



# NEPCon South and South East Asia Natural Rubber NTFP Addendum

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## 1 Introduction

The purpose of this standard is to define the requirements/certification indicators related to Non Timber Forest Product (NTFP) natural rubber (*Hevea brasiliensis*), which complements the requirements of the FSC™ for the certification of forest management, based on the Principles and Criteria of the FSC; that is, in this addendum only the principles and criteria that apply directly to the handling and operation of natural rubber latex are defined. Certified operations that wish to include natural rubber management as an NTFP in the scope of their FSC forest management certificate, must demonstrate that they are in compliance with the indicators described in this document.

## 2 Background

Forests can be managed for many different objectives and products. Such management can occur in natural forests or plantations, for timber or non-timber forest products, include mechanized or manual harvesting, and managed by a large industrial operation or a local community or landowner cooperative. Many combinations are possible. A critical question has been - how to evaluate the wide range of ecological, socioeconomic and silviculture impacts of forest management activities in a clear and consistent fashion, based on a combination of scientific research and practical experience?

## 3 Public Comment

Organizations and individuals are encouraged to submit their concern or comments regarding this standard to the NEPCon contact person noted above.

## 4 Content

### 4.1 Scope

This addendum shall be applicable for the assessment of management systems in tree plantations natural rubber (*Hevea brasiliensis*), forest management enterprises (FMEs) that require certification rubber as NTFPs in South and South-East Asia. This addendum shall be used in conjunction with the latest version of the FSC national forest stewardship standard approved for the country. This addendum is approved for use in Indonesia, Thailand and Sri Lanka.

### 4.2 Standard effective date

This standard shall be effective from 15 June 2018.

### 4.3 References

FSC-STD-01-001 v. 4.0 FSC Principles and Criteria for Forest Stewardship

#### 4.4 Terms and definitions

See annex A for glossary.

Acronyms:

FME: Forest management enterprise

FSC: Forest Stewardship Council

HCVF: High conservation value forests

NTFP: Non-Timber Forest Product.

SLIMF: Small and Low Intensity Managed Forests

#### 4.5 NEPCon South and South East Asia Natural Rubber NTFP Addendum

PRINCIPLE 1: COMPLIANCE WITH LAWS AND PRINCIPLES OF THE FSC.

Forest management shall respect all applicable laws of the country in which they occur, and international treaties and agreements to which the country is a signatory, and comply with all FSC Principles and Criteria.

Overview: The use of non-timber forest products, in this case natural rubber (*Hevea brasiliensis*) must be made within the ethical and legal framework of international laws and policies related to the environment and human rights, and as well as according to the laws.

The use of natural rubber does not required to have specific legal permits or specific licenses. The extraction takes place in natural rubber plantations established for this specific purpose within the FME. Because the conditions described above, they are not included in this addendum additional indicators apply to natural rubber; NEPCon interim standard for evaluation of forest management shall apply in this perspective.

Note: Recently natural rubber plantations have begun to establish rubber plantations in natural protected areas, so it will be necessary to assess, under Criterion 1.1, the existence of specific regulations for the use of rubber.

PRINCIPLE 2: TENURE AND USE RIGHTS AND RESPONSIBILITIES.

Long term tenure and use rights to the land and forest resources shall be clearly defined, documented and legally established.

Overview: Natural rubber (*Hevea brasiliensis*) are important resources for rural, and even urban, populations worldwide. Forest managers shall demonstrate sensitivity to the dependence of local individuals and communities on NTFPs, as long as Natural rubber (*Hevea brasiliensis*) usage does not threaten forest integrity. Forest managers may take

proactive steps to improve community relations by improving understanding of Natural rubber (*Hevea brasiliensis*), permitting continued access to and by being mindful of maintaining NTFP resources in management planning. However, increased market demand, higher prices for Natural rubber (*Hevea brasiliensis*) or new settlement may increase pressures on NTFPs. In such instances, management may need to restrict NTFP access to those with traditional rights, or in drastic cases, temporarily curtail access to protect resources.

2.1 Clear evidence of long term forest use rights to the land (e.g. land title, customary rights, or lease agreements) shall be demonstrated.

2.1. NTFP(Rubber).1 Agreements shall exist between the FME and third party commercial Natural rubber (*Hevea brasiliensis*) harvesters and should be documented. (e.g. a lease contract or other agreement outlining harvest area, estimated extracted volume, etc.).

2.2 Local communities with legal or customary tenure or use rights shall maintain control, to the extent necessary to protect their rights or resources, over forest operations unless they delegate control with free and informed consent to other agencies.

2.2. NTFP(Rubber).1 Local communities shall receive fair and adequate benefits for any use of their name or image in marketing of Natural rubber (*Hevea brasiliensis*).

2.2. NTFP(Rubber).2-When local knowledge is the basis of Natural rubber (*Hevea brasiliensis*) patent, informed consent shall be obtained and the affected community shall receive fair and adequate benefits.

2.3 Appropriate mechanisms shall be employed to resolve disputes over tenure claims and use rights. The circumstances and status of any outstanding disputes will be explicitly considered in the certification evaluation. Disputes of substantial magnitude involving a significant number of interests will normally disqualify an operation from being certified.

2.3. NTFP(Rubber).1 Large-scale harvesting and commercialization of Natural rubber (*Hevea brasiliensis*) shall be described in advance to affected communities, by means which are appropriate to the local reality, when the harvest of such products has the potential to impact local subsistence use.

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### PRINCIPLE 3: INDIGENOUS PEOPLES RIGHT.

The legal and customary rights of indigenous peoples to own, use and manage their lands, territories and resources shall be recognized and respected.

Overview: The rights of indigenous peoples to use NTFPs for subsistence needs must be protected. Natural rubber (*Hevea brasiliensis*) play central roles in cultural and religious ceremonies for indigenous communities and their protection may promote cultural survival and positive relations between stakeholders. Certification should seek to minimize any potentially negative impacts of market forces on traditional local use and management of forests and forest products. Certification should also avoid creating dependency relationships that may disrupt cultural balance, integrity, and belief systems, and that exploit indigenous-related knowledge and image.

3.3 Sites of special cultural, ecological, economic or religious significance to indigenous peoples shall be clearly identified in co-operation with such peoples, and recognised and protected by forest managers.

3.3. NTFP(Rubber).1 Culturally and religiously significant sites, groves, plants and animals of cultural or religious importance shall be identified and protected from Natural rubber (*Hevea brasiliensis*) harvesting activities.

3.4 Indigenous peoples shall be compensated for the application of their traditional knowledge regarding the use of forest species or management systems in forest operations. This compensation shall be formally agreed upon with their free and informed consent before forest operations commence.

3.4.NTFP(Rubber).1 Indigenous communities receive shall fair and adequate benefits for any use of their name or image in marketing of Natural rubber (*Hevea brasiliensis*).

3.4.NTFP(Rubber).2 When indigenous knowledge is the basis of an Natural rubber (*Hevea brasiliensis*) patent, informed consent shall be obtained and the affected community shall receive fair and adequate benefits.

### PRINCIPLE 4: COMMUNITY RELATIONS AND WORKER'S RIGHTS.

Forest management operations shall maintain or enhance the long-term social and economic well being of forest workers and local communities.

Overview: Workers involved in operations management and use of natural rubber may be linked to the FME (employees, forest owner/manager and relatives), or they may be third contracted parties to perform specific jobs harvesting or plantation management (local communities, enterprises, individuals). NEPCon interim standard for evaluation of forest management shall apply in this perspective.

#### PRINCIPLE 5: BENEFITS FROM THE FOREST.

Forest management should encourage the efficient use of the forest multiple products and services to ensure economic viability and a wide range of environmental and social benefits.

Overview: The NTFP natural rubber comes directly from the management of tree plantations natural rubber (*Hevea brasiliensis*), which were planted for that purpose, so that the interim standard (FM-32) shall apply this perspective.

5.1 Forest management should strive toward economic viability, while taking into account the full environmental, social, and operational costs of production, and ensuring the investments necessary to maintain the ecological productivity of the forest.

5.1.1.NTFP (Rubber) .1. FME shall have a financial analysis (or a budgetary projection if it is SLIMF) demonstrate the long term economic viability of the use of natural rubber, taking into account the environmental, social and operational costs of forest management. The assumptions of the analysis shall be duly substantiated.

5.2 Forest management and marketing operations should encourage the optimal use and local processing of the forest's diversity of products.

5.2.1.NTFP (Rubber).1. the FME shall encourage the optimal use of the rubber obtained, thus maximizing the economic benefits from their use.

5.3 Forest management should minimise waste associated with harvesting operations and on-site processing operations and avoid damage to other forest resources.

5.3.2.NTFP (Rubber).1. The FME, rubber collectors, transporters and / or processing centers should optimize their methods and equipment to minimize waste associated with harvesting and processing.

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5.6 The rate of harvest of forest products shall not exceed levels which can be permanently sustained.

5.6.1.NTFP (Rubber).1. The intensity of use of natural rubber should be in accordance with the specific management plan. Incision intensity, which defines the intensity of extraction of natural rubber shall be adjusted seasonally dry and rainy season according to a combination of experience and / or long-term local knowledge, in order to avoid overexploitation.

#### PRINCIPLE 6: ENVIRONMENTAL IMPACT.

Forest management shall conserve biological diversity and its associated values, water resources, soils, and unique and fragile ecosystems and landscapes, and by so doing, maintain the ecological functions and the integrity of the forest.

Overview: the management of natural rubber (*Hevea brasiliensis*), if carried out properly, it can help recover degraded habitats and reducing deforestation natural forest, protecting the integrity of natural resources and forests in general. Each type of product or service produced by rubber plantations involves different harvesting regimes and impacts, so management activities should reflect those differences. The interim NEPCon standard for evaluation of forest management (FM-32) shall apply this perspective.

6.6 Management systems shall promote the development and adoption of environmentally friendly non-chemical methods of pest management and strive to avoid damaging the environment. It should also avoid using chemical pesticides. In addition, pesticides classified as Type 1A and 1B are prohibited by the World Health Organization (WHO); pesticides hydrocarbons, and those compounds of chlorine; pesticides that are persistent, toxic or whose derivatives remain biologically active and accumulate in the food chain beyond their intended use; and any pesticides banned by international agreements. If chemicals are used, proper equipment and training shall be provided to minimise health and environmental risks.

6.6.1.NTFP (Rubber).1. It should be avoided as far as possible, the use of pesticides in the nursery, clonal garden, planting and in the process of extraction, transport and storage of rubber. (If pesticides are used, it is necessary to comply with indicators of interim standards for forest management (FM-32) ).

## PRINCIPLE 7: MANAGEMENT PLAN.

A management plan - appropriate to the scale and intensity of the operations - shall be written, implemented and kept up to date. The long-term objectives of management, and the means of achieving them, shall be clearly stated.

Overview: Management plans for natural rubber plantations (*Hevea brasiliensis*) should include aspects of the process of extracting natural rubber, as well as the expected volumes of wood; NEPCon interim standard for evaluation of forest management (FM-32) shall apply in this perspective. Notwithstanding the above, in this addendum it includes aspects corresponding to latex as a NTFP.

7.1 The management plan and supporting documents shall provide:

- a) Management objectives.
- b) Description of the forest resources to be managed, environmental limitations, land use and ownership status, socio-economic conditions, and a profile of adjacent lands.
- c) Description of silvicultural and / or other management system, based on the ecology of the forest and on information obtained through forest inventories.
- d) The rationale for rate of annual harvest and species selection.
- e) Provisions for monitoring forest growth and dynamics.
- f) Environmental safeguards based on environmental assessments.
- g) Plans for the identification and protection of rare, threatened or endangered.
- h) Maps describing the forest resource base including protected areas, planned management activities and land ownership.
- i) Description and justification of harvesting techniques and equipment to be used.

7.1.1.NTFP (Rubber).1. FME shall have a specific plan for the use of natural rubber and plantation management, which should at least include:

- Management objectives;
- Socio-economic conditions of local communities;
- Harvesting areas (described on a map, if possible);
- Rate, timing, and quantity of natural rubber to be harvested, based on the age and condition of harvestable trees and the established best management practices for rubber.

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- Description and justification of the amount of natural rubber harvested, the implemented harvesting technique and the equipment used;
  - Sources Information that sustain natural rubber management activities, (i.e., based on site-specific field data, local knowledge or published regional research and government requirements).
  - Definition of mitigation measures based on environmental assessments.

7.3 Forest workers shall receive adequate training and supervision to ensure proper implementation of the management plan.

7.3.1.NTFP (Rubber).1. There must be evidence that field workers implement, correctly, the rubber tapping guidelines set out in the management plan of natural rubber.

7.4 Forest producers should have a summary of the main elements of the management plan, including those listed in Criterion 7.1. The confidentiality of this information will be respected.

7.4.1.NTFP (Rubber).1. The public summary of the management plan should include aspects related to the use of natural rubber, as listed in the 7.1.1.NTFP Indicator (Rubber) .1.

## PRINCIPLE 8: MONITORING AND ASSESSMENT.

Monitoring shall be conducted - appropriate to the scale and intensity of forest management – to assess the condition of the forest, yields of forest products, chain of custody, management activities and their social and environmental impacts.

Overview: The internal monitoring systems are crucial to provide quality control for forest management operations of extracting natural rubber level plantations, identify social, ecological, economic and operational challenges, and to report on the success or failure of management interventions to resolve problems. In some operations natural rubber, monitoring may be adequate, but extremely informal. Assessors may need to move some operations toward more formal and documented monitoring systems, which in the end can serve to improve management quality and effectiveness.

8.1 Frequency and intensity of monitoring should be determined according to the scale and intensity of forest management operations, and according to the relative complexity and fragility of the affected environment. Monitoring procedures should be consistent and replicable over time, to allow comparison of results and assessment of changes.

8.1.1.NTFP (Rubber).1. FME shall develop a plan for periodic monitoring and reporting, specific for handling of natural rubber.

8.2 Forest management should include the research and data collection needed to monitor, at a minimum, the following indicators:

- a) Yield of all forest products harvested.
- b) Growth rates, regeneration and condition of the forest.
- c) The composition and observed changes in the flora and fauna.
- d) Environmental and social impacts of harvesting and other operations.
- e) Costs, productivity and efficiency of forest management.

8.2.2.NTFP (Rubber).1. FME shall monitor and record information on the following aspects:

- quantity of natural rubber harvested;
- Growth and recovery after the use of natural rubber.
- Management costs of natural rubber.
- social impacts of management.
- Monitoring the implementation of mitigation measures

8.3 Documentation shall be provided by the forest manager to enable monitoring and certifying organizations to trace each forest product from its origin. This is a process known as the "chain of custody".

8.3.1.NTFP (Rubber).1. Volume and source data on loads of natural rubber shall be available in the forest, and at processing and transportation centers controlled by FME.

8.3.2.NTFP (Rubber).1. the sales/delivery note and other documentation related to the sale/ delivery of natural rubber as a certified product shall include the description of the

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product group (eg, rubber FSC 100%), and certification code in the correct format (i.e., NEPCon-FM/COC-XXXXXX).

8.3.3.NTFP. (Rubber).1. The certificate shall be clearly distinguished from the non-certified product by means of marks or labels, separate storage and sale notes attached to the point of sale, ie, to the "forest gate".

8.5 Forest managers shall have a summary available to the public of the results of monitoring indicators, including those listed in Criterion 8.2. the confidentiality of this information will be respected.

8.5.1.NTFP (Rubber).1. FME shall make available to thee public a summary of the results of the main elements of its monitoring system for natural rubber.

#### PRINCIPLE 9: MAINTENANCE OF HIGH CONSERVATION VALUE FORESTS.

Management activities in high conservation value Forest (HCVF) shall maintain or enhance the attributes that define such forests. Decisions regarding high conservation value forest always be considered in the context of a precautionary approach.

Overview: Because the natural rubber tree plantations advantage of rubber (*Hevea brasiliensis*) that have been established for this specific purpose, are not natural forests that may have attributes of high conservation value. However, there are cases where natural rubber plantations (*Hevea brasiliensis*) are set in surrounding areas or buffer natural forests. Due to this, the provisions of the NEPCon Interim Standards for Forest Management evaluation (FM-32) shall be applied.

#### PRINCIPLE 10. PLANTATIONS

Plantations shall be planned and managed in accordance with Principles and Criteria 1 to 9 and Principle 10 and its criteria. While plantations can provide an array of social and economic benefits and can contribute to satisfying the world's needs for forest products, they should complement the management of, reduce pressures on, and/or promote the restoration and conservation of natural forests.

Overview: The non-timber forest product natural rubber is directly linked to the 10 principle of plantations, because this produced in NTFP plantations natural rubber (*Hevea brasiliensis*). This NTFP is harvested through the action of tree incision. In the

management plan of plantation should be stipulated the management and extraction of latex and in this addendum, criteria and indicators complementary to the activity of natural rubber extraction indicators are established.

Non-timber forest products, in this case, natural rubber latex, provide a range of social and economic local, regional and international benefits, and have the potential to diversify sources of income from forestry operations. The intention of NTFP certification is to optimize the socio-economic potential of certain species with market potential to improve the profitability of forest management in the FMUs.

In the case of natural rubber plantations (*Hevea brasiliensis*) latex is one of the products and services that this species can provide, in addition to forest wood emphasis. To ensure economic viability and sustainability of plantations, the FME will make efforts to diversify income Start implementing management purposes latex harvesting and wood. The natural rubber latex has good and bad economic cycles. Like timber harvesting, marketing natural rubber latex should follow sound marketing plans and have adequate to ensure the viability in the long term conservation of the plantation, and the stability of the FME financial investments.

10.6 Measure shall be taken to maintain or improve soil structure, fertility and biological activity. The techniques and rate of harvesting, road and Trail construction and maintenance, and the choice of species shall not result in long-term soil degradation or adverse impacts on wáter quality, quantity or substantial deviation from steam course drainage pattern.

10.6.1.NTFP (Rubber).1. FME shall take measures to minimize soil degradation (in structure fertility and biological activity), during the extraction of natural rubber latex.

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## Annex 1: FSC Glossary of terms

**Biological diversity:** The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems. (See Convention on Biological Diversity, 1992)

**Biological control agents:** Living organisms used to eliminate or regulate the population of other living organisms.

**Biological diversity values:** The intrinsic, ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic values of biological diversity and its components. (See Convention on Biological Diversity, 1992)

**Chain of custody:** The channel through which products are distributed from their origin in the forest to their end-use.

**Chemicals:** The range of fertilizers, insecticides, fungicides, and hormones which are used in forest management.

**Criterion (pl. Criteria):** A means of judging whether or not a Principle (of forest stewardship) has been fulfilled.

**Customary rights:** Rights which result from a long series of habitual or customary actions, constantly repeated, which have, by such repetition and by uninterrupted acquiescence, acquired the force of a law within a geographical or sociological unit.

**Ecosystem:** A community of all plants and animals and their physical environment, functioning together as an interdependent unit.

**Endangered species:** Any species which is in danger of extinction throughout all or a significant portion of its range.

**Exotic species:** An introduced species not native or endemic to the area in question.

**Forest integrity:** The composition, dynamics, functions and structural attributes of a natural forest.

**Forest management/manager:** The people responsible for the operational management of the forest resource and of the enterprise, as well as the management system and structure, and the planning and field operations.

**Forest management unit (FMU):** A clearly defined forest area with mapped boundaries, managed by a single managerial body to a set of explicit objectives which are expressed in a self-contained multi-year management plan.

**Forest stewardship:** forest management which, in conformity with the FSC Principles and Criteria for Forest Stewardship, is environmentally responsible, socially beneficial, and economically viable.

**Genetically modified organisms:** Biological organisms which have been induced by various means to consist of genetic structural changes.

**Indicator:** a quantitative or qualitative variable which can be measured or described, and which provides a means of judging whether a forest management unit complies with the requirements of an FSC Criterion. Indicators and the associated thresholds thereby define the requirements for responsible forest management at the level of the forest management unit and are the primary basis of forest evaluation.

**Indigenous lands and territories:** The total environment of the lands, air, water, sea, sea-ice, flora and fauna, and other resources which indigenous peoples have traditionally owned or otherwise occupied or used. (Draft Declaration of the Rights of Indigenous Peoples: Part VI)

**Indigenous peoples:** "The existing descendants of the peoples who inhabited the present territory of a country wholly or partially at the time when persons of a different culture or ethnic origin arrived there from other parts of the world, overcame them and, by conquest, settlement, or other means reduced them to a non-dominant or colonial situation; who today live more in conformity with their particular social, economic and cultural customs and traditions than with the institutions of the country of which they now form a part, under State structure which incorporates mainly the national, social and cultural characteristics of other segments of the population which are predominant." (Working definition adopted by the UN Working Group on Indigenous Peoples).

**High Conservation Value Forests:** High Conservation Value Forests are those that possess one or more of the following attributes:

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

**Landscape:** A geographical mosaic composed of interacting ecosystems resulting from the influence of geological, topographical, soil, climatic, biotic and human interactions in a given area.

**Local laws:** Includes all legal norms given by organisms of government whose jurisdiction is less than the national level, such as departmental, municipal and customary norms.

**Long term:** The time-scale of the forest owner or manager as manifested by the objectives of the management plan, the rate of harvesting, and the commitment to maintain permanent forest cover. The length of time involved will vary according to the context and ecological conditions, and will be a function of how long it takes a given ecosystem to recover its natural structure and composition following harvesting or disturbance, or to produce mature or primary conditions.

**Native species:** A species that occurs naturally in the region; endemic to the area.

**Natural cycles:** Nutrient and mineral cycling as a result of interactions between soils, water, plants, and animals in forest environments that affect the ecological productivity of a given site.

**Natural Forest:** Forest areas where many of the principal characteristics and key elements of native ecosystems such as complexity, structure and diversity are present, as defined by FSC approved national and regional standards of forest management.

**Non-timber forest products:** All forest products except timber, including other materials obtained from trees such as resins and leaves, as well as any other plant and animal products.

**Other forest types:** Forest areas that do not fit the criteria for plantation or natural forests and which are defined more specifically by FSC-approved national and regional standards of forest stewardship.

**Plantation:** Forest areas lacking most of the principal characteristics and key elements of native ecosystems as defined by FSC-approved national and regional standards of forest stewardship, which result from the human activities of either planting, sowing or intensive silvicultural treatments.

**Precautionary approach:** Tool for the implementation of the precautionary principle.

**Principle:** An essential rule or element; in FSC's case, of forest stewardship.

**Silviculture:** The art of producing and tending a forest by manipulating its establishment, composition and growth to best fulfil the objectives of the owner. This may, or may not, include timber production.

**SLIMF (small or low intensity managed forest):** A forest management unit which meets specific FSC requirements related to size and/or intensity of timber harvesting, and can therefore be evaluated by certification bodies using streamlined evaluation procedures. The applicable FSC requirements are defined in *FSC-STD-01-003 SLIMF Eligibility Criteria*.

**Stakeholder:** Individuals and organizations with a legitimate interest in the goods and services provided by an FMU; and those with an interest in the environmental and social effects of an FMU's activities, products and services. They include: those individuals and organizations which exercise statutory environmental control over the FMU; local people; employees; investors and insurers; customers and consumers; environmental interest and consumer groups and the general public [modified from Upton and Bass, 1995].

**Succession:** Progressive changes in species composition and forest community structure caused by natural processes (nonhuman) over time.

**Tenure:** Socially defined agreements held by individuals or groups, recognized by legal statutes or customary practice, regarding the "bundle of rights and duties" of ownership, holding, access and/or usage of a particular land unit or the associated resources there within (such as individual trees, plant species, water, minerals, etc.).

**Threatened species:** Any species which is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

**Use rights:** Rights for the use of forest resources that can be defined by local custom, mutual agreements, or prescribed by other entities holding access rights. These rights may restrict the use of particular resources to specific levels of consumption or particular harvesting techniques

## **Annex 2: List of national and local forest and related laws and administrative requirements which apply in South and South East Asia.**

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## Annex 3: General NTFP Management Considerations of natural rubber latex<sup>1</sup>.

### Human factor

In natural rubber production is closely linked to the human factor. Genetic and physiological conditions of the trees determine the production potential. The effective yield depends on the incision technique, ie collection standards (depth, length of cut, etc.), performed rigorously define an intensity of exploitation under favorable climatic conditions allow to obtain the best production potential of the trees.

Performance should be considered over several years. Some conditions can result in momentarily high production levels, yet unfavorable for the ecological balance of the tree, and involve long, mediocre productions. (P. Compagnon).

The implementing rules of incision being defined, the human factor involved in the rigor and quality of implementation of these standards. Among them, the depth of incision, whose deviation from 1 to 2/10 mm, in excess or less, remarkably affects production requires a trained and skilled hand work.

They are equally important:

- Timeliness and speed of execution of work, due to the low production of trees a few hours after sunrise,
- Incision care in order to avoid injuries in the cambium, which are causes of diseases in the pica panel.
- In addition, all precautions you should take the to prevent accidental loss of latex.

Good performance requires a hand plantation of adequate, stable and trained workforce. The ability of workers can vary according to regions; They can be both good men, women and teenagers, after a training "rubber tapping" which is often limited to 2 or 3 weeks. (P. Compagnon)

### Climatology

#### Temperature

Generally, it is considered suitable for the natural rubber an average temperature of 25 °C. In general, it is the average temperature at sea level in the regions between the equator and the 10 or 15 degrees north or south - area where the vast majority of the plantations are. In fact, the average temperature can hide variations that can be inconvenient for the natural rubber. (P. Compagnon)

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<sup>1</sup> This section is so general references on the cultivation of natural rubber; bibliographical prescriptions reported here are not necessarily linked to the requirements of the indicators of this Addendum, so should not be taken as elements to be evaluated in the field.

## Rainfall

The annual rainfall amount and distribution of this are of great importance in heveicultura.

For the trees to ensure sufficient growth, it is essential that certain rainfall conditions exist. Moreover, a water shortage is a limitation of production. On the contrary, abundant rains also disturbing and increase the risk of accidental bites and production losses. Rainfall should be considered under the following three aspects:

- Annual rainfall.
- Distribution of rainfall throughout the year.
- Distribution of rain throughout the day.

## hygrometry

In all rubber plantation regions, the humidity of the atmosphere in the first hour is near saturation. We have seen the importance that these conditions have for good latex spill. Even in countries with a long dry season, the humidity can reach down to 50% at noon during the dry months. At this time of year, the humidity in any way remains high in the morning by the fact more marked in low temperature and condensation occur in the form of fog and dew.

These conditions are paramount importance, since during the first months of the dry season, and even the budding stage help to have high yields. Instead, during the time of the budding stage, if these conditions continue to favor the onset of certain diseases of leaves. (P. Compagnon).

## Winds

Hevea is a tree that is more or less easily broken, so the winds can cause significant losses. Among several clones selected for their productivity, there are some that have proven to be better wind resistance and are preferably those that are planted. However, the term burst strength is relative. Certain regions may suffer from extremely violent winds that any hevea resist. (P. Compagnon).

## Relief

The hevea can be planted in both hilly and flat terrain land. However, from the point of view of the cost of establishing and operating the flat or slight slope are more favorable. The preparation and maintenance of soil can not be made by mechanical means when the slope is greater than 10-15%. On the other hand, sloping terrain must have protection works against erosion. The rugged terrain also present a problem for the collection and increased risk of accidental loss of latex.

When the slope is greater than 4-5%, it is recommended to plant in contour lines. When the general topography of an area dedicated to the heveicultura allows plant without having to make annoying parcellings, you try to limit the planting of land with more than 15% slope and planting land is avoided with greater than 25-30% slopes. (P. Compagnon)

## Diseases and pests

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dry cutting (F. Rivano)

Natural rubber has the particularity of not being the product of a fruit or a root, as most crop production. The laticiferous tissues generates *Hevea brasiliensis* rubber.

In normal operation, the incision is performed 3 to 4 times per fortnight. The spill of the latex 3 to 8 hours, according to the clones and ecoclimatic conditions. Various diseases of the cortex, due to known fungi (*Phytophthora palmivora*) can disrupt this organization. However, since the exploitation of hevea went from wild harvest to planting well organized, a phenomenon has appeared and seems to be widening as they increase yields. It is the dry cutting, characterized by the partial or complete absence of spillage of latex after incision.

This syndrome, is serious from an economic point of view, and today become a priority in research programs. The efforts made to date have shown the great complexity of the problem. To solve it, we must approach it in a multidisciplinary and international framework to better understand this disease and possibly multiforme identify different variants.

Dry cutting hevea is known for a long time. The term of bast Brown (brown bark) that has been associated since the beginning of the century, has helped to cause confusion about it. Indeed, the dry cutting reflected not only causes but symptoms can be very different, although they carry the same effects: degradation laticífero system and reduction or disappearance of the production of latex in rubber trees.

Among the direct or indirect causes of the disease, we must mention the over-exploitation due to the intensity of stimulation incision or too strong, but also the season, drought, soil quality certain. Non-random localization of diseased trees has also oriented towards finding studies of various pathogens, without the lack of results today allows to eliminate this hypothesis.

Sensitivity dry cutting is a clonal property, which can be very strong; Also, PB235 and PB260 clones for being fast metabolism, that makes them more vulnerable. Consequently, clones with slower metabolisms are less likely to get sick.

Differences in symptoms and disease progression have allowed distinguish different types of dry cutting. Some disappear after a prolonged break from incision; therefore, they are reversible. Other, despite a long period of rest and in some cases a slight return production inexorably lead to total dry tree; therefore, they are much more serious. (F. Rivano).

dry cutting without necrosis

seasonal dry cutting

It is often evolving throughout the year and is partial. You can change often and quickly, but is always transitory. No cytological or histological particularly symptom can be linked to the phenomenon. In general, there are few consequences at the level of production. (F. Rivano).

dry cutting induced overexploitation

If over-exploitation is not extended, this type of cut is often reversible. It should be distinguished due to over exploitation intensity incision and over-exploitation due to overstimulation.

#### On-operation due to the intensity of incision

It looks very clearly and is reported by several authors. Full spiral involves drier than average spiral cuts. So, does the frequency of pica. Higher induce drier than the lower courts. Incision orientation and cutting height also have an influence. The upward incision or high panels show fewer symptoms of dry cutting than the downward incision or low panel.

#### On-operation due to stimulation with ethylene

Stimulation by ethylene applied with caution not induce dry cuts. During operation, certain parameters must be controlled: the percentage of active ingredient stimulant, frequency of application, frequency of incision, clonal sensitivity and physiological condition of the harvested trees. On the contrary, too intensive stimulation causes the appearance of dry cuts whose gravity may be important. (F. Rivano).

#### Dry necrotic Court

It is necrosis whole cortex, characterized by a coffee staining tissues bast and senescence, not only the lactiferous mantles but also the constituent cell assemblies. It also has the fundamental characteristic ranging in the phloem. In very few cases, it also affects the cambium, which is still functional, or wood. It is a profound disruption secondary phloem, characterized by an anarchic cell multiplication. (F. Rivano).

#### South American leaf disease caused by *Microcyclus ulei*

It is a superior fungus belonging to the class of the Ascomycetes, presented in its life cycle three morphologically different stages with three types of spores: conidia, ascospores and pycnidiospores; The first two types are those with an infectante function. Symptoms corresponding to the imperfect form (conidiana) vary with the age of the leaf at the time of infection. The first symptoms are a small swelling where the conidia are formed. Infected stems petioles and deform, bend and can be wound in a spiral; lesions are dried and can be opened. The injured tissue hypertrophy. (F. Rivano).

#### Multiplication of planting

Via generative, this means by seeds; It is the method of natural reproduction. This method is still used in individual cases in certain countries in the Far East that have seed with a proven value. This plant material has the advantage of being more rustic, but in general the same production levels are not achieved with grafted trees.

Vegetatively: This is the playback method used for large-scale plantation establishment. In practice, by vegetative propagation method we understand only gusseted grafting also multiplication stake; However, for now, the results have not been great. However, the use of multiplication by cuttings on an industrial scale, subject to faithfully reproduce the feature set of the mother tree, allow a new

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progression in the vegetative propagation of selected plant material for producing plantations with high production.

In practice, grafting is the only technique used for industrial multiplication. For grafted plants it is required to have one side of a rootstock and the other buds grown on budwood. (F. Rivano).

#### Definition of incision

The latex cell content in which the rubber is, has the peculiarity of being regenerated; It is regenerated within the laticífero system. Hevea is distinguished from most crops in the fact that these elements of the plant (fruits, seeds, vegetative organs, ...) or fully harvested.

The latex is placed in a network of communicating vessels laticíferos roughly between them; It is fluid. The incision of these vessels allows the spill latex outward. This operation is repeated throughout the year with a characteristic frequency of incision system. (P. Compagnon).

#### Volume drained bark

The importance of spill of the latex depends on the drained area and the number of laticíferos vessels involved in the production, ie. the thickness of cortex and incised surface crust affected by the incision.

The drained volume is the productive zone of the tree and in which the latex is regenerated. Numerous parameters condition: the depth, length, slope, location of the panel, the number of open in the same tree cuts and finally the sense in which the bark is incised at the time of each incision. (P. Compagnon).

#### Incision depth

The observation of the structure of the crust shows a laticífero system consists of concentric laticíferos mantles that have little connection between them. These mantles are renewed periodically from the cambium and progressively degenerate as they move away to the outside of the crust. Younger and more active vessels, from the viewpoint of rubber biosynthesis, and therefore more productive, are closest to the cambium; its latex can be harvested more. Hence it makes the importance of the depth of incision for the spill.

Incising the bark does not have to reach the cambium. It can generate very fragile area responsible for regenerating the bast after the incision. If this area is damaged at the time of the incision, it may causing subsequent scarring or less marked deformation over the regenerated bark it becomes uneven and, therefore, difficult to chop in subsequent cycles. Moreover, an excessively deep basin create disease wounds panel, with consequences on subsequent incision conditions. The incision has to respect an area of 1 mm to 1.5 mm near the cambium. (P. Compagnon).

#### Cutting length

For long cuts, cortex located in the two cut ends (whose generatrix line can be the same in the case of a "complete spiral") can be drawn by both ends of the cut. This means that production per

centimeter cutting will be reduced in the case of long cuts (and particularly in the case of a complete spiral) in short cuts.

A Slit, despite being very productive, more or less strangling tree and may result eventually a disturbance in circulation of sap. Underfeeding of laticíferos sucrose may cause some downtime, problems even dry cutting. (P. Compagnon).

#### Number of cuts

Due to the progressive coagulation of the latex after incision, the effusion decreases. Therefore, a chopped laticífero is not completely emptied of its contents. The area of interest for the incision is therefore limited.

The productivity of a tree can be improved by increasing the number of cuts. (P. Compagnon).

#### Slope

The sap ducts of a trunk are not vertical but spiral shaped. The angle of the layer is, in most cases, inclined to the right going from bottom to top. The cut, which in any case must be tilted to allow spillage of latex, will be oriented so as to capture a maximum of laticíferos vessels.

#### Cutting height

It indirectly influences the volume of drained bark, since the thickness and the number of laticiferous mantles of this bark vary with the height of the cut. This point is more sensitive with high standing trees, with a conical trunk and whose number of laticiferous mantles is much higher in the lower part of the trunk. With grafted trees, the differences are smaller.

Cutting height also influences the characteristics of the latex, productivity and certain features of the spill. In a high cut, rate is higher obstruction, logical phenomenon considering the higher content of magnesium latex. (P. Compagnon).

#### Sense of incision

The exploitation of the bark can be done by chopping up or down, ascending or reverse incision and downward or normal incision. In the normal incision, the drainage area is located below the cut. In the reverse pole, the drainage area is located above the cut, where the nutritive elements arrive freely. The regeneration of the latex can be done in the best conditions; but the bark in regeneration, located below the cut, are seen with disadvantage. This bark regenerates more slowly. The reverse pole is handled especially at an advanced age of the trees, with the aim of making the upper part of the trunks profitable (above approximately 1.30 m). (P. Compagnon).

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## **Annex 4: List of the multilateral environmental agreements and ILO Conventions that South and South East Asia has ratified**

## Annex 5: List of officially endangered species in South and South East Asia

Example:

CITES

Animals Appendix I

Animals Appendix II

Animals Appendix III

Plants Appendix II

Plants Appendix III

CITES with national export quotas

Non-CITES with national export quotas

IUCN Red List species (2007) native to South and South East Asia

## Annex 6: Summary of the Certification Assessment Process<sup>2</sup>

The certification assessment process begins with a candidate operation submitting an application to NEPCon. Based upon a review of the application, the scope of the area to be certified and discussions with the candidate, NEPCon will propose a certification process that includes either a preassessment and then a main assessment, or goes directly to a main assessment. Every candidate operation is assigned a NEPCon task manager who will liaise with the assessment lead auditor and the candidate to schedule and perform the evaluations.

NEPCon auditors are provided with detailed guidance on the certification process, including pre-assessment briefings (either in person or by telephone) and access to a written NEPCon handbook for forest assessment. The purpose of these briefings and the manual is to ensure that a consistent and thorough certification process is followed.

In addition to following the NEPCon procedures outlined in our forest evaluation handbook, there are three other ways in which we ensure accuracy and fairness in our certifications:

1. The assessment must involve individuals who are familiar with the particular region and type of forest management operation under evaluation. It is NEPCon policy to involve local specialists in all assessments.
2. Team members must be familiar with NEPCon certification procedures. Each NEPCon certification assessment has a designated lead auditor who must have participated in a formal NEPCon auditor-training course or previously participated in other NEPCon forest management assessments or audits.
3. The assessment must use region-specific standards (i.e. accredited FSC standard or a "regionalized" NEPCon Interim Standard, based on this NEPCon Generic Standard).

**Team Selection and Planning:** NEPCon selects a qualified lead auditor and other team members to participate in the assessment. The lead auditor's first task is to ensure that all team members understand the scope and intent of the assessment process. Responsibility for evaluation of different sections (i.e. specific criteria and indicators) of the standard are assigned to different team members, depending on their particular training and expertise. All team members can provide input into any principle, but lead responsibility is assigned for data collection, analysis and writing for each criterion and indicator.

**Stakeholder notification:** At least 45 days prior to forest evaluation, NEPCon notifies stakeholders of the pending assessment and requests stakeholders' observations or comments with regard to the operations conformance with the certification standard.

**Fieldwork and Data Collection:** Evaluation of conformance with the standard is based upon data collection by the auditors through review of FME management documentation, interviews with staff and stakeholders, and field observations and measurements. The team organizes opening meetings with the FME staff to review the assessment scope and procedures and certification standards. Documentation review and interview with FME staff begin immediately. The assessment process then moves quickly to the field phase. Inspections are made to sites chosen by NEPCon auditors based on a comprehensive

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<sup>2</sup> For detailed information about procedures, contact our headquarters or regional offices through [www.nepcon.org](http://www.nepcon.org)

review of the candidate FME's forest holdings and management activities, discussions with interested/affected parties, and identification of critical issues or challenging sites. Site visits occur in the forest, at processing facilities, and in surrounding communities. Visits emphasize management activities of all types and phases and different biological or physical conditions.

Team members meet independently with stakeholders. All assessments solicit and incorporate input (confidential and/or open) from directly affected and/or knowledgeable stakeholders, including local communities, adjoining landowners, local forest industry, environmental organizations, government agencies, and scientific researchers. During these consultations, assessment team members explain the assessment process, solicit opinions, and gather impressions about the field performance of the operation being assessed.

**Data Analysis and Decision making:** Throughout the assessment the team meets independently to discuss progress in gathering information, and discuss preliminary findings. The assessment team works in a consensus fashion to analyze information and evidence gathered, evaluate conformance and reach agreement on their findings as to the certification of the candidate operation.

The assessment team evaluates performance by the FME at the indicator level of the standard. Any non-conformances are analyzed and classified as either minor or major. A nonconformance is considered major if it results in a fundamental failure to achieve the objective of the relevant criterion in the standard. Conversely, a nonconformance is considered minor if the impacts are limited in scale, prompt corrective action has been taken to ensure it will not be repeated and it does not result in a fundamental failure to achieve the objective of the relevant criterion. For each area of nonconformance identified, the assessment team develops a nonconformity report (NCR) which is classified as follows:

- **Major Nonconformity Report (NCR)** is issued to document a major nonconformance with an indicator(s)/criterion that the candidate FME must correct before NEPCon certification is granted;
- **Nonconformity Report (NCR)** is issued to document a minor nonconformance that candidate FME must correct by a specific deadline (i.e. short term - usually within one year) during the renewable five-year certification period (which is the standard FSC certification contract period); and,
- **Observation** is a very minor problem or the early stages of a problem which do not of itself constitute a nonconformance, but which the auditor considers may lead to a future nonconformance if not addressed by the client. An observation may be a warning signal on a particular issue that, if not addressed, could turn into a nonconformance in the future.

**Report Write-up:** Following the forest evaluation, the team prepares the certification assessment report. This report follows a standardized format and includes detailed findings of performance and proposes pre-conditions (major non-conformances), NCRs or observations.

**Review of Assessment Report by Candidate Operation, Independent Peer Reviewers and NEPCon Decision Review:** The candidate operation, at least one peer reviewer, and NEPCon regional staff, review each certification assessment report.

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**Certification Decision:** Once the above steps are completed, the applicable NEPCo regional office coordinates a certification decision process. If a certification decision is to approve certification, a five-year certification contract will be executed which requires annual on-site audits. If an operation is not approved, the certification decision will establish what must be done in order for the operation to achieve certified status in the future.

## About NEPCon

NEPCon (Nature Economy and People Connected) is an international non-profit organisation that works to build capacity and commitment for mainstreaming sustainability. For almost 25 years, we have worked to foster sustainable land use and responsible trade in forest commodities. We do this through innovation projects, capacity building and sustainability services.

We are accredited certifiers for sustainability schemes such as FSC™, PEFC, RSPO and SBP. We offer chain of custody and farm certification according to the Rainforest Alliance Sustainable Agriculture Standard. We also certify to our own LegalSource™, Sustainable Tourism and Carbon Footprint Management standards. A self-managing division of NEPCon promotes and delivers our certification services. Surplus from certification activities supports the NEPCon's non-profit activities.

NEPCon is recognised by the EU as a Monitoring Organisation under the EU Timber Regulation.

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