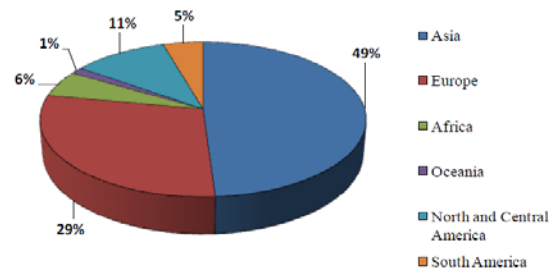


## Plantation Forests in a Modern World



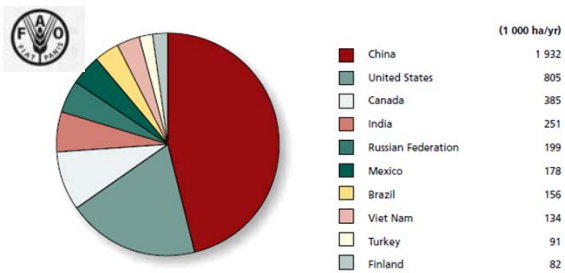
### Planted Forest Distribution



Lungo, Ball and Carlyle (FAO, 2006)

## Global Forest Resources Assessment 2010

FIGURE 5.3  
Ten countries with greatest annual increase in planted forest area, 1990–2010



## Acacia mangium Plantation, Indonesia

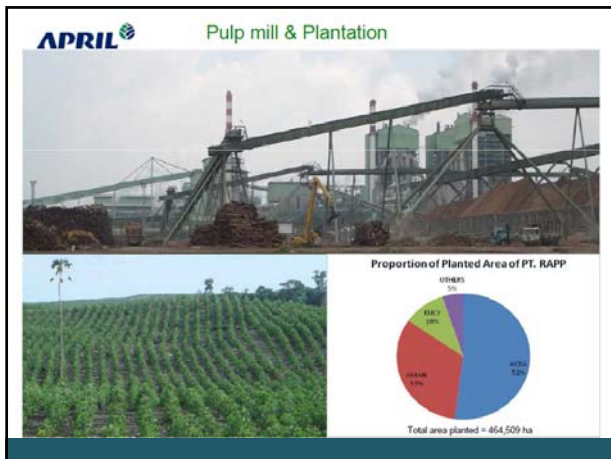


## Acacia crassicarpa Plantation, Indonesia



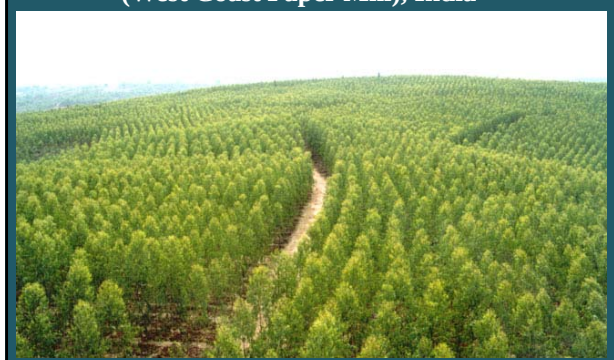
### Monkey attacks

- Long-tailed and pig-tailed macaque have devastated a large area of Acacia plantations in Sumatra
- All Acacias commercially planted are prone to monkey attack
- Young trees of 6 months old can be attacked
- Habitat loss and reduced food availability seems to cause increasing monkey attack





**Pulpwood plantations of WCPM  
(West Coast Paper Mill), India**

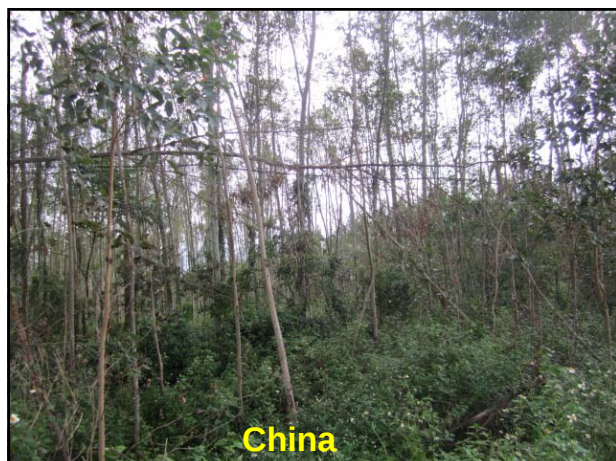
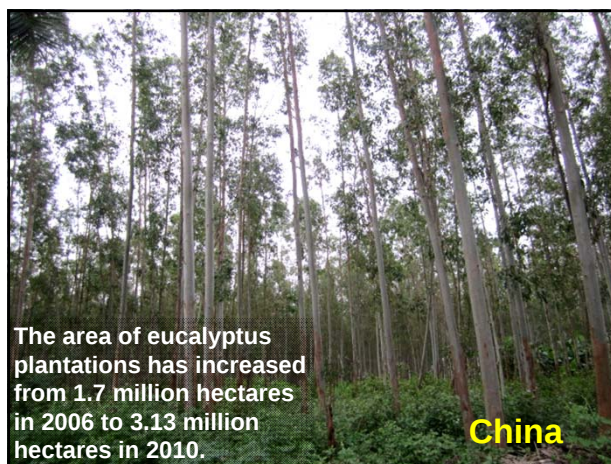


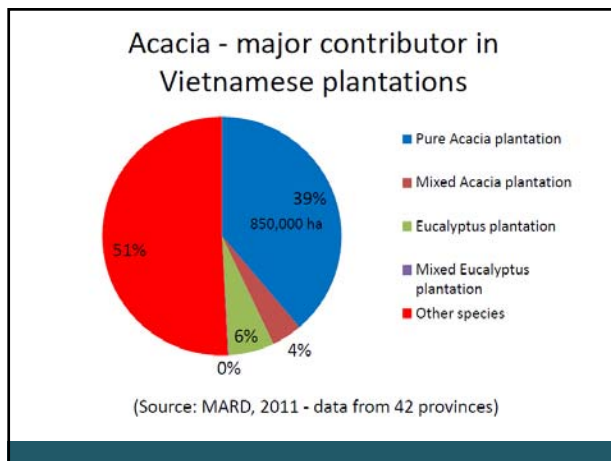
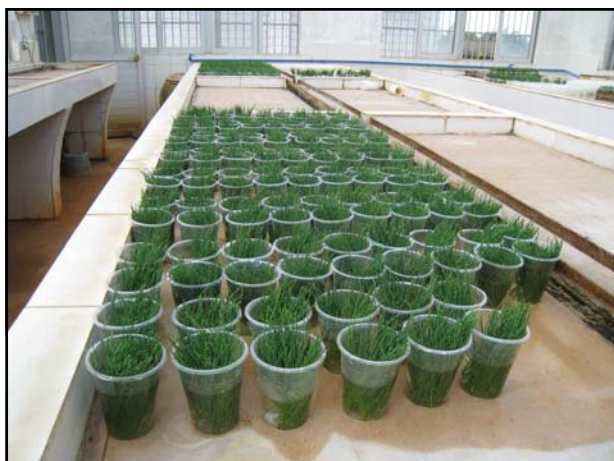
**TNPL - CPRC**  
CLONAL & SEEDLINGS PRODUCTION ACCOUNTS

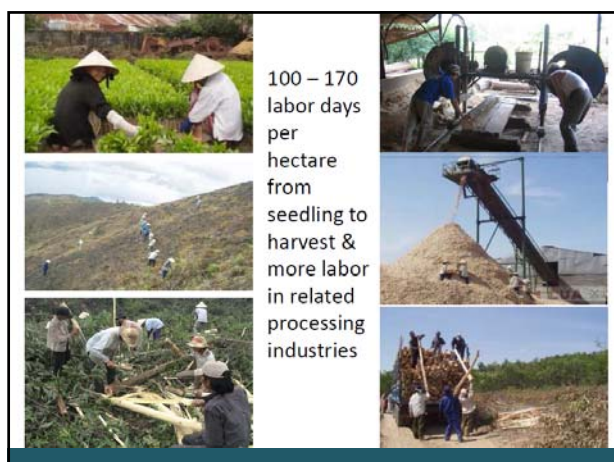
TEMPERATURE  
MAX : 35°C  
MIN : 30°C  
RAINFALL :

| S.NO | VARIETY              | PRODUCED       | DISTRIBUTED      | BALANCE          |
|------|----------------------|----------------|------------------|------------------|
| 1.   | EUCALYPTUS CLONES    | 21,96,277      | 21,32,983        | 6,33,294         |
| 2.   | CASUARINA CLONES     | 5,36,381       | 5,10,711         | 25,670           |
| 3.   | SISSOO CLONES        | 55,224         | 34,070           | 21,154           |
| 4.   | MELIA CLONES         | 45,943         | 5,544            | 40,399           |
| 5.   | BAMBOO TC PLANTS     | 8,950          | 8,550            | 4,000            |
| 6.   | EUCALYPTUS SEEDLINGS | 5,88,888       | 1,68,250         | 4,20,638         |
| 7.   | CASUARINA SEEDLINGS  | 6,33,381       | 5,41,277         | 92,104           |
| 8.   | EUCALYPTUS TC PLANTS | 11,700         | 8,550            | 3,150            |
|      | <b>TOTAL</b>         | <b>702,676</b> | <b>44,99,665</b> | <b>21,28,077</b> |

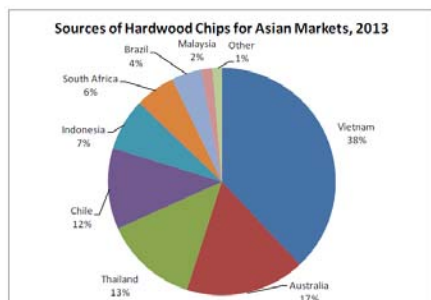








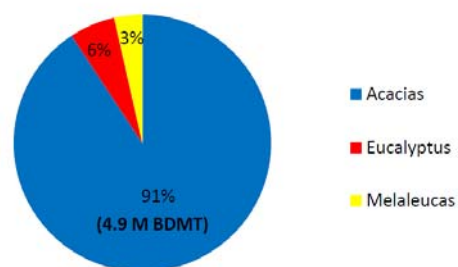
### Vietnam is by far the dominant woodchip exporter to the Asian markets



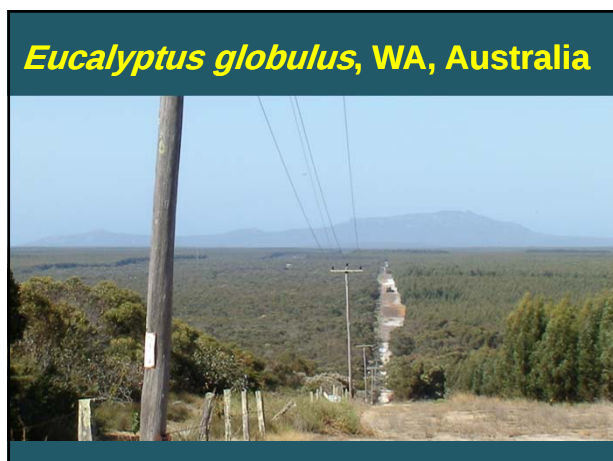
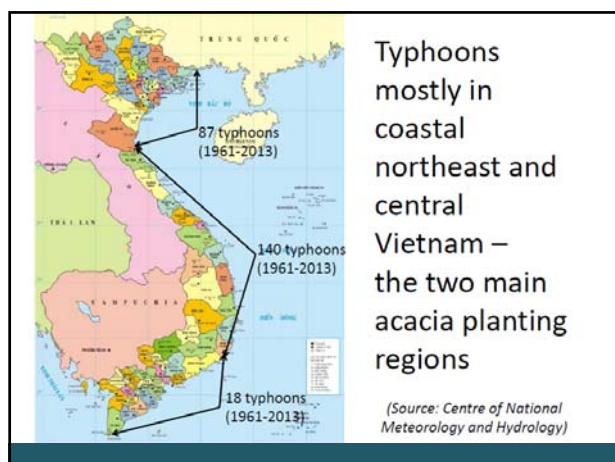
12

RISI

### Acacia Woodchip – Major Contributor



(Source: Centre for Industry and Trade Information, 2012)





## Eucalyptus hybrids , Brazil



**SPECIES TO BE PLANTED IN 2004**

| SPECIES                                       | %   |
|-----------------------------------------------|-----|
| <i>E. grandis</i> x <i>E. urophylla</i>       | 65  |
| <i>E. urophylla</i> hybrid                    | 15  |
| <i>E. grandis</i>                             | 7   |
| <i>E. urophylla</i>                           | 6   |
| <i>E. grandis</i> hybrid (Rio Claro)          | 3   |
| <i>E. saligna</i>                             | 2,5 |
| <i>E. camaldulensis</i> x <i>E. urophylla</i> | 0,6 |
| <i>E. urophylla</i> x <i>E. globulus</i>      | 0,5 |
| <i>E. camaldulensis</i> x <i>E. grandis</i>   | 0,4 |

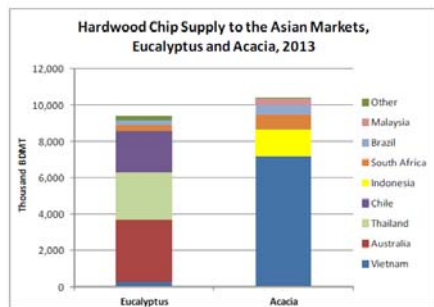
## Trend in Eucalyptus plantations area and mean annual increment in Brazil



Total area of Eucalypt plantation in the World: ~19.5 million ha  
Total area of Eucalypt plantation in Brazil: ~4.7 million ha (25%)

Source: ABRAF Statistical Yearbook - Base Year 2010/ ABRAF - Brasília, 2011

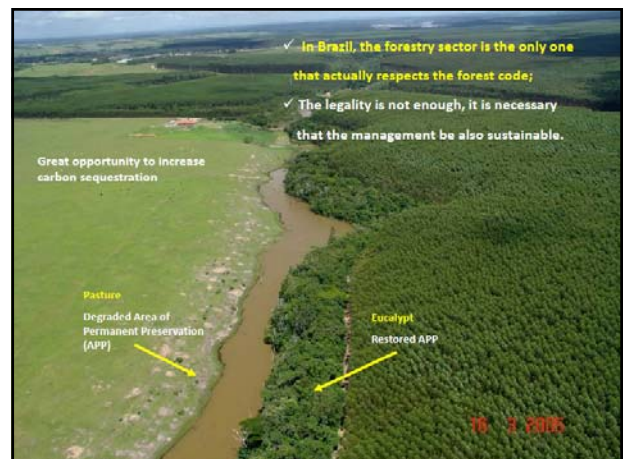
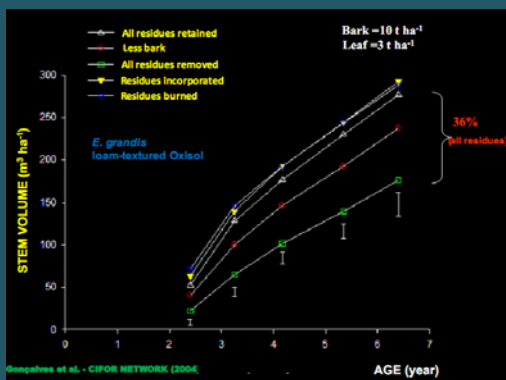
### 52% of hardwood chip imports in Asia were various species of Acacia in 2013



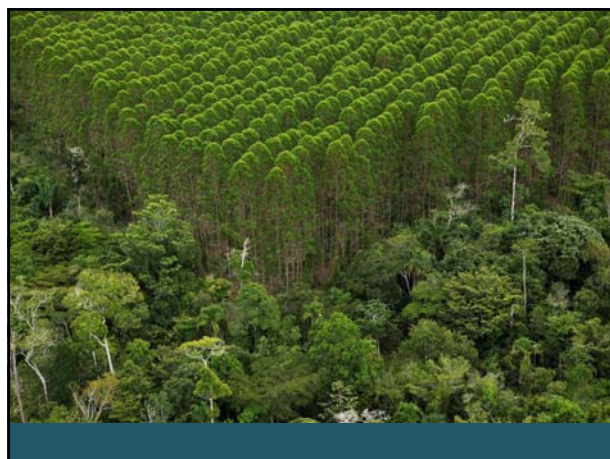
### Minimum cultivation



### Minimum cultivation



## Landscape design



## Sustainability concept

### Social

- Landlease instead of purchase
- Creating local employment
- Intercropping by farmers
- Trainings for employees
- Revenues partly return to local community
- Stimulate outgrowing

### Ecological

- Reforestation of degraded land
- Part of the planted seedlings are local species
- Conservation and restoration of bufferzones along waterways
- Enhance biodiversity
- Protect wildlife with poaching control and refugia

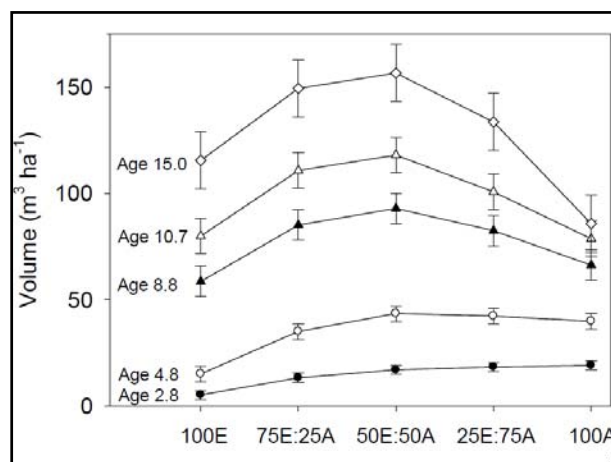
### Economical

- Yield much higher than from natural forest
- Shorter harvesting cycle
- Respond to declining supply and growing demand for sustainable timber
- Boost local economy

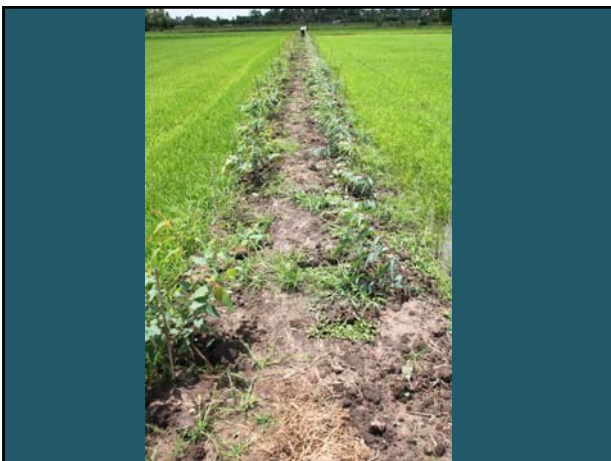


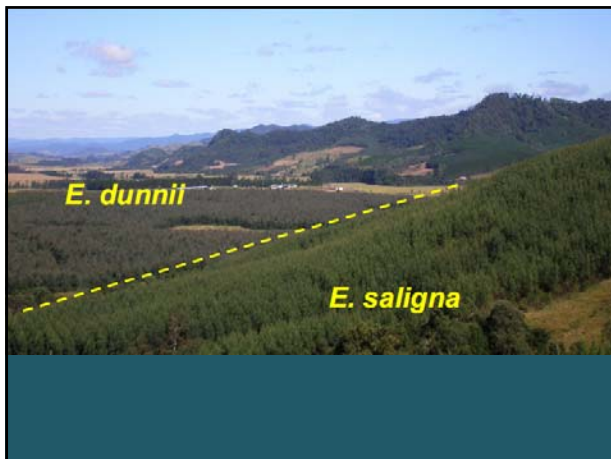
**Plantation along contour lines**











### Percentage of global exports (2012)

|                                                                                                                                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Industrial roundwood:</b> Russian Federation (16 percent); New Zealand (12 percent); USA (11 percent); Canada (6 percent); France (4 percent); Latvia (4 percent).                                 |
| <b>Sawnwood:</b> Canada (21 percent); Russian Federation (17 percent); Sweden (10 percent); Germany (6 percent); Finland (5 percent); USA (4 percent); Austria (4 percent).                           |
| <b>Wood-based panels:</b> China (18 percent); Germany (7 percent); Malaysia (7 percent); Canada (7 percent); Indonesia (4 percent); Thailand (4 percent); Austria (4 percent).                        |
| <b>Pulp for paper:</b> Canada (18 percent); Brazil (17 percent); USA (14 percent); Chile (9 percent); Indonesia (6 percent); Sweden (6 percent); Finland (5 percent); Russian Federation (4 percent). |
| <b>Recovered paper:</b> USA (34 percent); Japan (8 percent); UK (8 percent); Netherlands (6 percent); Germany (5 percent); France (5 percent).                                                        |
| <b>Paper and paperboard:</b> Germany (13 percent); USA (11 percent); Sweden (9 percent); Finland (9 percent); Canada (8 percent); China (4 percent); France (4 percent); Austria (4 percent).         |

### Percentage of global imports (2012)

|                                                                                                                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Industrial roundwood:</b> China (33 percent); Austria (6 percent); Sweden (6 percent); Germany (6 percent); India (6 percent); Republic of Korea (5 percent); Finland (5 percent).               |
| <b>Sawnwood:</b> China (18 percent); USA (15 percent); Japan (6 percent); UK (4 percent); Germany (4 percent); France (3 percent).                                                                  |
| <b>Wood-based panels:</b> USA (11 percent); Germany (7 percent); Japan (7 percent); Canada (4 percent); UK (4 percent).                                                                             |
| <b>Pulp for paper:</b> China (30 percent); USA (10 percent); Germany (9 percent); Italy (7 percent); Republic of Korea (5 percent); Japan (3 percent); France (3 percent); Netherlands (3 percent). |
| <b>Recovered paper:</b> China (51 percent); Germany (7 percent); Netherlands (5 percent); India (4 percent); Indonesia (4 percent).                                                                 |
| <b>Paper and paperboard:</b> Germany (10 percent); USA (9 percent); UK (6 percent); France (5 percent); China (5 percent); Italy (4 percent); Belgium (4 percent).                                  |