

Good practice guidelines for High Conservation Value assessments

*A practical guide for
practitioners and auditors*



This work was supported by:



This publication was produced with the assistance of the European Union, as well as the support of the American People through the United States Agency for International Development (USAID). The contents of this document are the sole responsibility of ProForest and can in no way be taken to reflect the views of the European Union, the European Commission, USAID or the United States Government.



The RAFT program was developed by TNC and USAID Regional Development Mission/Asia (RDM/A) and operates in partnership with WWF and the following organisations:



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A practical guide for practitioners and auditors

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INTRODUCTION

Purpose of these guidelines

This document sets out **good practices** for the identification and management of High Conservation Values (HCVs), and HCV forests and areas (see definitions, Box 1). It provides detailed guidance on the HCV assessment process, and should be of particular use to HCV practitioners involved in planning and conducting such an assessment, and to certifying bodies auditing HCV identification reports and management plans. Particular emphasis is placed on requirements to maintain the **robustness and credibility** of the process, which should be a priority for forest or land-use managers implementing an HCV management plan. This document should be used in conjunction with the *ProForest HCVF Toolkit*¹ or a national interpretation of HCVs, which define the six HCVs and provide guidance on thresholds for assessing the importance of a Value.

The HCV process includes six main steps discussed in detail in the following sections: Preparation, Planning, HCV identification, HCV management, HCV monitoring, and HCV reporting.

For each of these steps, guidance is provided on the process: the activities which need to be undertaken and the desired outcomes. There is also consideration of:

- **Data requirements** Appropriate use of data is at the heart of the HCV process. Identifying HCVs and planning appropriate management requires data to allow the assessor to know what values are likely to be present, and what the potential impacts of different management scenarios are.

- **Team requirements** What type of expertise is needed to undertake the activities?
- **Consultation requirements** Who should be consulted, how, and when?

Each of these aspects needs to be considered in light of the **likely HCVs** present and the **scale and impact** of the proposed operations. Large scale, high impact operations will demand more data and greater expertise as well as stronger justification of decisions than small scale or low-impact operations. **This document will be particularly useful for assessments of large, complex or controversial cases.**

Context for applying the HCV process

The HCV concept was originally developed, and is very widely used, in the context of FSC forest certification, but it has also been adopted by other forest certification standards (e.g. Malaysian Timber Certification Council, MTCC) and certification standards for agricultural production (e.g. Roundtable on Sustainable Palm Oil (RSPO) standard). In addition, outside the context of certification, it has developed into a valuable and flexible toolkit for a variety of uses, including land-use planning, conservation advocacy, and designing responsible purchasing and investment policies (governmental, commercial and institutional).

As a result of this growing range of uses, two very important issues have been identified which must be considered by anyone using the HCV concept:

- Certification vs non-certification uses
- Management of existing ecosystems vs conversion to other uses

The six steps of the HCV process



Certification vs non-certification uses

Applications within the context of certification incorporate:

- A number of critical safeguards, e.g. requirements to comply with national law, to protect endangered species, to respect indigenous peoples' traditional tenure and use rights (Box 2), and
- An ongoing mechanism to check that the management plans developed to maintain or enhance the values are being implemented.

Outside of a certification context, the HCV approach is not designed by itself to replace the safeguards provided by certification, so it is particularly important that the HCV assessment is conducted according to good practice, and that a credible framework is in place to address the critical

issues which fall outside of the HCV assessment's remit. Adherence in practice to the HCV Resource Network Charter (www.hcvnetwork.org) is a step towards this aim. The guiding principles of this Charter include a commitment to legal compliance as a baseline management requirement, to participatory and sensitive treatment of tenure, rights and consent issues, and to environmental safeguards around the issues of conversion (see below). Additionally, assessments outside a certification context need to consider that threats to HCVs may be greater, and that a more precautionary management approach is needed.

Ongoing management of natural resources vs conversion applications

Forest management is the main current context for HCV assessments. This assumes that the areas

Box 1 Some definitions...

High Conservation Value (HCV) *A biological, ecological, social or cultural value which is considered to be of outstanding significance or critical importance at the national, regional or global scale, as defined in the ProForest HCVF Toolkit and its various National/Regional Interpretations. It is these values which need to be protected.*

HCV assessment In this guide the term is used to refer to the complete process of identifying HCVs and developing management and monitoring plans to ensure that the values identified are maintained or enhanced.

High Conservation Value Forest (HCVF) or Area (HCVA) *A forest (or area) which possesses one or more of the following attributes:*

HCV 1 Areas containing globally, regionally or nationally significant **concentrations of biodiversity values** (e.g. endemism, endangered species, refugia).

HCV 2 Globally, regionally or nationally significant **large landscape-level areas where viable populations of most if not all naturally occurring species exist** in natural patterns of distribution and abundance.

HCV 3 Areas that are in or **contain rare, threatened or endangered ecosystems.**

HCV 4 Areas that provide **basic ecosystem services in critical situations** (e.g. watershed protection, erosion control).

HCV 5 Areas fundamental to meeting **basic needs of local communities** (e.g. subsistence, health).

HCV 6 Areas critical to **local communities' traditional cultural identity** (areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities).

HCVF or HCVA can also be defined as the *forest or area which is required to maintain or enhance a High Conservation Value*. This definition introduces a management goal and can accurately be described as an *HCV Management Area (HCVMA)*, a term already used in some national HCV toolkits. *The HCV Management Area may be smaller or larger than the total area in which the HCV is actually found* (e.g. in a forestry context it may be restricted to a core zone smaller than the total forest area, or it may extend outside the forest to include non-forest buffer zones).

Definitions adapted from the *ProForest HCVF Toolkit*, the *FSC Principles and Criteria*, and the *HCV Resource Network Charter* (www.hcvnetwork.org).

supporting HCVs will remain forested and, if these HCV areas only constitute a part of a forest concession, that they will be surrounded (buffered) by continuous forest cover. Most of the experience of HCV identification and management comes from forest management efforts to comply with FSC certification, and the process is relatively straightforward in this context.

However, there is a growing demand for robust HCV assessment methodologies both for managing the impacts of existing agricultural/tree plantations, and for responsibly planning the expansion of plantations (e.g. for certified palm oil under RSPO). Where the HCV process is used as a safe-

guard against the destruction of critical values in the context of conversion of natural vegetation to plantation forestry or agriculture, whether within a certification system (such as RSPO) or outside it, a more robust and precautionary approach is needed both in mapping and managing HCV areas, and in reviewing the results of HCV assessments. **An HCV assessment should always be completed prior to any irreversible forest clearance or land preparation activities.**

Compared to natural forest management, conversion generally has a much more severe and irreversible impact on biodiversity, ecological functions and social systems. Measures of protection for HCVs must therefore reflect the severity of the impact

Box 2 HCVs within a certification system: the FSC example

In the FSC Forest Stewardship Standard, HCVs are addressed by **Principle 9: Maintenance of high conservation value forests**: *‘Management activities in high conservation value forests shall maintain or enhance the attributes which define such forests. Decisions regarding high conservation value forests shall always be considered in the context of a precautionary approach.’* Maintaining HCV Forests represent an extremely important part of the FSC Standard’s sustainability goals, and P9 overlaps with several other principles, notably:

- **P1 Compliance with laws and FSC Principles** (criteria dealing with legally protected areas, avoiding illegal activities, including illegal harvest/hunting, and respecting international conventions and treaties on biological conservation)
- **P3 Indigenous people’s rights** (3.3 Sites of special cultural, ecological, economic or religious significance)
- **P4 Community relations and workers’ rights** (4.4 Management planning and operations incorporate the results of evaluations of social impact, through consultation)
- **P5 Benefits from the forest** (5.1 and 5.5 Ensuring the ecological productivity of the forest and the value of forest services and resources such as watersheds and fisheries)
- **P6 Environmental impact** (6.1 Environmental impacts, including landscape level considerations, integrated into management plans; 6.2 Protection of rare, threatened and endangered species and

their habitats; 6.3 Protecting ecological functions and values; 6.4 Protecting representative samples of existing ecosystems; 6.10 No conversion of HCVFs)

- **P7 Management plan** to include conservation issues and periodic revision process
- **P8 Monitoring and assessment** to include composition and observed changes in the flora and fauna, and environmental and social impacts of harvesting and other operations.

Given this wide overlap, why is P9 an explicit requirement? P9 is a safety net which requires that the forest manager take special measures, *above and beyond* what is considered general good practice as defined in the other principles, if the Forest Management Unit (FMU) contains nationally or globally significant attributes or values. Therefore, and *especially* in complex cases, addressing HCV identification and management from the start of the certification process can help to move the FMU a very significant way towards achieving FSC compliance (even if the HCV assessment eventually determines that HCVs are not present).

NB Establishing **Tenure and use rights and responsibilities** (FSC Principle 2) is one of the most important parts of sustainable forest management, and is beyond the scope of a technical HCV assessment. Where this is complex, tenure and use rights should be specifically addressed by separate and appropriate consultation; the results of such consultation will often influence eventual management decisions for HCVs



(Section 4). The legality and tenure safeguards must apply, but additional attention needs to be given to the environmental impact on all affected ecosystems/conservation values – not just on those of national importance. The HCV process rightly prioritises outstandingly significant or critically important values and areas, but does not excuse a devaluation of other areas or justify irresponsible land use.

Internal versus external involvement in the HCV process

It is normally the responsibility of the land owner or manager to ensure that the HCV process is carried out. This is most frequently the responsibility of a company or other land-management organisation but may also be at the level of regional or local government where HCV is used for land-use planning.

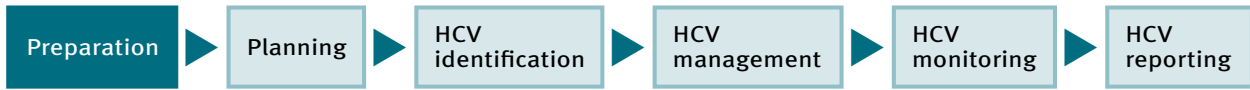
The actual work can be undertaken by the management organisation itself, by external experts, or by a combination of the two. In practice, external experts tend to be used more for larger areas or higher impact operations, to provide adequate expertise and independence. An HCV assessment can take several months (in complex cases) and it is also quite common for the full process to be divided into various parts with an external team undertaking the identification of HCVs and providing some input on the threats to HCVs, while the more detailed management planning is undertaken by the management organisation, perhaps with further input from suitably qualified external experts. Any combination can be used provided that:

- the people involved at each stage have adequate expertise and experience to undertake their role properly
- decisions are made based on the data and inputs from consultation, and not as a result of any pressure for a particular outcome from the company
- the whole process includes appropriate consultation and is adequately documented and reviewed.

When auditors (whether internal or external) or certifiers check the company's methods and results, they need to understand the process requirements for an appropriate assessment as set out in these guidelines, and will typically follow a similar set of steps as the initial investigators in a much abbreviated time frame (typically a few days). An auditor's role is not to collect new data but to verify the methods and conclusions of the assessment, sometimes including field inspections to confirm findings. It is the auditor's responsibility to verify that:

- an HCV identification was conducted which covers all the HCVs and the relevant landscape context, and threats to HCVs were assessed
- assessment data, investigator skills and the extent and scope of consultation were appropriate
- the management plan takes appropriate steps to maintain and enhance HCVs, including ongoing monitoring and regular review.

The guidelines presented in this document apply to both forms of investigation, except where specific reference is made to verification or audit recommendations.



1 PREPARATION

Purpose

To provide a basic understanding of the conservation significance of the area at multiple scales and the likely impacts and scale of the proposed operations, and to decide on the resources needed to carry out a credible HCV assessment.

Activities

Collection, collation and discussion of data to answer the following key questions:

- **What HCVs are known to occur or are likely to occur in the area?** (Section 1.1.1)
- **What is the likely impact of the operations on potential HCVs?** (Section 1.1.2)
- **What data currently exists, and what is still needed, to identify HCVs?** (Section 1.1.3)

Outcomes

The process of answering the questions above will lead to decisions on:

- **What are the skills and experience required to**

identify HCVs and assess management requirements? (Section 1.2.1)

- **What consultation needs to be done for this assessment, and how?** (Section 1.2.2)

Good preparation is a crucial part of the HCV assessment process, particularly in the context of verification, where assessment is being undertaken by an external team that will have only a limited time to undertake the work. Preliminary data collection can be conducted by the team leader, bringing in appropriate support and building up the assessment team as necessary.

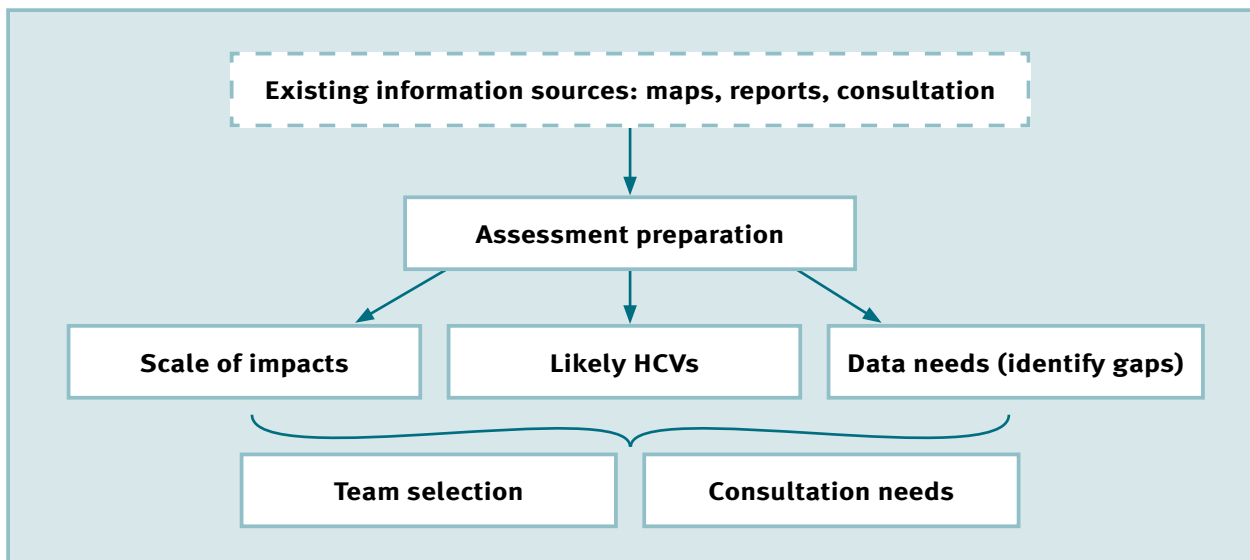
1.1 Understanding the context and information needs

1.1.1 Identifying the likely conservation significance

Key question **What HCVs are known to occur or are likely to occur in the area?**

Objective of identifying likely HCVs

Knowing what HCVs are likely to be present leads



to decisions on what **skills** are needed in an HCV assessment team, what **supporting data** is needed and **who should be consulted** during the assessment. At this stage, the objective is to gather **preliminary information** to help you plan the assessment.

What is needed to identify likely HCVs?

If a national interpretation of HCVs exists, this should always be the first step towards assessing potential HCVs. Copies of completed national interpretations should be available on the HCV Resource Network website. In the absence of a national interpretation, the assessment team should use the guidance of the *ProForest HCVF Toolkit* to produce a draft set of definitions showing how the HCVs are being interpreted. A review of the relevant data and regional guidance (see 1.1.3) will be necessary, and consultation with national institutions, NGOs and experts may be needed to complete this process.

In many cases it should be relatively obvious to a well informed assessor whether HCVs are likely to be present, and what the main categories might be: e.g. a tract of lowland rainforest in Sumatra, a megadiverse ecosystem under great threat, is likely to contain concentrations of rare, threatened or endangered species (HCV 1); a small woodland in the UK, where almost no-one is critically dependent on forests for their subsistence or cultural identity, is very unlikely to contain HCVs 5 or 6.

Knowing the likely HCVs will alert assessors to specific threats arising from proposed activities. For example, some endangered species are particularly sensitive to any kind of disturbance (e.g. nesting cranes, *Grus* sp.), and even low impact operations are likely to have a negative effect. On the other hand, some species (e.g. many forest ungulates and some ground-dwelling primates) are relatively insensitive to habitat disturbance *per se*, or may even be favoured by regenerating forest patches after logging operations, but can be very strongly affected by hunting pressure.^{2,3} A preliminary list of the likely HCVs can help to determine what further data is needed to build an accurate picture of HCV status and location (see 1.1.3), and what to look for when assessing likely impacts of the proposed operations.

Frequently asked questions

To simplify the process, can any of the HCVs be eliminated at this stage?

Assessors should not assume that values are absent simply because there is no information to support their presence. In some cases, no data has ever been gathered (this is particularly common in tropical forests, where data e.g. on the presence of endangered species or rare habitats may be of very poor quality or out of date). To eliminate an HCV on the basis of a desk study, the assessor needs to present evidence **beyond reasonable doubt** that the HCV is absent. In some cases this may be relatively simple e.g. in many western countries there are very few communities indeed who are critically dependent on forests or woodlands for their subsistence (HCV5), and documentary evidence to support a decision is easy to collect. In many cases however, a desk study is not sufficient, e.g. where community livelihoods and cultural values are little documented, stakeholder consultation, and often a site visit, will be necessary to determine HCVs 5 and 6.

1.1.2 Assessing scale and impact of the operation

Key question **What is the likely impact of the operations on potential HCVs?**

Activity **Collecting, analysing and discussing preliminary data**

Decisions

- Levels of resources to devote to HCV assessment and requirements to maintain credibility

Key data

- Potential presence and nature of HCVs (see 1.1)
- Operational plans and likely impact on conservation values

Objective of identifying the likely impact of operations

The potential scale and impact of the operation (e.g. very high, high, medium or low – see Box 3) provides guidance for the level of effort needed in the identification and management of HCVs. High impact operations are likely to carry a high risk of affecting identified values, and the requirements for a credible HCV assessment and management process are therefore more demanding. At this stage, the objective is to gather **preliminary data** to help you determine how rigorous the assessment process will need to be.

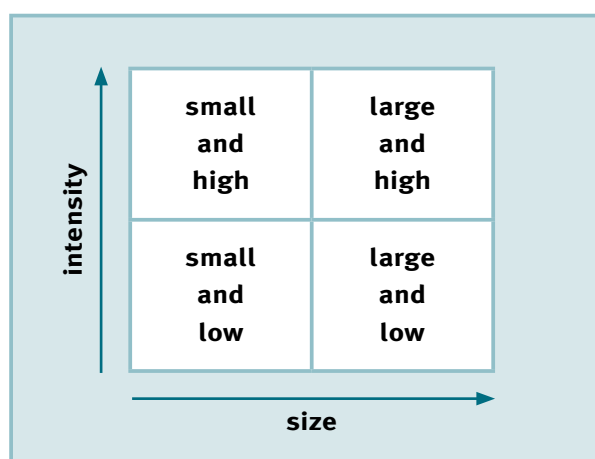


Figure 1 **Schematic illustration of how size of an operation and intensity of its impact determine the quality and amount of information required to make robust credible decisions about identification and management of HCVs. Small operations with low impact, such as a community-based selective logging cooperative or small-holder planting of oil palm in a mainly agricultural landscape, have less stringent requirements than high impact operations, such as conversion of natural vegetation to plantations.**

Criteria for assessing the likely impact of operations

1 What is the **type of land use and level of alteration to the original forest area or ecosystem**? Is the planned land use a continuation of existing use (e.g. forestry within a forested landscape, agricultural production within a mainly agricultural landscape) and if so what is the intensity (e.g. community forestry and artisanal logging, industrial selective logging, rotational clear felling)? Does the planned



land use involve conversion of natural habitat (e.g. mining or drilling activities, conversion of natural vegetation to agriculture or tree plantations)?

3 What is the **likely time of recovery from operations**? The longer the recovery time, the higher the impact. Conversion is regarded as irreversible change, and is the severest form of impact.

4 What is the **size of the operational area**? Depending on the type of land use, the larger the area in which operations occur, the higher the likely impact. NB: For conversion of natural ecosystems, the likely impact will be very high regardless of size of the area.

5 What are the **likely conservation values** present, considered at regional, national, global scales? Does the area likely contain critical habitat values, or rare values?

6 What is the **landscape context of the operational area**? Does the area represent an important component of the landscape for conservation – e.g. does it support habitats which are otherwise rare or poorly protected in the landscape? Does the surrounding landscape tend to protect likely HCVs (e.g. does it contain protected areas, well managed forests) or threaten them (e.g. does it contain extensive agriculture, heavy industry, pollution sources, fire hotspots, bushmeat markets etc)?

7 Will operations **increase access to remote areas**? Building roads through undisturbed habitat can dramatically increase pressure on HCVs through uncontrolled access to adjacent areas (hunting, timber extraction, encroachment for agriculture, settlements).

Box 3 Categories of likely impacts with examples

1 Very high impact Operations involve complete, irreversible alteration of the ecosystem or drastic reduction/elimination of HCVs.

Examples Conversion of natural vegetation to agriculture or plantation forestry, mining.

2 High impact Operations involve extensive, large scale alterations of the ecosystem, or potentially severe reductions in HCVs, which are reversible in the medium to long term and can be mitigated by good management.

Examples Intensive commercial logging, rotational clear-felling.

3 Medium impact Operations involve localised or moderate alterations to the ecosystem, or potentially modest disturbance to HCVs, and these are reversible in the medium term.

Examples Well managed, low intensity selective felling using reduced impact logging⁴ or continuous cover forestry⁵ techniques; changes in crops in mainly agricultural landscapes where some species use agricultural areas as well as natural habitat.

4 Low impact Changes to the ecosystem are minimal and are reversible in the medium to short term. *Examples* Non Timber Forest Product (NTFP) harvesting; Small, Low Intensity Managed Forests (SLIMFS) as defined by FSC.

Note These examples are context dependent. For instance, NTFP harvesting is often sustainable, but uncontrolled off-take of prized medicinal plants (e.g. *Cimicifuga racemosa* – ‘Black Cohosh’ in the US, or *Eurycoma longifolia* – ‘Tongkat Ali’ in Malaysia) can drive endangered species to local extinction, and would therefore be high impact; low intensity selective logging itself may have a minimal impact on primate populations, but in areas where bushmeat hunting is a major economic activity, easy road access for hunters in such forests can cause extremely high impacts.

How does the likely impact of operations affect requirements for a credible HCV assessment?

1 Timing of HCV assessment For high or very high impact operations it is very important to conduct HCV assessments and associated consultations with stakeholders and public **prior to the start of operations**. Lower impact operations can be more flexible in the timing of the assessment.



2 Assessment team composition Responsibility for completing an HCV assessment lies with the land manager, and the work should be carried out by qualified specialists. In some complex or controversial cases, the credibility of the assessment may depend on the demonstrable independence of the assessor, and the land manager may wish to assign the task largely to an external and independent team. The level of likely impact provides guidance on the qualifications needed in the team.

- For **low-impact operations**, such as ‘small and low intensity managed forests’ (SLIMFs as defined by FSC), the HCV assessment can usually be conducted internally, and the qualified team members may have moderate levels of experience.
- For **medium to high-impact operations**, many aspects of the assessment may be conducted internally, depending on capacity, but it is likely that the skills of one or more external specialists will be needed and it is recommended to seek early advice.
- **Very high impact operations** and particularly land use conversion have irreversible effects on ecosystems and local communities. Such cases will very often be complex or controversial, and may best be assessed by an experienced team with highly qualified specialists (see Section 1.2 on HCV team requirements). It is unlikely that a credible assessment could be achieved without the participation of independent specialists.

3 Consultation requirements It is not possible to achieve a credible assessment without stakeholder consultation. Requirements for consultation vary according to the likely impact of the planned opera-

tions. High and very high impact operations will require extensive consultation with a variety of stakeholders. Consultation requirements for low to medium impact operations should be correspondingly moderate (see Section 1.2.2). Some national or regional forest certification standards have specific consultation requirements for HCV assessments; assessors using those standards should follow the relevant guidelines.

4 Review process The HCV assessment should *always* be documented and transparent. Results of HCV identification and proposed management plans to maintain or enhance HCVs should be available for review by qualified experts, affected communities and other key stakeholders, and a review process should be implemented which reflects the impact of the operation. Some standards make specific requirements about the review process, which should be followed where applicable. (See also Section 6, Reporting).

Frequently asked questions

Is an Environmental Impact Assessment sufficient to assess the likely impact of operations?

EIAs can provide useful information and help to avoid duplicating effort, but the quality of the EIA needs to be critically reviewed. Many EIAs in land management are generic exercises, which may not examine relevant criteria or which give little help to the assessor in understanding real impacts. It is very important to remember this **preliminary** assessment of likely impacts is intended to guide the level of effort needed for the HCV process as a whole, and is not adequate as an assessment of actual threats to HCVs (see Section 4).

The company is willing to set aside X% of its land for conservation. Is this sufficient to maintain HCVs?

It is impossible to know the amount of land which will be needed to maintain HCVs until it is known what the HCVs are. Furthermore, it is not only the amount, but also the type and location of land which is likely to be crucial. Therefore, in order to maintain the HCVs, it is necessary to follow the assessment process and identify what values are present, what threats they face, and what the options are for managing those threats, before deciding what land area should be allocated to set-aside or special management regimes.

1.1.3 Gathering preliminary data

Key question **What data currently exists, and what is still needed, to identify HCVs?**

Activity **Collection and discussion of available information**

Decisions

- Does the data provide a good indication of the possible conservation values and context for the assessment?
- What additional data will be needed:
 - *before* the assessment?
 - *during* the assessment?

Key data

- Specific guidance on HCVs
- Habitat and biodiversity information
- Ecosystem service information
- Social and cultural information
- Evaluation of scale and impact

Objectives of preliminary data collection

Obtaining key data (Box 4) is essential for identifying HCVs and making the right decisions on management. This section provides detailed guidance on the categories of information an assessment may use. In the preparation and planning stages, the assessor needs to collect as much of this data as possible and make a preliminary judgement on the likely HCVs to be found and the likely impact of operations. **The assessment team will continue to collect, review and analyse these data in detail during the assessment proper.** A preliminary judgement should be made on the data quality and reliability, and any gaps in the data that are identified should be filled either by further data collection, consultation or specially commissioned studies.

Guidance on sourcing and analysing data

The assessor should start by listing the data needs against each HCV (see Box 4). If a national interpretation of HCVs exists, this should be the first point of reference as the HCVs will be defined for the national context, and many relevant data resources will be listed. In the absence of a national interpre-

Box 4 Key data and information sources

Specific guidance (all HCVs)

- Existing national or regional HCV interpretations (see www.hcvnetwork.org for a full list)
- Case studies
- Landscape level HCV maps (see Box 5 – Maps and mapping resources)

Habitat and biodiversity information (HCV 1, HCV 2, HCV 3)

- Maps of known ecosystems:
 - Forest types
 - Details of other ecosystems (grasslands, wetlands etc)
- List of threatened or endangered species and distribution maps
 - List of species protected by national or local law
 - IUCN Red List
 - National or regional Red Books
 - CITES lists (NB: expert opinion is needed for CITES species threat status)
- Protected areas – location, status, threats, reasons for gazettelement
- Conservation NGO information sources
- Forest inventory data

Ecosystem service information (HCV 4)

- Soil maps, topographic maps
- Watersheds/catchment boundaries
- Fire incidence

Social and cultural information (HCV 5 and HCV 6)

- Maps of human settlement and community data
- Any social studies conducted by company, NGOs or research institutions
- Any social impact assessments available for the area in question or affected communities
- NGO projects and current campaigns by the communities or in the region
- Cultural data or information available from museum, archaeology or cultural departments or bodies

Evaluation of scale and impact (all HCVs)

- Existing or planned land use (including landscape scale data) and infrastructure
- Operational plans for the area to be assessed
- Environmental impact assessments conducted by or for the company

tation, some relevant information may be found in other national interpretations from the same region, or in the *ProForest HCVF Toolkit* which provides generic guidance. Decisions need to be made regarding the time, budget and expertise available to collect and analyse the preliminary data.

For a typical assessment, the preparatory data stage may take as little as half a day for an assessor who is familiar with the area and has access to readily available data; more time will be necessary if significant desk research and consultation are needed.

Role of consultation in data collection

Key local and national research institutions, NGOs and experts should be consulted for data, reports, advice and ideas about who might have access to restricted information. The consultative effort should

be proportionate to the scale and impact of the operation, and the likely HCVs present. Consultation can yield valuable information on biodiversity (e.g. specialist organisations), on communities, and social and cultural information. Where data gaps emerge, assessors need to decide whether to rely on consultation with local stakeholders and credible experts for best estimates, or recommend specific surveys to obtain important data.

Maps

Obtaining reliable maps is a high priority. At a minimum, you should obtain recent forest cover, hydrology, elevation and slope, and location of communities and infrastructure, but many national mapping processes give further useful details on habitats, soil type, and current or planned land use (e.g. the Indonesian RePPPProT map system). Aerial

photos and satellite images are rich data sources – free Landsat images are available (see Landsat website), but may be out of date; other remote sensing sources can be expensive, and an appropriate budget should be allocated for recent data, depending on the likely impact of operations. In the absence of detailed maps, public resources such as Google Earth can provide basic data on vegetation cover, settlements and roads. NGOs and international conservation organisations publish a range of useful maps on biodiversity assets (see Box 5), and you should seek advice from the source on how to use and interpret these. Noting the date for any map remains important for all map sources.

Some areas (or community settlements) may also have community verified maps, showing the extent of cultural and community land use areas (e.g. Tanah Ulayat maps in the Kampar district of Sumatra). It is important to note that maps of cultural and community land-use should have been developed through a participatory approach and be accepted by all the communities involved. Where this is not the case, the maps may not reflect the actual cultural or community landscape (and therefore are not reliable), though they may still provide useful initial information.

When maps don't exist or information is of a poor quality, specialists with an understanding of local values, (e.g. the range of ecosystems present), should be sought. The assessor will need to source the best proxy data to aid decision making – e.g. forest inventory data, local knowledge, data from comparable areas etc.

Getting the right scale

It is very important to keep in mind the resources you will need to assess the **landscape context** of the assessment area from the start. An understanding of the landscape sets a good HCV assessment apart from many environmental impact assessments (EIAs), which often have a narrow focus on the area of operations and fail to consider landscape features. If conservation of HCVs is based on information that excludes the wider landscape, there is a strong risk that some HCVs will not be recognised, or indeed that the management plan will not safeguard

HCVs which have a landscape element (particularly HCVs 1, 2, 3, and 4). Conversely, the favourable status of critical values in the broader landscape can sometimes reduce the extent of management requirements for maintaining those values within the operation.

Box 5 Maps and mapping resources

For general context, maps and descriptions of regions of high biodiversity or high conservation significance have been produced by a variety of NGOs (see References for sources and useful websites). These maps do not mean that an area is automatically HCV, but are an indication of the likely presence of some HCVs e.g. threatened ecosystems or concentrations of endangered species.

At a large scale (coarse filter), these include **'biodiversity hotspots' (Conservation International)**^{6, 7} and **'priority ecoregions' (WWF)**^{8, 9}. For large, landscape-level forests (HCV2), see **'Frontier Forests' (WRI/Global Forest Watch)**^{10, 11}, **'World Intact Forest Landscapes' (Greenpeace)**^{12, 13} and **'Last of the Wild'**^{14, 15} **habitats (WCS)**.

A finer resolution is given by group-specific maps such as **'Important Bird Areas'**¹⁶ and **'Endemic Bird Areas'**¹⁷, (Birdlife International), **'Key Biodiversity Areas' (Birdlife Intl, Conservation Intl, IUCN and others)**^{18, 19} and **'Centres of Plant Diversity' (IUCN)**²⁰. The **Alliance for Zero Extinction**^{21, 22} targets sites which are essential for preventing the extinction of critically endangered species. Major conservation organisations (particularly UNEP/WCMC and WWF) also provide extensive links (data portals – links are given in the references) to mapping resources for individual species and species groups.

World Heritage Sites²³ **UNESCO** and **Ramsar Sites**²⁴ are internationally recognised cultural and biological priority areas. The Nature Conservancy produces detailed **'Ecoregional Assessments'**²⁵ combining a number of such maps to identify regional priority sites, and WWF has a similar process. Finally, maps of protected areas (HCV 1.1, gazetted or in process of gazettelement) should be sourced from the government or World Database of Protected Areas (UNEP/WCMC)²⁶.

Implications of preparatory data collection

At the end of the Preparation stage, a reasonable outline of the likely HCVs and of the scale and



impact should emerge. This will lead to decisions on final team composition and actions to be taken either to verify the data or to fill data gaps. For example: social data may suggest specialist team skills such as appropriate language skills or familiarity with particular ethnic groups. The preliminary information may suggest that expertise is required on a particular species group or habitat type (e.g. a qualified hydrologist or a suitably experienced botanist might be needed if the area contains extensive peat swamps).

Where necessary data is missing it is important to decide how and when it can be collected. Where the HCV process is being undertaken internally, collecting data can be a step in this process and should be undertaken before finalising identification of HCVs. Where an external HCV assessment team is being used who convene for a short period (typically only a few days or weeks), and particularly for high and very high impact situations, careful consideration should be given to what data needs to be collected before the team convene, and what can be collected by the team *in situ*. A lot of important data on species, habitats and communities cannot be collected in a few days and therefore, it is not scientifically justifiable to try to collect such information during this type of assessment. Rather, it needs to be collected prior to the commencement of the team work; if the data is essential to the identification and management of the HCVs, this may require a planned data collection programme and anything up to several months' work.

1.2 Outcomes: Team requirements and consultation

1.2.1 Decisions on HCV assessment team composition

Key question What skills and experience are required to identify HCVs and assess management requirements?

Activity Discussion and negotiations based on information gathered in the preparation stage

Decisions

- The composition of the HCV assessment team:
 - in the field
 - reviewers and experts to be consulted
- Further data to be collected, by whom, and how

Key data

- Scale and impact of operation
- Likely HCVs present
- Terms of reference for team members

Objective

The HCV assessment team should have sufficient skills and experience to assess all of the potentially present HCVs and communicate appropriately with a range of stakeholders. They must also understand the operational capabilities and limitations of the land management system. The team's expertise should be sufficient to make credible judgement of the various issues raised.

Team purpose

The main purpose of an HCV assessment team is to analyse all the available data and information from consultees and, based on this, to decide:

- what HCVs are present and where
- what the main threats are to the HCVs (both existing and as a result of proposed management)
- what management options may be used in order to ensure that the values are maintained or enhanced

- what monitoring is required to confirm that the values are being maintained or enhanced.

It is quite common for one team to identify the HCVs and produce a report on the values and potential threats, and for another team to define the management and monitoring plans. Various combinations are possible, so long as the team carrying out each step is adequately qualified. The scope and extent of the team's responsibilities should be clear before work starts: for instance, the assessment of threats may be quite straightforward for smaller or lower impact operations, but a more formal and comprehensive threat assessment may be necessary for larger or higher impact operations.

While most teams spend some time in the field in order to check existing data or to confirm information provided, most of the process is about analysis and discussion. Where the process is undertaken internally, it may be quite gradual, but it is important to have some team meetings to discuss findings and outputs.

For external HCV assessment teams it is crucial to spend significant time as a team discussing, mapping and analysing results.

Team composition and roles

The HCV assessment team needs to bring together diverse competences (see **Annex 1: Terms of Reference for HCV assessment team**), and the skills needed should become apparent during the preparation and planning stages of the assessment.

Forest managers developing an HCV assessment and management strategy internally need to ensure that the required expertise is represented on the team by using suitably qualified company staff, or external specialists, or through external consultation. For high impact or large scale operations, it is always advisable to seek early input from qualified independent experts. As noted earlier, if assessing an area for compliance against a particular standard, the team should respect the specific requirements of the standard for the composition of the assessment team.

In all cases there must be a team leader who has a good understanding of the HCV approach and

process. In addition, there should be specialists with knowledge of each of the potential HCVs – this is likely to include botanists and zoologists familiar with the ecosystem being assessed, specialists with competence in areas such as hydrology or fire management where this is an issue, and social experts with an understanding of local culture and language. It is also important to include expertise in management of the ecosystem and in GIS and mapping, especially for larger-scale or for higher impact operations.

Guidance on running HCV assessments in the field

Whilst team members can operate independently during field visits, they need to have regular meetings to exchange information. It is important that the GIS specialist should be on site to collect and map data in real time, as maps are a vital outcome of the HCV identification process.

The team leader has overall responsibility for the assessment. The role requires:

- coordinating preliminary data collection (desk study) and analysis
- identification of qualified and appropriate HCV assessment team members
- planning of field activities, consultation and surveys
- coordination and oversight of the field assessment
- coordination of the HCV team members
- compilation, writing and delivery of the HCV report.

The **team members** need to be competent to complete the assessment within their specific subject area, and to work as a team under the direction of the team leader in order to contribute to the findings and final report.

Special consideration should be given to language, cultural and gender issues in the community consultations. For instance, a male team member may not be able (or permitted to) communicate effectively with women from local communities.

1.2.2 Consultation process and needs

Key question What is the scope of the required consultation, and how should it be done?	
Activity Consultations based on information gathered in the preparation stage	
Decision	Key data
<ul style="list-style-type: none"> • Scale and scope of consultation required within the assessment • Consultation process 	<ul style="list-style-type: none"> • Likely HCVs present • Scale and impact of the operation • List of the likely stakeholders with an interest in the management of identified values • Skills and expertise of the assessment team

Objective of consultation within HCV assessment

Consultation is an essential part of HCV assessment, and serves a number of important purposes. It is used to:

- gather information on the social and environmental situation in the assessment area, to contribute to the HCV identification and decision making process
- provide information on potential negative impacts of operations on HCVs
- identify possible approaches for avoiding, mitigating or compensating for negative impacts of operations
- eliminate gaps in data, where information is held by stakeholders
- avoid or significantly reduce conflicts arising from operations
- increase social license associated with operations in controversial areas
- ensure the transparency of the assessment process and the credibility of the decisions taken.



Guidance on consultation

Within the HCV process consultation should be used at all stages. During the preparation and planning phase it can be used to help build a picture of the situation and the potential values and threats as well as to identify sources of data that can contribute to the identification of HCVs. Consultation is a crucial part of the identification process itself, particularly for HCVs 5 and 6. During the formulation of management plans, consultation is very important to ensure that options being considered are accepted by different stakeholders. In higher impact cases, particularly where conversion is involved, it is strongly recommended that formulation of management options and plans is undertaken through a highly consultative process involving both directly affected and other interested stakeholders. In lower impact situations, consultation on management options may be more informal and involve primarily only those directly affected by decisions.

There are **three broad types of consultees**:

- **Local stakeholders** Stakeholders directly impacted by the operations within the assessment area, e.g. local or indigenous communities and their freely chosen representatives, employees, neighbouring operations, local government.

- **Experts** Persons or bodies with knowledge and experience of the issues related to HCV within the assessment area, e.g. universities, researchers, NGOs (local or national), national administration.
- **Wider stakeholders** The general public and persons with an indirect interest within the area. In higher impact cases this is likely to include international NGOs and organisations.



Identifying stakeholders For high and very high impact operations the assessors will need to consult as widely as possible. All the relevant HCVs should be covered and a list of relevant direct stakeholders, experts and wider stakeholders should be identified. Local stakeholders can be identified via the company itself, through direct contact with local communities and, where available, through local NGOs. Certification schemes may be able to provide information on national and international stakeholders likely to be interested in the assessment. Team members may also have a range of contacts. For low impact assessments, the main focus should be on directly affected stakeholders.

Intensity of consultation The consultation requirements depend on the scale and impact of the operation. While the intensity of consultation can be decreased for low intensity operations, credibility has to be maintained for all HCV assessments. The assessor needs to build up a reasonable picture of the different interests and priorities that the stakeholders represent, and ensure that all the relevant opinions and data are either collected, or that the gaps in data are known and can be investigated.

Consultation methods After the scope of consultation is identified, the assessor will need to decide on the right methods of informing and consulting, based on each identified stakeholder. The methods need to be effective and accessible for the target stakeholder. For example, for consulting with international experts contact by email or a web-based discussion may be sufficient. For other stakeholders letters, emails, phone calls or face-to-face meetings may be most appropriate. For consulting with communities it is important to find an effective approach – for example an announcement on a local language radio channel or a piece in a local paper may be a good way to raise awareness, while further discussion is most likely to require visiting the community.

Consultation timing As outlined above, it is necessary to consult with stakeholders at various stages in the HCV assessment process. It is therefore important to communicate the purpose and process to stakeholders early on so that they understand what is being undertaken and how they can input to and influence the process. The method used to consult may change over the duration of the process – beginning with letters, emails or one-to-one meetings to inform stakeholders about the process and collect preliminary information but then moving on to public meetings to discuss findings or management plans. It is important to consider what the timing of such consultations should be and who will be involved.

Further information can be found in Annex 2: Guidance on consultation.



2 PLANNING

Purpose

To ensure that logistic arrangements are in place for a detailed investigation of HCV status.

Activities

Communication with assessment team members, land managers and other relevant stakeholders to ensure that the purpose of the HCV investigation is clear, and that access to key people and key data can be secured.

Planning

Planning is particularly important where an external team is undertaking the HCV assessment. In this case it is crucial to ensure that everything is in place to make the relatively short time the team will be together as productive as possible. Even for internal HCV assessments, much of the same planning is useful, though there is likely to be a greater degree of flexibility.

Time needed for the assessment A crucial question is the amount of time the team will need for the assessment. This should include any field visits needed, consultation, time to analyse data individually and time for team discussion for each HCV to agree presence or absence and, if present, its extent, threats and associated management prescriptions. It must also include adequate time to properly document and report on the findings and conclusions. Where some team members are involved in additional data collection, this should be included in the time allocated to them (see note of fieldwork below).

Team members Team members must be identified and contacted to establish their interest and availability. The timing of the assessment may need to be adjusted to ensure that key people are available.

Timing The timing of the assessment must be agreed. This will depend on a number of factors including:

- **urgency of the assessment** – where an assessment is required in advance of any operations taking place then it may have some urgency. While efforts should be made to respond, this should not be allowed to undermine the quality of the team, the data, the consultation or the process
- **availability of team members** – it is often necessary to organise dates around the availability of the team leader or key team members
- **data to be collected in advance of the assessment** – where data gaps have to be filled before an assessment, time must be allocated for this
- **consultation** – it may be important to begin the consultation process in advance of the full assessment (see below). It is also important to ensure that key consultees will be available within the planned assessment dates
- **external considerations** – it is also important to consider external factors such as the weather (if possible avoid periods when access to the field or local communities is made particularly difficult due to high rainfall) or holidays (avoid carrying out work just before a major national holiday and be aware of any local traditions).

Consultation planning Good planning for consultation is essential. Firstly, the potential consultees should be identified. Then contact needs to be made, as early as possible, setting out the purpose of the HCV process and outlining the role of consultation and the influence the consultee can have. If the process is likely to include meetings these should be planned and invitations sent out as early as possible – this is especially important if the meetings are to coincide with the timing of the HCV team assessment since dates are likely to be inflexible and so stakeholders need plenty of warning about what

the dates will be. It is not very credible to invite stakeholders to participate in a process with only a few days notice. Where this type of organisation cannot be done by email or phone (e.g. with some local communities) it may be necessary for a team member to visit in advance to explain the process and invite key people to meetings.

Logistics It is important that team travel, accommodation and access to resources – both for field visits and for team work – are agreed and organised in advance.

Note on fieldwork

HCV assessments always require considerable time in data analysis and discussion, and this may be the dominant activity. If there is abundant recent and reliable data, it may be possible to conduct an HCV assessment with very limited field time. However, even with excellent biological/ecological data, if HCVs 5 and 6 are likely to be present, fieldwork to determine the social values is normally necessary.

Where data is uneven or of poor quality, uncertainty may be reduced by surveys, field data collection, ground truthing of maps etc, and these data collection activities need to be factored into the time and budget for the assessment. If it is not possible or economic to gather reliable data, according to the precautionary principle the assessment should assume that possible or likely HCVs are in fact present, which will have repercussions for management decisions later on. The planning checklist (Annex 3: Guidance on planning) assumes that there will be an element of fieldwork.





3 HCV IDENTIFICATION

Purpose

To identify the presence or absence and, where present, location, status and landscape context of all six HCVs based on the best available evidence.

Activities

Data gathering, including document reviews, mapping, interviews (both structured and informal) with local stakeholders, field inspection and biological surveys. Collation of data, analysis of best available data, discussion with expert team. Preliminary consideration of management implications of HCV presence in consultation with stakeholders. Key consideration: Is the decision process documented, transparent and credible?

Key questions

- What HCVs exist within the assessment area, where are they located, what is their status (3.1)?
- What is the landscape context for the HCVs identified (3.2)?

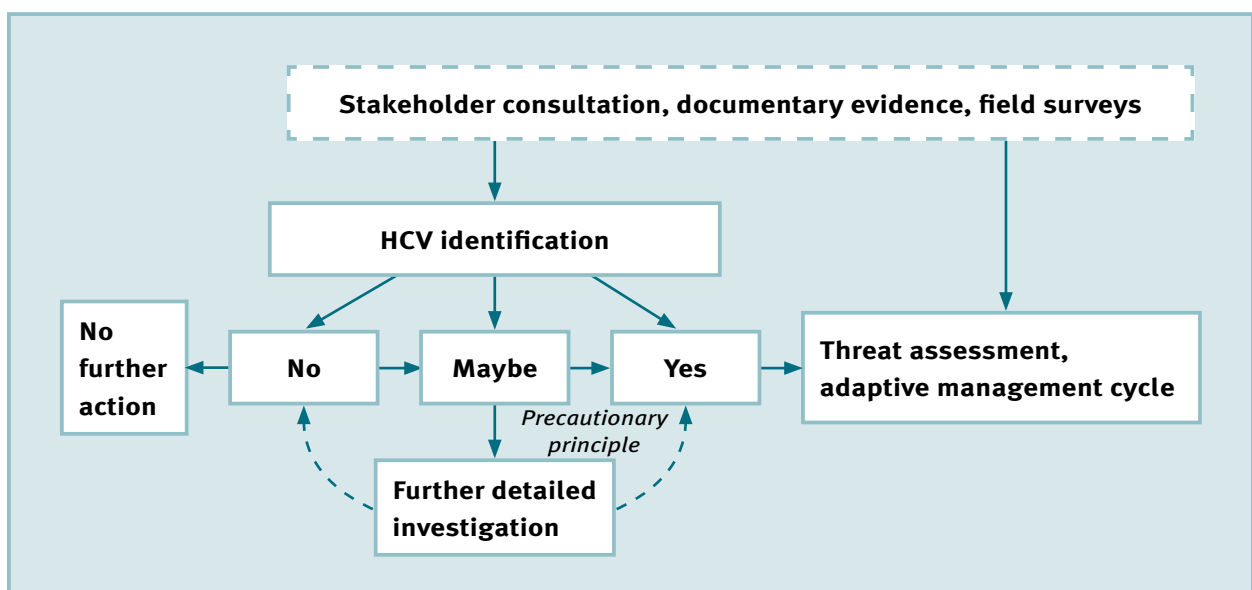
Outcomes

Decisions are made on presence, potential presence or absence of HCVs, their location in space and time, and their status (e.g. current levels, trends, viability). A clear HCV identification report is produced (see relevant parts of Section 6), and where appropriate, advice is given to the land manager on options for management.

3.1 Guidance on identification of HCVs

Key question What HCVs exist within the assessment area, where are they located, what is their status?

It is assumed that the assessor will have adequately prepared and planned the identification process (Sections 1 and 2), which is critical for effective identification of HCVs **This document does not provide detailed guidance on the identification of each HCV, as that is provided by the ProForest HCVF Toolkit and its national interpretations** (see also





recent guidance for forest managers²⁷ and updates on the HCV Resource Network website²⁸). Rather, for each HCV a short example is provided to give some idea of how such an exercise can be carried out and presented, together with some practical notes on the process of identification.

The identification step of the HCV process should lead to clear advice on the presence or absence of values, their location, status and condition, and as far as possible to provide information on areas of habitat, key resources, critical locations etc which are important in supporting the values. This will be used to develop management prescriptions to ensure that HCVs are maintained or enhanced (see Section 4). In practice, the team working on the identification of values often has opportunities to *consider the implications for management* which can be developed more fully later on. This is particularly relevant if the identification process is carried out by a team that will not be involved in developing management prescriptions, and examples are given in the section on each HCV to illustrate how the questions asked may be used to inform management decisions.

Some practical points to consider

- In many cases it is fairly obvious that an HCV is present. In this case more emphasis should be put on issues of location and status.
- The process of identification of the values does not need to be conducted in the order of the values themselves – e.g. many biologists would advise logically to start with landscape features (HCV 2) or ecosystems (HCV 3) before addressing species-specific issues (HCV 1).
- Local stakeholder consultation is often a critical part of HCV identification. Local communities may know more about the presence, number and location of biological values (e.g. endemic species) than national experts, and assessment of HCVs 5 and 6 can rarely be made without local stakeholder consultation. *In addition, it is important to use this opportunity to discuss threats and management options with local stakeholders* (see Section 4).

Use of the precautionary principle in identifying HCVs

If an HCV assessment uncovers credible evidence that an HCV potentially exists without delivering concrete proof (e.g. the suspected presence of a number of threatened species, as revealed by species distribution maps, expert opinion or anecdotal evidence provided by credible witnesses), the precautionary approach requires the assumption to be made that the value is actually present, until and unless further evidence can conclusively demonstrate its absence.

Frequently asked questions

How do you decide where the threshold for HCVs lies (what conservation values are HCVs i.e. significant at the regional, national or global level)?

If there is a national interpretation of HCVs, this should provide agreed categories (e.g. lists of protected areas and protection category, endangered and endemic species, social values, and thresholds of significance), with regional guidance for large countries with high ecological or social variability.

Assessors may come across situations not covered by the national interpretation, or HCVs for which the threshold of 'outstanding significance' have not been well defined. National interpretations cannot describe every possible situation, so should be adapted according to experience, and any decision to vary from the national interpretation should be documented and justified.

If no national interpretation exists, the assessment team needs to decide how they will define critical values, and document their decisions. As this goes beyond the scope of this document, please refer to the guidance in the *ProForest HCVF Toolkit*.

HCV 1 Areas containing globally, regionally or nationally significant concentrations of biodiversity values

HCV 1 is broken down into four subheadings:

- **HCV 1.1** Protected areas
- **HCV 1.2** Rare, threatened or endangered species
- **HCV 1.3** Endemic species
- **HCV 1.4** Seasonal concentrations of species.

Each of these should be assessed separately, as the data needs are quite diverse.

Presence All available data should be reviewed to identify what species are actually or potentially present in the area, or regularly use it, and whether or not they are in concentrations which constitute an HCV. Information reviewed may include land cover and ecosystem maps, lists of rare threatened or endangered species and species distributions, conservation priority maps, and protected area information, studies carried out in and around the area, records from hunting or lists of species sighted

by workers – see Section 1.1.3 and Box 4 on key data and information sources and Box 5 on maps. Some national HCV interpretations provide guidance on indicator species or even on species which constitute this value on their own. Where data is not available for the specific assessment area then conclusions may need to be drawn based on the type of habitat present. In this case, the precautionary principle must be adopted and the presence of habitat be taken to indicate the presence of the value until sufficient data is available to indicate absence.

Location and status It is important to identify not just the presence or absence of the value but where it is and its current condition. There may be a number of different species contributing to this HCV, each of which has a different distribution and status. Where information on each species is available, this should be used but where it is not (which is very common) then proxies such as suitable habitat should be used. Efforts should be made to identify the life-cycle requirements of the species, which can help to identify key ecological resources such as feeding and breeding sites, likely movement routes between resources, etc.

In some cases there may be insufficient data to establish distribution and status in any detail. In this case, a precautionary approach should be taken; if planned management is likely to threaten the value, it may be necessary to collect further detailed information on the location and status of the species before any management planning can be undertaken.



Example In a 60,000 ha concession of lowland rainforest in Sumatra, Indonesia, data from a local university field trip together with sightings by the forest management company staff, indicate the presence of both elephants and tigers together with a number of other threatened and vulnerable species. Therefore, the HCV is present.

As tigers and elephants both have large ranges, even without any data it can be assumed that if they are present they are potentially located throughout the assessment area and, since both tigers and elephants are known to use agricultural land to hunt or browse respectively, also in any adjacent agricultural areas. Therefore it can be concluded that this HCV is distributed throughout and around the assessment area.

However, more specific data is required to understand the current status and behaviour of the species, which is needed to make the link to management planning. This requires some understanding of the size of the population and the relative importance of different habitat types for different activities including resting, feeding, and reproduction.

Notes and comments

- In data-poor situations, it is normally better to prioritise important ecosystems or habitats (e.g. certain biodiverse ecosystems, key resources, seasonal migration areas etc) rather than depending on spot species recordings, as these are necessarily patchy. It is rare to have sufficient, comprehensive sightings of the species included in HCV species lists to map their distributions accurately at a local level.
- Where there are well-known, easily recognisable species of high importance (e.g. many ‘high-profile’ primates or other mammals, large reptiles, some highly visible bird species), there may be sufficient information to map distributions. *(Management implications: these distributions may serve in developing species-specific management plans).*
- In high-biodiversity areas, it may be impossible to identify the majority of endangered or endemic species. The assessor may need to rely on well-known ‘umbrella species’ whose pres-

ence specifically indicates that concentrations of endemic rare, threatened or endangered species are present (see also HCV 2). The decision to use proxy indicators for biodiversity values should be justified and documented. *(Management implications: These concentrations of biodiversity may best be protected by mapping and appropriate management of the relevant habitat type).*

- If the assessment area falls within a recognised highly biodiverse region, e.g. a ‘hotspot’, ‘priority ecoregion’, or other such zone (see Box 5), part or all of the area may contain significant concentrations of biodiversity. The ecologist/biologist should determine if the assessment area contains the specific factors or characteristics invoked in the description of the biodiversity zone, and where they are best represented. *(Management implications: these areas may be considered as the best examples of habitat required to maintain concentrations of biodiversity).*
- The assessment team should consider which areas are critical resources for populations of key species. *(Management implications: In the context of extractive logging, species which are sensitive to logging operations are a priority, and recommendations for maintaining them may include setting aside critical areas completely, or scheduling operations so that sufficient areas of mature habitat are maintained at any one time. Some species on national priority lists are relatively insensitive to disturbance, and need little special management – but expert guidance is essential for making such a decision).*
- For wide ranging endangered species (e.g. many top predators), there may be very sparse data – e.g. occasional records of tigers passing through a given forest management unit in Siberia. *(Management implications: The assessment team should look at the wider landscape and assess which aspects of landscape are critical – e.g. essential breeding areas, refuge areas, and hunting areas. An expert understanding of the species biology is essential for determining the area or range of habitats needed to support a population, but the requirements of even the*

best-known species are uncertain, and identifying critical areas should follow the precautionary principle).



HCV 2 Globally, regionally or nationally significant large landscape-level areas where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance

Presence Assessment of this value should consider three indicators:

- **Size** This is normally tens of thousands of hectares, though size limits vary between different types of ecosystem and location. Guidance is provided by national interpretations where available.
- **Level of fragmentation** A certain level of fragmentation is almost inevitable in most landscape forests. Some national interpretations establish a threshold (e.g. in Bulgaria, up to 7% of an ‘intact landscape’ can be affected by infrastructure). There may also be a mosaic of different natural habitat types within a landscape.
- **Naturalness** This should consider species composition, stand structure, habitat composition and degree of absence of exotic species; see *ProForest HCVF Toolkit* for generic guidelines.

In general, much of this type of assessment can be done based on remote sensing data, land cover

maps, aerial photography and other large-scale data further informed by ground truthing.

Location and status The location of this HCV should be clearly defined based on the extent of the landscape-level ecosystem (or mosaic of ecosystems), natural geographical features such as watershed boundaries, and human disturbance features. The status of this HCV will depend on the extent to which there has been any previous impact on intactness and species composition.

Example An HCV team is given the task of mapping HCV2 in a forest-dominated but fragmented landscape in Canada’s boreal zone, where land use includes forestry, mining and oil prospection. The Canada Boreal HCVF interpretation proposes thresholds for globally (greater than 500,000 ha), nationally (200,000 to 500,000 ha) and regionally (50,000 to 200,000 ha) significant large landscape level forests, based on fire disturbance dynamics and habitat requirements for wide-ranging species.

The HCV assessment team uses recent remote sensing data and land cover maps to establish a GIS model of all forest blocks above these thresholds, and overlays this with data on permanent infrastructure (dams, mines, surfaced roads etc), non-permanent human disturbances (blocks of forest affected by forest roads, unsurfaced tertiary roads, and timber harvesting activities) and selected forest quality indicators within watersheds (e.g. proportion of late-seral (i.e. ‘mature’) forest within the area, presence and abundance of indicator species). The position of the large blocks of forest in the landscape, relative to other landscape features, is also taken into account.

A combination of these data serves as a rational basis for determining the presence and geographical boundaries of large, landscape level forests, capable of supporting viable populations of wide-ranging animals such as bear, moose, caribou and wolf.

Notes and comments

- The conservation value of large blocks of forest should be supported by data and expert opinion. (*Management implication: a minimum size threshold set at the national level for the existence of HCV 2 (landscape-level HCV areas) should*

not imply that anything exceeding this value can be converted/modified down to the threshold level. The national threshold sets a minimum size for a large, intact forest to be of national, regional or global significance; therefore if a larger area than the national threshold exists, the value of that block is likely to be very high).

- When considering ‘umbrella species’ as representative of intact ecosystem function, advice on the population viability and stability should be sought from relevant experts. There may be national guidelines available – for example, many large mammal conservation experts consider that a population of about 50 breeding adults is viable, but only with protection, translocation for genetic mixing, and habitat management.

HCV 3 Areas that are in or contain rare, threatened or endangered ecosystems

Presence All the available information on ecosystem classification should be reviewed and the presence of different ecosystems should be assessed at an appropriate range of scales. A national interpretation may specify particular rare or threatened ecosystem types and minimum thresholds of significance, but other conservation planning processes or prioritisation schemes can often supply relevant criteria in the absence of a national interpretation. If ecosystem maps aren’t available, proxy data, such as forest inventory data, can be a very useful source of information and help to stratify an area into relevant classifications.

Location and status The location of HCV 3 should be quite clear following an ecosystem mapping exercise; where there are uncertainties, further data collection (e.g. a ground survey or higher quality remote sensing data) may be necessary. The status of the rare ecosystems should be described based on their spatial distribution on a range of scales - from detailed mapping at the local level to coarser maps at a higher (national or regional) scale, their connectivity (e.g. ability for characteristic species to move between patches and provide genetic flow), and levels of known disturbance and fragmentation.

Example A 120,000 ha forest concession in Gabon (Central Africa) extends eastwards from the foothills of a low mountain range, part of which is included in a National Park. The forest concession is spread out over undulating terrain between 450 and 850m, with occasional inselbergs (large, smooth-domed rocky outcrops) emerging from the forest canopy. The concession is dissected by a dense network of small rivers and streams. The whole concession is covered by moist tropical forest.

The assessment team uses data and advice from the National Herbarium, the Ministry of Forests, and national botanical and forestry experts to translate the company’s forest inventory data and topographic maps into a concession-level ecosystem classification showing altitudinal forest types (including lowland/hill forest formations, montane forest, inselberg ecosystems and small patches of cloud forest on exposed ridges), riverine forests and various aquatic habitats.

Following the Gabon National Interpretation of HCVs, all the montane formations and inselbergs are identified as HCV 3. Furthermore, the forest inventory shows a distinct area of ca. 8000 Ha within the hill forest matrix which is dominated by dense stands and large specimens of *Cesalpinioideae* trees belonging to over 70 species, which is an indication of a prehistoric refugium (an area which remained forested during the last Ice Age, whilst savanna dominated surrounding areas). These Ice Age refugia are rare on a national and regional basis. A previous ground survey by an experienced botanist supports this theory, by documenting the presence of an exceptionally diverse *Begonia* flora characteristic of refugia. The limits of the formation are therefore mapped out based on the forest inventory data and the ecosystem is classed as HCV 3.

Notes and comments

- Assessors frequently start the identification of the biological HCVs (HCV 1, 2 and 3) by mapping ecosystems, which provide a good indication of biodiversity, and then place these in the landscape context to see how the different ecosystems present are interconnected.
- Remember that this HCV applies to rarity at the global, national or regional level. Within a country, habitat comparisons (e.g. for threat and rarity) should be made with similar areas within

widely recognised biogeographic zones – e.g. in Indonesia, comparisons between forest formations should take account of biogeographic classification (e.g. lowland Sumatran rainforest contains many different species to lowland forest in Sulawesi or Kalimantan).

- The assessors should consider not only habitats which are naturally rare, but also those which have become or are becoming rare as a result of disturbance and conversion. This should include those which are under threat and likely to become rare in the foreseeable future.



HCV 4 Areas that provide basic ecosystem services in critical situations

HCV 4 is broken down into three subheadings:

- **HCV 4.1** Areas critical to water catchments
- **HCV 4.2** Areas critical to erosion control
- **HCV 4.3** Areas providing critical barriers to destructive fire.

Some national toolkits have added other critical ecosystems, such as **areas critical in providing services to agriculture** (e.g. pollination services in Indonesia, fisheries in Romania) and **protecting against wind** (e.g. wind protection belts in Ghana). Where relevant, these could also be considered in the absence of a national interpretation.

Presence HCV 4 is likely to occur wherever local communities are largely dependent on natural rivers and springs for providing drinking water, or where the natural ecosystems (usually forested areas) play an important role in stabilising steep slopes. These two values frequently occur together and the area which provides the critical services (water provision and erosion control) may overlap partially or completely. Assessors will need to analyse hydrological and topographic maps, soil maps with erosion risk indicators, human habitations and critical infrastructure (such as major transport routes, reservoirs, hydroelectric dams etc). Most countries have systems for identifying critical watersheds, and this is often part of national forest regulations. Critical protection against destructive fire is likely to occur in areas which are prone to serious fires, which contain or are adjacent to human settlements, important cultural sites, protected areas or other HCVs, and where the natural ecosystem is a barrier to fire. Where this is the case, expertise in fire management is often needed to refine the analysis of the HCV area.

Location and status The location of HCV 4 can be derived from a variety of maps (land cover, topographic and hydrological maps, human settlements and infrastructure), requirements from national regulations and guidance in national interpretations, and expert opinion. Where it is sensible to assess the status of the HCV, this may be linked to *the quality of the service provided* and to the ‘intactness’ or ecological integrity of the ecosystem. For example, in some situations an intact or carefully managed forest can act as a very effective firebreak, but a degraded or inappropriately managed forest in the same area may lose this function and become a serious fire hazard.

Example A 15,000 ha forest management unit in the central Bulgarian mountains overlooks a town and two villages, and surrounds a hydroelectric dam. The forest prevents sedimentation of the dam lake and protects the infrastructure. The villages and town are not critically dependent on the forest area for provision of drinking water but are protected from landslides and avalanches by the forested slopes. Assessors determine categories of HCV 4 using the Bulgarian National Interpretation of HCVF, obtain maps and data from the forest manager and the Mountain Rescue Service, and consult a reputable hydroelectricity engineering company to map the HCV areas around the dam. The team map the following areas as HCV 4: a 100 m strip protecting the river which feeds the hydroelectric dam, and around the dam itself; all areas over 30 degree slope; and forests on any slope within a defined avalanche protection belt above the settlements.

Note

Storage of carbon, both in the soil and in biomass, is increasingly being recognised as a critical ecosystem function of forests. Addressing this value is normally beyond the scope of an HCV assessment, but could be recommended for exceptionally carbon-rich ecosystems (including where below-ground carbon is the major carbon store e.g. peat swamps). Assessors should then refer to the national carbon policy framework for guidelines on carbon measurement.



HCV 5 Areas fundamental to meeting basic needs of local communities and

HCV 6 Areas critical to local communities' traditional cultural identity (areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities)

Presence The social values of natural ecosystems are likely to be much more important in areas where whole communities or significant sections of them are heavily dependent on those ecosystems for their livelihoods, and where there is limited availability of alternatives. Assessors will need to collect or review evidence of the natural resources utilised by communities (food, construction materials, firewood, medicines etc), the level of dependence of communities on these resources (which may be indicated by the traditional way of life and the degree of isolation from other people and from a cash-based economy), the areas used, and the vital cultural links between people and their environment. Where these values are likely to exist, a social survey is necessary to define the values and areas involved, covering a representative sample of the community, including members of disadvantaged groups as well as the higher social strata.

Location and status Social values may be distributed evenly over large areas (for instance, subsistence hunting), or concentrated in smaller, well-defined areas (e.g. some medicinal plants), or even be represented by single trees, rocks, caves etc (many cultural values such as sacred sites). Information about the status of the value may be obtained through the interviews conducted in the social survey, or through independent data collection (e.g. a survey of the distribution and abundance of a key resource). Where the community's use of resources is extractive, and particularly if the uses may affect biological HCVs such as endangered species, assessors should gather data on the past and present status and likely trends in the future, to help assess current and future sustainability of the activities.

Example A lowland forest concession in Kalimantan is surrounded by four villages whose traditional cultivation areas directly border the forest. Thanks to preliminary data, including government figures on income at the district level and evidence of poor roads, assessors judge that these communities are likely to be partly dependent on the forest, which requires further investigation. An experienced social team conducts a survey, including a participatory conservation planning exercise, which shows critical dependence on key forest resources: construction timber, medicines, and non-timber forest products (including forest fruit, rattan, game and aromatic resins used in religious ceremonies). The volume, uses and trading prices of these products is recorded, and the key areas which provide the resources are mapped with the cooperation of the community and verified in the field by the team, using GPS units with local guides (hunters and traditional medicine practitioners).

Notes and comments

- The importance of natural resources to local communities can be defined by such aspects as the intensity of use, length of use, quality of use and legitimacy of claims. Assessing social values requires an understanding of local languages, customs, and livelihoods. *(Management implications: Local communities need to be satisfied that they have received a fair hearing and that their concerns are addressed in any management plan. This has a lot to do with the process and quality of discussion, negotiation and decision making. Appropriate methods of communication with local communities should be established, using a common language. This means that local communities need to have been involved in a consultative process and agree to decisions through a process of free, prior and informed decision-making or consent. In essence this means that any decision or consent derived should be made without coercion or intimidation, with all relevant information provided and prior to any damaging activities or operations taking place).*
- Land claims and legality of access are frequent points of conflict between land use managers

and local communities. Within the context of FSC forest certification and some other standards (e.g. RSPO, RTFO etc), this aspect is dealt with explicitly but separately from HCV assessment. However, outside of the context of certification, **any application of the HCV process must take into account the legal and customary rights of local and indigenous people.** This may be based on the FSC guidance or an equivalent social sustainability framework.

3.2 HCVs and the wider landscape

Key question What is the broader landscape context for the HCVs identified?

Why assess the landscape context?

Within a landscape, if each one of the land management units ignores the wider landscape context (e.g. what is happening in neighbouring land units, what land use plans are being made in the region, the presence and status of protected areas etc), then fragmentation and disappearance of some HCVs becomes inevitable. This is a common problem with ‘standard’ EIAs, which are often conducted at small scales and ignore cumulative impacts across the wider area. Some values are present at the landscape level itself



(e.g. landscape level forests, large watersheds), others depend for their continued existence on the presence of a mosaic of suitable habitat in the wider landscape (e.g. some critical water values, populations of many rare, threatened or endemic species).

The landscape context therefore affects the responsibility of the manager for HCVs present within the management unit, and should be used to guide management decisions. The depth of analysis for the landscape context needs to be balanced with the presence and status of HCVs, the impact of the operations, and the ability and responsibility of the land manager to carry out an assessment which takes in factors well beyond the boundaries of the management unit (see Section 4, Management).

Guidance on assessing the landscape context

Some countries already have landscape level conservation assessments at least for part of the country (e.g. ‘ecoregional plans’ developed by TNC, ‘landscape forest’ maps by WRI/Greenpeace, landscape level HCVF maps by WWF, etc – see Box 5). National interpretations of HCVs may give

additional guidance on equivalent national frameworks (e.g. PROBIO systematic conservation planning process, Brazil).

Assessors should in every case look at how the following elements affect the HCVs identified:

- Land use adjacent to the assessment area
- Other active players in the landscape (e.g. settlements, forestry, agriculture, infrastructure)
- Presence and status of a regional land use plan
- Presence and condition of protected areas in the landscape (does the FMU provide a vital supporting function to a protected area?)
- Distribution and connectivity of ecosystems across the landscape
- Forest cover and condition, soil and geology
- Biogeographic barriers affecting movement into and out of the assessment area
- Watershed maps and criticality of area for maintaining water supply/quality





4 HCV MANAGEMENT

Purpose

Linking identification of HCVs to management.

Activities

Establish the for management options which will maintain or enhance HCVs, including the distribution and location of values, and their current level of **protection** in the landscape. Identify known or potential **threats** from planned operations and external sources. Establish the **range of management/mitigation options** for these threats. Consult with experts and stakeholders on which options are economically, ecologically and socially viable. **Define achievable objectives.**

Depending on the context, time frame and budget available, identification of threats can be done by the assessors involved in the HCV identification

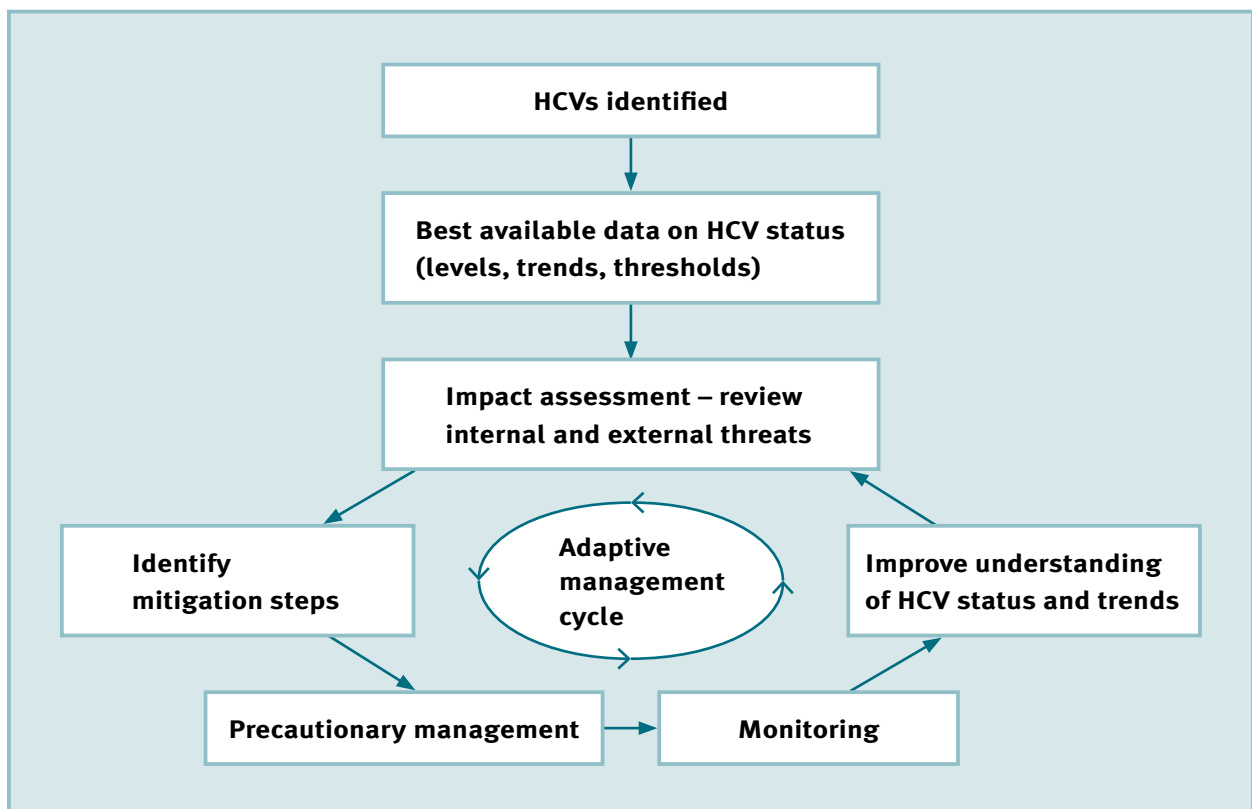
process, who can make recommendations based on their findings, or it may be a separate exercise conducted by the land manager, perhaps with guidance from the HCV identification team.

Key questions the management team need to consider:

- **What and where are the HCVs, and how important is the assessed area for maintaining them within the broader landscape?** (Section 4.1)
- **What internal and external threats are faced by the HCVs?** (Section 4.2.1)

Outcome The aim is to define clear objectives for management, with the purpose of maintaining or enhancing the HCVs, and to set out a precautionary management plan based on best available data and advice.

- **How do you reach appropriate management decisions to minimise or mitigate the threats to HCVs?** (Section 4.2.2)



4.1 Establishing context for HCV management decisions

Key question What and where are the HCVs, and how important is the assessed area for maintaining them within the broader landscape?

The outcome of this step will be an **HCV management plan, setting clear objectives**, defining **specific areas** requiring special management, and devising **appropriate management practices for each HCV** found within the assessment area. Managers will need to refer back to the information gathered previously for each HCV (i.e. the location, status and landscape context), and define specific objectives for each value in turn. The long-term strategic aim should be to maintain or enhance all the HCVs within the assessed area, and within the wider landscape so far as management influence allows.

The management prescriptions and areas which need to be set aside or managed specifically to maintain or enhance HCVs will depend on a combination of the HCVs present, the threats to the values (Section 4.2), and the ability and responsibility to manage and mitigate these threats. Some values are widespread, whilst others are very localised, and managers should consider whether special measures must be applied across the management unit as a whole, or be focused on specific areas.

What is the level of responsibility of the land manager for landscape level features?

Generally, the smaller the management unit, the more important the role of the wider landscape (outside the assessment area) in maintaining conservation values. For example, small forest management units may not support viable populations of large birds or mammals. However, they may be an integral part of a landscape that does. Therefore, numerous small management units (whether natural forest concessions, plantation forests, oil palm plantations or other) have collective responsibility for maintaining landscape level values.

Larger management units may not only contain landscape level features, but also bear much greater individual responsibility for maintaining those features. The influence of large land managers also gives them greater power to frame national or regional debates on land use and influence legislation.

In the context of plantations, the land manager is responsible for ensuring that HCVs are not destroyed by conversion and that HCV management areas are designed to be large enough, connected enough and of sufficient quality to maintain or enhance the HCVs. The landscape context takes on an even greater level of importance, as converted lands may cut off migration routes between areas of natural habitat, and prevent genetic flow between populations. Any conversion is relevant in this context, as many small conversions can eat away at landscape level conservation values as effectively as large unitary operations – therefore, small operations need to make an appropriate contribution to landscape conservation goals, either individually or collectively.

4.2 Threat assessment and management options

4.2.1 Threat assessment

Key question What internal and external threats are faced by the HCVs?

Purpose of the threat assessment

Understanding threats to the HCVs identified is a critical step in making management decisions to protect and/or enhance the values. Some threats are obvious and straightforward (e.g. conversion of an endangered ecosystem (HCV 3) will destroy it completely), whilst others may need to be investigated and quantified in some detail to inform the appropriate management. The assessor needs to determine the current status and trends in HCVs, and identify the causes of any deterioration (including proposed operations), in order to identify



management options to deal with these. At the same time as the threat assessment, options for minimising or mitigating threats should be discussed.

Internal and external threats

Threats to HCVs can come internally, from the land manager's own operations (e.g. road building, habitat fragmentation, poor harvesting practice, pollution, conversion etc.), or from external factors (e.g. encroachment, illegal logging and hunting, armed conflict, poor governance, land zoning plans incompatible with conservation). All land managers must address internal threats by appropriate management, and may be able to mitigate some external threats; however, smaller operations in particular may lack the financial resources or capacity significantly to affect external sources of threats. Large companies are frequently able to affect development processes on a landscape scale and this influence should be taken into account at the management stage. Accurate descriptions of the internal and external threats are therefore critical, and management prescriptions should be proportionate to the threats, the values to be maintained, and the capacity of the company to respond.

Methodologies for threat assessment

For smaller or lower impact operations, or situations where threats are well-known and reasonably stable, it may be relatively quick and easy to identify both internal and external threats. However, for larger or higher impact operations, or situations where threats are poorly understood, more structured and comprehensive approaches will be needed.

There are a variety of available methodologies for conservation threat assessment. Amongst the most influential practical tools are The Nature Conservancy's 5-S Framework²⁹ and Participatory Conservation Planning (PCP) tools, which have been used to good effect for HCV assessments in Kalimantan³⁰ (see Box 6). These tools compare the decline of conservation values to an 'illness', with **Stresses** (the 'symptoms' or proximal causes, such as a population decline) and **Sources** (the causes of the stresses, such as hunting for bushmeat). The manager can treat the immediate cause of stress (e.g. by making hunting more difficult), but needs to address the ultimate source in order to prevent the problem from recurring (e.g. in the case of bushmeat, by addressing the need for cheap protein sources for local populations)³¹. An alternative generic methodology is the Threat Reduction Assessment³² (developed jointly by WWF, TNC and WRI) which uses similar ranking and prioritisation methods.

Threat assessments can draw on expert opinion or stakeholder consultation. It is often useful to have local community engagement in threat assessment, as this can highlight valuable information on stresses and sources of stress, raise awareness of the communities' role and responsibility in conservation planning, and lead to innovative solutions to challenging problems.

Additional guidance on threat assessment

- The threat assessment methodologies, participation and outcomes must be documented and included in the HCV management report.
- It is important for the company to understand the threat assessment process; the team responsible for this task should ensure senior management understand the process and outcomes, in order to ensure constructive input and buy-in.

- If the threat assessment is being conducted internally, it can be difficult for the assessor to be objective about threats posed by the company's own operations: they may be over-familiar with the company's standard procedures, and fail to recognise a threat, or they may not feel confident to report a threat where it might create internal conflicts. The company should therefore carefully consider whether an external facilitator could improve the process. For high-impact operations, this is strongly recommended, and can also improve the credibility of the results.
- Social threat assessments should include threats to HCV 5 (basic needs) and HCV 6 (cultural values). Social HCVs are much more liable to change over short time scales than biological HCVs – for instance, dependence on bushmeat for protein can be an HCV requiring protection

Box 6 Threat assessment methodology – Identifying and prioritising using The Nature Conservancy's 5-S Framework for site conservation planning

The basic steps in an HCV threat assessment methodology are the following:

- List the HCVs previously identified
- For each HCV, assess the current status (e.g. excellent, very good, good, fair, poor, critical) and trend (increasing, stable, declining), if known
- Document which aspects of the value have been assessed, e.g. the area of forest, degree of fragmentation, or quantity of natural resources available

- For each HCV, list all the possible stresses and their potential impact
- For each possible stress, list the sources of stress (there can be more than one source for each stress)

Use this process to rank priorities for HCV management. Identify both the most immediate and severe threats to HCVs, and those which are easiest and cheapest to treat. These will form the basis for immediate action.

Example Threat assessment summary for HCV 5 in Kalimantan

HCV 5 Forest areas fundamental to meeting basic needs of local communities (e.g. subsistence, health)

What is happening/ stress	Potential impact on value	Cause/source (likely contribution to the stress)	Notes/examples
Reduced fish and game	Very high	<ul style="list-style-type: none"> • Over-collecting (very high) • Disturbance from logging activities (high) • Forest habitat loss (high) • River pollution (medium) 	Punan in the Kelai valley. Berau Regency are dependant on wild meat and fish for over 90% of their protein (E. Pollard pers obs)
Reduction in quantity/quality of forest fruits and veg	Very high	<ul style="list-style-type: none"> • Over-collecting (medium) • Disturbance from logging activities (high) • Forest habitat loss (high) 	More than 50% of people in the village of Mahak Baru got more than 50% of their fruit and vegetables from wild sources (TNC-SFO 2002)
Reduction in quantity/quality of other NTFPs	High	<ul style="list-style-type: none"> • Over-collecting (high) • Disturbance from logging activities (high) • Forest habitat loss (high) 	
Reduction in quantity/quality of building timber	Medium	<ul style="list-style-type: none"> • Over-collecting (medium) • Disturbance from logging activities (high) • Forest habitat loss (high) 	Timber from the forests is the only source of building material for many isolated forest communities

when forestry operations start, but with new access to guns, markets and transport, subsistence hunting can rapidly turn into commercial exploitation, which is no longer being used to fulfil basic needs and can begin to pose a threat to key species.

- ‘Standard’ Environmental and Social Impact Assessments can be used in this process, but the assessor must be aware that these are sometimes poorly executed. In some countries, the credibility of such assessments is low.

4.2.2 Defining management prescriptions to maintain or enhance values

Key question How do you reach appropriate management decisions to minimise the threats, in order to maintain or enhance the HCVs?

Objective

All the elements should now be in place to identify what can be done to minimise or mitigate the threats to HCVs. Managers need to develop a documented plan to maintain or enhance the HCVs, integrated into the operational management plan, which sets out specific objectives and management prescriptions for each HCV, taking into account the relevant threat assessments.

Guidance on reaching management decisions

Each HCV needs to be considered individually, but it may be possible to gain some efficiencies by thinking about them together and considering management options that may maintain multiple values. National interpretations of HCVs and regional guidance documents normally provide a list of management options for particular situations. In each case, managers should consider:

- What do you need to conserve (strategic objectives – e.g. maintaining or enhancing specific populations, habitats, services, social values?)
- What threat mitigation options were identified?
- What best practice is achievable? (see^{2, 33, 34})

- Is this enough to maintain the value, or must more be done?
- What are the constraints (economic, social, technical)?
- What are the resulting operational objectives (to be met by standard operating procedures)?
- How will success be monitored (see Section 5)
- What are the thresholds for management intervention (Section 5)?

It is important to remember that the appropriate way to maintain or enhance each value will depend on the value itself. There are a variety of possible options to maintain or enhance various HCVs, which include:

- **Conservation set-asides** (e.g. appropriately designed protected areas, buffer zones, habitat corridors)
- **Restoration** (e.g. remediation of previous damage to ecosystems, reintroduction of hunted species, creation of wildlife corridors between forest blocks)
- **Reduced impact harvesting operations** (e.g. reduced impact logging techniques or continuous cover forestry)
- **Infrastructure planning** (e.g. improved road building)
- **Scheduling of operations** (e.g. planning logging coupe schedules to benefit wildlife)
- **Control of hunting and fishing** (e.g. managing access and methods, providing affordable protein alternatives)
- **Community development and livelihoods projects** (e.g. employment and healthcare)
- **Local government and NGO support** (e.g. extending or renewing leases, preventing inappropriate development, supporting company conservation initiatives).

Consultation

Stakeholder consultation is an important part of identifying the benefits and challenges associated with various management options. The amount and

type of consultation, and the range of consultees should depend on the main management decisions to be made.

Where HCVs 5 or 6 are present, there should always be effective consultation with the affected communities on the measures taken to maintain or enhance the values so that the approach has wide support within the affected communities. Where HCVs 1, 2 or 3 are present then it is important to consult with environmental NGOs and other parties concerned with conservation of biodiversity. Consultation should aim to build agreement on the management options to be adopted. A similar approach should be adopted for HCV 4.

In all cases the consultation process and any agreements or decisions made should be documented (preferably as part of the HCV report). The resulting management plan should be available for review by all those involved in the consultation process. For larger or higher impact operations consultation it is normally necessary to consult during the formulation of the draft management plan and then again to allow inputs to the plan before it is finalised.

Use of the precautionary principle in defining management prescriptions

The precautionary principle applies both to the identification of HCVs (see Section 3.1) and to appropriate management. The management strategy used to protect the HCVs should reflect uncertainty around data.

The precautionary principle as it relates to an HCV assessment, can be formulated as follows (adapted from the Convention on Biological Diversity, 1992):

‘Where there is a threat of **significant reduction or loss of High Conservation Values**, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat.’

Where data are lacking, it can be difficult to make management decisions. In the case of low or medium impact operations, if there is insufficient information available for specific management of a given HCV, managers should aim to implement best operational practice and develop a monitoring



plan which will detect changes in the status of an HCV and allow prompt action. In the case of high or very high impact operations, and particularly in the context of conversion, the use of the precautionary principle to deal with inadequate information is essential: in practice, this can mean very little activity on the ground until appropriate data is available. The land manager must try to reduce uncertainty, if necessary by commissioning surveys and fieldwork to determine the limits and thresholds of HCVs. At a minimum, the land manager needs to take into account a precautionary area sufficient for the maintenance of each HCV in the landscape context, and secure this (or these) areas prior to any conversion. Stakeholder engagement is critical to a credible outcome, e.g. the involvement of the full range of stakeholders in defining what a sufficient area represents.

As a general rule, the higher the potential concentration of values and the impact of the operation, the further the management plan should go towards protection and restoration. More stringent protection measures can have benefits for monitoring – for example, if an area is completely set-aside to maintain a particular value or suite of values, then the monitoring requirements are lowered, because the threat has been removed. This is important, because for many biological processes, monitoring with sufficient power to detect significant negative effects can be highly demanding.



5 HCV MONITORING

Key question Are the HCVs being maintained or enhanced by current management practices?

Purpose

To determine whether HCV management objectives are being met, and provide managers with up-to-date information on the HCVs for which they are responsible, as a basis for management intervention or ongoing adjustment of operational plans.

Activities

Monitoring plans should be derived from management objectives and written into the management plan. Data gathered during the HCV assessment should be used to determine what should be the generic and specific objectives of the monitoring programme. The aim should be to develop a set of **simple, measurable indicators** for each key value. Monitoring activities can include social and biological surveys and direct and indirect observation of indicators, and are likely to involve detailed data collection over the long term. Data should be analysed, reported and acted on.

Box 7 Designing a monitoring plan

When designing the monitoring plan, the following points should be considered:

Process requirements

- What needs to be conserved/maintained (what are the management objectives)?
- What is known about current levels of the values?
- What thresholds should be set for management action?
 - Technical advice on values and their indicators
- Management responsibility for the monitoring
- Integration of results into management plan
- Frequency of management review
- Who should be involved in monitoring (i.e. identifying persons responsible internally; deciding if any outside expertise is required or if collaboration is needed, etc)

Data requirements

- Access to data sources (consider e.g. remote sensing vs ground surveys)
- Cost effectiveness of data collection options
- Contribution of operational monitoring to HCV data
- Choice of direct and indirect indicators

- Relative abundance/quality measurements
- Scale and intensity of monitoring required
- Frequency of sampling
- Power Analysis to determine what kind of effects might be detected with the chosen monitoring regime.

Team requirements

- Expertise of monitoring staff (can some monitoring be done in association with local or national NGOs, community leaders etc?)
- External review

A note on Social HCV monitoring (HCV 5 and 6)

Social HCVs are liable to change much more rapidly than biological HCVs, as people adapt to new economic circumstances. Monitoring social HCVs should be part of the company's policy of engagement with local communities, and should verify:

- Whether the value is being maintained.
- If the value is still within acceptable sustainable rates (e.g. hunting, harvesting of particular plant species, building timber extraction etc.)
- Applicability of the value (e.g. if supplementary protein is available, is hunting still a basic need?).

Guidance on monitoring

HCV national interpretations may provide some guidance on recommended methodologies for monitoring specific HCVs. The monitoring guidance produced for HCVs in Kalimantan²³ and for the Humid Tropics³⁵ (mainly South America) are particularly useful practical resources and can be obtained from the HCV Resource Network website.

For each HCV the monitoring plan (see Box 7) should establish:

- What will be monitored
- How will data be collected (methods and frequency)
- Who will be responsible for collecting the data
- When and how data will be analysed
- What the thresholds are for management action
- What is the management review process

What will be monitored, and how?

The **choice of indicators** at the beginning of the process is critical. Poorly chosen indicators can be difficult or expensive to monitor, and can fail to reveal important changes in the status of the HCV. Conservation monitoring is a specialised field of research, and consultation with experts when developing the monitoring plan is one of the best ways of spending the monitoring budget, both for designing a cost-effective monitoring process and avoiding expensive remedial action if changes are identified too slowly. If the monitoring plan is developed internally then, at least for larger or higher impact operations, it should be peer reviewed.

Indicators of HCV status may be direct or indirect

- **Direct indicators** can include, for example – actual sightings of species of concern (HCV 1); measurements of habitat quality (e.g. canopy closure, extent of damage for HCV 2/3); water quality parameters (HCV 4); quantities and prices of forest products in local markets (HCV 5).
- **Indirect indicators** can include, for example – extent of suitable habitat and key resources

(e.g. nesting sites) and signs of presence such as prints, dung or nests (HCV 1), or community surveys on the time and effort required to obtain key resources (HCV 5).

All data should be collected in a consistent and repeatable fashion, as the aim is to establish a basis for understanding long-term trends in the status of the HCVs.

Operational vs strategic monitoring

The management plan should have defined strategic objectives and operating procedures designed to meet those objectives. Both of these can be monitored (Box 8):

- Much of the data needed for good decision making can be obtained through **operational monitoring**, which allows managers to see whether the standard operating procedures in the management plan are being carried out (e.g. verification of procedure in road design and construction, harvesting operations, waste management etc). In addition, useful information can be gained from incorporating specific HCV monitoring into operational routines (e.g. recording roadside sightings of listed animal species).
- The strategic objectives set out in the management plan should also be monitored, to determine whether the Standard Operating Procedures are effective in maintaining the HCVs. This requires measurement of direct and/or indirect indicators of the HCV status.

Who will be responsible for collection and analysis?

Operational monitoring should be standardised and mandatory, with responsibility for specific tasks included in the standard procedures for designated staff. Some specific HCVs are likely to need require periodic surveys by specially trained staff or even external specialists.

The overall responsibility for the monitoring plan should belong to a named senior manager of the company/organisation managing the area, who will ensure that data is properly collected and analysed,

and that results are incorporated into the management plan. A monitoring plan which is not used in management decisions is a complete waste of money.

Box 8 Monitoring example: Maintaining a population of *Picathartes gymnocephalus*

The FMU contains a few breeding pairs of a rare species of ground-nesting bird that is an HCV. The management objective is to maintain these breeding pairs in the FMU. An exclusion zone around each known nest location has been established, as well as around similar sites where nests have been seen in the past.

Monitoring has three essential elements:

- 1 Operational monitoring: checking that the exclusion zone is marked, that harvesting crews can recognise the markings and that they are respected in practice. This should include post harvest checks that exclusion zones have remained intact.
- 2 Strategic monitoring: checking that nesting still occurs in the protected sites following logging activity. It may be necessary to monitor the sites over the next several breeding seasons.
- 3 Analysis and review: Review of the results of monitoring and feedback. In the event that nesting success appears to be affected, this includes identifying how to address this, for example by extending the exclusion zones in sites where harvesting is due to take place, rescheduling harvesting activity to occur after breeding, or complete cessation of harvesting activity until a cause of the nesting failure can be properly determined.

What are the thresholds for management action?

At the same time as choosing indicators, a threshold for action needs to be determined, i.e. an indicator value which suggests that the HCV is under threat and requires specific management action (e.g. predefined values for the number of breeding birds in a colony, the amount of silt in a river, the number of traps or snares collected along a particular forest path). Thresholds for action are necessarily somewhat subjective because data may not be conclusive, but they must be set high enough that remedial action can be taken before significant damage is

done to the value. When the monitoring plan is set up, thresholds for biological/ecological values should be set in consultation with appropriate experts, whilst thresholds for social values should be determined on the basis of stakeholder consultation. Thresholds should be reviewed periodically in the light of monitoring results and changing circumstances.

Management review

There should be a management review of all monitoring data at least annually to assess progress in meeting management goals; if particular HCVs fall below the action threshold at any time, a reassessment of the threats and management options should be initiated. The management plan should remain flexible to incorporate new information coming from the monitoring process. It should be stressed that detecting meaningful changes in many biological or physical processes can be extremely difficult, as baseline data may be missing and natural causes can induce large fluctuations. The manager should be aware of the power of the monitoring process to detect meaningful change, and adopt a precautionary approach where data are weak.





6 HCV REPORTING

Key question Does the report adequately describe and justify HCV identification, management and monitoring decisions?

Purpose

To give a clear overview of the findings and management decisions, and provide sufficient information for an expert third party to be able to judge whether the identification process and consultation has been adequate to justify management decisions. This should be done in a clear and consistent way, and generally include a final peer review and consultation process to guarantee quality control.

HCV assessment reports

All HCV assessment reports should contain the following elements (an HCV identification report would obviously omit the management chapter):

- 1 Executive summary** Key findings of the report, including a summary table and maps of the HCVs found in the assessment area and their extent and an overview of the management options identified in order to maintain them.
- 2 Introduction** Overview of the assessment area, background information on the land use manager and scope and purpose of the HCV assessment.
- 3 HCV methodology** The methodology used in the assessment, including:
 - information on the assessment team (this can be a summary of expertise, rather than the names of individuals – CVs should also be included in an annex)
 - the data sources used including any data collected specifically for the assessment

- stakeholder consultation processes including a list of stakeholders contacted.

4 Landscape context and conservation significance of the assessment area.

5 HCVs identified Each HCV should be clearly described and the decision on presence or absence should be explained and justified. For each HCV identified as present or potentially present, the location and distribution (e.g. a map) and status should be described, accompanied by a clear explanation of how these conclusions were reached. It is often useful to put detailed analytical data and reports as annexes with the key findings in the main text. All issues raised during the consultation process should be noted and the way in which they influenced the outcome.

6 Management and monitoring requirements The specific management objectives and measures to be taken for each HCV should be described (including mapped HCV management areas where appropriate). This should explicitly take into account the landscape context, threat assessment and threat management or mitigation options, giving sufficient detail to show how the value will be maintained or enhanced. There should be a clear record of the consultation process used to develop the HCV management options including any issues raised and how they were resolved. Again the use of maps is recommended wherever appropriate, while detailed information can be put in annexes.

7 Annexes References to data used (including primary data collected in the field), qualifications of HCV team and reviewers, records of stakeholder consultation, and summary of peer review reports.

Peer review process

The draft HCV report should be subject to review by one or more independent third party experts prior to being made public. The objective of the peer review is to ensure quality control. A summary of the peer review report(s) should be placed in the



annex of the public document, which includes the reviewer's recommendations, and justification for actions taken in response (accepting or rejecting recommendations).

Public availability

A public summary of the report should be made available, which contains all the information which relates to the identification of HCVs or which is relevant to the public understanding of management decisions on HCVs. The summary report may exclude:

- commercially sensitive information which is not relevant to HCV identification or management, and
- sensitive information which could be misused by the public (e.g. nesting sites of rare birds, burial sites at risk from grave robbers etc).

A draft of the report with recommended HCV management actions should be open for consultation with a wider audience, for a defined period, and the final version should be publicly available.

Implementation

For high and very high impact operations, and particularly for conversion scenarios, there should be a consensus* between the company and the major stakeholders that the management steps described in the public document are adequate to maintain the HCVs within the assessed area, prior to any major implementation activity (e.g. road building, land preparation for agricultural conversion etc).

For medium/low impact operations, management activities should proceed as agreed between the local stakeholders, assessment team and company, once the HCV draft has been made public, so long as the options for monitoring and review of the management plan are documented and implemented.

* 'Consensus' is officially defined (in *ISO/IEC Guide 2*) as 'general agreement, characterised by the absence of sustained opposition to substantial issues by any important part of the concerned interests and by a process that involves seeking to take into account the views of all the parties concerned and to reconcile any conflicting arguments'

ANNEX 1

TERMS OF REFERENCE FOR HCV ASSESSMENT TEAM

All team members should meet the General Requirements and where specified, the additional specialist requirements as listed:

General requirements

- Applied conservation/social experience and practical field experience
- Appropriate background in one of the fields required for HCV assessment
- Local experience within the country or at least region is recommended
- Understanding of the 6 categories of HCVs, how they relate to each other, and how they relate to other principles in the standard being followed (e.g. FSC, RSPO standards, as applicable)
- Ability to relate the findings of HCV identification to management/monitoring decisions

Team leader (can also have a specialist role on the team)

- Demonstrated understanding of the HCVs and HCV experience
- Appropriate background in applied conservation (ecological or social experience)
- Demonstrated ability to synthesise a variety of data from desk research and field assessments
- Ability to reach workable consensus on management decisions (in the case of verification assessments, ability to understand the impact of management decisions on HCVs and for various stakeholders)
- Local experience within the country of the assessment is desirable, but not an absolute requirement.

Social expert

- Knowledge and practical field experience within the local context compulsory
- Be able to speak fluently in one or more relevant local languages
- Must be able to conduct field assessment independently of the HCV assessment team if required
- Knowledge of and practical experience in the use and application of participatory methods or Participatory Rural Assessment techniques

Biodiversity/ecology expert

- Practical experience in applied conservation biology
- Understanding of landscape conservation approach
- Some specialisation in ecology of important species groups is useful
- Understanding of GIS is ideal

GIS expert

- Ability to apply GIS techniques to conservation biology and community land use issues.
- Ability to incorporate results in real time and advise team on GIS methodology

ANNEX 2

THE CONSULTATION PROCESS

Preparation and planning stage

Consultation at this stage will mainly involve talking to the land manager, key experts and known local stakeholders. The purpose of consultation here is to find out relevant information about the current status of HCVs, identify gaps within the available data, verify information obtained from reports and literature searches, and identify possible threats to HCVs in the assessment area. This stage in the process also helps identify local stakeholders who cannot easily be contacted except by site visits (e.g. some local communities).

A list of stakeholders should be drawn up, with their required level of involvement, which depends on the needs of stakeholders and the relevant information they can provide the assessor.

Inform Stakeholders should be informed at an appropriate level that an HCV assessment is taking place, with a simple explanation of the process, outcomes and associated objectives if applicable (e.g. company undergoing sustainability certification). This stage also serves as a call to contribute to the HCV assessment process. The invitation to participate can be passive (e.g. an announcement in a local newspaper) or active (e.g. inviting stakeholders to attend a HCV information workshop). Some stakeholders are likely to need culturally sensitive treatment.

Consult The objective is to gather information from stakeholders and increase the assessor's understanding of the situation. Consultation can take the form of phone calls, email exchanges, meetings, informal questioning or even structured interviews with the range of stakeholders who can be accessed prior to a site visit.

Involve At the preparation and planning stage, local stakeholders can help identify information gaps and plan how these will be addressed during site visits.

Field-based HCV identification stage

Consultation at this stage will mainly involve local stakeholders including community representatives, local administration representatives, and directly affected parties. Qualified specialists, company management and operational staff should also participate. The purpose of consultation here is to verify the information gathered within the initial preparation and planning stage, gather new information, assess the strength or credibility of various claims, and look for opportunities to reduce conflicts resulting from decision making. This stage is a critical opportunity to improve the outcome of the HCV assessment.

Inform and consult with the stakeholders identified, as required by the circumstances. It is important to be very clear what the purpose of the consultation is and what can be expected from the outcome. Where it is necessary to consult with local communities that have little experience of this type of process then it is crucial to use competent specialists who understand local culture and language, are entirely neutral and can explain the process and outcomes clearly. Poorly planned or implemented consultation can be damaging to both the land manager and the community.

Involve For certain HCVs, the involvement of local stakeholders is necessary to identify and map the HCVs, e.g. local communities involved in mapping of resource areas and qualifying dependency on various forest resources. The team should define the HCVs that need involvement of stakeholders and prepare a methodology for collecting and analysing the results. In many cases this will need to be done in advance of a time-constrained 'HCV assessment visit' so consideration should be given to who will be involved in this process (team members or separate specialists) and when it will be undertaken (if it is team members then it may be useful to do the work immediately before the rest of the team arrive). It is important that when identifying the social HCVs, the results need to be verified and accepted by the majority of the community.

Management decision stage

Consultation should not stop at the identification stage. It is a key principle of the HCV process that consultation should be included in decision making and management. Consultation at this stage can involve local stakeholders directly affected by operations, experts who can advise on viable HCV management strategies, and other interested parties concerned about the implications of proposed management. In the case of conversion this is particularly important.

1 Inform and consult The results of the HCV identification and threat assessment processes should be presented to stakeholders to invite discussion. It is important to reach agreement on the location and status (as far as possible) of HCVs, before management and monitoring decisions are made.

2 Involve As management options are considered, it is important to involve stakeholders. This is most commonly done by seeking input on one or more proposals. It is important to ensure that all relevant stakeholders are consulted in appropriate ways. It may be possible to do this through public meetings or workshops for invited participants. Alternatively it may be necessary to visit different communities directly. Allowing a period for public comment on plans made publicly available on a website is also a useful approach. As always with consultation it is important to explicitly consider each comment or input received and make a documented public response setting out how the comment influenced the process. For very high impact operations this process of consultation may take some time as widely differing and strongly held views will need to be accommodated.

Monitoring stage

Consultation at this stage can help to determine whether or not management decisions made have been effective, or whether any alterations need to be made. This is particularly useful in regards to HCV 5 and 6, but may also be helpful in regards to monitoring of other HCVs

1 Inform and consult The results of any monitoring exercise should be made available to relevant stakeholders. This could be in order to help identify any potential issues or to suggest more effective means of gathering information.

2 Involve Where possible, direct stakeholders should be involved in monitoring activities. This can help to add to any data as well as to alert on any sudden changes in conditions (e.g. sudden spate of poaching; irregular floods or droughts that may affect community water resources).

ANNEX 3

GUIDANCE ON PLANNING

The team leader should include the following points in a planning checklist:

- 1** A written planning document should be drawn up, according to the scope of the assessment.
- 2** Time requirements for the assessment should be estimated and agreed, including days in the field, preparation time, and budget.
- 3** For external assessments a contract between the assessment team and the client should be in place. The contract should specify an agreement between assessors and the company on what information should remain confidential, and what should be in the public domain (see Section 6, Reporting).
- 4** The scope of the assessment should be clear: does it cover HCV identification only or does it include other advisory/support services for developing an HCV management plan (e.g. threat assessment and consultation functions)?
- 5** Peer review of final reports by one or more independent, objective and expert external reviewers is normally a requirement (Section 6).
- 6** Availability of team members and contractual arrangements are in place.
- 7** Any conflicts of interest between the team and land use manager are resolved prior to visits.
- 8** Logistical arrangements with the land use manager (travel, accommodation, permits).
- 9** A defined strategy for representative sampling of local communities (taking into account e.g. ethnic groups, language groups, gender, social status of representatives).
- 10** Access to local stakeholders is organised and timetabled, i.e.:
 - company managers
 - operational teams
 - representatives of local communities
 - local authorities.
- 11** Access to any data and documents identified as crucial for assessment, including the company's forest/land management plan.
- 12** Copies of *ProForest HCVF Toolkit* or national interpretations of HCVs, if available.
- 13** GIS mapping facilities and at least a working map to use in the field. Everyone should be working from the same map. This should be geographically accurate and incorporate elevation, Landsat data, plus other information if available.
- 14** Where appropriate, ensure that everyone involved in mapping has a GPS and is using the same coordinate system.
- 15** Documented decisions need to be made on what to prioritise (based on critical threats and known or suspected HCVs).
- 16** Agreed descriptions of biological habitats, using a common language. Use agreed methodologies, indicator species etc as short cuts to habitat description.
- 17** For field surveys of biodiversity (e.g. plants or birds) preparation should be adequate to identify taxa of concern to the maximum extent possible.
- 18** A defined spatial strategy for site visits and/or biological sampling, based on the map (strategic sampling of species, habitat types etc). Take into account topography and access (e.g. habitat assessment in mountains take about three times longer than in floodplains, due to variety of habitats and difficulty of access).
- 19** Ensure adequate transport to carry out the sampling plan. This needs to be communicated to the logistics manager well in advance, especially for very large concessions.
- 20** Adequate planning for temporal variability (e.g. seasonal variability in ecological phenomena, migration patterns etc); if time constraints do not allow adequate coverage of known issues, this should be followed up in monitoring plans.
- 21** Preparation of data sheets/questionnaires for conducting the assessment – using consistent terminology and highlighting key requirements. Particularly important for large scale assessments.

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First edition, July 2008

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