



20<sup>th</sup> April 2018

Excursion  
Pro Silva Bohemica

# Agenda

## ➤ Handout

- Fact's about the Czernin-Kinsky Forstgut Rosenhof company

## ➤ 1<sup>st</sup> Site Visit: Density and Gene Trail in Rosenau

- Example of different planting densities with seed grown trees and vegetativ crops
- Discussion about the correlation of density and volume (quality)
- Could low denities be a solution against climate change?

## ➤ 2<sup>nd</sup> Site Visit: Example of Silviculture in Rosenhof

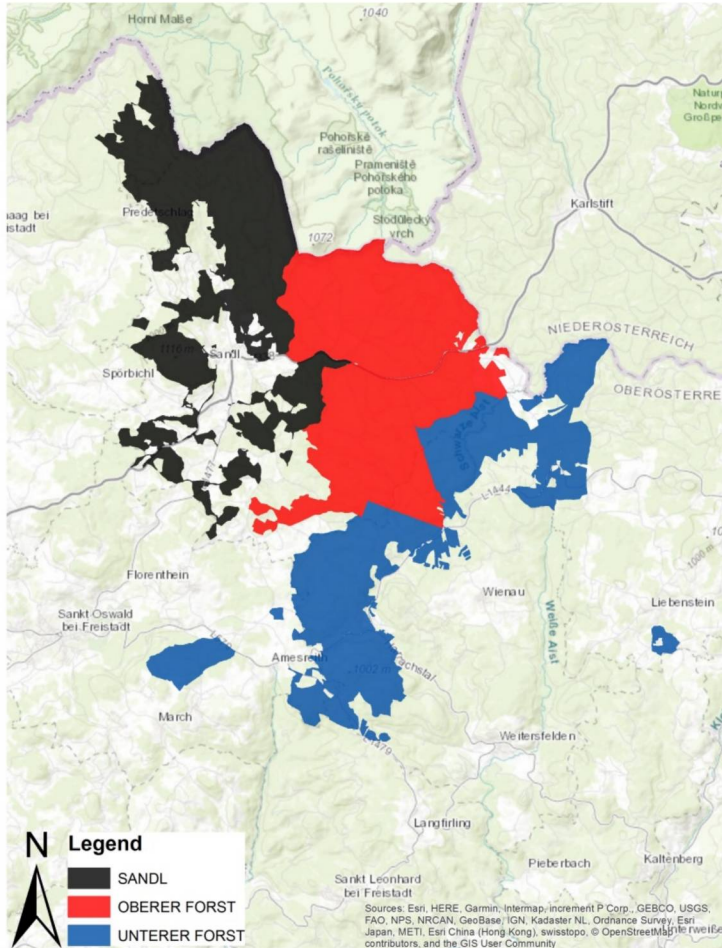
- Site visit of young, middle aged and mature stands
- Discussion about costs and benefits of natural regeneration



# Forstgut Rosenhof



# Estate Characteristics



- Size: 6,352 ha
- Commercial crops: 5,741 ha (94%)
- Farm Land 230 ha
- Ponds (Water) 17 ha
- Sea Level Average 900 m
- Rainfall 950 mm (600 mm during growing season)
- Forest Roads total 245 km
- Forest Tracks total 1,070 km



# Organisation

Count Stanislaus Czernin-Kinsky

*(Owner)*

Dipl.-Ing. Bernhard Nikodem

*(Forest Director)*

Christian Schwaiger

*(Financial Director)*

Ofö.  
Pesendorfer  
*(Forester)*

Fö.  
Sunzenauer  
*(Forester)*

Fö. Leister  
*(Forester)*

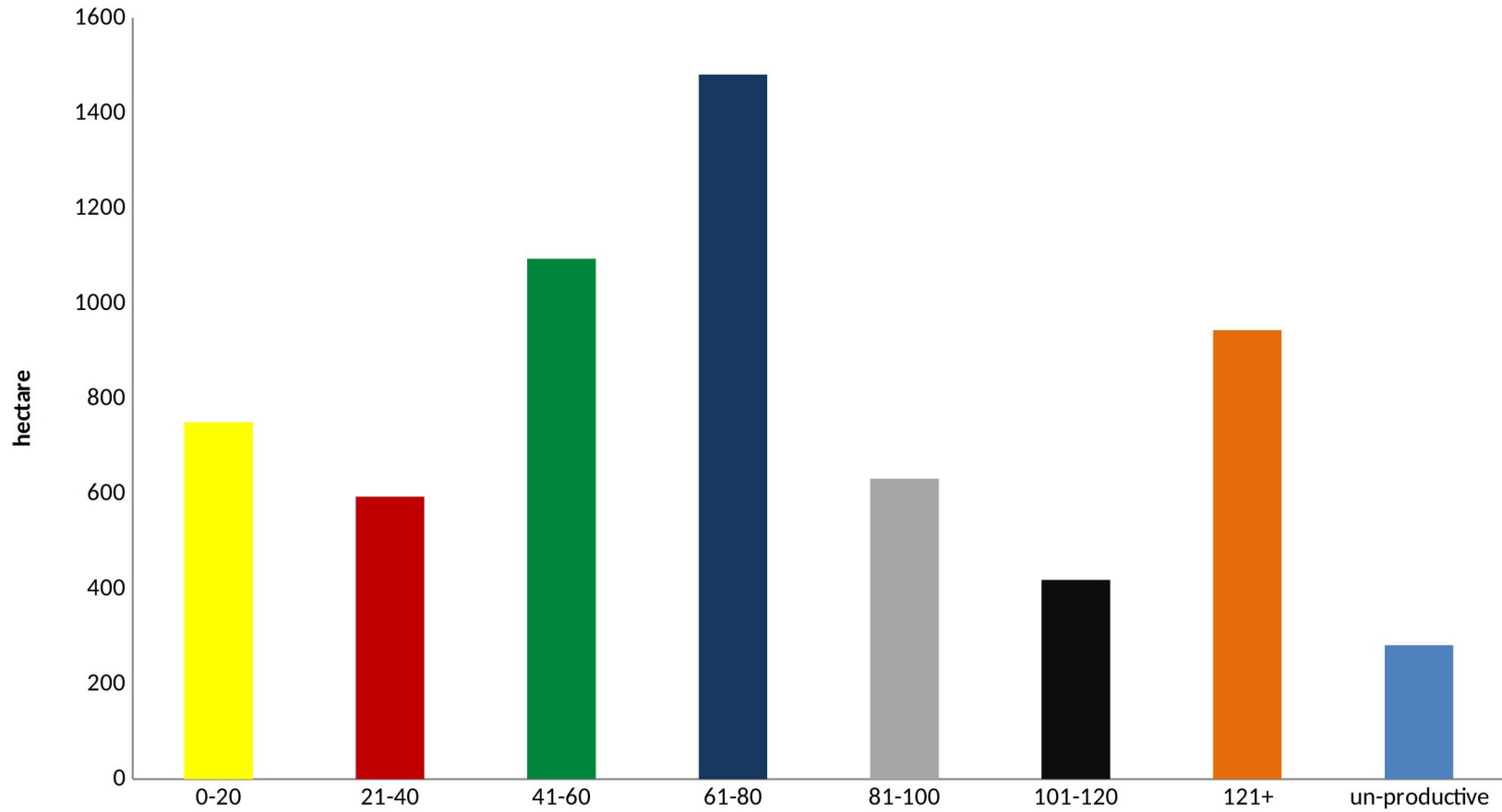
Dipl. -Ing.  
Christian  
Gartlehner  
*(Assistant of  
Directors)*

Martina Lehner  
*(Office Manager)*



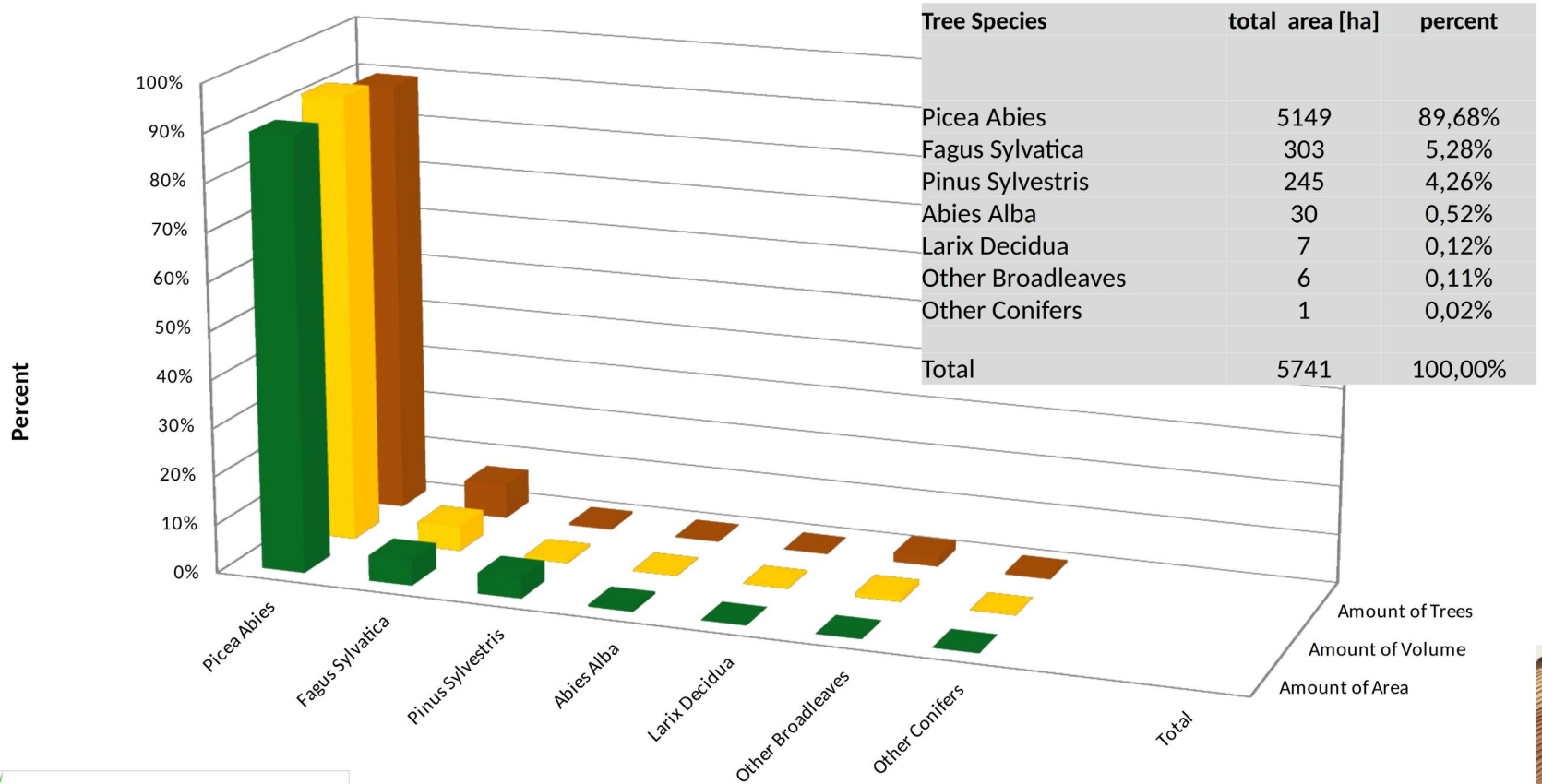
# Silviculture at Rosenhof

# Age Classes



# Tree Species

Distribution of Tree Species





# Regeneration – Natural Regeneration

- Rosenhof is a pure Natural regeneration company
  - canopy is opened up, in order to initiate Natural regeneration
  - regeneration period can last 5 to 20 years
  - Regeneration felling: remove the upper storey when natural regeneration has already reached a height of up to 2 m, sometimes even higher
  
- Planting of trees does not play an important role at Rosenhof
  - in case that the Natural regeneration is severely damaged due to final felling of the overstorey
  - likewise in the case after windblows
  - in addition to Norway Spruce, Fir, Larch, Maple, Beech and small quantities of Douglas Fir are introduced



# Artificial Regeneration

## ➤ Mounding

- On wet sites
- Benefits:
  - trees can grow 2 year without competition of grass
  - cost of planting is minimized
  - failure with mounding is kept very low

## ➤ Pit-planting

## ➤ bales and bare roots are planted



# Stem Reduction

- In the past heavy snow pressure caused a huge failure in young stands, caused by high stock densities
- The number of trees was reduced to less than 2.500 trees per hectare
- It turned out that many years later these stands had a height/diameter (h/d) ratio less than 80

➔ Hence the stands became very stable



# Time of Stem Reduction

- first stem number reduction takes place very often under shelter
- number of trees is thereby reduced to approx. 2,000 trees / ha
  - This measurement is not carried out if the height of the Natural regeneration is less than 3 m
- After final felling of the over storey, the number of trees in the under storey is regulated
  - The objective of this measurement is to achieve 1.000 trees / ha
- With this low number of trees, increment of thickness is promoted up to the first thinning
- Reduction is normally carried out in the months between May and October



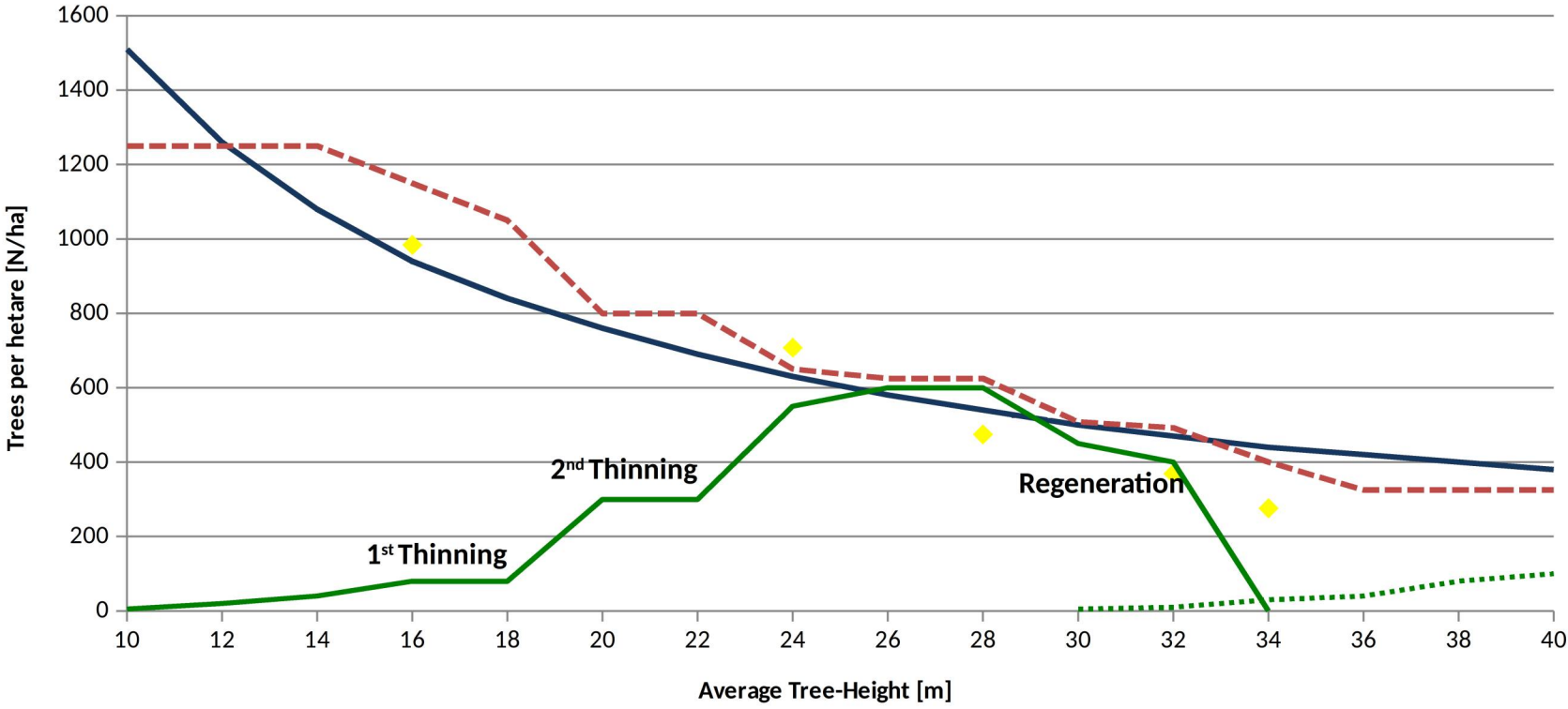
# Tree Density Guideline

- After Pollanschütz 1980
  
- $N$  (number of trees /ha) =  $20.000 / \text{top height}$ 
  - for a medium yield levels (production classes)
  - yield level of a stand is characterized by the total volume increment reached at a certain top height
  
- Yield level Rosenhof is 15.100
  
- Example:
  - Top height 16 m before the first thinning
  - Objectives:
    - Stability: height / diameter (h/d) ratio less than 80
  - Maximum number of trees per hectare:  $15.100 / 16 \text{ m} = 943$



# Thinning Scheme

## Density and Tree-Height



— Density after Pollanschuetz    
 - - - Density after Randroom Sampling    
 ◆ Density after Inventory 2013  
— Volume [m³] First Generation    
 ⋯ Volume [m³] second Generation

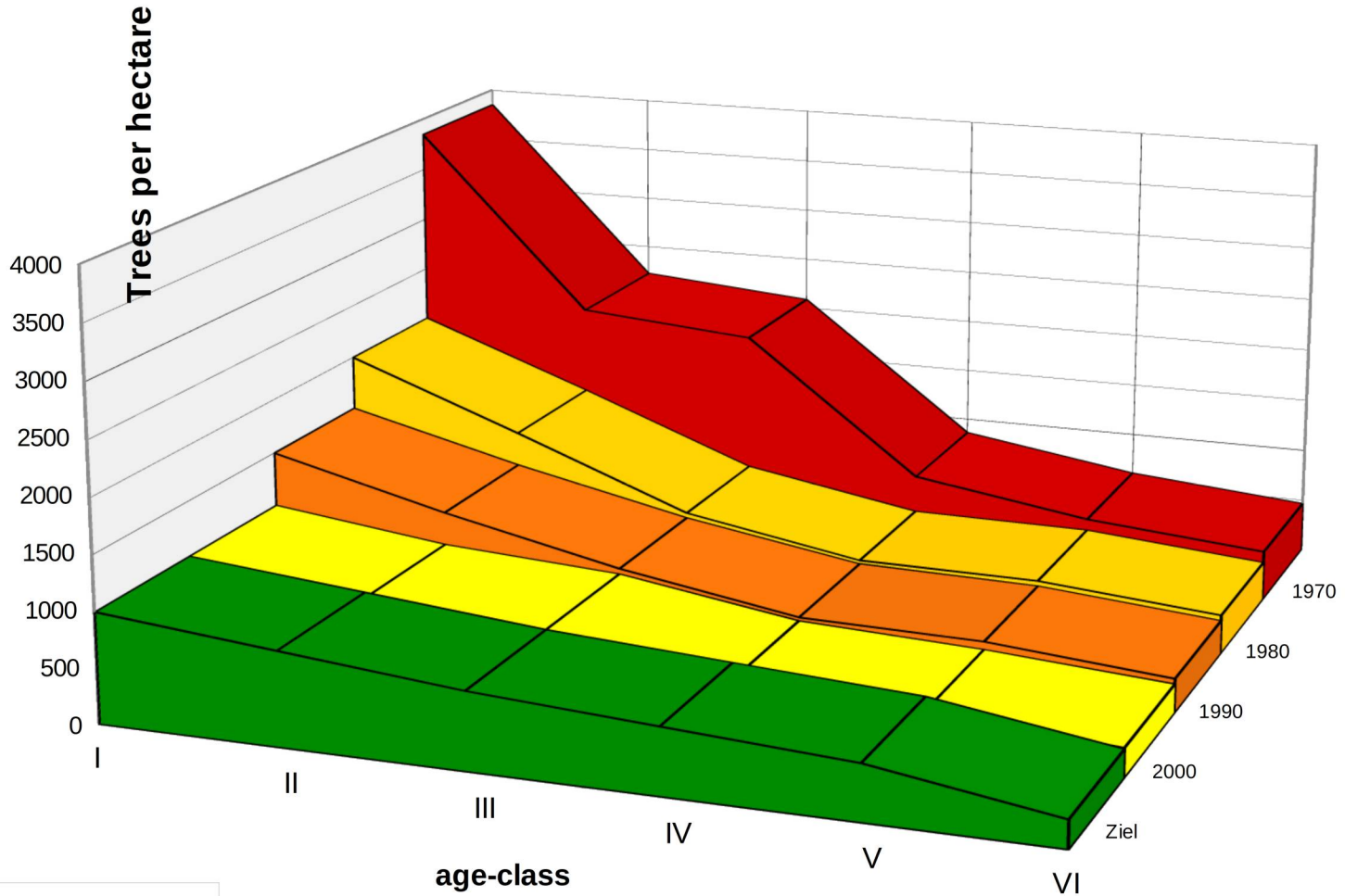


# Thinning

- exploitable diameter of at least 18 cm BHD during the first thinning in the outgoing stock
- about 70% Sawlogs during the first thinning and a positive stumpage value
- further selective thinning approximately at the age of the half rotation time



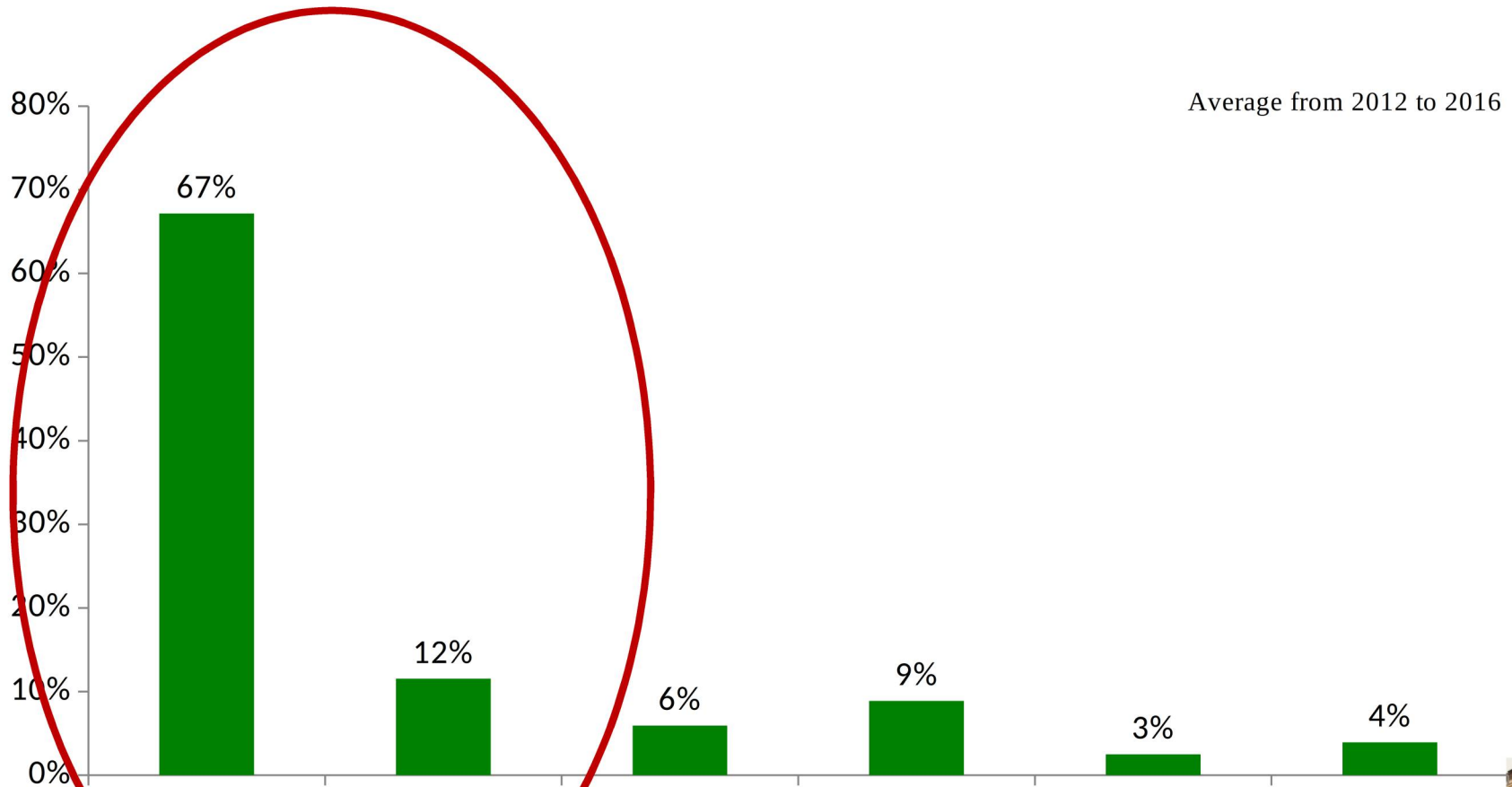
# Development of stock density





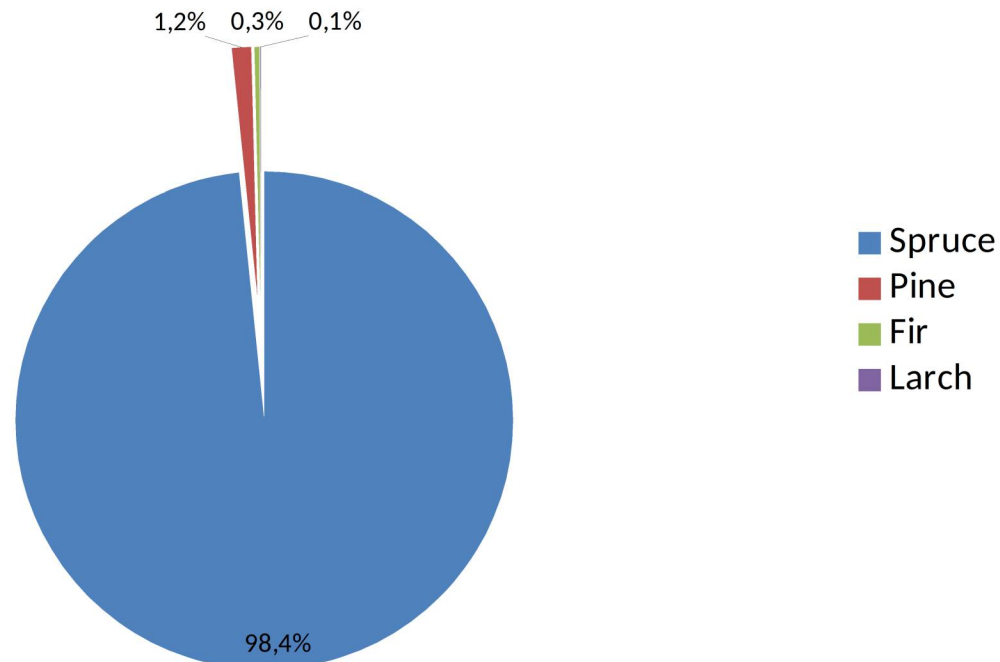
# Products and Qualities

# Distribution of Products

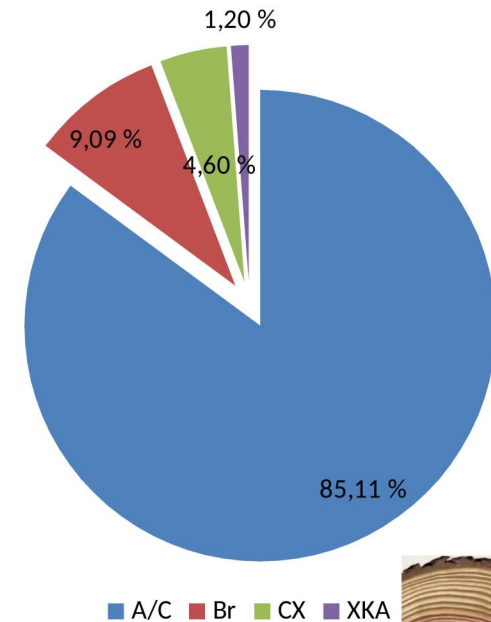
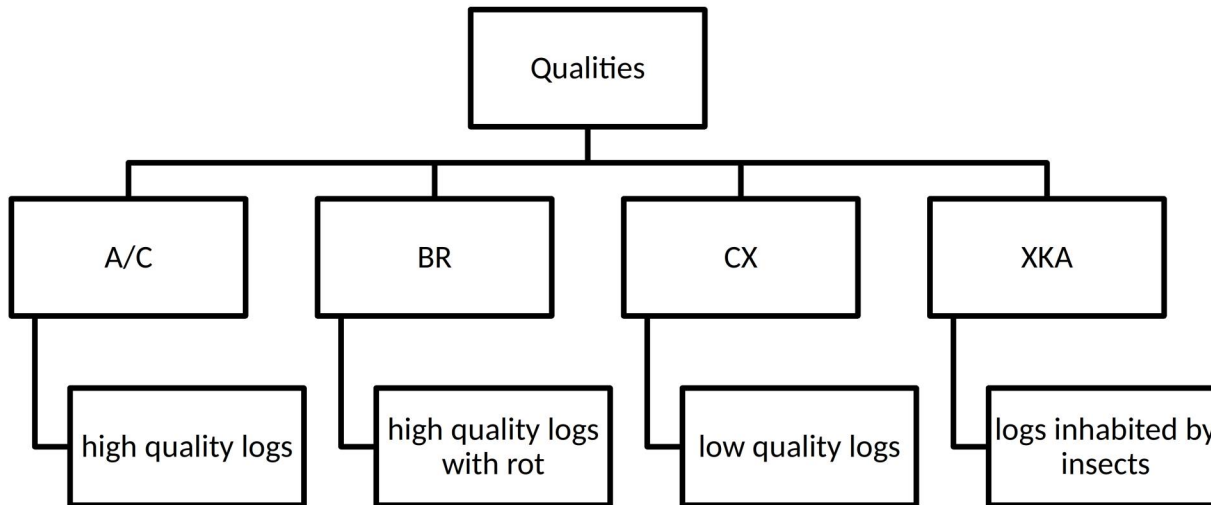


# Saw Logs – Tree Species

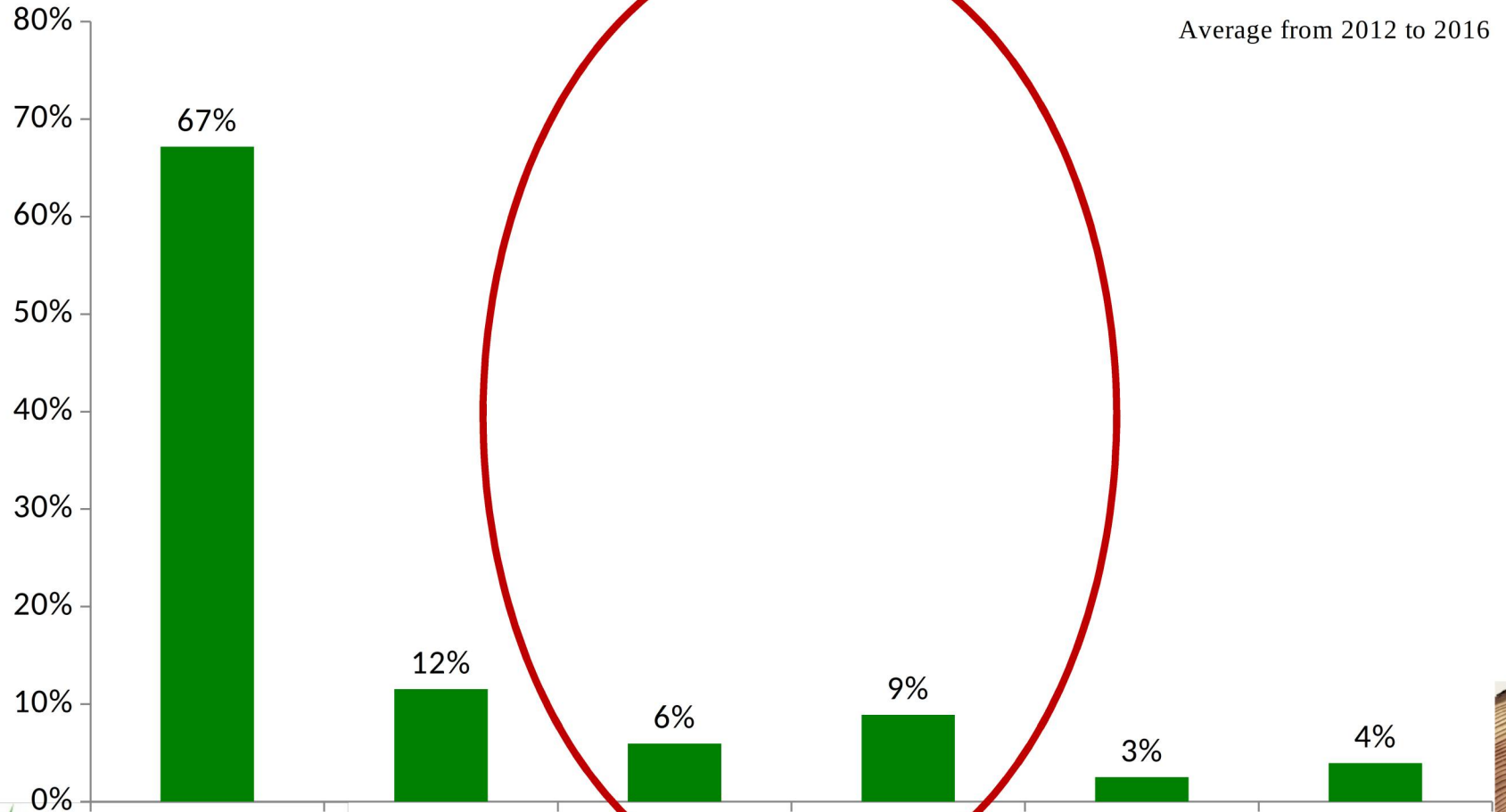
- Main species: Spruce (98.4%)
- Only 1.6% other species



# Saw Logs- Qualities



# Distribution of Products



# Industrial Roundwood - Groundwood

- Logs, used as raw material for paper or boards by mechanically grounding
- Diameter
  - Min 8 cm o.b. (6 w.b)
  - Max 35 cm o.b
- Length
  - 2m + ~0.02
- Logs without bending, rot and failures in colour
- Min. of 40-45% moisture content



# Industrial Roundwood - Pulpwood

➤ Logs, used for making wood pulp or paper products by crushing

➤ Diameter

- Min 8 cm o.b. (7 w.b)
- Max 65 cm (-80) o.b

➤ Length

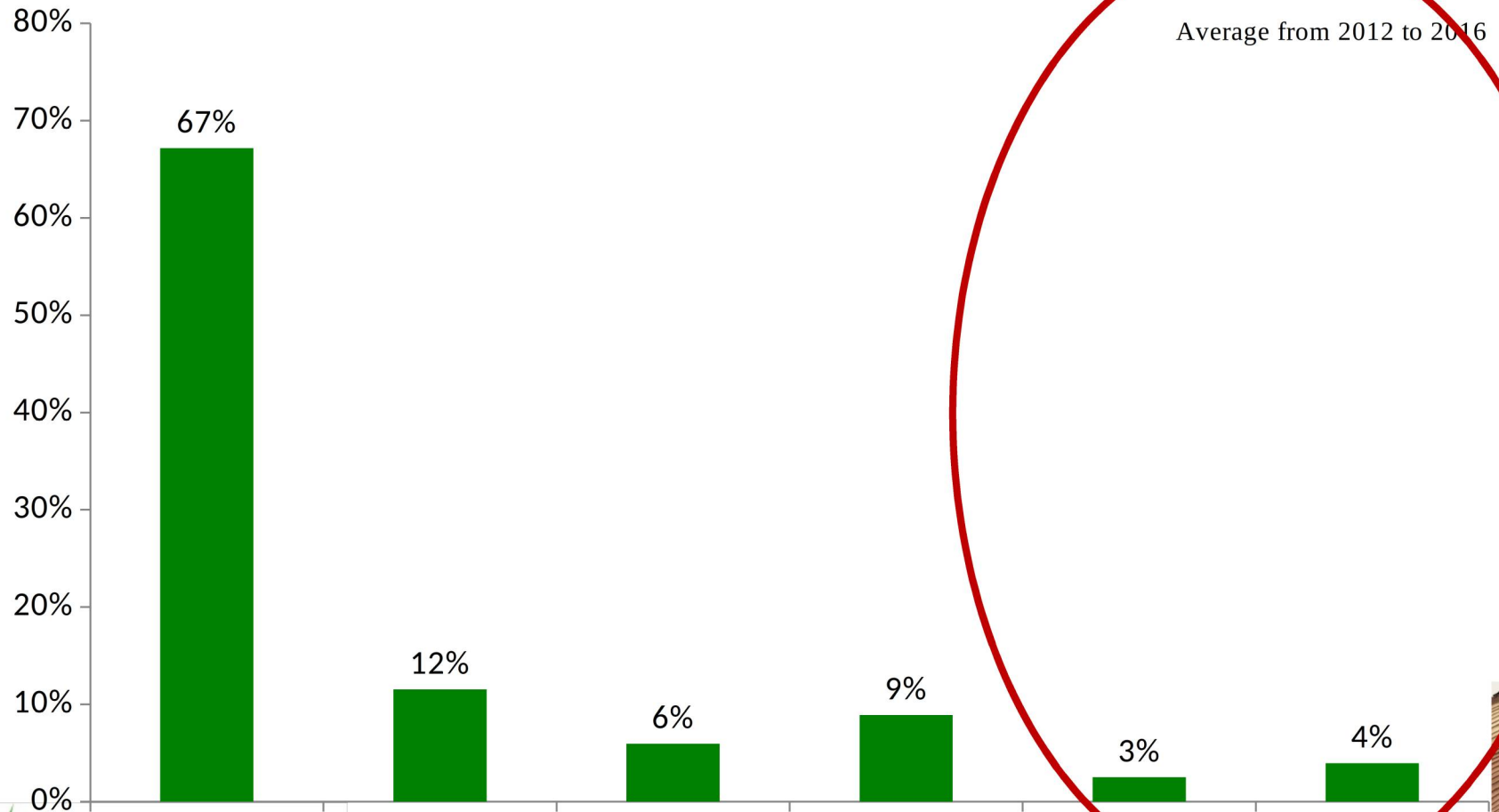
- 2m + ~0.02

➤ Logs with rot (max 10%)  
and failures in colour

➤ Damp or dry wood



# Distribution of Products





# Firewood

- Trees/logs with poor quality like pulp wood
- Softwood and Hardwood
- Low price product:
  - Softwood
  - Hardwood:
    - Standing sale
    - Roadside
- Special offer:
  - Permit to pick up off-cuts
  - About 20€ per stand

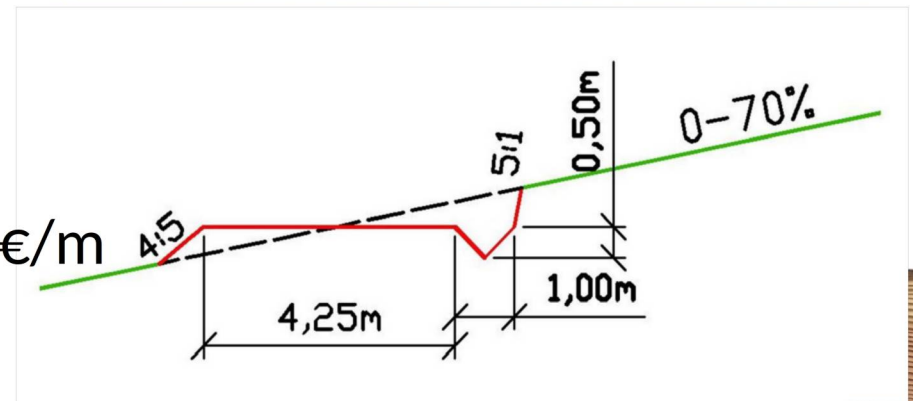
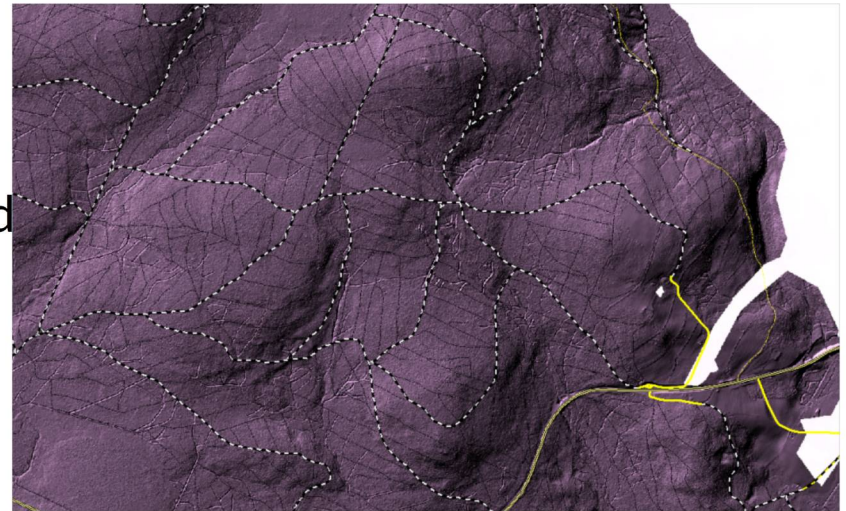


# Infrastructure and Harvesting Systems



# Forest Roads

- Total: 245 km
  - 38.6m per ha
  - 40m per ha productive woodland
- All-season roads
- Lane wide: about 4-4.5m
- Renovation costs: about 8-10€/m

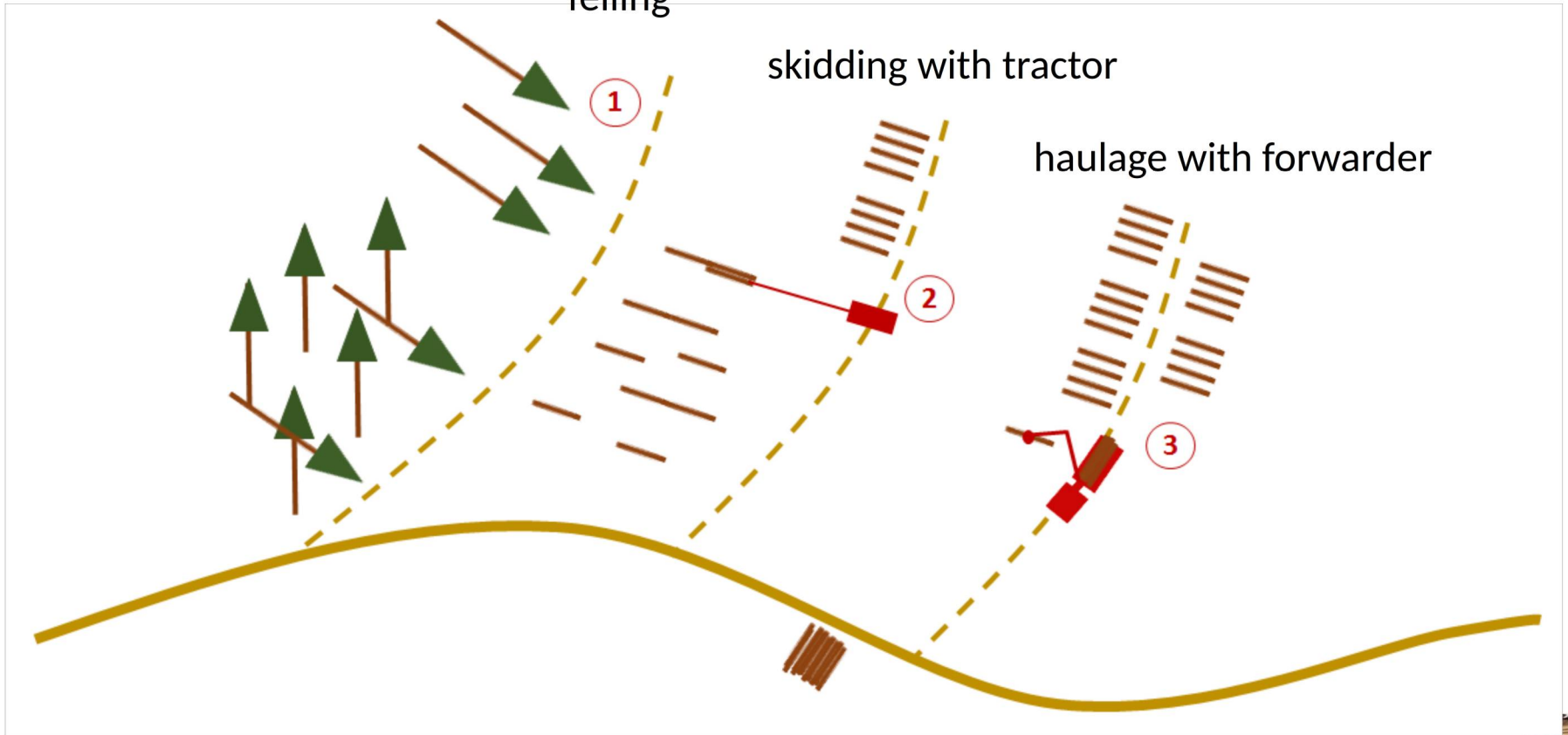


# Forest Tracks

- Total: 1,070,000m (664.5 miles)
- Fixed tracks for forwarding process
- Lane wide: about 4m
- Building costs: about 2.3€/m
- Renovation costs: about 1€/m

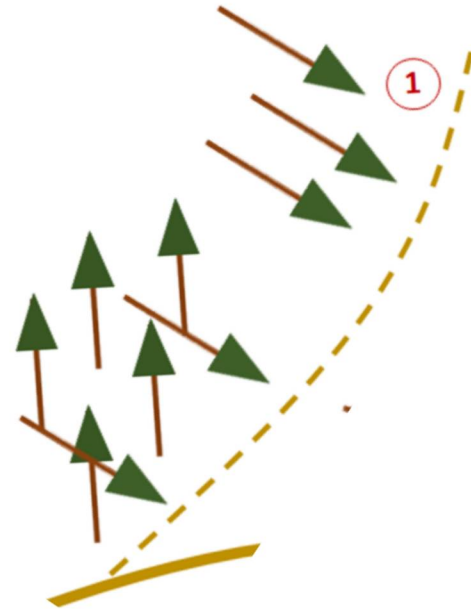


# Harvesting-System



# Felling

- Cut the tree and cut out sorts
- Two kinds of felling process:
  - Full mechanized with harvester
  - Manually by hand
- Harvester
  - Subcompany
  - Used for thinning
  - Volume about 80m<sup>3</sup> per day



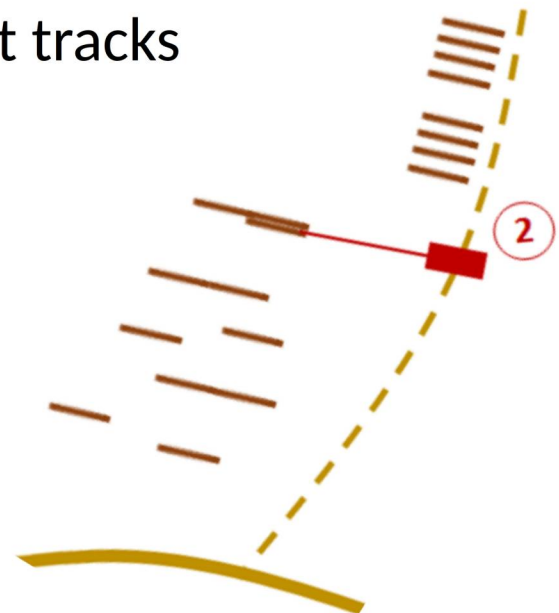
# Felling 2

- Felling by hand
  - Employed Chainsaw Workers
  - Contracted Local Farmers /Sub companies
  
- Employed Chainsaw Workers
  - Fully Employed by Forstgut Rosenhof
  - Used for second thinnings and clear fells
  - All materials and tools supported by the company
  - Volume about 25,000 m<sup>3</sup>
  
- Contracted Chainsaw Workers
  - Local farmers
  - Contracted by FG Rosenhof
  - Using their own machinery
  - Only during felling season (Oct – Mar)



# Skidding

- First part of the logging process
- Tractor with winch
- Carry trunks, double logs or logs to forest tracks
- Important: carefully work!!
  - to save remaining trees
  - to save natural regeneration
- Done by company or season workers





# Skidding – Company Machinery

- 4 tractors
  - 2 Deutz, 2 Steyr
  - Special forest applications
  - 8t winches



# Haulage with Forwarder

- Last part of the harvesting process
- Pick up logs and carry them to the forest road
- Sort out different qualities
- Done by company forwarder
  - Only exception: Contracted Harvesting Company



# Company Forwarder

## ➤ 2 Forwarder

- John Deere 1110E



# Farming & Fishing

## ➤ Farming:

- 150 ha under lease
- 77 ha we farm ourself (with contracted local farmers)
- Reclaim EU grants (different aid schemes)

## ➤ Fishing:

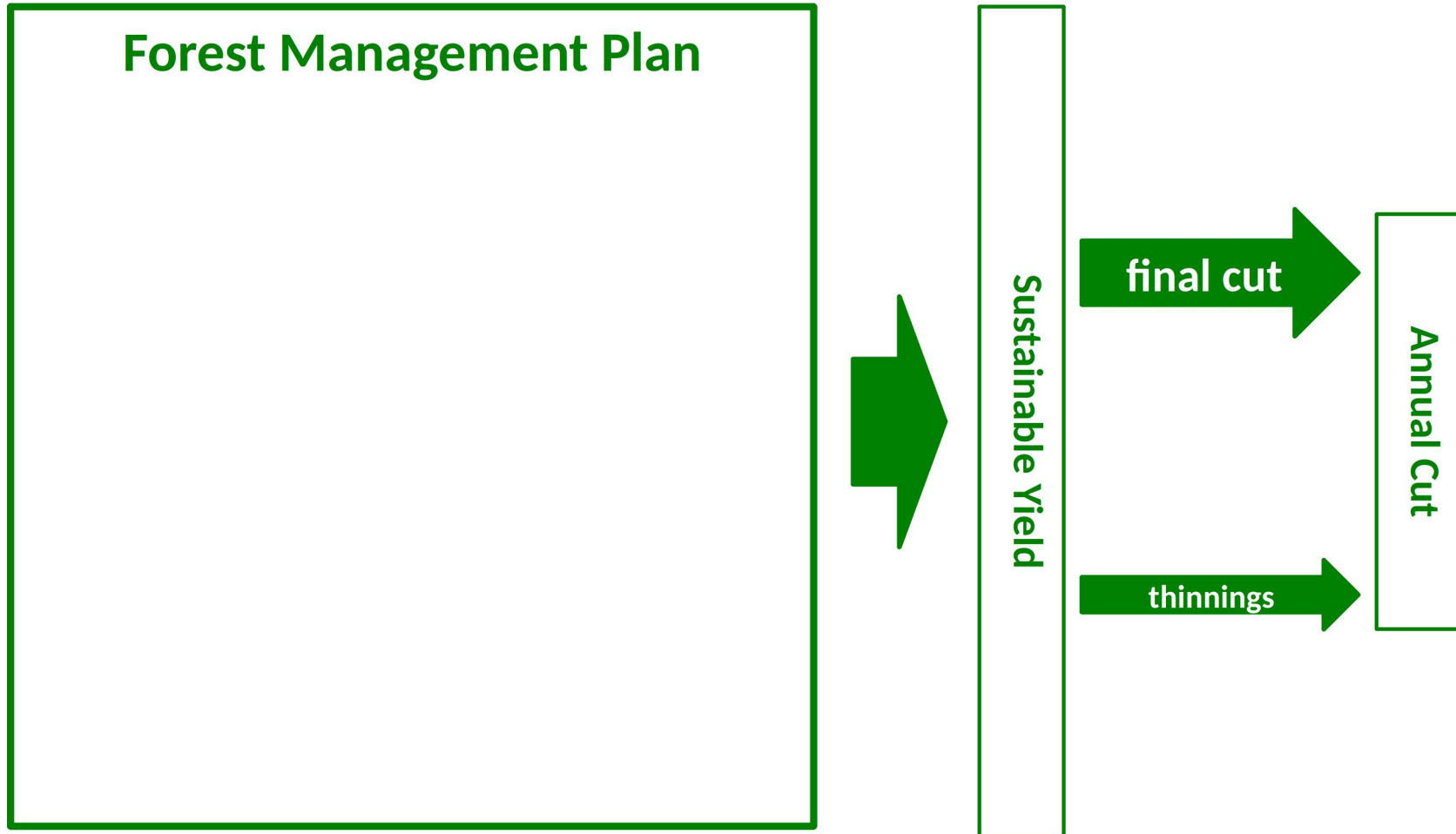
- Fishing right on rivers (Waldaist, Feldaist, Maltsch)
- All under longterm lease
- Kleiner Rosenhof Teich: daily fishing licences



# Sales and Marketing



# Sale - Process 1



# Sale Process 2

Forest Director, Financial Director, Foresters



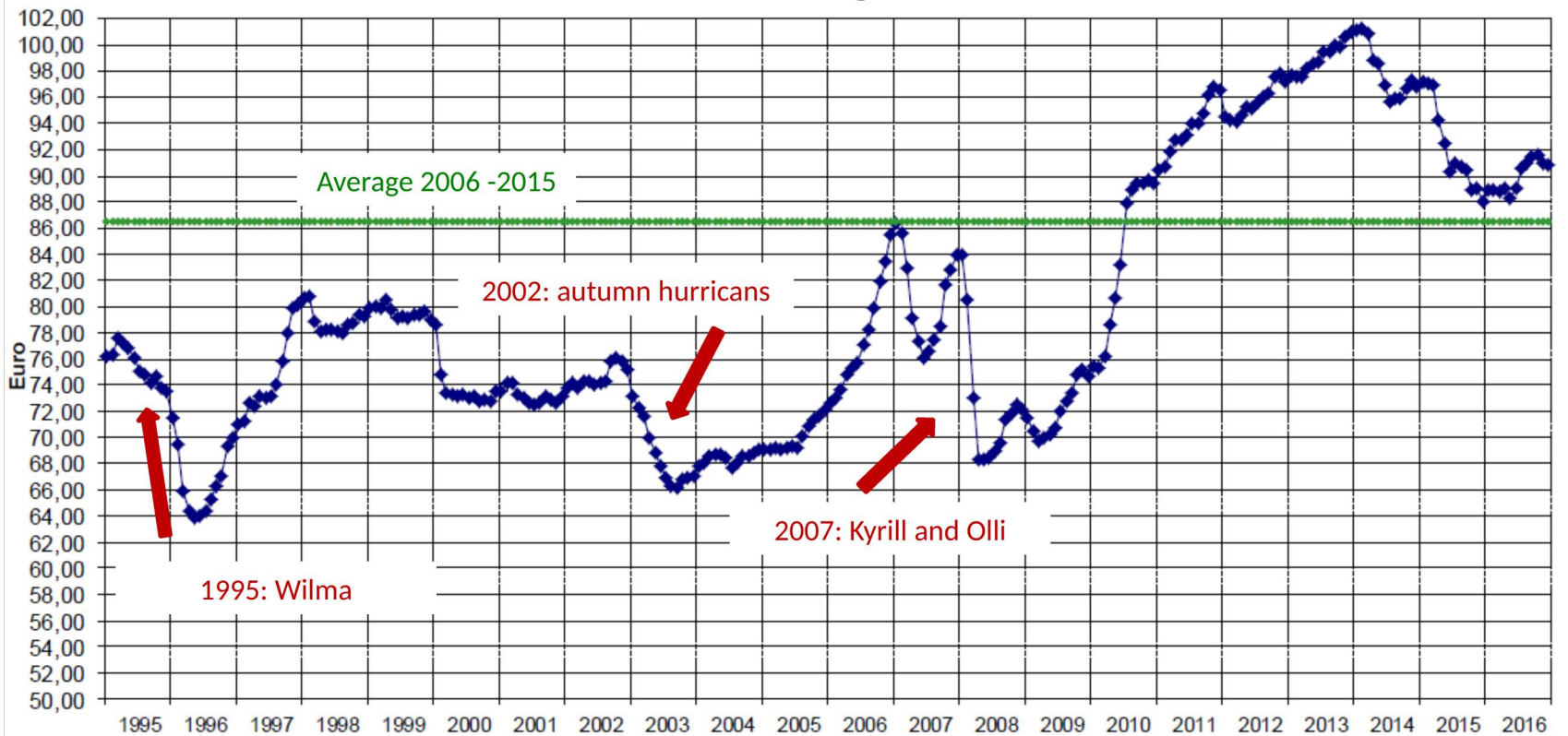
# Sale Process - Haulage





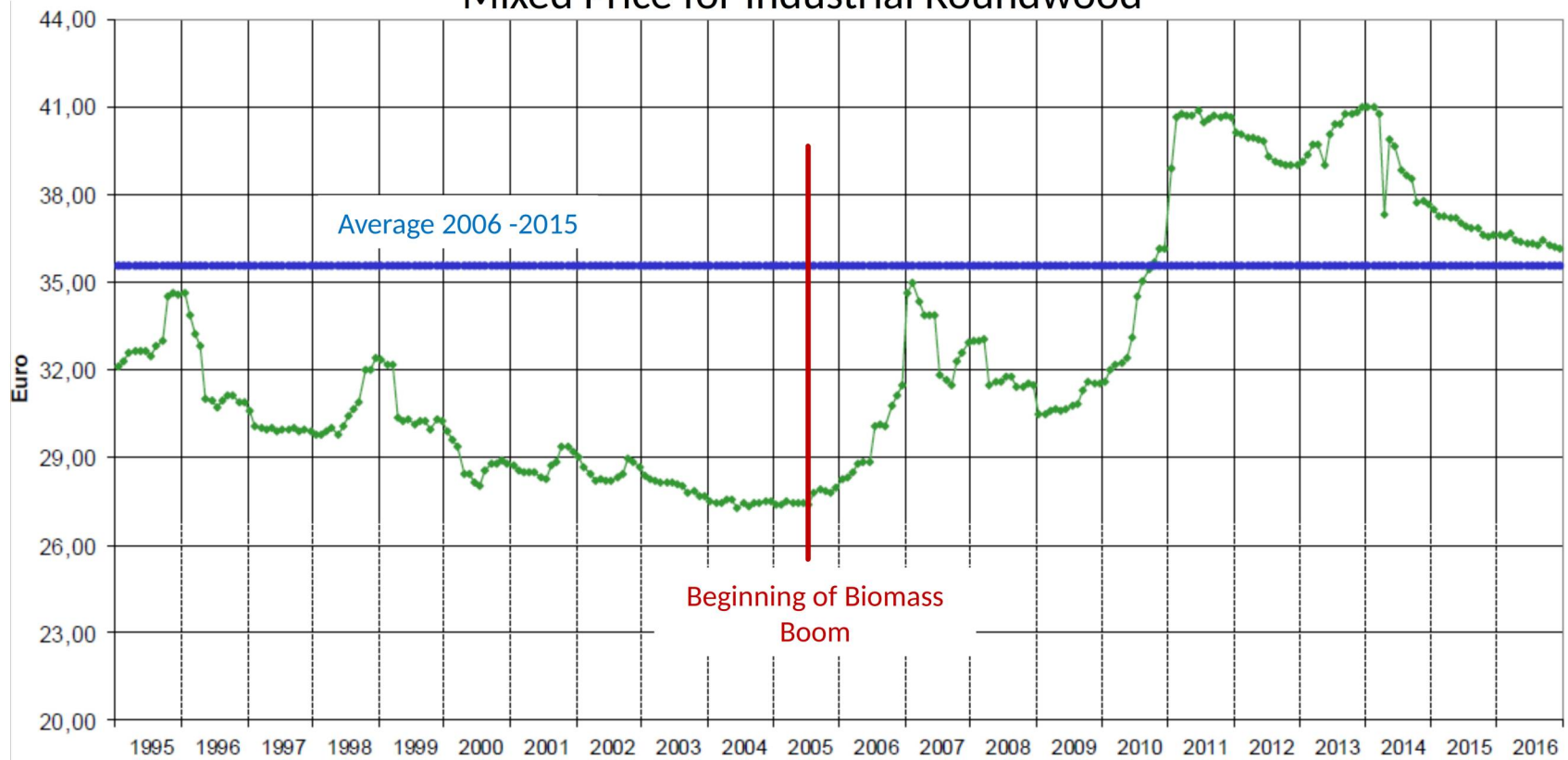
# Saw Logs – Price History

Price for Saw Logs, 2b



# Industrial Roundwood- Price History

## Mixed Price for Industrial Roundwood



# Quality Management

- Quality and volume check for each customer
  - Once per month
  - Manually measurement of one truck load
  
- Check of log-reports via IT
  
- Ranking:
  - Price
  - Qualification
  - Volume measurement
  - Support by windthrows



# Check of Log Reports

Das Hilfe

Art:  Nummer:  LFS Nr.:  Organisation:

Messdatum:  05.02.2017 -  07.03.2017 Lieferdatum:  05.02.2017 -  07.03.2017 Buchungsdatum:  05.02.2017 -  07.03.2017

№	Typ	Kunde	Protokollnr.	Lieferantenliefersecheinnummer	Messdatum	Status	<input checked="" type="checkbox"/> Kundenliefersecheinnummer	Sum m3	Sum. Stk	Lieferdatum	Lieferzeit	Frächter
1	SRH	Stora Enso Wood Products GmbH	0117303381	B55309	28.02.2017	I		18,390	258	28.02.2017	10:13	Kappl Hermann
2	SRH	Stora Enso Wood Products GmbH	0117102435	B55309	28.02.2017	I		11,950	28	28.02.2017	10:13	Kappl Hermann
3	SRH	Stora Enso Wood Products GmbH	0117303570	B54608	02.03.2017	I		33,070	363	28.02.2017	10:20	Kappl Hermann
								63,410	649,00			

(Status = I) ▼

Einzelstammdaten Allgemein Adressen Status Summenprotokoll Kurzinfo Qualitätsverteilung Stärkeklassenverteilung Längenausformungsfehler Referenz Report Aufteilung Zuordnung Kalkulation Dienstleisterverrechnung Kundenverrechnung

№	Typ	Pos. Nr	Stk. Nr	HA	RI	MD-V	ZD-G-OR	L GES	L VK	▽ ZD-G	m3	Q-E	Q-R	Q-F	Q-A	Q-K	Q-D	ABH	KR	L NK	-L		
1	SRH	232 232		FI	R		20	19,00	300	336	20,00	0,090	C	C	C	AB	AB	C	1	9	336	0	
2	SRH	248 248		FI	R		35	33,00	300	336	35,00	0,290	C	C	C	AB	AB	C	1,6	1	336	0	
3	SRH	88 88		FI	R		28	26,00	300	325	27,00	0,180	AB	AB	AB	AB	AB		0,9	3	325	0	
4	SRH	76 76		FI	R		24	22,00	300	323	23,00	0,140	C	C	C	AB	AB	C	1,3	7	323	0	
5	SRH	271 271		FI	R		17	16,00	300	323	17,00	0,070	C	C	C	AB	AB	C	0,5	4	323	0	
6	SRH	134 134		FI	R		29	28,00	300	320	30,00	0,200	C	C	C	AB	AB	C	0,3	4	320	0	
7	SRH	177 177		FI	R		36	34,00	300	319	36,00	0,310	BR	BR	BR	AB	AB	BR	1,2	3	319	0	
8	SRH	2 2		FI	R		17	15,00	300	318	16,00	0,070	AB	C	C	C	AB	AB		1,6	6	318	0
9	SRH	233 233		FI	R		21	21,00	300	318	22,00	0,100	C	C	C	AB	AB	C	0,5	6	318	0	
10	SRH	251 251		FI	R		34	32,00	300	318	34,00	0,270	CX	CX	CX	AB	AB	CX	1,5	4	318	0	
11	SRH	155 155		FI	R		27	26,00	300	317	27,00	0,170	AB	AB	AB	AB	AB	AB		0,7	3	317	0
12	SRH	189 189		FI	R		17	16,00	300	317	17,00	0,070	AB	AB	AB	AB	AB	AB		0,1	10	317	0
13	SRH	320 320		FI	R		20	19,00	300	317	20,00	0,090	BR	BR	BR	AB	AB	BR		0,6	5	317	0
14	SRH	356 356		FI	R		33	32,00	300	317	34,00	0,260	C	C	C	AB	AB	C	1,4	9	317	0	
15	CDH	4 4		FI	R		17	17,00	300	316	18,00	0,070	AR	AR	AR	AR	AR	AR		0,5	4	316	0



# Check of Log Reports

## Forstgut Rosenhof

### Qualitätsverteilung

Daten: Stora\_2017\_importiert

Vergleichswerte: Stora\_2017

Daten			
	Stk	m3	%/m3
AB	195	17,44	52,74%
BR	11	1,3	3,93%
C	118	10,41	31,48%
CX	37	3,81	11,52%
IF	1	0,04	0,12%
SP	1	0,07	0,21%
	363	33,070	

Vergleichswerte			
	Stk	m3	%/m3
	7.515	1.164,77	56,12%
	986	222,304	10,71%
	3.477	366,42	17,65%
	1.575	195,234	9,41%
	311	19,09	0,92%
	1	0,07	0,00%
	14.118	2.075,540	



Qualitätsverteilung in %



# Excuse - The Austrian Timber Industry

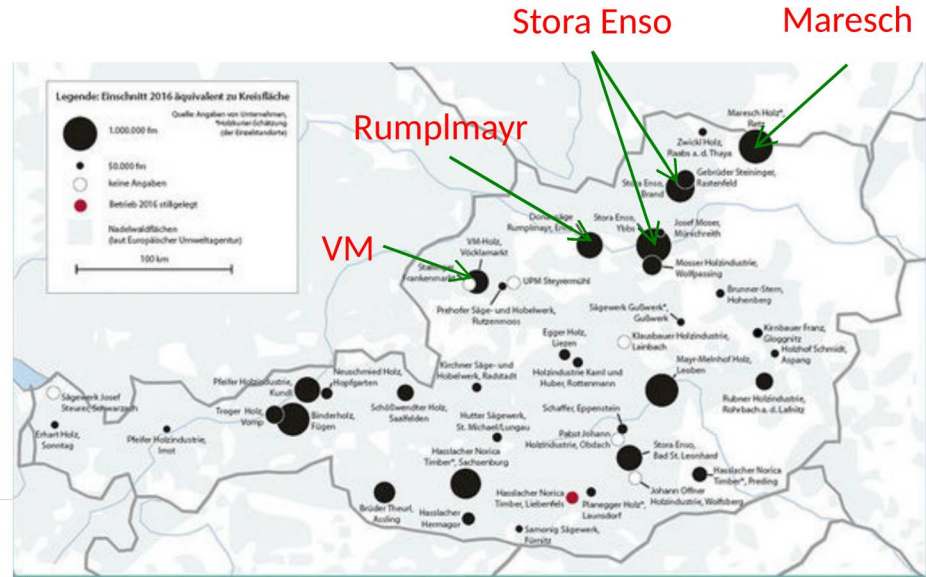
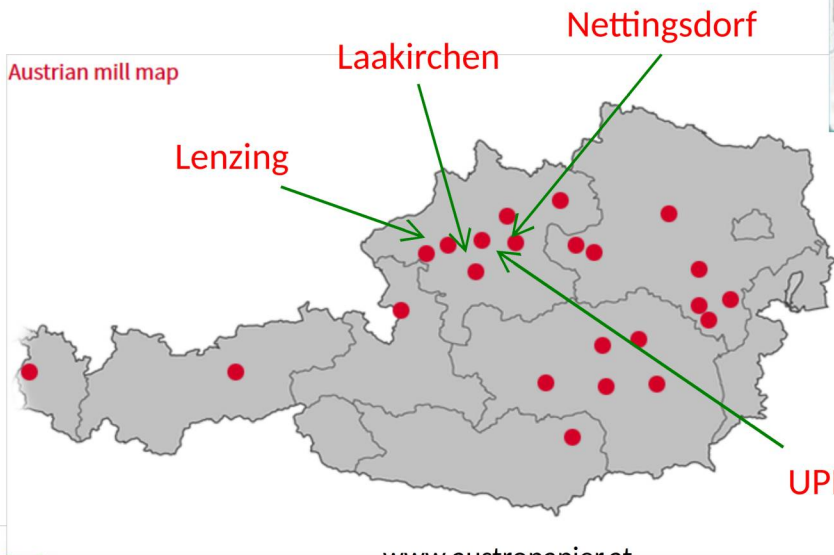


# Figures and Facts

- 1.315 Companies\*
  - 1.071 saw mills
  - About 300.000 employees
- Most of companies are middle and small companies in the ownership of families
- Economic value added\*:
  - 5 bill € net
  - About 1.7% of the gross domestic product

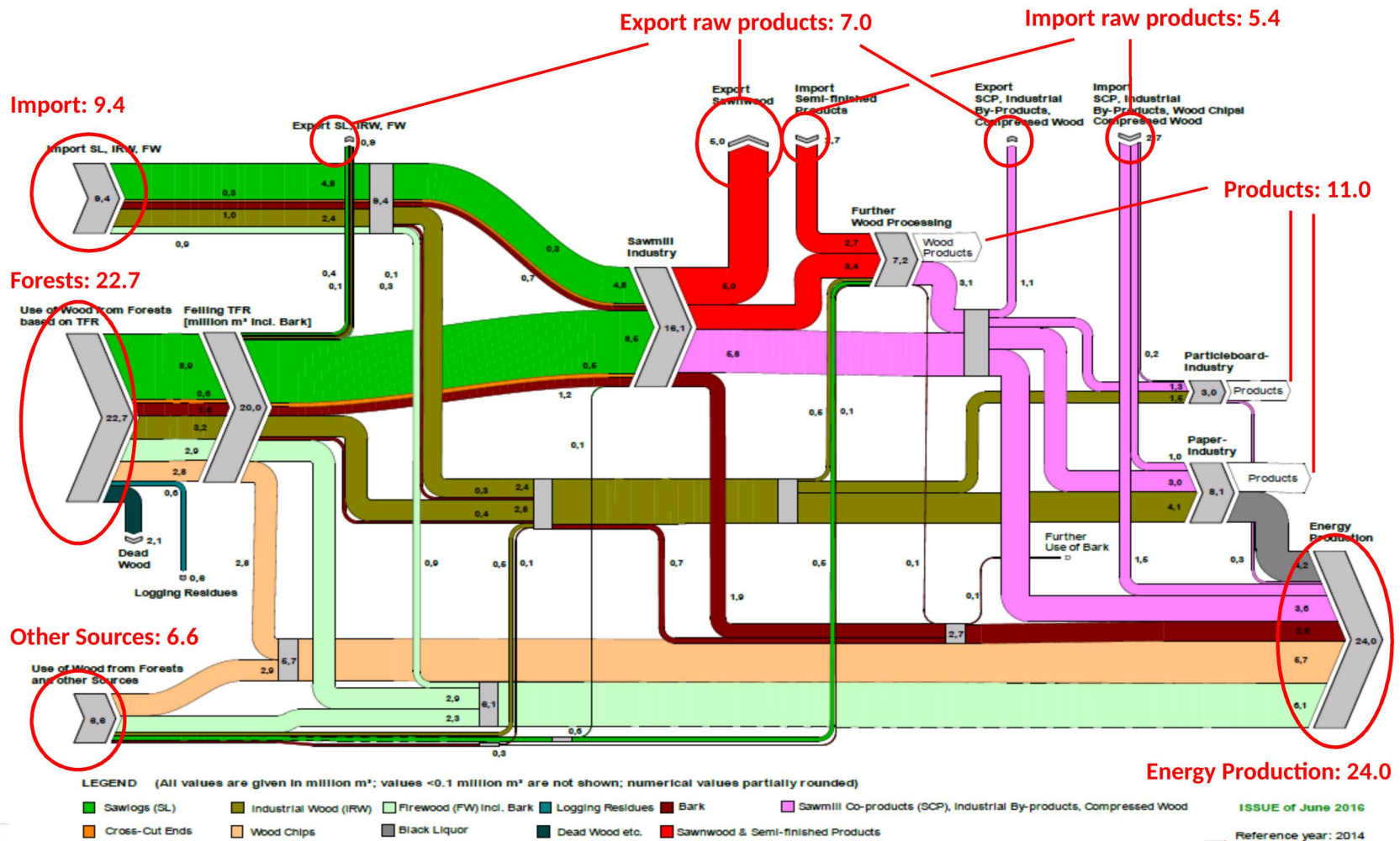


# Saw and Paper Mills in Austria



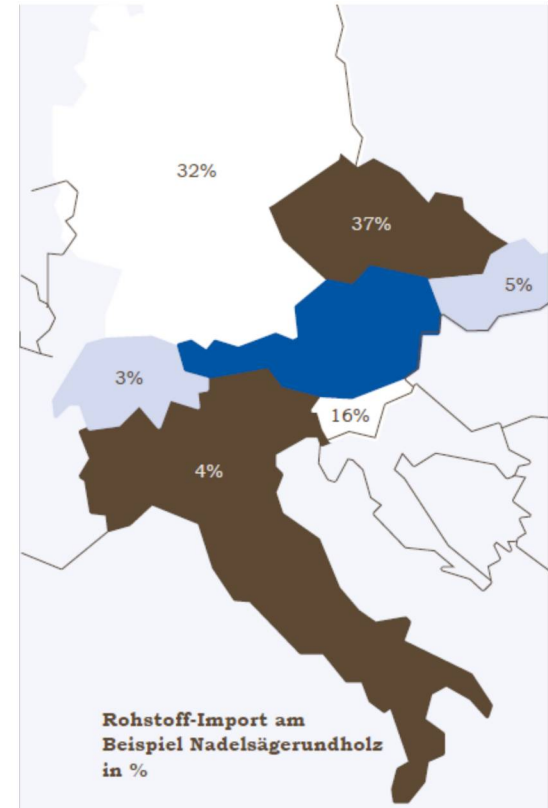


# Wood Flows in Austria



# Import – Austria First

- Worldwide Import volume about 70 mill. m<sup>3</sup>
  - China: 29%
  - Austria 10% **second place worldwide!**
  - Germany 9%
- Highest amount of timber imports in Europe
  - About 5.1 mill. m<sup>3</sup> saw logs in 2016
  - Imports from
    - Germany
    - Czech Republic
    - Slovakia
    - Slovenia
    - Croatia



<https://www.wko.at/Content.Node/branche/n/oe/Holzindustrie/Kompetenzbereiche/Brauchenbericht-2015-2016.pdf>



# Export - Top 7

- Export of sawn timber about 60%
  - about 5.04 mill m<sup>3</sup> **seventh place worldwide!**
  - about 1.03 bill. €

