



# **WHY INDONESIA'S FORESTRY SECTOR IS NOT SUSTAINABLE**

July 25<sup>th</sup> 2014

## **CONFERENCE PRESENTATION**

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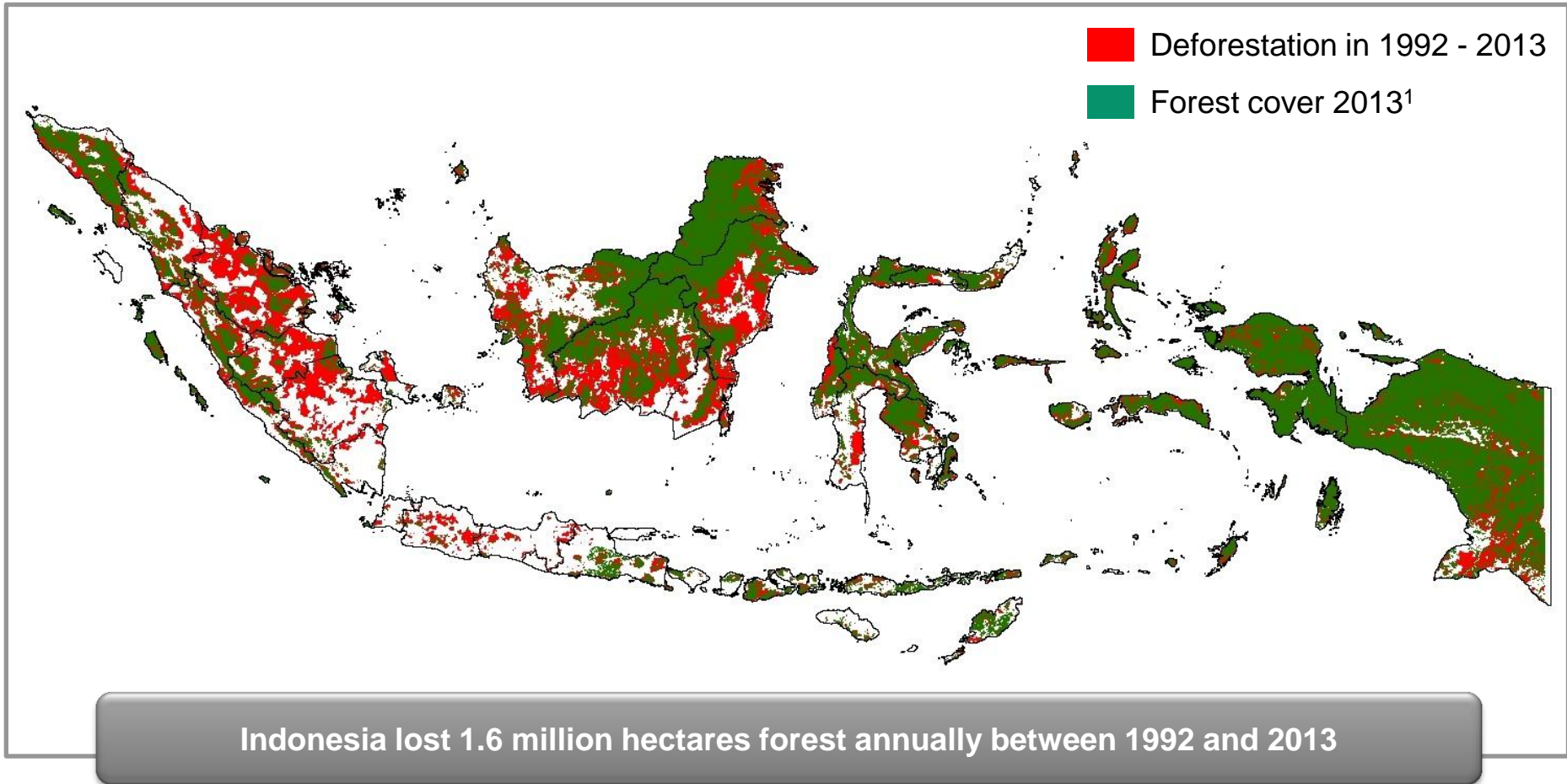


## **State of Indonesian Forests**

Challenges

Opportunities and key enablers

## INDONESIA HAS LOST APPROXIMATELY 1/3 OF ITS FOREST COVER SINCE 1990 ESPECIALLY IN SUMATRA AND KALIMANTAN



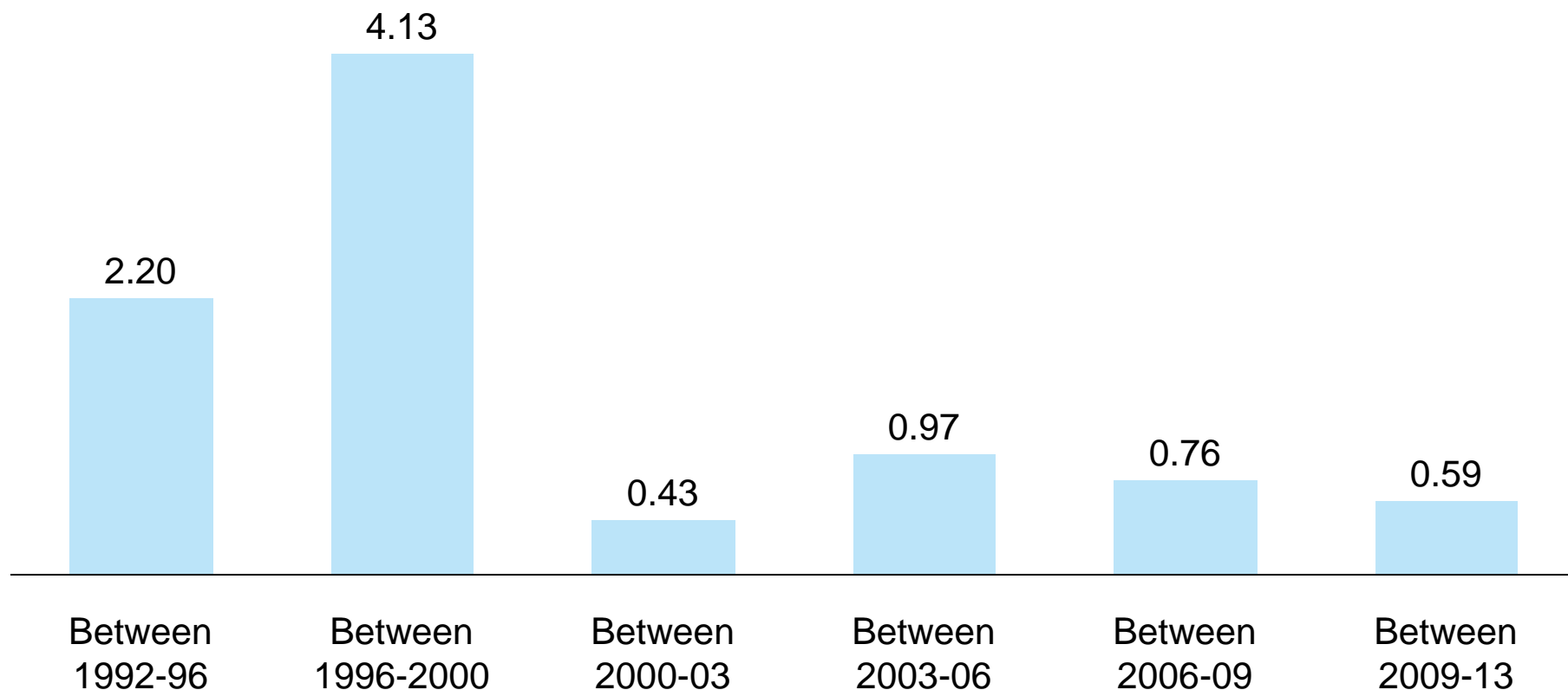
<sup>1</sup> Plantation forest is not considered as forest cover

SOURCE: Ministry of Forestry land cover map 1992 & 2013; Pöyry analysis

## HOWEVER, THE DEFORESTATION RATE HAS SLOWED SIGNIFICANTLY IN RECENT YEARS

### Average Annual Deforestation Rate 1992 to 2013<sup>1</sup>

Million ha



<sup>1</sup> Plantation forest is not considered as forest cover

SOURCE: Ministry of Forestry land cover map 1992 & 2013; Pöyry analysis

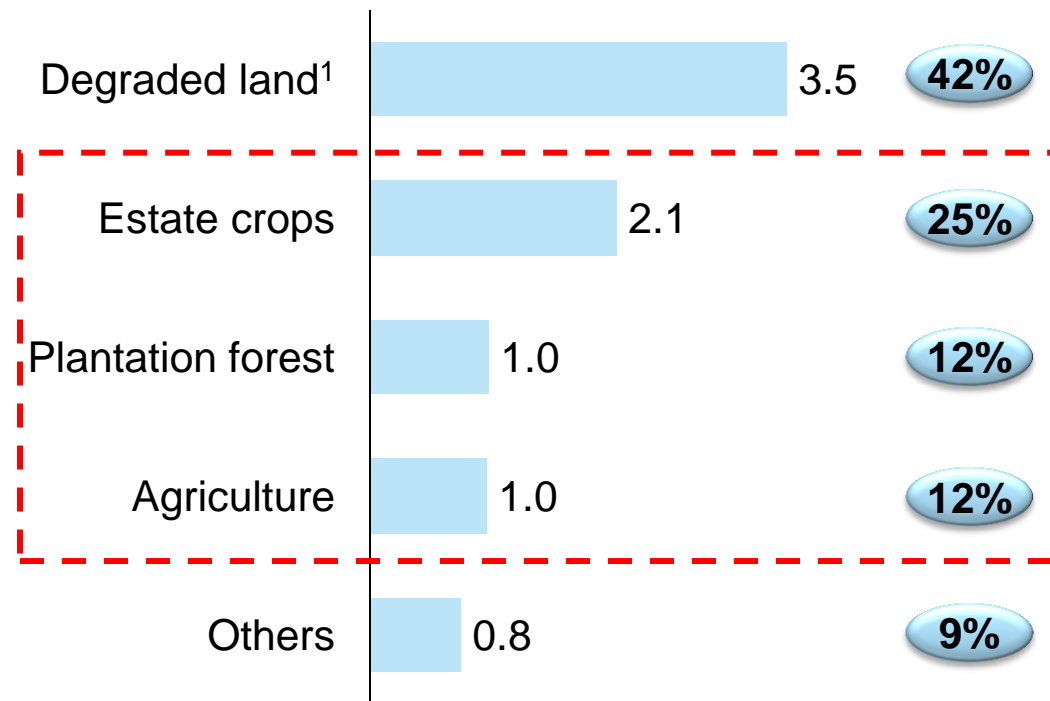


## DURING THE LAST DECADE AGRIBUSINESS AND FORESTRY HAVE BEEN MAJOR DRIVERS OF DEFORESTATION BUT THE LARGEST SHARE DOES ACTUALLY NOT RESULT IN ANY ECONOMIC BENEFIT BUT DEGRADED LAND



### 4+ million ha forest area is converted into estate crops, plantation forest and agriculture

Land cover change from forest to non-forest  
In million ha, 2000-13

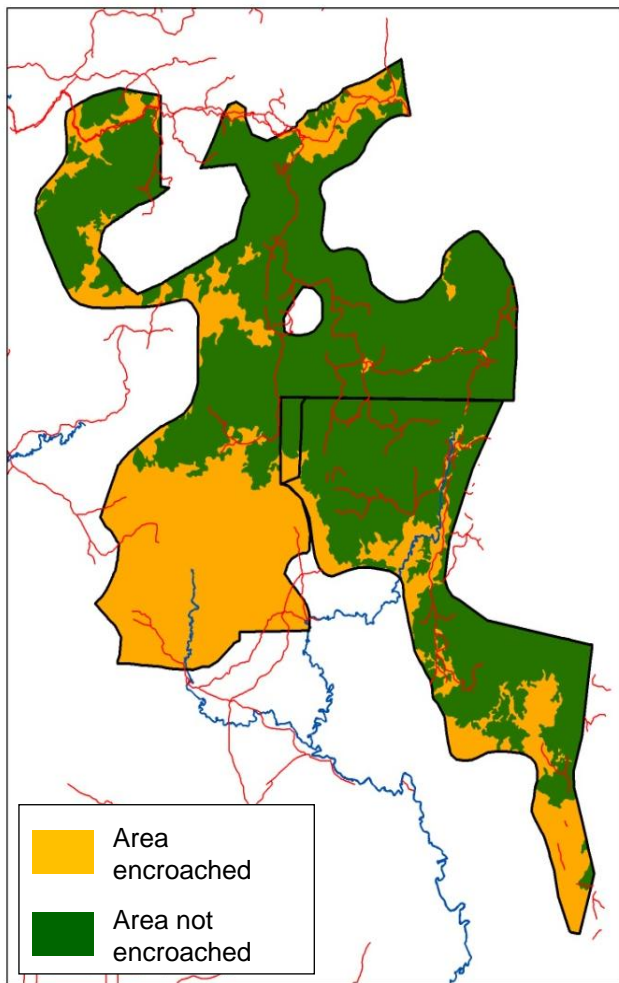


<sup>1</sup> Degraded land means the land is converted into shrub/open land and not developed into any other land cover

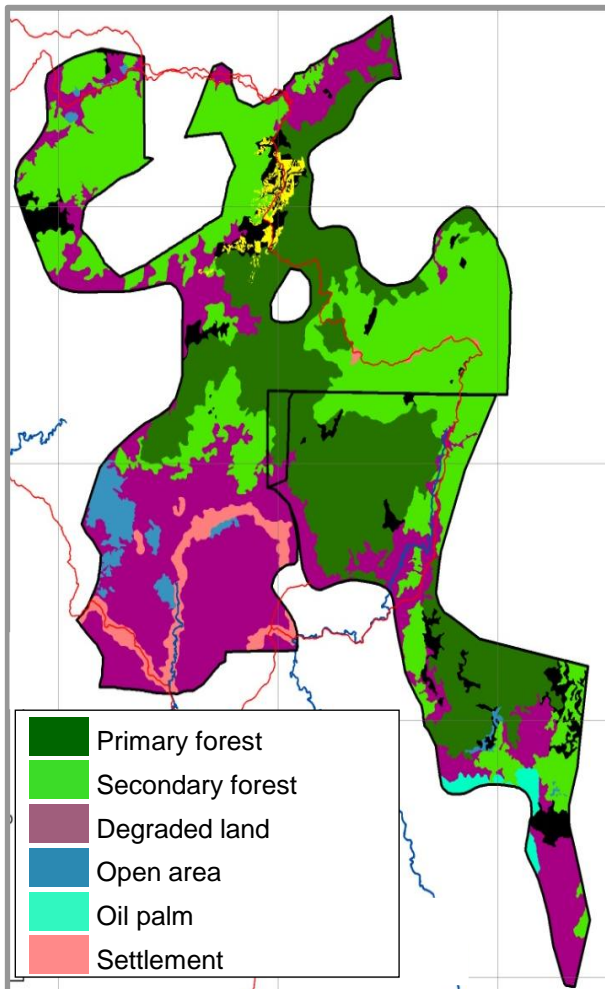
## LAND WITHIN EXISTING CONCESSIONS IS ALSO OFTEN ENCROACHED BY SMALLHOLDERS LEADING TO ADDITIONAL DEFORESTATION

SANITIZED CLIENT EXAMPLE

Encroachment map



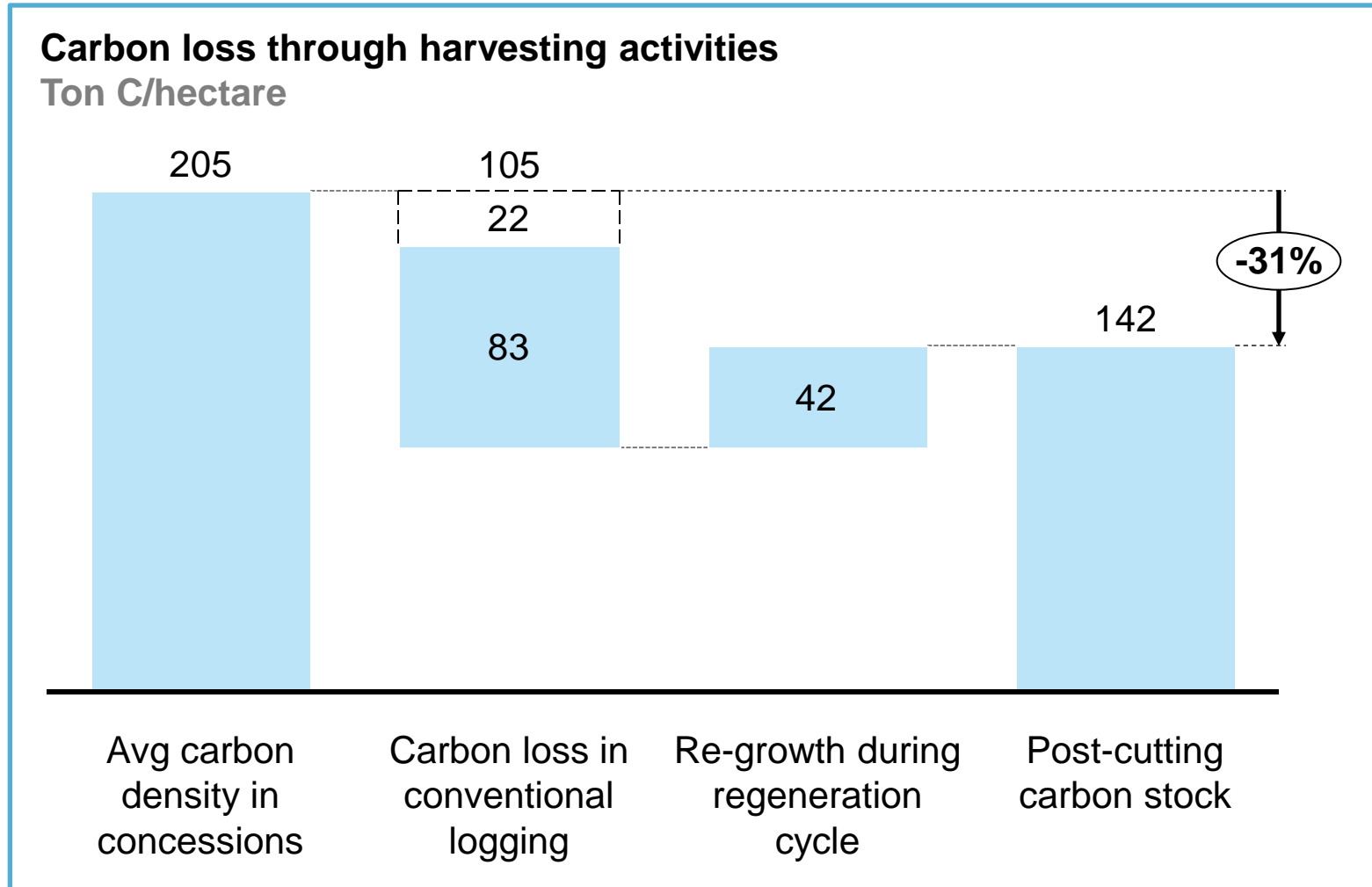
Land cover map



	Area
Encroached area	36%
Not encroached	64%

- The encroached area is not legally owned by the local communities
- Encroachment happened as a “land claiming tool” by local communities due to lack of licensing system for customary land (tanah adat)

## CONVENTIONAL LOGGING PRACTICES ARE LEADING TO SIGNIFICANT BIOMASS LOSS...



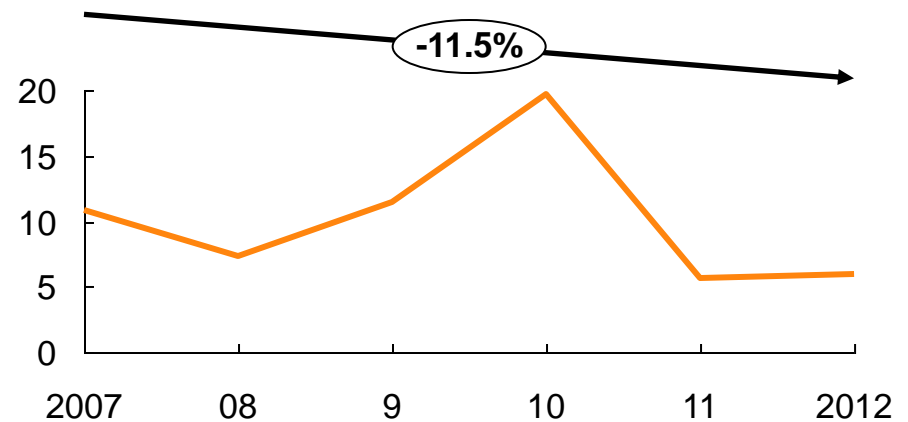
SOURCE: Putz et al., 2010; Stanley et al., 2009; Putz, 2008; Lasco et al., 2006

## ...AND AS A RESULT THE SUPPLY OF MERCHANTABLE TIMBER FROM INDONESIA'S LOGGING CONCESSIONS HAS DECLINED SHARPLY



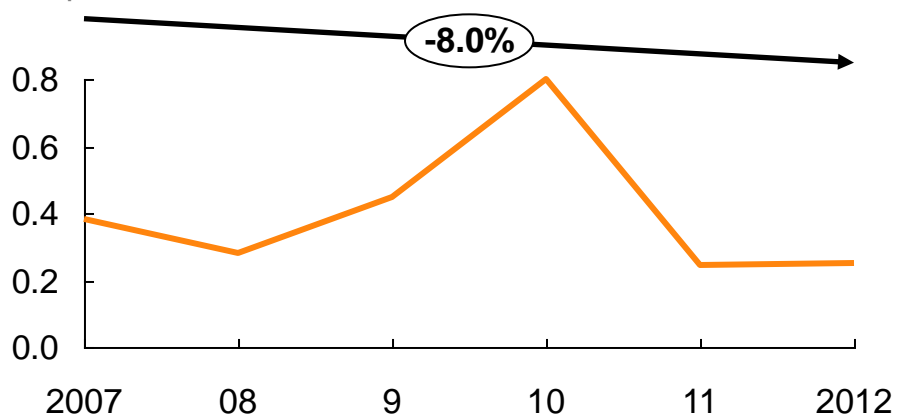
Indonesia log production from natural forest (HPH)

Million m<sup>3</sup>



Indonesia log yield from natural forest (HPH)

m<sup>3</sup> per hectare

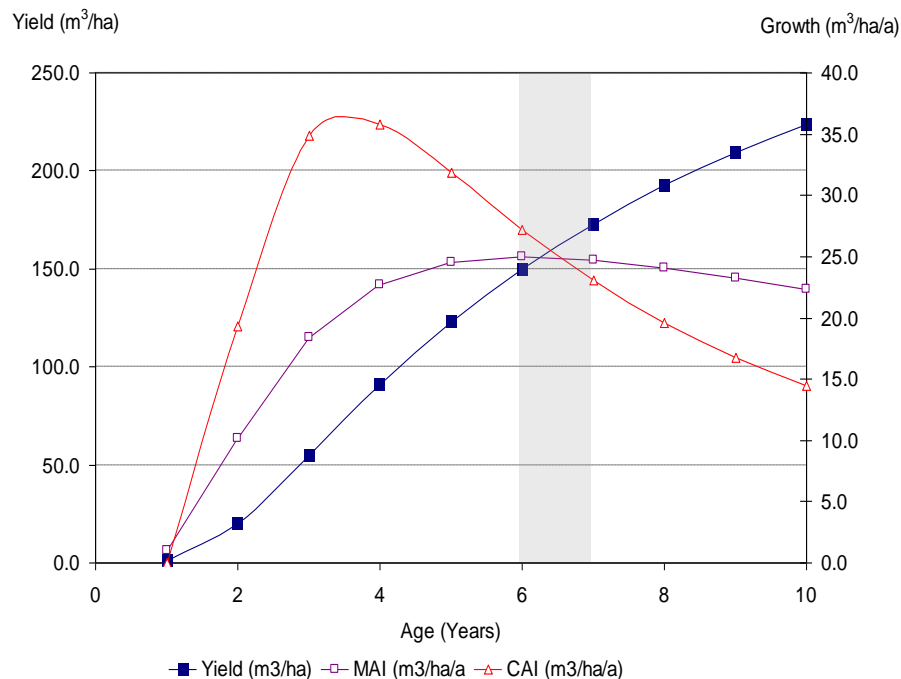




# COMPANIES TEND TO DECREASE THE FOREST ROTATION LENGTH TO BOOST WOOD INPUT, WHICH ACTUALLY LEADS TO LOW PULP YIELD

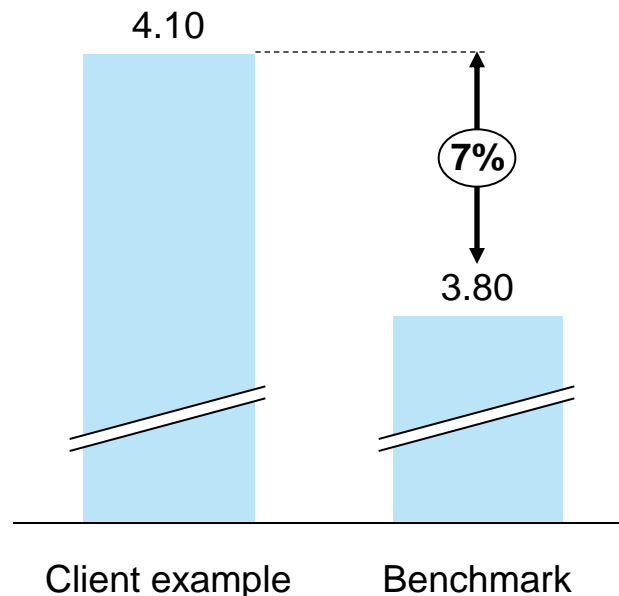
INTEGRATED PULP & PAPER EXAMPLE

Acacia is typically harvested in the 6<sup>th</sup> to 7<sup>th</sup> year when its MAI reaches maximum<sup>1</sup>



Companies tend to decrease the rotation length, which result in low yield

In GMT/ADT



1 Yield is total volume (in m³) or total weight (in GMT) of wood fibre recoverable at a specific age from a unit area of planted land (ha)

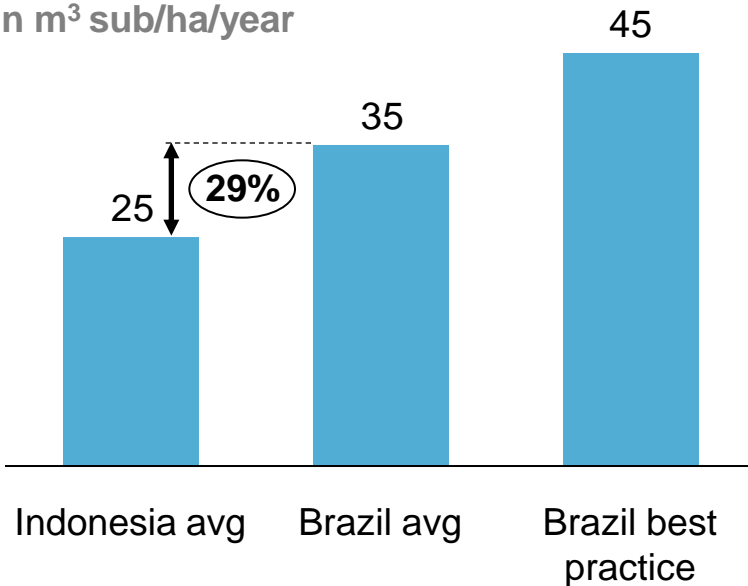
2 MAI is the yield in a particular annual period divided by the sum of all periods to date. The concept of MAI is the most common way of expressing growth rate in forestry

3 CAI is increment in yield between the current and the previous periods only

## IN AVERAGE MAI ARE SIGNIFICANTLY BELOW THE BRAZILIAN BENCHMARK AND ARE ACTUALLY DECLINING

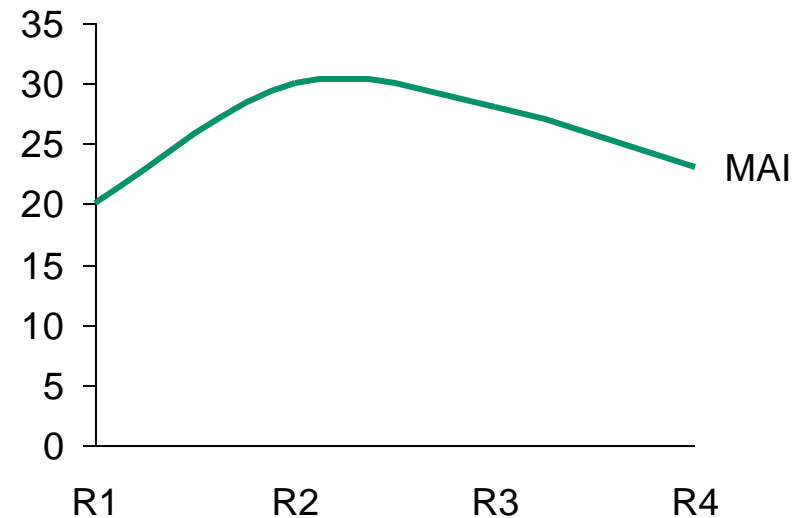
Indonesia's MAI is significantly below Brazil's MAI...

Mean annual increment  
In m<sup>3</sup> sub/ha/year



...and is declining over time

Mean annual increment  
In m<sup>3</sup> sub/ha/year

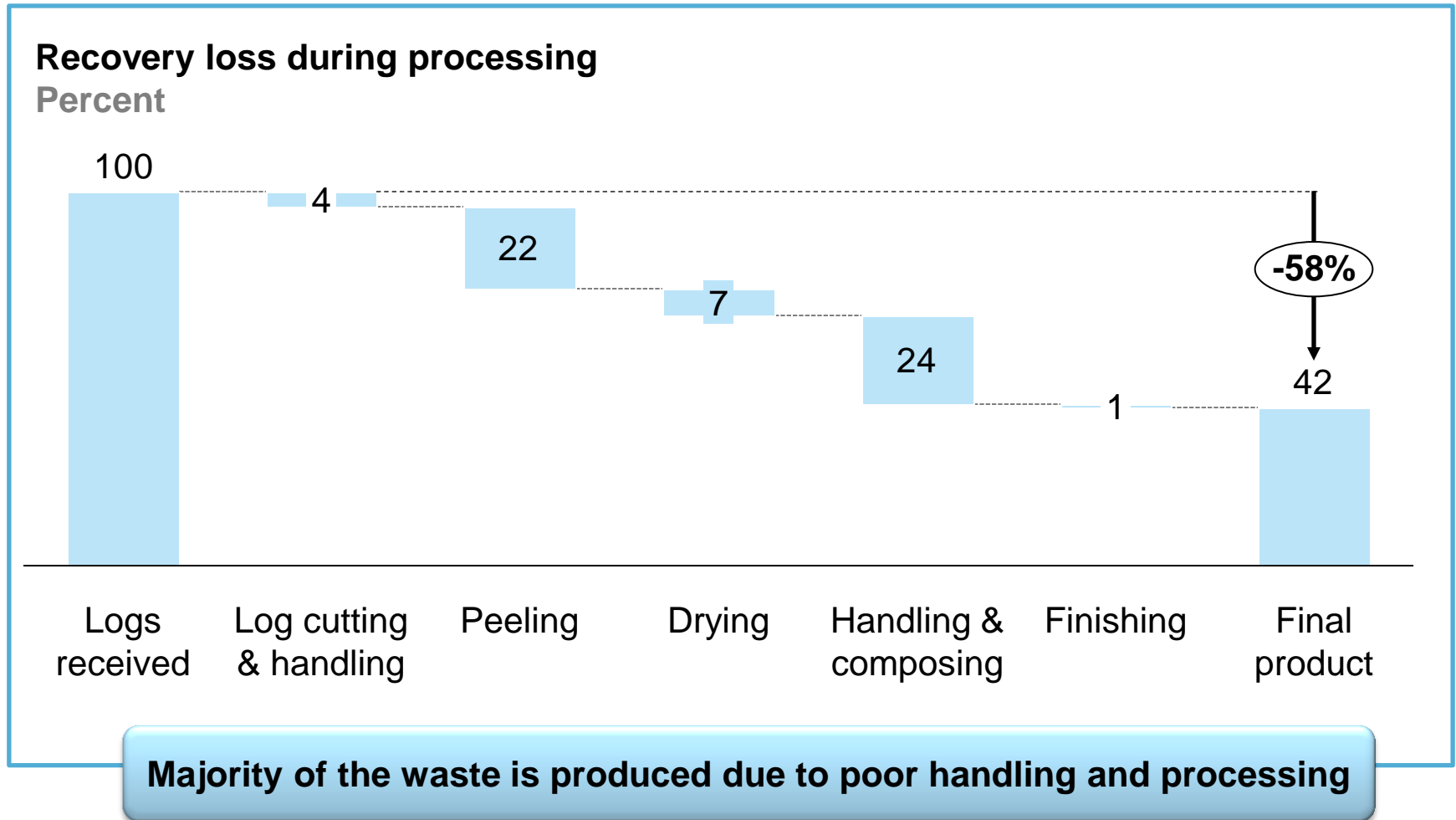


With successive rotations:

- Focus of tree breeding on yield improvement and physical tree properties; insufficient focus in disease resistance
- Simultaneous accumulation of pathogens and pests to contend with
- Increased incidence of pest and disease

## CURRENT DOWNSTREAM INDUSTRIES ARE NOT EFFICIENT

PLYWOOD EXAMPLE



## IN THE DOWNSTREAM INDUSTRIES, WOOD IS TYPICALLY LOST DUE TO POOR HANDLING





## **BAD HARVESTING PRACTICES RESULT IN LOW-QUALITY LOGS WHICH DRIVES LOW RECOVERY AT DOWNSTREAM**



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State of Indonesian Forests

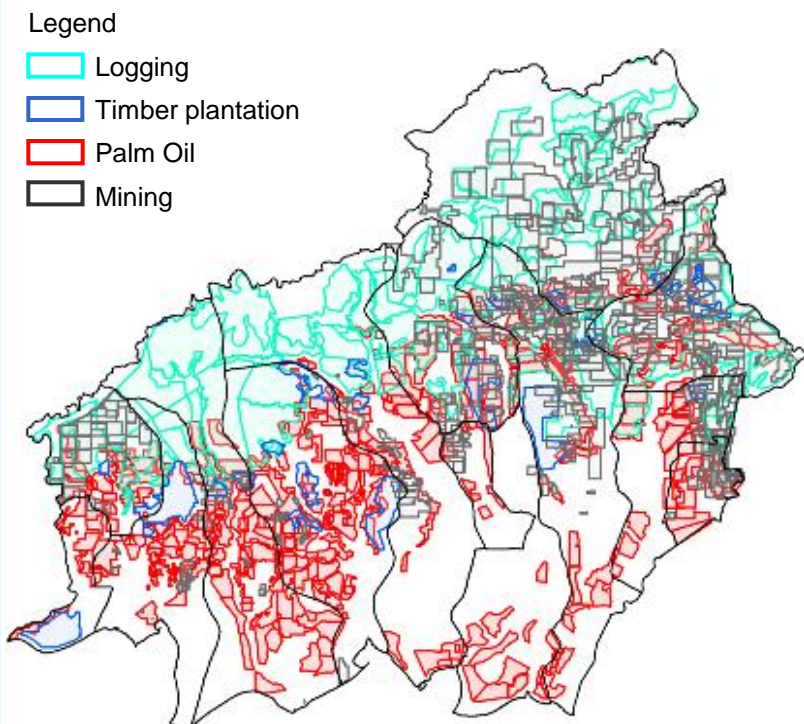
**Challenges**

Opportunities and key enablers

# NO CENTRALIZED MAP AND LICENSE ISSUING SYSTEM RESULT IN UNRESOLVED LICENSE OVERLAP

CENTRAL KALIMANTAN EXAMPLE

**Distribution of current licenses, including those not yet in operation, 2010**



**License area coverage and carbon at risk (after overlaps removed)**

	Total coverage <sup>1</sup> Mn ha	On forest or peat area <sup>1</sup> Mn ha	Carbon at risk <sup>2</sup> MtC
Forestry			
Timber plantation	0.4	0.2	122
Logging	2.6	2.2	666
Mining	2.3	1.7	559
Palm oil	3.6	1.7	1,538
Total in license	8.9	5.8	2,885
Province share	~60%	~60%	~30%

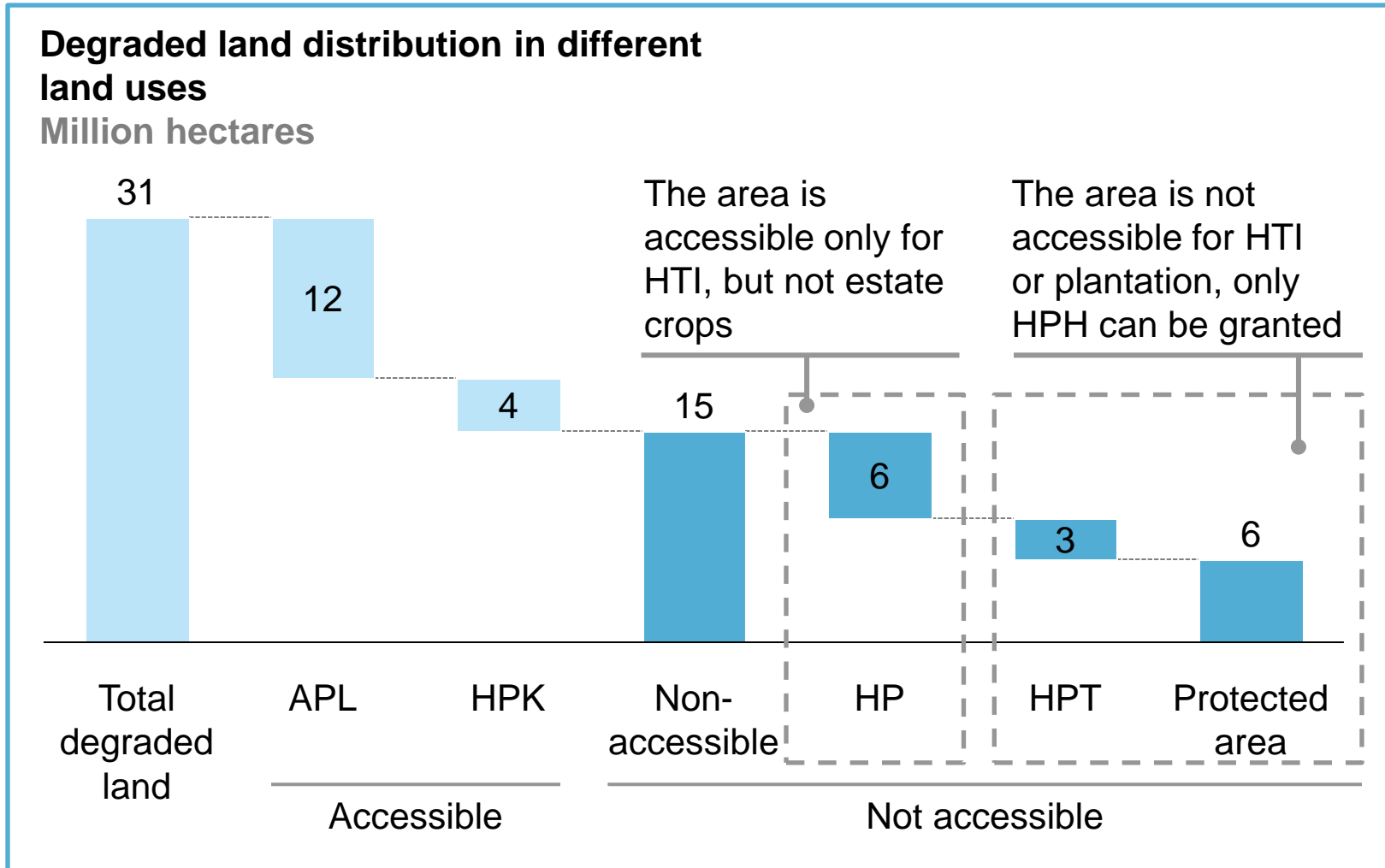
**In Central Kalimantan alone, 1.9 million hectares forestry licenses (timber plantation and logging) are overlapped with other licenses**

<sup>1</sup> All license overlaps have been eliminated. All licenses make up 12 million ha when overlaps are not eliminated,

<sup>2</sup> Carbon at risk reflects total carbon stored on area under license, this does not translate directly to emissions

SOURCE: Ministry of Forestry, Central Kalimantan's Plantation (2011), Mining (2011) and Forest (2011) Agencies, Woods Hole, Wetlands Int. (2002)

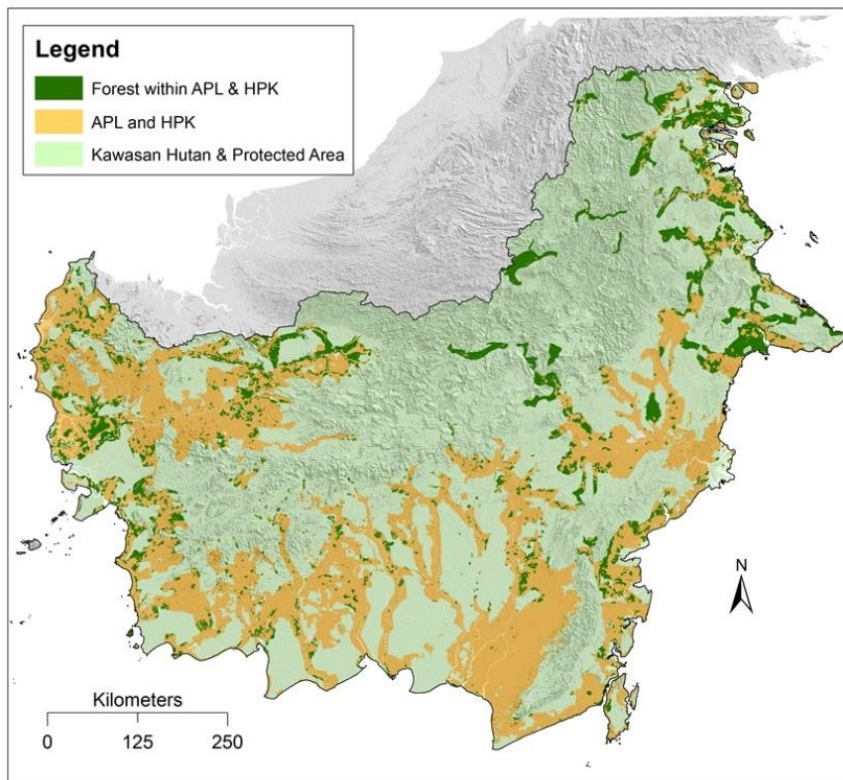
## 15 MILLION HECTARES DEGRADED LAND IS NOT ACCESSIBLE DUE TO THEIR KAWASAN HUTAN (FOREST ESTATE) STATUS...





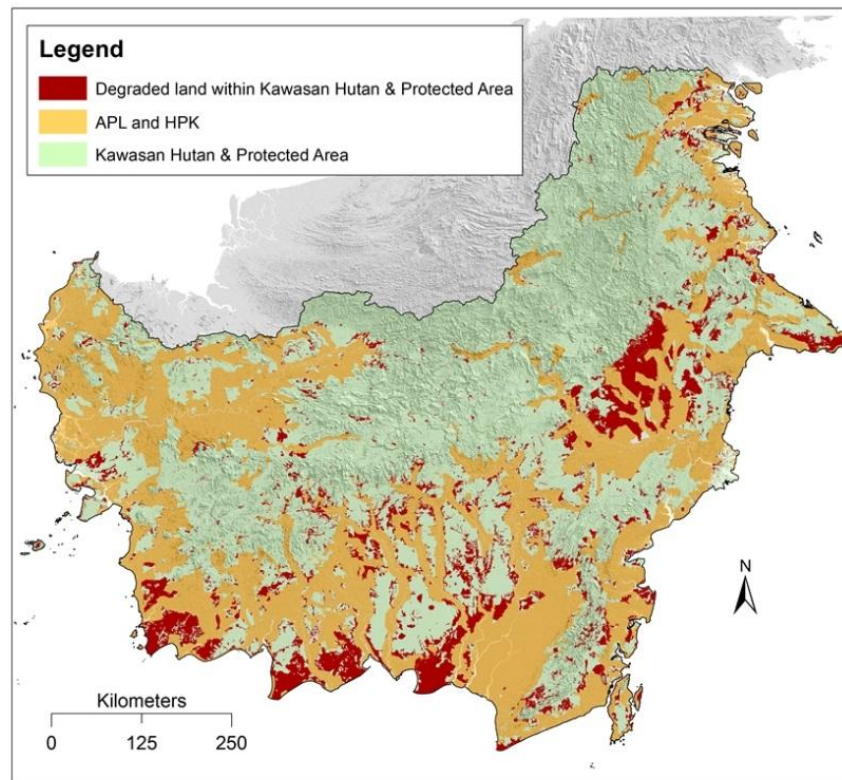
# ...WHILE 8.5 MILLION HA FOREST IS SET FOR PLANNED DEFORESTATION IN LAND DESIGNATED FOR OTHER LAND USE

### Forest cover within APL and HPK



8.5 million hectares forest within APL

### Degraded land within forest estate (excld HPK)

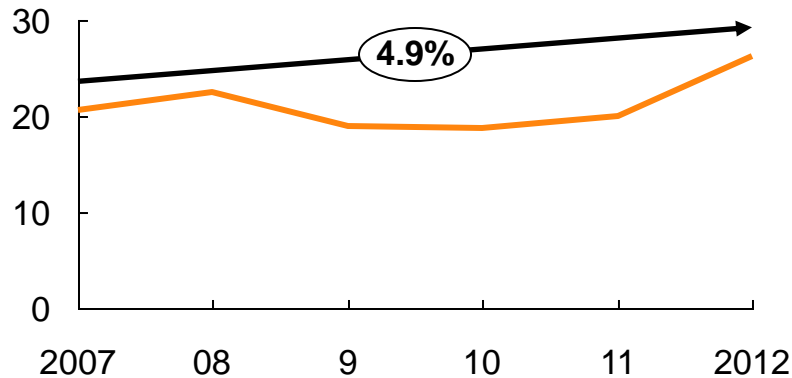


15 million hectares degraded land within Kawasan Hutan

# FOCUS HAS BEEN ON AREA EXPANSION BUT NOT ON YIELD IMPROVEMENT

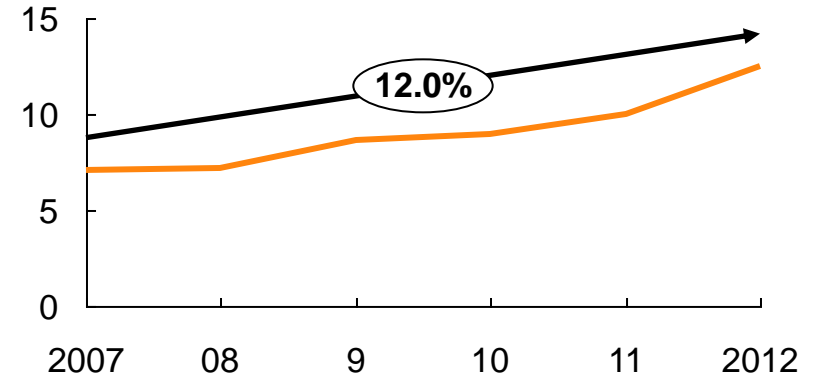
**Indonesia log production from plantation forest (HTI)**

Million m<sup>3</sup>



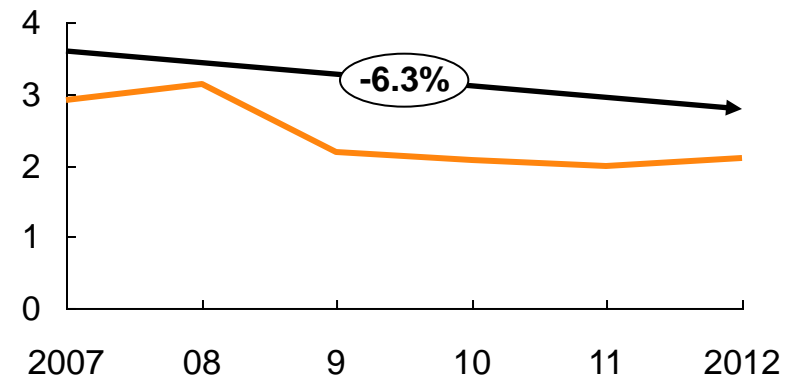
**Indonesia plantation forest area (HTI)**

Million hectares



**Indonesia log yield from plantation forest (HTI)**

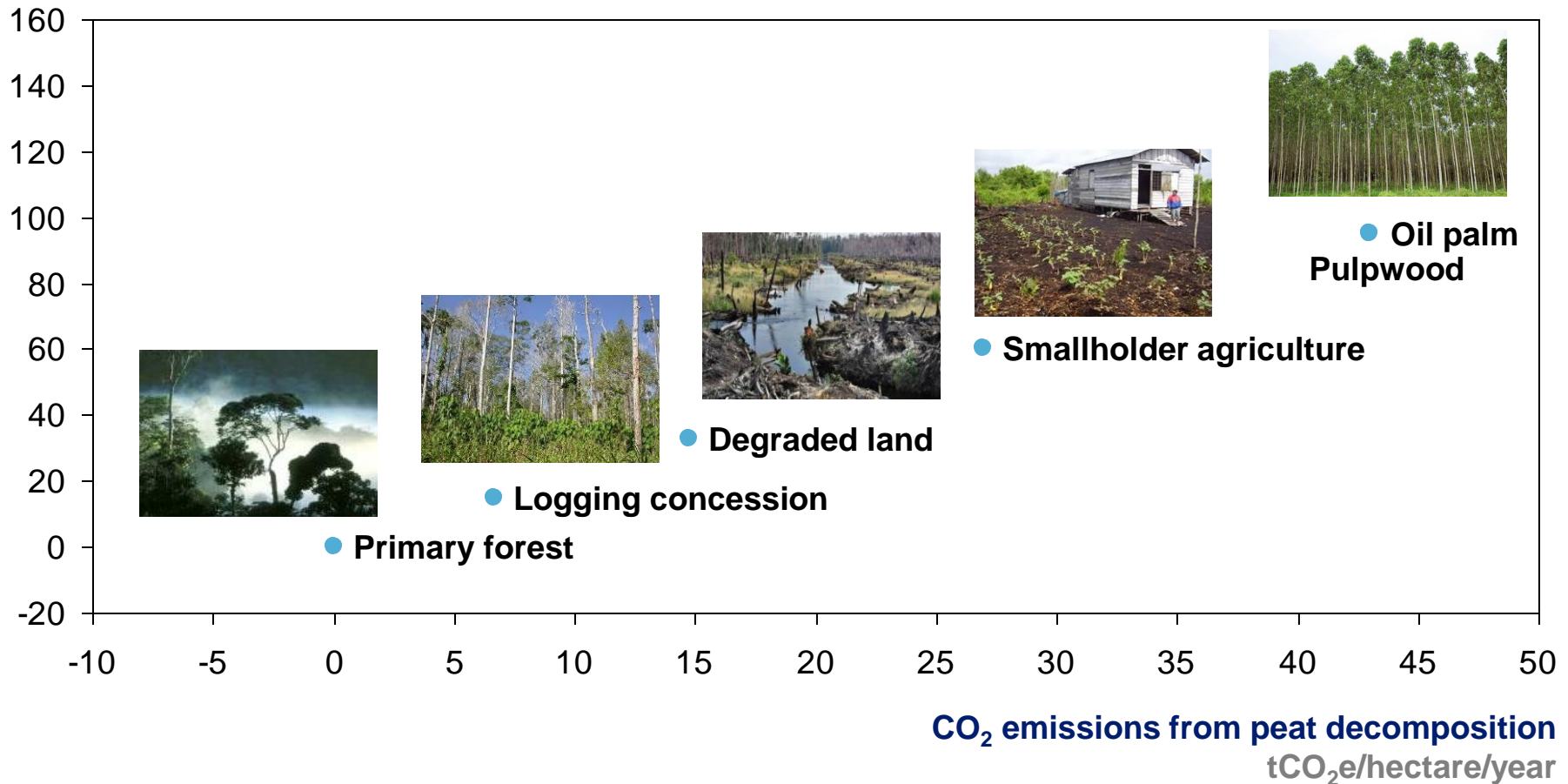
m<sup>3</sup> per hectare



## CHALLENGES

# A SPECIAL CHALLENGE IS PEATLAND AS ITS DEFORESTATION IS LEADING TO SIGNIFICANT CARBON LOSSES

Drainage depth  
cm



1 Based on a linear relationship model between drainage and peat decomposition according to Wosten et.al (2001)

SOURCE: Hooijer et al., 2006 – PEAT CO<sub>2</sub>e; Wetlands International; DNPI – Indonesia Greenhouse Gas Abatement Cost Curve

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## OPPORTUNITIES EXIST FOR INDONESIA TO IMPROVE SUSTAINABLE FOREST PRACTICES

### ENABLERS

1



**Extend moratorium to continue forest and peatland protection**

2



**Conduct carbon inventory analysis to allocate land for forestry activities**

3



**Promote and provide access to degraded lands**

4



**Utilize tree fully to improve revenue from one single tree**

5



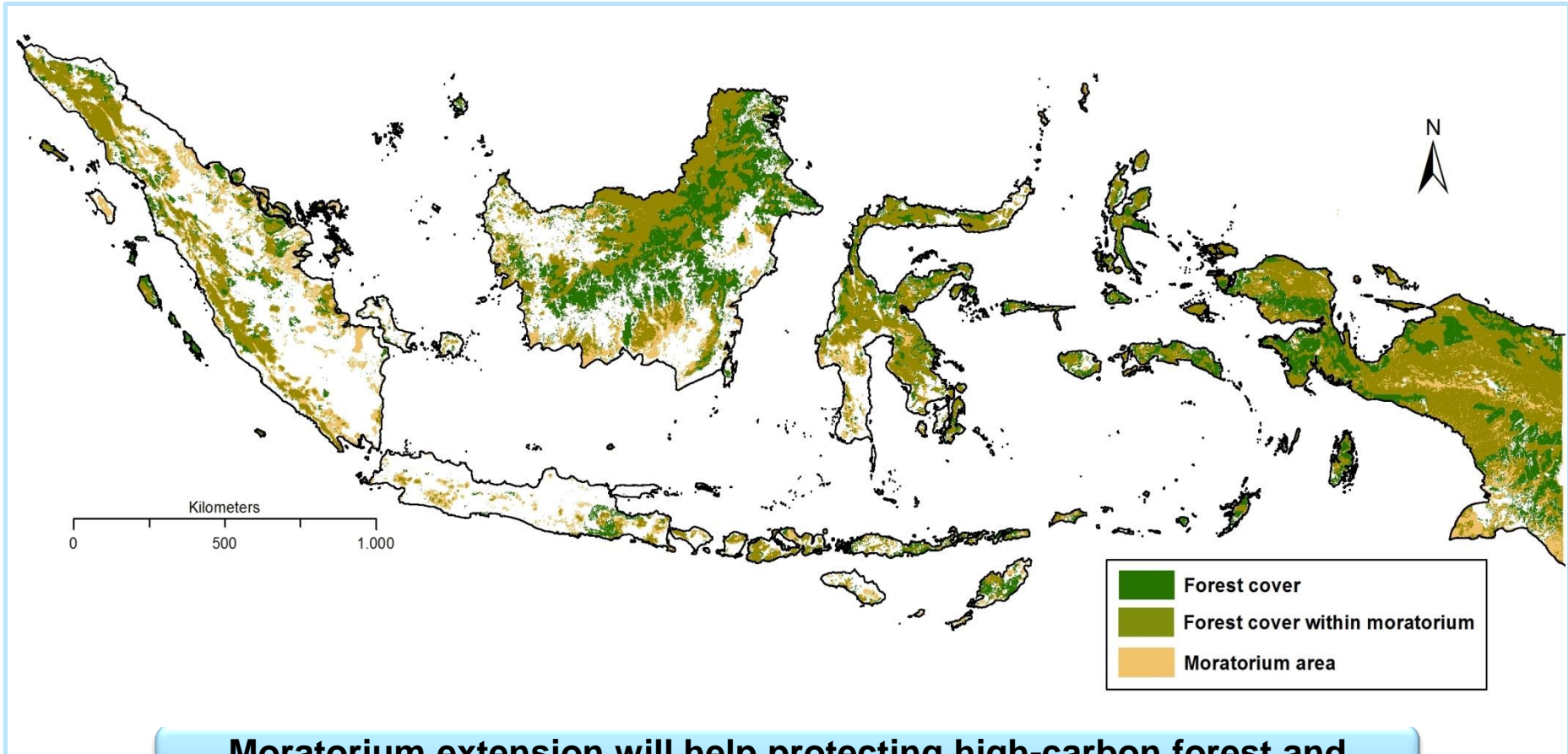
**Implement reduced impact logging (RIL)**

6



**Implement operational excellence to improve recovery in downstream business**

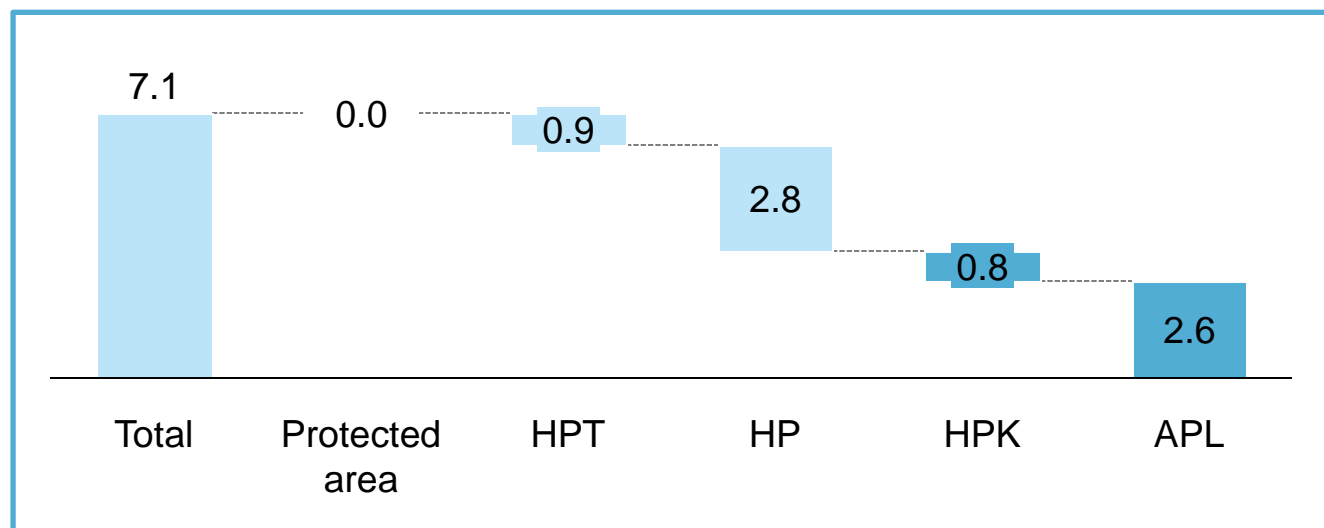
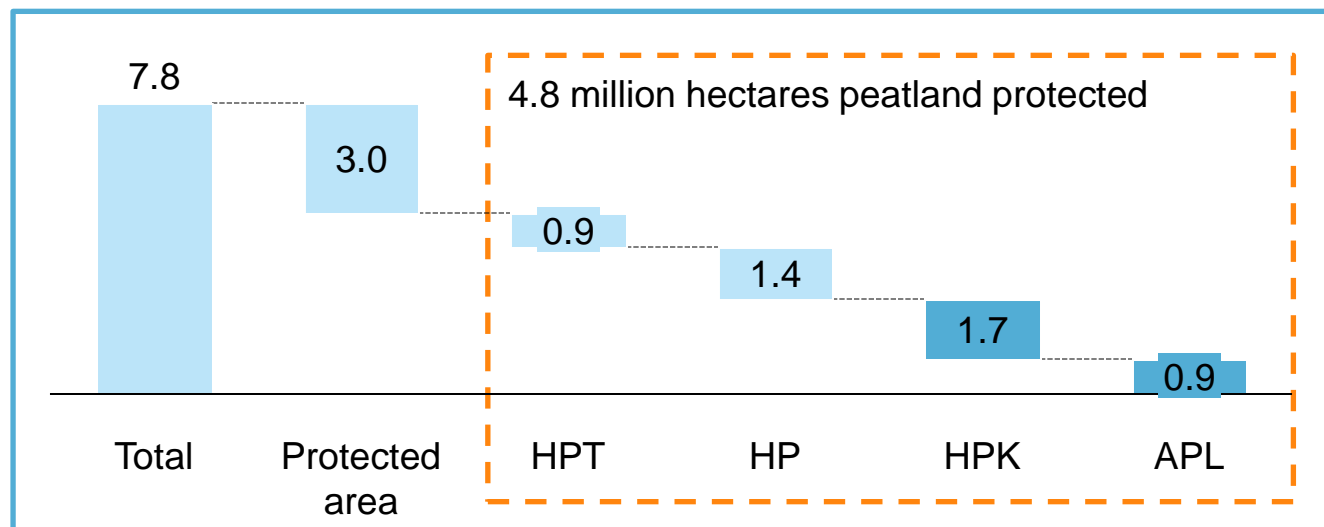
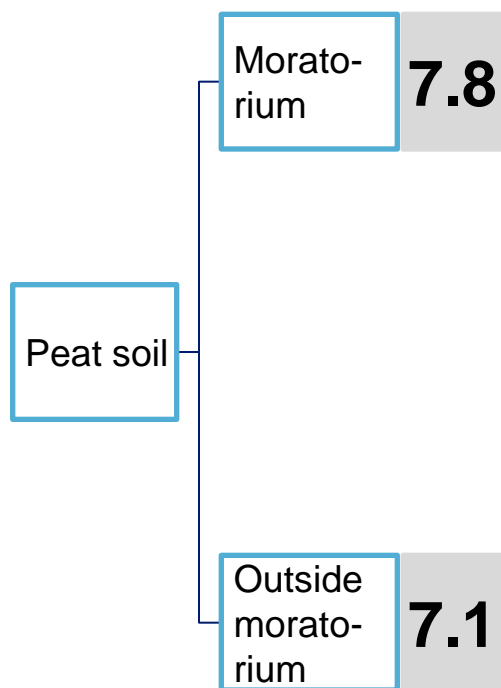
# 1 MORATORIUM PROTECTS 60 MILLION HECTARES FOREST AND PEATLAND FROM DEFORESTATION AND DEGRADATION



**Moratorium extension will help protecting high-carbon forest and peatland from conversion to other land uses**

# 1 CURRENT MORATORIUM PROTECTS ~4.8 MILLION HECTARES PEAT FROM BEING CONVERTED INTO LAND USE-RELATED ACTIVITIES

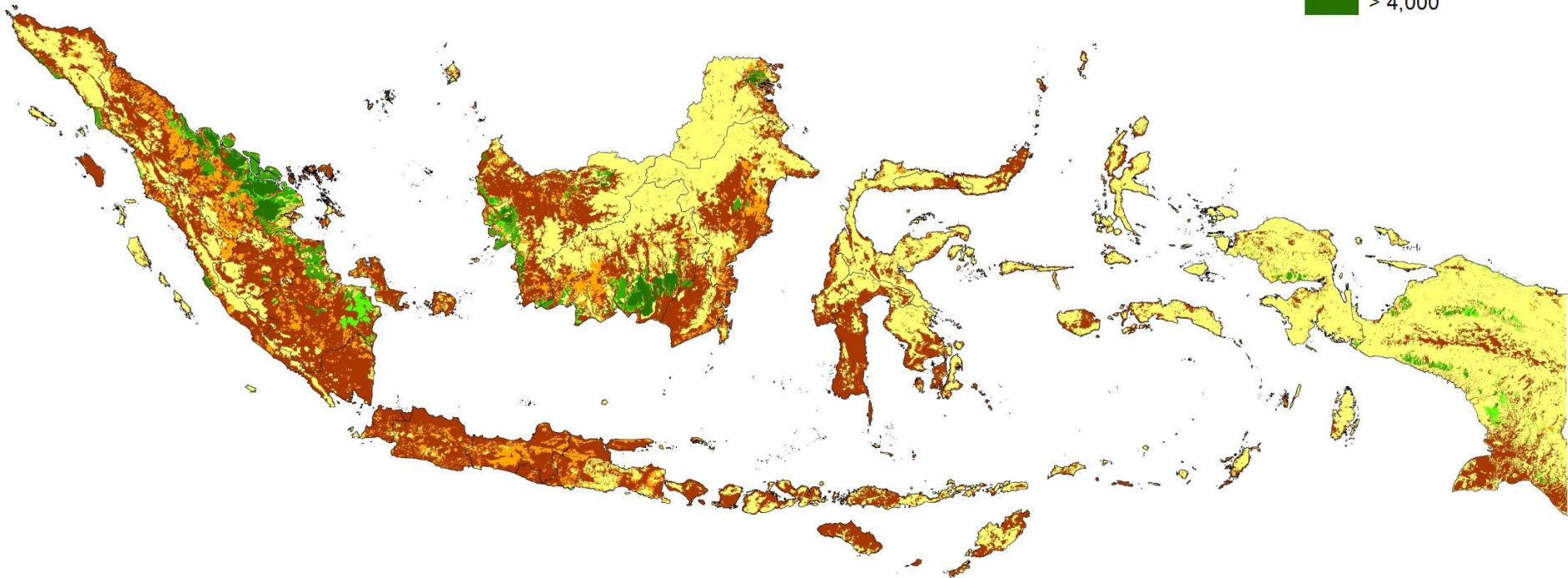
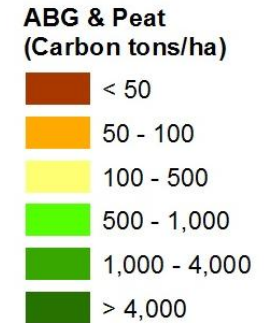
In million hectares



## 2 CONDUCTING CARBON INVENTORY ANALYSIS THROUGHOUT INDONESIA COULD HELP ALLOCATING LAND FOR FORESTRY ACTIVITIES

ANALYSIS EXAMPLE

Indonesia carbon stock above and  
below ground  
Ton C/hectare



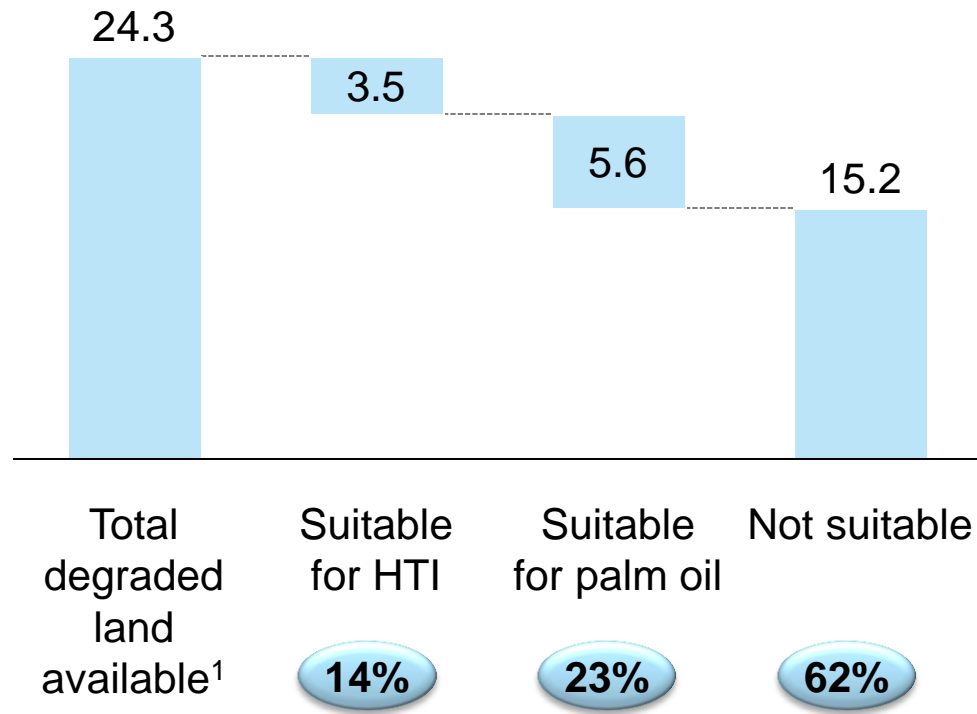
SOURCE: Ministry of Forestry; Wetlands International; ICRAF; Pöyry analysis



### 3 PROMOTING AND PROVIDING ACCESS TO DEGRADED LAND COULD CREATE SUSTAINABLE FORESTRY AND AGRIBUSINESS

**9 million hectares degraded land are suitable for plantation forest or estate crops development**

Million hectares

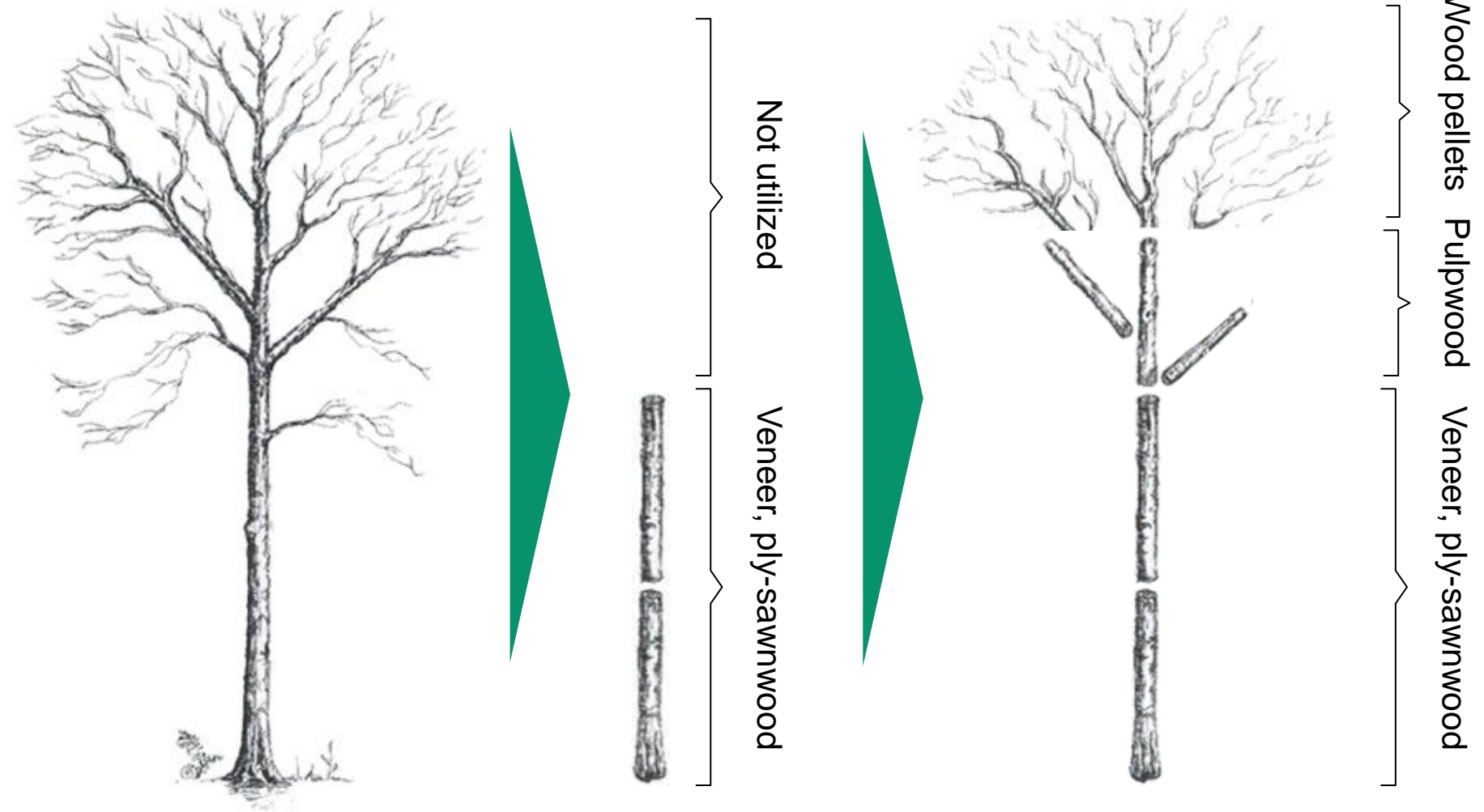


- Update current forest and non-forest zoning to provide access to degraded land
- Develop incentive scheme to promote the use of degraded land
- Improve government coordination to enable access to land banks located within two or more districts

<sup>1</sup> Available degraded land means no existing concession  
SOURCE: Ministry of Forestry; UKP4; Pöyry analysis

## 4 UTILIZING TREES FULLY CAN INCREASE THE VALUE FROM LOGGING ACTIVITIES AND DECREASE HARVESTING WASTE

ILLUSTRATIVE



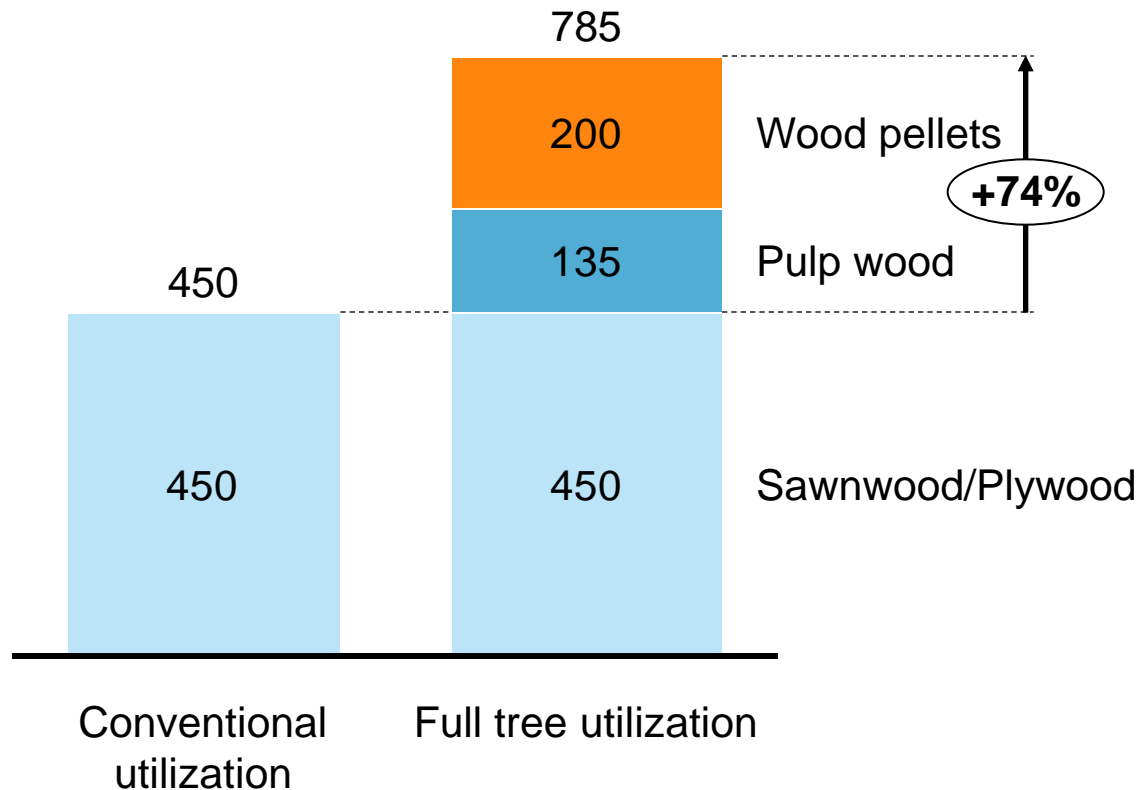
Conventional utilization

Full tree utilization

## 4 FULL TREE UTILIZATION WILL INCREASE REVENUE FROM ONE SINGLE TREE

### Revenue from conventional and full tree utilization<sup>1</sup>

In USD

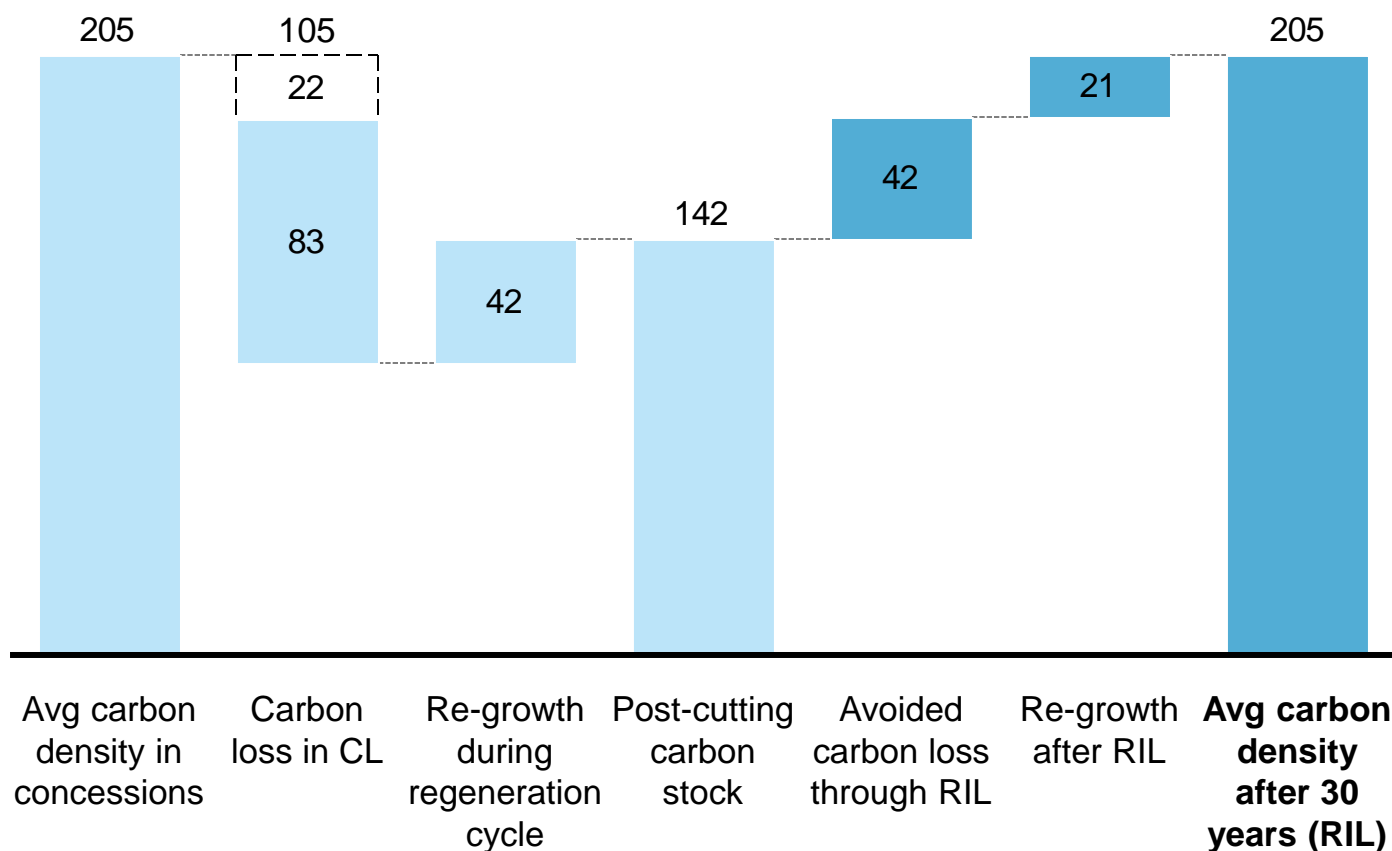


- Felling and logistic costs are slightly higher for full tree utilization because of complexity of operation
- Utilization of wood residues might result in loss of nutrients; soil quality has to be analyzed to avoid degradation

<sup>1</sup> Assuming overall wood volume of 10 m<sup>3</sup>, 3 m<sup>3</sup> sawnwood, 3 m<sup>3</sup> pulpwood, and 4 m<sup>3</sup> wood chips for wood pellet production

## 5 IMPLEMENTING REDUCED IMPACT LOGGING IN EXISTING CONCESSIONS COULD MINIMIZE POST-HARVESTING CARBON LOSS

**Carbon loss through harvesting activities**  
Ton C/hectare



- **More than 50% of collateral damage could be avoided** through improved harvesting planning and training of forest workers
- Reducing collateral damage will result in faster regeneration and regrowth during the cutting cycle, **allowing to reach pre-harvest carbon levels**



## 6 IMPLEMENTING OPERATIONAL EXCELLENCE IN DOWNSTREAM INDUSTRIES COULD IMPROVE EFFICIENCY AND RECOVERY

PLYWOOD EXAMPLE

### Implementing operational excellence initiatives could improve recovery in downstream industry

#### Recovery loss during processing

Percent

