

# Woody Biomass for energy generation

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# Outline

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  - Dalkia's position on renewable energies
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  - Political support for wood energy development





# Part I



drawing by Michael Hagelberg

# Brief company profile: Veolia Environnement, a world leader in environmental services

2007 Revenue: €32.6 billion 319,502 employees

Water	Waste Management	Energy Services	Transportation
			
<ul style="list-style-type: none"> <li>• <b>No. 1</b> worldwide in water and wastewater services for municipal and industrial customers.</li> <li>• 2007 revenue: <b>€10.9 billion</b></li> <li>• over <b>130</b> million people provided with water and wastewater services worldwide</li> <li>• <b>82,867</b> employees</li> <li>• operations in <b>60</b> countries</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Global leader</b> in waste management services</li> <li>• 2007 revenue: <b>€9.2 billion</b></li> <li>• nearly <b>60</b> million people served worldwide through municipal customers and <b>750,000</b> industrial customers</li> <li>• <b>100,032</b> <sup>(2)</sup> employees</li> <li>• operations in <b>35</b> countries</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>European leader</b> in energy services to municipal and industrial customers</li> <li>■ 2007 consolidated revenue: <b>€7.9 billion</b></li> <li>■ <b>100,000</b> facilities managed</li> <li>■ 54,834 employees in 38 countries</li> <li>■ 102,700 energy facilities managed</li> <li>■ 700 urban and local heating and cooling systems</li> <li>■ 21,500 educational, cultural, leisure and sports facilities</li> <li>■ 5,000 healthcare institutions</li> <li>■ 5.6 million housing units managed</li> <li>■ 3,900 industrial facilities</li> </ul>	<ul style="list-style-type: none"> <li>• One of the first private operator of ground passenger transportation in the world</li> <li>• 2007 revenue: <b>€5.6 billion</b></li> <li>• <b>2.7</b> billion passengers</li> <li>• <b>81,532</b> employees</li> <li>• operations in <b>30</b> countries</li> </ul>

Take care of the environment through our 4 business activities

# Dalkia's position on renewable energies

- Dalkia and the RES:
  - Reduce the GHG emissions (Tackle climate change )
  - Participate in reaching the EU targets
  - Diversify energy sources (biomass)
- Global energy managed by Dalkia\* : 94 813 GWh
- RES managed by Dalkia\*: 7% of the global energy
- Biomass energy managed by Dalkia \* : 36% of total RES:
  - Total biomass power available: 740 MW
  - Heat produced greater than 1 million MWh
  - 94 facilities across Europe
  - 691 400 CO<sub>2</sub> tons avoided

\* : 2006 figures

# Biomass added value

## ■ Local and mainly rural development by:

1- Wealth creation by the purchase of biomass for the long term

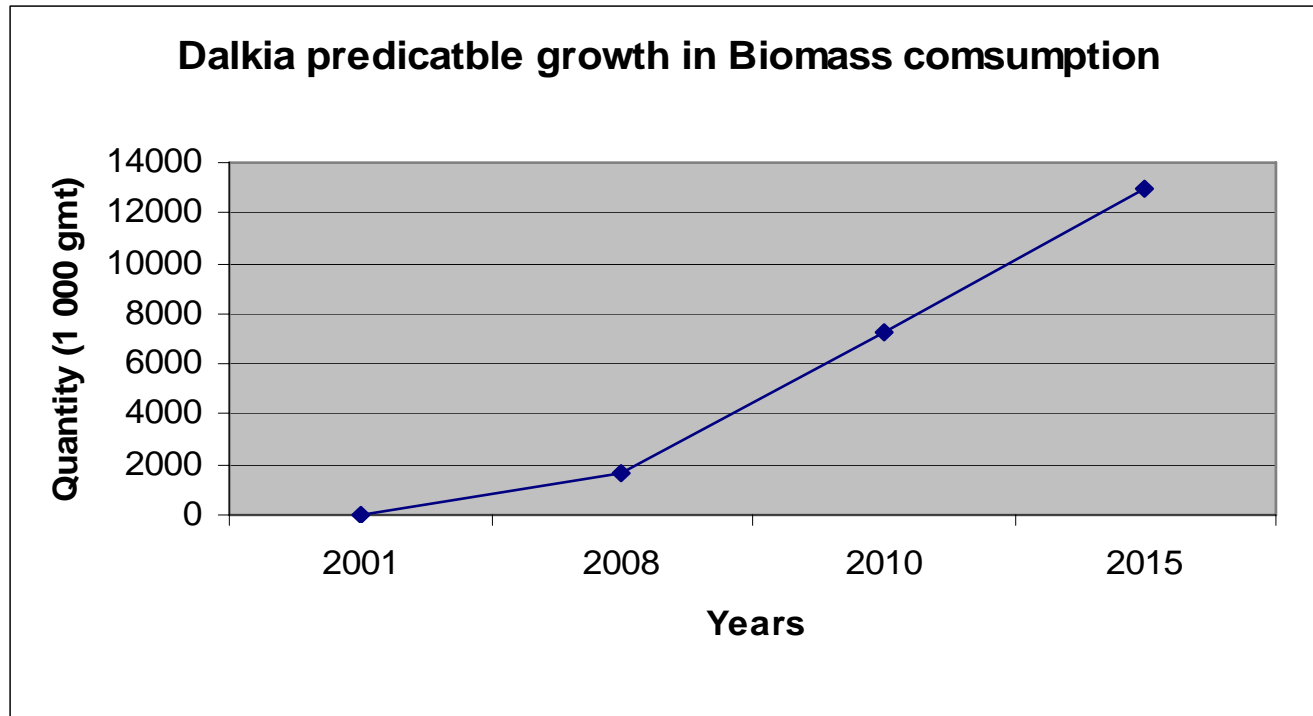
About 10 M€/year for 20 MWe power plant

2- Developing employment: Direct and inferred jobs:

- Forestry (harvesting, skidding and bundling ...)
- Biomass conditioning (shredding, grading...)
- Transport and logistics

About 140 jobs for 20 MWe power plant

# Dalkia's biomass supply today and forecast



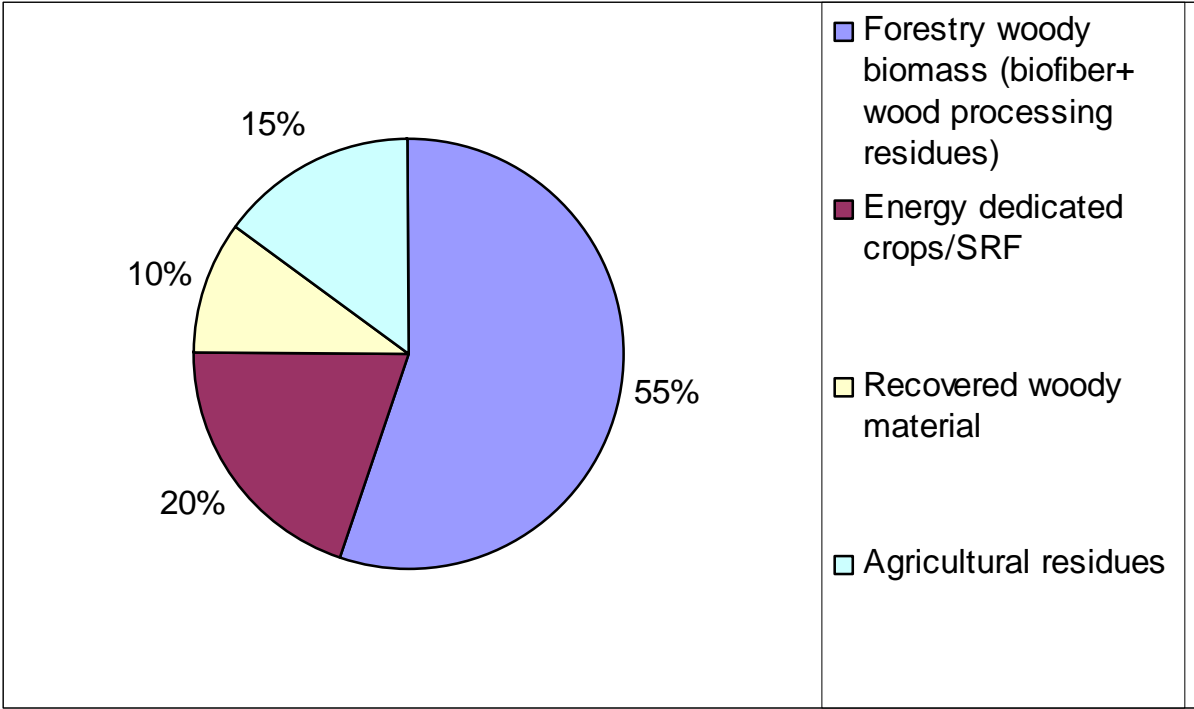
- 2008: 1,7 Mgmt
- 2010 forecast: 7 Mgmt = 1.3 Mtoe
- Mid-term forecast : 13 Mgmt = 2.5 Mtoe

## Part II





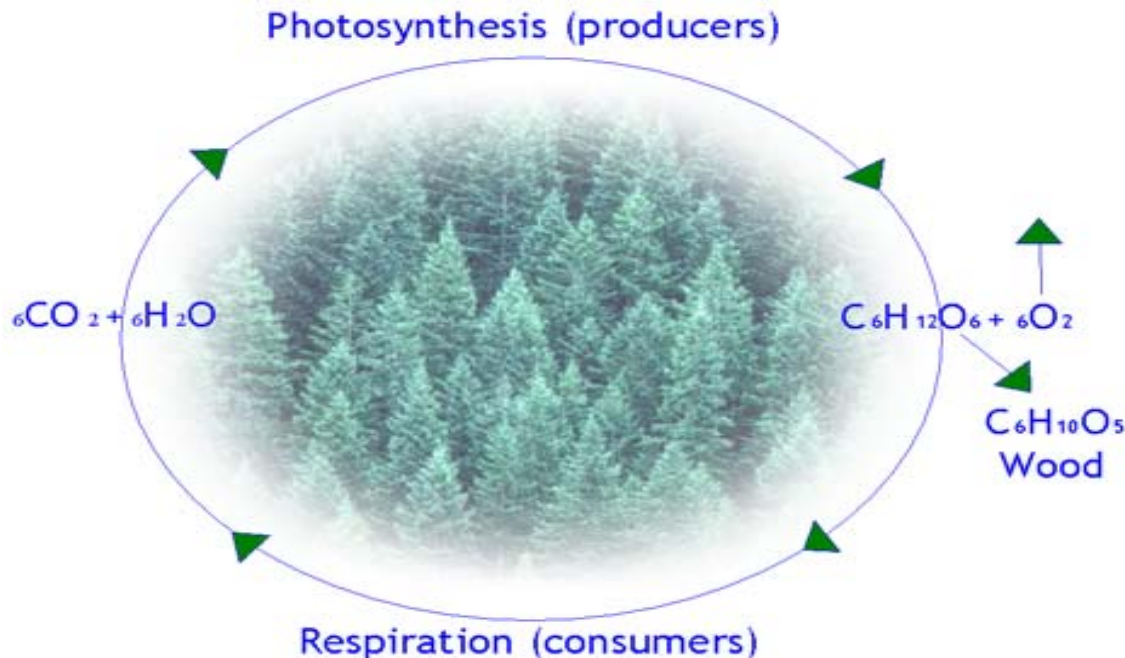
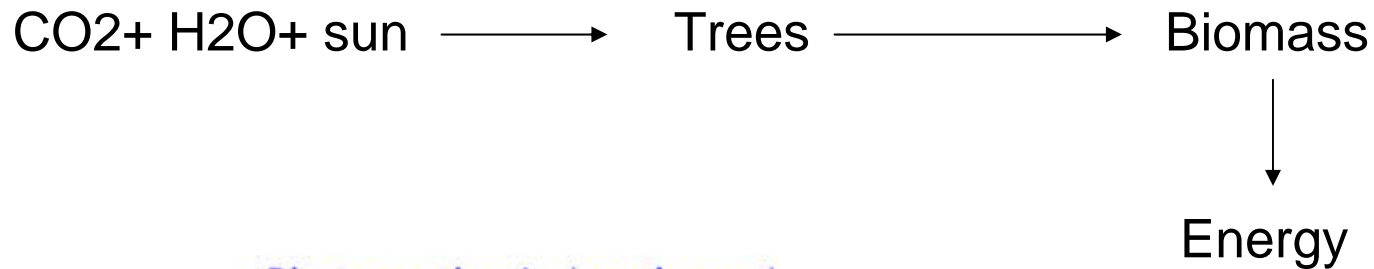
# Biomass principal families for Dalkia's supply model



Biofiber and wood processing residues: + 7 millions gmt/year,

# Forest biomass potential

The best sun fuel from nature with the most efficient energy  
(photosynthesis)

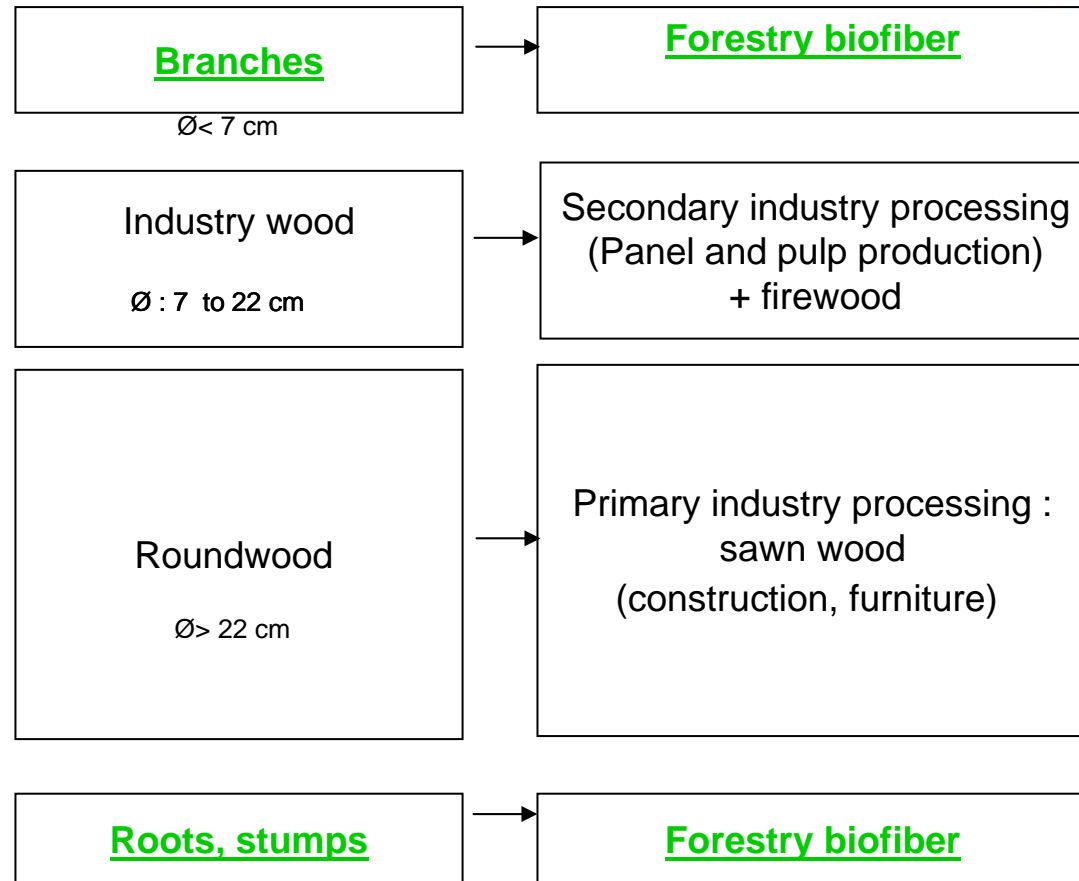


- European forest area: 1 billion ha (44.3 % of land area)
- Our estimated biomass potential from European forests:

Biomass potential  
from European forests  
= 106 Millions gmt

= 20 Mtoe

# Forest biofiber definition

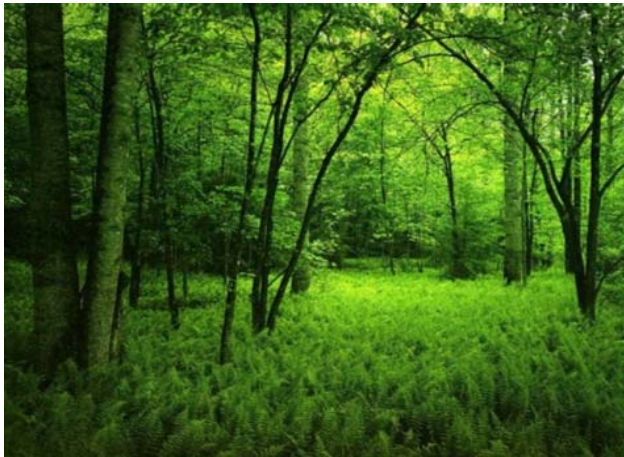


Biofiber: Logging et thinning residues (tops, branches, stumps, roots...) + remaining wood ~ 20 % of the quantities

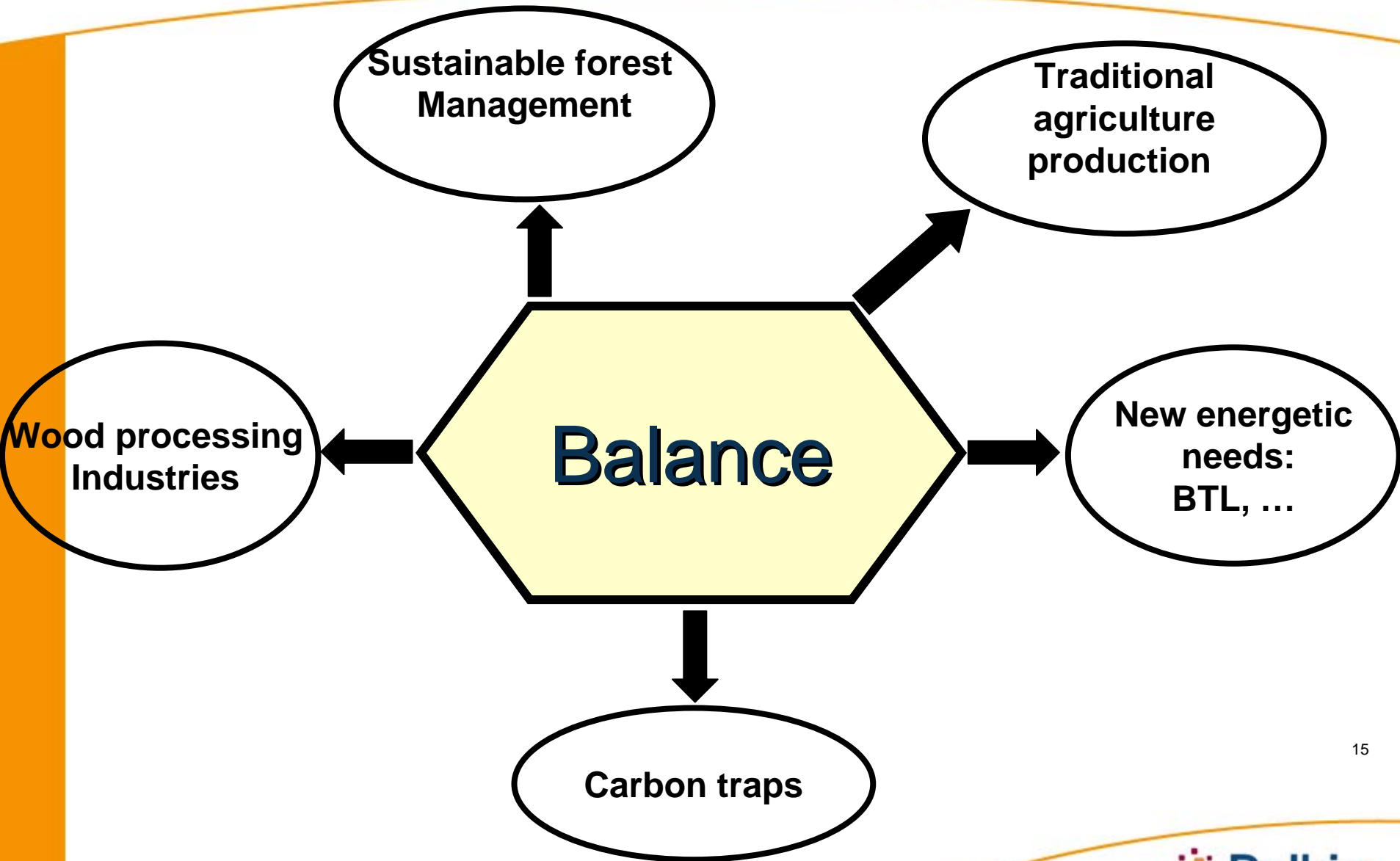
# SRF- Forestry on non forest lands

- New alternative to increase farmers' incomes and sustain rural development
- Favorise animal/species ecological habitat
- Increase the recovery of polluted soil
- Dalkia already planted : 2 000 ha in 2008 (poplar- willow- eucalyptus, robinia)
- Planting forecast: 15 000 ha in the next 2 years

## Part III



# Respect equilibrium



# Political support for wood energy development: Our point of view

- Support owners' cleaning of the forest floor to:
  - Increase productivity
  - Increase regeneration capacity
  - Improve public usage (social purposes)
  - Assist fire prevention
- Reinforce sustainable forest management at national level
- Reinforce control by certification models



**Thank you for your attention**

