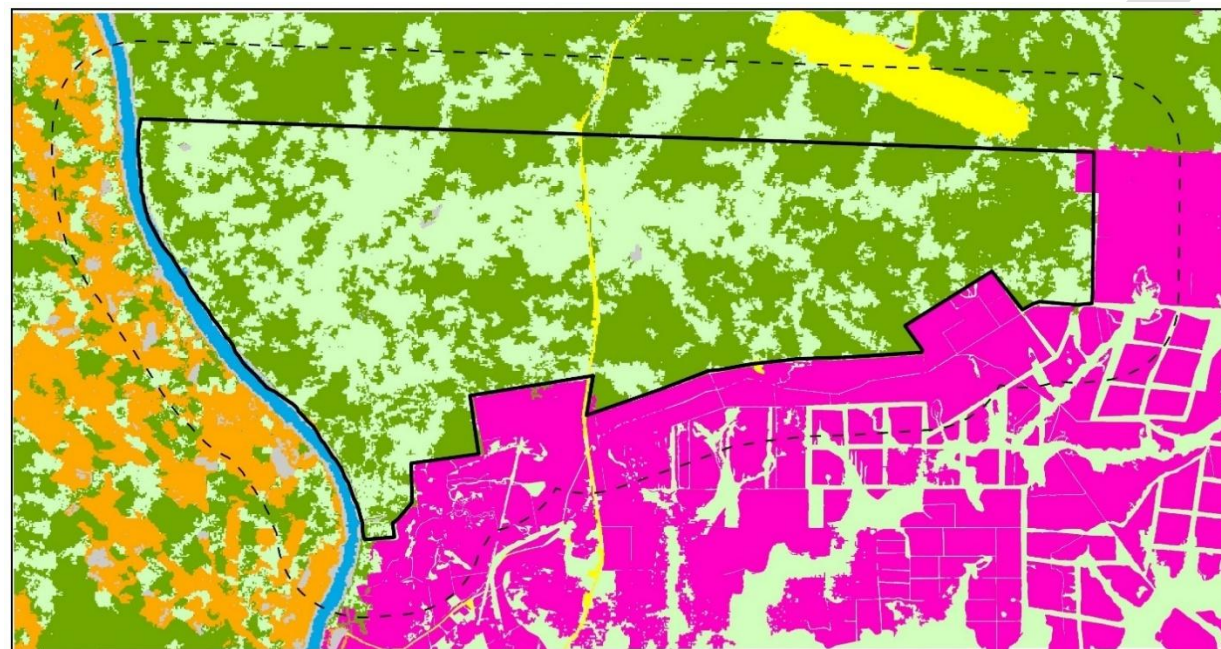


Figure 7. The above example illustrates the 1999 land cover map, which was produced by following all the steps of Land Cover Classification. At the time, the FMU was covered by natural Lowland and Riparian Forest, and the wider landscape had established Forest Plantations to the south and east, and small agricultural plots to the west, across the river. Infrastructure was limited to one road crossing the AOI, and a small airport in the north.

After Land Cover Classification:

The 1999 land cover map shown here exemplifies the application of a structured land cover classification workflow. By systematically following all stages—from image acquisition planning and selection, through preprocessing, segmentation, classification, and accuracy assessment—the map provides a reliable snapshot of the historical landscape, serving both as a record of past land cover and as a foundational layer for subsequent HCV identification and HCV loss assessments.

For display purposes, the land cover classification extends to the map frame boundaries; however, the actual assessment was confined to the AOI, according to the previously established delineation criteria.

For simplicity, the AOI here is represented using a buffer around the FMU boundary.

5. Informing the identification of past HCVs and the assessment of HCV loss using primary and secondary data sources

5.1 Primary data

Primary data comes from first-hand observation, measurement, or engagement with stakeholders. It is raw, original data which does not rely on other previously existing sources. Primary data is usually more specific, localized, and verifiable. It is collected directly by the assessor or a practitioner at the time the assessment of loss of HCV is conducted.

Some examples of primary data relevant to past HCV identification and assessment of loss include:

1. **Results from species field surveys:** direct ecological surveys identifying species, including presence of RTE species, and ecosystem types. These are especially useful for HCV 1, 2, and 3.
2. **Information obtained through direct community engagement** to build historical timelines of changes and related Participatory Mapping exercises. Information, including testimonials, obtained from Indigenous Peoples and Local Communities (IPLCs) is a direct source for identifying social HCVs — particularly to inform HCV 4 (ecosystem services), HCV 5 (community needs) and HCV 6 (cultural and spiritual values).
3. **Results from direct surveys and observation of remaining habitats and natural forest/non-forest ecosystems:** such remaining areas where they still contain HCV 1, 2, 3 at the present time, would also reflect the past presence and possibly condition.
4. **Delineated Intact Forest Landscapes (IFL):** Per the HCV definitions, these qualify as direct data for identifying HCV 2 (landscape-level ecosystems).
5. **All HCV data collected through assessor and practitioner's own field work** in identification of current HCVs (conducted as HCV assessment, or HCV-HCS assessment) are considered primary data if they are conducted at the same time as the identification of past HCV and assessment of HCV Loss. If not, they should be validated again when doing fieldwork for the assessment of loss.

5.2 Secondary data

Secondary data refers to information collected by others, outside the HCV loss assessment, such as academic research, government reports, conservation databases, historical land-use records, or remote-sensing datasets. In addition to being used as data sources to identify HCVs where collection of primary data is no longer possible, secondary data can guide field work by identifying priority areas for field work, which are then verified and contextualized through primary data.

Examples of secondary data relevant to past HCV identification and assessment of loss include:

- **Maps of Protected areas and Key Biodiversity Areas (KBA):** Used as indicators of potential concentrations of biodiversity, and hence a proxy for HCV 1.
- **Historical maps and satellite imagery:** Provide evidence of past land cover, forest extent, or ecosystem patterns.
- **Species distribution databases:** Records of past or current presence of RTE species.
- **Scientific literature and ecological studies:** Data from published surveys or monitoring programs.
- **Oral histories and archival records:** Testimonies and written records of cultural or community use linked to HCV 5 and HCV 6.
- **Publicly available data documenting grievances related to HCV loss:** this may include reports in local to global media, public records from civil society Organizations, data from observatories of conflict, etc that will provide useful information about potentially Impacted

Rights-holders, timelines of HCV loss, attribution of loss, and sometimes even spatial data for exact location of degraded or lost values.

- **Present day HCV or HCV-HCSA assessments:** they contain information on HCV condition at the end of the time period and may also include useful information on current values and their location, that could be used as proxy if validated when doing fieldwork for assessment of past HCVs and HCV loss.
- **Existing ecosystem maps and assessments:** Those provided and documented in national HCV interpretations, e.g., national toolkits for High Conservation Value Forest (HCVF), Protected Areas, or other mapping exercises.
- **If available, results from other baseline studies on social and environmental conditions conducted as required by the Remedy Framework:** these Third Party verified baseline studies would include a definition of both the Impact Area and the affected rights holders that should be used as reference. Nevertheless, Impact Areas and impacted rights holders may vary for HCV assessments due to the thematic scope.

Note: The last point requires future terminology alignment for the use in remedy processes. Identification of impact areas and parties happens prior to creation of baseline assessments.

Box 1. Why Collecting data from the field is essential

HCV identification, including the reconstruction of past HCVs, cannot rely solely on desk-based review of secondary sources.

Note: This section of the document requires alignment for use of the methodology in identifying potential PfA violations which seeks to determine if HCV destruction occurred, in contrast to use in remedy processes which seeks to determine what HCVs were lost.

While reports, maps, and databases provide valuable information, they should be cross-checked, confirmed, and strengthened through **field data collection and direct engagement with stakeholders** to ensure the accuracy, credibility, and legitimacy of past HCV assessments.

The key reasons why field data is essential include:

- **Ground-truthing and verification:**

Field surveys provide the opportunity to confirm or adjust what is suggested by secondary sources such as satellite imagery, species distribution databases, conservation maps and public reports and grievances on HCV loss. For example, there may be records of RTE species surveyed in the area, and their presence can still be observed in the area at the present time, or some Impacted Rights-holders may be able to provide additional information, including geolocation of potentially lost social HCVs.

- **Engagement with local stakeholders:**

Many HCVs, especially HCV 5 (community needs) and HCV 6 (cultural and spiritual values), depend on knowledge held by Indigenous Peoples and Local Communities (IPLCs). Only through reconstruction of historical timelines for resource use and access, participatory mapping, interviews, and direct dialogue, past social and cultural HCVs can be more accurately identified and mapped. Desk-based approaches alone risk overlooking or misrepresenting these values.

- **Contextual understanding of ecological and cultural values:**

Observing conditions firsthand allows capturing detail and nuance that cannot be

obtained from secondary data alone — such as habitat quality, species abundance, or the past cultural significance of a site. This contextual understanding is crucial for making informed judgments about the past presence and condition of HCVs.

5.3 Combining Primary and Secondary Data

Primary and secondary data together can provide a more complete picture of HCVs. A **best-available-data approach** requires using them together, each compensating for the other's limitations while reinforcing its strengths. When combined, primary and secondary data enable **triangulation** and provide corroborating lines of evidence, substantiating the HCV findings.

In identifying past HCVs, especially in landscapes that have undergone rapid ecological transformation or where historical social uses have been disrupted, the absence of field evidence does not automatically mean that HCVs never existed. In such cases, current field surveys may reveal little to no remaining evidence of the original biodiversity, ecosystem function or social values.

For example, a site that supported an endangered species a decade ago may now be a site long since cleared and converted into a plantation, without any indication of its former HCVs. However, it is important to understand that the absence of a species today does not mean it never existed in the past, especially where RTE species may have historically occupied a habitat that was later cleared or transformed. In such cases, relying solely on present-day field surveys would result in an underestimation of biodiversity value.

Similarly, a spiritual site abandoned due to the displacement of a community or to loss of access caused by plantation development may no longer be actively used or marked in the landscape. Without any remaining landmarks of the original landscape, communities may even struggle to successfully pinpoint the original location, due to the area's complete transformation to another state.

With scenarios like this, the comprehensive nature of the data from past maps, studies and literature resources will be key to the confidence with which they can provide certainty of the presence of past HCVs that are now lost or have been degraded.

Good practice when combining primary and secondary data includes:

- Cross-validating evidence from different sources to increase confidence.
- Systematically documenting data sources, assumptions, and limitations.
- Applying the precautionary approach: where credible secondary evidence points to potential HCVs, they should be recognized unless disproven through robust field evidence.

Box 2. Land cover of past natural ecosystems as indicator for HCVs

Land cover is one of the most useful indicators for identifying past HCVs. Land cover can show the varying types of natural ecosystems in the area — including but not limited to forests, for example swamps and wetlands, natural grasslands, lower seral stages (e.g., scrub and shrublands), and other known ecosystems in the area.

Forests provide critical ecosystem services, and are considered critical habitats especially for forest-dependent species — many of which may be RTE. For this reason, forest land cover is an indicator that one or more HCVs were present in the area.

Other non-forest ecosystems such as wetlands, natural grasslands, woodlands, riverbanks, etc. are considered to have an equivalent level of importance for the naturally occurring

species in such ecosystems, furthermore non-forest ecosystems can support forest-dependent species when they provide essential resources like food, shelter, and breeding grounds, even if lacking a dense tree canopy. Hence, areas with those land cover types indicate also they contained one or more HCVs.

Box 3. Proximity to community land as indicator for social HCVs

In situations where spatial data on past land use are unavailable—particularly with respect to community land and resource use—areas around settlements or villages can serve as indicators of HCV presence. This approach follows the precautionary principle, ensuring that potential HCVs linked to community well-being and cultural values are not overlooked, and is an important safeguard in the assessment process.

Areas with proximity to villages or settlements are considered an indicator of potential presence of HCV 5 (community needs) and HCV 6 (cultural values). This reflects the likelihood that communities have historically relied on nearby landscapes for essential needs such as water, food, fuelwood, medicinal plants, and culturally significant sites. Engagement with IPLCs remains essential to confirm, or adjust the boundaries of such areas, as community activity areas around their homes can range widely from 1 km to 10 km.

5.4 Data Sources and Importance of Multi-Scale Data

A vast amount of data of different types exists for the countries in which FSC certifies forests, coming from an equally wide array of sources. Whilst the availability, quality, and resolution of historical data can vary widely between global, regional, and national/local scales, good investigation of multiple data sources will ensure the best available data is used for an assessment of past HCVs and loss of HCVs. When despite best efforts, issues with quality and availability of data remain, this will directly influence the accuracy of past HCV identification and the assessment of loss outcome, hence, such limitations should be explicitly disclosed.

To establish an accurate picture of past conditions, it is necessary to combine:

- **Global datasets**, particularly important in the absence of more granular information, also for consistent baselines and understanding large-scale trends.
- **Regional datasets** for example for some ecoregional/ecological context.
- **National, sub national, and local datasets** for more granular ecological detail and socio-cultural relevance, and authoritative assessment records produced by States and their agencies.

Data integration across scales allows the assessment to account for differences in vegetation, species composition, hydrology, and community interactions. In locations with diverse ecological zones, reliance on a single data scale can lead to incomplete or misleading conclusions.

Below is a non-exhaustive list of key data sources to consider and use when conducting the assessment:

1. **Land cover data:** relevant for all HCVs - see Annex 2 for satellite data sources
2. **Species Data:** relevant for HCV 1

Accurate species information for the assessment of the AOI should be derived from multiple complementary resources:

- **IUCN Red List** – Global species conservation status, known distribution ranges, and habitat use.
- **Global Biodiversity Information Facility** – <https://www.gbif.org/>
- **CITES Appendices** – Regulatory listings for species subject to international trade restrictions.
- **BirdLife International publications** – Avian species distributions, Important Bird Area information.
- **Key Biodiversity Areas (KBA)** – Identified between 2007–2015 ([IBAT Alliance](http://ibat.alliance.org/)), representing globally important sites for biodiversity.
- Protected Area System from National Authority or WDPA <https://www.protectedplanet.net/>
- **Existing HCV National Interpretation species lists** – Context-specific priority species.
- **Field guides, peer-reviewed publications, and local biodiversity databases** – Provide field-verified occurrence data and habitat associations.
- **Records of stakeholder engagements** with biodiversity experts and Records of stakeholder engagements with Indigenous People and Local Communities.
- **Records on the trade, poaching and hunting of endangered plant and/or animal species**, which can be obtained for example from the police, custom officers, fiscal authorities or trade partners.

Extrapolation of species data

In cases where historical field data for the AOI are limited or absent, species occurrence can be **inferred** from proxies such as:

- **Remaining habitats containing HCV 1 values** with the same land cover types as those historically found in the AOI.
- **Biological surveys from similar habitats within the same region**, which are likely to support comparable species assemblages and vegetation types.
- **Areas in the region known to have harboured HCV 1 (species) and HCV 3 (ecosystem) values in the past**, particularly where habitat continuity or similar ecological conditions can be demonstrated.
- **Inputs from communities on the historical presence of species and their population estimation.** While it may not be possible to obtain the exact number of individuals, a well-structured interview questionnaire, for example using a certain range of numbers (e.g. 1-10, 10-100, over 100 individuals) can help assessor and practitioners to roughly estimate the population size.

This kind of analysis can be further supported by research efforts such as habitat or species population modelling, or corroborating literature of diverse nature, including for example historic newspaper reporting or university records, which growingly become accessible with digitisation and search engine developments.

For all such extrapolations, accompanying narratives should be documented which help understand the justification for their use, and the confidence in the proxy.

Measurement data of the control areas, such as areas outside the FMU and/or areas outside the AOI that have maintained the HCV 1 and HCV 3 over time, where possible should be presented alongside the extrapolation.

3. Large Landscape data: relevant for HCV 2

- Intact Forest Landscapes <https://intactforests.org/> and/or <https://www.globalforestwatch.org/>
- Key Biodiversity Areas <http://www.keybiodiversityareas.org/request-gis-data> ;
- Important Bird Areas (IBA) <https://datazone.birdlife.org/about-our-science/ibas>
- Ramsar Convention on Wetlands Sites <https://www.ramsar.org/our-work/wetlands-international-importance/ramsar-list>

- Global Forest Watch <https://data.globalforestwatch.org/datasets/gfw::global-peatlands/about>
- Atlas of Ungulate Migration <https://www.cms.int/en/gium/migration-atlas>
- Tiger conservation landscape <https://arc-gis-hub-home-arcgishub.hub.arcgis.com/maps/350391d0933c407b917fb6aa22fb3acf/about>
- Landscape of forested areas with wide-ranging species population, such Central Forest Spine in Malaysia, and Caribou range map in Alberta, Canada.
- Ecosystem distribution data from National Government Sources and complementary satellite image interpretation for land cover and land use.
- Stakeholder engagement with regional and/or local Conservation Planning Experts on historical distribution of wide-ranging species and historical extent of large landscapes.

4. Ecosystem Maps: relevant for HCV 3

- Global 200 Ecoregions – WWF’s global classification of priority ecoregions, providing a macro-scale ecological framework.
- Country-level ecosystem maps – Where available, these offer finer thematic resolution and better alignment with national vegetation classifications, such as MapBiomass Platform in Brazil. The MapBiomass platform offers detailed historical land cover and land use data for Brazil, with annual mapping since 1985. It is a critical national resource for reconstructing ecosystem change, detecting deforestation patterns, and identifying areas of high ecological integrity.
- Global data sets for specific groups of ecosystems such as mangrove ecosystems - Global Mangrove Watch (1996 – 2020) Version 3.0 Dataset <https://zenodo.org/records/6894273> and Reef ecosystems – Allen Coral Atlas allencoralatlas.org, Peatlands (e.g. Global Peatlands)
- Ramsar Convention on Wetlands Sites – official listings of internationally important wetlands under the Ramsar convention.
- 2019 Tree Canopy Height Data – Land Carbon Lab provides high-resolution canopy structure data, valuable for assessing forest condition and complexity.

5. Topographical Data: relevant for HCV 4

- High-resolution vector-based datasets should be prioritised for accurate terrain modelling.
- Where unavailable, the ASTER GDEM 30 m dataset provides global coverage of elevation data suitable for many landscape-scale analyses.
- Hydrological data: Global watershed, and available national Hydrological unit map

6. Social studies and public resources: relevant for HCV 5 and HCV 6

- The global platform of Indigenous & Community lands: <https://www.landmarkmap.org/map>
- If available, Social Baseline Assessments (as outlined in the FSC Remedy Framework procedures) carried out in the area for the past and current dates.
- Peer-reviewed publications, other available social studies and research

7. Social Data obtained from communities: relevant for HCV 5 and HCV 6

- Testimonials on basic needs, customs, traditional practices and sacred sites from remaining affected rights holders
- Testimonials on basic needs, customs and sacred sites from displaced affected rights holders if identified
- Participatory Mapping involving the impacted and affected rights holders. This is a fundamental approach that maps current and historical land use, extent of rights and different areas of customary management and resource use within the AOI. Mapping work

is done manually by communities' members and then transferred to a GIS format to enable integration and overlaying with other data sets and assessment results.

It is also important to reiterate that throughout the process, communities should have the right to access expert advice and support so that they can participate effectively. An example is given in Figure 8 below.

- Those responsible for conducting a participatory mapping exercise identify social HCVs and use this to triangulate data coming from other existing participatory maps. The resulting map will be presented back to the entire community for comments and corrections, providing a picture or the original sketch map to be compared with the digitised map.
There are some resources for further guidance and best practices in conducting Participatory Mapping:
 - FSC Guidelines for the Implementation of the Right to Free, Prior and Informed Consent (FPIC) FSC-GUI-30-003
 - Forest Peoples Programme Participatory Mapping: guidelines for communities and Organizations
- Stakeholder engagement with community development Organizations working with affected rights holders or other similar communities in the area.

Box 4. Participatory maps developed with community involvement

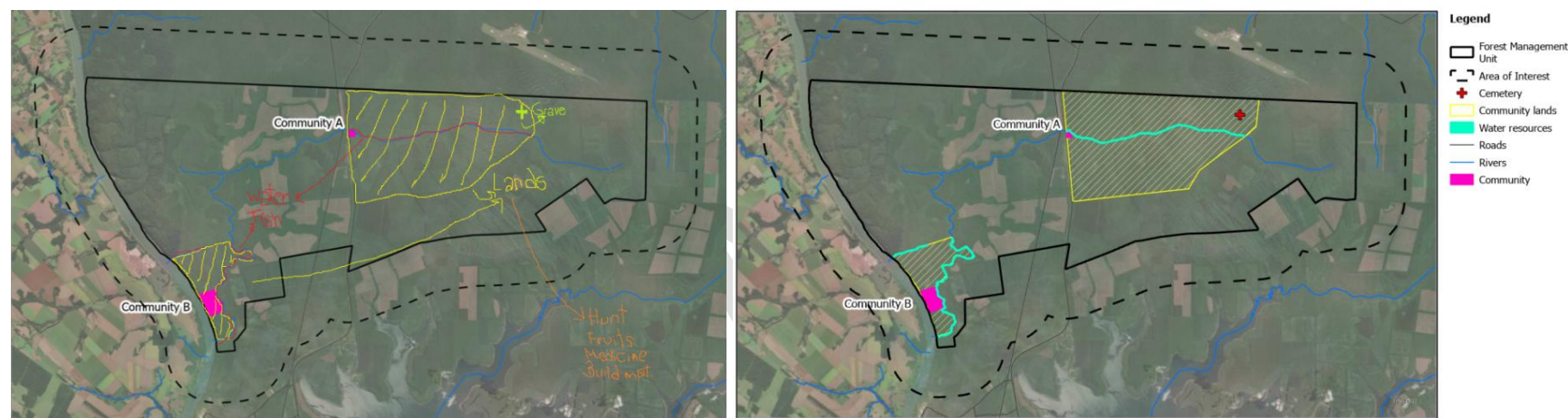


Figure 8. Example maps showing the outcome of a participatory mapping exercise with two communities: Community A and Community B. The hand-drawn sketches (left) were later digitised into geo-referenced map (right).

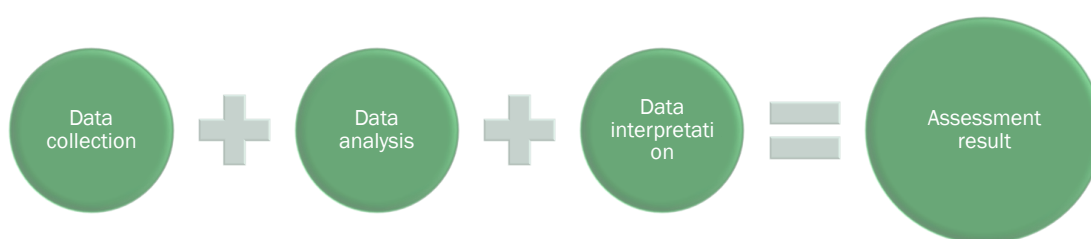
Each community was provided with a base map containing a high-resolution satellite image with FMU boundaries, historical and current settlement areas, road networks, and watercourses already marked. Elder participants were asked to delineate the lands they used in 1999. Both communities indicated use of forest resources such as game animals for food, fruits, medicinal plants, construction materials, and wood for handicrafts sold to tourists in nearby cities. They also identified past use of watercourses for drinking, hygiene, and fishing. In addition, Community A marked the location of its cemetery. Both areas were, and remain, regarded by the communities as irreplaceable for meeting their basic needs and wellbeing.

6. Applying the Precautionary Principle

The Precautionary Principle in general means that when there is a threat of severe or irreversible damage to the environment or to human welfare, responsible parties should take explicit and effective measures to recognize and address the risks, even when scientific information is incomplete or uncertain.

In the context of assessing HCV loss, this requires those responsible for the assessment to actively seek out the best available information and provide justification that best efforts have been made to collect and verify such information.

Where there is evidence or reasonable indication that an HCV was present in the past, it should be treated as part of the baseline unless contrary evidence clearly demonstrates otherwise. Conversely, where the conclusion is that no HCV was present, this absence should be substantiated with adequate documentation showing that no evidence supports its presence in the past.



The Principles below must be applied when the data is collected and when presenting the conclusions of the assessment



Figure 9. Precautionary principle - among other principles to apply when conducting HCV assessments.

Some examples of using the precautionary principle in this context:

- If a degraded area currently overlaps with a KBA, it should qualify as past HCV 1, even if no other information exists on the quality of its flora and fauna before the unacceptable activities occurred.
- If young regeneration of HCV 1 species is repeatedly found in areas degraded by unacceptable activities, all similar degraded areas should be treated as past HCV 1.
- Where impacted and affected right holders are identified, but some of them cannot be directly involved during the stakeholder engagement sessions, their lack of participation does not exempt assessors from the responsibility to continue seeking the best available information from alternative sources, or at later time.

Applying the precautionary principle also means that result of assessments should not be limited to documenting loss over time. Those conducting the assessment of HCV Loss should understand that they have a responsibility to issue observations or recommendations for the assessed case to prevent further HCV loss, and to enable action to immediately address any ongoing negative impacts. This

ensures that uncertainty does not result in inaction and that current risks to HCVs and affected rights holders are not overlooked.

7. Analysing data and synthesizing findings

The relevance and quality of data collected and how they are processed are critical—but the objective is to harness those data resources to be analysed, assessed for the loss of HCVs in all categories, and reach a conclusion on this loss. Robust analysis and synthesis are as important as data collection itself. Findings should use the full extent of relevant data, otherwise there may be a failure to identify past presence of some HCVs, resulting in the underestimation of the extent of HCV loss. Those taking responsibility for an assessment of loss of HCVs should understand the need to allocate sufficient time and expertise to this stage to ensure the resulting assessment is technically sound and grounded by evidence.

Effective analysis also means interpreting the data in a way that is contextually appropriate. Even when the input data is largely complete, relevant, assessed for accuracy, gone through data analysis – if such analysis is done in an unstructured manner, or lacks due objectivity, it can lead to misleading or inaccurate conclusions. This is a common pitfall that may significantly undermine the overall integrity of an assessment.

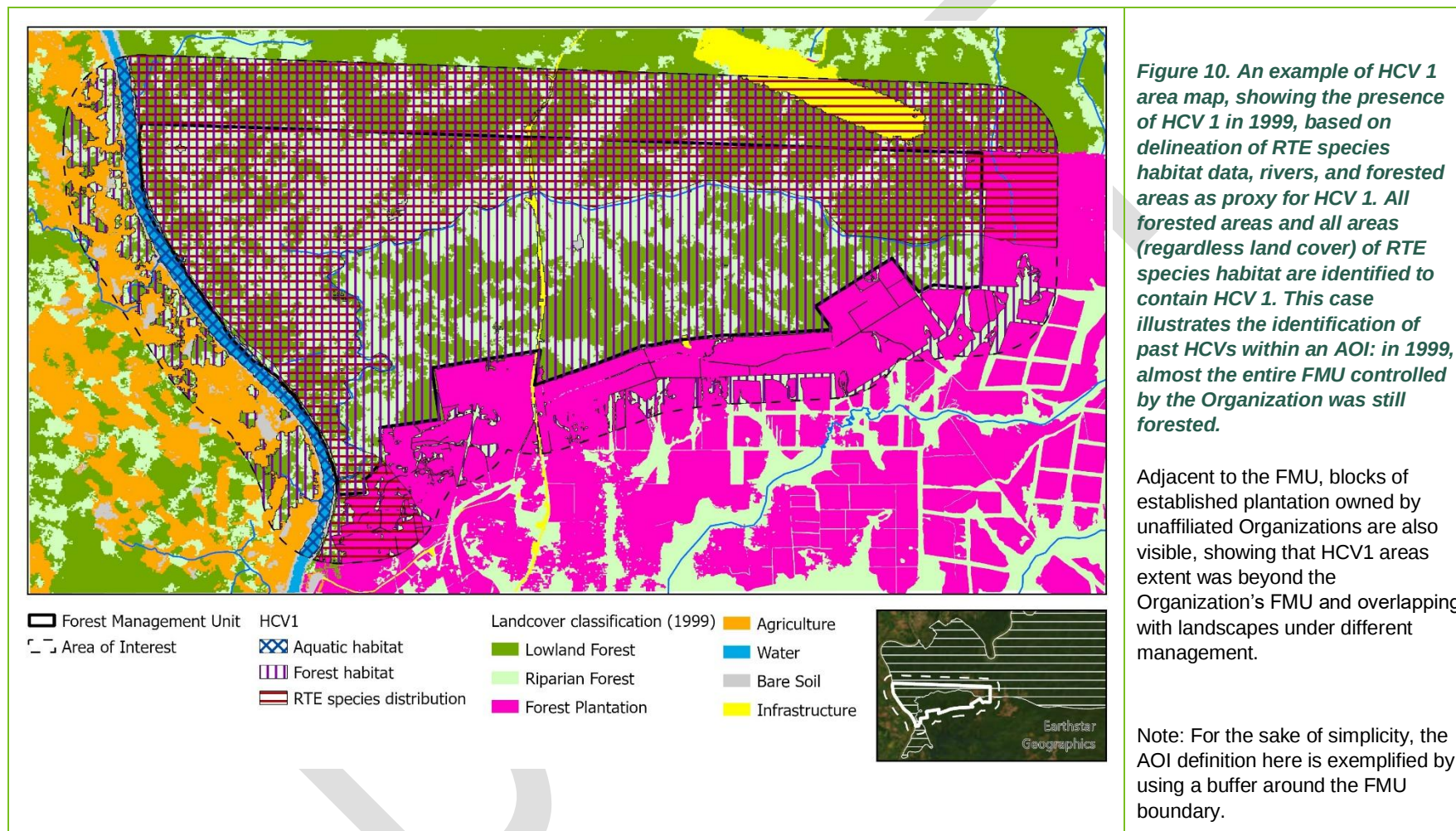
For example, if data show that a rare, threatened, or endangered species were documented throughout the entire AOI, clearly indicating the entire area was originally its habitat, the entire area should be delineated as impacted HCV areas. It would be insufficient to instead, for example, delineate only riparian areas as HCVs as this would be against what the supporting data reflect. Such flawed analysis would result in incorrect HCV identification and corresponding delineation of HCV Areas. If left uncorrected, this would eventually lead to a situation in the assessment of HCV Loss where there was a failure to objectively capture the full extent of HCV Loss occurring due to unacceptable activities and conversion.

It is important to note that the analysis should be conducted independently from pre-existing land use designations, planning or agreements, such as legal gazettelement, pre-existing negotiated settlements with local stakeholders, or Organization's pre-existing voluntary commitment, as delineation of HCV Areas is solely based on whether the data shows that the areas assessed contained HCVs or not.

In the process of bringing together the results of multiple strands of individual analyses into a clear, justifiable conclusion— assessors and practitioners should translate the collected data into the identification of HCVs, ensuring that the findings are substantiated with the relevant and best available data. Upon overlaying the land cover map, with all the best available HCV data, HCV maps are produced delineating HCV Areas (where possible, per HCVs) within the AOI for the target date(s). Some examples of how these maps might look are provided below in **Figure 10, Figure 11, Figure 12** and **Figure 13**.

A more detailed look into how the results of the assessment should be presented is outlined in Error! Reference source not found., in the reporting template section.

Result HCV maps from identification of past HCVs



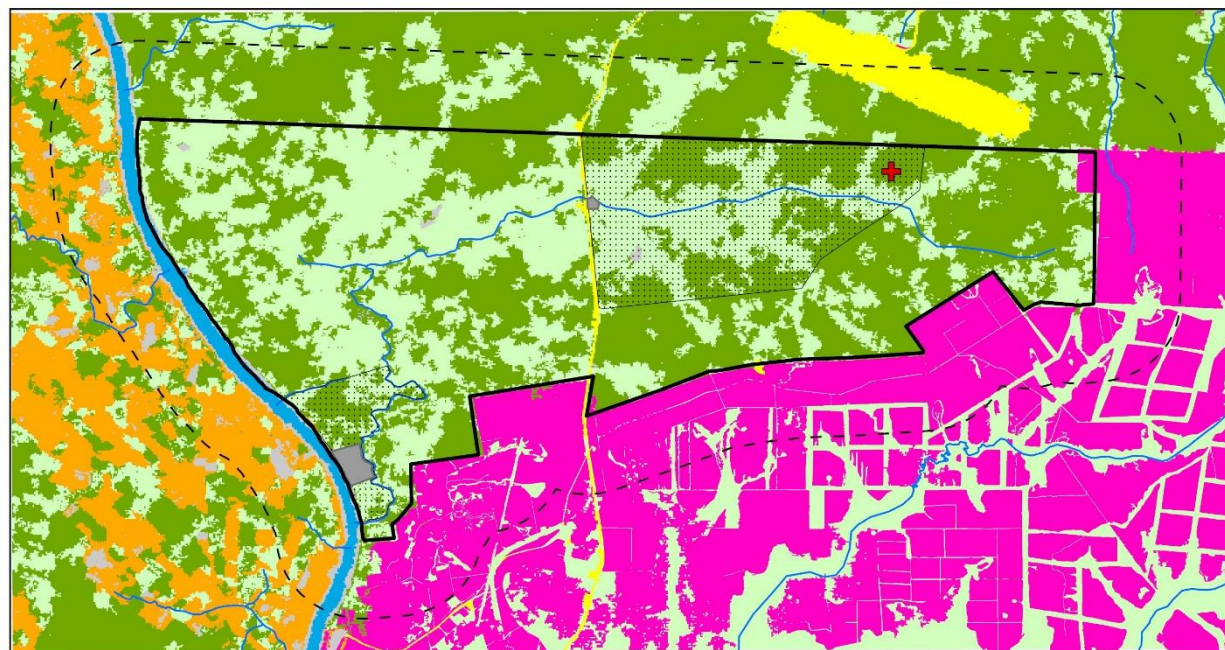


Figure 11. HCV 6 area map, showing the presence of a cemetery.

This case illustrates the identification of past HCVs within an AOI: in 1999, where almost the entire FMU controlled by the Organization was still forested. Within the Organization's FMU, community land areas with a cemetery, which is HCV 6, have been identified through participatory mapping exercise.

Note: For the sake of simplicity, the AOI definition here is exemplified by using a buffer around the FMU boundary.

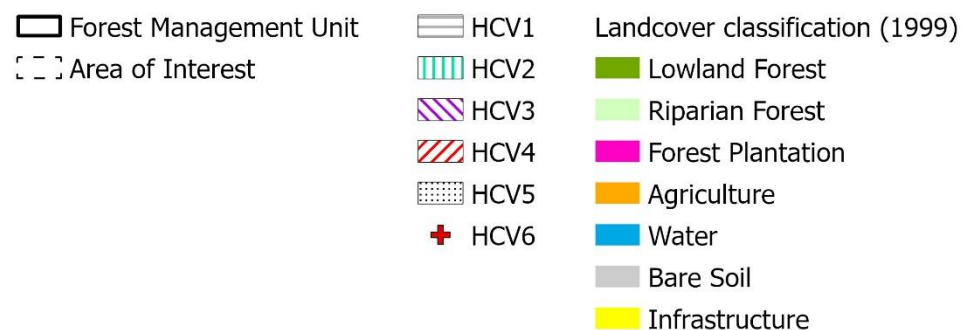
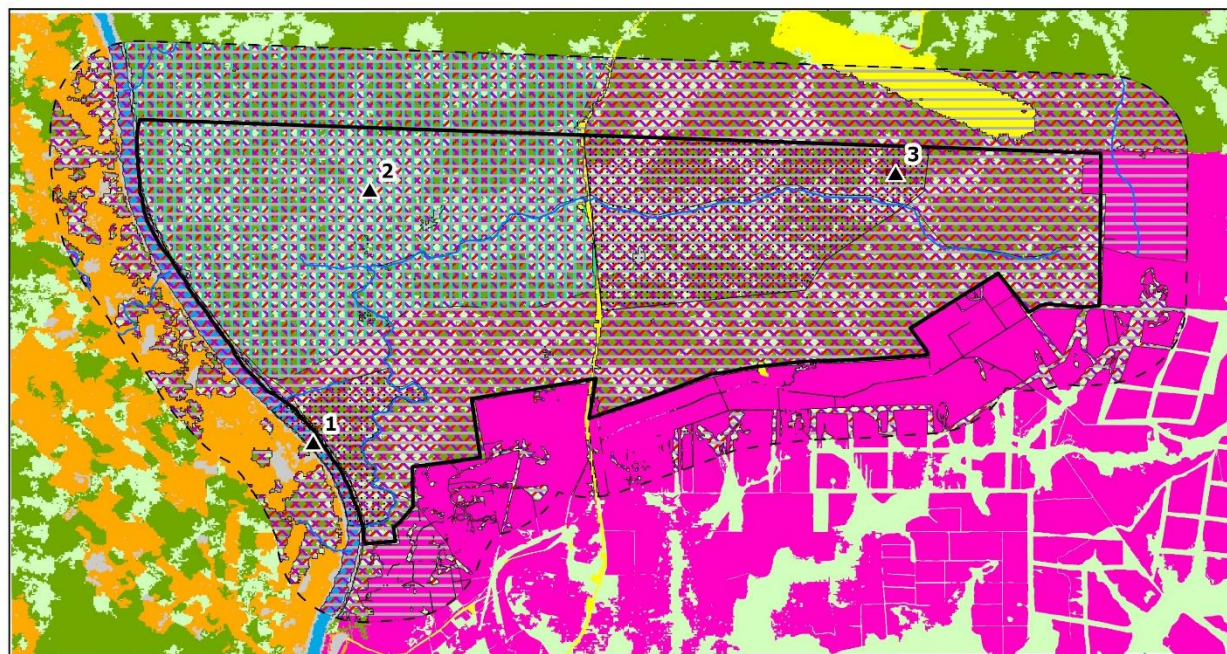


Figure 12. A summary map with delineated areas of all HCVs.

Adjacent to the FMU, blocks of established plantation owned by unaffiliated Organizations are also visible, showing that HCV1 areas extent was beyond the Organization's FMU and overlapping with landscapes under different management.

The figure illustrates the spatial overlap of different HCVs within the study area. Three points are highlighted to show distinct combinations: 1) HCV5 (Water Resources), 2) HCV1, HCV2, HCV3, and HCV4, and 3) HCV1, HCV3, HCV4, HCV5, and HCV6.

Note: For the sake of simplicity, the AOI definition here is exemplified by using a buffer around the FMU boundary.

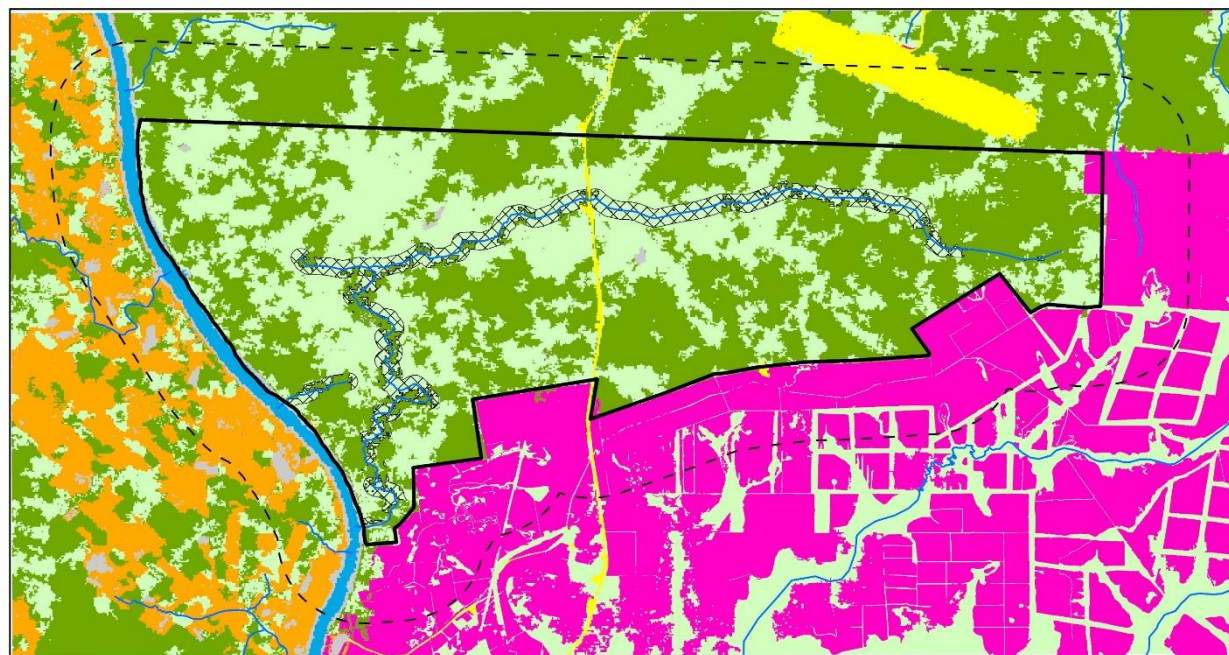


Figure 13. This map is an example of incorrect designation and delineation of HCV Areas, where only riparian areas are delineated as HCV Areas, despite that HCVs were found in almost the entirety of the FMU and throughout the AOI.

Other common problems in HCV identification include lack of stakeholder's feedback integration, Identification and HCV Area Delineation of HCV 4, HCV 5 and HCV 6 without community involvement, and HCV Areas designation not conducted independently, but following a pre-existing land use/plan.

Note: For the sake of simplicity, the AOIs definition here is exemplified by using a buffer around the FMU boundary.

8. Assessment of HCV loss over the time period

Once the identification of past HCVs and identification of current HCVs results are produced, the assessment of loss of HCVs is conducted essentially by measuring the difference between two data points. In practice, this involves comparing the results of HCV identification using the gathered maps and datasets from at least two different time points or target dates. For instance, taking an HCV1 area map as of 1st of November 1999 and HCV1 areas map as of 1st of December 2020 and spatially overlaying these using a GIS, practitioners can quantify:

- The change in extent of HCV areas (e.g. hectares of forest land cover lost).
- The shift in boundaries or fragmentation of key habitats.
- The change in ecological integrity, as inferred from land cover types, canopy density, proximity to human activities, or species presence/absence data.

Comparison of more target dates would apply depending on when the conversion and/or unacceptable activities causing HCV Loss took place, or where the Organization established and/or acquired more FMUs under their responsibility/ownership/control over time.

An analysis may also reveal positive changes, where HCVs have reappeared or recovered in areas that were previously degraded. Examples include cases where HCVs may have reappeared in formerly heavily impacted or degraded areas as a result of protection or restoration of more favourable conditions.

For example:

- Natural forests regenerating in previously logged areas,
- Return of RTE species following habitat restoration or protection,
- Improved wetland function after cessation of agricultural drainage.

These observations highlight the dynamic nature of ecosystems and the potential for restoration-driven conservation gains.

Following are examples of how the result of an assessment of HCV Loss might look, where HCV identification results from 1999 and from 2020 are available.

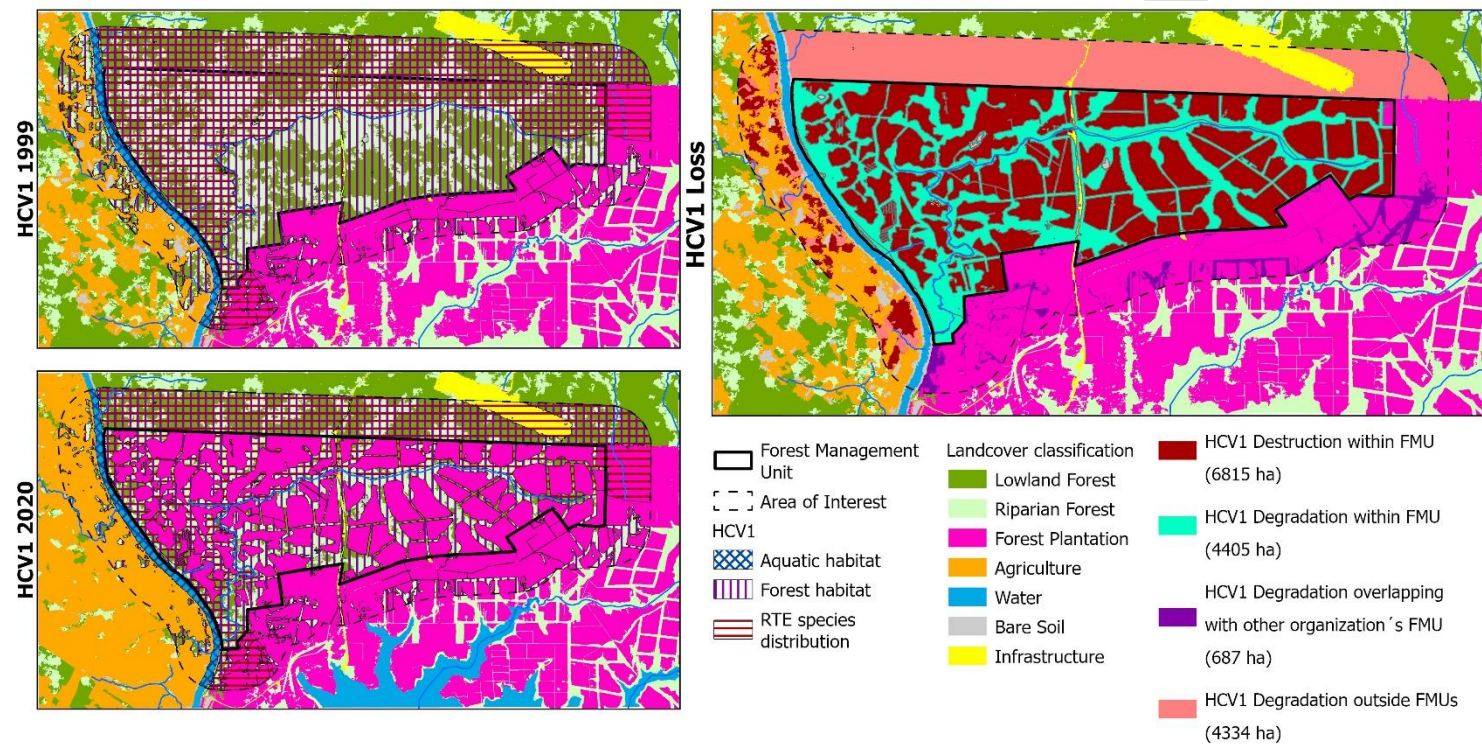


Figure 14. The maps and the resulting analysis above show the loss of HCV 1 Area between 1999 and 2020. Specific RTE species home range and forest habitat as proxy for HCV1 have been converted over the years, within the FMU, and within the AOI. What constitutes HCV Loss is not just the former HCV areas converted to plantation (destruction), but also the habitat fragmentation caused (degradation).

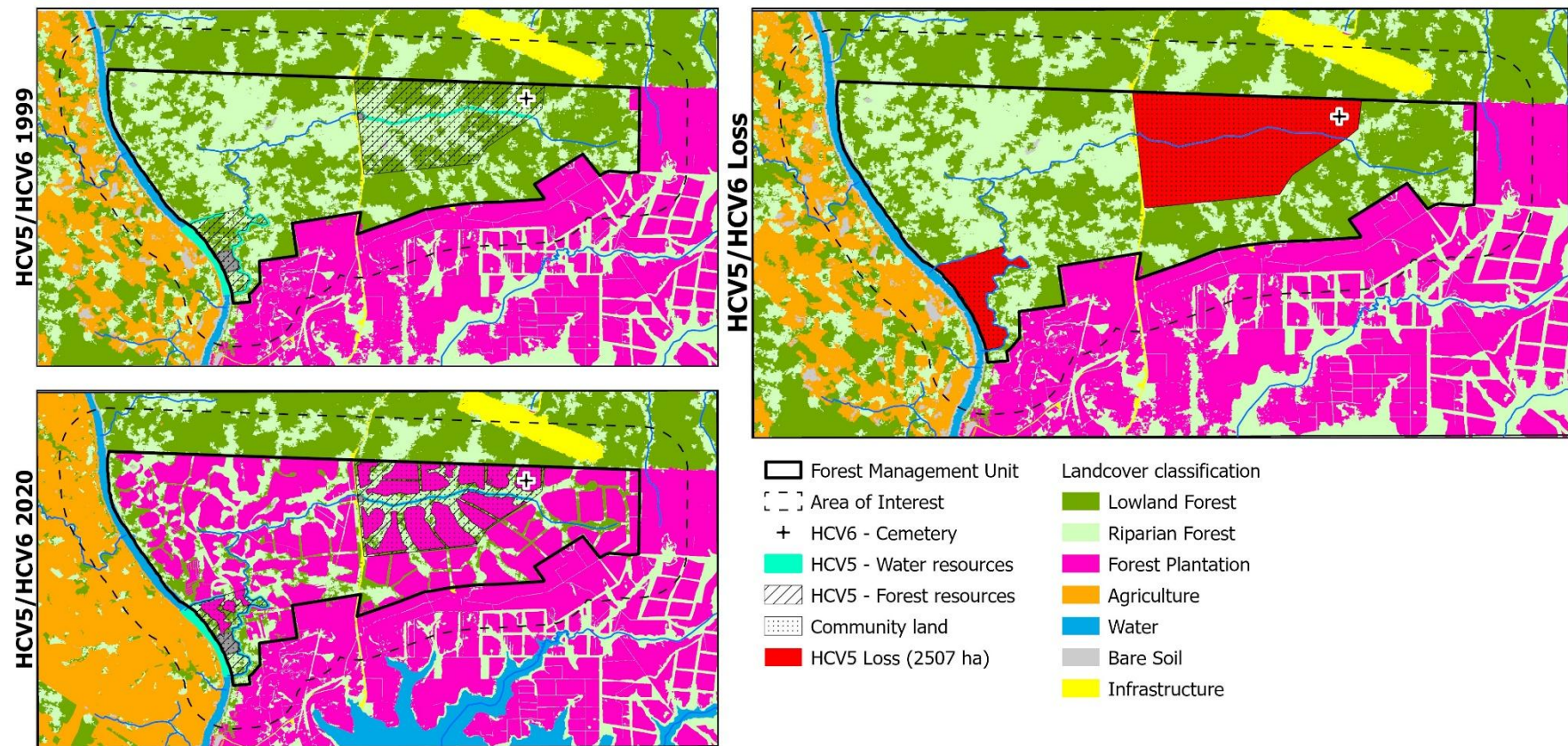


Figure 15. The maps and the resulting analysis above show the loss of HCV 5 and HCV 6 Area between 1999 and 2020. HCV 5 and HCV 6 loss in this case are not limited to the converted area, but they are lost entirely due to loss of access. Note: HCV 6 loss cannot be quantified in hectares.

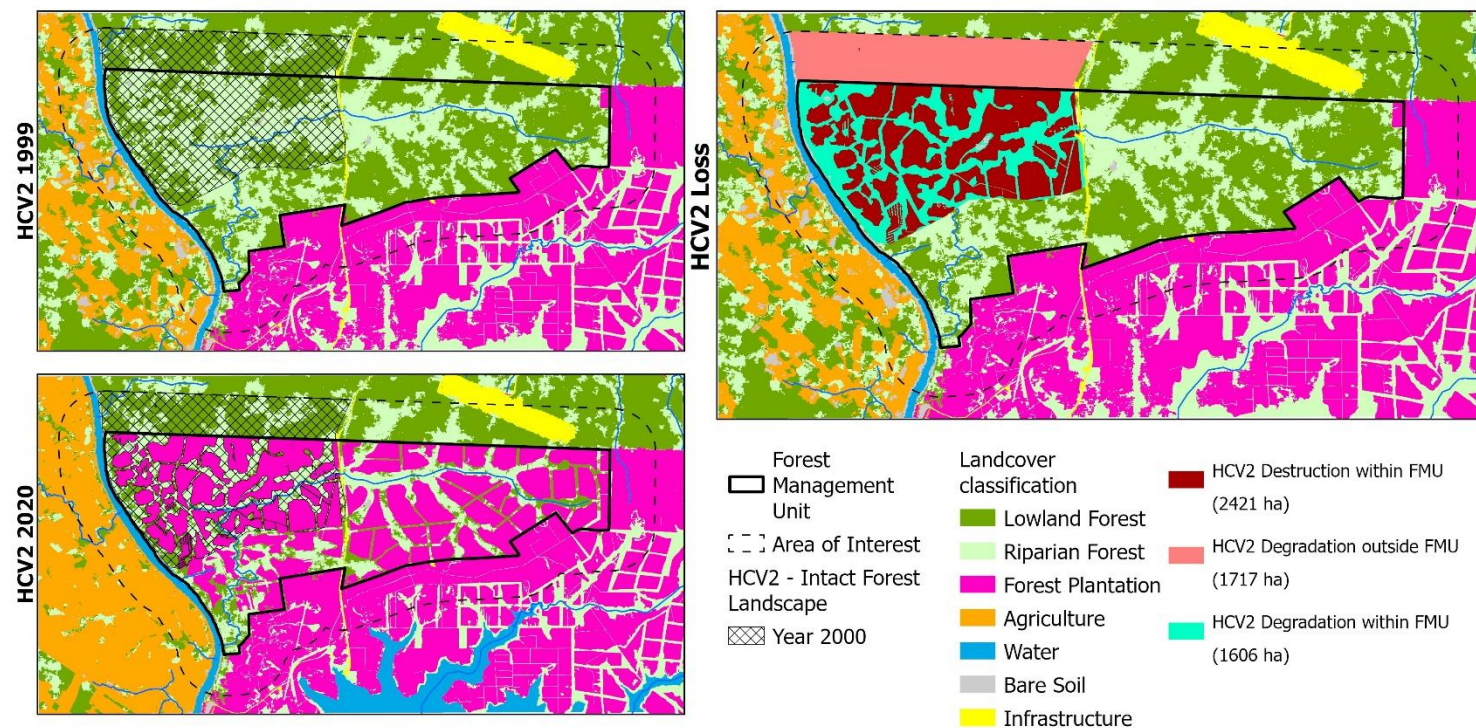


Figure 16. The maps and the resulting analysis above show the loss of HCV 2 Area between 1999 and 2020. Part of IFLs have been converted over the years, within FMUs, and within the AOI.

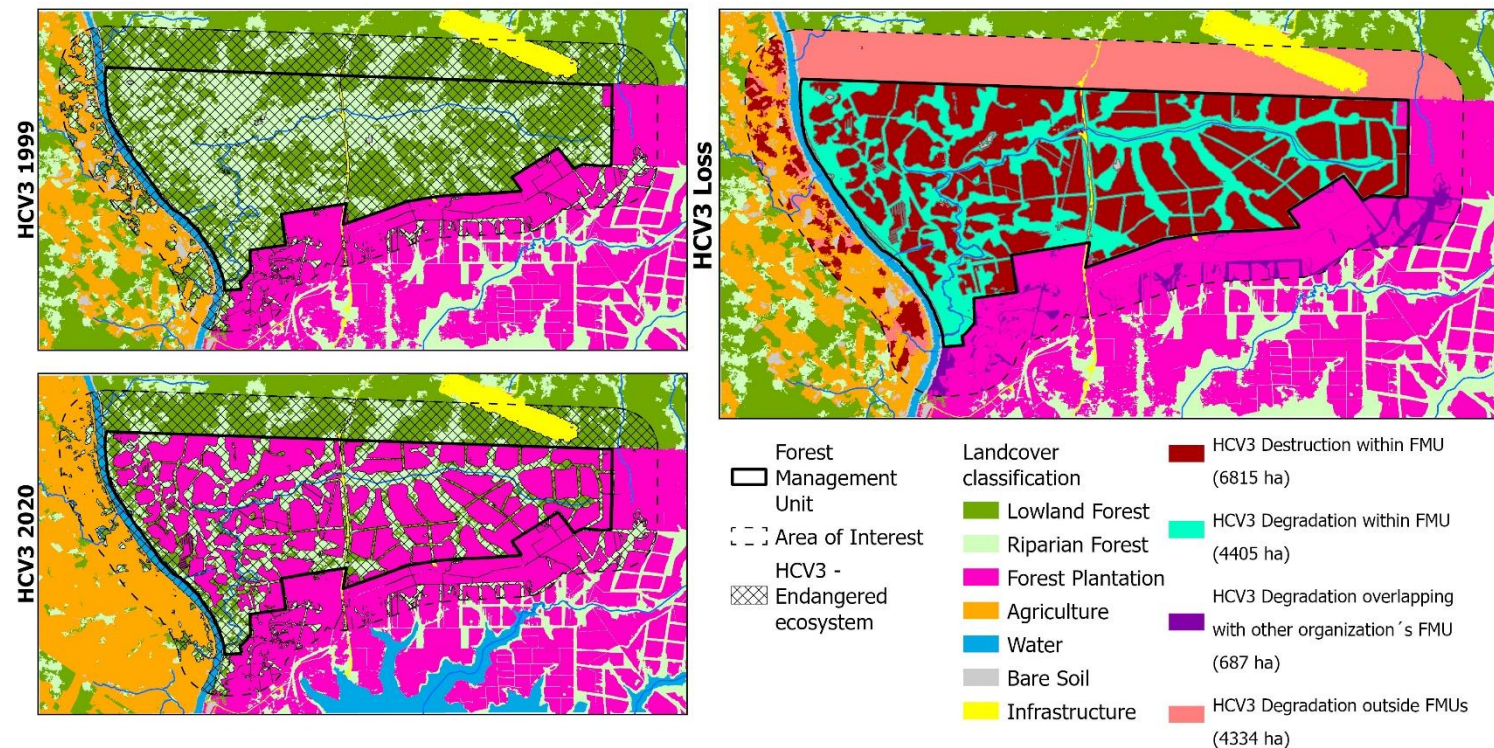


Figure 17. The maps and the resulting analysis above show the loss of HCV 3 Area between 1999 and 2020. RTE ecosystems (riparian forest and lowland forest) have been converted over the years, within FMUs, and within the AOI.

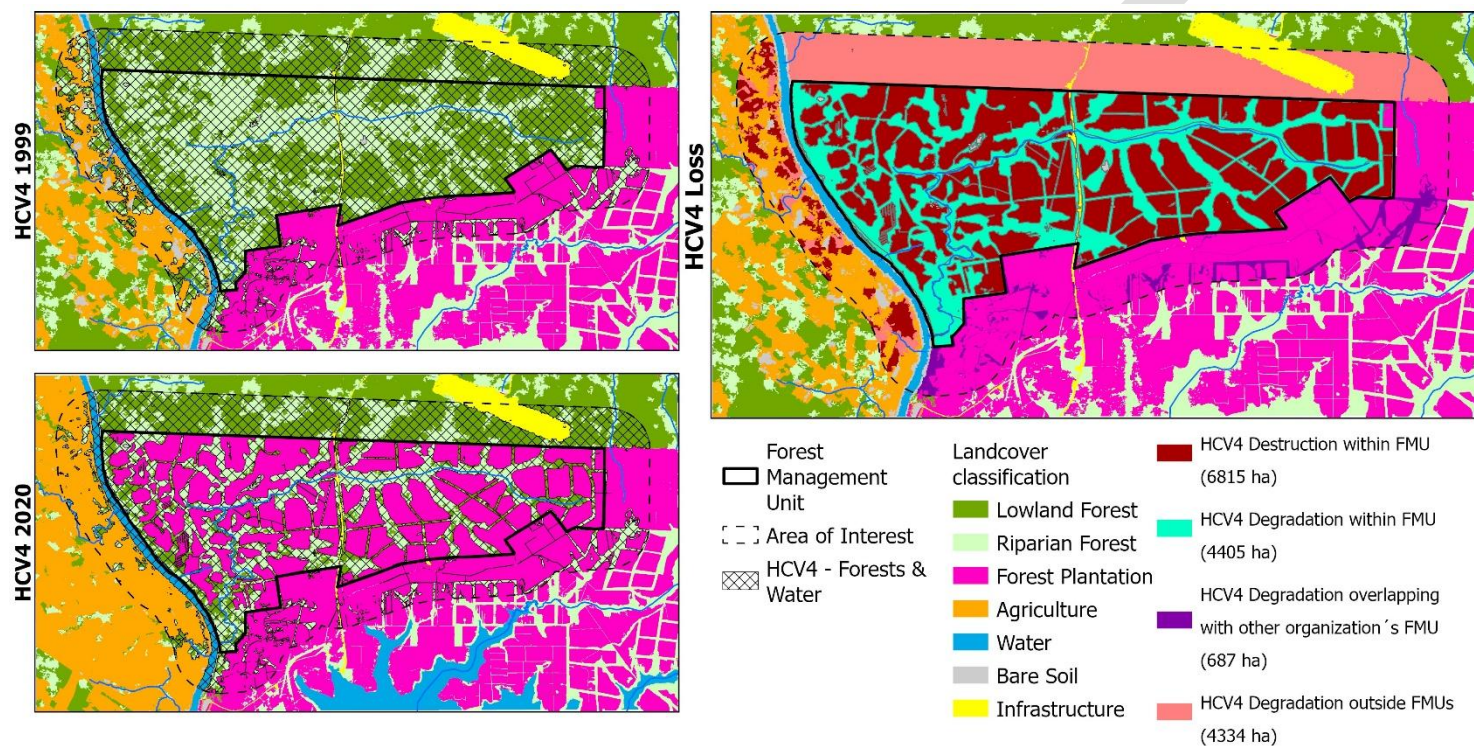


Figure 18. The maps and the resulting analysis above show the loss of HCV 4 Area between 1999 and 2020. Areas providing critical regulating and supporting ecosystem services (forests and water bodies) have been converted over the years, within FMUs, and within the AOI

9. Final Considerations in the assessment of loss of HCVs

The degree of detail in quantifying HCV loss inevitably may vary depending on the final nature of this data. Those responsible for the assessment and its conclusions need to have recognized these variations and applied an approach that is both context-appropriate and transparent in its limitations.

Assessments should clearly state the confidence and/or express any uncertainty attached to the findings. Some typical situations may be encountered:

1. **Spatially Explicit Data** – results in well delineated HCVs maps with specific locations. This could occur when both historical and current datasets include more granular information of HCVs, where they were and their attributes e.g., HCV1 - RTE species habitats, HCV4 – areas containing ecosystem services. With these datasets, spatial overlays result in maps illustrating what HCVs have been lost, where, and the spatial extent of the loss.
2. **Estimated scale of loss** – in some cases, information may only be available in estimation, such as only estimated size of impacted areas or the number of sites and/or affected communities without a complete or precise delineation possible. For example, sometimes graveyards have been completely obliterated, but communities will know what was damaged. It may not be possible for them to return to the exact spot because the damage is so complete. While quantification of loss in terms of scale can be made, neither full spatial tracking nor delineation of where the change occurred, are possible.
3. **Qualitative or Categorical Data** – only presence/absence or type of HCVs known, with no applicable or specific spatial or area data. Although loss of some HCVs may be measured in areas, this is not always the case, and not all HCV Loss can be expressed in hectareage or numbers lost. At the most limited level, only information on whether certain HCV types are present or were present historically may be available, without details on their extent or location. While this still provides baseline information—for instance, a documented decline in HCV1 over time or the disappearance of HCV5 resources for one or more affected rights holders—the loss cannot be spatially mapped or quantified in numbers.

The situations above are not mutually exclusive, and an assessment can have a mix of some or all of these situations and the corresponding findings for one or more of the different HCVs. However, contextual findings as described above do not necessarily constitute a shortcoming or limitation, as not all values (in particular social values) can be measured in an area or quantified in absolute numbers.

Notwithstanding, potential limitations on data availability and quality should not be used to reduce the level of effort for the assessment to a bare minimum. Hence, such limitations should always be documented by those responsible for the assessment and justified with evidence that the best efforts to collect data were made.

At the end of the assessment of loss of HCVs, a well-informed result that is substantiated by best available data obtained and processed following best practices should confidently be used in any planned next steps, especially where these are to articulate the loss of HCVs in the AOI in a Remedy Framework case.

These findings of the assessment of HCV loss will later form the basis for the next steps of the FSC Remedy Framework, when harms are identified and assessed.

Assessment of loss of HCVs more broadly helps establish a better understanding of the HCVs in the landscape, informs restoration priorities, and strengthens accountability mechanisms following the processes in the Remedy Framework and the decisions on how harms will be remedied.

PART 2: ASSESSMENT MANUAL

1. Purpose and structure of the manual

The primary purpose of this manual is to provide assessors and/or appointed individuals who conduct assessment of HCV Loss for FSC Remedy Framework, with a clear sequence of steps to follow when conducting the assessment. It indicates what the assessor is expected to do, including data collection, validation, and documentation at each step, and in what order. Its further purpose is to provide a template for reporting, indicating what content the assessor should include in the report, and in which structure.

Note: Future alignment of the document is needed to better reflect usage in PfA cases.

2. Key requirements for HCV assessments

The FSC Remedy Framework establishes procedures and requirements that must be followed and completed before moving to the HCV Loss assessment phase, including those related to Free, Prior, and Informed Consent (FPIC).

The HCV Approach has FPIC requirements for HCV assessments which are relevant for the entire assessment of HCV Loss process and are detailed below, along with provisions about dealing with impediments that should lead to suspending an assessment process for the entire AOI or a portion of it.

2.1 Identification of AOI and Parties

As due diligence best practice, the assessor should gather evidence that these previous processes are complete, before launching the HCV assessment of loss process. Furthermore, this identification step is critical to gain access to the Organization's information on the scope of the assessment.

The Parties are the affected stakeholders who have been subject to the effects of unacceptable activities, and who the assessment team must engage with throughout the assessment of HCV Loss process.

The affected stakeholders* include impacted rights holders*, defined as any person or group who have experienced harm to their rights as a result of unacceptable activities, and which should be differentiated into:

- Affected rights holders* entitled to FPIC: Indigenous Peoples*, Traditional peoples and local communities with legal or customary rights
- Other persons or groups.

2.2 Stakeholder Engagement and Free, Prior and Informed Consent to the past HCV identification and the assessment of HCV Loss

All affected stakeholders* identified as Parties have the right to participate in the activities of an assessment of loss of HCVs process. This includes participatory mapping, information exchange through different methods, field surveys and the post-fieldwork debriefing to be informed about the outcomes of the assessment.

While all affected stakeholders are entitled to participation in line with the FSC Remedy Framework procedures and the Principles of the HCV Approach, assessments of loss of HCVs conducted in areas owned or used by Indigenous Peoples, Traditional peoples and local communities with legal or customary rights (the affected rights holders), must follow FPIC processes.

The following best practices should be followed by the assessor to uphold FPIC principles, which also form part of the practice expected under the HCV Approach:

- Proceed with assessment activities only once there is documented evidence that FPIC to conduct the assessment has been granted by affected rights holders.
- Whenever an affected rights holder withholds consent to proceed with the assessment, their land must be excised entirely from the AOI **OR** if included in the report (for example to document the lack of consent) it should be mapped as “not assessed”, and evidence of the impediment must be documented.
- Affected rights holders with ongoing land conflicts/disputes should not be included in the assessment unless all parties involved agree to proceed through engagement in grievance or dispute resolution mechanisms as stipulated in FSC-GUI-30-003 V2.0. If their areas are enclaved in the AOI, they should be mapped as “not assessed”.
- Always re-confirm there is informed consent from individual affected rights holders before entering their lands to conduct any fieldwork, even when there is previously documented FPIC. Engage the designated representatives of the affected rights holders to accompany field teams wherever possible. This applies to field/community visits during all steps of the assessment.
- In preparation for and during participatory mapping to identify HCVs, engagement and discussions with the affected rights holders, provide information in a timely, clear and easy-to-understand manner.

Note: In the next phase of development for the document, it must be clarified if the bullet points above all apply to remote assessment activities which take place prior to field work, or if it is essential to do field work prior to remote assessment activities when possible. Alignment with existing guidance related to FPIC must also be confirmed.

2.3 Impediments to completing the past HCV identification and assessment of loss process

Assessors should exercise duty of care and stop assessment activities if any of the following impediments emerges, with regards to the Parties and/or the AOI or a portion of it:

- the Organization loses or cannot demonstrate legal rights over the FMU(s), or permission to conduct the assessment in the FMU(s) (if no longer holding legal rights over it),
- there are ongoing conversion and/or unacceptable activities by the organization, as observed by the assessor
- there is evidence that affected rights holders have not been engaged according to FPIC processes as required by the FSC Remedy Framework Procedures.

Note: Future alignment of the document is needed to better reflect usage in PfA cases, for example when the goal of the investigation is to determine if there has been destruction of HCVs outside of the legal concession areas.

In all cases, the assessor must document as best as possible the impediments found and share this information with the Organization.

When impediments affect only one among several FMUs or a clearly discernible land area belonging to a specific affected rights holder, the assessment may continue in the remaining of the AOI, since not affected by the impediment. For reporting, areas with impediments may be mapped as “not assessed”.

3. Who should conduct assessments

HCV Loss assessments require the engagement of experienced professionals from social and environmental sciences with a good understanding of the HCV Approach and who are familiar with the region where the AOI is located. Practical knowledge of local languages is a critical asset for an assessment team’s composition.

Therefore, the assessment team should include:

- A qualified lead assessor who has completed training on HCV assessment.
- At least one GIS and remote sensing expert, one social expert, and one environmental expert.
- All team members to:
 - be able to communicate appropriately and effectively with a range of stakeholders. This includes the capacity to be respectful of local cultures, engaging using appropriate methods and language.
 - have a clear understanding of FPIC principles and how to use them during the assessment.
- Social expert(s) with skills including facilitation of community consultations and participatory mapping.
- Environmental expert(s) with relevant specific expertise (e.g., bat identification, peat studies, mangrove ecology) and/or the ability to use specialist equipment (e.g., camera traps).
- Any interpreters (if applicable) to be independent from the Organization; able to communicate appropriately (see above); and have received an introduction to FPIC so their work is aligned with its principles.

Box 5. Conflict of Interest in Engaging and contracting with an Organization

Assessors must identify any potential Conflict of Interest (COI) that may affect the conduct of an assessment, where there are current and/or previous connections between the individuals in the assessment team and the Organizations.

Whenever a potential COI has been identified, adequate measures must be taken to remove or manage the potential COI, ensuring the integrity of the assessment. Since there are scenarios where potential COI may be unavoidable, the measures taken to manage the COI must be disclosed.

4. Steps in conducting the Assessment of past HCVs

Phases in Conducting Assessment

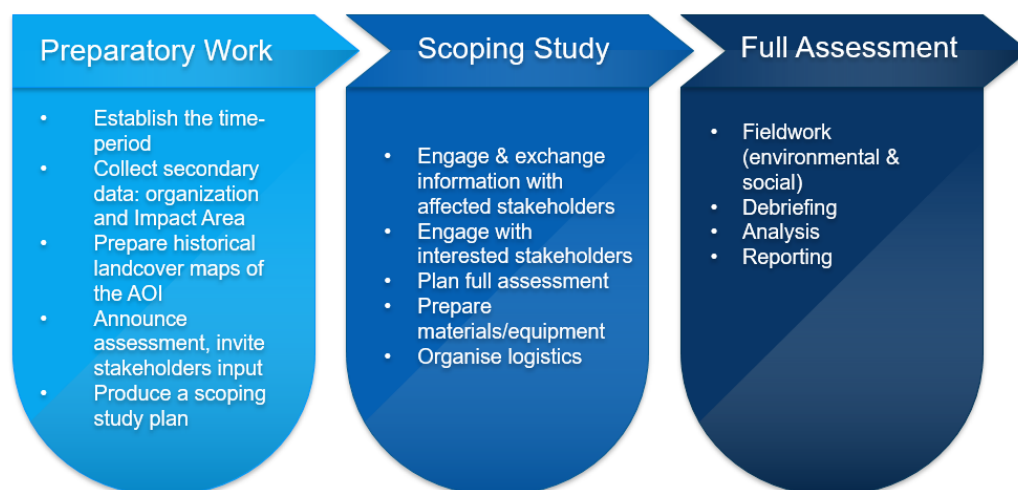


Figure 19. Phases in conducting assessment of past HCVs and HCV Loss

4.1 Preparatory work phase

The preparatory work is a desk-based step consisting of establishing the time-period for the assessment, gathering information about the AOI, beginning the analysis of secondary data including preparation of historical land cover maps, and planning a scoping study which sets the foundation for all later work, as detailed below.

a. Establish the time-period applicable to the assessment.

This step sets the temporal scope of the assessment for which data must be collected and analysed to determine the *past** status of HCVs - at the time immediately before commencement of the *unacceptable activities**, and any changes affecting their presence, condition and accessibility since.

Key target dates to consider are (see **PART 1 - section 3.1**):

- those established in the FSC Remedy Framework for HCVs,
- dates specific to the Organizations' legal title(s) or management control of the FMU(s) in the AOI, with the earliest title date setting the target start point,
- date when the assessment of current presence of HCVs started, which constitutes the end-date for the HCV Loss assessment time-period.

b. Collect secondary data about the Organization and AOI

The following information should be obtained from the Organization; from best available sources; and/or produced through analysis:

- Location, area in hectares (ha.) and coordinates of the AOI.
- Name, location, area in ha and coordinates of currently held FMU(s) with date(s) of legal title(s) or management control.

- Name, location, area in ha and coordinates of FMU(s) held by the Organization in the past, with the respective time-period(s) of the Organization's legal title(s) or management control.
- Satellite imagery relevant to AOI (**See Error! Reference source not found. Image acquisition**)
- Third-party verified list of Parties (if not obtained before starting the assessment).
Note: Future alignment of the document is needed to better reflect usage in PfA cases.
- Information about current and historical social aspects relevant to the AOI and the Parties, such as ethnicity, economy, cultural and Organizational aspects, as well as reliance on ecosystem services for livelihoods and available public services like healthcare, water, electricity, transport, markets, etc.
- Information about current and historical environmental features: thematic maps (showing the geographic pattern of a particular theme in a geographic area), soil studies and maps, species, habitats and ecosystems that may be or have been present, as well as any areas of importance for conservation (local, regional, national or global).
- Information about changes in social and environmental conditions in the AOI over time, including changes in landcover, displacement and arrival of local communities, emergence of infrastructure and restrictions in access, as well as social and environmental grievances over time, among other social and environmental change processes.
- Existing information about HCVs, historical and current threats to HCVs and HCV destruction, degradation or loss in the time-period for the assessment.

c. Prepare an initial historical landcover maps of the AOI

The GIS and remote sensing expert will use all satellite imageries collected to produce this initial land cover classification (LCC) maps for the AOI (see Part 1 Guidance, Section 4 – Producing the Land Cover Classification, and Error! Reference source not found. for further explanation).

Land cover maps that should be prepared at this point should represent the land cover at the main target dates framing the time-period for the assessment (PART 1 – Section 3.1), and the date of the assessment for current presence of HCVs. Depending on the data available at this point, additional maps reflecting the series of changes in landcover over time may be produced. As the assessment progresses, new primary or secondary data will allow improving the accuracy of the LCC and hence of the first initial historical landcover maps.

The initial historical landcover maps does not only underpin HCV identification and assessment of loss; they also help in further collecting, triangulating and analysing data by:

- helping stakeholders narrow down the dates and periods when unacceptable activities may have caused loss or destruction of HCVs or triggered a process resulting in degradation, destruction or loss of (access to) HCVs.
- helping the assessment team choose points in the AOI to carry out land cover validation (ground-truthing) during the scoping study visit.
- helping all participants identify the most meaningful fieldwork locations to gather data on past presence of HCVs.

d. Announce the assessment and call for Interested Stakeholders' and Affected Stakeholders' input

The next step in the preparatory work is for the assessor to initiate stakeholder engagement by announcing the plan to undertake an assessment of loss of HCVs and by actively seeking inputs from stakeholders.

Best practices for this step include that:

- The announcement should provide stakeholders with the details of the planned assessment, including the time-period for the assessment, a land cover map-series showing the AOI and its changes over the time-period, or at a minimum, land cover maps for the beginning and end of the time-period.
- Sufficient time should be given for stakeholders to respond, and where additional details and time are requested by the stakeholders, they should be accommodated by the assessor.
- The time frame to receive stakeholders' inputs is not limited to the preparatory work phase, and the assessor should accommodate all stakeholders' inputs until the completion of the assessment process.
- All exchanges and attempts made by the assessor to solicit inputs from stakeholders; and the received stakeholders' inputs and the corresponding assessors' responses to the input, should be documented and later presented in the assessment report.

For further guidance on stakeholder engagement, see also [FSC Guidance for Stakeholder Engagement](#)

e. Produce a scoping study plan

The assessment team should review and synthesize all information collected in the previous activities, including the initial affected and interested stakeholders' inputs, to identify remaining data needs. This information is then used to produce a Scoping Study Plan including:

- a) When, where, and how many visits are required to undertake the scoping study, including field visits (number and sites) to start ground-truthing land cover and to initiate stakeholders' engagement.
- b) The capacity needed in the field including the profiles of team members and whether independent interpreters are needed. Field work may be conducted by one team member if there are no affected rights holders, or if the team member has the correct skill set to cover social and environmental aspects. Where there are affected rights holders in the AOI, scoping will be conducted by at least two team members, including one familiar with land cover mapping and able to conduct it and one social expert (See **Section 3**).
- c) Logistics, considering the size and accessibility of the site(s) and their respective locations and the need for any support from the Organization with logistics. The Organization's field staff may help the assessment team with further understanding of information provided in the preparatory work phase or provide information only available on-site.
- d) The sample of affected stakeholders to engage for the purposes of improving the design and planning of the full assessment; and starting data gathering on past presence, condition and locations of HCVs across the AOI during the time-period. Topics to be explored include changes in land cover, use and access to HCVs, population changes due to displacement, migration, emerging settlements and infrastructure, emerging land and resource use conflict and grievances and illegal use of resources. The representative sample of affected stakeholders to be visited during scoping, should include:
 - Those residing in the vicinity of areas that may have been impacted by unacceptable activities.
 - Those involved in past or current grievance processes related to loss, destruction or degradation of HCVs.
 - Those close to/overlapping with planned land cover classification ground-truthing sites.
 - A range of affected and impacted rights holders (as applicable) with different characteristics (geographical, political, economic and related to ethnicity or religion).

4.2 Scoping Study

The scoping study is an essential, mostly field-based activity conducted to enable a full assessment of HCV Loss. It helps the assessment team understand the terrain and gain detailed knowledge of the social and environmental context, through an initial engagement with a sample of the affected stakeholders and other interested stakeholders, so the full assessment can be better planned.

The scoping study encompasses **at least** the following field activities:

1. Engagement and information exchange with affected stakeholders, including impacted and affected rights holders (if applicable).

This activity **initiates** engagement and information sharing about the assessment with a sample of affected stakeholders, chosen to help with planning for the full assessment (dates, places, who participates, etc). At the end of this activity the following has been achieved and is documented:

1. Stakeholders engaged understand the objectives of the HCV Loss assessment, including how it fits in the Remedy Framework process. Explanatory work to this end must be conducted in a non-technical way, so the affected stakeholders gain a clear conceptual understanding of the HCV assessment.
2. The assessment team and stakeholders have a shared understanding of the assessment activities, including the plan for field visits, opportunities and means of information exchange, stakeholder engagement steps, and debriefing.
3. The assessment team has started collecting information on past presence of HCVs, historical changes in HCV condition and access, and about impacted and affected rights holders that may no longer be present in the AOI (if applicable), as well as mechanisms to contact them.
4. The assessment team has confirmed through interviews and direct observation that affected rights holders:
 - have given their FPIC to the assessment going ahead.
 - have freely nominated their own representatives.
 - have been made aware that they can say no to the assessment.

2. Engagement and information exchange with other interested stakeholders

These initial engagements are intended to help with planning the full assessment, by pointing at data sources, specific sites, affected stakeholders that may contribute quality information to determine the past location, status and condition of HCVs in the AOI.

Interested stakeholders to be contacted should include:

- Governmental organizations
- Non-governmental organizations and other civil society Organizations
- Union representatives
- Academics and social and environmental experts
- Scientists
- Other private sector actors (if applicable), within and/or overlapping the AOI
- Organization's staff working on-site that may provide information available only in field offices.

3. Initial field validation of Land Cover Classification (LCC) and update of historical land cover maps

Validation and accuracy assessment of past LCC presents challenges because land cover in the AOI may have changed as a result of the unacceptable activities, limiting the possibility to collect reliable reference data for training and validation. The Guidance proposes the Extrapolation of Land Cover as a practical solution to this challenge (See Error! Reference source not found.), and the conditions required for this solution to be applicable.

Field validation of the present day LCC to be used for extrapolation starts during the scoping study through ground-truthing visiting the independently selected sample points and ground-truthing of survey locations/checkpoints as determined by the remote sensing expert, to collect data that will be used for the subsequent accuracy assessment (See Error! Reference source not found. – Accuracy Assessment, 9.1.1.1 Role and Preparation of Validation Data). These sample points may include:

- Areas within the FMU(s) where present-day land cover indicates HCVs may have been present in the past, i.e., remaining or degraded species habitat, and natural ecosystems such as forests, swamps, scrubs/thicket.
- Areas in the wider landscape where current healthy habitats and natural ecosystems are used to extrapolate historical land cover classes that are no longer found within the FMU(s).
- Areas within the FMU(s) where there have been land cover changes during the time-period (as detected through desk-based land cover classification, resulting in landcover for the date before unacceptable activities, and the date of the assessment for current presence of HCVs (start and end date for the assessment time-period).

The number of samples to be collected in the field must balance what is statistically sound and what is practically attainable (See Error! Reference source not found.).

When ground-truthing, the assessment team should log the coordinate points and take photos of the points for all compass directions, and of the canopy.

Where access is difficult (i.e. dangerous terrain presenting risk to personal safety), drone survey may be used for the ground-truthing of the land cover; in this case, it is recommended to establish five or more ground control points (pre-ground-truthed fixed points) prior to the survey and the assessment team should ensure that photos with sufficient resolution are produced (taken from <100 m above the ground). Where there are people and communities, the assessment team should ensure that the use of drones does not invade someone's privacy, and that people's rights are respected.

A set of principles for socially responsible use of drones can be found on <https://conbio.onlinelibrary.wiley.com/doi/full/10.1111/csp2.374> .

Where ground-truthing data is collected, the accuracy assessment of the LCC must be updated (See Error! Reference source not found.), and the updated land cover classification as revised through the accuracy assessment must be applied in the historical land cover maps, including at least maps for the time-period start and end target dates, and ideally also for the intermediate target date(s) when the impact of unacceptable activities translated into recognisable land cover changes.

These map-series will inform the field assessment methodological design (plots and transects for environmental surveys), stakeholder interviews, and must be part of the social field assessment materials as they will provide the context and background for affected stakeholders to reconstruct the history of changes in presence, condition, extent and access to social HCVs through Historical timeline and participatory mapping exercises.

4. Planning for the full HCV Loss assessment

The information and data gathered up to the scoping study provides inputs for the design and planning of the full assessment.

If the assessment team is complete and able to analyse the scoping study results on-site, the full assessment may be conducted directly after the scoping study. Delays in starting the full assessment for more than 12 months since the scoping study may require repeating a preparatory field visit to agree on a revised timeline with the affected stakeholders and verify there are no emerging impediments to proceeding.

Planning includes:

- a) **Defining and contracting the assessment team:** At this stage some key members would have already been contracted, but additional team needs should be addressed
- b) **Determining data needs and developing methods to collect it:** The assessment team takes stock of all the data collected to this point, including the updated historical land cover maps, and prepares the methods for collecting and analysing any critical, incomplete or missing data needed to triangulate and validate the information about past HCVs, their location, condition and extent.

Methods preparation must consider the following:

- Use of historical land cover data to identify sites located in the FMU(s) or the wider landscape that need to be surveyed for traces of social and environmental HCVs: including vestiges of cultural sites, persisting traditional farming systems, access routes, outstanding land cover types likely to contain environmental HCVs, among others. Also to be used for identifying survey sites where the extent of HCV destruction and opportunities for HCV restoration or enhancement can be documented.
- Data on likely or formerly present taxa, habitats and areas providing ecosystem services (potential HCVs) to be triangulated with stakeholders.
- Required level of engagement: for social assessment: 100% of the communities identified as impacted and affected rights holders must be involved in the full assessment through their appointed representatives, respecting agreed stakeholder engagement mechanisms. These representatives may support with organising meetings and inviting relevant people to attend.
- Required social methods and recording of results: Participatory reconstruction of historical timelines and participatory mapping of past HCV use, access, degradation and loss are mandatory methods to be used in the assessment, and their results must be documented, with as much georeferenced detail as possible, as well as listing of either impacted or affected right holders linked to the identified past HCVs. Additional methods may be necessary for collecting specific spatial data (for example transects to georeferenced exact locations) or for expanding qualitative detail on extent and intensity of impact caused by HCV Loss (such as Most Significant Change, participant observation, focus groups, semi-structured interviews and life history interviews, among others).
- Sampling for social studies: the assessment team must engage at least a sample of the population in each community, ensuring it is representative of all existing subgroups (determined by gender, age group, ethnicity, origin, economic status, activities, Organizations, power, and religion). It is critical to sample individuals of an age that would have allowed them to be firsthand witnesses of the baseline condition and ensuing changes.

Reliance on HCVs for basic needs is often critical for minority, vulnerable and marginalised groups; these must be engaged in development of historical timelines of HCV use and participatory mapping.

There is no specific prescription for determining sampling size and sampling intensity. However, the assessor should ensure to allocate a sufficient level of effort necessary to collect data needed to come to conclusive findings.

The rationale, justification and limitations of the sampling design, as well as the results, must be recorded to be included in the report, with supporting evidence.

- Inclusion of other interested stakeholders through specific methods like interviews, focus group discussions, etc., providing them with information in advance relating to the assessment of loss process, the assessment team's responsibilities, and timing.
- Efficient use of time and other resources: field studies should be organised to optimise the use of time and resources. This is also appreciated by affected stakeholders who can avoid multiple, often repetitive, stakeholder engagements and visits to gather and exchange information.

c) **Preparing the materials/equipment needed to conduct data collection, analysis, and stakeholder engagement during the field visits:** This includes preparing all adequate materials to explain the assessment to stakeholders, summarising data that supports field activities and sharing this information to help stakeholders produce more accurate evidence of past HCVs presence. This includes providing in advance:

- Data packages summarising in an accessible format all contextual information collected to date, including dates and extent of unacceptable activities and their impact. This will help stakeholders in producing more accurate historical timelines on changes in presence, condition and access to HCVs.
- Printed versions of the historic land cover map series.
- Visual aids to explain in simple terms what the assessment is, and to engage affected stakeholders (if applicable) in data collection (e.g., a photographic field guide of potential HCV 1 species).
- Specific materials and equipment may be needed in the field for collecting and recording data depending on how the assessment is organised and the characteristics of the area (e.g. projectors, soil auger/sampler set/equipment, camera traps, drones, etc.)

d) **Final logistical considerations should address:**

- National/regional/local health and safety/security risks while travelling to and in the area and actions to avoid and/or mitigate such risks.
- Days or times when it would not be advisable to organise meetings e.g., religious days, public holidays, or times when everyone is at work.
- Gender responsiveness, so assessment activities are planned to adapt to the different activities, needs and priorities of women and men, creating conditions for their participation.
- Time needed to communicate the assessment calendar to the Organization, relevant experts, interested and affected stakeholders.
-

Box 6. What information is collected and produced in the scoping study?

1. Documented timeline, activities, and map of the scoping study.
2. Records of stakeholder engagement, inputs, information exchanges, and supporting materials (meeting notes, photos, participant lists, and other data sources).
3. Documentation of FPIC to the assessment activities by affected rights-holders.
4. Some updated land cover in maps-series for the time-period
5. Records of planned full assessment methods, materials, and activities, timeline, sites and stakeholders list, and their justification.
6. Information packages for affected stakeholders.

4.3 Full Assessment

The full assessment comprises three main activities:

1. Fieldwork

The assessment team travels to the field site(s) to collect primary data intended to expand, validate and triangulate the information collected in the previous phases.

The assessment team should collect a comprehensive set of information and data in the field to enable a sound and credible assessment of HCV Loss, supported by a wide range of evidence on the historical presence or absence of such values when compared to the present time.

Typical primary data collection falls into two parts: social fieldwork and environmental fieldwork.

Social Fieldwork:

The purpose of social fieldwork is to collect information from affected stakeholders about:

- The presence of values under the HCV Categories 4, Ecosystem Services, 5 Community Needs, and 6 Cultural Values in the AOI, at the beginning of the time-period for the assessment (before the unacceptable activities), and the specific land cover types associated to each of these values and their attributes.
- The specific affected stakeholders associated with those values (by ownership, use or access).
- Any changes in the presence, condition, extent and access to past HCVs, directly or indirectly caused by the unacceptable activities of the organization in the AOI during the time-period, and the rights holders affected by these changes.
- The timeline of the changes affecting the HCVs and - when applicable, the location and area (in hectares) impacted.
- Opportunities existing in the AOI to restore lost or degraded values, including access to outstanding values

For the purpose of reporting, all historical social information collected that can be used for refining the past land cover classification must be documented and to the extent possible geo-referenced.

Who must be involved in social fieldwork?

All affected stakeholders (See PART 2 - Section 2.1) have the right to be involved in the social fieldwork. Provided there is agreement to participate, 100% of communities designated as impacted and affected rights holders must be engaged by the assessment team through their appointed representatives and through a sample representative of all sub-groups within each community (See PART 2, Section 4.2, point 4 on: Required level of engagement and Sampling for social studies).

Note: This section should be a topic for further review in the next phase of development of the document. Specifically, it should be considered if 100% of communities including representative samples of all sub-groups is feasible for all processes.

Note: Future alignment of the document is needed to better reflect usage in PfA cases.

Each of these community subgroups may have specific social and economic practices and associated knowledge; hence, their basic needs (past and current) as well as the mechanisms to satisfy them, may have been different from those of the rest of the community. This is why it is important to identify each of these sub-groups and involve them in the assessment, creating the conditions needed to ensure their meaningful participation.

If the assessment team finds during fieldwork that some sub-group(s) were not identified during the preparatory work, activities should be reorganised to ensure they are involved as relevant and that conditions to ensure their participation are created.

How is social data collected? The core and mandatory methodologies for social field assessment are participatory historic timelines and participatory mapping (See Table 1). Cultural settings, power relations and other internal dynamics may require separate mapping and history timeline exercises, to ensure information is garnered from all subgroups.

In some cases, additional methodologies may be necessary to gain insight on the precise location, extent and impact of changes in the condition and access to HCVs.

Table 1. Social field work activities depending on the type of right holders.

Activity	Timing	Affected stakeholders	Affected rights holders	Comments
Verify there is FPIC to conduct the assessment and that communities' representatives were self-chosen	Before initiating any activity with the community Scoping, (Full assessment) Before entering any individual's lands (Full assessment)	No	Yes	Discuss their right to say no at any point of the assessment. Representatives may help identify sub-groups, coordinate and (sometimes) join the field work and may be designated as spoke-persons
Explain the HCV Loss assessment objectives and activities	At the time of first engagement (in some cases during Scoping, in most. Full assessment)	Yes	No	Information packages with data collection in previous phases should be shared in advance with all affected stakeholders
Participatory reconstruction of historic timelines and Participatory Mapping for HCV 4,5, and 6	Full assessment	Yes	Yes	Ideally before the environmental studies so georeferencing of key points/areas identified through participatory mapping can be added to field surveys
Most Significant Change, Semi-structured interviews, focus groups, reconnaissance and other methods to collect information	Full assessment	Yes	Yes	Key to collect information from indirectly affected rights holders about their HCVs likely to be affected by the potential development. Also important as follow up to participatory mapping with affected rights holders. If some subgroups were not able to participate/did not speak during participatory mapping
Debriefing	After all information from social and environmental fieldwork has been	Yes	Yes	Clear and easy to understand summaries and maps must be prepared, and copies

	collected, analysed and preliminary results are synthesised to be presented and discussed (including preliminary maps of past HCV areas)		labelled “draft” must be left with the affected stakeholders (when possible both in printed and digital formats). All questions, suggestions and responses from the assessment team should be documented.
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Environmental Field Work: The purpose of environmental fieldwork is to collect historical information, triangulating secondary data collected with the current field conditions. Specifically, environmental field work should collect data to support:

- **Past and present occurrences of all HCV categories by:**
 - Completing the ground-truthing of land cover, including all the sites used to extrapolate past land cover. For all values and their attributes, establish the specific land cover types associated to each of them.
 - Identifying rare, threatened, or endangered species or ecosystems (HCV 1) as defined by National Interpretations and/or the HCV Common Guidance, collecting data e.g. through biodiversity survey, interviews, on-site documentations, etc.
 - Evaluating whether the Intact Forest Landscapes or other large landscape-level ecosystems or ecosystem mosaics are present (HCV 2) as defined by National Interpretations and/or the HCV Common Guidance.
 - Identifying rare, threatened, or endangered ecosystems (HCV 3) as defined by National Interpretations and/or the HCV Common Guidance, collecting data e.g. through biodiversity survey, interviews, on-site documentations, etc.
 - Identifying different areas providing regulating and supporting ecosystem services (HCV 4) as defined by National Interpretations and/or the HCV Common Guidance.

Table 2. Environmental HCV Attributes required to be identified

HCV 1 Species Diversity	HCV 2 Landscape-level ecosystems, ecosystem mosaics and IFL	HCV 3 Ecosystems and habitats
• High overall species richness, diversity, or uniqueness. • Populations of multiple endemic or RTE species. • Important populations or a great abundance of individual endemic or RTE species. • Small populations of individual endemic or RTE species, critically dependent on the area (EN or CR on the IUCN Red List). • Sites with significant RTE species richness, or populations (including temporary concentrations). • Particularly important genetic variants, subspecies or varieties.	• Large landscape-level ecosystems or mosaics that are relatively far from human settlements, roads, or other access. • Intact Forest Landscapes (IFL). • Smaller areas that provide key landscape functions (e.g., connectivity, buffering) and support the maintenance of larger areas in the wider landscape. • Large, relatively natural and intact areas that provide habitat for top predators or species with large range requirements. • Areas containing viable populations of the majority of naturally occurring species.	• Ecosystems that are naturally rare because they depend on highly localised soil types, locations, hydrology or other climatic or physical features. • Ecosystems that are anthropogenically rare, because the extent of the ecosystem has been greatly reduced by human activities compared to their historic extent. • Ecosystems that are threatened or endangered (e.g., rapidly declining) due to current or potential operations. • Ecosystems that are classified as threatened in national or international systems (such as the IUCN Red List of Ecosystems).

- | | | |
|--|---|--|
| | <ul style="list-style-type: none"> • Ecosystems with important subpopulations of wide-ranging species. | |
|--|---|--|

2. Debriefing with stakeholders

Affected stakeholder engagement takes place throughout the assessment of loss of HCV process. However, a debriefing session allows the assessor to:

- Present evidence-based HCV Loss assessment results to affected stakeholders.
- Refine and validate with affected stakeholders the findings for HCV 4, 5, and 6 to ensure they reflect their perspectives.
- Document final affected stakeholder feedback, concerns, and recommendations for inclusion in the final report.

Affected stakeholder engagements may take different formats—such as community meetings, large presentations to government/NGOs, or individual meetings with experts—but the chosen format should enable informed participation by all stakeholders. All stakeholder engagements should be held in appropriate languages and formats to ensure accessibility.

Box 7. Recommended contents for debriefing sessions

To ensure transparency and effective participation, the assessment team should prepare at least the following:

- Overview of the assessment and its purpose.
- Key steps of the assessment process.
- Maps of legal and customary lands (past and present, where available).
- Description and justification (with evidence) of past HCV presence, potential presence, or absence, and associated rights holders.
- Draft maps of HCV areas (historical, current, and potential loss overlays).
- Information on HCVs that could not be spatially mapped.
- Description of threats to social and environmental values.
- Preliminary recommendations for avoiding and mitigating existing or ongoing impacts of operations.
- Limitations, concerns, or issues with the assessment (including excised areas and reasons).

3. Analysis and report writing

The analysis and report writing activity translates raw data and stakeholder engagement outcomes into clear, structured findings. This stage establishes the evidence base for conclusions about the presence, condition, and loss of HCVs.

For the sections to be presented as the result of the assessment, see the report template in **Annex 4.**

Findings per HCV category

Findings should be organised and presented for each HCV category, supported by map-series whenever spatial information is available to document the scale and timeline of changes. with detail on:

- Past HCVs found (detailed per attribute as applicable) and level of confidence of the finding.
- Affected rights holders linked to each type of past HCV identified, with as much detail as available.
- Dates when unacceptable activities started and extent of damage or loss of each HCV over the time-period.
- Overlays between historical and current maps highlighting areas of HCV lost, degraded or affected by restrictions in access.

Evidence base

Findings should be substantiated by documented evidence from primary and secondary data sources, and all stakeholder engagements undertaken. Evidence combines quantitative data (e.g., hectare estimates, land cover statistics) and qualitative information (e.g., testimonies, expert observations). Limitations in data availability or accuracy should be transparently reported.

Assessment of HCV change and loss

The report should provide a systematic comparison of past and current HCVs, describing:

- **Current HCVs:** what HCVs and their nature, and as applicable, their extent
- **Past/historical HCVs:** what HCVs and their nature, and as applicable, their extent.
- **Comparative analysis:** differences between historical and current findings.
- **Land cover and HCV changes over time:** documented through maps and other available data.
- **Nature and extent of loss** distinguishing:
 - A. HCVs destruction, including conversion and/or clearing into Open Land - where possible, losses should be quantified in hectares per HCV, with total estimated area loss and delineated affected zones.
 - B. HCVs degradation, such as habitat fragmentation, population decline, pollution, soil erosion, land degradation (e.g. from primary forest to lower seral stages), expansion of invasive species, etc. The result of the assessment should specify what types of degradation have been found to take place - where possible, degraded areas should be quantified in the relevant measurement units (e.g. hectares, volume, etc. per HCV), with delineated affected zones.
 - C. Unquantifiable losses, e.g. loss of community access to certain basic needs. Where the extent of loss can only be qualitatively determined and cannot be quantified in numbers, explanation should be provided along with the supporting evidence and documentation.

The assessment result may conclude HCV Loss belonging to one or more categories - for example, where both Category A (e.g. conversion) and Category B (e.g. habitat fragmentation) have been concluded.

Note: In the next steps in the development of the document, it is necessary to further clarify how to assess HCV damage versus HCV loss versus HCV destruction, which have different corresponding consequences in the FSC system.

Final Assessment of Loss of HCV Report output

The finalised Assessment of Loss of HCVs report(s) should be written in accessible language, so that all affected rights holders, affected right holders, and other stakeholders can understand the findings.

Supporting data and documentation, both from Primary and Secondary data, including geospatial data should be provided alongside the full report in the supplementary materials (see Annex 4 Report template).

DRAFT

ANNEX 1: EXPLANATION TO PRODUCING LAND COVER CLASSIFICATION STEPS

Image Acquisition Planning

Image acquisition planning is a critical step in land cover classification for HCV identification and HCV loss assessment, as the quality of subsequent analyses depends on selecting appropriate imagery. This stage involves defining the requirements for satellite data in terms of spatial, spectral, temporal, and resolution needs. For instance, when reconstructing past land cover conditions, imagery with adequate temporal coverage becomes especially important to represent specific periods of interest, even if resolution or sensor quality is limited. Careful selection of sources and sensors—such as Sentinel-2, Landsat, or Planet—ensures that the imagery aligns with the project's objectives and provides a consistent basis for classification across time.

Equally important is the consideration of acquisition dates and seasons to minimize atmospheric interference, such as cloud cover, and to capture phenological cycles relevant to vegetation and land use. Since historical imagery may present additional challenges, clear quality criteria should be established, including thresholds for cloud-free coverage, acceptable solar angle, and absence of haze or shadow. By systematically addressing these aspects during the planning stage, analysts can maximize the reliability of the imagery selected for reconstructing past landscapes, thereby reducing uncertainty in HCV identification and loss assessment.

Image Acquisition

When selecting satellite imagery for identification of past HCVs and assessment of HCV Loss, image quality and suitability are primarily determined by three interrelated characteristics: spatial resolution, spectral resolution, and temporal resolution. These parameters should be considered together to ensure that the selected imagery accurately represent past land cover and detect the ecological or social indicators needed for HCV identification.

- **Spatial resolution** is the level of detail visible in the imagery. For detecting small-scale features—such as narrow riparian zones, small forest patches, or village surroundings relevant to HCV 5 and 6—high-resolution imagery (e.g., ≤ 10 m) is often required. For landscape-level assessments (HCV 2) or broad land cover trends, moderate-resolution imagery (e.g., 10–30 m) may be sufficient.

The key is to match the resolution to the scale of the HCV features to be identified, avoiding unnecessarily high-resolution data that may increase processing complexity without improving the results.

- **Spectral resolution** determines the ability to differentiate between land cover types based on their reflectance in different wavelength bands. For example, near-infrared bands are crucial for distinguishing vegetation types, assessing forest health, and mapping water bodies, while shortwave infrared can help identify soil moisture or burn scars. When planning the analysis, imagery with spectral bands that reliably separate the ecosystem types or land uses relevant to the HCV categories under assessment should be selected. Moreover, the availability of specific bands also enables the calculation of spectral indices (e.g., NDVI, NDWI), which can provide additional insights into vegetation vigour, water content, or other key ecological attributes. The incorporation of such indices into the classification process enhances the separability of land cover classes, reducing confusion between spectrally similar categories and improving the overall accuracy of the results.

- **Temporal resolution** is how frequently imagery is acquired over the same location. For assessments of past HCVs, the priority is to obtain images as close as possible to start of the assessment time frame and through to the current date, ideally during similar seasonal conditions to ensure comparability. This is critical to avoid misinterpretation due to seasonal vegetation changes or temporary land uses. In some cases—especially where land cover changed rapidly—multiple images over a short period may be needed to confirm the timing and nature of changes. Temporal resolution also becomes relevant when constructing image mosaics, as higher revisit frequencies increase the chances of obtaining cloud-free observations across the entire area of interest.

The selection of imagery is often a balance between these three factors, availability, and budget. For example, free imagery from Landsat or Sentinel missions may provide the needed spectral and temporal coverage for most assessments, while commercial providers may be necessary where very high spatial resolution is essential. Careful consideration of these parameters at the image selection stage ensures that the land cover classification will be robust, and that the identification of past HCVs will be as accurate and technically sound as possible.

Nevertheless, assessments should not rely only on freely available resources, and efforts to obtain the best available data should be undertaken. Assessments which fail to use all possible readily available satellite imagery (considering both free and proprietary satellite data sources) at appropriate resolutions and quality that cover the AOI are not acceptable and risk undermining assessment credibility.

Box 8. Using Google Earth Engine (GEE)

GEE is a cloud-based platform that provides access to a vast archive of satellite imagery (including Landsat, Sentinel, MODIS, and others) and geospatial datasets, together with powerful processing capabilities. It enables users to visualize, process, and analyse multi-temporal imagery without the need to download large volumes of data, making it a valuable tool for landcover change analyses and the identification of potential HCV loss.

In practice, GEE is especially useful during the preprocessing and acquisition stages of satellite imagery. It allows rapid selection and downloading of images for any Area of Interest (AOI), flexible adjustments to AOI boundaries, and efficient creation of cloud-free mosaics by combining multiple scenes. Users can also generate vegetation and spectral indices, rescale or harmonize bands with different spatial resolutions, and prepare standardized image composites ready for classification or change detection. A further advantage is the reproducibility of analyses through scripts, which makes it possible to replicate or update workflows consistently across studies.

Good practices: when using GEE, it is recommended to (i) share the scripts or code employed, to enhance transparency and reproducibility, and (ii) carefully document all parameters applied—such as AOI boundaries, date ranges, filters, and preprocessing steps—to ensure clarity and comparability of results.

See Error! Reference source not found. for further information on satellite image sources.

Image Pre-processing

Once satellite imagery has been acquired for use for land cover classification for the AOI over the applicable timeframe it should undergo pre-processing to ensure that the data are ready for analysis. Pre-processing is especially critical for assessing loss of HCVs, where comparisons between images from different dates, sensors, or seasons should be free from distortions or inconsistencies that could lead to misinterpretation. A series of steps need to be taken as follows:

- **Geometric correction and co-registration:** images from different sensors or acquisition dates should be spatially aligned to a common coordinate system so that each pixel represents the same ground location. Misalignment, even of a few meters, can create false changes when comparing past and present land cover.

- **Radiometric and atmospheric correction:** variations in sensor calibration, sun angle, or atmospheric conditions (haze, aerosols, humidity) can affect pixel reflectance values. Applying atmospheric correction (e.g., surface reflectance processing) standardizes the data, allowing for reliable multi-temporal analysis and accurate spectral classification.
- **Cloud and shadow masking:** clouds and their shadows can obscure ground features and distort classification results. For analysis over the applicable time frame, where historical images may be limited, multiple scenes may need to be combined (mosaicking) to obtain cloud-free coverage of the AOI for the full-time frame being assessed.
- **Image mosaicking and clipping:** large FMUs and their surrounding wider landscapes may require merging several image tiles into a seamless mosaic. Once mosaicked, the imagery can be clipped to the AOI (FMU and the WL) extent to reduce file size and focus processing efforts.
- **Seasonal consistency check:** whenever possible, select and process images from the same season for both the past baseline and current date to minimize differences caused by seasonal vegetation cycles rather than actual land cover change.
- **Resampling and band alignment:** when combining imagery from different sensors or resolutions, resample bands to a common pixel size and ensure spectral bands are correctly aligned. This is essential when integrating proxy datasets, such as historical land cover maps or ancillary spatial layers.

Carefully executed pre-processing ensures that any observed differences in land cover are due to actual environmental change rather than technical inconsistencies. Pre-processing underpins the accuracy of the LCC, and, therefore, the reliability of the past HCV identification. Inadequate pre-processing can propagate errors throughout the analysis, leading to incorrect conclusions about the extent and nature of HCV loss. All processes carried out during pre-processing should be documented including the data sources, software, algorithms and parameters used as these will be presented in the assessment report that is generated (see PART 2 - Manual).

An illustration of a satellite image, before and after pre-processing is provided below:

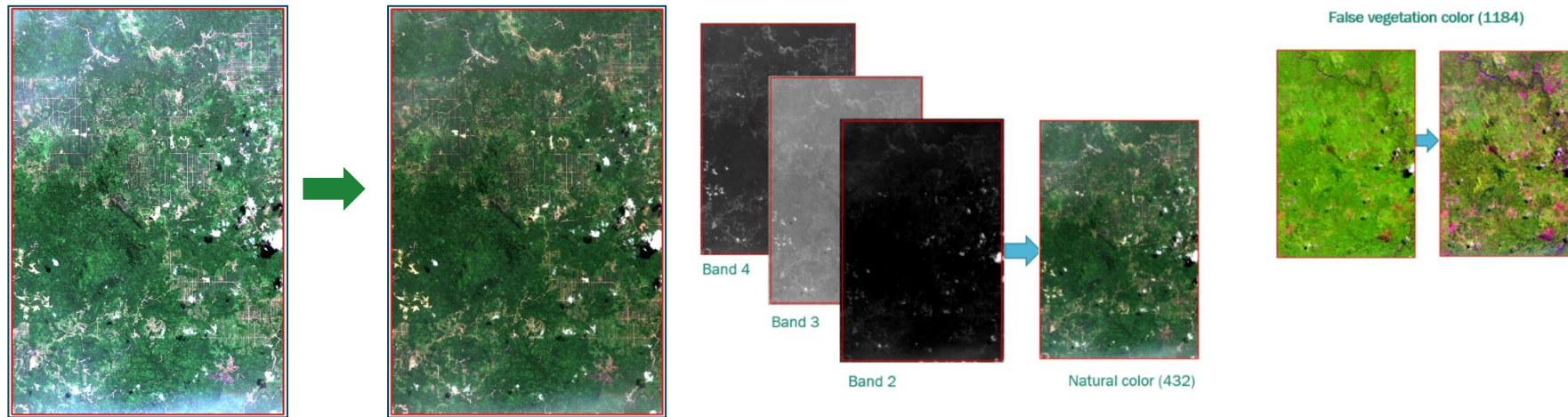


Figure 20. The illustrations demonstrate key steps in image preprocessing and band combination for land cover analysis. In panel A, atmospheric correction improves image clarity by reducing haze or aerosol effects, resulting in a sharper and more reliable visual interpretation compared to the original input. Panel B shows a natural colour composite (bands 4-3-2), which closely resembles how the landscape would appear to the human eye and facilitates intuitive recognition of land cover features. Panel C presents a false-colour composite (bands 11-8-4), where vegetation appears in distinctive tones, enhancing the ability to distinguish vegetated areas from other surfaces and providing a clearer basis for subsequent classification.

Segmentation

Object-Based Image Analysis (OBIA) provides a more robust framework for land cover classification compared to traditional pixel-based methods. While pixel-based approaches rely exclusively on spectral values at the pixel level, OBIA groups adjacent pixels into meaningful objects (segments) that incorporate not only spectral information but also spatial, textural, and contextual attributes. This object-level perspective reduces the “salt-and-pepper” effect commonly observed in pixel-based classifications and improves the ability to distinguish land cover types that have similar spectral signatures but differ in shape, structure, or spatial arrangement.

OBIA classifications can be performed in both supervised and unsupervised modes. In supervised approaches, the analyst defines training samples for each land cover class, which guide the assignment of objects based on their attribute similarity. In unsupervised approaches, objects are automatically grouped into clusters according to statistical similarities, and these clusters are later labelled into meaningful classes. The general workflow involves several key steps: (i) image segmentation, where parameters such as scale, shape, and compactness are set to control object size and boundaries; (ii) calculation of object attributes, including spectral means, standard deviations, texture, and shape metrics; (iii) classification, either supervised or unsupervised, based on selected attributes; (iv) post-classification refinement to correct misclassifications and merge fragmented objects; and (v) accuracy assessment. Parameterization is critical, as segmentation scale determines the level of detail, while shape and compactness weights influence how elongated or homogeneous the resulting objects will be. Proper tuning of these parameters, combined with careful selection of training data or clustering rules, ensures higher classification accuracy and makes OBIA a powerful tool for mapping land cover change and detecting loss of HCV areas over time.

Best practices in OBIA include enriching the input imagery with derived spectral indices (e.g., NDVI, NDWI, NBR), which can be added as additional layers to improve the separability of classes that may otherwise appear spectrally similar. Incorporating topographic variables such as elevation, slope, or aspect from a DEM can also enhance classification in heterogeneous landscapes. Careful parameter testing during segmentation is essential; starting with a range of scale, shape, and compactness values and iteratively refining them helps ensure that objects represent real-world features rather than arbitrary pixel clusters. It is also recommended to use a combination of spectral, spatial, and textural attributes for classification, rather than relying on spectral information alone.

Common errors in OBIA often arise from inadequate segmentation, such as setting the scale parameter too low, which leads to excessive fragmentation, or too high, which causes over-generalization of land cover classes. Misclassification can also occur if training samples are biased, too few, or not representative of class variability. Over-reliance on spectral attributes alone may reduce accuracy, particularly in areas where different land covers share similar reflectance values. Another frequent mistake is neglecting seasonal differences when using multi-date imagery, which can result in inconsistencies between classification periods. Additionally, applying identical segmentation parameters to images with different spatial or radiometric resolutions without adjustment often produces poor results. Finally, insufficient post-classification refinement—such as failing to merge small, isolated objects or overlooking logical inconsistencies—can lower the overall accuracy of the classification.

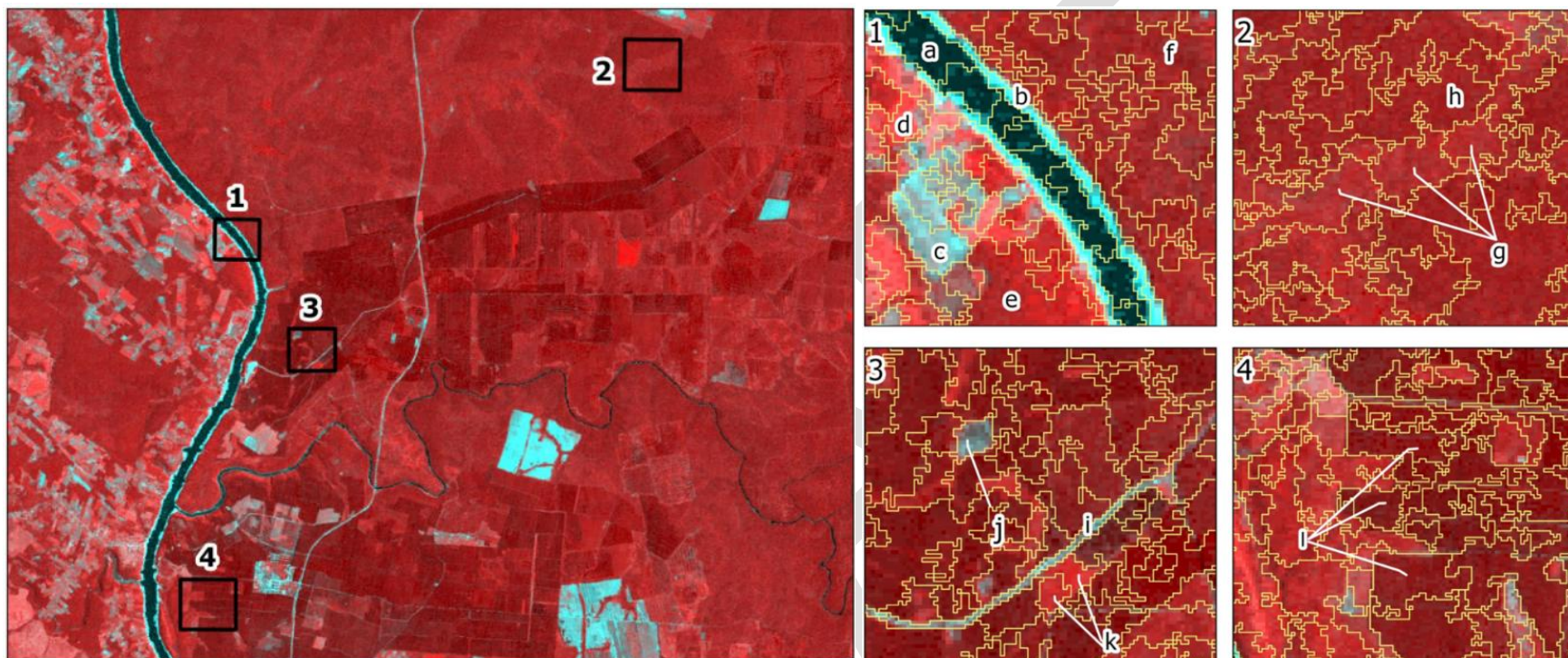


Figure 21. Insets of the segmented imagery illustrating the adequacy of the chosen segmentation parameters. The examples highlight how patches of different land cover types are clearly delineated, demonstrating that the selected scale, shape, and compactness values allowed for accurate separation of distinct cover classes. These results confirm that the segmentation process produced objects that correspond well with real landscape features, providing a reliable basis for subsequent classification. (a) water; (b) sandbanks along the river shore; (c) fallow agricultural plots; (d) cultivated agricultural plots; (e) riparian forest; (f) lowland forest; (g–h) illustrate the correct separation between riparian forest (g) and lowland forest (h); (i) paved road; (j) partially bare soil; (k) degraded lowland forest (note the difference in colour and brightness compared to f); (l) correct delineation of plantation edges versus riparian forest.

Extrapolation of Land Cover

When assessing past HCV conditions, one of the key challenges is the limited availability of reliable reference data for training and validation. A practical solution is to extrapolate current field control points to past imagery, provided that the land cover type at those locations has remained stable over time. In this approach, field-verified sites collected in the present can be used both as training samples for a supervised OBIA and as validation points for the accuracy assessment of classifications applied to historical images.

The critical step is to carefully identify and select control points corresponding to land cover classes that have not undergone substantial change between the reference date and the present. This requires a preliminary multi-temporal inspection of the imagery, ensuring that selected areas consistently exhibit the same spectral and spatial characteristics across dates. For example, long-standing forest patches, permanent water bodies, or paved roads are typically reliable candidates, whereas agricultural fields or secondary vegetation are more prone to change and therefore less suitable. By restricting training and validation to stable land cover types, it is possible to extrapolate current ground-truth information to past classifications while maintaining reliability in both supervised OBIA and subsequent accuracy assessment.

Training samples for past land cover classifications may not only be obtained from extrapolated current ground control points, but also from complementary sources of information. For instance, community knowledge can provide valuable inputs: when local people indicate a site previously used for the collection of non-timber forest products (HCV5), the assessor can record both the geographic position and the type of environment that existed there, using this information as input for the reconstruction of past land cover. In addition, other secondary sources may include:

- Historical maps and cartographic archives: Old topographic or thematic maps depicting vegetation, land cover, or land use patterns.
- Aerial photographs: Historical imagery that allows visual interpretation of past land cover types.
- Scientific literature and ecological surveys: Studies documenting vegetation composition, biodiversity assessments, or habitat descriptions.
- Governmental or institutional databases: Forestry inventories, cadastral records, land registries, or agricultural censuses.
- NGO and conservation project reports: Documentation from past conservation initiatives or land management programs.
- Herbarium and museum records: Georeferenced specimens that indicate historical distribution of vegetation types or habitats.
- Local oral histories and ethnographic records: Accounts preserved in social or anthropological studies that provide indirect evidence of land use and cover.
- Grey literature and project archives: Unpublished reports, environmental impact assessments, or consultancy studies containing land cover references.

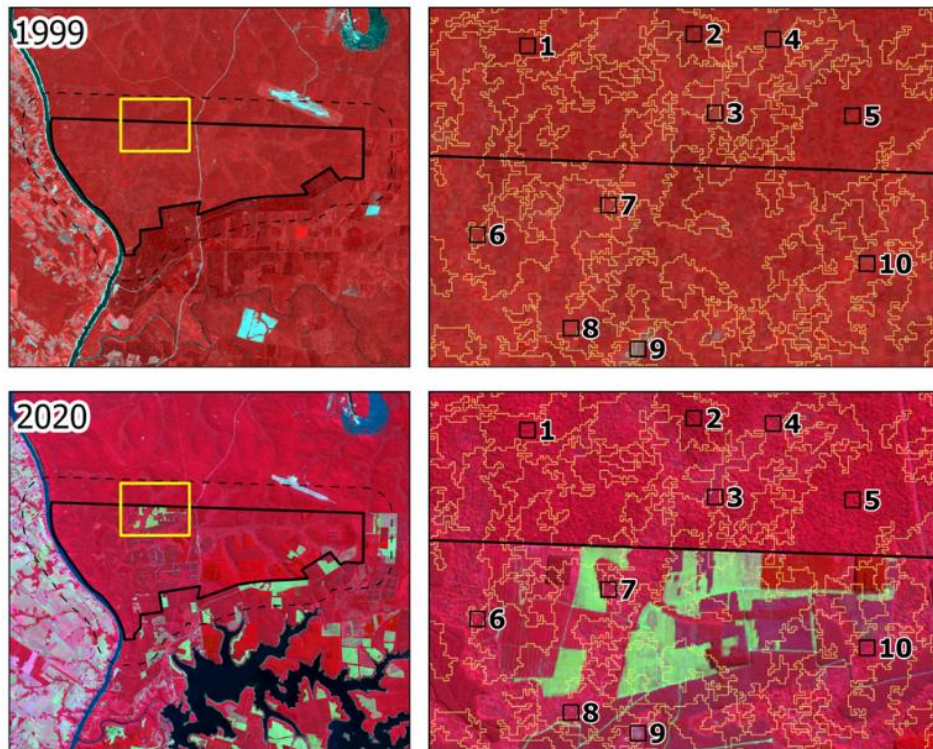


Figure 22: illustrates how segment training and labelling can be performed using the current (2020) imagery, even though much of the area has already been converted. Stable locations identified in this process can also serve as reference sites for environmental fieldwork and for extrapolating training and validation data to past classifications. Points 1, 2, and 5 represent samples (outside the FMU) of mature, nearly intact Lowland Forest. Point 4 corresponds to a shorter Lowland Forest, possibly a transitional zone towards the riparian forest. Points 3, 6, 7, 8, and 10 represent Riparian Forest samples (both inside and outside the FMU). Point 9 corresponds to nearly bare soil. Points 6 to 10 represent remnants within the FMU of natural cover types that can still be used for the satellite-based classification of past images.

Accuracy assessment

Good practice requires that the accuracy of a land cover classification be validated using independent reference data, such as high-resolution satellite imagery or field observations. Where older high-resolution images are available, these may serve to validate classifications derived from lower-resolution imagery. For areas identified only through low-resolution imagery, accuracy can be estimated using more recent higher-resolution data. In all cases, it is essential to clearly describe the validation process and the estimated accuracy, since these—together with the degree of correspondence between proxies and reality—represent major sources of uncertainty.

Understanding Accuracy Assessment in Remote Sensing

Once classification is completed, the remote sensing specialist should design the accuracy assessment process. This is typically carried out by comparing the classified map against an independent set of reference samples, stratified across land cover classes. A sufficient number of samples per class must be collected to ensure statistically robust estimates (commonly ≥ 50 points per class as a practical guideline, though the exact number depends on the study area, class distribution, and desired confidence level).

In the specific context of past HCV identification and loss assessment, it is important to highlight that both the training of the land cover classification and the accuracy assessment should be understood as iterative processes. They begin during the scoping study stage but are progressively refined as new information becomes available—both from secondary sources consulted during desk research and from field-based evidence, including biodiversity surveys and knowledge provided by local communities. This iterative refinement ensures that the classification framework remains responsive

to new insights and that the resulting accuracy assessment reflects the best available evidence throughout the entire assessment process.

Past/historical land cover classifications should ideally reach an Overall Accuracy of at least 70%, though higher standards ($\geq 80\%$) are generally recommended for reliable applications. If accuracy is lower, the classification approach may need to be revised—for example, by adjusting segmentation parameters, refining training data, or revising class definitions. After adjustments are made, the accuracy assessment should be repeated to verify whether the revised classification meets the minimum accuracy threshold.

Accuracy assessment is essential to evaluate how reliably a classification map represents the real landscape. Because classification is never perfect, some level of error (misclassified pixels or objects) is inevitable. Errors may arise from the quality of input imagery, the representativeness

Purpose and Scope of Accuracy Assessment

The main objective of accuracy assessment is to compare classification results with reliable reference data (ground truth or validation data) in order to:

- Determine the overall accuracy of the classification,
- Measure the accuracy of individual classes,
- Identify which classes are most frequently confused or misclassified.

By systematically evaluating these aspects, users can gain a clear understanding of the strengths and weaknesses of the classification map.

Role and Preparation of Validation Data

Validation data are critical for accuracy assessment and typically consist of geolocated points or polygons labelled with their true land cover class. These labels are compared against the classification results to evaluate agreement.

Key principles for preparing validation data include:

- **Independence from Training Data:** Validation samples must not overlap with training data.
- **Random Sampling:** Randomized strategies (e.g., stratified random sampling) ensure statistical robustness.
- **Minimizing Spatial Autocorrelation:** Adequate separation between samples avoids redundancy and bias.

Labelling Methods for Validation Samples

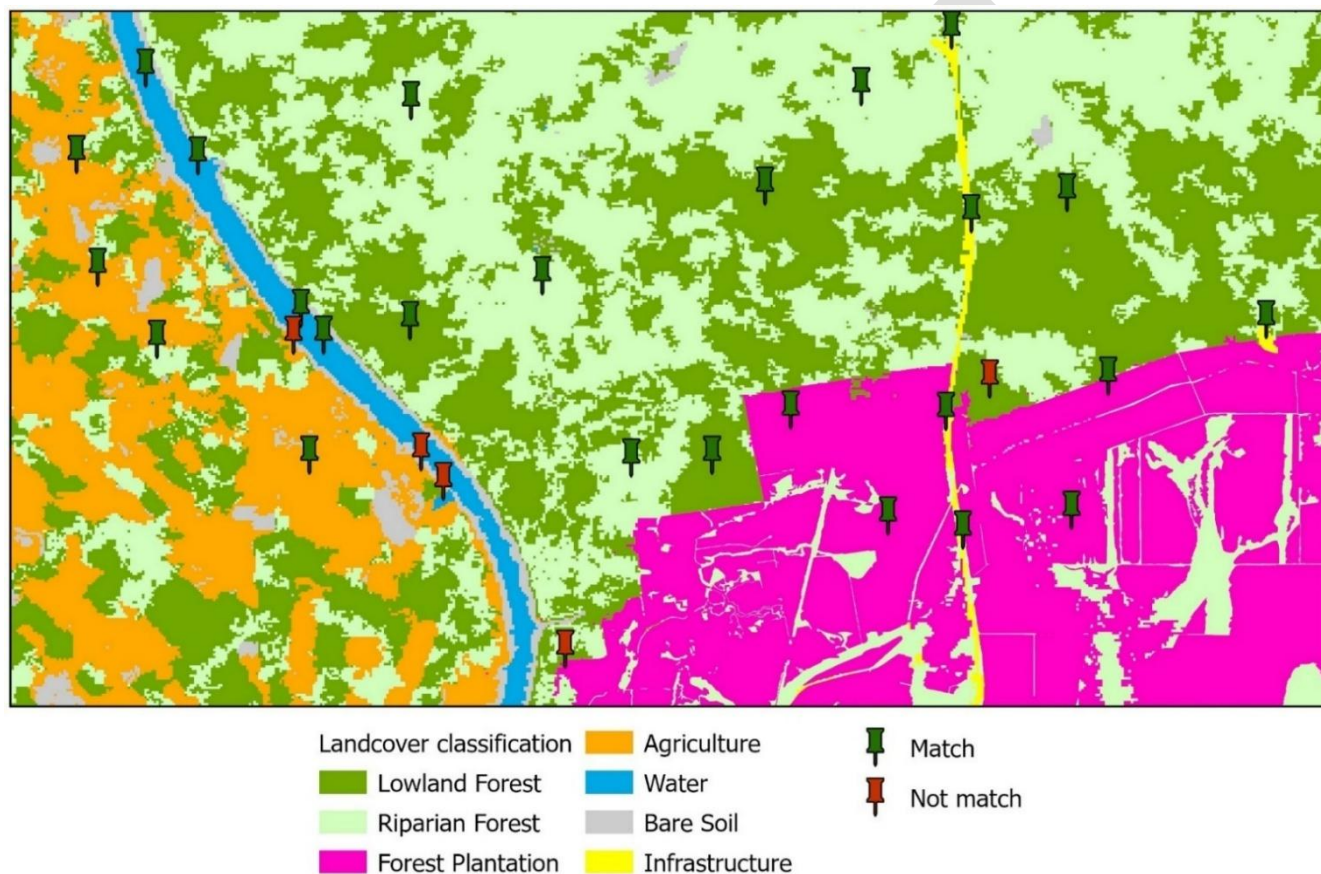
- **Visual Interpretation:** Assigning labels from high-resolution imagery or tools like Google Earth.
- **Field Surveys:** Ground truthing through direct field visits (highly accurate, but resource intensive).
- **External Data Sources:** Independent land cover maps or surveys can also serve as validation sources.

Community Knowledge: Locations and environmental descriptions provided by local communities (e.g., past use of an area for NTFP collection; sites where RTE species were sighted), which can supply both spatial and contextual information for validation.

Accuracy (Confusion) Matrix

- **Overall Accuracy:** Proportion of correctly classified samples over total samples. Provides a general measure but does not reveal class-specific errors.
- **Producer's Accuracy:** Proportion of correctly classified samples for a class relative to all reference samples of that class (sensitive to errors of omission).
- **User's Accuracy:** Probability that a sample labelled as a given class on the map truly belongs to that class (sensitive to errors of commission).

Example of Accuracy Assessment



Reference \ Map	Lowland Forest	Riparian Forest	Water	Infrastructure	Forest Plantation	Agri	PA
Lowland Forest	4	0	0	0	1	0	0.80
Riparian Forest	0	5	0	0	0	0	1.00
Water	0	0	4	0	0	1	0.80
Infrastructure	0	0	0	5	0	0	1.00
Forest Plantation	1	0	0	0	4	0	0.80
Agri	0	0	2	0	0	3	0.60
UA	0.80	1.00	0.67	1.00	0.80	0.75	

In this illustrative example, six land cover classes were evaluated with five validation samples per class (30 samples in total). The resulting confusion matrix shows an Overall Accuracy (OA) of **83%**, indicating that most reference samples were correctly classified. The values along the diagonal (bold) of the accuracy matrix represent the number of samples correctly classified for each land cover class.

The **Producer's Accuracy (PA)** values highlight how well each class present in the field was detected on the map. For instance, *Riparian Forest* and *Infrastructure* achieved perfect PA (1.00), meaning all field samples were correctly mapped. In contrast, *Water* showed a lower PA (0.67), indicating that some true Water samples were misclassified as Agriculture.

The **User's Accuracy (UA)** reflects the reliability of each map class from the perspective of the end-user. For example, when the map labels an area as *Agriculture*, it is correct only 60% of the time (UA = 0.60), as several pixels mapped as Agriculture were in fact other land cover types in the field. Conversely, *Riparian Forest* and *Infrastructure* again achieved the highest reliability (UA = 1.00).

This example illustrates how OA provides a general measure of classification performance, while PA and UA offer class-specific insights into both omission and commission errors.

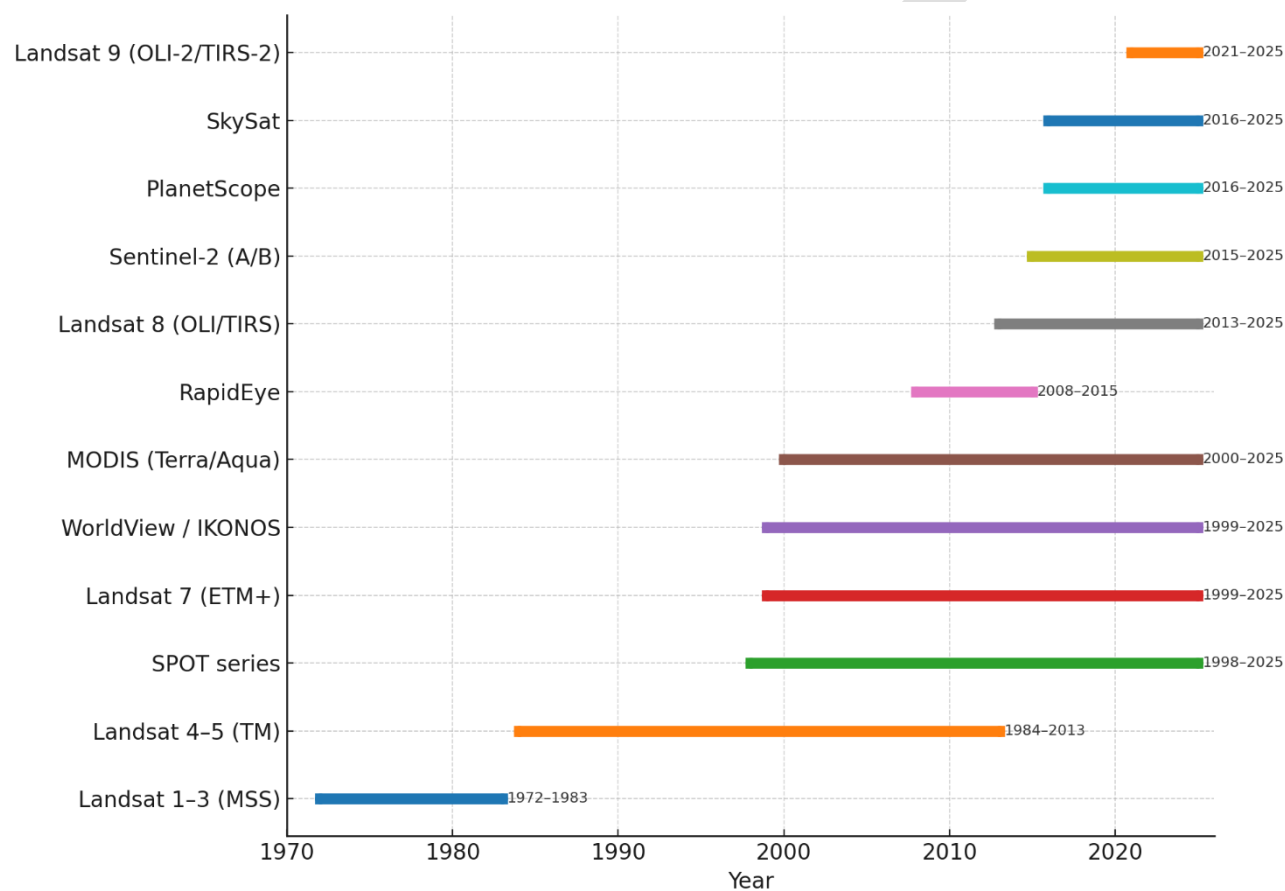
How about User's Accuracy in the context of past condition?

User's Accuracy (UA) is particularly relevant for current land cover assessments where ground-truth data are available. For past conditions, direct validation through field checks is not possible. However, UA may still be estimated if independent historical reference data (e.g., archival aerial imagery, historical maps) are available. Otherwise, UA is generally not assessed for past land cover reconstructions.

ANNEX 2: SATELLITE DATA SOURCES

Satellite Data Sources							
Satellite / System	First Year of Imagery	Sensor	Spatial Resolution	Spectral Resolution (Bands)	Temporal Resolution	Access Type	Main Access Portals
Landsat 1–3	1972–1978	MSS	60 m multispectral	4 bands (visible, NIR)	18 days	Free / Open	USGS EarthExplorer, GloVis
Landsat 4–5	1982–1984	TM	30 m multispectral; 120 m thermal (later 60 m resampled)	7 bands (visible, NIR, SWIR, thermal)	16 days	Free / Open	USGS EarthExplorer, GloVis
Landsat 7	1999	ETM+	30 m multispectral; 15 m panchromatic; 60 m thermal	8 bands (visible, NIR, SWIR, thermal, panchromatic)	16 days	Free / Open	USGS EarthExplorer, GloVis
Landsat 8	2013	OLI + TIRS	30 m multispectral; 15 m panchromatic; 100 m thermal	11 bands (visible, NIR, SWIR, thermal)	16 days	Free / Open	USGS EarthExplorer, GloVis
Landsat 9	2021	OLI-2 + TIRS-2	30 m multispectral; 15 m panchromatic; 100 m thermal	11 bands (same as Landsat 8)	16 days	Free / Open	USGS EarthExplorer, GloVis
Sentinel-2 (ESA)	2A: 2015, 2B: 2017, 2C: planned	MSI	10 m (visible/NIR), 20 m (red edge/SWIR), 60 m (coastal/aerosol)	13 bands	5 days (combined A & B)	Free / Open	Copernicus Open Access Hub, AWS, Google Cloud
MODIS (Terra/Aqua)	2000	MODIS	250 m, 500 m, 1 km	36 bands (visible to thermal)	1–2 days	Free / Open	NASA LAADS DAAC, LP DAAC
SPOT series (CNES/Airbus)	SPOT 4: 1998, SPOT 5: 2002, SPOT 6/7: 2012–2014	HRVIR / HRG	1.5–6 m multispectral; 1.5 m panchromatic	4–8 bands	1–4 days	Proprietary	Airbus GeoStore
RapidEye (Planet Labs)	2008–2015	REIS	5 m multispectral	5 bands	Daily (constellation)	Proprietary	Planet Labs
PlanetScope (Planet Labs)	~2016	Dove	~3 m multispectral	4–8 bands	Daily	Proprietary or research licensing	Planet Labs
SkySat (Planet Labs)	~2016	SkySat	0.5 m panchromatic; 2 m multispectral	4–8 bands	Daily	Proprietary or research licensing	Planet Labs
WorldView series / IKONOS (Maxar)	IKONOS: 1999, QuickBird: 2001, WorldView 1–4: 2007+	Varies by satellite	31 cm – 1.2 m multispectral; ~50 cm panchromatic	4–16 bands	1–4 days	Proprietary	Maxar SecureW

Availability timeline of major satellites



Recommended Free/Open Satellite Sources by Target Year			
Target Year (Historical Baseline)	Recommended Satellite(s)	Key Advantages	Limitations
1972–1983	Landsat 1–3 (MSS)	First global multispectral archive; 60 m resolution suitable for broad land cover trends	Low spatial resolution; only 4 spectral bands; less accurate for small patches of HCVs
1984–1998	Landsat 4–5 (TM)	30 m resolution multispectral; thermal band; improved radiometric quality	16-day revisit may miss rapid changes; cloud cover can be an issue
1999–2012	Landsat 7 (ETM+)	30 m multispectral + 15 m panchromatic; ideal for pansharpening historical imagery	SLC-off issue after 2003 causes data gaps (can be mitigated with gap-filling from other images)
2000–present	MODIS (Terra/Aqua)	Very high temporal resolution (1–2 days); ideal for detecting seasonal or annual patterns	Coarse spatial resolution (250 m–1 km) not suitable for fine HCV mapping
2013–present	Landsat 8 (OLI/TIRS)	High radiometric quality; 30 m multispectral + 15 m panchromatic; additional spectral bands for vegetation & water analysis	16-day revisit; cloud cover limitations
2015–present	Sentinel-2 (A/B)	10–60 m resolution; high spectral richness; 5-day revisit; excellent for vegetation and land cover classification	Limited availability for years before 2015
2021–present	Landsat 9 (OLI-2/TIRS-2)	Same advantages as Landsat 8; ensures continuity of data	Short historical archive
Multi-period	Combined Landsat archive (MSS, TM, ETM+, OLI, OLI-2)	Continuous record from 1972 to present; consistent preprocessing available from USGS	Varying resolutions and band sets require careful harmonization

ANNEX 3: OTHER HCV AREA MAPS

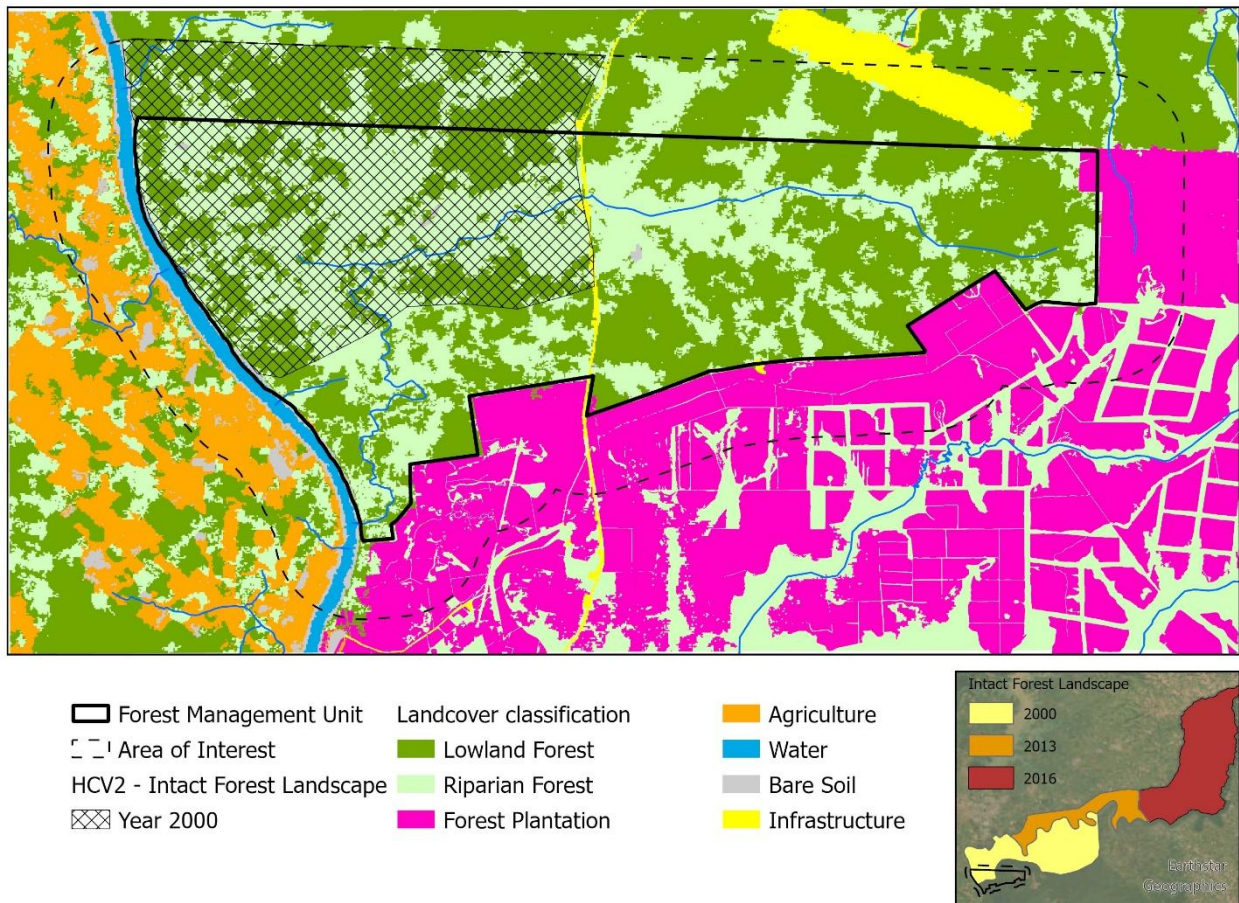


Figure 23. HCV 2 area map, showing the presence of HCV 2, based on the delineated historical extent of Intact Forest Landscape in year 2000, corroborated by the forest land cover in the background

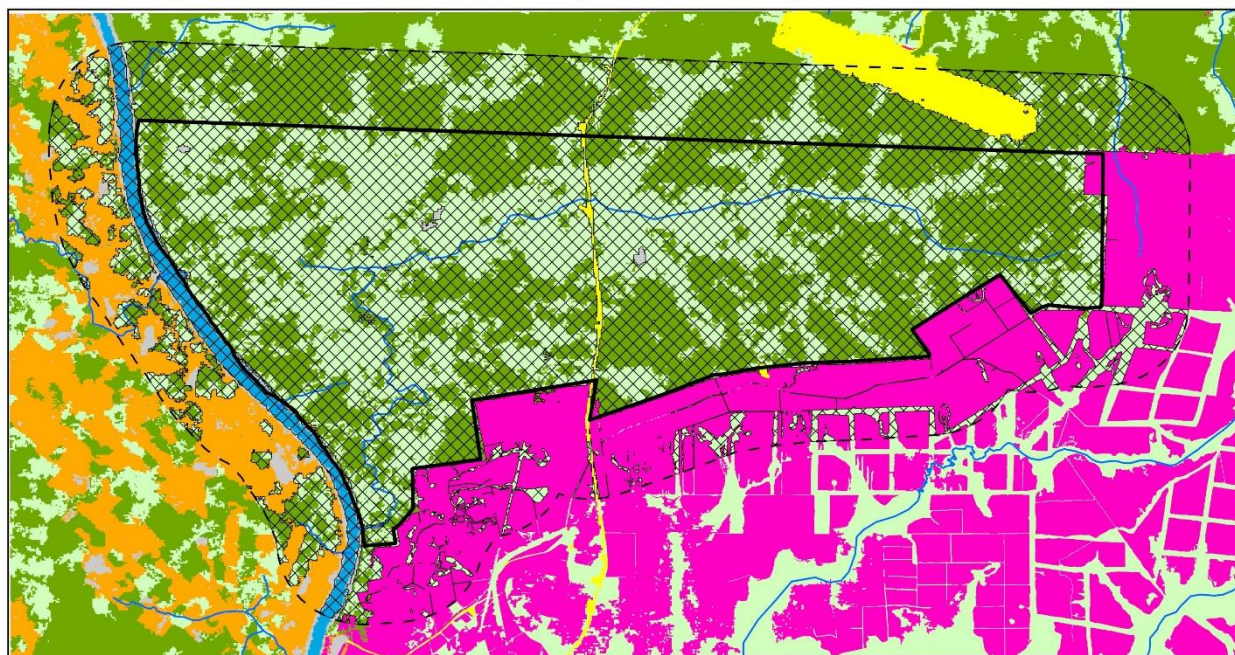


Figure 24. HCV 3 area map, showing the presence of HCV 3, based on the delineated historical extent of RTE ecosystems – in this case lowland forest and riparian forest.

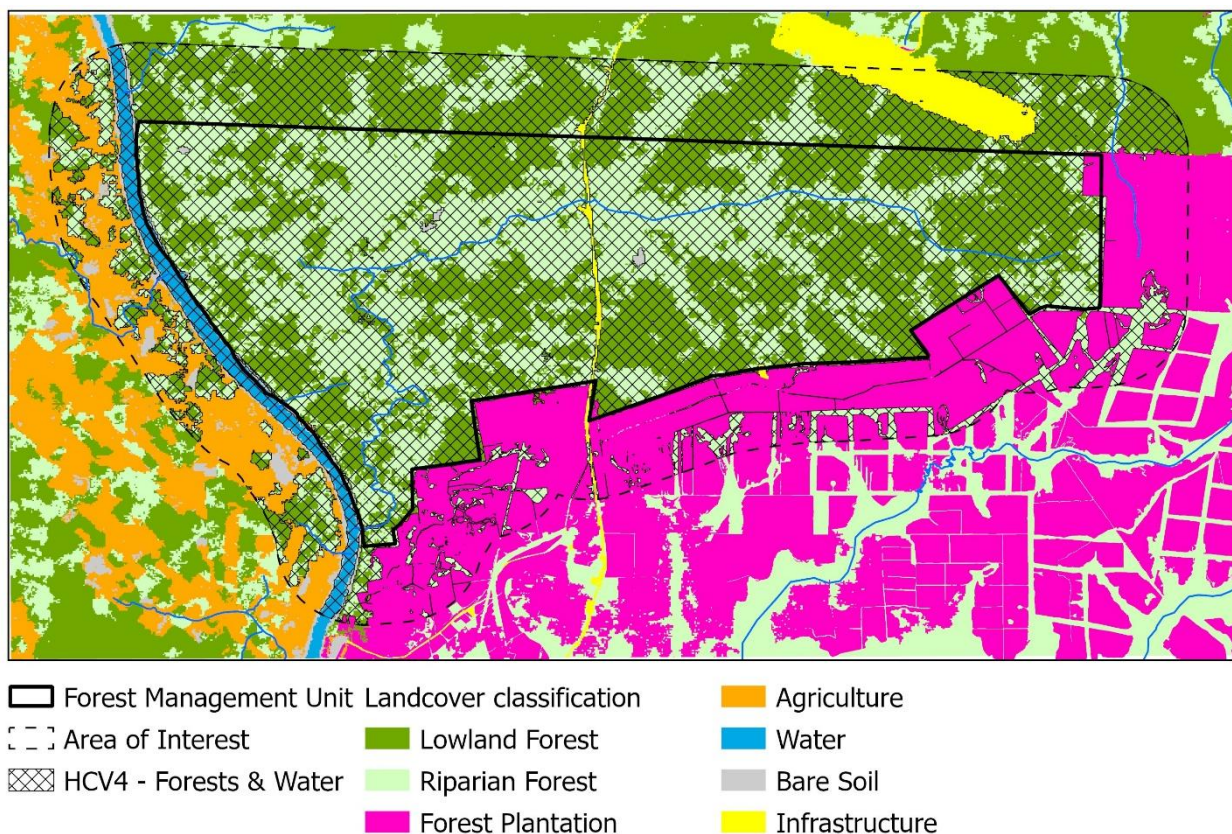


Figure 25. HCV 4 area map, showing the presence of HCV 4, based on the delineated historical extent of areas providing critical ecosystem services. Forest is a proxy for HCV 4.

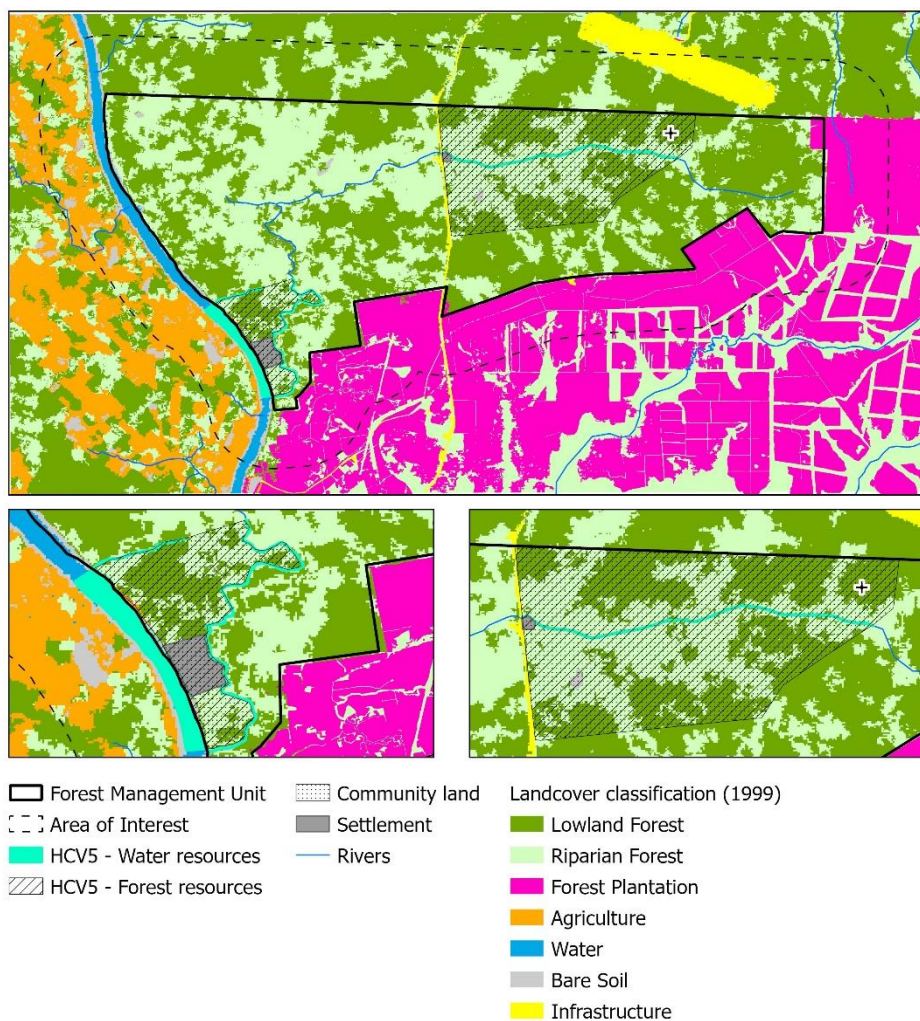


Figure 26. HCV 5 Area map showing areas where communities obtained their basic needs. The areas are delineated based on the participatory mapping results confirmed by the communities.

ANNEX 4: HCV ASSESSMENT REPORT TEMPLATE STRUCTURE

1. Purpose of the assessment
 2. Location of the assessment – KEY ISSUE
 3. Overview of the Organization commissioning the assessment
 4. Description of the AOI - KEY ISSUE
 5. Historical Land Cover Classification - KEY ISSUE
 - 5.1. Image Acquisition, Image pre-processing, Image processing, Object-based land cover classification, Accuracy assessment
 - 5.2. Result of land cover classification
 6. Environmental HCVs in the past
 - 6.1. HCV: Methods, sources and key context information- KEY ISSUE
 - 6.2. HCV1: Species Diversity - KEY ISSUE
 - 6.3. HCV 2: Landscape-level ecosystems, ecosystem mosaics and IFL - KEY ISSUE
 - 6.4. HCV3: Ecosystems and habitats - KEY ISSUE
 7. Social HCVs in the past
 - 7.1 Social Methods, sources, context information and participatory mapping results - KEY ISSUE
 - 7.2 HCV4: Ecosystem Services - KEY ISSUE
 - 7.3 HCV5: Community Needs - KEY ISSUE
 - 7.4 HCV 6: Cultural values - KEY ISSUE
 8. Summary of the HCVs findings – KEY ISSUE
 9. Comparison and Analysis of HCVs Changes between past HCVs and current HCVs findings – KEY ISSUE
 - 9.1. Description of findings resulting from the identification of current HCV assessment per HCVs
 - 9.2. Comparative analysis and map of HCV loss
 10. Stakeholder engagement - KEY ISSUE
 11. Conclusion of HCV Loss – KEY ISSUE
 12. Next Steps
- Annexes
- Supplementary materials – KEY ISSUE
- References



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