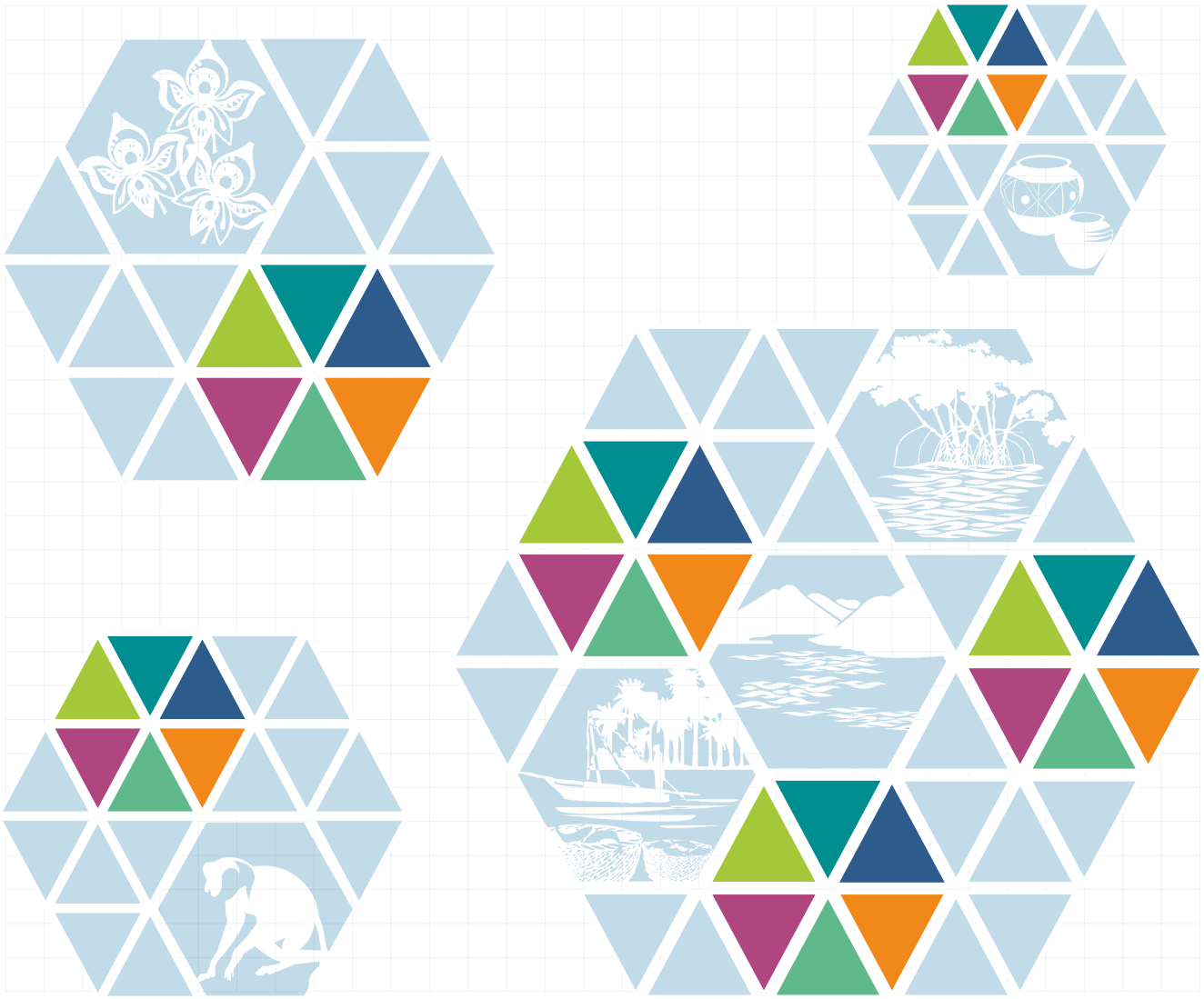
HCV RESOURCE NETWORK

High Conservation Value (HCV) Screening:

Guidance for identifying and prioritising action for HCVs as part of jurisdictional and landscape approaches

April 2019



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HCV RESOURCE NETWORK

About the HCV Network

The High Conservation Value (HCV) Network is an umbrella organisation that oversees the development and practical implementation of the HCV approach. It is a member-based organisation composed of NGOs, commodity producers, companies, certification schemes and conservation organisations who care about protecting outstanding environmental and social values in farming and forestry. Since its founding in 2005, the Network's governance structure has evolved from a Steering Group to a Management Committee elected by the Members. In 2015 the HCV Network was officially incorporated as a not-for-profit company under the name of HCV Network Limited.

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HCV Network Limited is a registered company in England and Wales (no. 9710578)

Purpose of this guidance document

The purpose of this guidance document is to introduce a methodology called HCV Screening. HCV screening is a desktop exercise that aims to characterise the environmental and social aspects of a jurisdiction or landscape, assess the likelihood that HCVs are present, consider threats to those HCVs and ultimately indicate which values are most urgent to attend to with follow-up actions and interventions. During the development of this guidance, input was gathered through discussions with practitioners, a workshop and webinars. The intention is that this guidance and methodology will be field tested. This could then lead to a future update enriched by practical examples or case studies.

This guidance applies to any context across different geographies, ecosystems and commodities. In some cases, it may be used as a good practice guide, whilst in other cases (e.g. jurisdictional certification) elements of the guidance could take on a more normative significance. Development of the guidance was funded by the Sustainable Agriculture Supply Chains and Standards Programme of the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and HCV Network Ltd. One of the reasons GIZ funded the development of this guidance is so that it can contribute to ongoing work in Kapuas Hulu, Indonesia (see Box 1), where the government and other stakeholders are committed to a sustainable jurisdictional initiative.

The target audience is members of the HCV screening team and stakeholders who are actively involved in the screening process and the wider project or initiative in which it is being used. This is likely to include government technical staff, NGOs, subject experts and consultants. See section 2.1.3 for more information about recommended qualifications for the screening team. HCV Network will prepare a condensed version of this document aimed at governments, companies, funders and policy makers.

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Acronyms

CBO	Community-based Organisation
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CR	Critically endangered (IUCN Red List)
EIA	Environmental Impact Assessment
EN	Endangered (IUCN Red List)
FPIC	Free Prior and Informed Consent
FSC	Forest Stewardship Council
GHG	Greenhouse gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GoI	Government of Indonesia
GPNP	Gunung Palung National Park (GPNP)
GTL	Gunung Tarak Landscape
GTPF	Gunung Tarak Protection Forest
HCV	High Conservation Value
HCS	High Carbon Stock
HCSA	High Carbon Stock Approach
IFL	Intact Forest Landscape
IBAT	Integrated Biodiversity Assessment Tool
IUCN	International Union for Conservation of Nature
KBA	Key Biodiversity Area
LCP	Landscape Conservation Plan
MU	Management unit
NGO	Non-governmental organisation
NI	National Interpretation
NTFP	Non-timber forest products
OPMU	Oil palm management units
RSPO	Roundtable on Sustainable Palm Oil
RTE	Rare, threatened and endangered
UNDP	United Nations Development Programme
Vu	Vulnerable (IUCN Red List)
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WCS	Wildlife Conservation Society
WRI	World Resources Institute
WWF	World Wide Fund for Nature

1. How the HCV approach can contribute to landscape and jurisdictional initiatives

1.1 HCV approach

The High Conservation Value (HCV) approach was created more than 20 years ago[1] as a tool and framework to protect important environmental and social values in Forest Stewardship Council (FSC) certified forests. It has since expanded to other commodities[2] and ecosystems, so that over the last decade or so maintaining HCVs has become a key component of responsible production and resource use. The HCV approach is based on six values (see Figure 1), with HCV 1, 2 and 3 representing environmental values that are significant at national or global reference scales, whereas HCV 4, 5 and 6 are social and natural resource values identified through engagement and consultation with local communities. The HCV Network is a member-based organisation dedicated to the stewardship of the HCV approach. Consistent application of the HCV approach across regions and sectors requires that everyone uses the same set of HCV definitions and follows the same general approach. As such, one of the roles of the HCV Network is to develop guidance on how to apply the HCV approach.

Figure 1 Full definitions of the six HCV categories.

HCV 1

Species diversity

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

HCV 2

Landscape-level ecosystems, ecosystem mosaics and IFL

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

HCV 3

Ecosystems and habitats

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

HCV 4

Ecosystem services

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

HCV 5

Community needs

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

HCV 6

Cultural values

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

1.2 Landscape and jurisdictional approaches

Voluntary certification has been quite successful in promoting responsible production of commodities like timber and palm oil (illustrated e.g. by the market shares of FSC and Roundtable on Sustainable Palm Oil (RSPO) of global production). It has acted both directly by driving positive changes at the management unit (MU) level, and indirectly by setting best practice examples for sectors and legislators. But, voluntary efforts by a few actors operating in isolated MUs are not enough by themselves to effectively address large scale complex challenges such as deforestation, biodiversity loss and threats to livelihoods and cultural values that have multiple drivers acting over large areas and involving many different actors. Increasingly, governments, foundations, NGOs and companies are looking to landscape or jurisdictional approaches to overcome some of these challenges.

Landscapes can be defined by natural characteristics (e.g. ecosystems, major vegetation types, watersheds, biomes or ecoregions) or by social characteristics (e.g. legal, political, administrative or cultural boundaries). A **landscape approach** is "a framework to integrate policy and practice for multiple [and often] competing land uses through the implementation of adaptive and integrated management systems" (Reed et al. 2016). Integrated landscape-level management is not a new concept, but rather one that has evolved and changed during attempts to integrate social and economic development with biodiversity conservation and, more recently, climate change mitigation (Reed et al. 2016)[3]. Any actor or group of actors can initiate a landscape approach. Typically, it involves collation of information (e.g. on land and resource use and rights, habitat and species distributions, and environmental and social values), multi-stakeholder consultation, collaboration and consensus-building and the development of governance institutions and mechanisms for application and monitoring. According to Reed et al. (2016), because of the dynamic nature of landscapes, there is no defined end point to a landscape approach, rather it is an iterative process of negotiation, trial and adaptation.

A **jurisdictional approach** is a type of landscape approach that is applied to a jurisdictional (legal administrative) unit and in which the relevant jurisdictional (government) authority plays a major role. A jurisdictional unit may be anything from a municipality to a district, a province, a state or a whole country. Jurisdictional approaches require committed, actively engaged authorities. This creates opportunities for more effective land use planning, formal recognition of land rights, compensation, legislation, law enforcement, stakeholder engagement and redress. It is aimed at overcoming the distinction between 'voluntary' and 'compulsory'; authorities therefore need to consider how to enforce compliance with an agreed framework, set of objectives, standard, etc. on parties that are not e.g. members of voluntary standards or currently committed to sustainable practices. Consideration is needed on how to make jurisdictional approaches work where legislation may have previously failed to prevent social and environmental harms. There may also be internal challenges from the interplay between authorities at different levels of government, in different departments, and often with differing interests or objectives.

Throughout this document the terms landscape and jurisdiction are used together or interchangeably because HCV screening could be used in a landscape encompassing multiple jurisdictions, or for a single jurisdiction. But even where the HCV approach is used for a single jurisdiction, one of the fundamental tenets of the HCV approach is that it considers the relevant ecological and social landscape. Therefore, if jurisdictional boundaries cut an arbitrary line across a habitat, watershed or village forest territory – it would be important to consider the functional landscape beyond jurisdictional boundaries for long term HCV maintenance.

1.3 HCV inputs to land use planning and management

The HCV approach is a useful tool and framework to use as part of land use planning. Proper use of the HCV approach requires consideration of all six values through a combination of desk study, fieldwork and stakeholder consultation and participation. As such, the HCV approach is intended to be used in combination with other instruments and safeguards in the context of good governance and respect for fundamental principles of responsible land and resource use including:

- Compliance with applicable international, national and local laws;
- Recognition of demonstrable rights of all parties to use the land or water, including the legal and customary rights of local communities and indigenous peoples;
- Recognition that use or management of the land or water by other actors does not diminish the legal or customary rights, of indigenous peoples, local communities or other users, without their Free Prior and Informed Consent (FPIC);
- Commitment that areas necessary at the site and landscape level to maintain or enhance HCVs are managed responsibly and are not degraded or destroyed; and
- Commitment that values which do not meet HCV criteria are also managed responsibly.

The HCV approach has been used at a landscape scale, to some degree, for over a decade, though in recent years with the uptake of landscape and jurisdictional initiatives for sustainability, the application of the HCV approach at larger scales has become increasingly demanded. There is growing interest from governments and multilateral institutions (e.g. GIZ, UNDP) to commission and/or support and facilitate large scale application of the HCV approach to guide land use planning, sustainable sourcing, legislative and regulatory measures, etc. (see Box 1).

1

UNDP - Global

The United Nations Development Programme (UNDP) is supporting several projects that use the HCV approach as part of integrated landscape management. Examples include:

- In Lao PDR: support for the adoption of guidelines created by the HCV Network for identifying HCVs, including interpreting the meaning of the six HCV categories in the context of the Lao PDR, and developing a broad consensus on the definitions. Once this consensus has been reached, the project will work with relevant stakeholders to incorporate the HCV definitions into relevant policies and regulations governing forest resources management, as well as establishing a requirement that Conservation Forests (protected areas) and Protection Forests incorporate the actions required under different HCV designations into their management plans and day-to-day operations.
- Myanmar Ridge to Reef: secure the long-term protection of Key Biodiversity Areas in Tanintharyi through integrated planning and management at land and seascape scales, using the HCV approach to identify and safeguard the natural capital upon which local communities are to a greater or lesser extent dependent upon.
- Pelalawan District, Riau Province: contribute to the development of spatial plans aimed at ensuring commodity production and expansion within appropriate areas, as well as the reduction and eventual elimination of deforestation associated with commodity expansion, beginning with HCV and High Carbon Stock (HCS) forest areas.
- Identifying, assessing, delineating and mapping HCV areas and developing management recommendations/plans for them in the SECURE Himalaya project landscapes in selected districts of Jammu and Kashmir, Himachal Pradesh, Uttarakhand and Sikkim, India.

Africa Biodiversity Collaborative Group - Republic of Congo

From 2015-2016 in Republic of Congo (RoC), Wildlife Conservation Society (WCS) led a consortium including World Wide Fund for Nature (WWF) and World Resources Institute (WRI) in a spatial planning exercise covering the northern forest zone of the RoC, designed to identify priority areas for conservation at the jurisdictional scale. The analysis focused on animal biodiversity and ecosystems (HCVs 1-3). RoC is committed to a jurisdictional REDD+ programme that is being designed across the two Departements of Sangha and Likouala, covering around 10 million ha of Congo Basin forest. The project was designed to support implementation of the emissions reduction programme in northern Congo by providing data on the spatial distribution of biodiversity values and how these overlap with carbon stocks.

The consortium consolidated survey data from 16 separate wildlife surveys conducted in the landscape between 2008 and 2016. Species density models were produced from this survey data to predict species numbers for areas that had not been surveyed. This was combined with a forest habitat typology derived from work by CIRAD and University of Leeds, and a novel metric of human footprint (The Human Pressure Index) developed by WRI. Above-ground biomass data was provided by NASA, from analysis conducted for the emissions reduction programme. This was used to measure forest condition by comparing biomass measurement within the same habitat types.

The spatial planning software Zonation was used to highlight areas that had overlapping values of high species densities, high biomass and good forest condition. Priority areas were then identified for each forest type considering connectivity to existing protected areas where possible. The resulting maps of conservation priority zones are analogous to a probability of presence map of HCVs 1 and 2 at the landscape scale. It can be used to identify new potential protected areas, and to guide forest management decisions such as the establishment of conservation zones. It is hoped the maps can also be used to increase the effectiveness of results-based carbon payments as the high priority areas represent win-win zones for biodiversity and climate.

USAID LESTARI - Papua

USAID LESTARI has experience applying the HCV approach at the landscape level as an entry point for improving spatial planning in Mappi and Bouven Digoel districts, Papua, Indonesia. LESTARI supports the Government of Indonesia (GoI) to reduce greenhouse gas (GHG) emissions and conserve biodiversity in carbon rich and biologically significant forest and mangrove ecosystems. LESTARI applies the landscape approach to reduce GHG emissions, integrating forest and peatland conservation with low emissions development achieved through improved land use governance, enhanced protected areas management and protection of key species, sustainable private sector and industry practices, and expanded constituencies for conservation among diverse stakeholders in the landscape in which it works.

The core initiative in the Mappi - Bouven Digoel landscape was to rationalise the spatial plans that were heavily skewed towards development of oil palm plantations and extractive wood industries, and significantly lacking in conservation areas. A landscape scale HCV assessment was implemented to identify priority areas for conservation of biodiversity, environmental services, community needs and cultural values. In-depth HCV assessments over an area in excess of 4.5 million ha would have been prohibitively time consuming and costly. Therefore, indicative HCV 1-4 were identified through mapping land cover from existing secondary data augmented with up-to-date satellite images, and then combined with field assessments with experts from several Papuan Universities, WWF-Indonesia, local government and non-government partners, in key locations chosen for their ecosystem potential and level of threat from proposed development. HCV 5 and 6 were indicatively identified throughout the districts by intensive participatory mapping and group discussions over several months with representatives of all indigenous communities that claim traditional rights. The results of the indicative landscape-scale HCV identification were then thoroughly consulted at the district level through inclusive, participatory, stakeholder consultations for inputs and corrections.

The landscape HCV assessment was subsequently used by multi-stakeholder forums facilitated by the project, to identify areas of potential "sustainable development conflicts" and develop solutions to address these issues within a "Landscape Conservation Plan" (LCP). The LCP analysed threats to HCVs within the landscape and assigned priorities for conservation based on these levels of value and threat. The LCP also elaborated strategies and focus of management to maintain and enhance important values within the landscapes. Through the development of the LCPs for Mappi and Bouven Digoel, the understanding and justification for conservation of priority HCV areas within the districts was greatly enhanced.

With support from local government agencies as well as local NGOs, LCPs that prioritised areas for conservation were used as substantive input during the Strategic Environmental Assessments and the Spatial Planning for the districts. Through this quite lengthy process with its origins firmly planted in landscape-scale HCV assessments (i.e. screening), over 1.5 million ha of important habitat and forest in Papua is now proposed for conservation or improved forest management with full support from local stakeholders and government under the district spatial plans, and will therefore not be available for plantations or other destructive development in the future.

www.lestari-indonesia.org/en/lestari-project/

Tropenbos Indonesia - West Kalimantan

Tropenbos Indonesia has been working on large-scale conservation and development priorities in Gunung Tarak Landscape (GTL) based on the HCV approach. They support civil society organisations and communities to coordinate their strategies, and influence government and oil palm companies to establish, conserve and manage HCV areas.

GTL covers 506,000 ha of lowland ecosystems located in Ketapang and Kayong Utara districts, West Kalimantan, Indonesia, where land use change has triggered negative consequences for ecologically important areas including fragmentation. Tropenbos Indonesia analysed HCV changes

in the landscape for 2000-2016 and then focused on HCV losses that occurred in sixteen oil palm management units (OPMUs) in the landscape.

The findings demonstrate that HCV area losses between 2000 and 2016 were mainly due to loss of forests, which were heavily logged and later converted into agro-commodity production areas, mainly oil palm plantations. HCV areas in 2000 (before large scale expansion of OPMUs took place) covered moderate proportions inside OPMUs; but after 16 years, the maintenance of HCV areas was low overall. In 2016, large HCV areas remained in only four forest ecosystems: Gunung Palung National Park (GPNP), Gunung Tarak Protection Forest (GTPF), and parts of Sungai Putri and Pematang Gadung peat-swamp forests. Some OPMUs seemed to demonstrate efforts in conservation and/or commitment to sustainable practices because they maintained relatively larger areas of HCVs compared to the rest.

Nevertheless, the fragmentation of HCV areas in GTL resulted in fragmentation and isolation in some parts of the landscape and across some OPMUs. The identification of landscape HCV areas served as an initial basis for a strategy to restore connections between fragmented forest areas and increase the viability of plant and animal populations. From the identified landscape HCV areas in GTL, they found that existence of gaps between the large ecosystems of GPNP, GTPF and Sungai Putri peat-swamp forest indicated that development of ecological corridors are an urgent need.

www.tropenbos.org/resources/publications/

GIZ - Kapuas Hulu, West Kalimantan

Commissioned by the German Ministry for Economic Cooperation and Development, GIZ is collaborating with the jurisdiction of Kapuas Hulu in West-Kalimantan, Indonesia, towards sustainable agricultural production that does not negatively impact forests and other valuable ecosystems. Palm oil and natural rubber are the two largest forest-risk commodities with supply chain links to the German market. In partnership with the local district government, GIZ is applying a cross-commodity, jurisdictional approach to improve sustainability within the district and along the supply chain. In 2017 a multi-stakeholder platform was created at district level, bringing together local government, private sector and civil society to address several sustainability issues. Within this platform, various stakeholders identify sustainability risks and develop potential solutions to address these. As part of this work, GIZ commissioned a mapping study of the supply shed that shows the different kinds of land cover, land uses and risks to forests in the jurisdiction. This will be built upon with further ground work and stakeholder engagement to help advance the progress towards implementation of a sustainable jurisdictional approach in Kapuas Hulu.

These projects and others have based their work on HCV Network guidance documents and HCV National Interpretations (NIs). These guidance documents are valuable and useful, but they were mainly developed with a smaller scale, more targeted application of the HCV approach in mind. Scaling up the HCV identification process, requires consideration of different factors and it can therefore benefit from guiding principles and a framework methodology to provide some consistency to the increasing use of the approach in landscapes and jurisdictions. As such, it is an opportune time to publish this guidance document on HCV screening.

1.4 HCV Screening

HCV screening is largely a remote desktop exercise that aims to characterise the environmental and social aspects of a jurisdiction or landscape, assess the likelihood that HCVs are present, consider threats to those HCVs and ultimately indicate which values are most urgent to attend to with follow-up actions and interventions. HCV screening consists of six main steps, as summarised in Figure 2. For steps 1 and 2, it is important to clearly define where and why the screening will take place, and then to gather the best available information to use as a basis for steps 3 and 4. Steps 3 and 4 consist of estimating the likelihood or probability that HCVs are present and how they might be threatened. Step 5 takes the combined results of the likelihood of HCVs and the severity of threats to produce a risk assessment rating or urgency level. The results of the risk assessment are then analysed and used to prioritise and plan next steps in step 6.

In other words, the results of HCV screening provide a way to prioritise action in large scale, complex settings - guiding local assessments and planning. Screening is not the same as a detailed HCV assessment for an entire landscape or jurisdiction (see Table 1), but it can highlight important values and areas and prompt stakeholder discussion about long term sustainability. Then stakeholders can determine how screening results and their implications would fit into larger plans for the jurisdiction or landscape, and what resources may be required to move forward.

Though HCV screening is meant to be desktop exercise, depending on the context, the objectives and the resources available, varying degrees of effort can be invested in data collection, mapping, stakeholder consultation and engagement. The more effort invested during the screening exercise, means that results will be more detailed, and the screening team will be better able to more accurately recommend management interventions, engagement strategies and other practical next steps.

The key to remember is that screening results (especially if 100% desktop) must not be used as a shortcut to by-pass necessary local-level field work, consultation and FPIC. Instead, HCV screening is meant to help prioritise next steps and to streamline and harmonise subsequent field-level work. Screening should be used in combination with site-level activities and within a wider jurisdictional or landscape setting (see Figure 3) – what is important is that the totality of landscape/jurisdictional and site work is robust (in terms of data) and legitimate (in terms of meaningful participation and FPIC).

Figure 2 Summary table showing the steps of an HCV screening. Detailed description of the screening process is provided in section 2.

Step 1

Define objectives and scope

Define objectives of the screening exercise and describe where the screening will take place. Indicate whether and how the screening exercise will be complemented by other activities (e.g. consultation, field visits) either during and/or after the screening.

Step 2

Gather information for HCV analysis

Use HCV NI or collaborate with HCV NI processes underway. Gather available information including spatial data to begin compiling lists of potential HCVs. Available information is used to define probability classes and identify threats.

Step 3

Estimate probability of HCV presence

Define probability classes for HCVs and assign probability classes to each HCV based on information/data analysed. Prepare maps (where possible) to show how HCV probability is distributed throughout the landscape or jurisdiction.

Step 4

Assign threat levels

Identify threats and consider their impact on HCVs to arrive at threat levels. Prepare maps (where possible) to show how threats are distributed throughout the landscape or jurisdiction.

Step 5

Risk assessment

The probability of presence and threat level for each HCV are combined to produce an urgency level for each HCV in different parts of the landscape or jurisdiction.

Step 6

Prioritise next steps

Reporting will characterise the overall landscape or jurisdiction, present results of the probability and threats analyses and the risk assessment and indicate which HCVs and data gaps are most urgent to attend to.

Box 2: Scenarios where HCV Screening can be used

Land use planning and management

Land use planning should involve a wide group of stakeholders – including relevant authorities – from the beginning, and include discussions on how outcomes are implemented, plans for site level follow up, and potential instruments to ensure compliance with laws, policies, management plans, etc. HCV screening can inform and guide land use planning, by compiling social and environmental information to help identify priority values for conservation and livelihoods, and to plan for intervention and engagement. The outputs of an HCV screening would also be useful for field-level assessments including Environmental Impact Assessments (EIA), Strategic Environmental Assessments and HCV-HCSA assessments.

Jurisdictional certification

Commodity certification schemes usually rest on certification of individual MUs (or groups of MUs). Where standards require HCV assessments, these are normally commissioned (or conducted) separately for each MU. However, as neighbouring MUs usually share much the same environmental, social and wider landscape context, separate HCV assessments inevitably generate a significant amount of overlap and repetition and incur higher costs. To an extent, jointly commissioned HCV landscape screenings could reduce duplication and create cost-effective frameworks for simpler, streamlined follow up assessments at the MU level. Such cooperative or centralised screening could be initiated by groups of concessionaires, by government or by certification schemes to achieve consistency and benefits of scale. This could be particularly useful when one company owns adjacent plantations, or multiple plantations in a larger landscape.

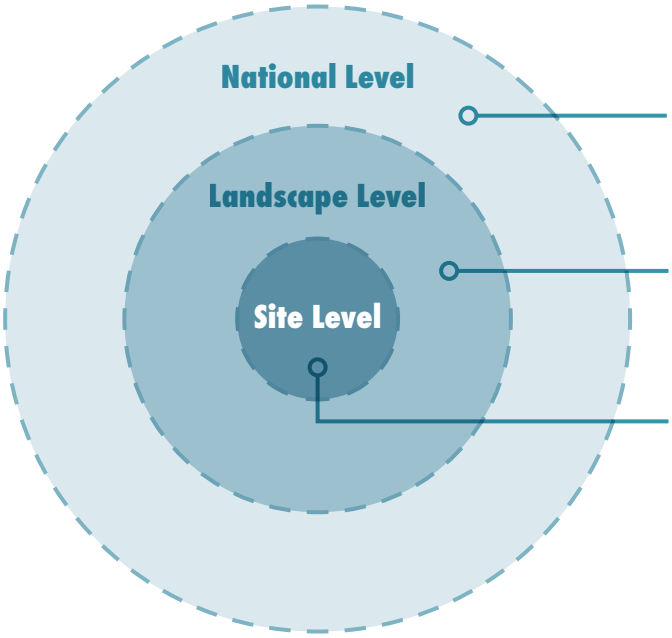
Supply chain risk management

Jurisdictional authorities or companies may commit to no deforestation, no destruction of peat and no exploitation of local communities, and the six HCV definitions overlap significantly with these concepts. HCVs represent values widely agreed to be of utmost environmental and social significance. As such, HCVs (together with basic requirements related to tenure, rights and FPIC) may form minimum responsibility criteria separating ‘acceptable’ from ‘unacceptable’ produce, thereby allowing e.g. smallholders to enter supply chains and gradually improve their practices to meet more stringent production requirements. HCV screening may serve as a first filter to identify values and areas that need local level attention and support to reduce and mitigate risks related to non-compliances with such minimum requirements.

1.5 HCV inputs to sustainable landscapes

Proper implementation of the HCV approach across a landscape or jurisdiction is best considered as a combination of efforts at the national, landscape/jurisdictional and site level that provide a basis for maintaining HCVs over time. This section describes how HCV screening can benefit from or contribute to HCV National Interpretations (NI), and compares how identification, management and monitoring of HCVs differs between site and landscape level.

Figure 3 This figure illustrates how the HCV Approach can be nested at different levels from national, to landscape and site level.



Available information on national conservation and livelihoods priorities will provide useful inputs to screening. National commitments or priorities (e.g. policies and land use planning) can influence work at landscape and jurisdictional scales.

HCV Screening draws on existing national and sub-national information to prioritise HCVs in the landscape. Screening results will determine next steps for action. Screening activities provide an opportunity to engage with stakeholders in the landscape.

Site level activities may include detailed HCV assessments (which should be streamlined by drawing on screening results), HCV management and monitoring activities, integration of HCV approach with other initiatives, use of HCV indicators to monitor sustainability claims, etc. Depending on the size and heterogeneity of the landscape, there may be many different types of activities or interventions.

1.5.1 National HCV interpretations and frameworks

HCVs apply worldwide, irrespective of ecosystem or production context. Consequently, HCV definitions are the same for all users. However, the formulations are generic and brief, and to be operational in the field the definitions need to be interpreted in the national or subnational context. HCV NIs or Toolkits interpret the HCV global definitions in a way that makes sense in the national context. Good quality NIs should include data sources and may also include relevant proxies and thresholds (e.g. habitat sizes or species population numbers). Where there are no HCV NIs, assessors must use the global guidance and interpret the definitions on a case by case basis. However, nationally agreed and recognised NIs are key to enable more standardised and cost- effective HCV assessments. Jurisdictional authorities or funding agencies could insist that an HCV NI is a basis for HCV screening – or that screening feeds back into updating and improving an existing NI. The main task of the NI working group is to interpret the global HCV definitions and agree on what constitute HCVs in the national context. Refer to HCV Network guidance for more details on what the working group needs to do.

National FSC standards for forest management, national FSC frameworks (FSC equivalents of HCV NIs) and FSC risk assessments for Controlled Wood should also be consulted during the screening process. These documents may contain lists, examples and maps of likely HCVs. FSC standards are particularly authoritative as they normally represent the outcomes of national stakeholder processes and working groups. However, FSC's materials focus on forests and forestry, so interpretations linked to other ecosystems and land use contexts may not be addressed.

1.5.2 Comparison with site-level identification

In general, the methods for HCV assessments, outlined in the Common Guidance (2013) and HCV Network manuals, are designed for use at the site level. HCV assessments rely on the use of secondary information, primary fieldwork and stakeholder consultation to identify HCVs and provide management and monitoring recommendations. Unlike an HCV screening, that is expected to focus on the probability of HCV presence, an HCV assessment strives to definitively confirm the presence or absence of HCVs whenever possible. To better illustrate this, Table 1 compares site-level HCV assessments with HCV screening.

Table 1 Comparison of site level HCV assessment methods and activities with HCV screening for a landscape or jurisdiction.

This table is only indicative, to show how the level of detail (especially for field work and consultation) will be greater for a site level HCV assessment compared to screening. However, in practice projects could combine desktop screening with some fieldwork and consultation to arrive at more detailed results and recommendations.

	HCV Screening for a landscape or jurisdiction	Site level HCV assessment
Scope or size of the area	Larger scales (e.g. districts, provinces, landscapes) with more types of land cover and land uses to consider, possibly associated with a broader range of ecosystems and diversity of cultures and livelihood types.	Assessment takes place at the management unit (MU) level (e.g. plantation, concession, permit area) or possibly in a smallholding.
Data resolution	Likely to have coarser data resolution and more reliance on proxies. Social and cultural data will be more general and coarser because there is no (or less) detailed fieldwork or participatory mapping.	Expect much finer resolution of data to be available. Some data will come from primary fieldwork by assessment team.
Consideration of the "wider landscape"	The scope of the screening includes an entire landscape or jurisdiction. Proximity and mobility of values and threats identified during the screening may influence and may be influenced by factors outside of the landscape or jurisdiction. These should be considered during the general characterisation of the landscape.	Some HCVs are present at the landscape level itself (e.g. landscape level ecosystems), 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). The key social and biological features of the wider landscape should be clearly described.
Expert consultation	Used to identify sources of information, define indicators and probability classes and to help with interpretation of results.	Used to identify sources of information and to help with interpretation of results.
Fieldwork	Fieldwork is not necessarily conducted for the screening, but pre-existing field data can be included. However, if resources allow, projects can opt to supplement/complement screening with fieldwork, wider consultation and/or a scoping study.	Floral and faunal surveys, social studies, participatory mapping, etc.
Stakeholder consultation	Consultation takes place at the national and landscape/jurisdictional unit e.g. contacting relevant stakeholders (e.g. local NGOs, CBOs or government) through phone and face-to-face interviews. Consultation must be well documented. Unlikely to include local-level stakeholder consultation.	A necessary component of the assessment – including local level consultation. Consultation must be well documented.

	HCV Screening for a landscape or jurisdiction	Site level HCV assessment
Identification of HCVs 1-4	Rather than identifying specific environmental HCVs, it may only be proxies that are available. HCVs 1-4 lend themselves better to remote identification techniques. HCV screening would rely on remote sensing, secondary data, and qualitative and quantitative data collected through consultation with relevant landscape-level actors and institutions.	HCVs are identified through primary and secondary data and identification is justified based on evidence.
Identification of HCVs 5 & 6	Screening focuses on gathering contextual information and predicting where HCV 5 and 6 (as a class of values) are likely to occur – rather than identifying specific values and locations. Rather than direct engagement with local people – interviews likely to be held with social experts at national level or jurisdictional unit. Use of pre-existing qualitative and quantitative data, for example, government statistics, population distribution, and information available on local cultures, livelihoods, natural resource use, customary tenure systems, and cultural assets. Previous government and non-government research and reports from social and cultural organisations and academic sources may be used.	HCVs are identified through primary and secondary data and identification is justified based on evidence. Identification of HCV 5 and 6 must be participatory, with FPIC of local people.
Management & monitoring recommendations	Depending on the level of detail of the available data, some management priorities can be identified e.g. threats to be mitigated, stake- holders to engage with, field work to conduct, etc. Management and monitoring recommendations that arise as part of the screening could be included in the screening report, however planning would not happen as part of a screening exercise, but rather as a follow-up step after HCV screening.	Management is the responsibility of the grower, company, farmer, etc. – and mainly applies to the MU. Likely to involve a less diverse group of stakeholders (company, local communities, and possibly government) and focus on much smaller areas within and adjacent to the site. Often relies on routine site visits to HCV areas. Usually led by the company, ideally with input and assistance from communities.

1.5.3 Implementation – maintenance of HCVs in the landscape

The aim of the HCV approach is to maintain values over time through adaptive management and monitoring[4]. At the site-level, a producer company or farmer, for example is responsible for the development and implementation of HCV management and monitoring plans which must clearly show where HCVs occur and how they will be maintained over time. At a larger scale – for a landscape or jurisdiction, implementation of policies, legislation and integrated management plans will ultimately be the responsibility of jurisdictional authorities or another party or parties who have responsibility for the area. Each management intervention should be accompanied by monitoring and enforcement to ensure that it achieves its objectives, including documentation and evaluation of outcomes that can then inform adaptive management systems to improve interventions that do not effectively maintain HCVs. If a jurisdictional authority or other actor wanted to claim that it is maintaining HCVs in a landscape or jurisdiction, this could be evaluated and verified against a set of indicators including indicators for HCV maintenance, but also indicators of progress and achievement towards project objectives. Development of indicators and HCV management and monitoring should be conducted with stakeholder participation.

2. Steps of an HCV screening exercise

This section is the core of this guidance document, explaining the HCV screening process in detail.

2.1 Step 1: Define objective(s) and scope

2.1.1 Objectives

Identify and define the objective(s) of the screening exercise.

- Who is initiating or commissioning the screening, and for what purpose(s)? (For examples see pages Box 2).
- How will the outcome be used, and by whom?
- Will the screening be complemented by other processes or activities, such as:
  - HCV NI processes
  - Fieldwork
  - Local-level consultation

2.1.2 Scope

Clearly describe (and show on a map) the geographical boundaries of the screening exercise including the boundaries of the jurisdiction or landscape and subunits (e.g. smaller administrative units such as districts) where relevant. Finding the right balance between the size of the target landscape/jurisdiction, the geographical resolution of the data and the objectives of the screening is an important part of the planning. In principle, there is no upper size limit for screening; however, it is important to have realistic expectations on the relations between the size of the screening area, the efforts involved, and the level of detail of the results. For small jurisdictions with abundant resources one may be able to do a detailed HCV assessment of the whole jurisdiction, in others screening may be used alone to identify coarse-level priorities, requiring significant additional local-level work to underpin management and monitoring recommendations and planning.

2.1.3 The screening team

Screening must be coordinated by a team leader with relevant HCV expertise and experience, working with a team of social and environmental experts, and with partners in the wider landscape/jurisdiction. It is preferable that the consultants are local to the country (subject to availability of suitably skilled personnel). Necessary skills and experience in the team include:

- In-country expertise and ideally, knowledge of, and familiarity with, the area concerned
- Good working knowledge of the HCV approach
- Ability to communicate in the national language and local languages
- GIS expertise
- Geographically relevant ecological experience, good understanding of threats and management practices, and good knowledge of principles of landscape ecology and conservation land-use planning
- Qualitative social science expertise (for example from the disciplines of anthropology or development studies), familiarity with local cultures including customary land tenure and use systems and local livelihoods, and skills and experience related to community engagement, participatory mapping and assessment approaches, and the concept of FPIC

2.1.4 Stakeholder engagement

During the screening exercise, the team must plan and carry out stakeholder engagement activities. Because it is largely a remote desk-top exercise, the methods used for stakeholder engagement may be phone and in-person interviews and possibly group discussions or meetings. Consultation will normally be with government authorities, social and environmental NGO staff and other experts, and where possible, representatives from landscape-level CBOs or indigenous organisations. There may be opportunities for members of the screening team to visit jurisdictional authorities and others for in-person interviews or meetings, but this is not required as part of screening. It is important that the screening team presents the screening process to stakeholders with a standard explanation that all team members use to describe the who, what, why, etc. This could help prevent misunderstanding and conflicts, especially where people might feel that they should have been involved or informed earlier or might have expectations for benefits or involvement. This engagement process can also serve to prepare the ground for a more comprehensive subsequent multi-stakeholder planning process, informed by the screening results.

Box 3 Stakeholders to engage with during HCV screening

3

- Relevant national or regional government ministries
- Social NGOs and CBOs, including representative indigenous and community organisations
- Academics and local consultants with relevant environmental and social expertise
- Experts involved in HCV NI elaboration

It is important to document stakeholder engagement including e.g.

- Name, organisation, expertise
- Category of stakeholder (e.g. government, NGO, CBO, biologist, social expert)
- Information shared and sought (e.g. did the team consult on data layers, a species list, the location of human settlements, social context?)
- Concerns raised and suggestions made

Expert consultation

The level of consultation with experts will depend in part on the existence and quality of an HCV NI. In the absence of an HCV NI, more consultation effort will be required to identify HCV indicators, relevant datasets and subsequently to define probability classes (see section 2.3).

What about local consultation?

Strictly speaking, local consultation is not possible during a relatively brief (compared to ground level assessments with fieldwork and consultation) and remote HCV screening exercise. What this means, is that the results of the HCV screening are insufficient and inappropriate a basis for issuing all specific recommendations on HCV management and monitoring for all six HCV categories. Local consultation and community engagement are integral parts of the process of identifying social HCVs, identifying threats to those HCVs and setting priorities for their management and conservation. It could be useful to take a nested approach to consultation; whereby consultation at the jurisdictional unit or landscape is subsequently followed (after the screening) by local level consultation and FPIC. Screening teams have flexibility to do more consultation in situations where time and resources allow, so facilitating the subsequent follow up.

2.2 Step 2: Gather information for analysis

Once the geographic scope of the screening exercise is clear, the team must consider what kinds of HCVs might be present in the jurisdiction or landscape. The screening team should rely on national and subnational HCV interpretations and frameworks, relevant scientific data and expert knowledge. The team should check to see if an HCV NI or FSC national framework is available, because they are likely to list nationally relevant indicators for each HCV. As these materials vary in their publication date and level of detail, one needs to identify what components can be directly used for the screening, and what needs to be improved or elaborated. This may include assessing the level of detail of interpretation, the accuracy of data layers including vegetation and land use maps, and consulting the experts involved in developing those documents. The Common Guidance for HCV Identification (2013) also lists potential indicators for HCVs. As explained in section 1.5.1, if there is no NI for the country where the screening team is working, it is strongly recommended that an NI process be initiated as a complementary activity to the screening exercise.

Available data may not allow for comparable quality of analyses of all HCVs, and where there is little information, documenting what is unknown or uncertain will be an important output of the screening exercise. Information gaps will indicate where more data should be collected in the future, or how the precautionary approach (see Box 4) should be invoked.

Table 2 provides examples of useful data types and data sources which are relevant to the HCV definitions. Some of the examples are HCVs in their own right (e.g. IFLs), whereas others would be indicators of possible HCV presence (e.g. Key Biodiversity Area (KBA) or the location of traditional and/or subsistence-based communities).

Deciding on indicators for each HCV and analysing the available data will enable the screening team to both define probability classes and assign probability classes to each potential HCV.

Table 2 Example of information/data sources to be used during an HCV screening.

Environmental information	

• IUCN species range maps
• National protected species lists
• CITES Appendix I and II Listed species
• Threatened ecosystems
• Intact Forest Landscapes
• Endemic hotspots
• Nationally or regionally recognised large intact ecosystems
• Protected Areas
• Key Biodiversity Areas (e.g. Important Bird Areas, Important Plant Areas, Alliance for Zero Extinction sites)
• Ramsar sites (internationally important wetlands)
• UNESCO World Heritage sites
• Global ecosystem data sets e.g.
  • mangroves[5]
  • tropical dry forests[6]
  • wetlands and waterbodies[7]
  • Hansen *et al.* forest cover data[8]
  • dryland ecosystems[9]
	• UNEP WCMC Critical Habitat screening map[10] for marine and terrestrial environment
	• Digital Elevation Models[11]
	• National soil maps
	• Water maps; catchments, rivers and hydrology maps
	• Global Forest Watch
	• Integrated Biodiversity Assessment Tool (IBAT) – up-to-date maps of PAs, KBAs, IUCN Red-listed species range maps **https://conservation.ibat-alliance.org/**
	• **https://earthexplorer.usgs.gov/**

General information	
• HCV NI • Other national HCV frameworks (e.g. FSC) • Past HCV assessments • EIAs and Strategic EIAs	• Recent national or regional land cover maps, verifying through consultation whether the mapped areas are still valid if the maps are not recent (e.g. >2 years old)

Social information

- Population censuses
- Maps of human settlements
- Socioeconomic reports
- SIAs
- Maps of linguistic distribution (e.g. ethnologue, terralingua)
- Recent research and reports
- Results of prior participatory map-ping
- UNESCO World Heritage sites
- Distribution of different ethnic groups
- Location and presence of traditional and/or subsistence-based communities
- Titled indigenous lands and documented customary lands and resource use areas
- Designated areas for communal/subsistence use (such as community or communal reserves, extractive reserves, community forests, community conservation areas etc.)
- Global Platform of Indigenous and Community Lands: **http://www.landmarkmap.org/**
- UNESCO Atlas of the World's Languages in Danger: **http://www.unesco.org/languages-atlas/index.php**

The screening team should acquire or develop a land cover map with the following characteristics:

- If available, national land cover maps and classifications, published by national authorities or another reputable agency,
- Appropriate spatial extent and resolution should be used to allow for mapping of habitat proxies and the location of HCV indicators, acknowledging that fine scale features may be difficult to detect. In cases where the landscape/jurisdiction is looking to align with "no deforestation" commitments, it is relatively straightforward to incorporate an HCS forest layer if indicative or more detailed map resources are available,
- Data layers are accurate with no significant land-use changes since the data were developed, or that changes are generally known and considered/incorporated, this should be verified using recent satellite imagery or other remote sensing data where available,
- Where possible include all different ecosystems,
- Differentiate between types of land uses where possible, e.g., types of agriculture or plantation.

The available data will allow the screening team to:

1. Define HCV indicators
2. Define probability classes (higher or lower) for each HCV
3. Identify threats to HCVs
4. Define threat levels (higher or lower) for each HCV
5. Identify data gaps
6. Characterise the quality of the data
7. Document data sources for future use in the jurisdiction/landscape, noting where data are stored

2.3 Step 3: Estimate probability of HCV presence

The next step is to consider which HCVs are, or may be present or absent in the landscape or jurisdiction, and how they are likely to be distributed, aiming to cover all potentially present HCVs (in all six HCV categories).

Presence can be classified along a spectrum from certain absence to certain presence. If analysis of the available information indicates that an HCV is absent, this must be justified in the screening report. Where available information indicates that HCVs may be present – the probability of this presence can be categorised as lower or higher as shown in the table below. On the other hand, if data are lacking and do not allow for an educated guess for some values or in some parts of the landscape, then this should be documented in the screening report. Data gaps can help guide future interventions in the landscape after screening is completed. Higher and lower probability of presence can be shown on maps and in summary tables. Thresholds and definitions for HCV probability classes should be linked to the HCV NI whenever possible.

Table 3 Probability of HCV presence is classed as lower or higher. The specific indicators and definitions of the classes will vary according to different locations and must be developed and defined by the screening team and stakeholders.

Lower probability of presence	Higher probability of presence and certain presence
An HCV or class of HCVs is unlikely or less likely to be present in the jurisdiction/landscape (or subunit).	Values that are known to be present, or likely or very likely to be present in the jurisdiction/landscape (or subunit).

The definition of probability classes is a matter of judgement, but for some HCVs it can be defined with reasonable certainty based on evidence. For example, HCV 2 can be mapped based on land cover interpretation and IFLs, and the potential presence of HCV 1 can be estimated from known species' habitat associations.

The quantity and quality of data from which to estimate probability of presence will vary between locations and for different HCVs within a jurisdiction or landscape. It is important to be clear about the limitations, precision and the certainty of the data – if in doubt, it is best to be precautionary (see Box 4) and assume presence rather than absence. Below (2.3.1 – 2.3.5), example tables are provided to show how probability of presence could be defined for different HCV categories.

Box 4: Precautionary Approach

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In the context of HCV identification or estimating the probability of HCV presence, use of the precautionary approach means that when there are reasonable indications (e.g. secondary data and expert opinion) that an HCV is present, the screening team should assume that it is present. Where threats to HCVs are likely to be severe (e.g. land use change scenarios), and where the stakes are high in terms of habitat loss or displacement of local peoples' resource use, the precautionary approach is especially important because of potential threats of severe or irreversible damage to the environment or to human welfare. In these cases, responsible parties need to take explicit and effective measures to prevent the damage and risks, even when the scientific information is incomplete or inconclusive, and when the vulnerability and sensitivity of values are uncertain.

HCVs 1, 2, 3 and 4 are considered the environmental HCVs. Due to the availability of mapped data on species ranges, ecosystems, rivers, watersheds, etc., these HCVs lend themselves more readily to remote desktop screening. Identifying most aspects of these HCVs in a jurisdiction or landscape is relatively straight forward, i.e. one can usually identify what values (e.g. endangered species, ecosystems, etc.) may be present in a certain landscape via remote sensing and geospatial data (even if confirming the precise location of these may be more challenging). When direct data (e.g. species or ecosystem data) is unavailable or uncertain, habitat or ecosystem proxies are very useful. For example, the presence of a protected area or a large area of relatively intact natural vegetation can be used as a proxy for where HCV 1 (concentrations of biodiversity) and HCV 3 (rare ecosystems) may occur.

Estimates of environmental HCV probability should rely on best available information, with a preference for data on real HCV presence where possible. However, field studies are not necessarily part of the screening and accurate field data are not always readily available and/or may not be recent or accurate. In the absence of detailed data, proxies such as land designations or vegetation types that link to HCV definitions provide a more realistic means to estimate the probability of presence of environmental HCVs.

2.3.1 HCV 1: Concentrations of biodiversity

HCV 1: Concentrations of biological diversity including endemic species, and rare, threatened or endangered (RTE) species that are significant at global, regional or national levels.

HCV 1 covers significant concentrations of biological diversity, recognised as unique and outstanding, in comparison with other areas. Comparison of areas to define significant concentrations can be within the same country, or between smaller administrative areas (if in a large country) or compared with biogeographic units of similar size and between disturbed and undisturbed sites within the landscape. Rare, threatened and endangered (RTE) species refers to species that are at risk of undergoing or have undergone severe population decline. Endemic species are those found within a restricted geographic region. The scale of endemism should be agreed in consultation with experts, as this may be national, subnational or across a restricted biogeographic region. Once this is agreed, the species would be a candidate HCV 1 species. Rare species may exist in variable patterns of distributions across the screening landscape. Therefore, it can be useful to consider different kinds of rarity.

'Anthropogenically rare RTE species': Many of these species were once common across larger tracts of forests or other natural ecosystems. The main reasons that they are now RTE, is that their once wide expanses of habitat have been converted and fragmented through clearing for agriculture and pasture, and/or that their numbers have been severely reduced by overhunting or intensive collecting. The strong association between species and ecosystems means that remaining tracts of these ecosystems in reasonably natural states may be used as proxies for species presence. For species that are targeted for hunting and collection, proximity to human settlement would be a factor in determining the probability of presence.

'Naturally rare RTE species': Many potential HCV 1 species (or concentrations of species) are specialists linked to certain spatially restricted locations, e.g. sites or patches of habitats or ecosystems. These, which often also qualify as HCV 3, may be thought of as 'islands' within a 'sea' of 'ordinary' nature. Such sites (or their proxies) can often be quite precisely mapped, however the data layer may not be at a fine enough resolution to detect the habitat and will otherwise be missed in mapping, relying more on consultation with experts to be detected and reliably mapped.

'Wide-ranging RTE species': These roams over large areas, regularly, or seasonally. These include large herbivores and carnivores, often generalists using a range of habitats and moving long distances in search of food and mates. Wide-ranging species tend to be quite resilient to (moderate) intensification of land use, with the main threats being rather overhunting or persecution, or loss of habitats that they critically depend on at certain times. Animals that live in hierarchical herds or packs may be more vulnerable: often only high-status individuals reproduce, and vitality loss due to inbreeding may occur despite relatively high population numbers.

The whereabouts of wide-ranging HCV 1 species shift over time and cannot be pinpointed with the same precision as species closely linked to certain sites and habitats. Thus, a precautious assumption is that such species are present in all their historic range of distribution unless there are strong indications to the contrary (e.g. no observations over the last couple of decades) and recolonisation is highly unlikely. For some species with very low population densities and/or cryptic natures, there may be only coarse data available. While for charismatic species, that have been the focus of research and monitoring, are likely to have more accurate distribution maps. In addition to species range maps, it is valuable to aim to identify sites of critical temporal use e.g. salt licks for elephants and fruiting groves for forest primates.

Compile a list of candidate HCV 1 species

Most HCV NIs include guidance on what species and species assemblages are considered possible HCVs, and under which circumstances. Where no such guidance exists, it is precautionary to treat all nationally protected species, as well as those listed as threatened (VU, EN and CR) on the IUCN Red List, National Red Lists and in CITES Appendix lists, as candidate HCV 1 species. Endemic species are typically covered under the IUCN Red List classification system and/or designated on nationally protected species lists, so may be considered as subsets of these. Consultation can help identify species that may qualify as HCV 1 but have not yet been assessed using the IUCN Red List procedures and to identify appropriate scales of endemism that qualify as HCV 1. During consultation or as part of HCV NI processes, experts may recommend a species list that can take precedence due to accuracy or completeness, and/or identify gaps or weaknesses in these lists. It is useful to organise species lists according to category (e.g. taxonomic category, CR EN, VU, endemic).

Overlay species data with habitat and ecosystems

Species distribution maps (e.g. species range maps and results of inventories from published scientific literature, grey literature, previous assessments in the area, and IUCN Red List) should be compiled or develop. IUCN species distribution maps vary in accuracy and should be interpreted as approximations and used in conjunction with land cover and other geographic features to better approximate limits to a species' distribution in the jurisdiction or landscape.

Next, the species maps can be overlaid with available environmental data layers including protected areas and habitats. Protected areas, recognised by IUCN and the Convention on Biological Diversity are proxies for concentrations of biodiversity, and if present in a subunit or jurisdiction/landscape indicate HCV 1. This is also true for global conservation priority sites such as Key Biodiversity Areas (KBAs) (including Important Bird Areas, Important Plant Areas, Alliance for Zero Extinction sites, etc.), Ramsar sites, UNESCO World Heritage sites etc. Other designated priority areas in the jurisdiction/landscape with comparable species populations or assemblages would also indicate a high probability of HCV 1 presence.

Ecological requirements of potential HCV 1 species should be considered and matched to land cover, ecosystem types, etc. on the land cover map. Few of the HCV 1 species will have accurate distribution maps across the jurisdiction/ landscape. To overcome this, predicted distributions can be modelled and mapped in a variety of ways. HCV 1 habitat- specialists are likely to be found only in areas where their required habitat occurs (assuming they are not hunted or collected). The screening team should check for the existence of large-scale (and therefore more detectable during screening) features that may support temporal concentrations of biodiversity, e.g. wetlands.

Candidate HCV 1 species can be grouped together according to their habitat and ecological requirements. By selecting the land cover classes or modelling the criteria that meet the group's ecological requirements, the predicted distribution for each species-group (remembering that HCV 1 can be interpreted as a concentration of species) can be mapped across the jurisdiction/landscape and subunits with relative confidence.

Habitat quality, the size of habitat patches and spatial arrangement are all important in maintaining diversity, particularly for vulnerable species. Larger and closer (better connected) patches are more ecologically viable than smaller, isolated patches. Probability classes can be based on patch size and proximity to larger intact ecosystems. Minimum width of forest corridors can be used as criteria for HCV 1 probability classes, noting that many species will travel along narrow forest strips with occasional gaps in connectivity. Therefore, the potential value of degraded habitat should not be underestimated, especially where hunting pressure is low.

Based on species distribution data, known habitat use, etc. subunits can be marked for likelihood of HCV presence (lower or higher).

Consultation with experts is important for providing information on habitats (especially use of degraded lands and the potential importance of human-modified habitats for maintaining landscape connectivity) or important breeding and feeding sites that may not be captured in land cover maps.

Define and assign probability classes

The screening team must rely on best available information to define the probability classes for HCV 1; the table below provides examples of the types of indicators that could be used for this. Once the classes are defined, the screening team can then assign potential HCVs to the lower or higher probability category. There are then multiple ways the team can present the results of the probability analysis including maps and tables.

Table 4 Examples of the types of indicators that can be used to define probability classes for HCV 1. This table should be read across the columns, i.e. species are potentially present according to a source from column 2 AND the species data overlaps with habitat or land cover (column 3). These examples are for illustration purposes and are not exhaustive or country-specific.

Probability of HCV 1 Presence	Species-specific data	AND, species data and/or potential range overlaps with...
Higher	Species potentially present according to: • IUCN species range maps • National protected species lists • CITES Appendix I and II • HCV NI or another national HCV framework • Floral and faunal studies with accurately mapped species distributions, supported by expert opinion	• Accurately mapped suitable habitats (of adequate size) for species that are habitat-specialists • Habitat matrix that is suitable for wide-ranging species • Large intact ecosystems • Areas that may be important for large-scale ecological connectivity • Regenerating (degraded) forest areas that do not appear as forest in the land cover map, but overlap with known distributions of species that are CR, EN or VU species on the IUCN Red List where the species' distribution has been mapped in finer detail • Natural forest patches >1,000 ha, with buffer • Protected Areas with buffer • Conservation priority areas (e.g. KBA) • Connectivity corridors and stepping stones between large blocks of forests, even where forest quality is heavily degraded • Rivers and associated riparian forests (especially where forest >100 m in width is present on either side of a river)
Lower	Species potentially present according to: • IUCN species range maps • National protected species lists • CITES Appendix I and II • HCV NI or another national HCV framework • Expert opinion	• Natural forest (or other habitat) patches of 50-1,000 ha • Highly modified and/or polluted areas • Heavily degraded habitat • Agriculture and monoculture plantations (which do not provide connectivity) • Remnant natural forest (or other habitat) patches <50 ha that do not provide a connectivity function

HCV 1 probability results

HCV 1 results have the potential to be rather extensive, depending on the number of potential HCV 1 species in the jurisdiction or landscape. Depending on the quality and detail of species distribution data, screening teams may be able to produce maps for individual species or for assemblages of species and these are useful to include in the screening report as an annex. The location of HCV 1 species and their overlap with threats will help to prioritise action. HCV 1 results can also be presented in tabular form with lists of HCV 1 species along with a brief description – organised according to different categories (e.g. by taxonomic category, protection status, endemic species).

2.3.2 HCV 2: Large landscapes

HCV 2: Large landscape level ecosystems, ecosystem mosaics and Intact Forest Landscapes (IFL) that are significant at global, regional or national levels, and that contain viable populations of the great majority of the naturally occurring species.

Indicators of HCV 2 have been mapped on a global scale by WRI and Greenpeace (e.g. IFLs). National FSC standards and HCV NIs may also consider smaller old-growth forest landscapes as HCV 2, particularly in countries with a history of forest exploitation; and generally, such areas should be easy to identify through remote sensing. One can assume that large naturally structured old-growth forest landscapes still host most of their "original" biota, and thus qualify as HCV 2. Non-forested landscapes can be more challenging to assess. Semi-open and open ecosystems such as savannahs, grasslands and wetlands often lack structurally defining features that can be readily identified remotely. Important aspects like the species composition of ground flora do not lend themselves to assessment from satellites – although new technologies are emerging[12]. A very low level of human impact is not necessarily the best indicator of HCV 2 either – as grassland and woodland values may be created and maintained by human practices such as harvesting of fodder, regular burning or moderate livestock grazing. However, proxies may be designed based on a time series of photos, on the assumption that open grassland not created by deforestation over the last couple of decades may have a long history and harbour high biodiversity values. Valuable (undrained) wetlands may be addressed through similar time series approaches. A precautionary approach may be needed to identify extent, and expert input can provide important insight as to the biodiversity potential of such areas.

Define and assign probability classes

The screening team must rely on best available information to define the probability classes for HCV 2; the table below provides examples of the types of indicators that could be used for this. Once the classes are defined, the screening team can then assign potential HCVs to the lower or higher probability category. There are then multiple ways the team can present the results of the probability analysis including maps and tables.

Table 5 Examples of the types of indicators that can be used to define probability classes for HCV 2. These examples are for illustration purposes and are not exhaustive or country-specific.

Probability of HCV 2 Presence	Examples of indicators for HCV 2
Higher	• IFLs • Ramsar sites • Large intact ecosystems e.g. > 50,000 ha (or national threshold), or a mosaic of ecosystems of a similar size • Large wetlands • Areas where large blocks of forests or other ecosystems (<50,000 ha) are connected by corridors and stepping stones, though not highly fragmented • Connectivity corridors and stepping stones between large blocks of forests or other ecosystems
Lower	• Semi-open and open ecosystems such as savannahs, grasslands and wetlands where overall extent is less than 50,000 ha and there are indications that the level of intactness has been significantly reduced • Large ecosystems with high levels of fragmentation and/or degradation • Large ecosystems where there has been a reduction and/or disappearance of multiple species and/or species groups

HCV 2 probability results

Some HCV 2 values can be mapped precisely, for example the location of IFLs could be shown with certainty on a map. In addition to IFLs, the screening team can include other large ecosystems on an HCV 2 map. It would also be valuable to show areas in the landscape where connectivity functions occur (e.g. corridors, stepping stones). The location of HCV 2 ecosystems and their overlap with threats will help to prioritise action. HCV 2 results can also be presented in tabular form with lists of HCV 2 habitats or ecosystems along with a brief description – organised according to different categories (e.g. forest, wetland, corridor).

2.3.3 HCV 3: Ecosystems and habitats

HCV 3: Rare, threatened or endangered (RTE) ecosystems, habitats or refugia

The following types of ecosystems qualify as HCV 3. Ecosystems that are:

- naturally rare and highly localised,
- anthropogenically rare, with a current extent that is significantly reduced compared with its historic extent due to human activities,
- endangered or threatened and rapidly declining and/or degenerating due to human activities,
- rare and threatened and are not well represented within existing protected area networks,
- heavily fragmented relative to their original extent.

Where an HCV NI exists, this should provide references to relevant classification systems and threatened ecosystems. However, NIs vary in the level of detail provided on endangered ecosystems, often due to data paucity at the national scale, and the challenge of setting clear thresholds. Therefore, it is important to identify data gaps and weaknesses, and consider that in regions where land use change has been rapid and/or land use plans have been elaborated or updated, the status of RTE ecosystems may have changed.

If necessary, recent satellite imagery and new information can be used to update existing (and possibly outdated) ecosystem classifications. The starting point for this updated analysis is the national classification system, and mapping the historic, current and if possible projected extent of land classes in their natural condition. The risk status of individual ecosystems can be determined by calculating their extent and degree of current and future loss. It is therefore important to use the most recent satellite imagery and information on land use change, so that the results are based on current conditions and best available information on future scenarios. As part of the updated analysis, it may also be necessary to adjust or define the rarity and threat thresholds, if these were previously poorly defined in the NI. The output of this analysis is to produce an updated map of RTE ecosystems for the landscape/jurisdiction. Remote sensing and vegetation stratification can use biophysical factors such as rainfall and soil type to develop vegetation proxies

In the absence of an NI the team will need to use 'targeted' consultation with experts and national authorities to source material on national land cover classifications for ecosystems and ecosystem threat assessments (if available), paying attention to the criteria used for the assessment and dates of the analyses. Consultation with experts can also help identify highly localised features and associated habitats (HCV 3), that occur at too fine a resolution to be detected by satellite imagery.

Another potential data source is the IUCN Red List of Ecosystems, which provides a global framework for assessing ecosystem risk (CR, EN, VU, etc.). Though the coverage of assessments is still low, its global definitions are useful, and it is designed to be flexible such that it can be applied at a range of scales and could be used for a national level assessment as part of the landscape screening[13].

Define and assign probability classes

The screening team must rely on best available information to define the probability classes for HCV 3; the table below provides examples of the types of indicators that could be used for this. Once the classes are defined, the screening team can then assign potential HCVs to the lower or higher probability category. There are then multiple ways the team can present the results of the probability analysis including maps and tables.

Table 6 Examples of the types of indicators that can be used to define probability classes for HCV 3. These examples are for illustration purposes and are not exhaustive or country-specific.

Probability of HCV 3 Presence	Examples of indicators for HCV 3
Higher	• Nationally identified RTE ecosystems, that are still in their natural or historical condition • E.g. mangroves, wetlands, montane ecosystems, peatlands • PAs and other protected designations (Ramsar sites, KBAs) • RTE Ecosystem or vegetation classes that have been or can be accurately identified or modelled using imagery and/or geophysical features
Lower	• Areas where RTE ecosystems were identified in the past, but where land-use change and loss of natural vegetation has occurred • Ecosystem or vegetation classes that are difficult to identify and map using remote sensing and modelling, therefore mapping and assessing threat is approximative e.g. intact savannas and grasslands

HCV 3 probability results

Some HCV 3 values can be mapped precisely, for example the location of some rare ecosystems could be shown with certainty on a map. However, in other cases, it will be necessary to use maps of proxies for HCV 3 such as land cover that has undergone some analysis and classification by the screening team. The location of HCV 3 ecosystems and their overlap with threats will help to prioritise action. HCV 3 results can also be presented in tabular form with lists of HCV 3 habitats or ecosystems along with a brief description – organised according to different categories (e.g. habitat type, level of rarity, classification according to the IUCN).

2.3.4 HCV 4: Ecosystem services

HCV 4: Basic ecosystem services in critical situations, including protection of water catchments and control of erosion of vulnerable soils and slopes.

HCV 4 should be considered in relation to the location of human settlements and human population distribution in the landscape because the definition implies that ecosystem services are for people.

Protection of water catchments: HCV 4 may apply to river and stream regulation in natural catchments where these water supplies are critical for human uses including drinking water, cooking, washing and irrigation and, fishing, and where there are no viable or readily available alternatives. Virtually all activities in the terrestrial landscape will affect downstream freshwaters – it is just a matter of how much and how far. The presence of human population in all watersheds in the jurisdiction/landscape should be confirmed during subsequent field-level work. In seasonal areas, the impacts of changing land use on water quantity/flow regimes can have particularly serious impacts on livelihoods, and climate change may worsen these impacts in places.

Control of erosion of vulnerable soils and slopes: HCV 4 occurs in areas that contain natural vegetation types (e.g. forest or native grasslands) in good condition that help to prevent erosion, landslides gullying, dust storms and desertification, where such events would have a critical impact on people or the environment. Such impacts might be catastrophic (landslides) or pernicious and difficult to reverse (gradual loss of soil fertility and land productivity). Surface erosion causes the loss of top-soil, which leads to decreasing land productivity; in drylands it can also causes dust storms, dune formation and desertification.

Landslides and ravines reduce the area of productive lands, damage infrastructure, endanger human lives, change a watershed's hydrology characteristics, and increase sediment loads, which causes siltation of water bodies and irrigation channels. This is particularly important for farming and fishing communities, and for freshwater or coastal biodiversity.

Define and assign probability classes

The screening team must rely on best available information to define the probability classes for HCV 4; the table below provides examples of the types of indicators that could be used for this. Once the classes are defined, the screening team can then assign potential HCVs to the lower or higher probability category. There are then multiple ways the team can present the results of the probability analysis including maps and tables.

Table 7 Examples of the types of indicators that can be used to define probability classes for HCV 4. These examples are for illustration purposes and are not exhaustive or country-specific.

Probability of HCV 4 Presence	Examples of indicators for HCV 4
Higher	• Areas important for the prevention of erosion and sedimentation • Steep slopes (defined by national regulations or stricter) • Upstream forest (source and transition zones of water catchments) • Areas that function as natural barriers to the spread of forest or ground fires • Rivers, lakes, waterbodies, wetlands and immediate buffer zones • Areas or ecosystems important for the provision of water and prevention of flooding for down-stream communities e.g. riparian and flood plain forests, peat swamp forests and peatlands, freshwater swamp forest • Known presence of important pollinators and/or pollinator habitat – where pollination is critical for communities' livelihoods
Lower	• Medium slopes e.g. 9-25 degrees

HCV 4 probability results

It may be feasible to identify, and map in high resolution, areas that are likely to provide HCV 4 environmental services (e.g. riparian vegetation and stabilising vegetation on steep slopes). However, in practice, confirming which of these qualify as HCVs will require field work and engagement with local communities. HCV screening can assume that all vegetation along rivers and on steep slopes provide environmental service. Standard width buffers (varying in width based on river width) can be selected and mapped remotely for rivers and wetlands across the landscape using available data, regardless of current condition/vegetation cover in the buffer areas. Allocation of buffer zones as HCV 4 recognises the importance of riparian zones for maintaining water quality across the landscape.

Satellite images and radar images taken during rainy seasons can show the extent of flooding. For forests, it is possible to detect changes in species composition (visible change in canopy colour or features) from satellite imagery. It is also useful for screening teams to conduct mapping of flood zones for large wetlands - if riparian zones are not feasible during the screening exercise. The location of potential HCV 4 areas and their overlap with threats will help to prioritise action. HCV 4 results can also be presented in tabular form with lists of values with a brief description – organised according to different categories (e.g. areas that protects against erosion, area that protects against flooding, area that provides habitat for important pollinators, etc.).

2.3.5 HCVs 5 and 6

HCV 5: Sites and resources that are fundamental for satisfying the basic necessities of local communities or indigenous peoples (for livelihoods, health, nutrition, water, etc...), identified through engagement with these communities or indigenous peoples.

HCV 6: Sites, resources, habitats or landscapes of global or national cultural, archaeological or historical significance, and / or of critical cultural, ecological, economic or religious sacred importance for the traditional cultures of local communities or indigenous peoples, identified through engagement with these local communities or indigenous peoples.

HCVs 5 and 6 are commonly referred to as the social HCVs because they refer to values of the environment for people, rather than intrinsic biodiversity values. They are concerned with provisioning basic needs (HCV 5) and cultural identity (HCV 6). The social HCVs are also sometimes referred to as local HCVs, because HCV 5 and most aspects of HCV 6 are concerned with locally held values that must be identified through engagement with local communities and indigenous peoples. This presents particular challenges for HCV screening at a jurisdictional or landscape scale, because meaningful engagement with all communities across a large geographic area requires substantial time and resources. Consequently, whilst the methodology for screening the six HCVs has as far as possible been standardised, the screening process for social values is necessarily different in some respects from the process for the environmental HCVs.

Some of the differences are as follows:

- Much of the screening process is carried out, not for individual values of HCV 5 and 6 (since these cannot usually be identified remotely), but for the overall classes of social HCVs based on available information about social, economic and cultural factors.
- Greater emphasis is placed on qualitative information compared to the environmental HCVs. This information is particularly important in identifying threats and vulnerabilities to threat and in making recommendations for priority setting. Qualitative information can also inform subsequent site-level assessments and significantly reduce the time and resources that they require.
- Less emphasis is placed on mapping compared to the environmental HCVs, both because not all the data needed to conserve social and cultural values can be spatially defined, and because mapping must be participatory and requires substantial fieldwork, which is not practicable over large areas. Furthermore, it is unlikely that detailed participatory mapping has already been done for resource use (e.g. for hunting camps, fields and fishing grounds, sites where different non-timber forest products (NTFPs) are gathered) and cultural sites (e.g. burial grounds, sacred sites, shrines).

Gather information on the social, economic and cultural context

The screening team should gather contextual information on social, economic and cultural factors that will inform the selection of social indicators in the overall landscape and a first analysis of where any social HCVs are likely to be present. This is a desk-based exercise involving web-based searches, but it should also rely on consultation with relevant social experts and institutions holding specialist knowledge about the country or jurisdiction. The latter may include staff from relevant CBOs and NGOs, government personnel, academics and independent researchers. Qualitative information is valuable in the subsequent threat analysis and risk assessment, and for informing and reducing the workload for subsequent site-level assessments. Topics to cover include:

- State political systems: organisation/layers of government, state of civil society, governance indicators and major conflicts or civil unrest

- Human populations: size, ethnic groups and religions, migration trends, systems of social organisation and representation. Note that settlement maps are often inaccurate or outdated and may not include small hamlets or camps.
- Presence and legal status of indigenous/traditional peoples, including legal mechanisms for recognition of land and resource rights
- History of settlement and past and current land use: overall trends and trajectories, including future plans (e.g. land use plans, spatial planning maps, planned major developments at the landscape scale)
- Socio-economy: levels of wealth, poverty, broad equity and distributional issues
- Current and planned infrastructure, including transport (roads and railways), education, healthcare, electricity, access to clean water and sanitation, markets, dams, communications
- Economic activities: description of major economic activities and overall range of livelihoods.
- Prevalence and major components of subsistence and mixed economies for different ethnic groups and different areas
- Temporal and spatial variation in livelihoods and natural resource reliance, including coping strategies to deal with extreme events such as droughts and floods.
- Details on local natural resource use, including farming, hunting, gathering and fishing. (If possible)
- Major planned developments or changes in law and policy related to land tenure and use.
- Access issues, including legal land tenure categories
- Legal tools for recognition/designation of community areas (e.g. community conservation areas and conservancies, community forests, freshwater bodies that are subject to community rights
- Customary systems of land and resource rights
- Religious or sacred landscape features such as mountains, lakes, forests, rivers and waterfalls;

HCV 5: Basic necessities for livelihoods

One can assume that HCV 5 is most likely to be present wherever there are local communities whose livelihoods are based wholly or substantially on the use of local natural resources. For example, farmlands, shifting cultivation areas, pastures, hunting grounds, gathering areas, fishing grounds, etc. However, the absence of officially mapped settlements cannot be taken to mean that no HCV 5 is present. This is partly because there are several kinds of resources that are fundamental to basic necessities that may occur remotely from settlements and also because many marginal groups (like indigenous peoples and forest communities) are not captured by censuses and do not show up in official data sets. Some examples include:

- Uninhabited high-altitude areas which are the only source of certain medicinal plant species
- Extensive hunting grounds for wide-ranging species such as peccaries, tapir, elk and caribou
- Seasonal resource use areas accessed by mobile users
- Watering holes or livestock grazing areas that are critical in times of extreme drought, but are otherwise unused
- High peaks or caves that are traditionally used for refuge during floods, earthquakes or cyclones
- Breeding grounds of migratory fish species that are fundamental sources of protein
- Communities that rely on river water for drinking, washing, fishing, etc. even in relatively developed areas

HCV 6: Cultural values

The definition of HCV 6 is extremely broad, and it is useful to divide it into two different categories: values of critical importance for local people and values of global or national significance. Local values of HCV 6 are likely to be present wherever customs and traditions still play a significant role in local people's lives. However, local level cultural values are very unlikely to be identified remotely as part of a screening exercise. Local HCV 6 values may include:

- Religious or sacred landscape features such as mountains, lakes, forests, rivers and waterfalls
- Burial grounds
- Sites at which traditional ceremonies take place
- Plant or animal resources with totemic values or used in traditional ceremonies

Some sites of local importance and significance may only be known by locals (and it may be "secret knowledge"), particularly in countries that have not undertaken major, detailed cultural and archaeological surveys. Some such values cannot be detected without in-depth engagement with the communities to which they belong. The screening team is advised to make use of NIs where possible, and to consult with relevant social experts and jurisdictional institutions to compile a set of indicators for HCV 5 and 6. Table 8 gives some examples of indicators for the local HCV 5 and 6 probability classes.

HCV 6 values of global or national significance

Sites that are of global or national cultural significance are likely to be well known and documented and are often already recognised and protected as part of global and national cultural heritage. As such, they are relatively straightforward to identify and map, without the need for proxies or indicators.

The following information sources are useful as indicators for global and national HCV 6:

- UNESCO World Heritage Sites
- Nationally designated sites
- Museums, heritage lists, national data sets, authorities and organisations which specialise in particular geographic areas or cultures
- National directives concerning archaeological sites and resources
- Consultation with anthropologists, historians, archaeologists, museums and databases for identification of "sites of global or national significance"

This list needs to be reviewed and expanded for individual screenings to include details of all relevant national sources. For example, there may be relevant information in a National Heritage Strategy or a National Ecotourism Strategy. Consultation is also important in identifying sites that are not yet formally recognised as of national/global significance but may qualify. The broad indicators in Table 9 should be reviewed and adjusted as necessary to reflect local conditions:

Define and assign probability classes

The screening team must rely on best available information to define the probability classes for HCV 5 and 6; the tables below provide examples of the types of indicators that could be used for this. Once the classes are defined, the screening team can then determine which areas in the landscape are likely to harbour HCVs 5 and 6. Where data are lacking and knowledge is insufficient to make an assignment (to lower or higher), this should be noted as a data gap in the screening report. Assignment of probability classes for each potential HCV can be done for the entire jurisdiction/landscape or for each subunit within the jurisdiction/landscape.

Table 8 Examples of the types of indicators that can be used to define probability classes for local-level HCV 5 and 6. These examples are for illustration purposes and are not exhaustive or country-specific.

Probability category for presence of HCV 5 & 6	Examples of indicators for local-level HCV 5 and 6 values
Higher	• Datasets from recent participatory mapping of local social values • Presence of indigenous/traditional communities or communities with subsistence-based or mixed economies • Titled or customary indigenous and local community lands and resource use areas, including land claim data under request but not approved. Information could be publicly available or accessed through NGOs representing indigenous or local people • Areas designated for communal/subsistence use (such as community or communal reserves, extractive reserves, community forests, smallholdings, fallows, community conservation areas etc.) • Designated/customary sacred sites • Other areas where there is evidence of use by indigenous/traditional communities or communities with subsistence-based or mixed economies
Lower	• There are no indigenous/traditional or subsistence-based communities present, no indication of any use by such communities, and no indication of cultural or ecosystem services values. This information may also be totally "unknown" and therefore the data gaps must be presented in the screening results

Table 9 Examples of the types of indicators that can be used to define probability classes for the national or global aspect of HCV 6. These examples are for illustration purposes and are not exhaustive or country-specific.

Probability category for national/global HCV 6	Examples of indicators for national and global HCV 6 values
Higher	• Sites are designated or formally recognised as of global/national significance • Sites are under consideration for designation/formal recognition as of global /national significance • Sites have been identified or proposed as of sub-national significance and may potentially be of global/national significance
Lower	• This category could be used for areas of uncertainty where there may be global cultural HCVs which have not been designated - but e.g. where an expert may have mentioned potential presence of a value

HCV 5 and 6 probability results

As mentioned above, greater emphasis is placed on qualitative information that can inform subsequent site-level assessments and significantly reduce the time and resources that they require, and less emphasis is placed on mapping. However, some information on social and cultural factors can be presented spatially (e.g. location of settlements, known indigenous territories), whereas others can be presented as textual description or in tabular form.

2.4 Step 4: Estimate threat levels to HCVs

Once the screening team has estimated the probability of HCV presence the team must identify potential threats to the maintenance of those HCVs. As long-term maintenance is the ultimate HCV management goal, identifying the threats to values helps to direct attention to where and how management activities may eventually be carried out. This section is not divided to discuss threats for each HCV category, because many threats can have cross-cutting effects on multiple HCVs and HCV categories. The threats analysis should look generally at the kinds of threats that exist in the landscape (and different subunits) and consider how they impact different HCVs. Table 1 in the Common Guidance for the Management and Monitoring of HCVs (HCV Network 2014) lists a selection of threat assessment methods that could be adapted for use at larger scales. Threat levels for each HCV (or HCV class) should be estimated and classified as lower or higher based on the intensities of different threats and the vulnerability of the HCV to those threats. Box 5 provides example of how lower or higher threat levels may be defined.

Table 10 Threat level is classed as lower or higher. The specific indicators and definitions of threat classes will vary according to different locations and must be developed and defined by the screening team and stakeholders.

Lower threat level	Higher threat level
A threat level is lower if e.g. the intensity of a threat is lower, if HCVs are less sensitive or vulnerable to a threat, etc.	A threat level is higher if e.g. the intensity of the threat is higher, if HCVs are sensitive or vulnerable to a threat, etc.

2.4.1 Threats to environmental HCVs

For HCV 1, the availability and configuration of suitable habitat is just one factor that affects species populations and communities, and vulnerability to habitat loss and degradation may differ between the environmental HCVs depending on species' ecology and life-history characteristics. The threat assessment can be presented for species or groups of species that occur in the same area, experience the same threats, and share the same responses. Landscape level ecosystems (HCV 2) can generally tolerate some human activities, but their spatial configuration can be critical to their resilience. Changes to the 'core areas' of these ecosystems are more likely to result in degradation than impacts on edge areas which may already be affected to a certain extent. For naturally rare ecosystems (HCV 3), any loss or degradation can be drastic, leading to the loss of the ecosystem and its associated biodiversity.

Animals and plants are generally more sensitive and less resilient where they occur as small, isolated populations versus in areas where they are more widely distributed. Environmental HCV threats can be identified (at least conversion, fragmentation, fire and even forest degradation to some extent) using remote sensing data and this can help define spatial threat distribution. For fire, historic hot spot maps and mapping land covers that are particularly susceptible to fire can indicate areas with higher threat levels.

2.4.2 Threats to social HCVs

Threats to the social HCVs are assessed for the overall class of HCV 5 and local HCV 6 rather than for individual values separately. This is not only because individual values are not identified during the screening process, but also because threats that severely disrupt local ways of life are likely to affect multiple values related to livelihoods (HCV 5) and to culture (HCV 6). Potential threats to the local social HCVs include many factors that also threaten the environmental HCVs. Examples are natural disasters, to which some parts of the landscape may be particularly vulnerable, and human activities that cause substantial environmental and social/cultural disruption (e.g. commodity expansion, intensification of road networks). Changes in law and policy can also pose a major threat to the local social HCVs, especially where they affect local people's access to land and resources. Many of these threats occur over large areas, so that it makes sense to assess them at the jurisdictional or landscape scale.

Threat intensity (a component of the threat level) can be qualitatively assessed as the immediacy of the threat and its likely impacts on livelihoods and cultures, the most severe of which may be permanent dispossession and displacement. The single most important determinant of the vulnerability of indigenous, traditional and subsistence communities (and therefore of livelihoods and cultural values), is security of land and resource rights. Even where national constitutions and laws recognise customary and/or traditional rights, lack of implementation of land titling and enforcement of protections may expose communities, and the corresponding social HCVs, to threats. Additional factors include the diversity and substitutability of livelihoods; community assets and capabilities, and their adaptability and economic and cultural resilience to change. Food and water security are two aspects of resilience that are often particularly pertinent for subsistence-based communities in landscapes that are undergoing a rapid pace of change. In relation to cultural values, vulnerability is especially high for isolated communities with little contact with external society, and for communities that remain outside the market economy.

Local communities are more vulnerable to factors such as impacts of droughts or floods where subsistence farming plays a major role in food production, where economic margins are small and where poor infrastructure makes it more difficult to provide support from other areas in times of shortages. At the jurisdictional or landscape scale, it is unlikely that these factors can be quantified or assessed in detail. However, a qualitative description of the vulnerability of local communities in different parts of the landscape (and therefore of HCVs 5 and 6) can be constructed from the information gathered in Step 2, together with consultation with social experts.

2.4.3 Define and assign threat levels

The screening team must rely on best available information to define threat levels. Once the classes are defined, the screening team can then assign potential HCVs to the lower or higher threat levels by considering the threat factors (intensity and vulnerability) that influence the impact of threats to different HCVs and in different part of the landscape. The table below provides examples of different kinds of threats and how the factors of intensity and vulnerability can help determine the threat level. For example, where a threat occurs with greater intensity and/or where the HCV under threat is more vulnerable or sensitive – the threat level should be higher. But where a threat occurs at a lower intensity and/or where the HCV is more resilient to disturbance or less vulnerable, the threat level should be lower. There are then multiple ways the team can present the results of the threats analysis including maps and tables.

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Box 5: Examples of how to define threat levels.

The first part of this box, shows examples of types of threats and how threat intensity and vulnerability or sensitivity of the HCV to the threat can determine if threat levels are lower or higher. The second part of this box shows examples of the kinds of threats that may occur in different landscapes. These examples are illustrative, and the threats analysis will vary by landscape.

Threat Type	Intensity	Vulnerability	Threat Level
1. Threat causes habitat loss and ecosystem fragmentation.	Intensive logging, clear-cutting, habitat conversion.	Ecosystem is highly sensitive to disturbance; threat will result in the disappearance of distinguishing biotic and abiotic variables. Landscape ecosystems that have already been reduced or heavily disturbed, where further impacts may lead to the loss of viable populations of most species. Fragmentation would lead to ecological isolation.	Higher
2. Threat causes gradual change in community structure and processes but does not lead to ecosystem collapse.	Hunting or collection at rates that do not cause population decline over the long-term.	Habitat generalists, with high population recovery rates. Species with moderate to rapid population growth and recovery rates. Species that tolerate some degree of habitat disturbance.	Lower
3. Threat causes species decline.	High levels of hunting or collection, high levels of pollution.	Species with very narrow range distributions and localised populations will be heavily impacted by habitat loss. Species with slow reproductive and population recovery rates. Species highly sensitive to changes in environmental conditions.	Higher
4. Threat to aquatic ecosystems and water quality and threat to livelihoods.	Dam construction resulting in complete changes in downstream hydrological conditions.	Communities completely reliant on river water for domestic use.	Higher
5. Threat will cause degradation or loss of ecosystem functioning, though not prevent regeneration.	Threat causes some level of disturbance to large ecosystem, but does not reduce its spatial extent, the mosaic of ecosystems, major large-scale processes, or threaten viable populations of keystone species.	Landscape ecosystems with a high proportion of PAs, and strong legal protection. Ecosystem is resilient to impacts of the threat, quickly regenerating and returning to previous functioning.	Lower

Threat Type	Direct Threats	Indirect Threats
1. Threat causes habitat loss and ecosystem fragmentation.	Pollution, high impact logging, conversion and clearing of habitat, mining, road construction, fire.	Migration, human population growth, regional expansion of mills and other processing capacity that increases demand for forest and agricultural products, mismanagement of forests that buffer against spread of fires
2. Threat causes species decline.	Commercial and/or uncontrolled hunting or collection, poisoned baits, vehicles, spread of pesticides, pollution and spread of toxic waste, fences that restrict the mobility of wild animals.	Migration, increasing road network, lack of enforcement of environmental regulations.

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Box 6: Data sources for threat mapping

- HCV NIs may have information on threats
- Expert consultation
- National commodities land-use, major infrastructure projects (e.g. dam and road networks) and land-use plans
- Crop suitability maps
- GFW Hansen tree cover loss
- Fire hotspots (e.g. NASA)
- Human footprint maps:
  http://wcshumanfootprint.org/
- Water risk maps:
  http://waterriskfilter.panda.org/en/Explore/Map
  https://www.wri.org/resources/maps/aqueduct-water-risk-atlas
  http://water.globalforestwatch.org/

2.4.4 Presenting the results

The results of the threats analysis should identify threats to HCVs in the landscape and show where they occur and how threats can differentially affect different HCVs. Where possible the location and spatial variability of threats can be estimated and mapped, for example, the threat of forest conversion is likely to be much higher in a zone allocated for agricultural conversion compared to in a National Park. Threat maps can be overlaid with probability of HCV presence. Lists of potential threats and how they affect different HCVs in different parts of the jurisdiction/landscape will need to be reviewed and supplemented by more detailed work during subsequent site-level work, in consultation with the people concerned.

2.5 Step 5: Risk assessment

Step 5 of the screening process is a risk assessment that determines the urgency level of each HCV in the landscape. The risk assessment acts as a bridge between information and action by synthesising what HCVs are likely to occur in the jurisdiction/landscape, what threats need to be mitigated in order to maintain these values, what values should be addressed with urgency, and what information gaps must be urgently filled. This information is essential for prioritising and planning interventions and next steps. The risk or level of urgency is a function of the probability of presence and the threat level (see Table 11).

Table 11 The risk assessment combines probability of presence with threat level to arrive at one of three urgency or priority levels (yellow, orange or red).

		Probability of Presence	
		Lower	Higher
Threat level	Higher		
	Lower		

Presenting the results of the risk assessment

It may be useful to present the risk assessment results in relation to the objectives of the screening exercise defined at the start. This can involve subdividing the landscape into relevant areas or subunits based on those objectives and based on management responsibility or intervention strategies, for example, by administrative units (especially if a jurisdictional project), land use types, commodity production areas or farmer types.

For example:

- What are the urgent actions needed in each administrative subunit? This will help guide planning for local authorities and other stakeholders.
- If there are substantial large, undeveloped (proposed) concessions they may be a priority for engagement on the need for site level HCV assessments.
- If there is an area with evidence of ongoing smallholder expansion, there could be a need to develop a smallholder engagement and extension services programme in the area.
- If there is a critical corridor under threat from conversion, stakeholders may decide to explore options for protecting it via a protected area or other effective conservation measures.

At a subunit level, a summary table can be used to present results of the risk assessment, showing how probability of presence and threat level were combined to arrive at a measure of urgency for each HCV or HCV category (see Table 12). Table 12 provides a brief hypothetical example from South Africa to show how different levels of probability of presence and threat will look as a risk assessment result (i.e. yellow, orange or red). Noting of course that there can be variability in HCV probability and threat levels in different subunits in the landscape. Also, it is possible that some HCVs are only present in certain subunits, so that for some subunits the HCV is absent. The HCV 2 example in Table 12 is an example of how an HCV may be clearly absent is some subunits (i.e. the extent of the Ramsar site only overlaps with subunits A and B).

Table 12 Summary table for HCVs in a hypothetical South African landscape showing variation in probability of presence, threat level and risk level for four different subunits (e.g. districts) in a jurisdiction. The letters L and H stand for Lower or Higher and the colours (yellow, orange and red) represent the risk level or urgency for each HCV in each subunit.

HCV	Description	Subunit A	Subunit B	Subunit C	Subunit D
HCV 1	African wild dog	L; H	L; H	L; H	H; H
HCV 1	White rhinoceros	L; H	L; H	H; H	L; H
HCV 1	White-backed vulture	L; L	L; H	H; H	L; H
HCV 2	iSimangaliso Wetland Park (332,000 ha, including the largest estuarine wetland in Africa, grasslands, bush and marine reserves - World Heritage site and Ramsar area with more than 500 bird species)	H; L	H; L	Not applicable	Not applicable
HCV 5	Natural forest ecosystems in Kwazulu-Natal (and Eastern Cape) important for livelihoods and well-being of rural communities as sources of building material, fuel wood, food and medicine.	Not applicable	H; L	H; H	H; L

2.6 Step 6: Prioritise next steps

The results of HCV screening provide a basis for wider and more focussed engagement with stakeholders and decision-makers in the landscape. If used as part of a jurisdictional initiative, there must be involvement with government authorities and wide engagement with stakeholders. The results must now be strongly linked to the original objectives of the screening exercise, for example to feed into land use planning, sustainable sourcing, legislative and regulatory measures, etc. The level of detail of the results will correspond to the level of detail of the information that was used to conduct the probability and threats analyses. For example, if the screening methodology was complemented with some fieldwork and/or a scoping study that included e.g. participatory mapping, local consultation, etc. then the next steps can potentially be accelerated.

After screening, detailed data collection, field validation and participation should be focussed where risks to HCVs are higher, for example:

- If conversion of natural vegetation is proposed
- If population displacement is proposed or could occur
- If access, use or tenure rights would be impacted
- Where there are overlaps or conflicts between conservation, development projects, local people's lands or areas of customary use
- If land use change is planned within a certain distance of a protected area

HCV screening results can be presented as an HCV profile for the whole jurisdiction or landscape, but it is also possible to complement this with subunit-level HCV profiles. These HCV profiles would be part of the screening report. See Annex 1 for a general HCV screening report template that can be adapted by the screening team.

The key outputs of the screening exercise can include:

- An overall summary or profile of the jurisdiction or landscape including a summary of land cover and land use, and general social and environmental characteristics.
- Explanation of information sources and data used, experts consulted, etc. including reference to any NIs or national HCV frameworks used.
- Explanation of how probability classes were defined using HCV indicators.
- List of potential HCVs along with their probability of presence. To be accompanied by explanation of HCV presence (lower or higher probability) or absence based on available data and consultation. Designation of HCV absence must be well justified.
- List of threats and their impact level (lower or higher threat levels)) to different HCVs in different parts of the jurisdiction/landscape.
- Risk assessment results for each HCV in the jurisdiction/landscape (this can be presented according to different subunits if relevant).
- Overlay different layers (environmental and social values, different HCV maps, planned development) to identify overlapping and potentially conflicting land uses. Flag these in the priority setting step. Also indicate areas where there is a lack of information – where more information would be required before proceeding with land use change or change of access.
- Explanation of data gaps – this can promote collaboration to fill in needed data.

- Priorities for further data collection: Information collected during the screening process can give an indication of the intensity or scale of fieldwork that is likely to be needed in different parts of the landscape in order to complete the process of HCV identification and threat analysis post-screening.
- Explanation of the social context including interpretation of available information and data gaps. The output of the risk assessment (urgency level) for the social HCVs is concerned with making recommendations for actions to conserve basic needs and cultural values where they are most threatened. A strength of the screening process is that it can point not only to spatially-based priorities for actions (e.g. field-based community engagement and data collection) but also to actions that are needed at the level of the entire jurisdiction or landscape. Examples include changes in law and policy or the development of new programmes, strategies and institutions.
- If results are presented by subunits or sub-landscape level, subunits could be ranked in terms of importance for conservation of multiple overlapping HCVs. If multiple values are present in the same subunit, that will mean that a different set of follow up activities may be needed than for a subunit with just one value. Follow up work and management interventions can be prioritised where HCV protection will have a disproportionately strong positive effect on protection of other HCVs. For example, if a few subunits contain 80% of the HCVs and threats (elevated threat levels), then this must be a priority for action.
- Depending on the level of detail of the results, the team can propose management and monitoring recommendations to be discussed with stakeholders in the landscape. For example, although some recommendations can be made, e.g. to monitor land use change using remote sensing in and near a protected area, the management and monitoring strategies for the protected area and its surrounds must be determined with site-level stakeholder engagement, based on site-level conditions, capacity (skill and budget) and data availability.

Translating the results of the screening into action will require:

1. Addressing those HCVs identified as in most urgent need of attention based on the risk assessment, including full consultation and FPIC, participatory mapping of HCVs 5 and 6; and ecological fieldwork as necessary to fill in detail on HCV maps. This local follow up may be done as part of an ongoing process, or it may be triggered (or need updating) for individual localities in connection to specific proposals for development. An initial analysis at the local level may allow for simplified HCV assessment procedures for small scale operations, while requiring that proposers (companies or public work departments) of projects likely to have significant impacts, commission prior, 'standard' HCV assessments in line with HCV Network guidance.

   If follow up includes standard site-level HCV assessments for certain areas, these could benefit from the work already done during the screening and so be considerably streamlined and simplified. Such follow up work could be commissioned by and supported by diverse combinations of actors (e.g. community organisation, government authorities, NGO, donor agency) and undertaken by those with authority over all or parts of the landscape (e.g. governmental bodies, members of a certification scheme or a growers' association, or a group of local landowners or communities).

2. Participatory development of an overall HCV management and monitoring framework that is fully integrated into the wider jurisdictional or landscape initiative where the screening was conducted.

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Box 7: Example of Maps that can be produced as part of HCV screening

Maps are an important output of the screening exercise; however which maps are produced and the level of detail in those maps will vary depending on the context where screening was used. All maps must be clearly explained and interpreted. One of the values of the maps is to show which areas are already well-documented (for some HCVs) and where data is lacking (i.e. which areas likely need what type of follow up work). Here are some examples of maps that could be produced:

- Location and boundaries of HCV screening exercise
- Location of environmental features (protected areas, large ecosystem blocks, IFLs)
- Location of social features (human settlement, roads, infrastructure)
- Land cover and land use (agricultural concessions, forestry, mining, etc.)
- Probability of HCV presence across the landscape – with a separate map for each category of HCV
- Distribution of threats and the threat levels related to HCVs across the landscape
- Risk assessment map or maps for each HCV category (for whole landscape and/or subunits) indicating (in yellow, orange and red) the areas where HCVs are in most need of urgent action
- Overlaps where conflicting land or resource uses and proposed plans may occur
- Which parts of the landscape have higher concentrations of different HCVs

End notes

[1] The HCV concept was developed in 1998 by the Forest Stewardship Council (FSC) as a tool to protect outstanding environmental and social values in certified forests.

[2] Aquaculture Stewardship Council, Better Cotton Initiative, Bonsucro, Equitable Origin, Fairtrade International, Florverde Sustainable Flowers, Forest Stewardship Council, Roundtable on Sustainable Palm Oil (RSPO), Rainforest Alliance, Soil Association, International Federation of Organic Agriculture Movements and Proterra

[3] Reed J., J. Van Vianen, E.L. Deakin, J. Barlow and T. Sunderland. 2016. Integrated landscape approaches to managing social and environmental issues in the tropics: learning from the past to guide the future. Global Change Biology 22: 2540–2554.

[4] https://www.doi.gov/sites/doi.gov/files/migrated/ppa/upload/Chapter1.pdf and http://learningforsustainability.net/adaptive-management/

[5] Giri C, Ochieng E, Tieszen LL, Zhu Z, Singh A, Loveland T, et al. Status and distribution of mangrove forests of the world using earth observation satellite data (version 1.3, updated by UNEP-WCMC). Glob Ecol Biogeogr. 20:154–9.

[6] Miles L, Newton AC, DeFries RS. A global overview of the conservation status of tropical dry forests. Journal of Biogeography. 2006; Available from: http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2699.2005.01424.x/full

[7] Wetlands and peat: https://www.cifor.org/global-wetlands/. Rivers (including river width): https://zenodo.org/record/1297434#.XDYz_Fz7SUm

[8] Hansen, M. C., P. V. Potapov, R. Moore, M. Hancher, S. A. Turubanova, A. Tyukavina, D. Thau, S. V. Stehman, S. J. Goetz, T. R. Loveland, A. Kommareddy, A. Egorov, L. Chini, C. O. Justice, and J. R. G. Townshend. 2013. "High-Resolution Global Maps of 21st-Century Forest Cover Change." Science 342 (15 November): 850–53. Data available from: www.earthenginepartners.appspot.com/science-2013-global-forest

[9] https://www.unep-wcmc.org/resources-and-data/world-dryland-areas-according-to-unccd-and-cbd-definitions Available from: http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2699.2005.01424.x/full

[10] https://www.unep-wcmc.org/news/screening-for-critical-habitat

[11] https://www.asf.alaska.edu/

[12] See Brazilian initiatives like MapBiomas and LAPIG

[13] Guidelines for IUCN Red List of Ecosystems: https://portals.iucn.org/library/sites/library/files/documents/2016-010-v1.1.pdf

Annex 1: HCV Screening Report Template

Results of the screening exercise should be written up into a report of some kind (e.g. document, PPT presentation). Clear documentation of the screening process and its results is crucial for communicating results to and engaging with a range of stakeholders in the jurisdiction or landscape. This annex provides a recommended outline for the contents of an HCV screening report.

1. Introduction

2. Scope and objectives of HCV screening

- Explanation of who commissioned the screening exercise and for what objectives
- Description of boundaries and map of screening area

3. Team members and collaborators

Explanation of who conducted the screening exercise as part of the core team and which partners, collaborators and stakeholders were actively engaged in the process.

4. Overview of screening landscape

Description of landscape or jurisdiction. Contextual information should include:

General land cover and land use

Geography (in the wide sense), including:

- Geology and topography
- Geomorphology and soils
- Climate (temperatures, amounts and annual patterns of precipitation etc.)

Ecology and environment, including:

- Bioregion
- Vegetation
- Major floral and faunal elements
- Protected areas

Socioeconomic context, including:

- Economy
- Demography
- Settlements and infrastructure
- Land tenure
- Development trends and trajectories
- Presence of different ethnic groups and religions
- Rural community livelihoods and natural resource use
- Customary systems of resource rights
- Traditional belief systems
- Systems of social organisation and representation
- History of settlement and past and current land use
- Legal tools for recognition / designation of community areas

5. Methods

Describe methods used for e.g. information gathering, stakeholder engagement, definition of HCV indicators, definition of HCV probability classes, mapping, threat assessment methods, classification and use of subunits (if relevant). Explain how the screening process was combined with field work, scoping and/or local consultation (if relevant).

6. Screening results - HCV profile(s)

For each HCV or class of HCVs, the following items are presented:

- Information sources (with detailed information in an annex, including how the information can be accessed for future work in the landscape)
- Probability of HCV presence, description of all possible HCVs and evidence/information to support conclusions
- Justification for any HCVs classified as absent
- Threats to each HCV or class of HCVs and threat level to the HCV in different parts of the jurisdiction
- Results of risk assessment for each HCV or HCV category across the landscape and in subunits (if relevant)

7. Next steps / recommendations

Discussion of next steps will be dependent upon objectives of screening exercise, context, etc.

8. Annexes

- Qualifications and contact information for screening team
- Contact information for stakeholders and experts (where relevant)
- List of data/information sources including documents, maps, databases, experts, etc.