

# Informative Note

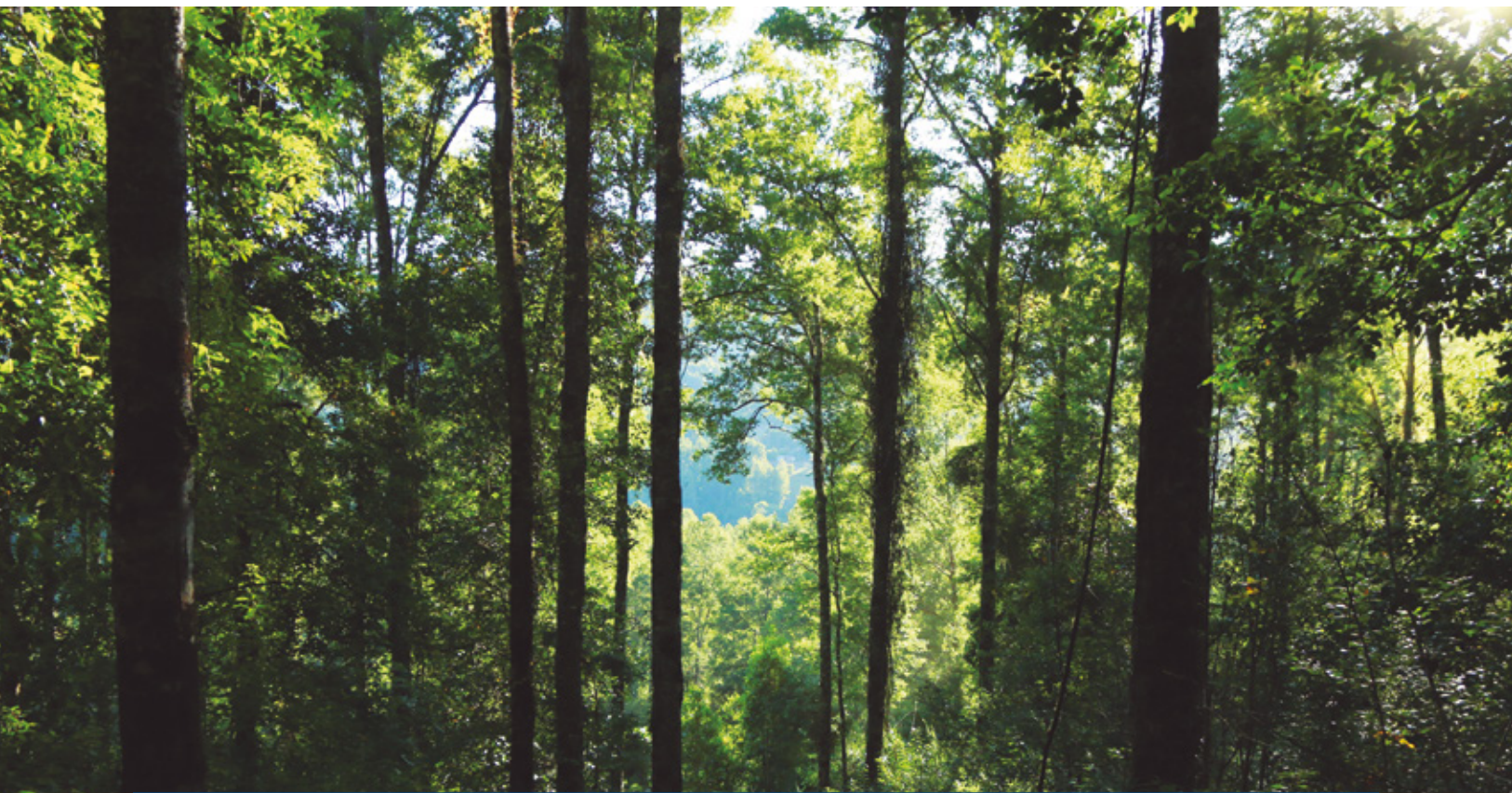
# ENCCRV

# 07



NATIONAL STRATEGY ON  
CLIMATE CHANGE AND  
VEGETATION RESOURCES

Santiago, May 2017



In this Edition

**Identification and prioritization of causes for deforestation, devegetation and degradation of vegetation resources and related issues for increasing their cover and quality as foundations for the design of the action measures of the National Strategy on Climate Change and Vegetation Resources (ENCCRV).**



# ENCCRV

ESTRATEGIA NACIONAL DE CAMBIO CLIMÁTICO Y RECURSOS VEGETACIONALES



**National Strategy on Climate Change  
and Vegetation Resources**

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## **Identification and prioritization of causes for deforestation, devegetation and degradation of vegetation resources and related issues for increasing their cover and quality as foundations for the design of the action measures of the National Strategy on Climate Change and Vegetation Resources (ENCCRV)**

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# 1. Introduction

Since 2010, the National Forestry Corporation (CONAF) within the Ministry of Agriculture designs and implements the 2017-2025 National Strategy on Climate Change and Vegetation Resources – approved by the Council of Ministers for Sustainability on November 14th, 2016 –, therefore becoming a fundamental policy instrument for fulfilling the commitments assumed by Chile at an international level with regard to climate change, desertification, land degradation and drought.

The ENCCRV's general objective is:

*“To reduce the social, environmental and economic vulnerability generated by climate change, desertification, land degradation and drought on vegetation resources and human communities that depend on these for increasing ecosystem resilience and contributing towards mitigating climate change, thus promoting the reduction and capture of greenhouse gas emissions in Chile.” (CONAF, 2016)*

To achieve this, the following specific objectives have been defined:

## 01.

Contribute to the fulfillment of the commitments assumed by Chile in terms of vegetation resources before the United Nations Framework Convention on Climate Change (UNFCCC), the United Nations Convention to Combat Desertification (UNCCD), the Convention on Biological Diversity (CBD) and other national and international agreements.

## 02.

Influence in technical, political and financial decision-making that allows positioning the role of vegetation resources with regard to mitigation and adaptation to climate change and the struggle against desertification, land degradation and drought as priority axes within the sectoral development policies.

## 03.

Manage the valuation and valorization mechanisms of the environmental services provided by native vegetation resources, including performance-based payment systems that respect benefit sharing arrangements and environmental and social safeguards.

In the formulation and implementation of the ENCCRV, we have included three major Phases (Figure 1), the first one being the Preparation Phase, where all of the Strategy's technical and management elements are conceptually designed; secondly, we have the Implementation Phase, where the action measures related to management, restoration and formation of forests and other vegetation resources are materialized; and finally, the Results-based Payments phase, which seeks to compensate -monetarily and non-monetarily- verifiable actions in terms of enhancing practices related to the sustainable management of vegetation resources and the maintenance or increase of the ecosystem services that these provide to society -including carbon capture, water regime regulation, soil protection, biodiversity conservation, among others- attributable to the execution of the action measures established by the ENCCRV<sup>1</sup>.



<sup>1</sup> Available at: <http://www.enccrv-chile.cl/index.php/descargas/publicaciones/87-enccrv-2017-2025-v2/file>

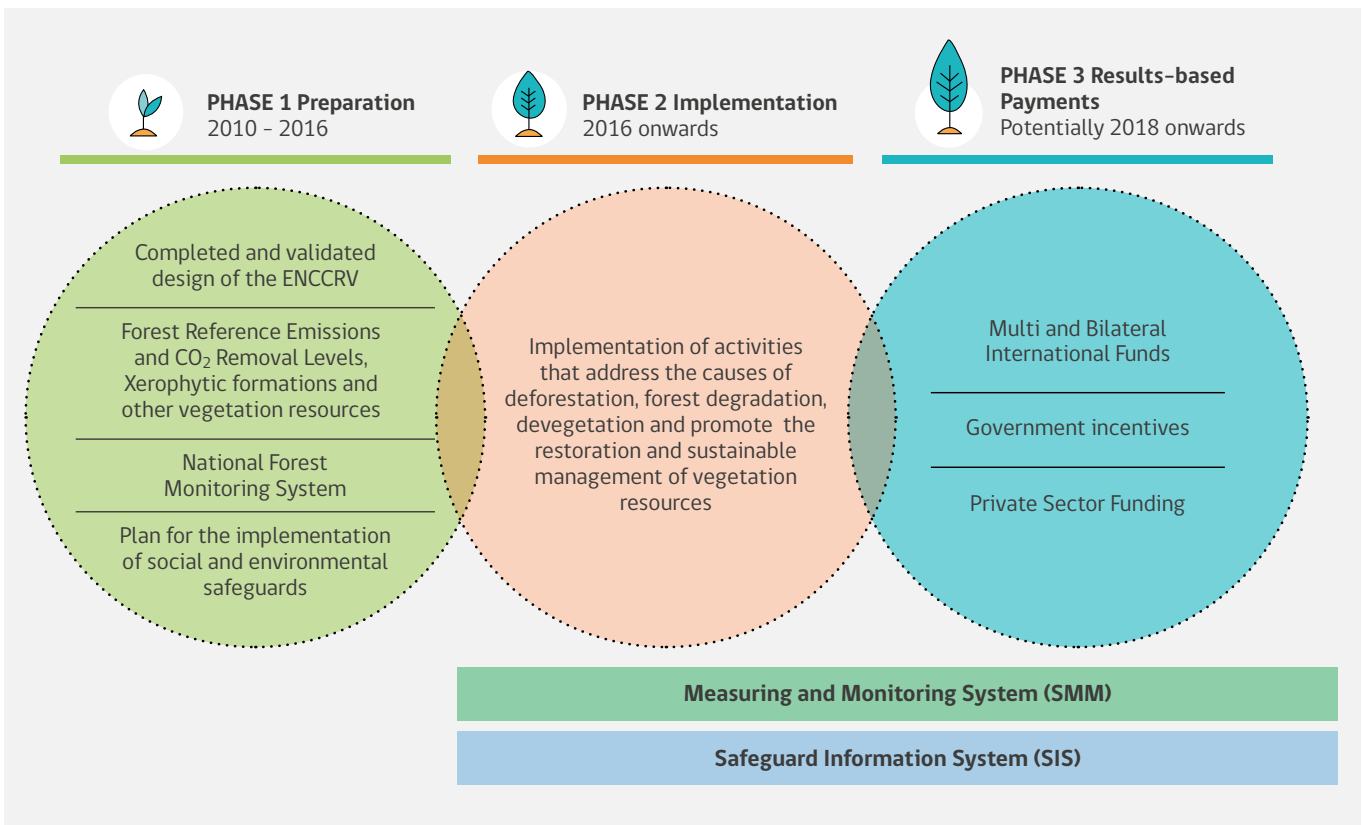


Figure 1. ENCCRV Phases.

From the methodological point of view, the formulation of the ENCCRV is based on the results of multiple technical studies and a participative process conducted in each one of the fifteen regions of Chile, which has generated the necessary inputs for designing integral actions that respond to the

perspective and demands from different society stakeholders.

Table 1 shows the main studies developed for the formulation of the ENCCRV.



**Table 1.** Studies developed for the formulation of the ENCCRV.

Name of the Study	Supporting Consultant Team	Source of Financing	Implementing Entity
Forest Reference Emission Levels, Forest Reference Levels (FREL/FRL) <sup>2</sup> .	Winrock, UACH and Chilean Forestry Institute (INFOR)		
Plan for the Implementation of the Social and Environmental Safeguards of Public and Indigenous Consultation and Self-assessment of Chile's ENCCRV <sup>3</sup> .	Developed by CONAF		
Support in the generation and analysis of the causes of deforestation, forest degradation and no enhancement of forest carbon stocks, identifying strategic options for addressing them within the framework of the ENCCRV <sup>4</sup> .	Universidad Mayor, AIFBN; EBP Chile and CIREN		
Creation of an analysis of the elements and technical and legal procedures required for the creation and future implementation of a Carbon Reduction Rights Transfer and Benefit-Sharing System associated to payment for environmental services (PES) -with a focus on carbon- within the ENCCRV <sup>5</sup> .	TECO Natural Resources Group Chile; Climate Focus and SudAustral Consulting	Forest Carbon Partnership Facility (FCPF)	The World Bank
Support in the creation of technical, political and strategic inputs for incorporating key elements on management and compensation schemes for environmental services developed within the ENCCRV. This is headed by CONAF in the Project for the new Forestry Development Law and other regulatory and sectoral promotion instruments <sup>6</sup> .	SudAustral Consulting; Winrock International; CERTFOR and Ugarte y Hernández Abogados		



<sup>2</sup> Process that has received the approval of the independent international expert panel established by the UNFCCC Secretariat and is published as Chile's official document in the UNFCCC website. It is worth noting that this reference level document positions Chile as one of the first countries to make progress towards the analysis of four of the five REDD+ activities with regard to deforestation, forest degradation, conservation and sustainable management, and carbon stock enhancement for the regions from Maule to Los Lagos. Available at: <http://redd.unfccc.int/submissions.html?country=CL>

<sup>3</sup> Available at: <http://www.enccrv-chile.cl/index.php/descargas/enccrv/7-plan-salvaguardas-enccrv/file>

<sup>4</sup> Tender No. 842990-1-LP15

<sup>5</sup> Tender No. 842990-11-LP15

<sup>6</sup> Tender No. 842990-3-LP15



## REDD+

The positive policies and incentives approach towards Greenhouse Gas (GHG) Emission Reductions caused by Deforestation and Land Degradation, in addition to the promotion (+) of conservation, sustainable management of forests and enhancement in forest carbon stocks –also known as REDD+– is a climate change mitigation mechanism adopted by the UNFCCC that aims to recognize the importance of adequate and predictable financial resources, including results-based payments for developing countries to protect their forest resources, improve their management and use them in a sustainable manner, thus contributing to the global battle against climate change and its effects. Currently, the REDD+ mechanism includes 5 activities, pursuant to Decision 1/CoP 16:

01. Emission Reductions due to Deforestation
02. Emission Reductions due to Forest Degradation
03. Conservation of Forest Carbon Stocks
04. Sustainable Management of Forests
05. Enhancement of Carbon Forest Stocks

With the results obtained from these studies, we generated the fundamentals needed to propose the activities and action measures contemplated within the ENCCRV, which are based on a technical-scientific analysis and a participative process of regional and national scale.

The development of these studies has been coordinated by CONAF's UCCSA unit within the GEDEFF Department and is focused on linking and aligning

the results obtained in the cause identification and prioritization process with the aims of the ENCCRV. This coordination management allowed to collect –in a rigorous and synergetic manner– all of the identified and prioritized elements that make up the Strategy, especially the results of the technical and participatory workshops, expert meetings, and national-level cross-referencing of reports and existing information with regard to the subject.



### Causes

Factors that cause deforestation, devegetation, degradation of forests and xerophytic formations, as well as the reasons that prevent or negatively interfere in the execution of restoration, conservation, sustainable management, enhancement and regeneration activities of native forests and xerophytic formations. The Decisions adopted by the UNFCCC's Conference of Parties (CoP) mention the causes and thus request developing countries to identify and characterize them with the aim of addressing them in their national strategies or action plans and to ensure that the answer to those causes adapts to national circumstances.

Relevant national and international stakeholders participated in each one of these instances, along with representatives from every Focus Group (FG) or interested party. All of them were key in strengthening and validating the results of each one

of the previously-described studies and processes, allowing the integration of different perspectives to the fulfillment of the objectives established by these studies.

### Focus groups

- |   |   |
|---|---|
| 01. Indigenous Peoples                  | 06. Women Organizations                                 |
| 02. Academics                           | 07. Private Sector                                      |
| 03. Institutional Sector                | 08. Small and Medium-sized Landowners                   |
| 04. Forest Consultants/Extension Agents | 09. Indigenous Women, small and medium-sized landowners |
| 05. Non-government Organizations (NGOs) | 10. CONAF Staff   |

This Informative Note is an overview of the results of the studies and participatory processes for defining the main causes for deforestation, devegetation, and degradation of vegetation resources and related

issues for increasing their cover and quality and -as a result- the activities and action measures contemplated by the ENCCRV for addressing them.



## 2. Main Causes of Deforestation, Devegetation, Degradation of Vegetation Resources and related issues for increasing their cover and quality

### 2.1. Addressing causes within the context of the UNFCCC's REDD+ Approach

CONAF -as a National Focal Point for the REDD+ approach before the UNFCCC Secretariat- conducted an in-depth analysis of the decisions adopted in the Conference of Parties (CoP) where the subject of deforestation and forest degradation is mentioned, constituting the conceptual basis to be applied and adapted to national circumstances when formulating the ENCCRV.

These decisions require developing countries to identify the causes (Decision 4/CoP15), address them in their national strategies or action plans (Decision 1/CoP16) and to ensure that the answer to these causes adapts to national circumstances (Decision 15/CoP19). Particularly, these decisions state:

### 2.1.1. Decision 4/CoP.15:

It requests the (developing country) Parties to determine the causes of deforestation and forest degradation that generate emissions; as well as the means to eradicate them<sup>7</sup>.

### 2.1.2. Decision 1/CoP.16:

It requests developing countries –when developing and applying their national strategies or action plans– to address, among other things, the causes for deforestation and forest degradation, land tenure issues, forest governance, gender considerations and safeguards, ensuring the full and effective participation of the interested parties, such as indigenous peoples and local communities<sup>8</sup>.

### 2.1.3. Decisión 15/CoP.19:

Notes that while there may be means of life that depend on activities related to the factors that cause deforestation and forest degradation, and while the fight against these may involve an economic cost and have consequences for national resources, the decision establishes the following:

a. \_\_\_\_\_  
Reaffirms the importance of addressing drivers of deforestation and forest degradation in the context of the development and implementation of national strategies and action plans.

b. \_\_\_\_\_  
Recognizes that drivers of deforestation and forest degradation have many causes, and that actions aimed at addressing these drivers are unique to each

country's national circumstances, capacities and capabilities.

c. \_\_\_\_\_  
Encourages Parties, organizations and the private sector to take action to reduce the drivers of deforestation and forest degradation.

d. \_\_\_\_\_  
Also encourages all Parties, relevant organizations, and the private sector and other stakeholders, to continue their work to address drivers of deforestation and forest degradation and to share the results of their work on this matter, including via the web platform on the UNFCCC website.

e. \_\_\_\_\_  
Further encourages developing country Parties to take note of the information from ongoing and existing work on addressing the drivers of deforestation and forest degradation by developing country Parties and relevant organizations and stakeholders<sup>9</sup>.

While for REDD+ it is explicitly requested that developing countries identify the causes of deforestation and land degradation, in addition to the issues that halt the enhancement of forest carbon stocks, within the ENCCRV formulation framework we decided to include this logic to other vegetation resources such as xerophytic formations, wetlands and high Andean wetlands, based on the national scope that this initiative has and on the social and environmental relevance that was assigned to them in several dialogue instances conducted throughout Chile.

## 2.2. Methodological Approach

Based on the results obtained from workshops with experts and with focus group representatives, in addition to the bibliographical revision and revision of official country data, analytical work was conducted by a multi-disciplinary team of specialists comprised of academics from the public sector, civil society, and private consultants, among others. The methodology

that was developed for the study is comprised of 5 consecutive stages of development, depicted in Figure 2.

Subsequently, this process was assessed and validated by relevant stakeholders, as shown in Figure 3.



<sup>7</sup> Available at: <http://unfccc.int/resource/docs/2009/cop15/spa/11a01s.pdf#page=12>

<sup>8</sup> Available at: <http://unfccc.int/resource/docs/2010/cop16/spa/07a01s.pdf#page=2>

<sup>9</sup> Available at: <http://unfccc.int/resource/docs/2013/cop19/spa/10a01s.pdf>

## Methodological Scheme for the definition of causes and activities



1. Technical and participative identification of the main causes



2. Homologation and prioritization of the causes by Chile's Macro zones



3. Qualitative and quantitative characterization of the prioritized causes



4. Definition of Activities and Action Measures for addressing causes



5. Identification of priority areas communes for the implementation of the activities and action measures

Figure 2. Methodological Scheme for defining causes and activities.

### 2.2.1. Technical and participatory identification of the main causes

For the development of this first stage, the country was divided into three macro zones that account for similar ecological conditions, especially climatic conditions, under the assumption that there are differences among them in terms of the causes to be identified. The macro zones that were defined are:

**North Macro zone:** Regions of Arica and Parinacota, Tarapaca, Antofagasta, Atacama and Coquimbo.

**Central macro zone:** Valparaiso Region, Metropolitan Region and Region of Libertador Bernardo O'Higgins.

**South macro zone:** Regions of Maule, Biobio, La Araucania, Los Rios, Los Lagos, Aysen del General Carlos Ibanez del Campo and Magallanes and the Chilean Antarctica.

For each one of these macro zones, we worked with the following information sources (Figure 3):





 <p>Written Studies and References</p>	<ul style="list-style-type: none"> <li>• Review of Official Documentation of International Guidelines</li> <li>• State-of-the-art of causes in Chile</li> <li>• State-of-the-art in Chile in terms of opportunity costs</li> <li>• Previous projects and publications headed by CONAF for the formulation of ENCCRV</li> </ul>
 <p>Regional ENCCRV Formulation Workshops</p>	<p>Fifteen (15) regional workshops were conducted within the framework of the Strategic Environmental and Social Assessment (SESA) of the ENCCRV. The participation process included different focus groups with the participation of more than one thousand key stakeholders at a national level.</p> <p>In these workshops, the participants were explicitly consulted with regard to the direct and indirect causes that they considered to be a priority and the possible measures that they considered the most relevant in order to address them.</p>
 <p>Macro zone validation workshops</p>	<p>Participative consultation process that considered regional technical stakeholders, including professionals from public services, academics and consultants.</p> <ul style="list-style-type: none"> <li>- <b>North Macro zone Workshop:</b> Regions XV, I, II, III and IV; held in the city of La Serena.</li> <li>- <b>Central Macro Zone Workshop:</b> Regions V, VI, VII and Metropolitan; held in the city of Santiago.</li> <li>- <b>South Macro Zone Workshop:</b> VIII, IX, X, XI and XIV and XII Regions, held in the city of Temuco.</li> </ul> <p>The main objective of these three workshops was to gather the cause prioritization proposal of local stakeholders, the geographic distribution of the issue and the alternatives for mitigation.</p>
 <p>Expert workshop</p>	<p>A national-level expert workshop was held with different specialists from the climate change area and/or with experience on vegetation resource assessment. The results of this workshop allowed us to gather perspectives with regard to the different causes with a greater degree of knowledge in the subject matter and a better systematization of the information generated in the previous stages.</p>

Figure 3. Main sources of information for the identification, selection and prioritization of causes.



The result of this stage was a systematized database where the document revision findings and participative process answers were recorded, exceeding 1,000

records associated to causes of deforestation, devegetation and degradation of native vegetation resources.

### 2.2.2. Homologation and prioritization of causes by Chile's macro zones

The second step consisted in the homologation of the results obtained in the previous stage, which basically translates into identifying records with the same or similar meaning and intention, in addition to clarifying those inputs that presented confusing or inaccurate information. All of the above was conducted with the safeguard of intervening the least possible with the original idea provided by the participants, thus minimizing the interpretations of the group responsible for homologating and prioritizing. The result of the process was a total of 26 homologated causes, out of which 22 were identified for the north macro zone, and 26 for the central and south macro zones. This difference accounts for the heterogeneity of the territories. The prioritization of these causes was primarily made based on the allocation

and integration of three attributes: importance, uncertainty, and activity and passivity relation between causes.

#### Importance

The level of importance was determined by a simple function, based on three variables:

- Relative frequency of mentions for each of the causes in the consultation and background revision

$$FRT = \frac{\text{Number of cause records}}{\text{Total number of records}}$$



- Relative frequency of mentions for each one of the causes in the consultation by focus groups

$$\text{FRGF} = \frac{\text{Number of focus groups in which a cause was recorded}}{\text{Total number of records in the cause map}}$$

- Relative frequency of mentions by geographic distribution

$$\text{FRDG} = \frac{\text{Number of spatial records in the cause map}}{\text{Total number of records in the cause map}}$$

The relative frequency of mentions by geographic distribution was generated based on an innovative participatory methodology developed in the macro zone workshops, where local experts were asked to identify the main causes of degradation, devegetation and deforestation for their macro zone. Subsequent to this, they were asked to mark on deforestation and degradation macro zone maps, the areas where each cause has the highest incidence (Figure 4). This was named a **“cause map”**.

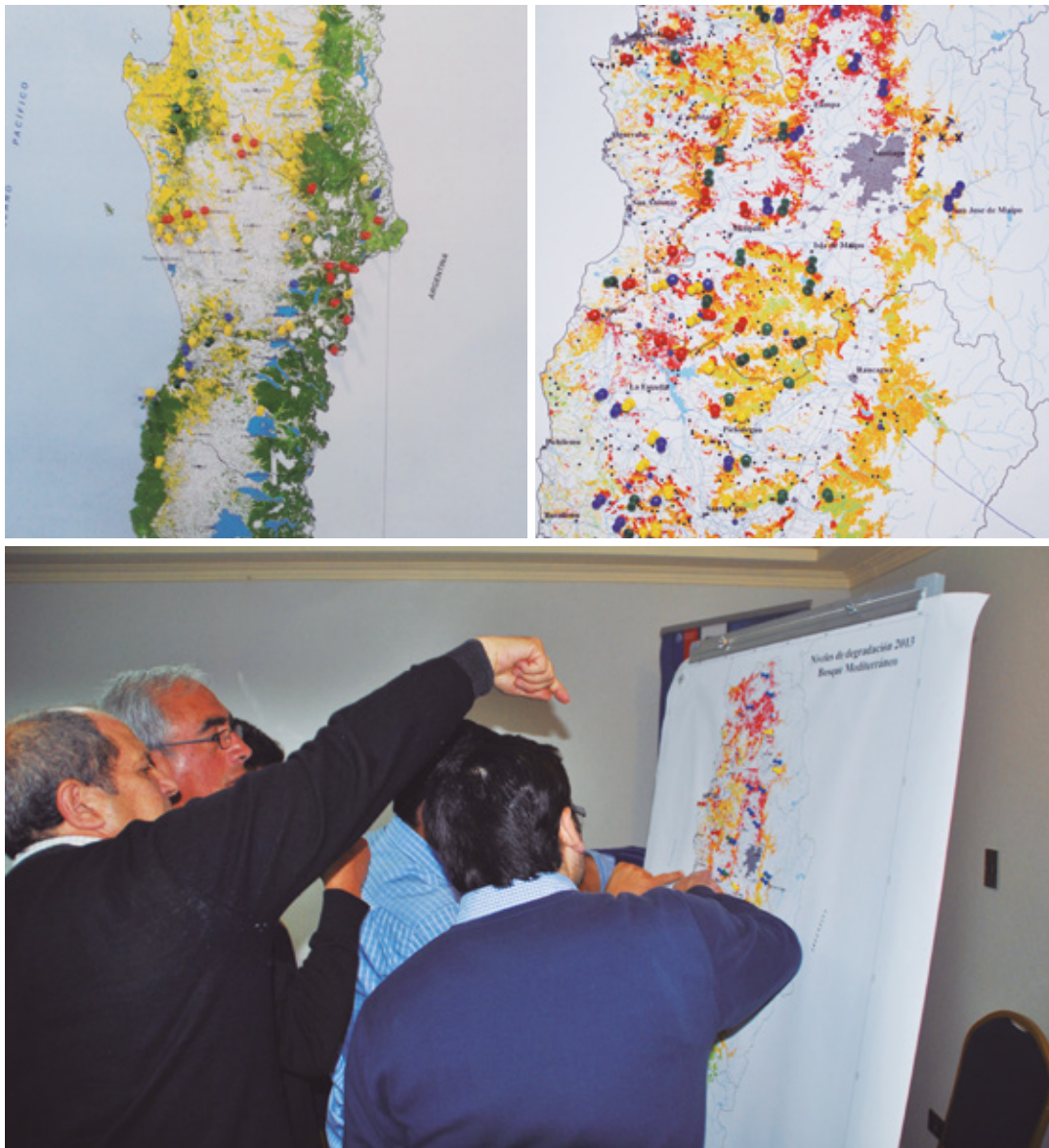


Figure 4. Example of mentions by geographic distribution.



The final equation used is:

$$\text{Importance} = \left( \frac{\text{FRT}}{\text{Total of Causes}} + \frac{\text{FRGF}}{\text{Total of answers by focus group}} + \frac{\text{FRDG}}{\text{Total of points in the cause map}} \right) * 100$$

### Uncertainty

Defined as the probability of occurrence of validated information that allows characterizing the cause in relation to its magnitude and associated GHG emissions. It is classified into four levels (Figure 5):

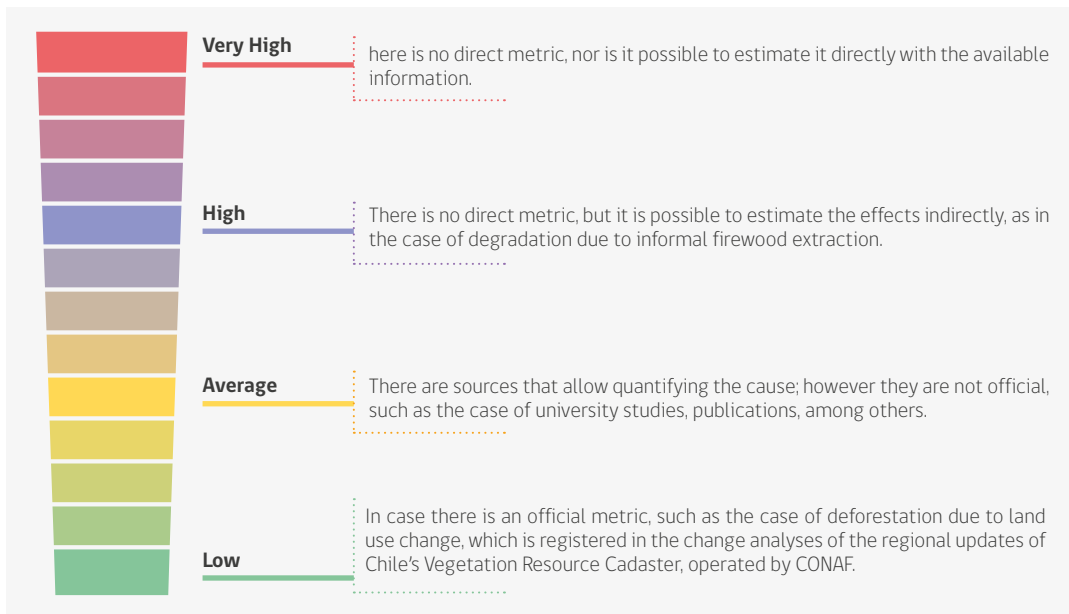


Figure 5. Classification of uncertainty

### Relation of activity or passivity between causes

There are interrelationships, interactions or synergies between causes; therefore one cause may induce and/or drive other causes (called active causes). Another way of formulating these interactions is by assuring that "cause A is active over cause B" given it defines or drives it.

Based on this definition, a contingency matrix was structured for each one of the homologated causes, where the relation of dependency of the cause in the column was assigned to the cause in the row using dichotomous "Active" or "Not Active" option, as shown in Figure 6. The total count on each "Active" row determined the level of activity of its corresponding cause; this number is a measure of the causes it depends on. The determination value of the level of activity or influence of one cause over other causes lies in the fact that managing one very active cause

means reducing the potential effects of all those causes that depend on it.

Similarly, a second product provided by the contingency matrix is the total number of "Active" causes for causes indicated in the matrix column, which indicates their level of passivity, i.e. the level of dependency of other causes, which -in terms of planning- means the possibility of reducing the effects of a passive causes when managing those active causes that determine it.

This contingency matrix was conducted during a workshop, with the participation of a multi-disciplinary team that included public officials, NGOs, academics, trade union representatives and international specialists.

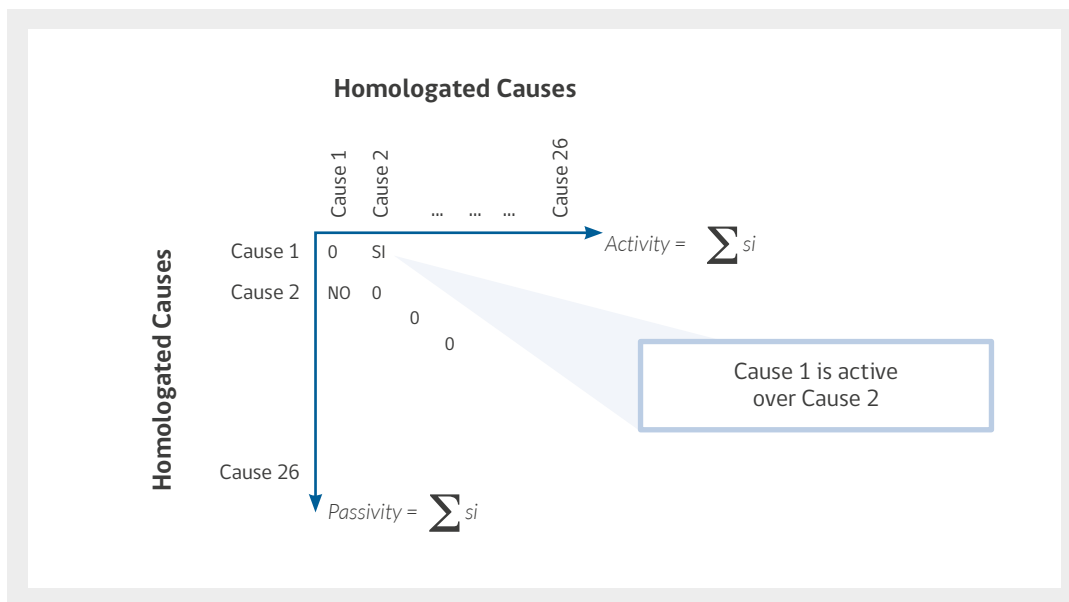


Figure 6. Contingency matrix for determining "Activity-Passivity".

Once the three attributes: Importance, Uncertainty, and Relation of activity or passivity were determined for each homologated cause, they were ranked according to their form of action, and the two following categories were defined:

#### Direct Cause

Human activities or actions that have a direct impact on vegetation resources.

#### Indirect Cause

Processes of social, economic, political and/or cultural nature that generate or drive a direct cause.

The results by macro zone in terms of direct or indirect causes are detailed in Figure 7.

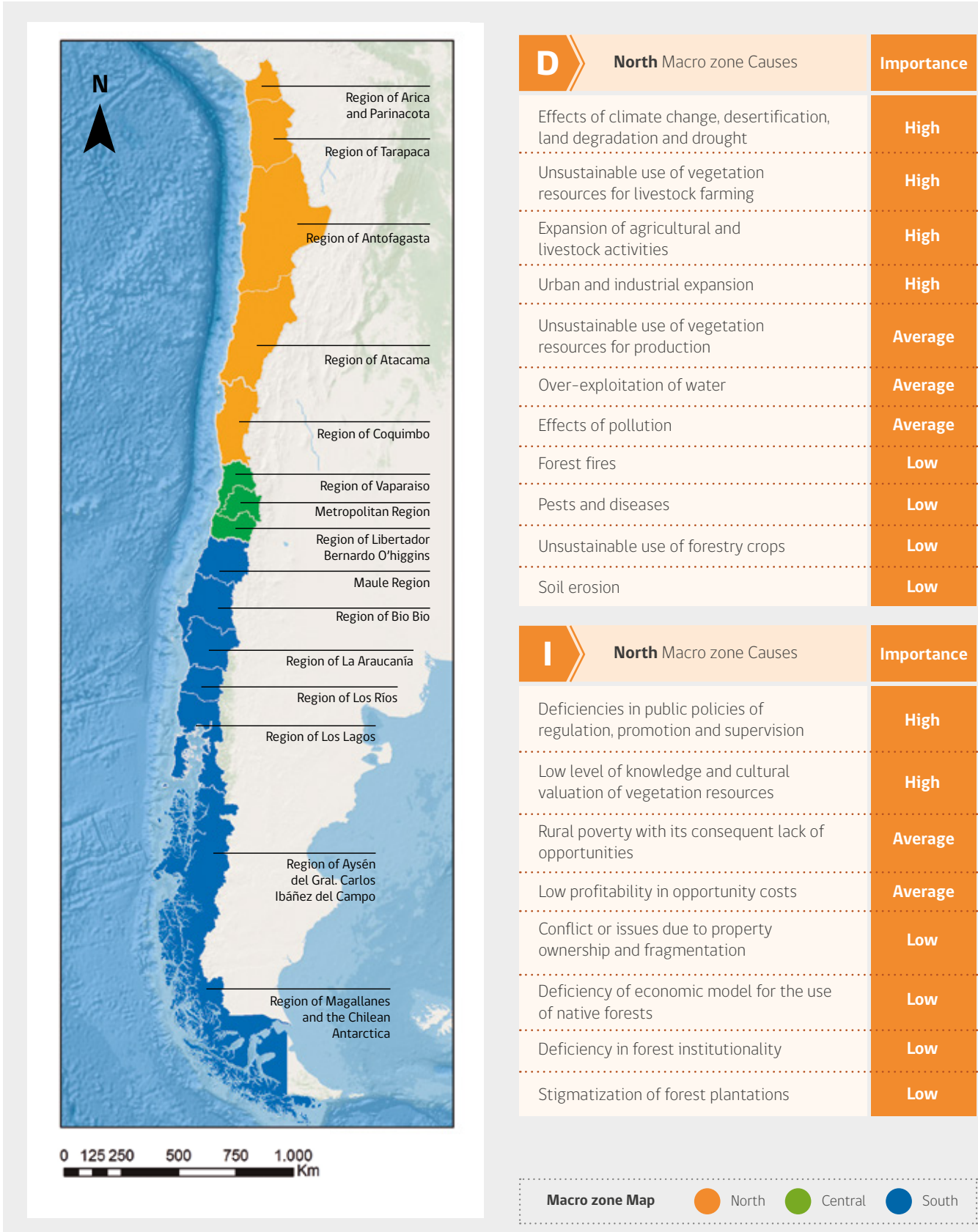


Figure 7. Main causes by each macro zone.

<b>D</b> Central Macro zone Causes	Importance
Effects of climate change, desertification, land degradation and drought	High
Expansion of agricultural and livestock activities	High
Forest fires	High
Unsustainable use of vegetation resources for production	High
Unsustainable use of vegetation resources for livestock farming	High
Urban and industrial expansion	Average
Unsustainable use of forestry crops	Low
Advancement of sand dunes	Low
Soil erosion	Low
Pests and diseases	Low
Over-exploitation of water	Low

<b>I</b> Central Macro zone Causes	Importance
Deficiencies in public policies of regulation, promotion and supervision	High
Low level of knowledge and cultural valuation of vegetation resources	High
Low profitability in opportunity costs	Average
Rural poverty with its consequent lack of opportunities	Average
Deficiency of the economic model for the use of native forests	Average
Informality in the firewood market	Low
Conflicts or issues due to property ownership and fragmentation	Low
Deficiency in forest institutionalality	Low
Stigmatization of forest plantations	Low

<b>D</b> South Macro zone Causes	Importance
Forest fires	High
Unsustainable use of vegetation resources for production	High
Unsustainable use of vegetation resources for livestock farming	Average
Unsustainable use of forestry crops	Average
Effects of climate change, desertification, land degradation and drought	Low
Expansion of agricultural and livestock activities	Low
Urban and industrial expansion	Low
Effects of pollution	Low
Pests and diseases	Low
Over-exploitation of water	Low
Soil erosion	Low

<b>I</b> South Macro zone Causes	Importance
Deficiencies in public policies of regulation, promotion and supervision	High
Low level of knowledge and cultural valuation of vegetation resources	High
Informality in the firewood market	Average
Rural poverty with its consequent lack of opportunities	Average
Low profitability in opportunity costs	Low
Deficiency of the economic model for the use of native forests	Low
Conflicts or issues due to property ownership and fragmentation	Low
Deficiency in forest institutionalality	Low
Stigmatization of forest plantations	Low

Type of Cause **D** Direct **I** Indirect

### 2.2.3. Qualitative and quantitative characterization of the prioritized causes

Information systematization was conducted with the obtained results, with the aim of working in the qualitative and quantitative characterization of each of the direct prioritized causes and their respective related indirect causes.

#### Quantitative characterization

For quantitative characterization, we estimated the annual affected areas for each direct cause and

associated GHG emissions; this was only possible due to the presence of carbon emissions and removals of vegetation resources for those areas. This estimation was fairly simple for those causes of low uncertainty such as land use change due to expansion of agricultural or industrial activities; nevertheless, for other causes of higher uncertainty, the quantitative estimation could not be conducted or was estimated through indirect methods as shown in Tables 3 and 4.

**Table 2.** Quantitative estimation procedure based on uncertainty.

	<p><b>Activity: Deforestation and Devegetation</b></p> <hr/> <p><b>Estimation of area and emissions</b></p> <p>Analysis of land use-change according to the Vegetation Resource Cadaster; and estimation of GHG emissions for each type of land use-change according to Chile's FREL/FRLs.</p>
	<p><b>Activity: Degradation</b></p> <hr/> <p><b>Estimation of area and emissions</b></p> <p>The figures for each cause were estimations that used as a base the total area and emissions due to degradation obtained from the FREL/FRLs, integrating emissions from forest fires and the substitution of native forests for monospecific forest plantations of industrial-nature. A percentage (%) of the total emissions from degradation was assigned to each cause, considering the adjusted value of Importance of each one of them, as explained in the previous chapter.</p>
	<p><b>Activity: Trouble with increasing the quality and quantity (area) of vegetation resources</b></p> <hr/> <p><b>Estimation of area and emissions</b></p> <p>This estimate does not apply</p>

As an example, and only for Regions between Maule and Los Lagos that have a FREL/FRL, the quantitative characterization of the direct causes was conducted,

estimating the affected area and the subsequent emissions associated to deforestation and forest degradation for 2001-2010 (Table 3 and 4).



**Table 3.** Quantitative estimation of emissions due to deforestation causes.

Deforestation Causes	Area (ha/year)	tCo Emissions <sub>2e</sub> /year
Unsustainable use of vegetation resources for production	3,041	1,622,855
Expansion of agricultural and livestock activities	1,165	621,519
Unsustainable use of vegetation resources for livestock farming	1,165	621,519
Urban and industrial expansion	324	172,644
Others	776	414,346
<b>Total</b>	<b>6,471</b>	<b>3,452,883</b>

**Table 4.** Quantitative estimation of emissions due to deforestation causes.

Causes of Forest Degradation	Area (ha/year)	tCo Emissions <sub>2e</sub> /year
Unsustainable use of forestry crops	11,921	4,076,040
Unsustainable use of vegetation resources for production	indefinite	2,302,763
Forest Fires	4,884	1,127,745
Unsustainable use of vegetation resources for livestock farming	indefinite	1,001,201
Effects of climate change, desertification, land degradation and drought	indefinite	800,961
Effects of pollution	indefinite	200,240
Others	indefinite	500,601
<b>Total</b>	<b>396,091</b>	<b>10,009,551</b>

### Qualitative characterization

We worked on the qualitative description of each cause based on the previous information, adding bibliographic information, quantitative historical information and the professional experience of each one of the experts that participated in this instance. In addition, the information generated throughout

the entire process was graphed in "relation trees", associating each direct cause with the indirect causes acting over them; each one with their attributes accounted for graphically (see Figures 7, 8, 9, 10, 11, 12, 13 and 14).

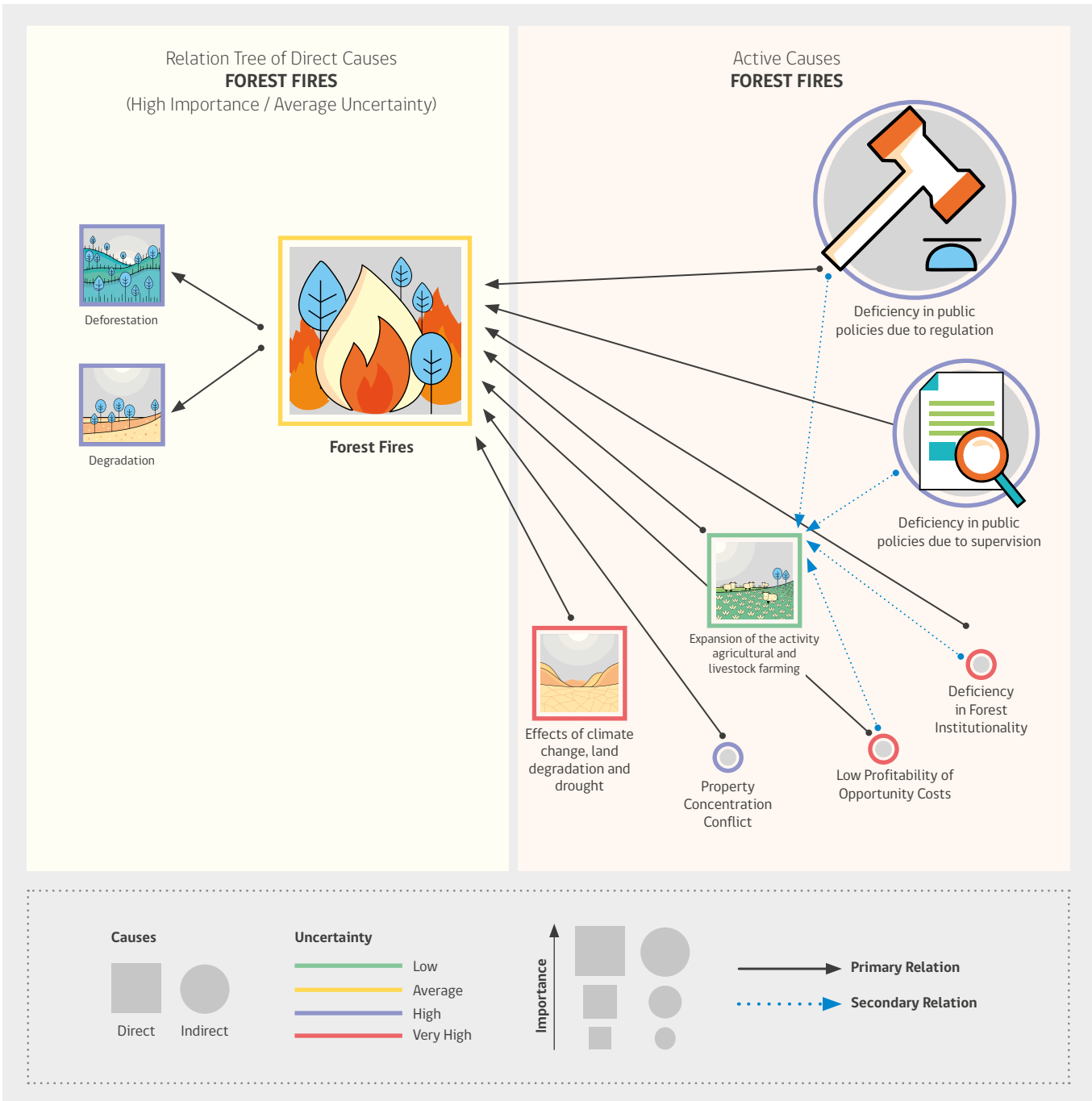


Figure 8. "Forest Fires" Cause and its relation tree.

As shown in the figure above, forest fires are a direct cause of high importance and low uncertainty that generates deforestation and degradation of forests and other vegetation resources. In addition, seven causes are active over them; with the most important being the deficiencies in public policies due to regulation and supervision and the effects of climate change.



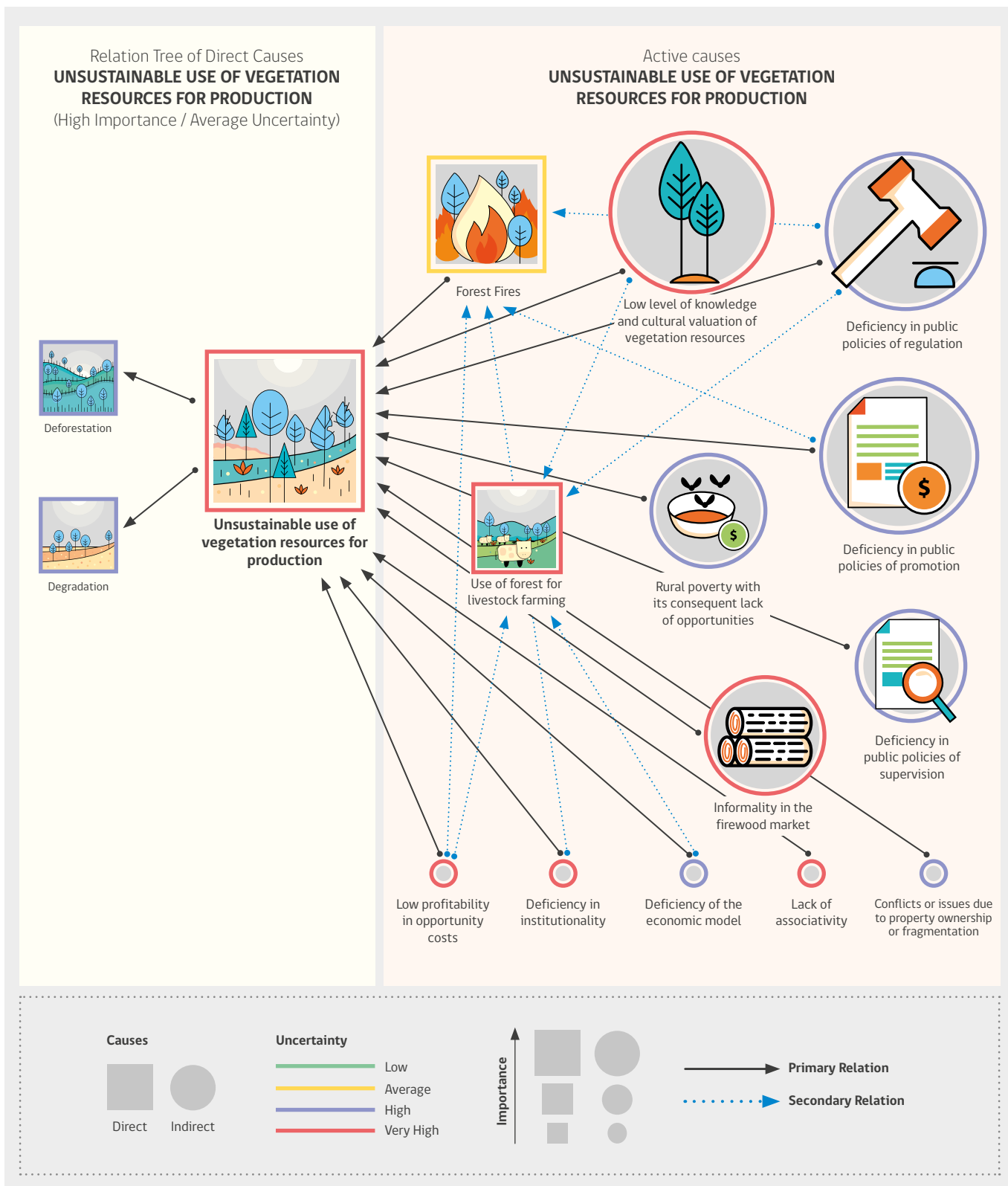


Figure 9. "Unsustainable Use of Vegetation Resources for Production" Cause and its relation tree.

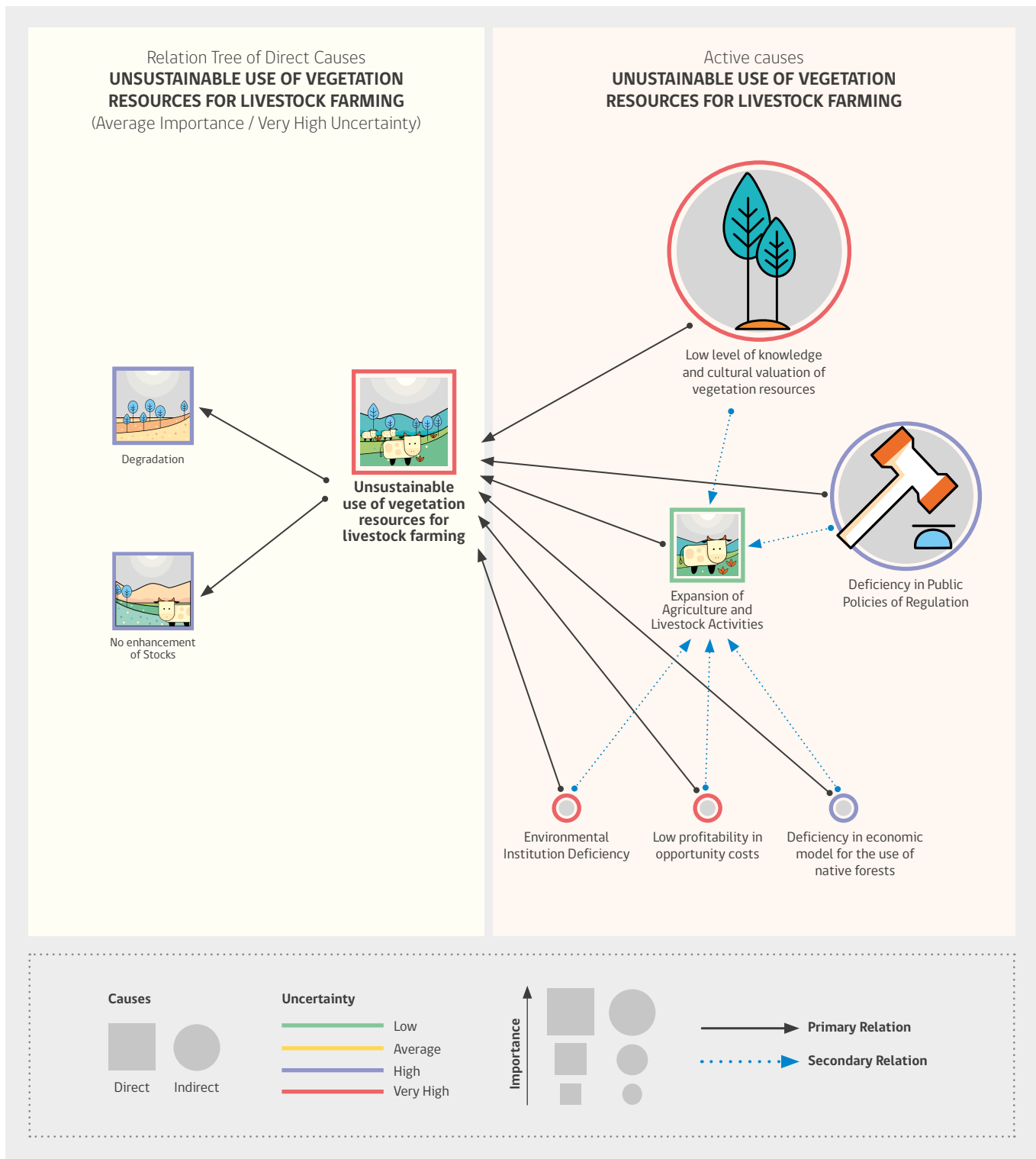


Figure 10. "Unsustainable Use of Vegetation Resources for Livestock Farming" Cause and its relation tree.

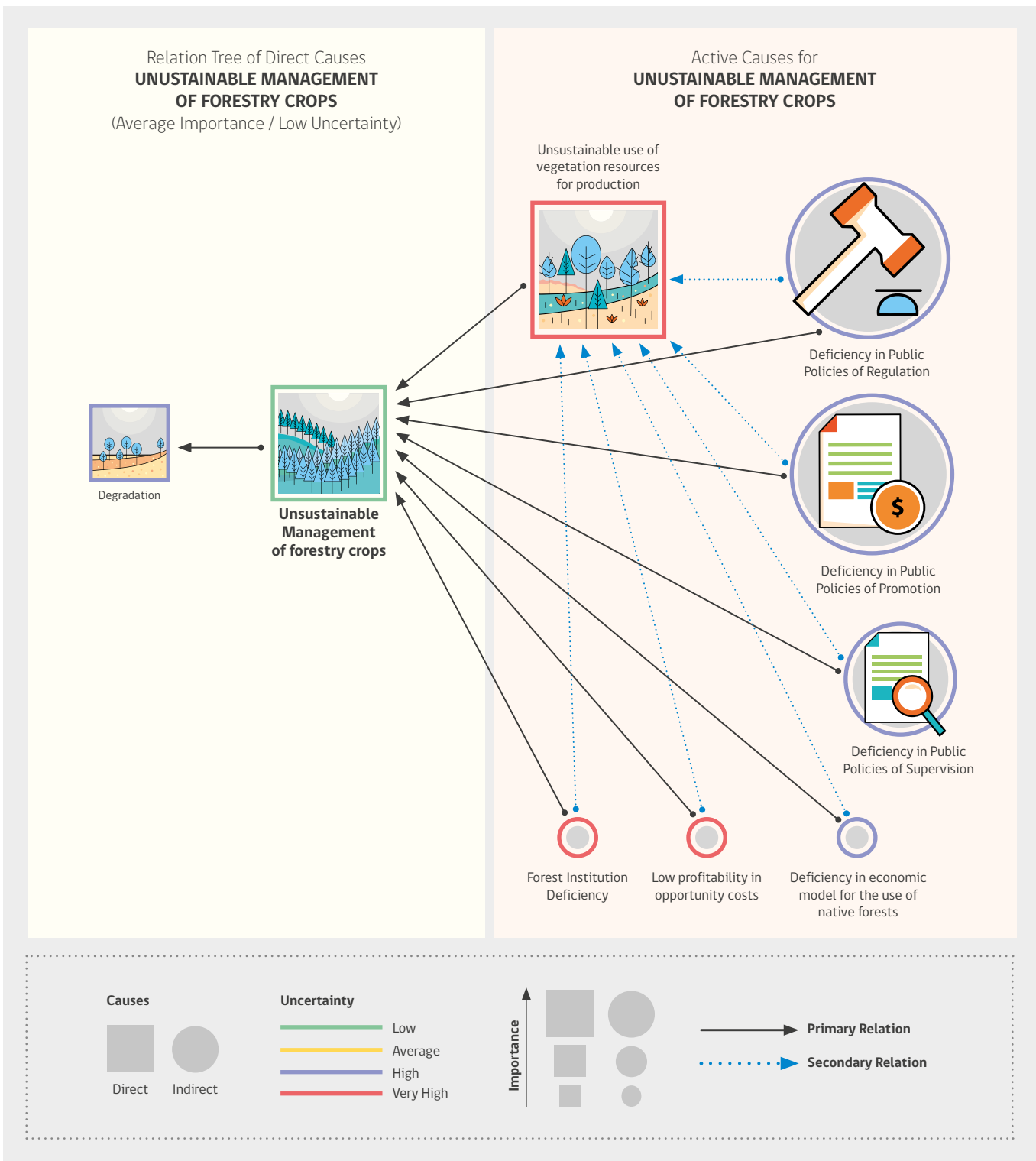


Figure 11. Cause of "Unustainable Management of Forestry Crops" and its relationship chart.

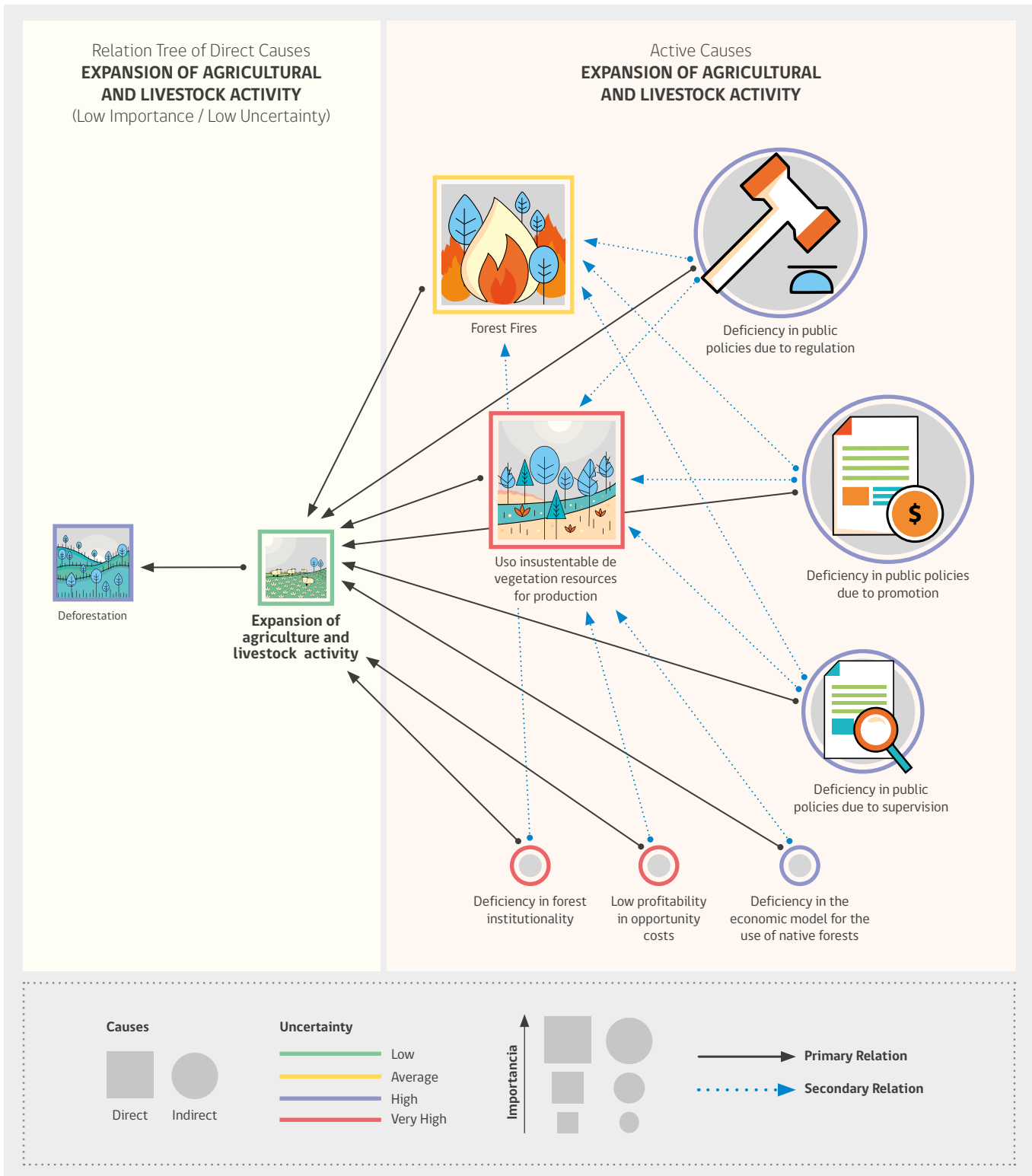


Figure 12. Cause of "Expansion of Agricultural and Livestock Activity" and its relationship chart.

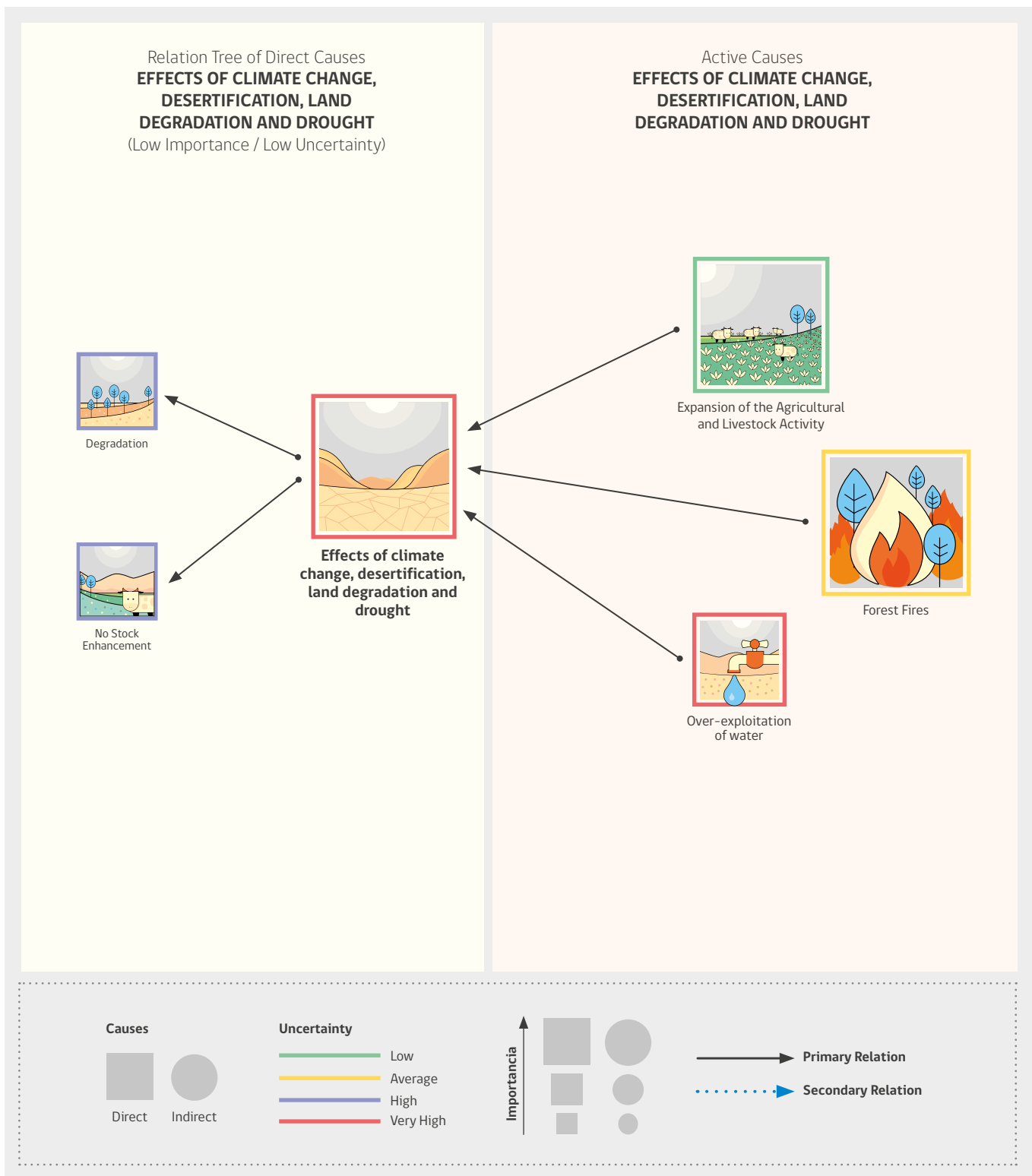


Figure 13. Cause of "Effects of Climate Change, Desertification, Land Degradation and Drought" and its relationship chart.

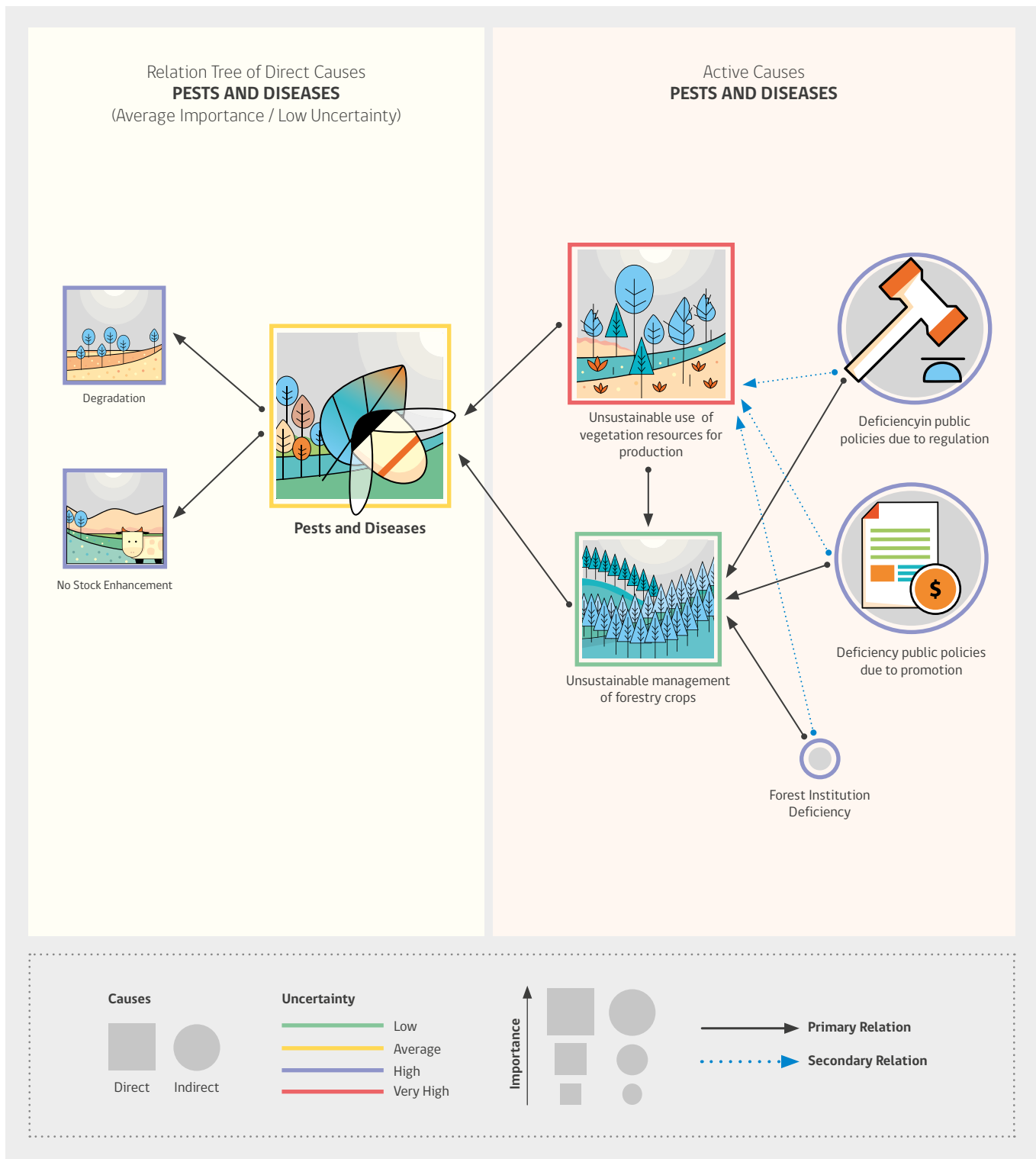


Figure 14. Cause of "Pests and Diseases" and its relationship chart.

## 2.2.4. Definition of activities and action measures for addressing causes

Based on the previously described cause analysis and following the methodological scheme in Figure 2, a series of Activities have been proposed within the framework of the ENCCRV with their respective mitigation and adaptation Action Measures, shaping the technical and operational base for fulfilling the related objectives and goals for tackling the main direct and indirect causes.

The main concepts that shape the operational structure of the ENCCRV shall be clearly understood, therefore they are defined as follows:

### ENCCRV Activities

Set of action measures, consistent with vegetation diversity and the different local realities of the country, aimed at addressing the causes of deforestation, devegetation, degradation of forests and xerophytic formations, as well as the motives that prevent or negatively interfere in the execution of activities of restoration, conservation, sustainable management, enhancement and regeneration of vegetation resources.

### Action Measures

Specific definition of the actions that make up an activity. These action measures may have a specific impact on one of the causes or may be of cross-cutting nature; they are those that simultaneously address two or more causes. Action measures may also be:



#### **Direct**

Those that generate environmental, social and economic benefits directly over the territory given their operational nature.



#### **Facilitating**

Those that facilitate or drive the implementation of the direct measures.

The following categories were considered for defining action measures:



#### **Institutional management:**

Institutional arrangements for coordinating public services in order to facilitate the implementation of the action measure.



#### **Operational:**

Execution of on site actions under established practices and schemes.



#### **Regulatory:**

Improvements, modifications and inclusions in the current and developing legislation.



#### **Supervision:**

Improvements, modifications and inclusions in forest and environmental supervision instruments.



#### **Promotion:**

Improvements, modifications and inclusions in public promotion instruments.



#### **Territorial Planning:**

Management improvements at a landscape and territory level.



#### **Formation and/or transfer of capabilities:**

Reducing gaps in technical and technological capabilities.



#### **Environmental education and awareness-raising:**

Reduction of information and uncertainty gaps; change of attitudes and perceptions.



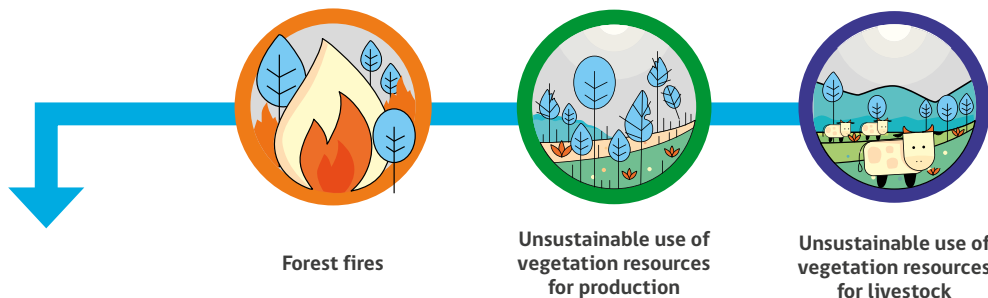
#### **Research:**

Generation of knowledge and reduction of information and uncertainty gaps.

Within this context, the ENCCRV has proposed conducting seven (7) activities associated to the prioritized direct causes, along with one (1) cross-cutting activity that addresses all causes. These activities involve the implementation of 26 action measures, out of which 7 are direct and 19 are facilitating measures developed in several fields of action (Figure 15).

### Causes

Drivers that generate GHG emissions and increase the vulnerability of terrestrial ecosystems, and communities dependent on them



	MT	IF	US	MG
<b>Activities</b>	Transversal activity impacting one or more of causal	Strengthening management in forest fire prevention and restoration of burned area	Model of sustainable management of vegetation resources	Model areas of public-private management that make the management of vegetation resources compatible with livestock

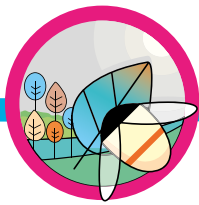
### Action Measures

<p><b>Direct</b></p>	<b>MT. 4.</b> Program for Reforestation and revegetation in prioritized communes/areas	<b>IF. 2.</b> Program for the restoration of ecosystems affected by forest fires	<b>US. 1.</b> Program for institutional forest management with emphasis on public and private lands	<b>MG. 1.</b> Buffer strips for livestock activity
	<b>MT. 5.</b> Strengthening of ecological restoration program in prioritized communes / areas	<b>IF. 3.</b> Program for Preventive Silviculture with emphasis on the rural-urban interface	<b>US. 3.</b> Integrated regulatory and tax exemption system for promotion of chain of production	
	<b>MT. 1.</b> Inclusion of climate change, DDL issues in new Forestry Development Law	<b>IF. 1.</b> Estimation of greenhouse gas emissions and fire severity analysis	<b>US. 2.</b> Strengthening of wood energy program and the country's energy matrix	<b>MG. 2.</b> Strengthening and extension of Summer Pasture Management Committees
<p><b>Facilitating</b></p>	<b>MT. 2.</b> Amendment and strengthening of Law No. 20,283 on Native Forest Recovery and Forest Promotion and its regulations	<b>IF. 4.</b> Strengthening of "Communities Prepared Against Forest Fires" Program		<b>MG. 3.</b> Agricultural Research Program
	<b>MT. 3.</b> Adjustments for the inclusion of landowners with poor legal certainty of land tenure	<b>IF. 5.</b> Inclusion of preventive management elements and post fire restoration in Law No. 20,283 and its regulations		
	<b>MT. 6.</b> Environmental education and diffusion program	<b>IF. 6.</b> Program on technological transfer of alternatives for the use and management of agroforestry and livestock wastes		
	<b>MT. 7.</b> Strengthening of forest and environmental supervision programs			
	<b>MT. 8.</b> Strengthening and updating Management Plans of SNASPE areas within the context of the ENCCRV			

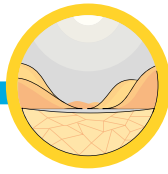
Figure 15. Graph of causes, activities and action measures.



2. Main Causes of Deforestation, Devegetation, Degradation of Vegetation Resources and related issues for increasing their cover and quality



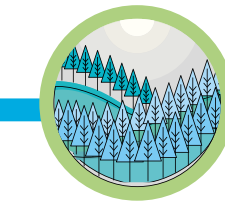
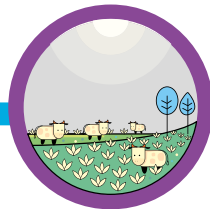
Pests and diseases



Effects of Climate Change, Desertification and Drought (DLDD)



Expansion of agricultural activity and Livestock



Expansion of monoculture tree plantations



Expansion of Urban and Industrial\*

**PF**

**GA**

**RH**

**RS**

Strengthening plant protection in native vegetation resources

Adaptive management of vegetation resources to climate change, desertification, land degradation and drought

Regulatory adjustment and compatible agricultural development with native vegetation resources

Support for the forestry sector, promoting an activity without replacing native species

**PF. 1.**  
Strengthening of Phytosanitary Protection Program on Native Vegetation Resources

**GA. 1.**  
Adaptation Program for vegetation resource management within the framework of climate change, desertification, land degradation and drought

**RH. 1.**  
Amendment of Law No. 19,561 which exempts agricultural land recovery from reforestation

**RH. 2.**  
Incorporation of forest conservation variables into Law No. 18,450

**RH. 3.**  
Limit the application of Law No. 20,412 on Forestry Land use Vocation (APF)

**RS. 1.**  
Targeting of restoration and supervision program to promote forest management sustainability

\* While no specific action measures are established for the Urban and Industrial Expansion cause, several measures of cross-cutting nature were graphed as elements that will allow to reduce its effect on vegetation resources.

Each one of these action measures are described with their respective fields of action, annual goals, responsible departments within CONAF and budget<sup>10</sup>.

### 2.2.5. Identification of priority areas/communes for the implementation of the action measures

As a last methodological stage, we are working on the development of a multivariable algorithm that allows prioritizing areas for the implementation of the proposed action measures, with the aim of making their impact more efficient and effective, in addition to fulfilling the objective set out in the ENCCRV, addressing social, environmental and economic criteria.

In this regard, we have progressed in the creation of thematic cartographic covers (Figure 16) that will identify environmental, economic and social variables, including e.g. FREL/FRLs, territorial incidence of causes, social vulnerability index, intervention costs, among others.

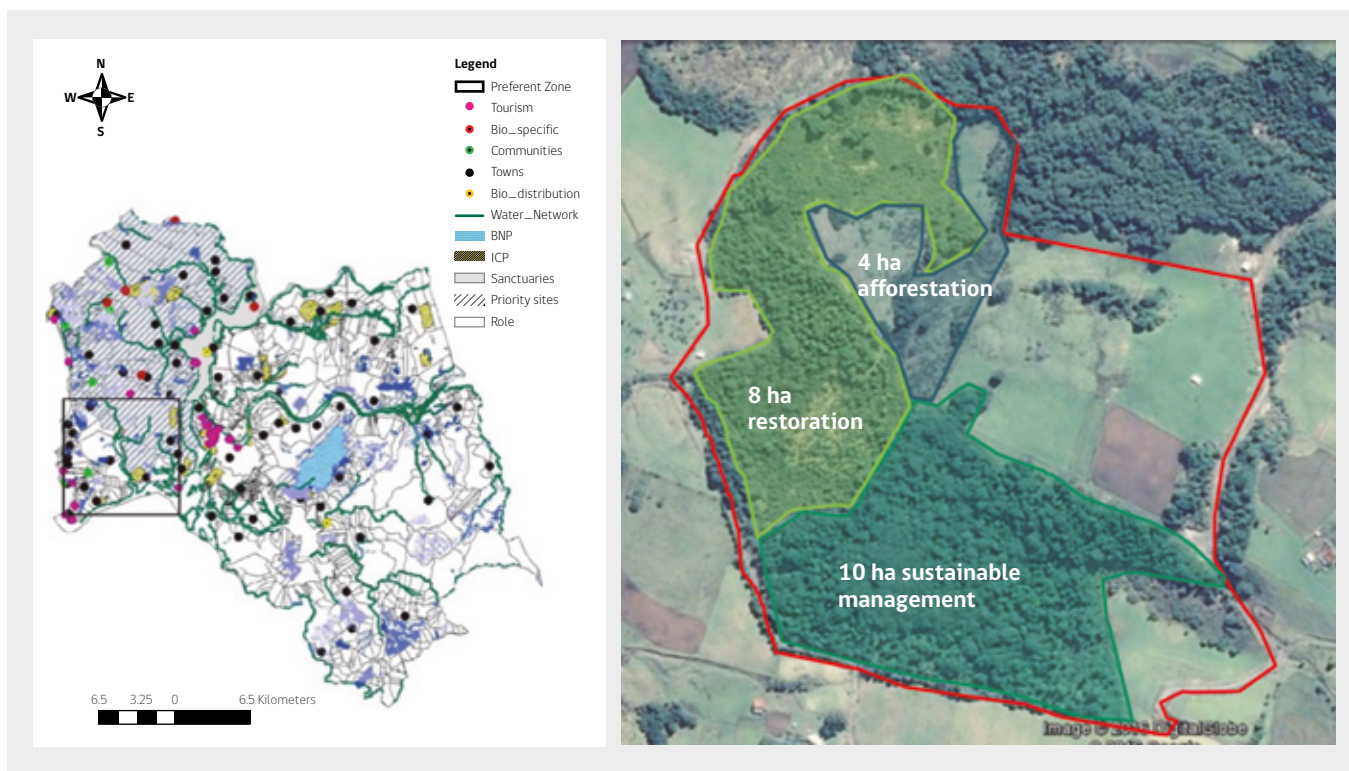


Figure 16. Cover; example of prioritization of areas for the implementation of action measures.

## 3. Conclusions

### 01.

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We identified and analyzed 26 causes of deforestation, devegetation, degradation of vegetation resources and related issues for increasing their cover and quality, through the participation of more than 1,266 local stakeholders consulted in the framework of the Strategic Environmental and Social Assessment (SESA). Twelve of these causes were defined as direct and fourteen as indirect causes.

### 02.

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The methodology used to rank causes by order of importance accounted for the use of variables such as the frequency of mentions in workshops, the uncertainty of the information and their relation of influence over other causes. Based on this methodology, it was determined that the main direct causes of deforestation and devegetation, degradation of vegetation resources and related issues for increasing their cover and quality were the unsustainable use of vegetation resources for production, unsustainable management of forestry crops and forest fires, followed by the unsustainable use of vegetation resources for livestock farming, the expansion of the agricultural and livestock activity and the effects of climate change, desertification, land degradation and drought.

### 03.

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Seven activities shall be implemented for addressing the main causes of deforestation, devegetation, degradation of vegetation resources and related issues for increasing their cover and quality in Chile; these are: 1) Strengthening of management in forest fire prevention and restoration of burnt areas. 2) Sustainable management model for vegetation resources. 3) Model Areas of public-private management that reconcile the use of vegetation resources with livestock farming. 4) Strengthening of phytosanitary protection in native vegetation resources. 5) Adaptive management of vegetation resources to climate change, desertification, land degradation and drought. 6) Regulatory adjustment and agro pasture development compatible with native vegetation resources and 7) Supporting the forest sector by promoting forest management sustainability.

### 04.

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Twenty-six action measures have been defined for mitigating the main causes, out of which 7 account for direct and 19 for facilitating action measures.

### 05.

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With regard to the indirect causes of deforestation, devegetation, degradation of vegetation resources and related issues for increasing the cover and quality of forests, the deficiencies in national policies are the most relevant, as indicated by workshop participants, particularly those related to regulation policies and forest promotion policies. Despite high uncertainty and difficulties for defining its quantitative contribution, social aspects related to rural poverty and lack of opportunities are relevant in terms of the frequency with which they were mentioned in the participative formulation and validation instances of the ENCCRV.

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## 5. Acronyms and Abbreviations

<b>CDB</b>	Convention on Biological Diversity.
<b>CIREN</b>	Natural Resources Information Center.
<b>CMNUCC</b>	United Nations Framework Convention on Climate Change.
<b>CNULD</b>	United Nation's Convention to Combat Desertification.
<b>CONAF</b>	National Forestry Corporation.
<b>COP</b>	Conference of Parties.
<b>ENCCRV</b>	National Strategy on Climate Change and Vegetation Resources.
<b>GEDEFF</b>	Forest Development and Promotion Management Department.
<b>GEI</b>	Greenhouse gases.
<b>NREF/NRF</b>	Forest Reference Emission Levels/Forest Reference Levels (FREL/FRL).
<b>ONG</b>	Non-governmental Organization.
<b>REDD+</b>	Positive Policies and Incentives Approach for Reducing Emissions from Deforestation, Forest degradation and Promotion of (+) the Role of Conservation, Sustainable Management of Forests and Enhancement of Forest Carbon Stocks.
<b>SESA</b>	Strategic Environmental and Social Assessment.
<b>UCCSA</b>	CONAF's Climate Change and Environmental Services Unit.









**National Forestry Corporation**

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Forest Development and Promotion Management Department (GEDEFF)  
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