



Creating value from integrated forestry in Sweden

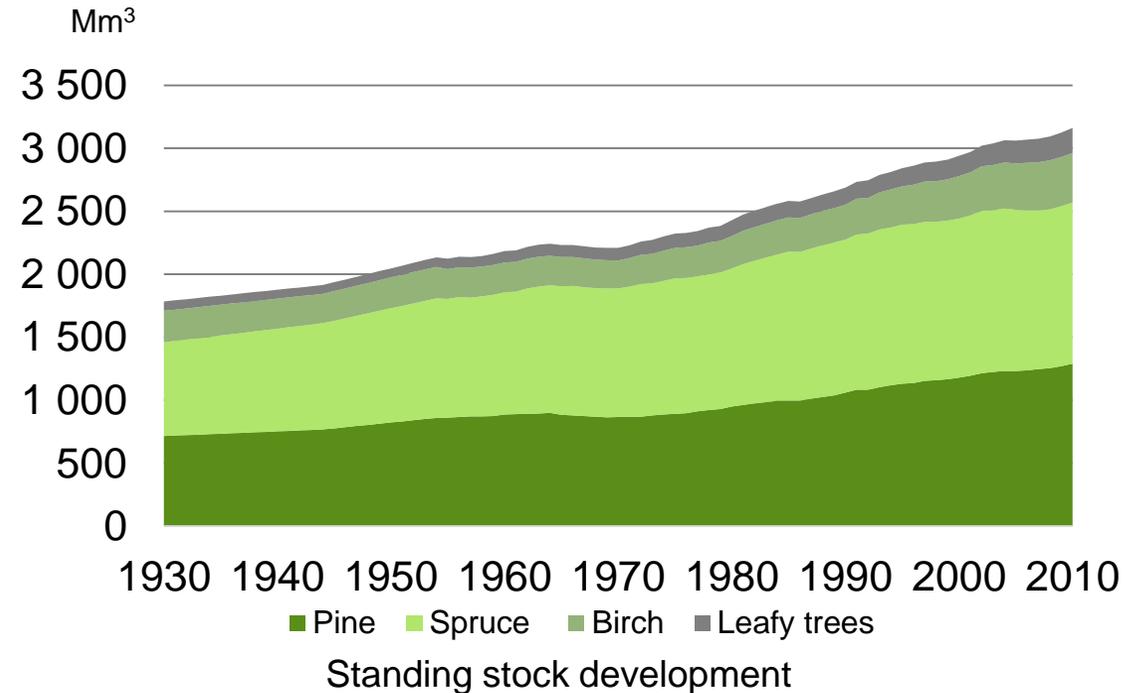
Martin Holmgren
SVP, Wood Supply Sweden

Sustainable forest management secures long-term wood supply



- 70% of Sweden is forest land
 - 28 million hectares
 - 23 million hectares productive forest land
- 80% of the forest land is in active use
- Ownership
 - 50% private owned, average property 50 hectares, 330 000 private forest owners
 - 25% owned by companies
 - 25% owned by state and institutions

Over the past 90 years, Sweden's forest resource has doubled



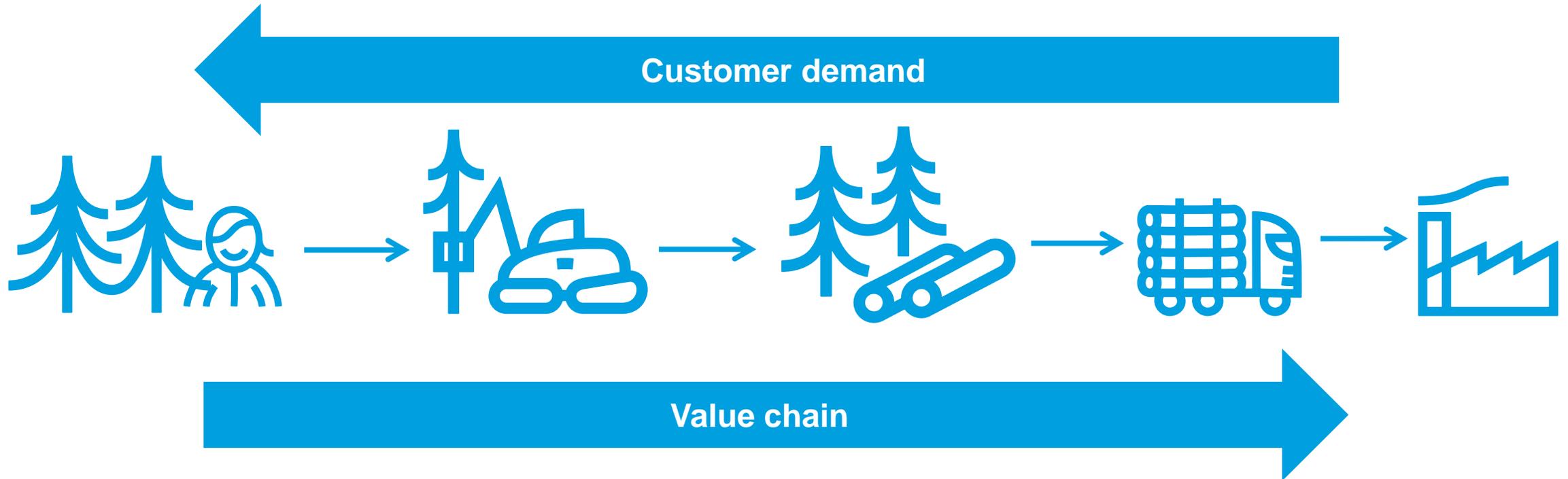
Two key objectives in managing wood supply



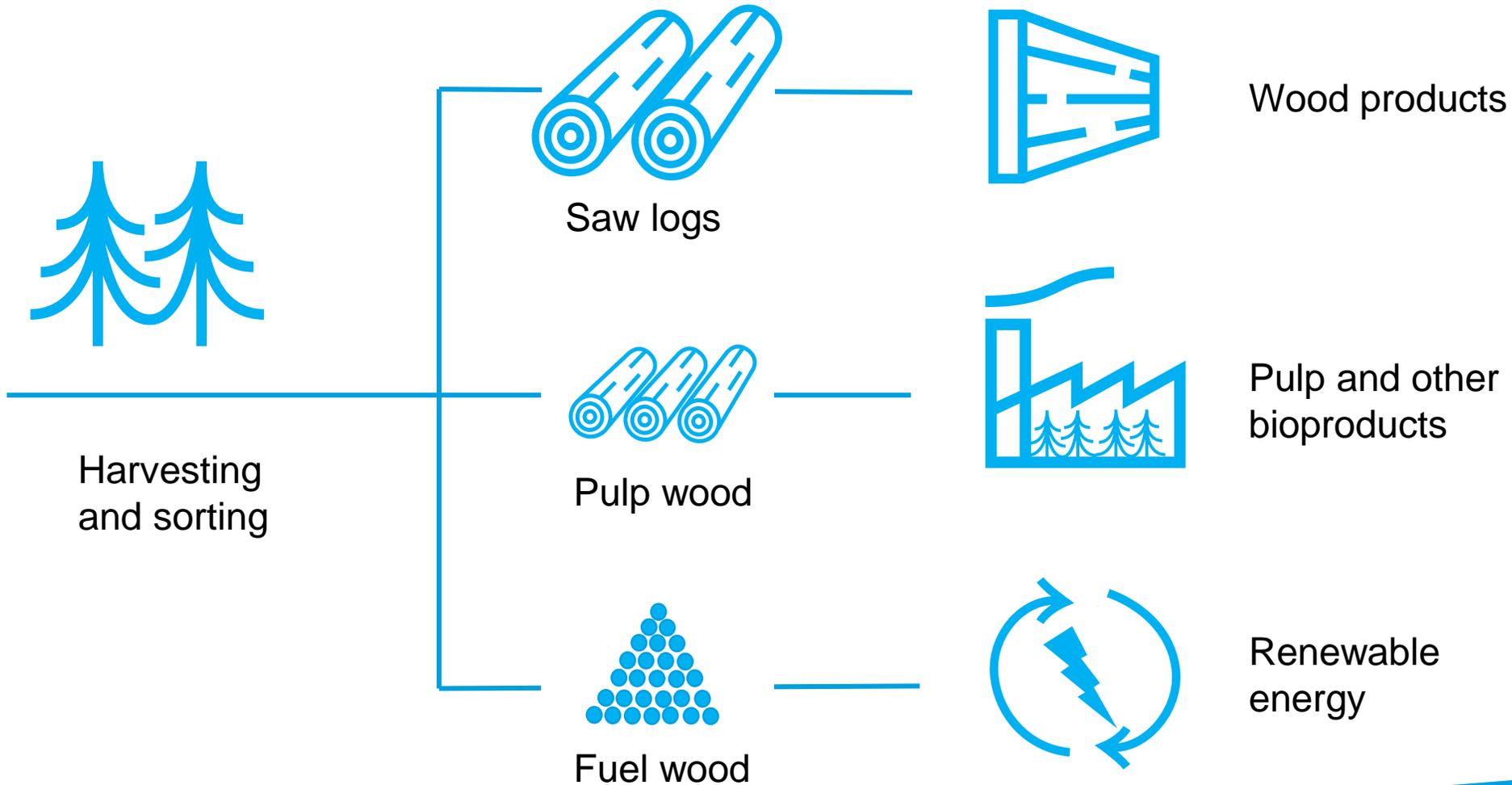
- Supply Stora Enso's Swedish mills with raw material – saw logs, pulpwood/chips and solid biofuel
- To create value by managing and developing our forest assets in Sweden



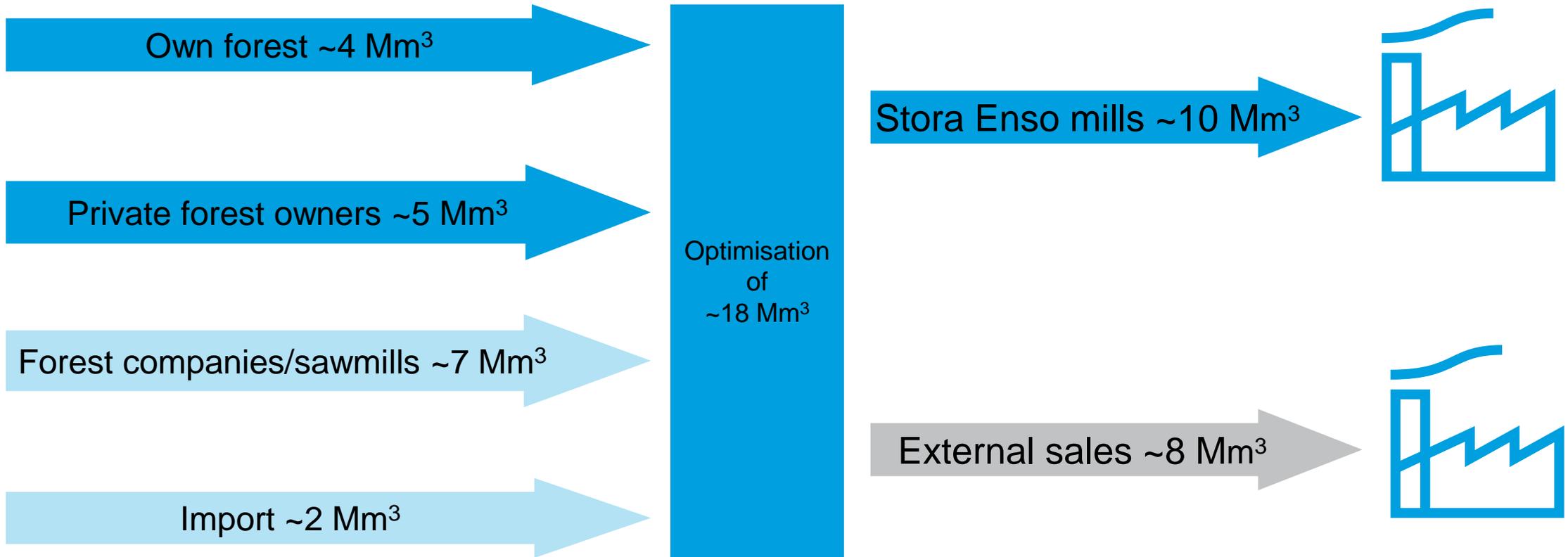
We are able to increase value creation through backward integration



We use every part of the tree...



...and we optimise supply to our mills



Our mills are located close to our forests

– increasing efficiency



One fully loaded timber truck every minute, 24 hours a day, all year round are delivered to one of our mills

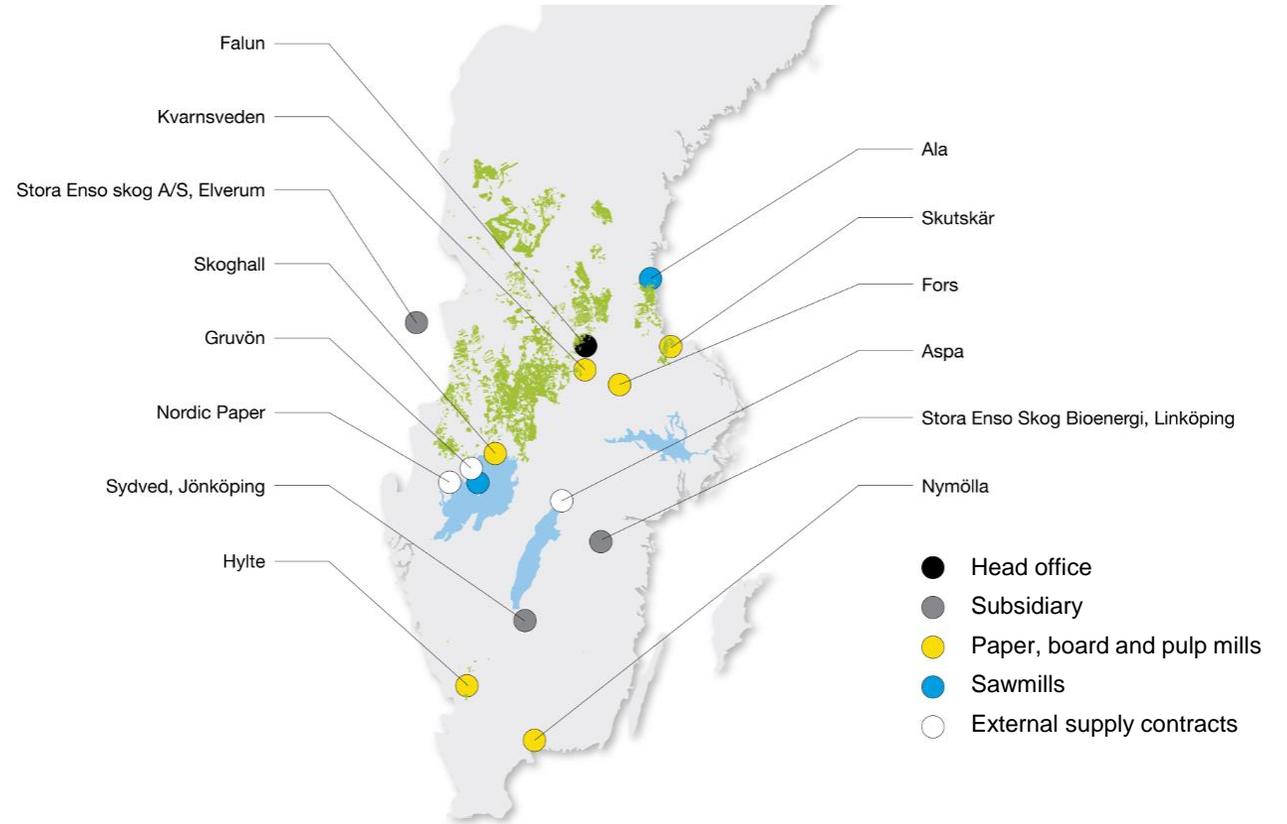
Operations

700 employees in Wood Supply Sweden

Mainly outsourced operations for silviculture, harvesting and transportation

~ 600 harvesters and forwarders

~ 300 trucks



Today's consumers demand sustainable forestry

This is our approach to sustainability



Forest growth
Productivity



Growing forests good for the climate
Protecting biodiversity
Limit impact on soil and water

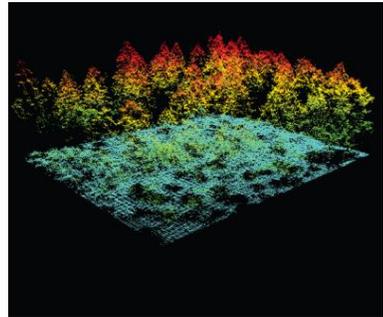
Jobs in rural areas
Dialogue with indigenous people
Recreation considerations

100% of our wood from sustainable sources

96% of lands owned and managed by Stora Enso are covered by certification.



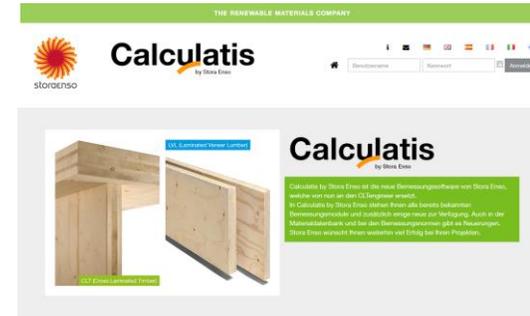
Precision forestry creates next level of value in supply chain



Forest data/info



Cutting optimisation



Product value



Backward integration

Disclaimer



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THE RENEWABLE MATERIALS COMPANY



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Onsite

Safety first

Everyone home safe every day



Helmet
If a tree falls



Safety vest
So that the machine operator can see you

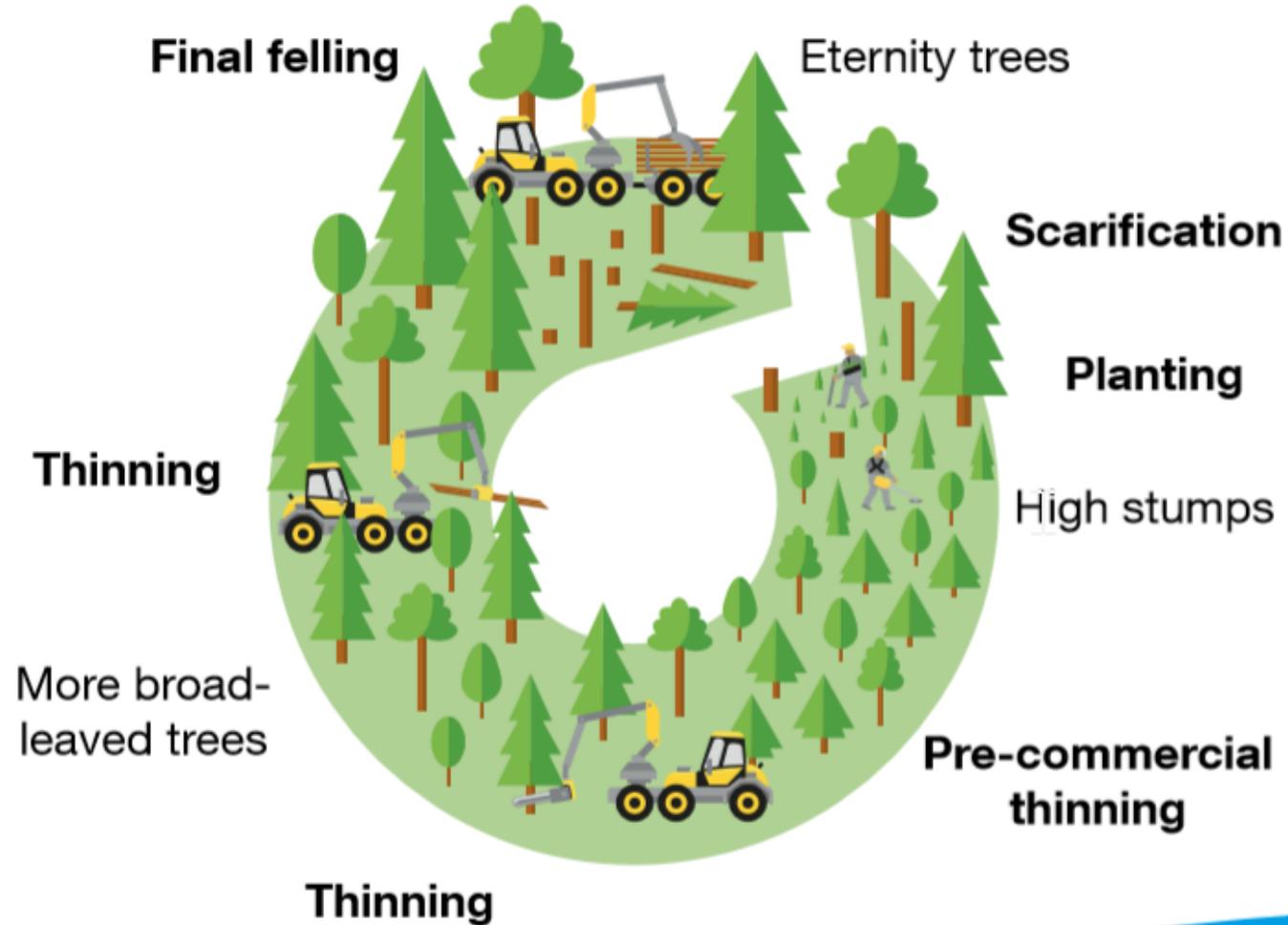


Safety distance
90 meters to harvester
20 meters to forwarder

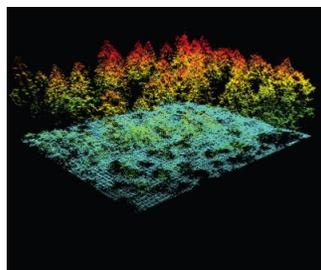
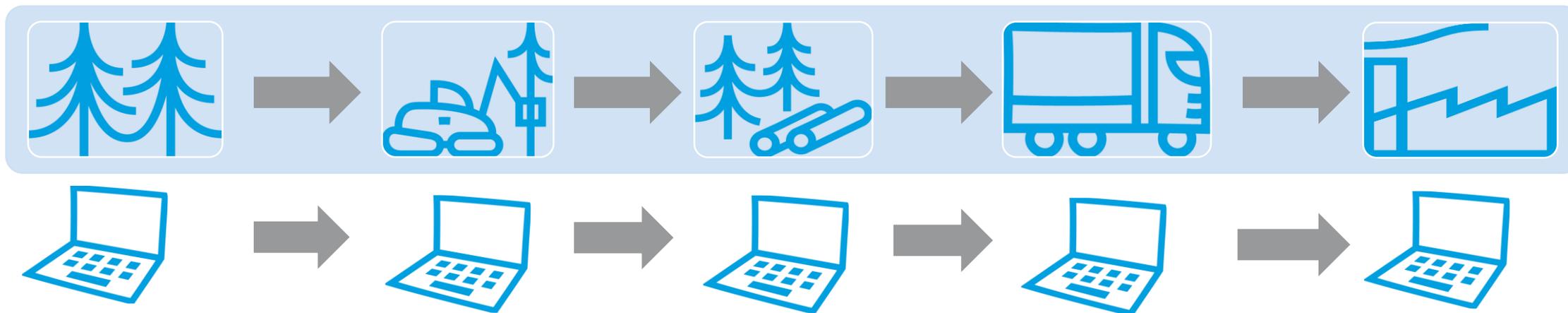


**Never go close to a forest machine without having contact with the operator.
Always be careful when walking in the forest.**

The forest cycle 60 to 100 years



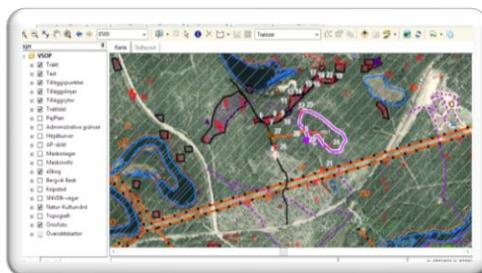
The digital chain from forest to mill



Laser data own forest



Private land owners
Forest management plans



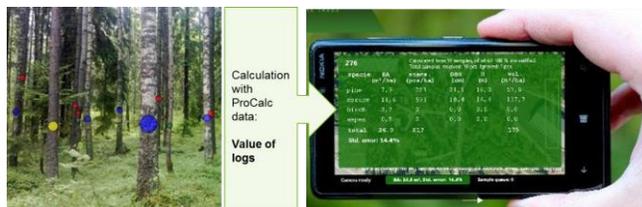
Site planning

INDLAG	TERMINAL		BILVAG SES		BILVAG Sydvad				
	TTN	TTK	GTN	GTK	LT	BMB	BMG	GM	LM
rylien	Green	Red	Green	Green	Yellow	Green	Green	Green	Green
dnby	Green	Green	Green	Green	Green	Green	Green	Green	Green
amboda	Green	Green	Green	Green	Green	Green	Green	Green	Green
stjarnland	Green	Green	Green	Green	Green	Green	Green	Green	Green
olmas	Green	Green	Green	Green	Green	Green	Green	Green	Green
alun	Green	Green	Green	Green	Green	Green	Green	Green	Green
ljan	Green	Green	Green	Green	Green	Green	Green	Green	Green
vsg	Green	Green	Green	Green	Green	Green	Green	Green	Green
atllven	Green	Green	Green	Green	Green	Green	Green	Green	Green
3006	Green	Green	Green	Green	Green	Green	Green	Green	Green
asafors	Green	Green	Green	Green	Green	Green	Green	Green	Green
bjardalen	Green	Green	Green	Green	Green	Green	Green	Green	Green
charbo	Green	Green	Green	Green	Green	Green	Green	Green	Green

Transport optimisation



Scanning and measurement



Trestima – data from private forests



Cutting optimisation



Remote camera measurement

ProCalc – Product revenue calculations

The **harvesting site**

Facts	
Age	62
Areal	12.2 (9.1) hectares
Volume	2 436 m ³
Assortments	Pine 1 043 m ³ Spruce 1 216 m ³ Birch 177 m ³

The felling concerns ancient and cultural remains – **remnants of charcoal kiln**

Nature consideration taken in several areas

Number of high stumps to set is **3 to 5 per hectare**

Felling is affected **by pipes**



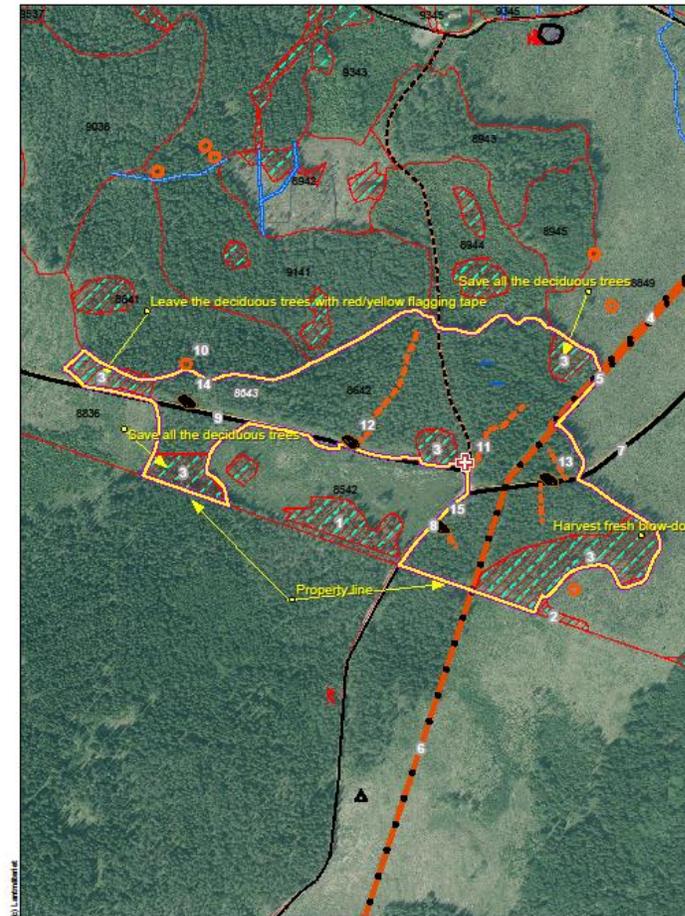
234161244

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04 Lövnäs South Final Harvest



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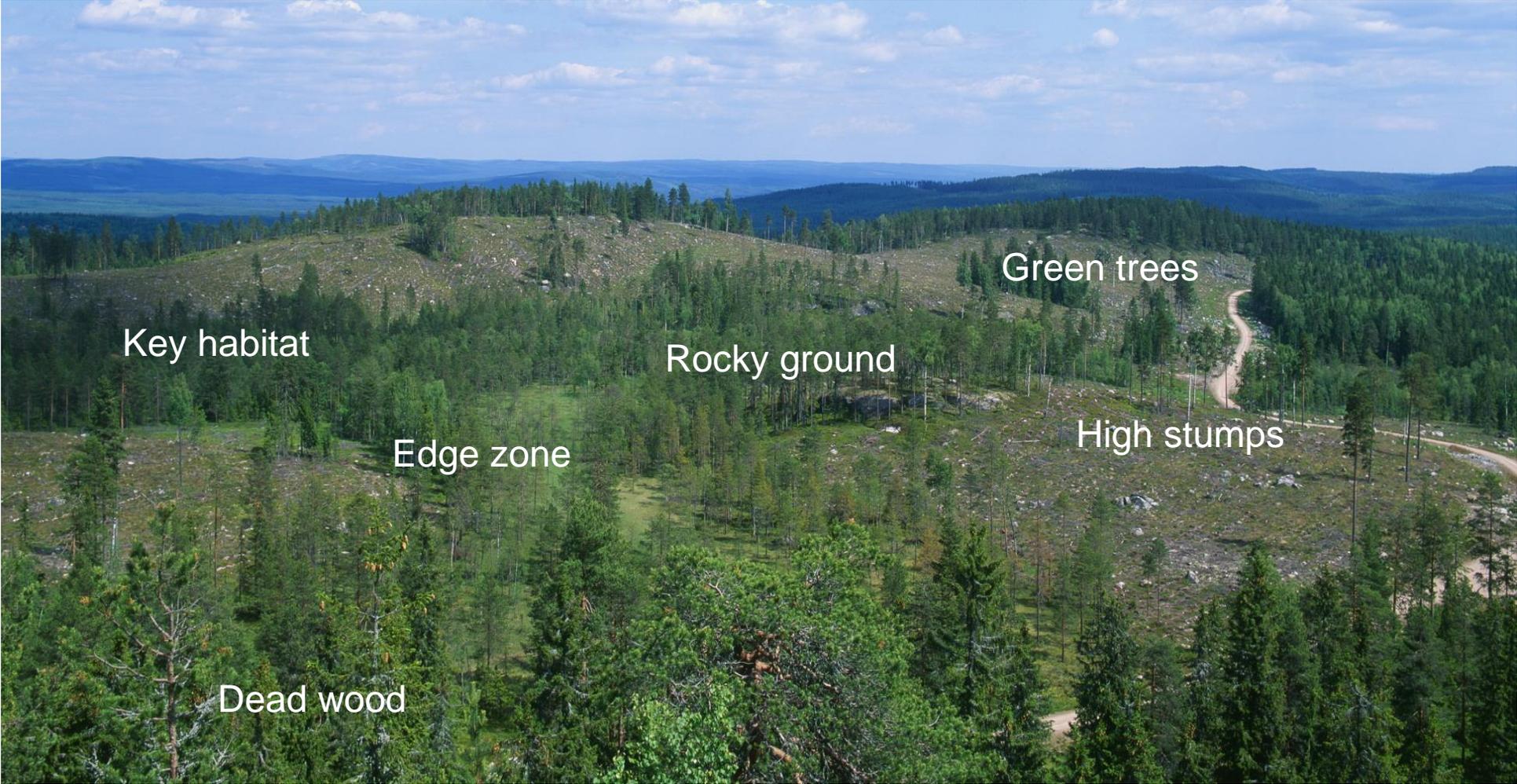
0 240 Meter

Larmkoordinater X: 6598623 Y: 424459

1:5 000

Rittdatum: 2019-08-29

We are creating a mosaic landscape



Careful planning

Benefits people and the environment – Right method



- The wood is transported without damaging the soil and water streams
- The soil is spared and the fuel consumption of forwarders is reduced by about 10%
- In the future, global warming will increase the need for harvesting on soft ground

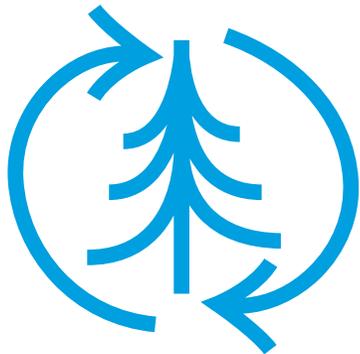


Planting new forest

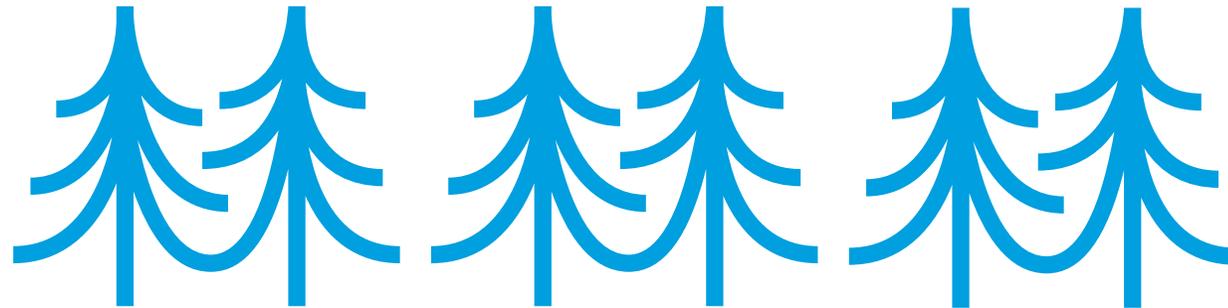
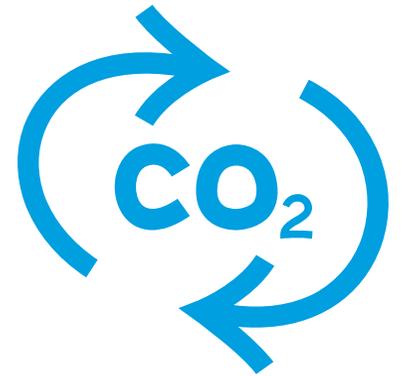


**For every tree we harvest – we plant two new trees in the forest.
The new trees grow up to 25% better than the old trees.**

Emission compensation by 30 year old pine



1 tree return trip from STO to HKI
2 trees return trip from STO to London
4 trees return trip from STO to NY



Soil preparation and planting new trees



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