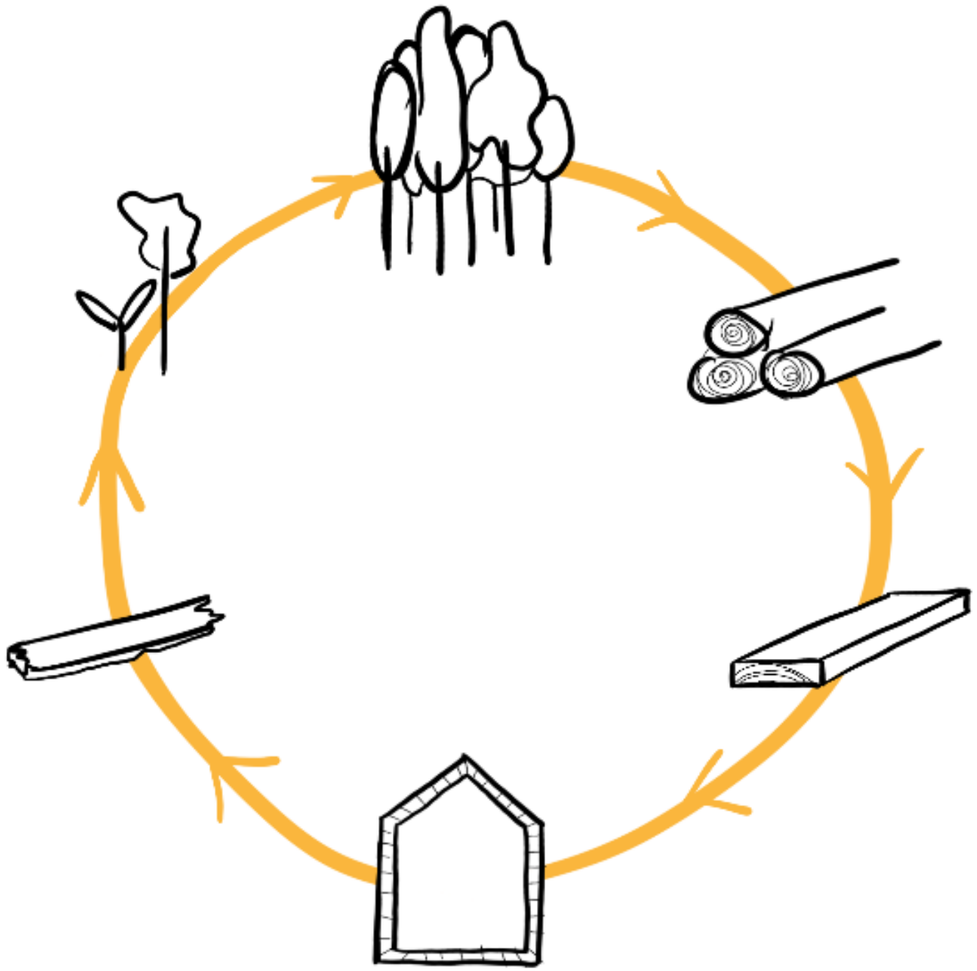
Woodn’t you like to grow a house?

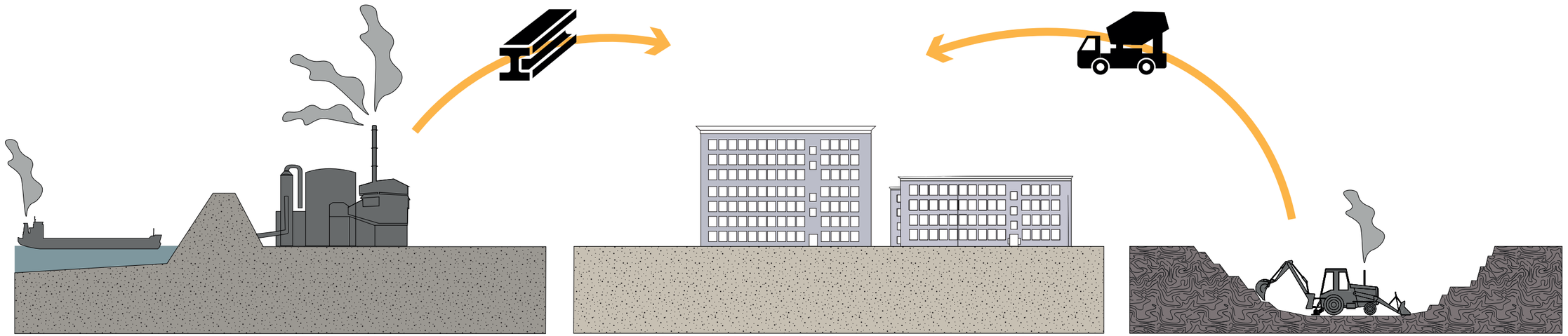
From dynamic production forest to social housing



IDEAL CYCLE

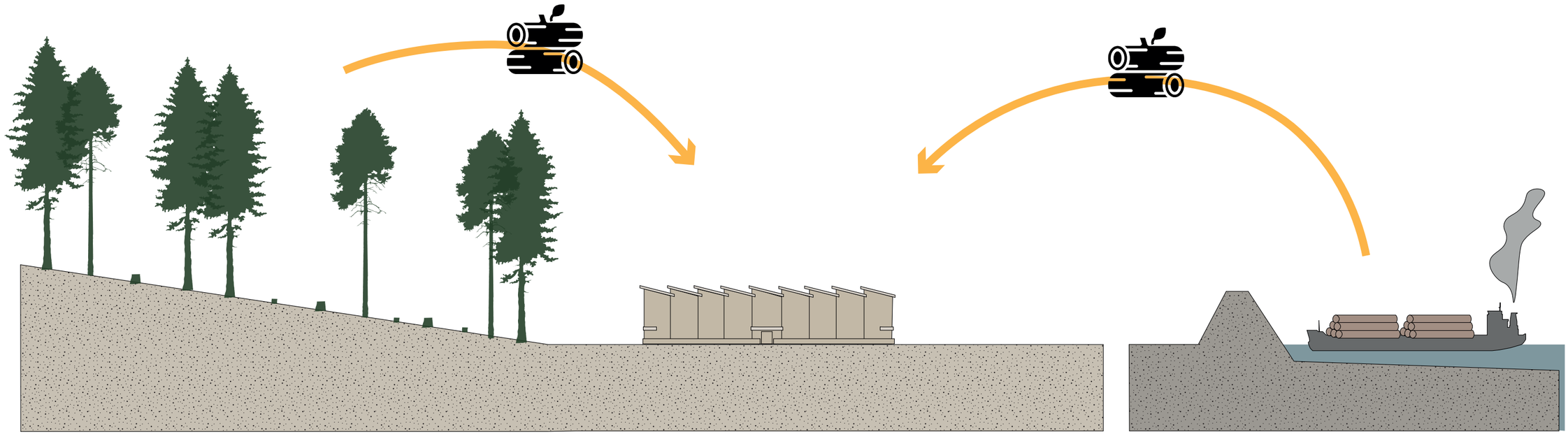


CURRENT SYSTEM | ANTHROPOCENE



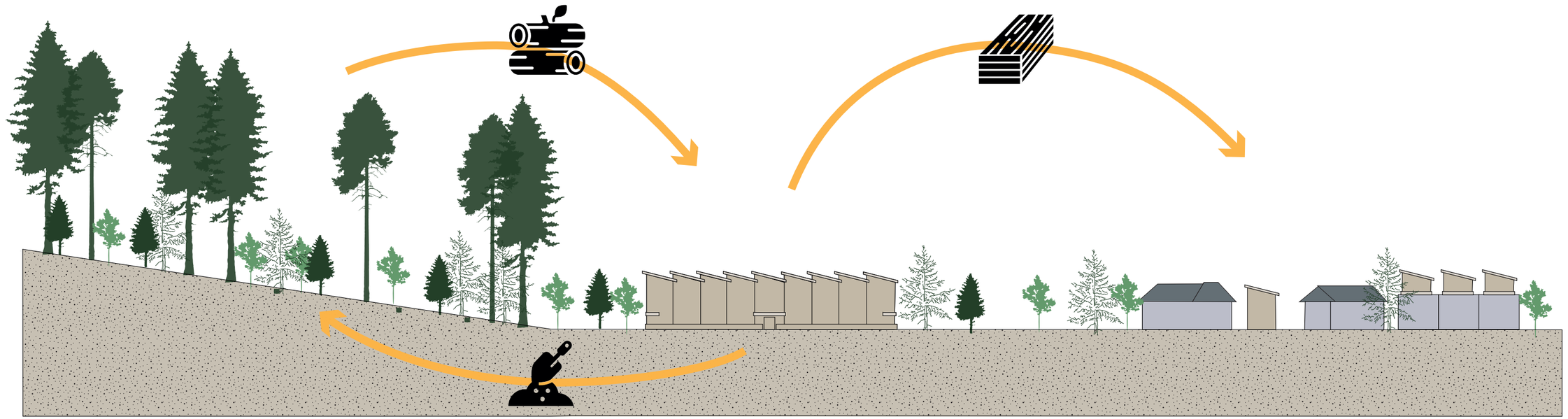
Human depleting natural resources

STEP IN THE RIGHT DIRECTION



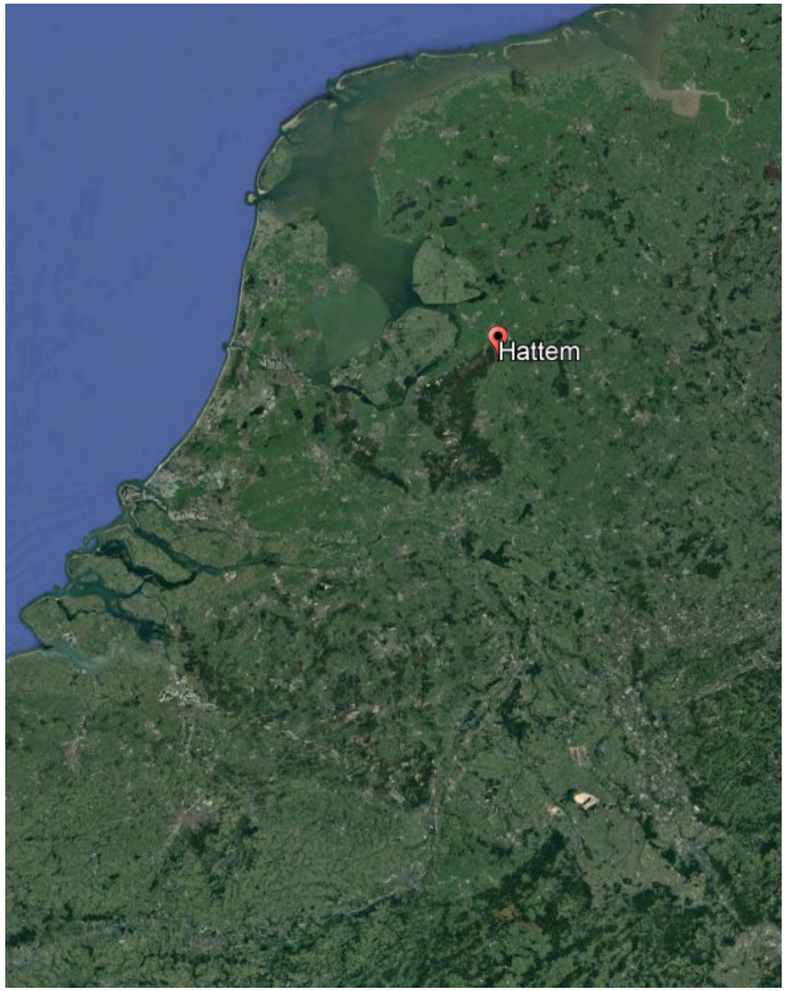
Uncompleted cycle of natural materials

ASPIRED SYSTEM | SYMBIOSCENE



Humans as an integral part of living system

HATTEM





HATTEM



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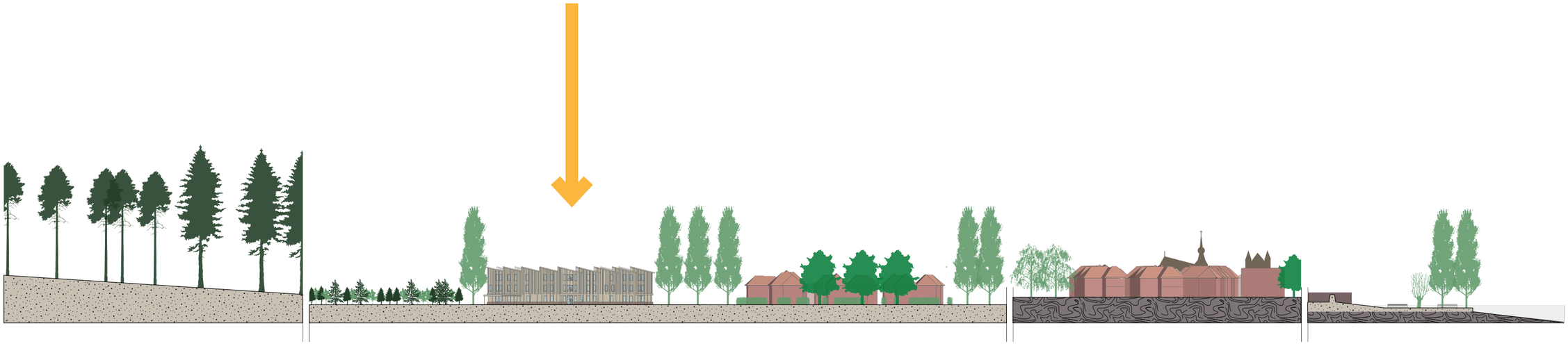

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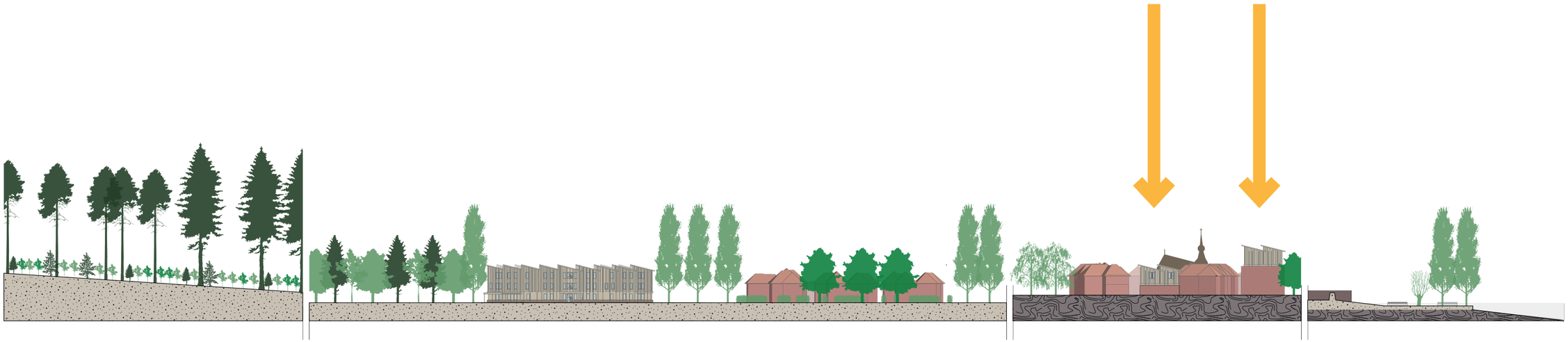

HATTEM



HATTEM



Dynamic Production Forests

Yael von Mengden

Gerdy Verschuure-Stuip
Alexander Wandl

23-06-2023



Growing Social Housing

Mathilde Siderius

Roel van de Pas
Peter Teeuw
Gilbert Koskamp

23-06-2023



Dynamic Production Forests

Planting new forests on old agricultural land in The Netherlands

Woodn’t you like to grow a house?

Gerdy Verschuure-Stuip
Alexander Wandl
23-06-2023



URGENCY



https://wwf.panda.org/wwf_news/?259495/Save-Our-Forests-Our-lungs-Our-Treasure

URGENCY

- Bossenstrategie
- 10% extra forest by 2030
- ≈ 36.300 hectares



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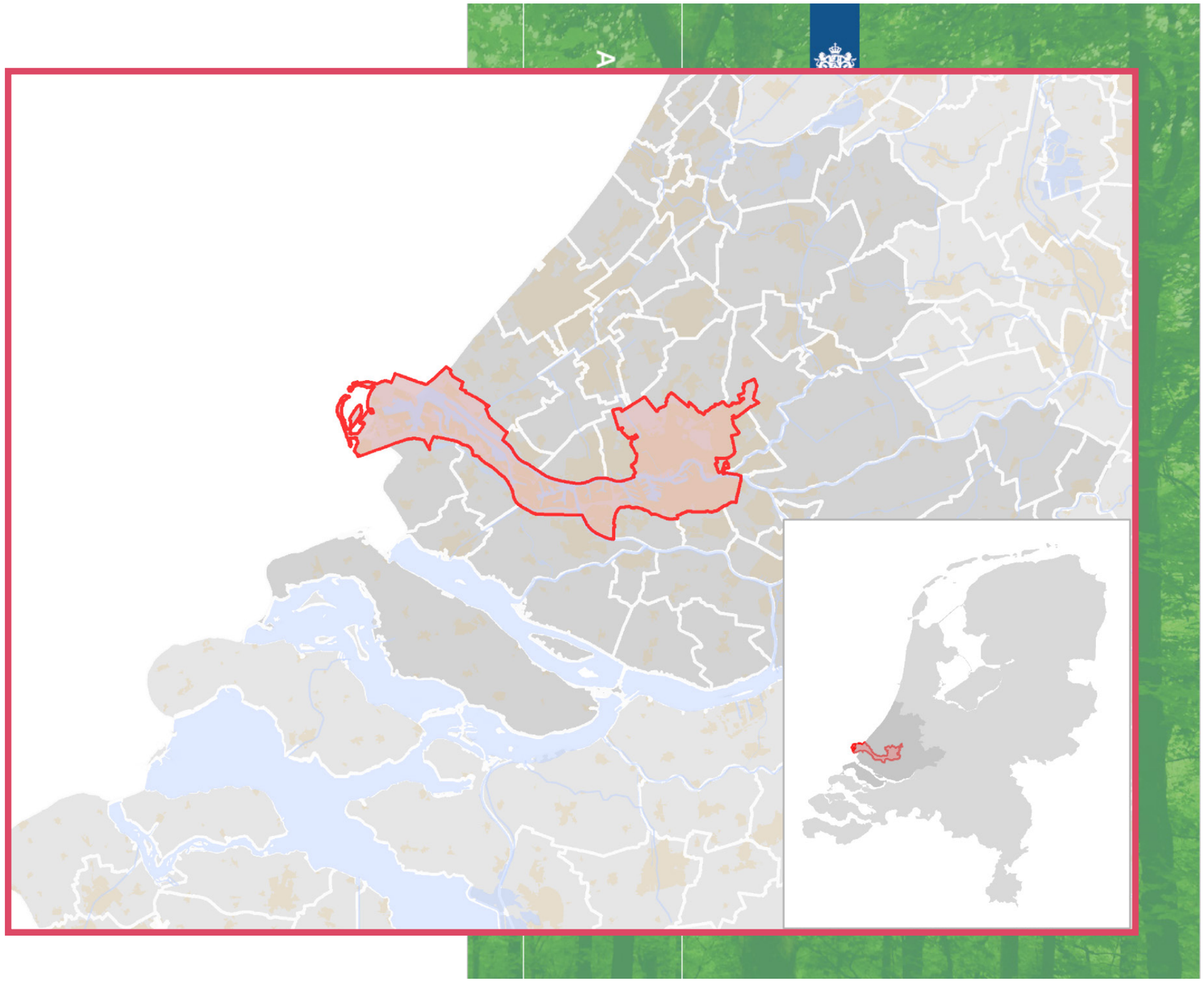
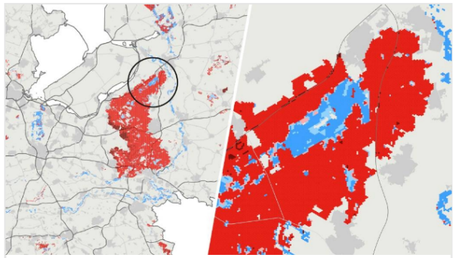


URGENCY



URGENCY



nos.nl

Het stikstofprobleem is echt Nederlands, uitgelegd in acht grafieken

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www.google.com

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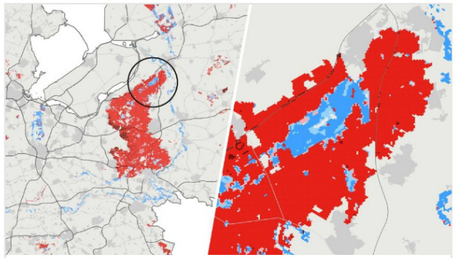
URGENCY



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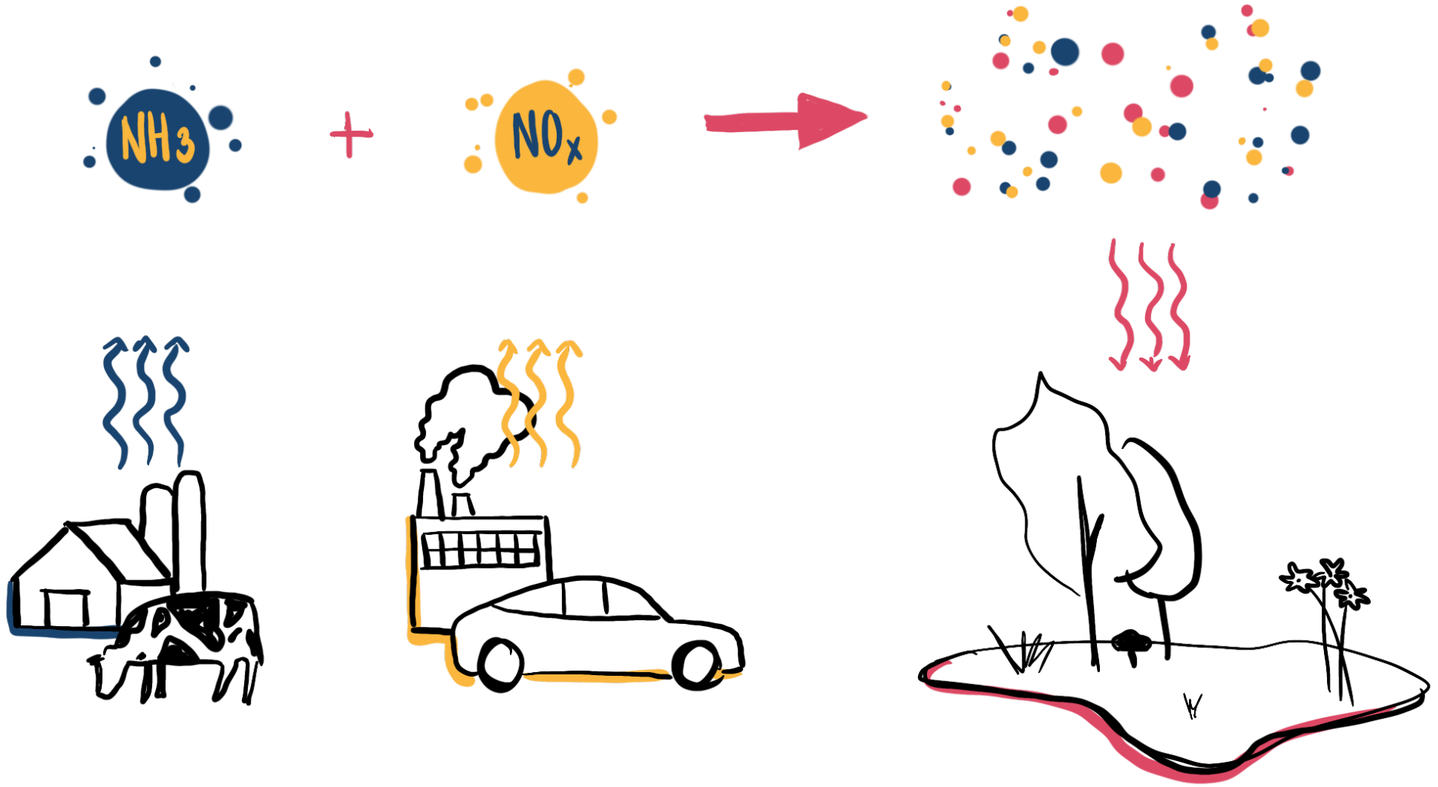
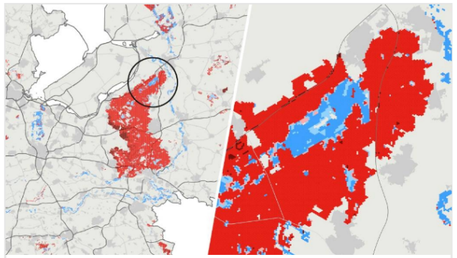
Nitrogen crisis ⟶



URGENCY



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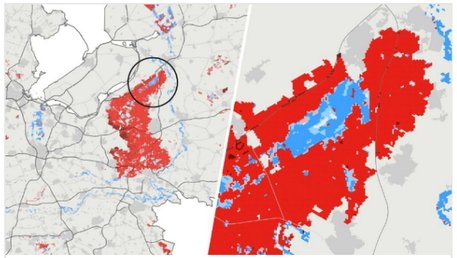

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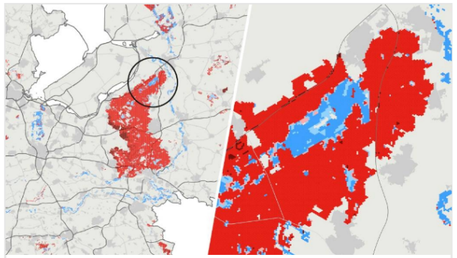

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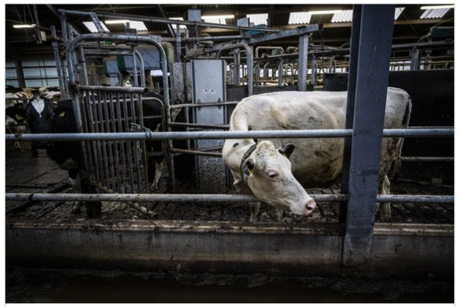


www.google.com

Brussel: piekbelasters stikstof mogen worden uitgekocht

Nederland mag de grote uitstoters van stikstof in de veehouderij gaan uitkopen. De Europese Commissie heeft de plannen van het kabinet hiervoor goe...



Buy-out ⟶ Vacant agricultural land

URGENCY





Technological developments ⟶ Less livestock

URGENCY



Agricultural land for livestock ⟶ Vacant ⟶ New infill

PRODUCTION FOREST



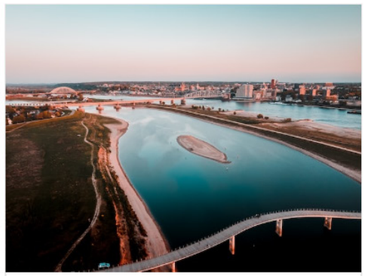
PRODUCTION FOREST



scientias.nl

CO2-uitstoot van de bouw bereikt recordhoogte

De sector is verantwoordelijk voor bijna 40 procent van de totale wereldwijde CO2-uitstoot. Willen we in 2050 volledig CO2-neutraal zijn, dan moet het



klimaatweb.nl

Het Kabinet komt met Landelijke Maatlat voor klimaatadaptief en groen bouwen - Klimaatweb

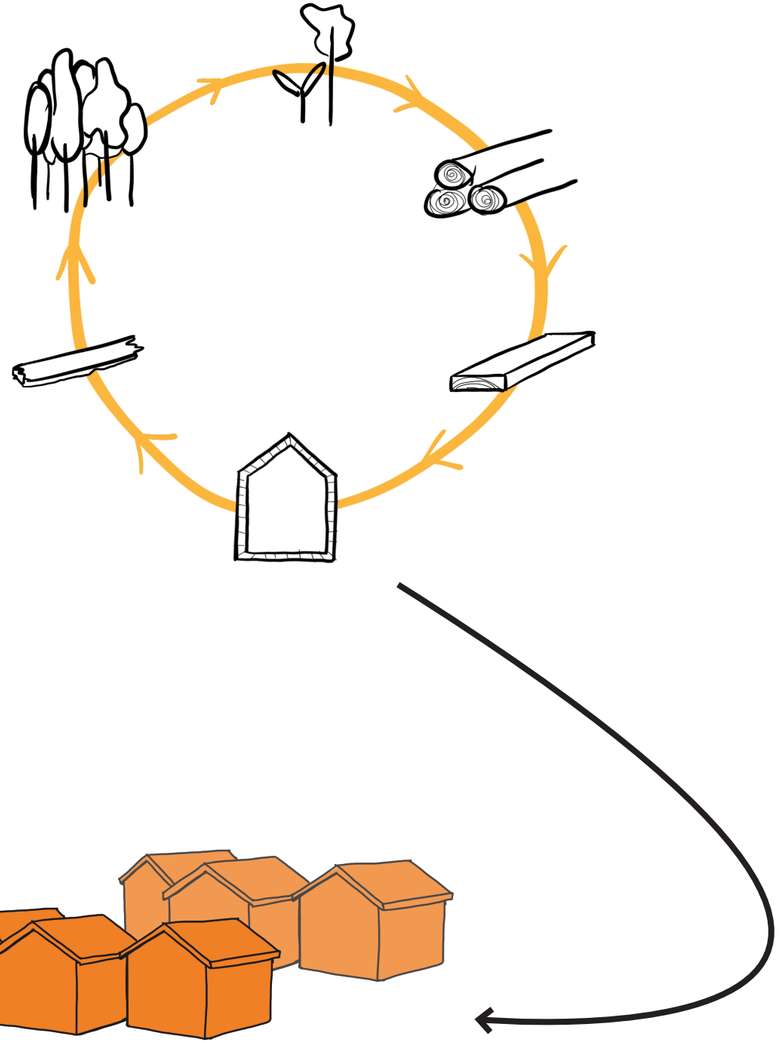
Op 23 maart heeft de Rijksoverheid met de Kamerbrief 'De Landelijke Maatlat voor een groene klimaatadaptieve gebouwde omgeving' uitgebracht. De maatlat maakt duidelijk wat voor nieuwbouw klimaatadaptief inrichten en bouwen inhoudt. Dit is nodig om beter...



nos.nl

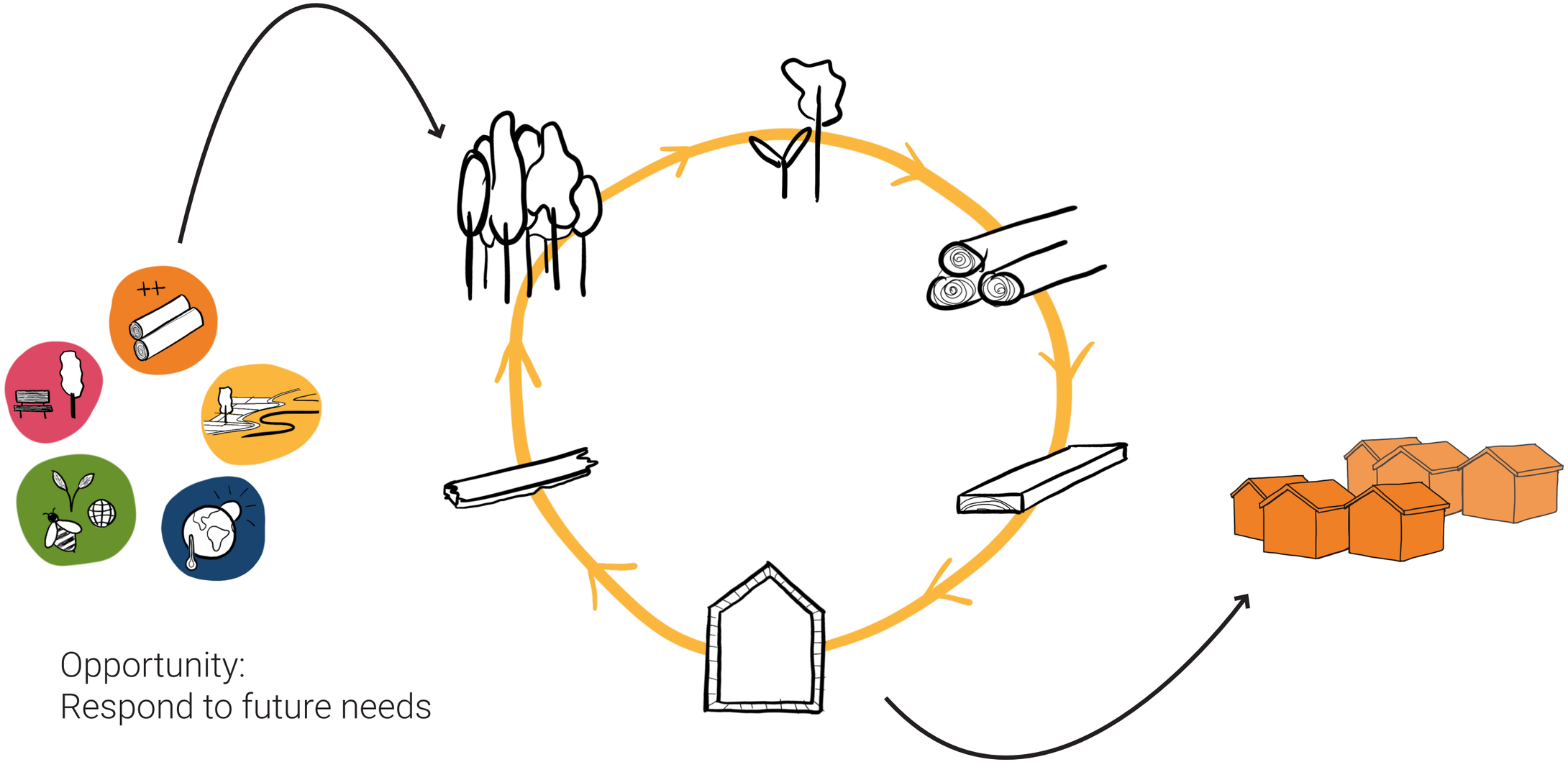
Grote bouwcoalitie presenteert actieplan voor 1 miljoen woningen in tien jaar

De woningnood dwingt tot een gestructureerde aanpak van woon- en bouwplannen. De wooncoalitie wil sneller, goedkoper en meer fabrieksmatig bouwen.



Making the building industry more sustainble

PRODUCTION FOREST



Opportunity:
Respond to future needs

PRODUCTION FOREST



Production as part of daily life

https://www.natuurmonumenten.nl/natuurgebieden/landgoed-oud-groevenbeek/op-weg-naar-een-robuust-duurzaam-en-divers-bos

MONOCULTURE



Association “production forest”

https://natuurbeleven.com/post/2018/06/23/oerlesche-en-zandoerlesche-bossen

PUBLIC OPINION







Association “destroying nature”

https://ikgadeboomin.org/exclusieve-golfclub-de-haar-wil-43-bomen-kappen-voor-1-hole
https://www.ad.nl/amersfoort/boomborden-als-protest-tegen-woningen-in-het-bos-jullie-hebben-geen-toekomst-zonder-mij

PRODUCTION FOREST





Shift in attitude towards forests

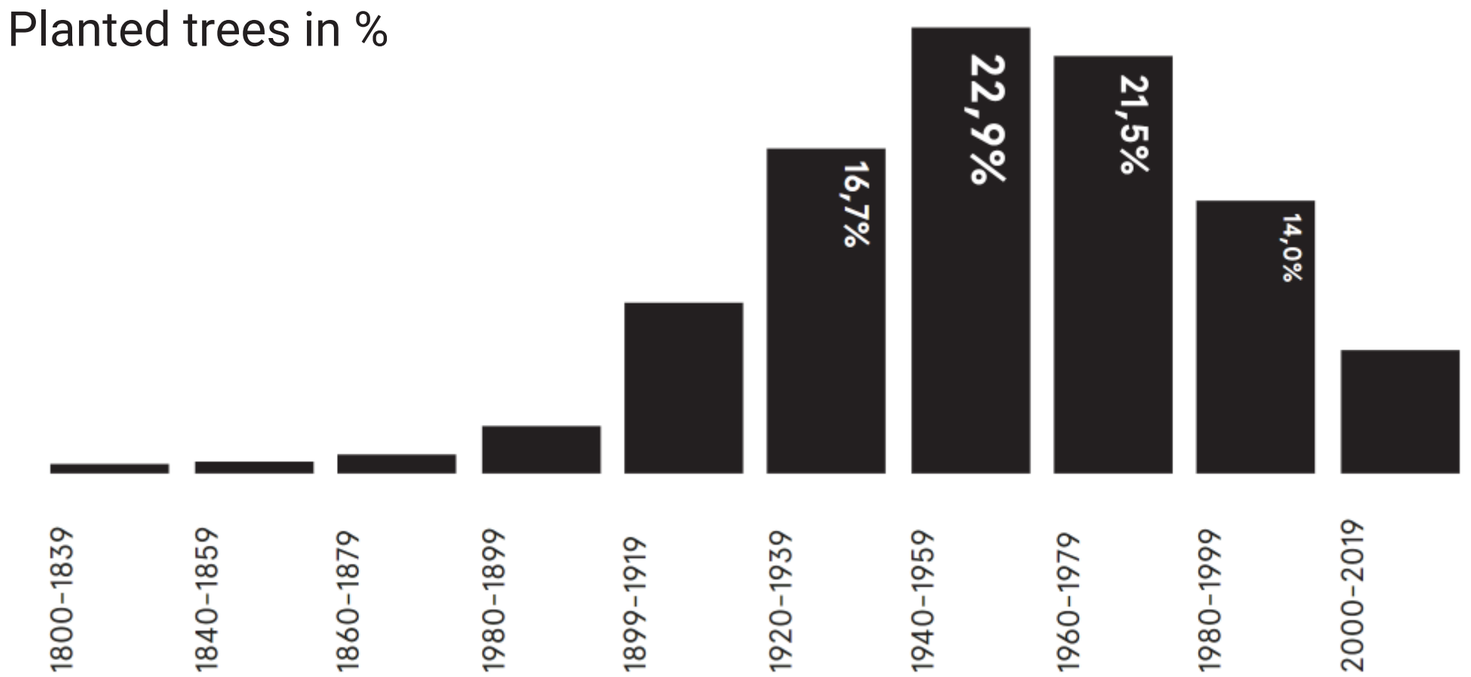
125 YEARS AGO...





From sand drift to forest

125 YEARS AGO...



90% forests nowadays planted from 1900

https://issuu.com/fluxlandscapearchitecture/docs/hlb_bossenboek_281122_spreads

SHIFT IN REQUIREMENTS



WOOD PRODUCTION



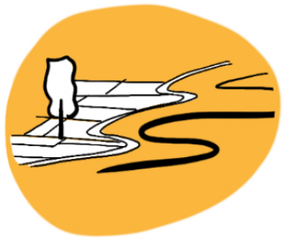
RECREATION



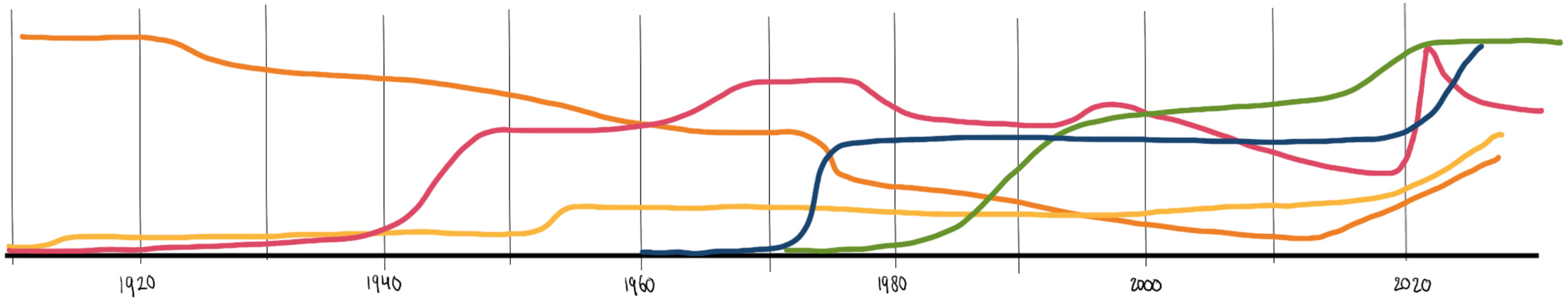
BIODIVERSITY



CLIMATE RESILIENT



EXPERIENCE OF LANDSCAPE



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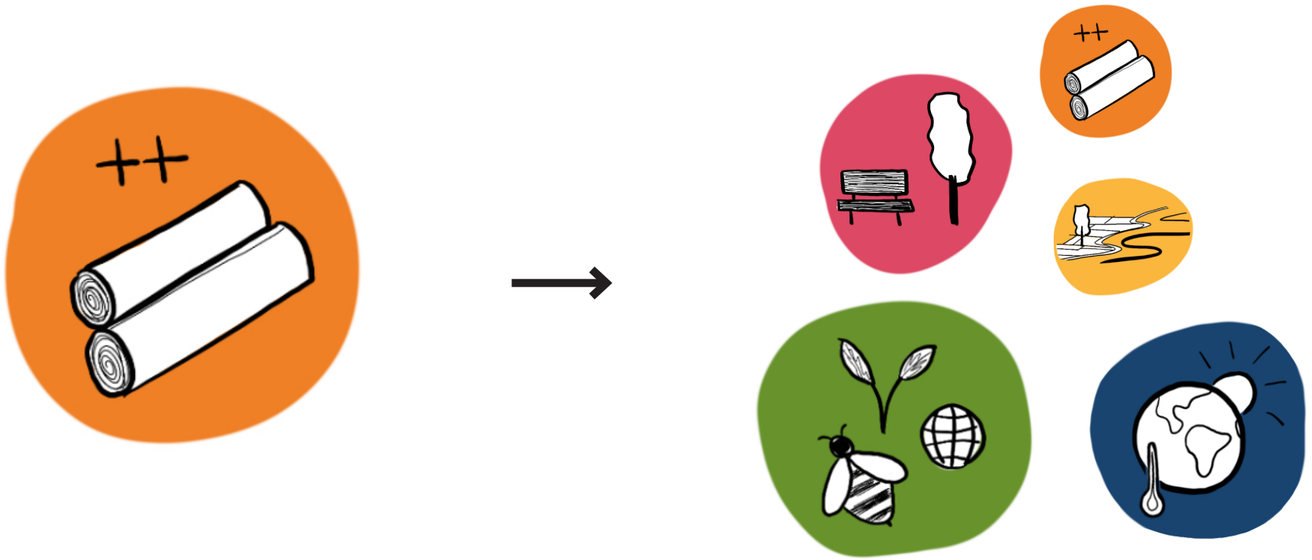
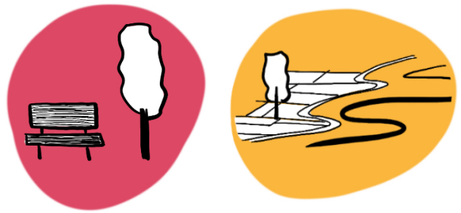


Accommodate more aspects than production

RESEARCH QUESTION

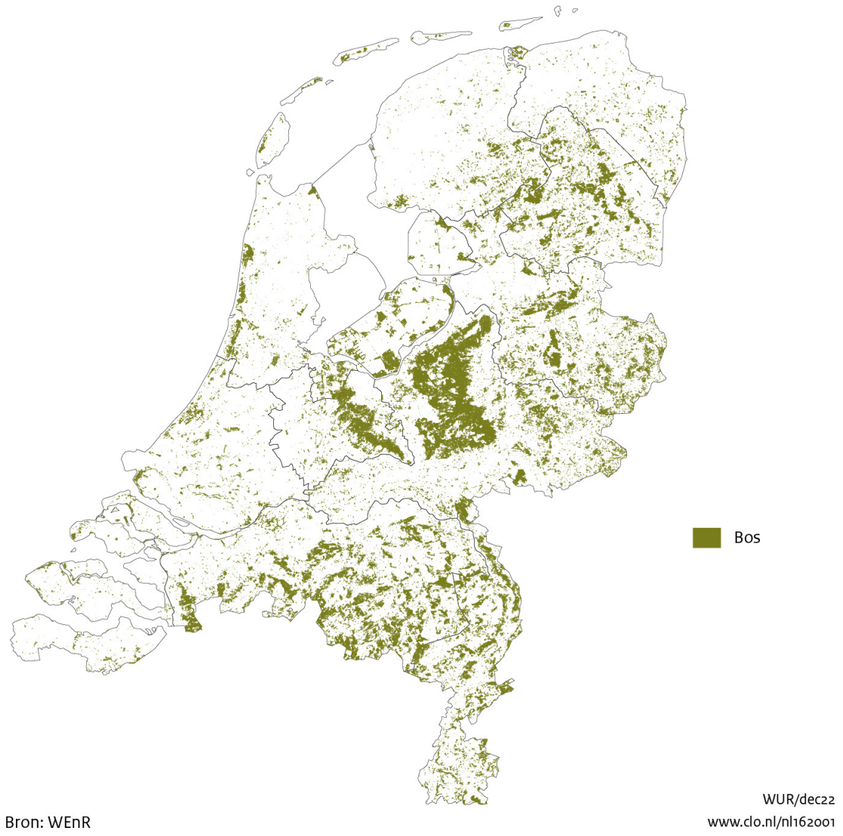




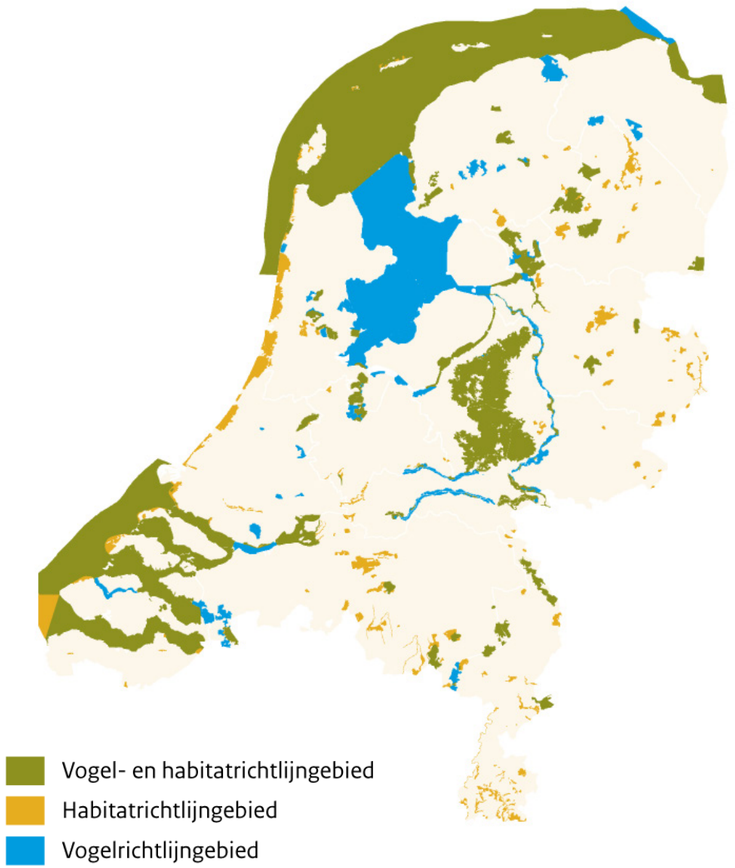
“HOW CAN A **SUSTAINABLE** AND **MULTIFUNCTIONAL PRODUCTION FOREST** BE DESIGNED IN THE NETHERLANDS?”



LOCATION



Expand current forest areas



Natura 2000 areas

VELUWE

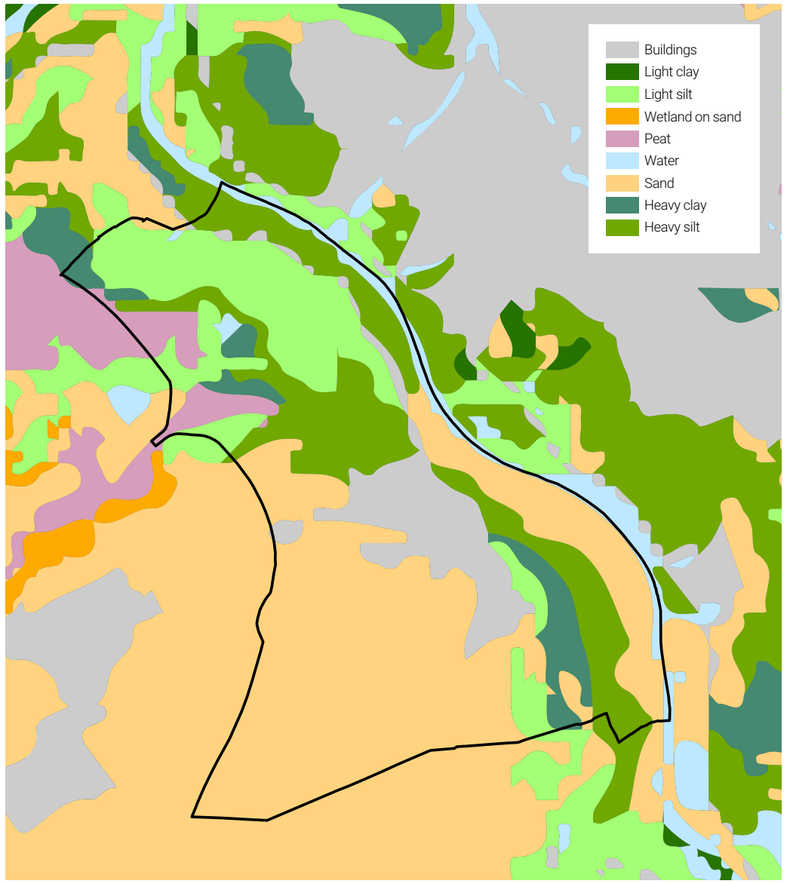


HATTEM

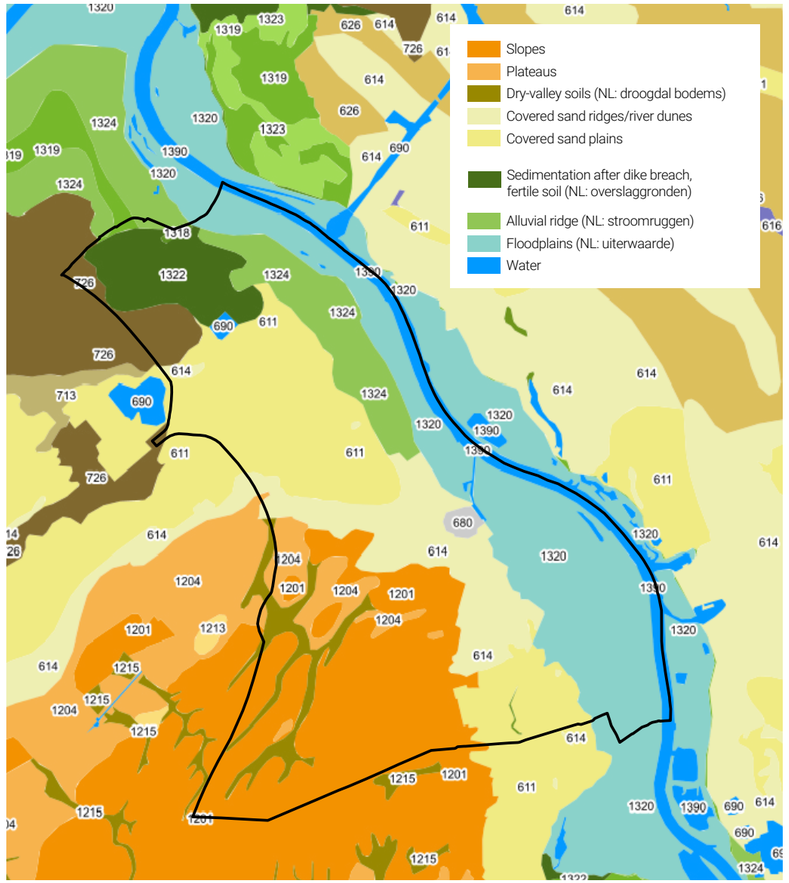




HATTEM



Soil types



Geomorphological map

HATTEM








Forest Polder Urban River

HATTEM





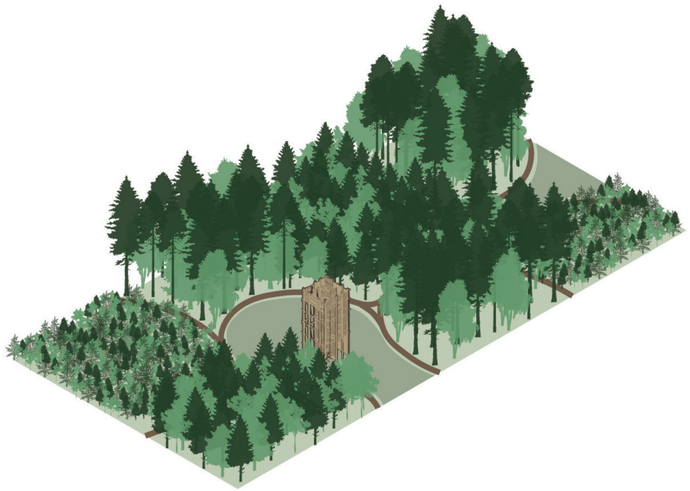
1:10.000

Intersection expansion forest and Hattem

3 DYNAMIC PRODUCTION FORESTS



Type A: The Buffer Forest



Type B: The Wood Factory



Type C: The Clear-cut Living

3 DYNAMIC PRODUCTION FORESTS





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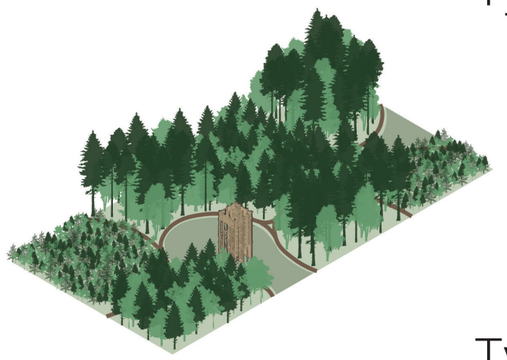


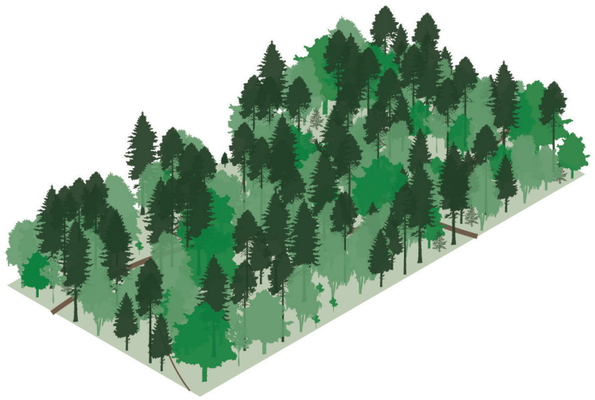
Type B: The Wood Factory



Type C: The Clear-cut Living

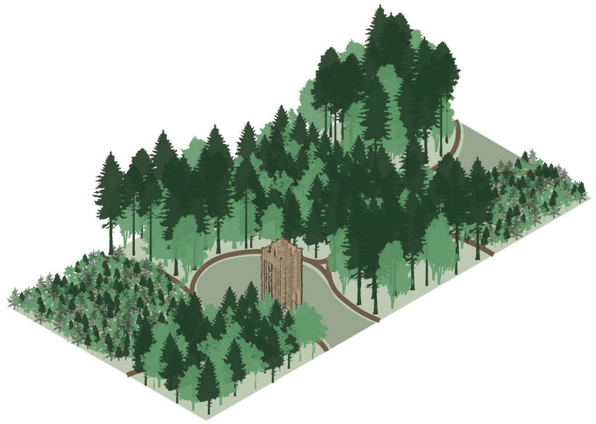
3 DYNAMIC PRODUCTION FORESTS





Type A: The Buffer Forest





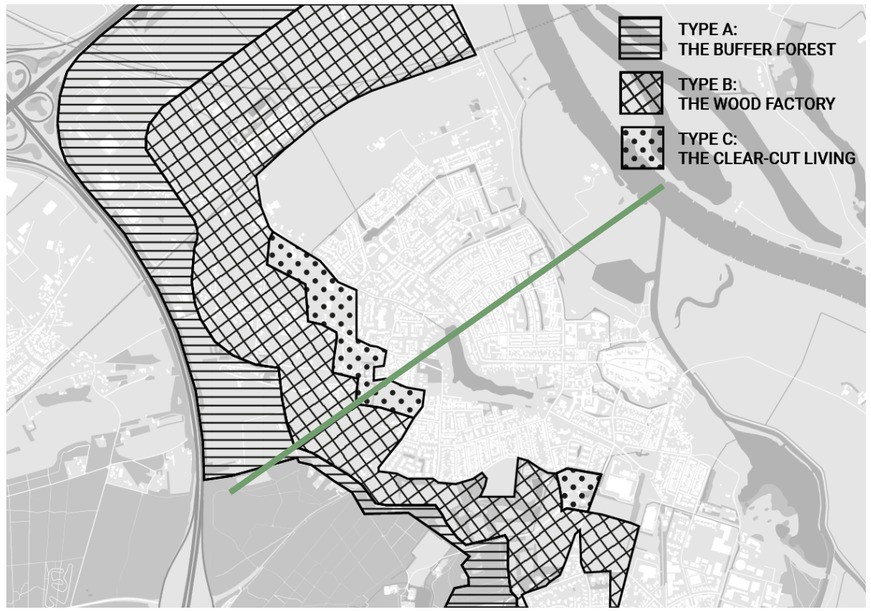
Type B: The Wood Factory





Type C: The Clear-cut Living

GRADIENT


TYPE A:
THE BUFFER FOREST
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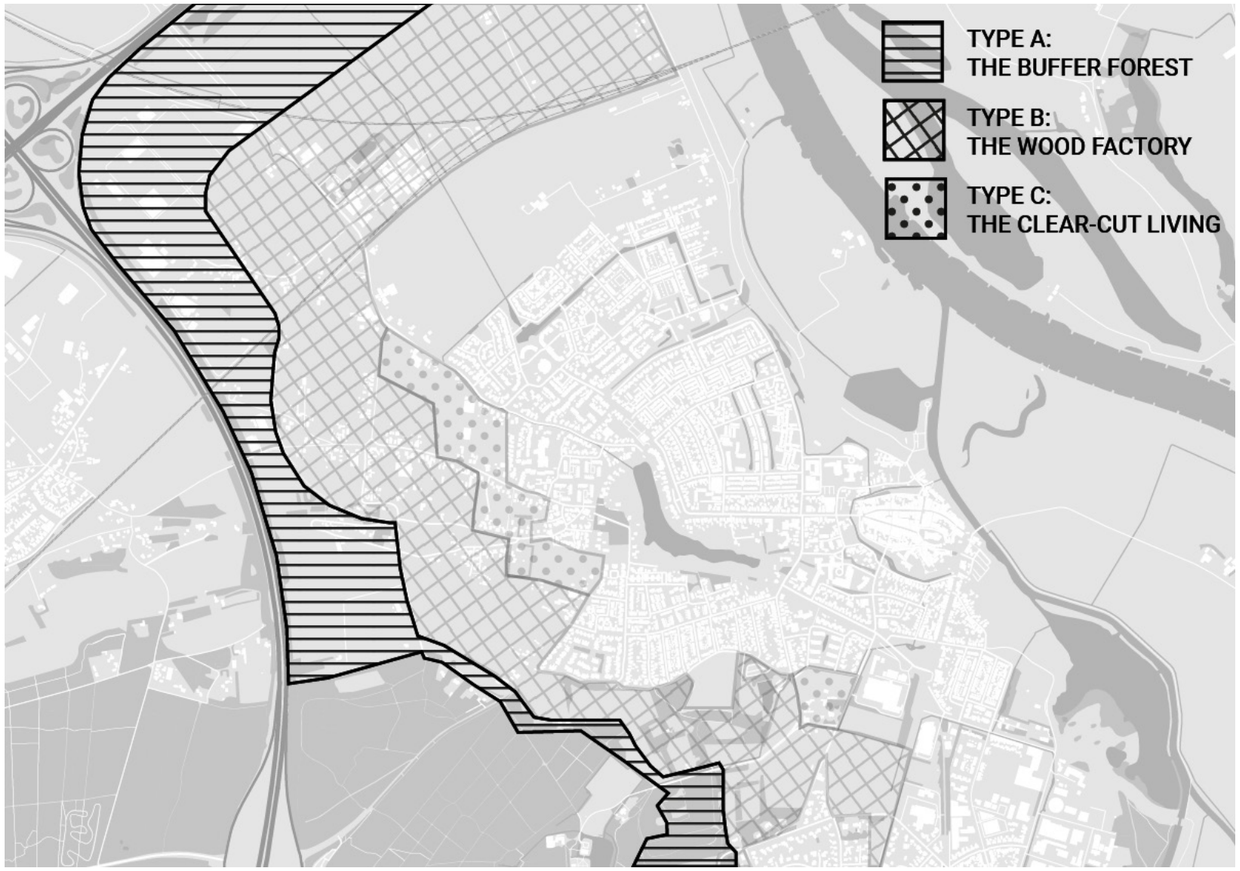
THE WOOD FACTORY
TYPE C:
THE CLEAR-CUT LIVING


Natura 2000
Buffer
Wood Factory
Clearcut living

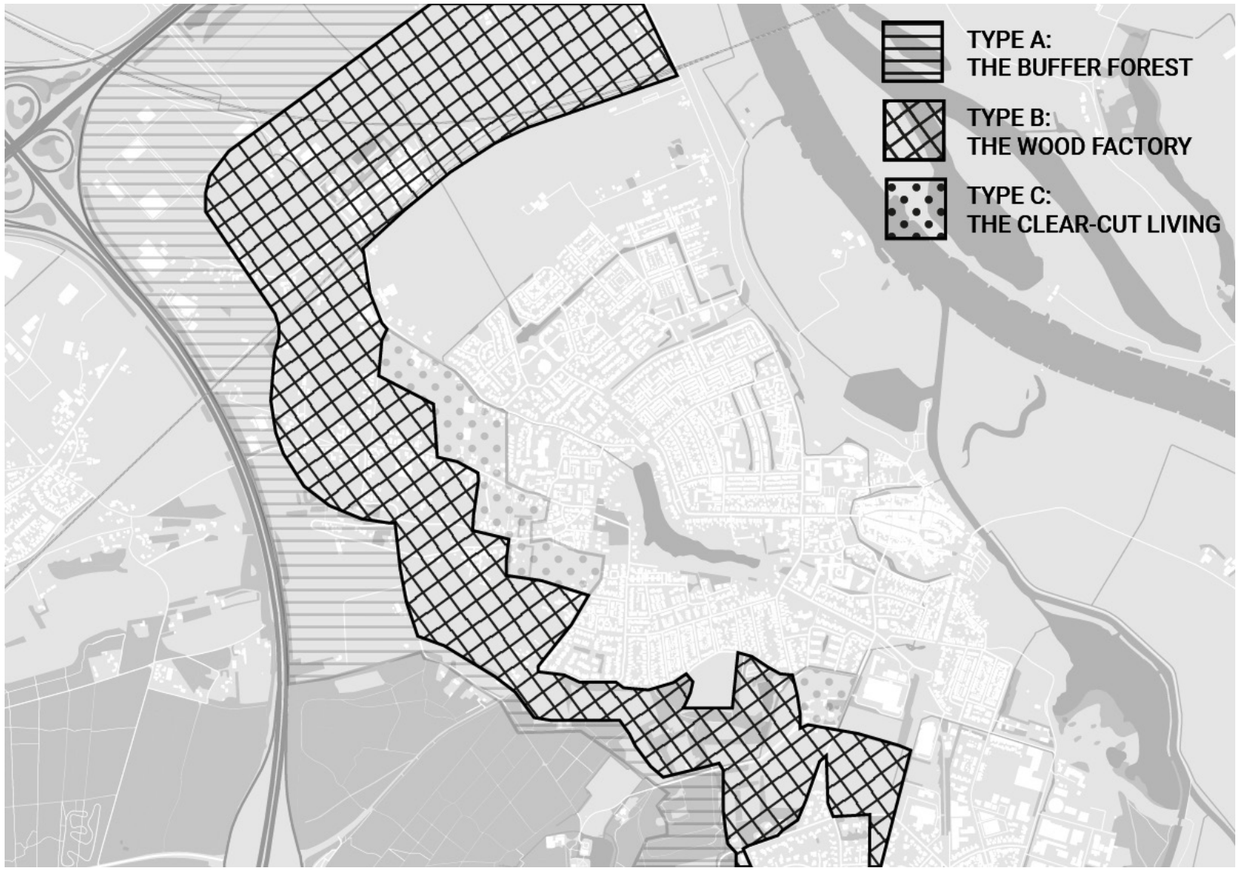
TYPE A: THE BUFFER FOREST

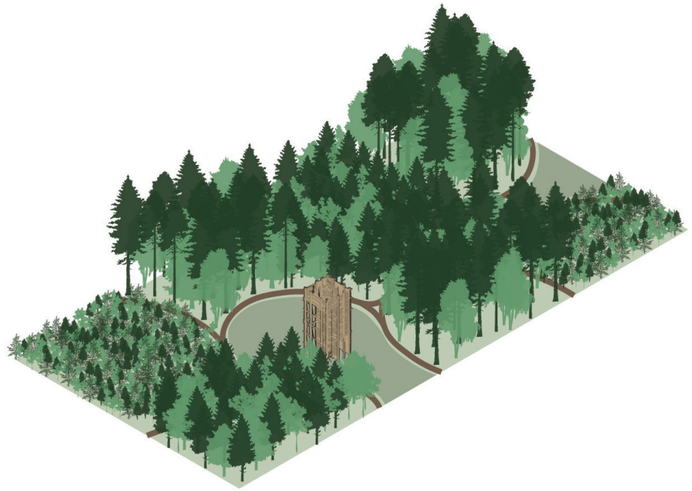




Type A: The Buffer Forest

TYPE B: THE WOOD FACTORY





Type B: The Wood Factory

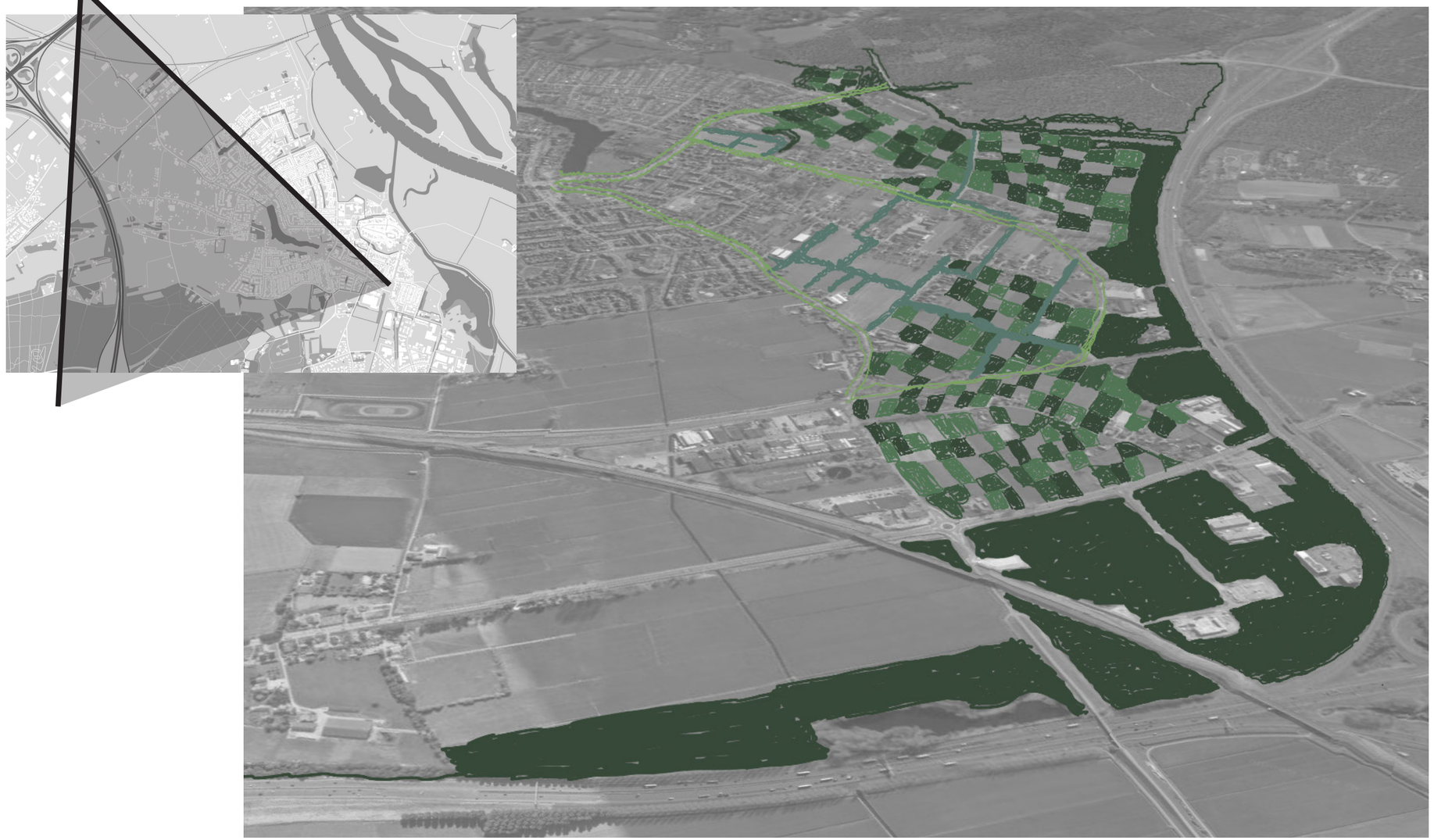
TYPE C: THE CLEAR-CUT LIVING



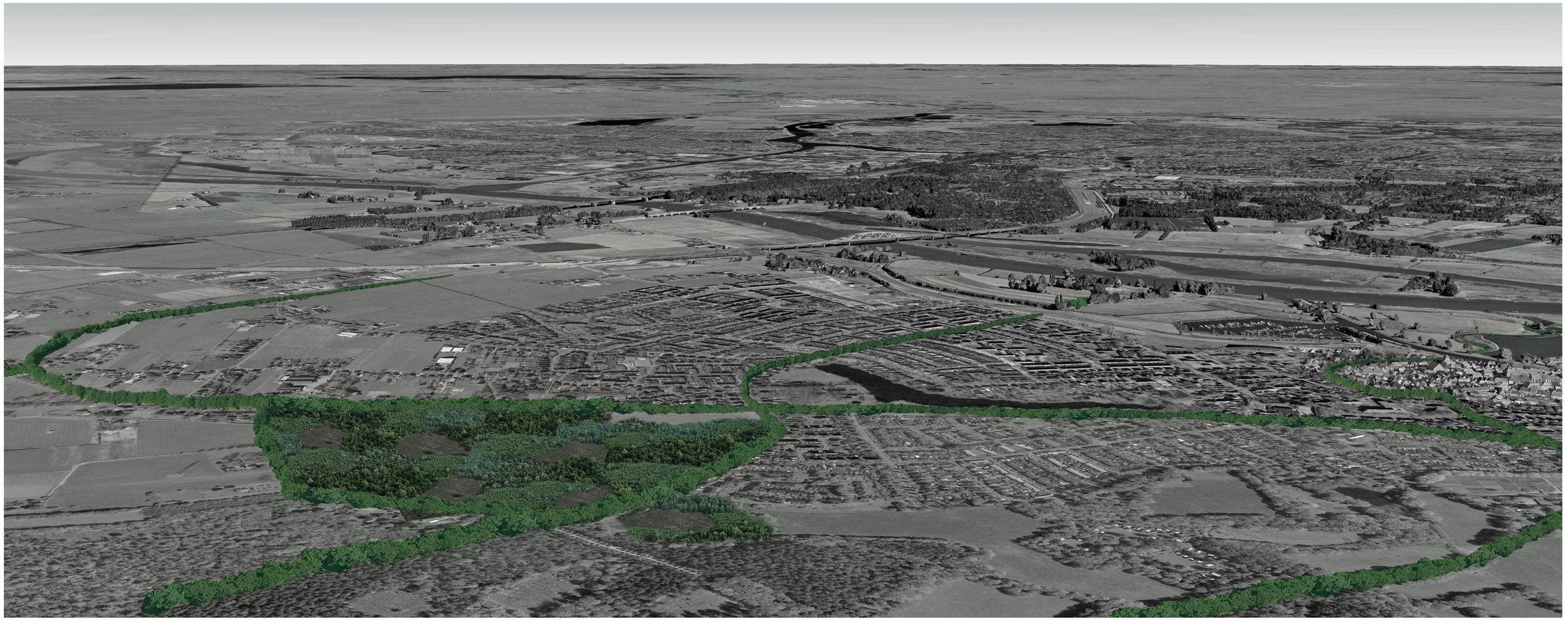


Type C: The Clear-cut Living

OVERVIEW OF HATTEM



OVERVIEW OF HATTEM

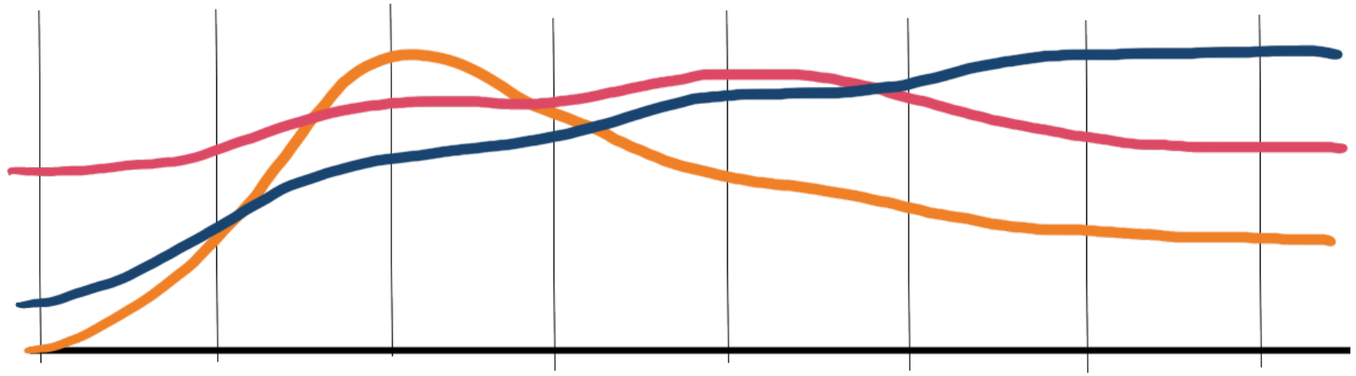


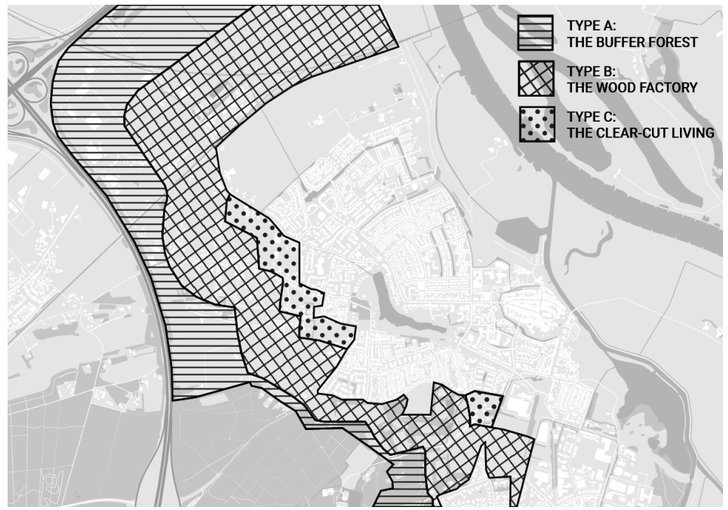
CHANGING NEEDS

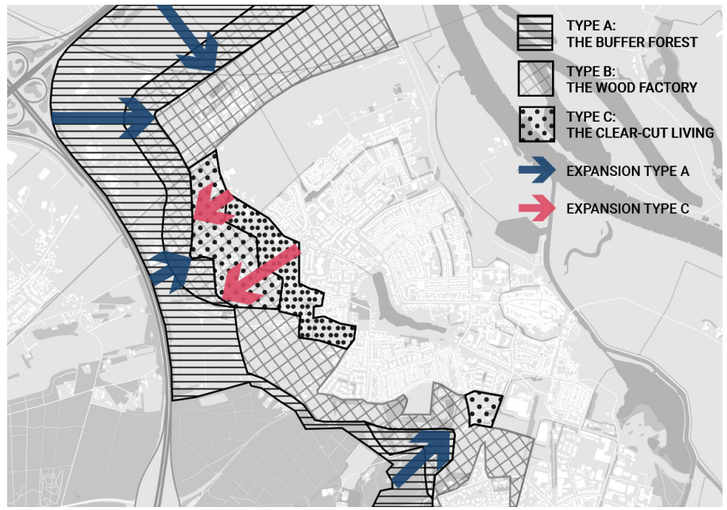
Type A: The Buffer Forest

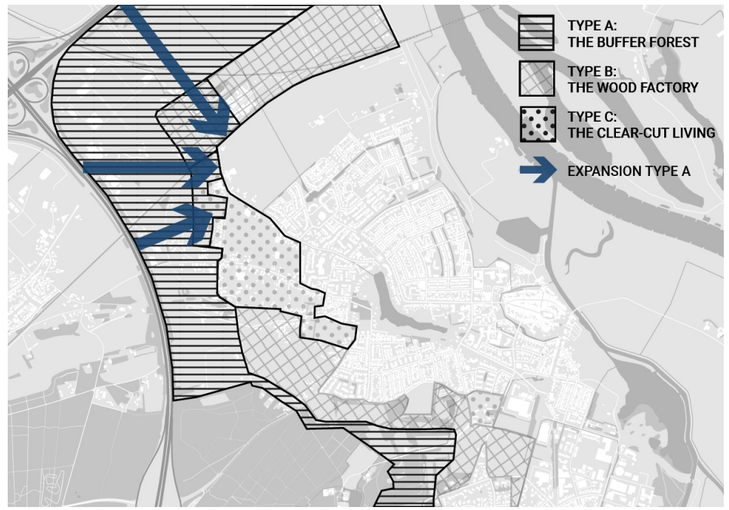
Type B: The Wood Factory

Type C: The Clear-cut Living





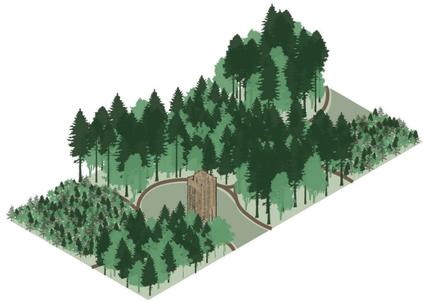




3 TYPES



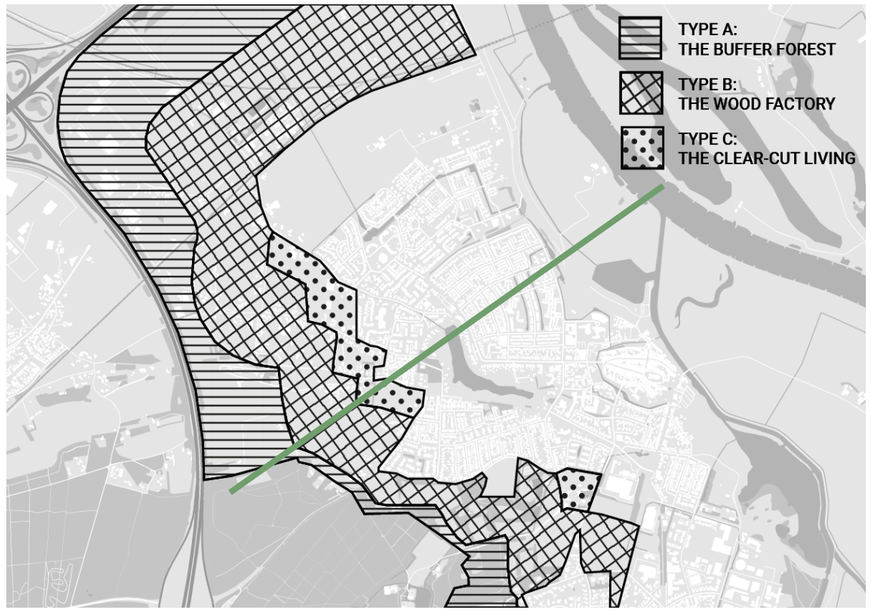
Type A: The Buffer Forest

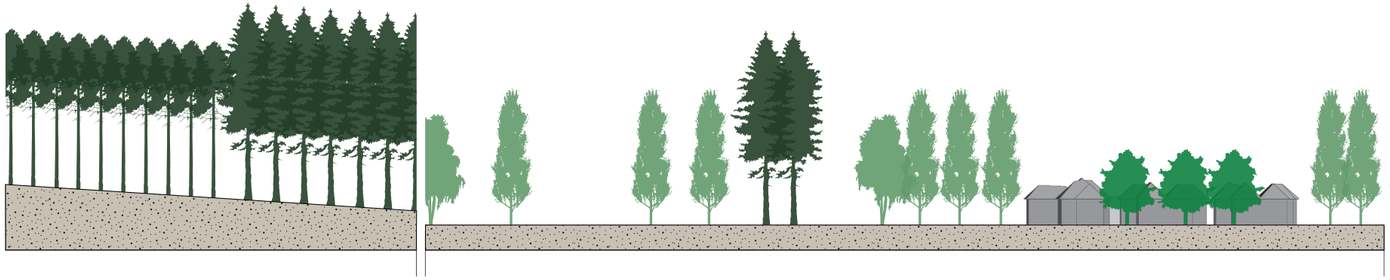


Type B: The Wood Factory



Type C: The Clear-cut Living



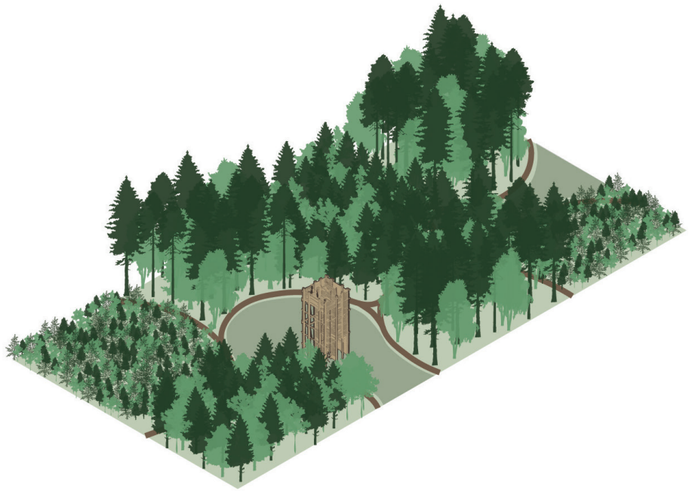




3 DYNAMIC PRODUCTION FORESTS



Type A: The Buffer Forest

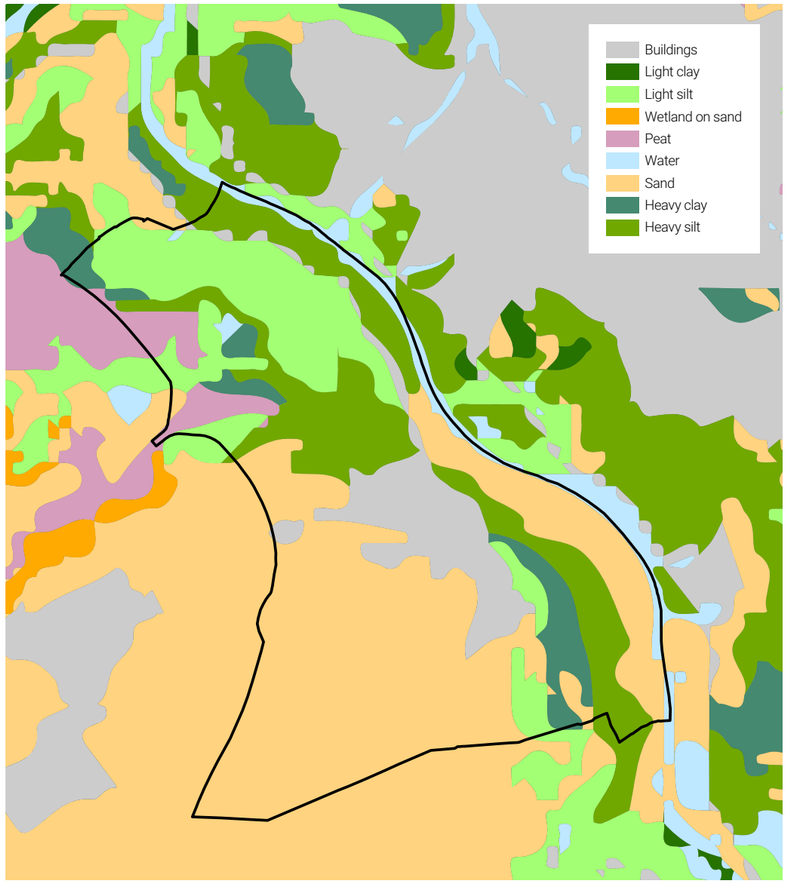


Type B: The Wood Factory



Type C: The Clear-cut Living

SAND SOIL



	Roots	Soil	Shadow/light	Growing site	Indigenous	Pioneer tree	Height	Tree type	Target diameter (minimum)	Growth rate	Latin name	Tree species	Tree photo	Strength	Durability (heartwood)	Laminated	Solid	Other	Remarks	Sight	Smell	Teach (affinity relative to palm)	Wood photo
	Lateral	All types of soil (loess, silt, peat, heavy clay, light clay, sand, loam)	Sunny to semi-shaded sites	Deciduous forests, hillside forests, calcareous forests, wooded banks, hedges, shrublands, along roads and stream banks.	x		15-20m	Deciduous tree/ hardwood	45 dbh	Medium	*Carpinus betulus*	European hornbeam											
	Lateral	Loess, silt, light clay, sand, loam	Sunny sites	Dune forests, riparian forests along large rivers, forest edges, shrublands and roadsides.	x	x	15-20m	Deciduous tree/ hardwood	50 dbh	Fast (15-25 years) Annual growth 15m3/ha	*Populus alba*	Silver poplar											
	Heart	Loess, silt, heavy clay, light clay, sand, loam	Sunny to semi-shaded sites	Along roads, along ditches in meadows, along rivers, wet marshes, pocket forests, willows and wet forest edges.	x	x	15-25m	Deciduous tree/ hardwood	100 dbh	Fast (25 years)	*Salix alba*	White willow											
	Lateral	Loess, silt, peat, sand, loam	Sunny to semi-shaded sites	Deciduous forests, coniferous forests, marsh forests, forest edges, wooded banks, logging plains, heathland, along fens, dry dune slopes, inner dune edges, wasteland and in large cavities of decayed walls.	x	x	Max 30m	Deciduous tree/ hardwood	45 dbh	Medium (50-60 years) Annual growth 8-15m3/ha	*Betula pendula*	Silver Birch		?	V	x		Floor tiles	Untreated not suitable as construction wood, decays too quickly in moist air	White, silverish, with little difference between heartwood and sapwood	-	42%	
	Heart	Loess, silt, light clay, sand, loam	Shaded sites	Deciduous forests, parks and dune forests.	x		20-30m	Deciduous tree/ hardwood	60 dbh	Medium-slow (50-80 years)	*Fagus sylvatica*	European beech		D30, D40	V	x	x	Threshold, stairs, floor	Very good to glue. Expands a lot in contact with water. Not to be used outdoors.	Heartwood whitish to light brown. Steamed is pink to light red.	-	41%	
	Tap	Loess, heavy clay, light clay, loam	Sunny to semi-shaded sites	Deciduous forests, dune forests and scrubland.	x		Max 40m	Deciduous tree/ hardwood	60 dbh	Medium (60 years) Annual growth 6.4m3/ha	*Fraxinus excelsior*	European ash		D40	V	x (CLT in development)	x	Roof, doors, staircases, floor	Heavy, hard but excellent to work with. Highly underrated in construction, grows fast, is hard and has beautiful markings.	Very broad sapwood, contrasting with the brownish heartwood. White to creamy white color. Uniform texture. Light yellow exposed to daylight Nice grain with beautiful markings.	-	39%	
	Tap	Loess, silt, light clay, sand, loam	Sunny	Coniferous forests.			25-45m	Coniferous tree/softwood	50 dbh	Fast (40 years) Annual growth 10,5m3/ha	*Larix decidua*	European larch		C14, C18, C24, C30. Similar in properties to pine but heavier, harder and stronger.	II-III: One of the most durable coniferous tree species in Europe. Larch sapwood is less susceptible to blue mold than spruce sapwood and much less so than pine sapwood. Can be used outdoors untreated.	x	x	Frames, façade, interior, staircases and roofscapes, foundation pole	Larch wood ranks above pine in utility value, but below that of larch, Douglas fir and pinus. Takes twice as long to dry as pine. Does not work, warps fairly quickly.	Sapwood: dirty white. Heartwood: yellowish brown to reddish brown, discolored over time.	Contains a large amount of resin, pronounced resin smell.	32%	
	Tap	Loess, silt, light clay, sand, loam	Sunny sites	Heathland, sand drifts, bogs, pine forests and sometimes in the dunes.	x		Max 40m	Coniferous tree/softwood	45 dbh	Medium-slow (75-80 years)	*Pinus sylvestris*	Scots pine		C14, C18, C24, C30. Less resilient and tough than spruce and pine and therefore less suitable for long joists.	III: Sapwood very nondurable.	x	x	Frames, door, floors, interior, fences	Disadvantage compared to silver fir and spruce is the strong perspiration of resin. Easy to process.	Fresh heartwood: light brown. Sapwood: white to white-yellow. Clear difference between light-colored earlywood and thinner-colored latewood. Becomes darker over time.	High resin content creates a pleasant resin smell. Disappears over time but when old wood is rewetted it smells like new again.	32%	
	Lateral	All types of soil (loess, silt, peat, heavy clay, light clay, sand, loam)	Sunny, open places	Forest edges, shrublands, wooded banks, pioneer on logging plains, clearings in forests, dunes, roadsides and along railroad tracks.	x	x	20 - 30m	Deciduous tree/ hardwood	50 dbh	Fast (15-25 years) Annual growth 15m3/ha	*Populus nigra*	Black poplar		C22. In terms of mechanical properties as strong as a spruce.	V. For indoor use it is durable but outdoors it does not last long.	x	x	Floor	Dries relatively quickly. Wear-resistant and difficult to ignite. Strange that poplar wood is hardly used in construction in NL.	Practically colourless.	Odorless, nasteless.	29%	
	Lateral	Loess, heavy clay, light clay, loam	Semi-shaded to shaded sites	Coniferous forests.			Max 45m	Coniferous tree/softwood	50 dbh	Medium-fast (40-60 years)	*Picea abies*	European spruce		C14, C18, C24, C30	IV: Unlike other woods, spruce sapwood is considered equivalent (in durability and other properties) to heartwood for most applications after drying. Not to be used outdoors untreated.	x	x	Frames, doors, staircases, floors, interior, furniture, foundation pole, façade	Easy to process	Almost white to pale yellow brown. Freshly sawn almost white. Yellow-brown due to exposure to light and air. 5-6cm of sapwood.	Resinous but lacking the distinctive resin smell found in pine.	32%	
	Tap	All types of soil (loess, silt, peat, heavy clay, light clay, sand, loam)	Sunny to semi-shaded sites	Coniferous forests.	x (established)		Max 50m	Coniferous tree/softwood	60-80 dbh	Medium (75 years) Annual growth: 125m3/ha	*Pseudotsuga menziesii*	Douglas fir		C14, C18, C24, C30	III: Can be used outdoors untreated.	x	x	Frames, façade, interior, foundation pole	Fir is known for laying down a consistently high proportion of strong, dense summerwood, which is what makes it such a good structural timber.	Heartwood is light red, to brownish red. Sapwood is light yellow. Yearrings are well defined. 1-2 cm of sapwood.	-	Relatively resinous.	32%	
	Tap	Loess, silt, light clay, sand, loam	Sunny to semi-shaded sites	Deciduous forests, forest edges, hedgerows, on the heads of old river dunes, drifting sands, heathland and calcareous places in the dunes.	x		15-30m	Deciduous tree/ hardwood	60-70 dbh	Slow (150 years)	*Quercus robur*	Pedunculate oak		D18/D24/D30	II-III: Keeps well when dry or continuously in water.	x (CLT in development)	x	Frames, doors, floor	Steaming reduces shrinking and swelling. Wood works in one direction, can cause cracks	When fresh: yellowish white, later yellowish red. Steamed pink to pale red. In contact with steel blue/black due to the reaction of tannic acids with the metal which will corrode.	Odorless	41%	
	Heart	Loess, silt, light clay, sand, loam	Sunny to semi-shaded sites	Along streams and rivers, deciduous forests, ravine forests, hedgerows and along hollow roads and open field.	x		25-35m	Deciduous tree/ hardwood	45-60 dbh	Fast (25 years)	*Ulmus laevis*	White elm		Elm is barely inferior to oak in quality as construction or work wood.	IV		?	x	Door, staircase, furniture		Relatively high percentage of sapwood, color light yellow. Heartwood color light brown to dull dark brown, sometimes with a greenish sheen.	Said to release unpleasant odor during processing.	-	
							30-45m	Deciduous tree/ hardwood	60 dbh	Medium	*Abies alba*	Silver fir		C14, C18, C24, C30	IV: Little resistance to insect attacks. Susceptable to blue mold.	x	x	Frames, door, staircases		Yellow to greyish white. Contains many knots and coarse yearrings.	Little resin, no characteristic odor.	32%	
							15-25m	Deciduous tree/ hardwood	40-60 dbh	Medium (60 years) Annual growth 14-17 m3/ha	*Castanea sativa*	Sweet chestnut		D24	II: High tannic acid content accelerates corrosion of metals but allows untreated outdoor application.	x (CLT in development)	x	Frame, Door, furniture, façade, roof, floor	Easier to process than oak	Light brown to dark brown. Resembles oak, but slightly lighter, with beautifull grain. Little sapwood.	-	-	
							25-30m	Deciduous tree/ hardwood	?	Fast (40 years) Annual growth: 9,4m3/ha	*Robinia pseudoacacia*	Black locust		D30	II: Known as one of the most durable woods in Europe.	x	x	Frames, door, staircases, façade		Color of the heartwood is light yellow-green to brown-green, turning golden brown after exposure to light. In sharp contrast with with the 10-20 mm wide gray-yellow sapwood.	-	52%	

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Roots	Soil	Shadow/light	Growing site	Indigenous	Pioneer tree	Height	Tree type	Target diameter (minimum)	Growth rate	Latin name	Tree species	Tree photo	Strength	Durability (heartwood)	Laminated	Solid	Other	Remarks	Sight	Smell	Teach (affinity relative to palm)	Wood photo
Lateral	All types of soil (loess, silt, peat, heavy clay, light clay, sand, loam)	Sunny to semi-shaded sites	Deciduous forests, hillside forests, calcareous forests, wooded banks, hedges, shrublands, along roads and stream banks.	x		15-20m	Deciduous tree/ hardwood	45 dbh	Medium	*Carpinus betulus*	European hornbeam											
Lateral	Loess, silt, light clay, sand, loam	Sunny sites	Dune forests, riparian forests along large rivers, forest edges, shrublands and roadsides.	x	x	15-20m	Deciduous tree/ hardwood	50 dbh	Fast (15-25 years) Annual growth: 15m3/ha	*Populus alba*	Silver poplar											
Heart	Loess, silt, heavy clay, light clay, sand, loam	Sunny to semi-shaded sites	Along roads, along ditches in meadows, along rivers, wet marshes, pocket forests, willows and wet forest edges.	x	x	15-25m	Deciduous tree/ hardwood	100 dbh	Fast (25 years)	*Salix alba*	White willow											
Lateral	Loess, silt, peat, sand, loam	Sunny to semi-shaded sites	Deciduous forests, coniferous forests, marsh forests, forest edges, wooded banks, logging plains, heathland, along fens, dry dune slopes, inner dune edges, wasteland and in large cavities of decayed walls.	x	x	Max 30m	Deciduous tree/ hardwood	45 dbh	Medium (50-60 years) Annual growth: 8-15m3/ha	*Betula pendula*	Silver Birch		?	V	x		Floor tiles	Untreated not suitable as construction wood, decays too quickly in moist air	White, silverish, with little difference between heartwood and sapwood	-		42%	
Heart	Loess, silt, light clay, sand, loam	Shaded sites	Deciduous forests, parks and dune forests.	x		20-30m	Deciduous tree/ hardwood	60 dbh	Medium-slow (50-80 years)	*Fagus sylvatica*	European beech		D35, D40	V	x	x	Threshold, stairs, floor	Very good to glue. Expands a lot in contact with water. Not to be used outdoors.	Heartwood whitish to light brown. Steamed is pink to light red.	-		41%	
Tap	Loess, heavy clay, light clay, loam	Sunny to semi-shaded sites	Deciduous forests, dune forests and scrubland.	x		Max 40m	Deciduous tree/ hardwood	60 dbh	Medium (60 years) Annual growth: 6,4m3/ha	*Fraxinus excelsior*	European ash		D40	V	x (CLT in development)	x	Roof, doors, staircases, floor	Heavy, hard but excellent to work with. Highly underrated in construction, grows fast, is hard and has beautiful markings.	Very broad sapwood, contrasting with the brownish heartwood. White to creamy white color. Uniform texture. Light yellow exposed to daylight Nice grain with beautiful markings.	-		39%	
Tap	Loess, silt, light clay, sand, loam	Sunny	Coniferous forests.			25-45m	Coniferous tree/softwood	50 dbh	Fast (40 years) Annual growth: 10,5m3/ha	*Larix decidua*	European larch		C14, C18, C24, C30. Similar in properties to pine but heavier, harder and stronger.	II-III: One of the most durable coniferous tree species in Europe. Larch sapwood is less susceptible to blue mold than spruce sapwood and much less so than pine sapwood. Can be used outdoors untreated.	x	x	Frames, façade, interior, staircases and roofhouses, foundation pole	Larch wood ranks above pine in utility value, but below that of larch, Douglas fir and pinus. Takes twice as long to dry as pine. Does not work, warps fairly quickly.	Sapwood: dirty white. Heartwood: yellowish brown to reddish brown. discolored over time.	Contains a large amount of resin, pronounced resin smell.	32%	
Tap	Loess, silt, light clay, sand, loam	Sunny sites	Heathland, sand drifts, bogs, pine forests and sometimes in the dunes.	x		Max 40m	Coniferous tree/softwood	45 dbh	Medium-slow (75-80 years)	*Pinus sylvestris*	Scots pine		C14, C18, C24, C30. Less resilient and tough than spruce and pine and therefore less suitable for long joists.	III: Sapwood very nondurable.	x	x	Frames, door, floors, interior, fences	Disadvantage compared to silver fir and spruce is the strong perspiration of resin. Easy to process.	Fresh heartwood: light brown. Sapwood: white to white-yellow. Clear difference between light-colored earlywood and thinner-colored latewood. Becomes darker over time.	High resin content creates a pleasant resin smell. Disappears over time but when old wood is newshad it smells like new again.	32%	
Lateral	All types of soil (loess, silt, peat, heavy clay, light clay, sand, loam)	Sunny, open places	Forest edges, shrublands, wooded banks, pioneer on logging plains, clearings in forests, dunes, roadsides and along railroad tracks.	x	x	20 - 30m	Deciduous tree/ hardwood	50 dbh	Fast (15-25 years) Annual growth: 15m3/ha	*Populus nigra*	Black poplar		C22. In terms of mechanical properties as strong as a spruce.	V. For indoor use it is durable but outdoors it does not last long.	x	x	Floor	Dries relatively quickly. Wear-resistant and difficult to ignite. Strange that poplar wood is hardly used in construction in NL.	Practically colourless.	Odorless, resinless.	29%	
Lateral	Loess, heavy clay, light clay, loam	Semi-shaded to shaded sites	Coniferous forests.			Max 45m	Coniferous tree/softwood	50 dbh	Medium-fast (40-60 years)	*Picea abies*	European spruce		C14, C18, C24, C30	IV. Unlike other woods, spruce sapwood is considered equivalent (in durability and other properties) to heartwood for most applications after drying. Not to be used outdoors untreated.	x	x	Frames, doors, staircases, floors, interior, furniture, foundation pole, façade	Easy to process	Almost white to pale yellow-brown. Freshly sawn almost white. Yellow-brown due to exposure to light and air. 1-6cm of sapwood.	Resinous but lacking the distinctive resin smell found in pine.	32%	
Tap	All types of soil (loess, silt, peat, heavy clay, light clay, sand, loam)	Sunny to semi-shaded sites	Coniferous forests.	x (established)		Max 50m	Coniferous tree/softwood	60-80 dbh	Medium (75 years) Annual growth: 12,5m3/ha	*Pseudotsuga menziesii*	Douglas fir		C14, C18, C24, C30	III: Can be used outdoors untreated.	x	x	Frames, façade, interior, foundation pole	Fir is known for laying down a consistently high proportion of strong, dense summerwood, which is what makes it such a good structural timber.	Heartwood is light red, to brownish red. Sapwood is light yellow. Yearrings are well defined. 1-2 cm of sapwood.	Relatively resinous.	32%	
Tap	Loess, silt, light clay, sand, loam	Sunny to semi-shaded sites	Deciduous forests, forest edges, hedgerows, on the heads of old river dunes, drifting sands, heathland and calcareous places in the dunes.	x		15-30m	Deciduous tree/ hardwood	60-70 dbh	Slow (150 years)	*Quercus robur*	Pedunculate oak		D18/D24/D30	II-III: Keeps well when dry or continuously in water.	x (CLT in development)	x	Frames, doors, floor	Steaming reduces shrinking and swelling. Wood works in one direction, can cause cracks	When fresh: yellowish white, later yellowish-red. Steamed pink to pale red. In contact with steel blue/black due to the reaction of tannic acids with the metal which will corrode.	Odorless	41%	
Heart	Loess, silt, light clay, sand, loam	Sunny to semi-shaded sites	Along streams and rivers, deciduous forests, ravine forests, hedgerows and along hollow roads and open field.	x		20-35m	Deciduous tree/ hardwood	45-60 dbh	Fast (25 years)	*Ulmus laevis*	White elm		Elm is barely inferior to oak in quality as construction or work wood.	IV	?	x	Door, staircase, furniture		Relatively high percentage of sapwood, color light yellow. Heartwood color light brown to dull dark brown, sometimes with a greenish sheen.		Said to release unpleasant odor during processing.	-	
						30-45m	Deciduous tree/ hardwood	60 dbh	Medium	*Abies alba*	Silver fir		C14, C18, C24, C30	IV. Little resistance to insect attacks. Susceptable to blue mold.	x	x	Frames, door, staircases		Yellow to grayish white. Contains many knots and coarse yearrings.	Little resin, no characteristic odor.	32%	
						15-25m	Deciduous tree/ hardwood	40-60 dbh	Medium (60 years) Annual growth: 14-17 m3/ha	*Castanea sativa*	Sweet chestnut		D24	II: High tannic acid content accelerates corrosion of metals but allows untreated outdoor application.	x (CLT in development)	x	Frame, Door, furniture, façade, roof, floor	Easier to process than oak	Light brown to dark brown. Resembles oak, but slightly lighter, with beautifull grain. Little sapwood.	-	-	
						25-30m	Deciduous tree/ hardwood	?	Fast (40 years) Annual growth: 6,4m3/ha	*Robinia pseudoacacia*	Black locust		D30	II: Known as one of the most durable woods in Europe.	x	x	Frames, door, staircases, façade		Color of the heartwood is light yellow-green to brown-green, turning golden brown after exposure to light. In sharp contrast with with the 10-20 mm wide grey-yellow sapwood.	-		53%	

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Roots	Soil	Shadow/light	Growing site	Indigenous	Pioneer tree	Height	Tree type	Target diameter (minimum)	Growth rate	Latin name	Tree species	Tree photo	Strength	Durability (heartwood)	Laminated	Solid	Other	Remarks	Sight	Smell	Teach (affinity relative to palm)	Wood photo
Lateral	All types of soil (loess, silt, peat, heavy clay, light clay, sand, loam)	Sunny to semi-shaded sites	Deciduous forests, hillside forests, calcareous forests, wooded banks, hedges, shrublands, along roads and stream banks.	x		15-20m	Deciduous tree/ hardwood	45 dbh	Medium	*Carpinus betulus*	European hornbeam											
Lateral	Loess, silt, light clay, sand, loam	Sunny sites	Dune forests, riparian forests along large rivers, forest edges, shrublands and roadsides.	x	x	15-20m	Deciduous tree/ hardwood	50 dbh	Fast (15-25 years) Annual growth: 15m3/ha	*Populus alba*	Silver poplar											
Heart	Loess, silt, heavy clay, light clay, sand, loam	Sunny to semi-shaded sites	Along roads, along ditches in meadows, along rivers, wet marshes, pocket forests, willows and wet forest edges.	x	x	15-25m	Deciduous tree/ hardwood	100 dbh	Fast (25 years)	*Salix alba*	White willow											
Lateral	Loess, silt, peat, sand, loam	Sunny to semi-shaded sites	Deciduous forests, coniferous forests, marsh forests, forest edges, wooded banks, logging plains, heathland, along fens, dry dune slopes, inner dune edges, wasteland and in large cavities of decayed walls.	x	x	Max 30m	Deciduous tree/ hardwood	45 dbh	Medium (50-60 years) Annual growth: 8-15m3/ha	*Betula pendula*	Silver Birch		?	V	x		Floor tiles	Untreated not suitable as construction wood, decays too quickly in moist air	White, silverish, with little difference between heartwood and sapwood	-	42%	
Heart	Loess, silt, light clay, sand, loam	Shaded sites	Deciduous forests, parks and dune forests.	x		20-30m	Deciduous tree/ hardwood	60 dbh	Medium-slow (50-80 years)	*Fagus sylvatica*	European beech		D35, D40	V	x	x	Threshold, stairs, floor	Very good to glue. Expands a lot in contact with water. Not to be used outdoors.	Heartwood whitish to light brown. Steamed is pink to light red.	-	41%	
Tap	Loess, heavy clay, light clay, loam	Sunny to semi-shaded sites	Deciduous forests, dune forests and scrubland.	x		Max 40m	Deciduous tree/ hardwood	60 dbh	Medium (60 years) Annual growth: 6,4m3/ha	*Fraxinus excelsior*	European ash		D40	V	x (CLT in development)	x	Roof, doors, staircases, floor	Heavy, hard but excellent to work with. Highly underrated in construction, grows fast, is hard and has beautiful markings.	Very broad sapwood, contrasting with the brownish heartwood. White to creamy white color. Uniform texture. Light yellow exposed to daylight Nice grain with beautiful markings.	-	39%	
Tap	Loess, silt, light clay, sand, loam	Sunny	Coniferous forests.			25-45m	Coniferous tree/softwood	50 dbh	Fast (40 years) Annual growth: 10,5m3/ha	*Larix decidua*	European larch		C14, C18, C24, C30: Similar in properties to pine but heavier, harder and stronger.	II-III: One of the most durable coniferous tree species in Europe. Larch sapwood is less susceptible to blue mold than spruce sapwood and much less so than pine sapwood. Can be used outdoors untreated.	x	x	Frames, façade, interior, staircases and roofhouses, foundation pole	Larch wood ranks above pine in utility value, but below that of larch, Douglas fir and pinus. Takes twice as long to dry as pine. Does not work, warps fairly quickly.	Sapwood: dirty white. Heartwood: yellowish brown to reddish brown. discolored over time.	Contains a large amount of resin, pronounced resin smell.	32%	
Tap	Loess, silt, light clay, sand, loam	Sunny sites	Heathland, sand drifts, bogs, pine forests and sometimes in the dunes.	x		Max 40m	Coniferous tree/softwood	45 dbh	Medium-slow (75-80 years)	*Pinus sylvestris*	Scots pine		C14, C18, C24, C30: Less resilient and tough than spruce and pine and therefore less suitable for long joists.	III: Sapwood very nondurable.	x	x	Frames, door, floors, interior, fences	Disadvantage compared to silver fir and spruce is the strong perspiration of resin. Easy to process.	Fresh heartwood: light brown. Sapwood: white to white-yellow. Clear difference between light-colored earlywood and thinner-colored latewood. Becomes darker over time.	High resin content creates a pleasant resin smell. Disappears over time but when old wood is newshad it smells like new again.	32%	
Lateral	All types of soil (loess, silt, peat, heavy clay, light clay, sand, loam)	Sunny, open places	Forest edges, shrublands, wooded banks, pioneer on logging plains, clearings in forests, dunes, roadsides and along railroad tracks.	x	x	20 - 30m	Deciduous tree/ hardwood	50 dbh	Fast (15-25 years) Annual growth: 15m3/ha	*Populus nigra*	Black poplar		C22. In terms of mechanical properties as strong as a spruce.	V. For indoor use it is durable but outdoors it does not last long.	x	x	Floor	Dries relatively quickly. Wear-resistant and difficult to ignite. Strange that poplar wood is hardly used in construction in NL.	Practically colourless.	Odorless, resinless.	29%	
Lateral	Loess, heavy clay, light clay, loam	Semi-shaded to shaded sites	Coniferous forests.			Max 45m	Coniferous tree/softwood	50 dbh	Medium-fast (40-60 years)	*Picea abies*	European spruce		C14, C18, C24, C30	IV. Unlike other woods, spruce sapwood is considered equivalent (in durability and other properties) to heartwood for most applications after drying. Not to be used outdoors untreated.	x	x	Frames, doors, staircases, floors, interior, furniture, foundation pole, façade	Easy to process	Almost white to pale yellow-brown. Freshly sawn almost white. Yellow-brown due to exposure to light and air. 1-6cm of sapwood.	Resinous but lacking the distinctive resin smell found in pine.	32%	
Tap	All types of soil (loess, silt, peat, heavy clay, light clay, sand, loam)	Sunny to semi-shaded sites	Coniferous forests.	x (established)		Max 50m	Coniferous tree/softwood	60-80 dbh	Medium (75 years) Annual growth: 125m3/ha	*Pseudotsuga menziesii*	Douglas fir		C14, C18, C24, C30	III: Can be used outdoors untreated.	x	x	Frames, façade, interior, foundation pole	Fir is known for laying down a consistently high proportion of strong, dense summerwood, which is what makes it such a good structural timber.	Heartwood is light red, to brownish red. Sapwood is light yellow. Yearrings are well defined. 1-2 cm of sapwood.	Relatively resinous.	32%	
Tap	Loess, silt, light clay, sand, loam	Sunny to semi-shaded sites	Deciduous forests, forest edges, hedgerows, on the heads of old river dunes, drifting sands, heathland and calcareous places in the dunes.	x		15-30m	Deciduous tree/ hardwood	60-70 dbh	Slow (150 years)	*Quercus robur*	Pedunculate oak		D18/D24/D30	II-III: Keeps well when dry or continuously in water.	x (CLT in development)	x	Frames, doors, floor	Steaming reduces shrinking and swelling. Wood works in one direction, can cause cracks	When fresh: yellowish white, later yellowish-red. Steamed pink to pale red. In contact with steel blue/black due to the reaction of tannic acids with the metal which will corrode.	Odorless	41%	
Heart	Loess, silt, light clay, sand, loam	Sunny to semi-shaded sites	Along streams and rivers, deciduous forests, ravine forests, hedgerows and along hollow roads and open field.	x		20-35m	Deciduous tree/ hardwood	45-60 dbh	Fast (25 years)	*Ulmus laevis*	White elm		Elm is barely inferior to oak in quality as construction or work wood.	IV	?	x	Door, staircase, furniture		Relatively high percentage of sapwood, color light yellow. Heartwood color light brown to dull dark brown, sometimes with a greenish sheen.	Said to release unpleasant odor during processing.	-	
						30-45m	Deciduous tree/ hardwood	60 dbh	Medium	*Abies alba*	Silver fir		C14, C18, C24, C30	IV. Little resistance to insect attacks. Susceptable to blue mold.	x	x	Frames, door, staircases		Yellow to grayish white. Contains many knots and coarse yearrings.	Little resin, no characteristic odor.	32%	
						15-25m	Deciduous tree/ hardwood	40-60 dbh	Medium (60 years) Annual growth: 14-17 m3/ha	*Castanea sativa*	Sweet chestnut		D24	II: High tannic acid content accelerates corrosion of metals but allows untreated outdoor application.	x (CLT in development)	x	Frame, Door, furniture, façade, roof, floor	Easier to process than oak	Light brown to dark brown. Resembles oak, but slightly lighter, with beautifull grain. Little sapwood.	-	-	
						25-30m	Deciduous tree/ hardwood	?	Fast (40 years) Annual growth: 6,4m3/ha	*Robinia pseudoacacia*	Black locust		D30	II: Known as one of the most durable woods in Europe.	x	x	Frames, door, staircases, façade		Color of the heartwood is light yellow-green to brown-green, turning golden brown after exposure to light. In sharp contrast with with the 10-20 mm wide gray-yellow sapwood.	-	53%	

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Oak *(Quercus robur)*

Yael →

← Mathilde

Roots	Soil	Shadow/light	Growing site	Indigenous	Pioneer tree	Height	Tree type	Target diameter (minimum)	Growth rate	Latin name	Tree species	Tree photo	Strength	Durability (heartwood)	Laminated	Solid	Other	Remarks	Sight	Smell	Teach (affinity relative to palm)	Wood photo
Lateral	All types of soil (loess, silt, peat, heavy clay, light clay, sand, loam)	Sunny to semi-shaded sites	Deciduous forests, hillside forests, calcareous forests, wooded banks, hedges, shrublands, along roads and stream banks.	x		15-20m	Deciduous tree/ hardwood	45 dbh	Medium	*Carpinus betulus*	European hornbeam											
Lateral	Loess, silt, light clay, sand, loam	Sunny sites	Dune forests, riparian forests along large rivers, forest edges, shrublands and roadsides.	x	x	15-20m	Deciduous tree/ hardwood	50 dbh	Fast (15-25 years) Annual growth: 15m3/ha	*Populus alba*	Silver poplar											
Heart	Loess, silt, heavy clay, light clay, sand, loam	Sunny to semi-shaded sites	Along roads, along ditches in meadows, along rivers, wet marshes, pocket forests, willows and wet forest edges.	x	x	15-25m	Deciduous tree/ hardwood	100 dbh	Fast (25 years)	*Salix alba*	White willow											
Lateral	Loess, silt, peat, sand, loam	Sunny to semi-shaded sites	Deciduous forests, coniferous forests, marsh forests, forest edges, wooded banks, logging plains, heathland, along fens, dry dune slopes, inner dune edges, wasteland and in large cavities of decayed walls.	x	x	Max 30m	Deciduous tree/ hardwood	45 dbh	Medium (50-60 years) Annual growth: 8-15m3/ha	*Betula pendula*	Silver Birch		?	V	x		Floor tiles	Untreated not suitable as construction wood, decays too quickly in moist air	White, silverish, with little difference between heartwood and sapwood	-	42%	
Heart	Loess, silt, light clay, sand, loam	Shaded sites	Deciduous forests, parks and dune forests.	x		20-30m	Deciduous tree/ hardwood	60 dbh	Medium-slow (50-80 years)	*Fagus sylvatica*	European beech		D35, D40	V	x	x	Threshold, stairs, floor	Very good to glue. Expands a lot in contact with water. Not to be used outdoors.	Heartwood whitish to light brown. Steamed is pink to light red.	-	41%	
Tap	Loess, heavy clay, light clay, loam	Sunny to semi-shaded sites	Deciduous forests, dune forests and scrubland.	x		Max 40m	Deciduous tree/ hardwood	60 dbh	Medium (60 years) Annual growth: 6,4m3/ha	*Fraxinus excelsior*	European ash		D40	V	x (CLT in development)	x	Roof, doors, staircases, floor	Heavy, hard but excellent to work with. Highly underrated in construction, grows fast, is hard and has beautiful markings.	Very broad sapwood, contrasting with the brownish heartwood. White to creamy white color. Uniform texture. Light yellow exposed to daylight Nice grain with beautiful markings.	-	39%	
Tap	Loess, silt, light clay, sand, loam	Sunny	Coniferous forests.			25-45m	Coniferous tree/softwood	50 dbh	Fast (40 years) Annual growth: 10,5m3/ha	*Larix decidua*	European larch		C14, C18, C24, C30. Similar in properties to pine but heavier, harder and stronger.	II-III: One of the most durable coniferous tree species in Europe. Larch sapwood is less susceptible to blue mold than spruce sapwood and much less so than pine sapwood. Can be used outdoors untreated.	x	x	Frames, façade, interior, staircases and roofhouses, foundation pole	Larch wood ranks above pine in utility value, but below that of larch, Douglas fir and pinus. Takes twice as long to dry as pine. Does not work, warps fairly quickly.	Sapwood: dirty white. Heartwood: yellowish brown to reddish brown. discolored over time.	Contains a large amount of resin, pronounced resin smell.	32%	
Tap	Loess, silt, light clay, sand, loam	Sunny sites	Heathland, sand drifts, bogs, pine forests and sometimes in the dunes.	x		Max 40m	Coniferous tree/softwood	45 dbh	Medium-slow (75-80 years)	*Pinus sylvestris*	Scots pine		C14, C18, C24, C30. Less resilient and tough than spruce and pine and therefore less suitable for long joists.	III: Sapwood very nondurable.	x	x	Frames, door, floors, interior, fences	Disadvantage compared to silver fir and spruce is the strong perspiration of resin. Easy to process.	Fresh heartwood: light brown. Sapwood: white to white-yellow. Clear difference between light-colored early wood and thinner-colored latewood. Becomes darker over time.	High resin content creates a pleasant resin smell. Disappears over time but when old wood is newshad it smells like new again.	32%	
Lateral	All types of soil (loess, silt, peat, heavy clay, light clay, sand, loam)	Sunny, open places	Forest edges, shrublands, wooded banks, pioneer on logging plains, clearings in forests, dunes, roadsides and along railroad tracks.	x	x	20 - 30m	Deciduous tree/ hardwood	50 dbh	Fast (15-25 years) Annual growth: 15m3/ha	*Populus nigra*	Black poplar		C22. In terms of mechanical properties as strong as a spruce.	V. For indoor use it is durable but outdoors it does not last long.	x	x	Floor	Dries relatively quickly. Wear-resistant and difficult to ignite. Strange that poplar wood is hardly used in construction in NL.	Practically colourless.	Odorless, resinless.	29%	
Lateral	Loess, heavy clay, light clay, loam	Semi-shaded to shaded sites	Coniferous forests.			Max 45m	Coniferous tree/softwood	50 dbh	Medium-fast (40-60 years)	*Picea abies*	European spruce		C14, C18, C24, C30	IV. Unlike other woods, spruce sapwood is considered equivalent (in durability and other properties) to heartwood for most applications after drying. Not to be used outdoors untreated.	x	x	Frames, doors, staircases, floors, interior, furniture, foundation pole, façade	Easy to process	Almost white to pale yellow-brown. Freshly sawn almost white. Yellow-brown due to exposure to light and air. 1-6cm of sapwood.	Resinous but lacking the distinctive resin smell found in pine.	32%	
Tap	All types of soil (loess, silt, peat, heavy clay, light clay, sand, loam)	Sunny to semi-shaded sites	Coniferous forests.	x (established)		Max 50m	Coniferous tree/softwood	60-80 dbh	Medium (75 years) Annual growth: 12m3/ha	*Pseudotsuga menziesii*	Douglas fir		C14, C18, C24, C30	III: Can be used outdoors untreated.	x	x	Frames, façade, interior, foundation pole	Fir is known for laying down a consistently high proportion of strong, dense summerwood, which is what makes it such a good structural timber.	Heartwood is light red, to brownish red. Sapwood is light yellow. Yearrings are well defined. 1-2 cm of sapwood.	Relatively resinous.	32%	
Tap	Loess, silt, light clay, sand, loam	Sunny to semi-shaded sites	Deciduous forests, forest edges, hedgerows, on the heads of old river dunes, drifting sands, heathland and calcareous places in the dunes.	x		15-30m	Deciduous tree/ hardwood	60-70 dbh	Slow (150 years)	*Quercus robur*	Pedunculate oak		D18/D24/D30	II-III: Keeps well when dry or continuously in water.	x (CLT in development)	x	Frames, doors, floor	Steaming reduces shrinking and swelling. Wood works in one direction, can cause cracks	When fresh: yellowish white, later yellowish-red. Steamed pink to pale red. In contact with steel blue/black due to the reaction of tannic acids with the metal which will corrode.	Odorless	41%	
Heart	Loess, silt, light clay, sand, loam	Sunny to semi-shaded sites	Along streams and rivers, deciduous forests, ravine forests, hedgerows and along hollow roads and open field.	x		20-35m	Deciduous tree/ hardwood	45-60 dbh	Fast (25 years)	*Ulmus laevis*	White elm		Elm is barely inferior to oak in quality as construction or work wood.	IV	?	x	Door, staircase, furniture		Relatively high percentage of sapwood, color light yellow. Heartwood color light brown to dull dark brown, sometimes with a greenish sheen.	Said to release unpleasant odor during processing.	-	
						30-45m	Deciduous tree/ hardwood	60 dbh	Medium	*Abies alba*	Silver fir		C14, C18, C24, C30	IV. Little resistance to insect attacks. Susceptable to blue mold.	x	x	Frames, door, staircases		Yellow to grayish white. Contains many knots and coarse yearrings.	Little resin, no characteristic odor.	32%	
						15-25m	Deciduous tree/ hardwood	40-60 dbh	Medium (60 years) Annual growth: 14-17 m3/ha	*Castanea sativa*	Sweet chestnut		D24	II: High tannic acid content accelerates corrosion of metals but allows untreated outdoor application.	x (CLT in development)	x	Frame, Door, furniture, façade, roof, floor	Easier to process than oak	Light brown to dark brown. Resembles oak, but slightly lighter, with beautifull grain. Little sapwood.	-	-	
						25-30m	Deciduous tree/ hardwood	?	Fast (40 years) Annual growth: 6,4m3/ha	*Robinia pseudoacacia*	Black locust		D30	II: Known as one of the most durable woods in Europe.	x	x	Frames, door, staircases, façade		Color of the heartwood is light yellow-green to brown-green, turning golden brown after exposure to light. In sharp contrast with with the 10-20 mm wide gray-yellow sapwood.	-	53%	

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Douglas fir *(Pseudotsuga menziesii)*

Yael ⟶

⟵ Mathilde

Roots	Soil	Shadow/light	Growing site	Indigenous	Pioneer tree	Height	Tree type	Target diameter (minimum)	Growth rate	Latin name	Tree species	Tree photo	Strength	Durability (heartwood)	Laminated	Solid	Other	Remarks	Sight	Smell	Teach (affinity relative to palm)	Wood photo
Lateral	All types of soil (loess, silt, peat, heavy clay, light clay, sand, loam)	Sunny to semi-shaded sites	Deciduous forests, hillside forests, calcareous forests, wooded banks, hedges, shrublands, along roads and stream banks.	x		15-20m	Deciduous tree/ hardwood	45 dbh	Medium	*Carpinus betulus*	European hornbeam											
Lateral	Loess, silt, light clay, sand, loam	Sunny sites	Dune forests, riparian forests along large rivers, forest edges, shrublands and roadsides.	x	x	15-20m	Deciduous tree/ hardwood	50 dbh	Fast (15-25 years) Annual growth: 15m3/ha	*Populus alba*	Silver poplar											
Heart	Loess, silt, heavy clay, light clay, sand, loam	Sunny to semi-shaded sites	Along roads, along ditches in meadows, along rivers, wet marshes, pocket forests, willows and wet forest edges.	x	x	15-25m	Deciduous tree/ hardwood	100 dbh	Fast (25 years)	*Salix alba*	White willow											
Lateral	Loess, silt, peat, sand, loam	Sunny to semi-shaded sites	Deciduous forests, coniferous forests, marsh forests, forest edges, wooded banks, logging plains, heathland, along fens, dry dune slopes, inner dune edges, wasteland and in large cavities of decayed walls.	x	x	Max 30m	Deciduous tree/ hardwood	45 dbh	Medium (50-60 years) Annual growth: 8-15m3/ha	*Betula pendula*	Silver Birch		?	V	x		Floor tiles	Untreated not suitable as construction wood, decays too quickly in moist air	White, silverish, with little difference between heartwood and sapwood	-	42%	
Heart	Loess, silt, light clay, sand, loam	Shaded sites	Deciduous forests, parks and dune forests.	x		20-30m	Deciduous tree/ hardwood	60 dbh	Medium-slow (50-80 years)	*Fagus sylvatica*	European beech		D35, D40	V	x	x	Threshold, stairs, floor	Very good to glue. Expands a bit in contact with water. Not to be used outdoors.	Heartwood whitish to light brown. Steamed is pink to light red.	-	41%	
Tap	Loess, heavy clay, light clay, loam	Sunny to semi-shaded sites	Deciduous forests, dune forests and scrubland.	x		Max 40m	Deciduous tree/ hardwood	60 dbh	Medium (60 years) Annual growth: 8,4m3/ha	*Fraxinus excelsior*	European ash		D40	V	x (CLT in development)	x	Roof, doors, staircases, floor	Heavy, hard but excellent to work with. Highly underrated in construction, grows fast, is hard and has beautiful markings.	Very broad sapwood, contrasting with the brownish heartwood. White to creamy white color. Uniform texture. Light yellow exposed to daylight Nice grain with beautiful markings.	-	39%	
Tap	Loess, silt, light clay, sand, loam	Sunny	Coniferous forests.			25-45m	Coniferous tree/softwood	50 dbh	Fast (40 years) Annual growth: 10,5m3/ha	*Larix decidua*	European larch		C14, C18, C24, C30: Similar in properties to pine but heavier, harder and stronger.	II-III: One of the most durable coniferous tree species in Europe. Larch sapwood is less susceptible to blue mold than spruce sapwood and much less so than pine sapwood. Can be used outdoors untreated.	x	x	Frames, façade, interior, staircases and roofhouses, foundation pole	Larch wood ranks above pine in utility value, but below that of larch, Douglas fir and pinus. Takes twice as long to dry as pine. Does not work, warps fairly quickly.	Sapwood: dirty white. Heartwood: yellowish brown to reddish brown. discolored over time.	Contains a large amount of resin, pronounced resin smell.	32%	
Tap	Loess, silt, light clay, sand, loam	Sunny sites	Heathland, sand drifts, bogs, pine forests and sometimes in the dunes.	x		Max 40m	Coniferous tree/softwood	45 dbh	Medium-slow (75-80 years)	*Pinus sylvestris*	Scots pine		C14, C18, C24, C30: Less resilient and tough than spruce and pine and therefore less suitable for long joists.	III: Sapwood very nondurable.	x	x	Frames, door, floors, interior, fences	Disadvantage compared to silver fir and spruce is the strong perspiration of resin. Easy to process.	Fresh heartwood: light brown. Sapwood: white to white-yellow. Clear difference between light-colored earlywood and thinner-colored latewood. Becomes darker over time.	High resin content creates a pleasant resin smell. Disappears over time but when old wood is newshad it smells like new again.	32%	
Lateral	All types of soil (loess, silt, peat, heavy clay, light clay, sand, loam)	Sunny, open places	Forest edges, shrublands, wooded banks, pioneer on logging plains, clearings in forests, dunes, roadsides and along railroad tracks.	x	x	20 - 30m	Deciduous tree/ hardwood	50 dbh	Fast (15-25 years) Annual growth: 15m3/ha	*Populus nigra*	Black poplar		C22. In terms of mechanical properties as strong as a spruce.	V. For indoor use it is durable but outdoors it does not last long.	x	x	Floor	Dries relatively quickly. Wear-resistant and difficult to ignite. Strange that poplar wood is hardly used in construction in NL.	Practically colourless.	Odorless, resinless.	29%	
Lateral	Loess, heavy clay, light clay, loam	Semi-shaded to shaded sites	Coniferous forests.			Max 45m	Coniferous tree/softwood	50 dbh	Medium-fast (40-60 years)	*Picea abies*	European spruce		C14, C18, C24, C30	IV. Unlike other woods, spruce sapwood is considered equivalent (in durability and other properties) to heartwood for most applications after drying. Not to be used outdoors untreated.	x	x	Frames, doors, staircases, floors, interior, furniture, foundation pole, façade	Easy to process	Almost white to pale yellow-brown. Freshly sawn almost white. Yellow-brown due to exposure to light and air. 1-6cm of sapwood.	Resinous but lacking the distinctive resin smell found in pine.	32%	
Tap	All types of soil (loess, silt, peat, heavy clay, light clay, sand, loam)	Sunny to semi-shaded sites	Coniferous forests.	x (established)		Max 50m	Coniferous tree/softwood	60-80 dbh	Medium (75 years) Annual growth: 125m3/ha	*Pseudotsuga menziesii*	Douglas fir		C14, C18, C24, C30	III: Can be used outdoors untreated.	x	x	Frames, façade, interior, foundation pole	Fir is known for laying down a consistently high proportion of strong, dense summerwood, which is what makes it such a good structural timber.	Heartwood is light red, to brownish red. Sapwood is light yellow. Yearrings are well defined. 1-2 cm of sapwood.	Relatively resinous.	32%	
Tap	Loess, silt, light clay, sand, loam	Sunny to semi-shaded sites	Deciduous forests, forest edges, hedgerows, on the heads of old river dunes, drifting sands, heathland and calcareous places in the dunes.	x		15-30m	Deciduous tree/ hardwood	60-70 dbh	Slow (150 years)	*Quercus robur*	Pedunculate oak		D18/D24/D30	II-III: Keeps well when dry or continuously in water.	x (CLT in development)	x	Frames, doors, floor	Steaming reduces shrinking and swelling. Wood works in one direction, can cause cracks	When fresh: yellowish white, later yellowish-red. Steamed pink to pale red. In contact with steel blue/black due to the reaction of tannic acids with the metal which will corrode.	Odorless	41%	
Heart	Loess, silt, light clay, sand, loam	Sunny to semi-shaded sites	Along streams and rivers, deciduous forests, ravine forests, hedgerows and along hollow roads and open field.	x		20-35m	Deciduous tree/ hardwood	45-60 dbh	Fast (25 years)	*Ulmus laevis*	White elm		Elm is barely inferior to oak in quality as construction or work wood.	IV	?	x	Door, staircase, furniture		Relatively high percentage of sapwood, color light yellow. Heartwood color light brown to dull dark brown, sometimes with a greenish sheen.	Said to release unpleasant odor during processing.	-	
						30-45m	Deciduous tree/ hardwood	60 dbh	Medium	*Abies alba*	Silver fir		C14, C18, C24, C30	IV. Little resistance to insect attacks. Susceptable to blue mold.	x	x	Frames, door, staircases		Yellow to grayish white. Contains many knots and coarse yearrings.	Little resin, no characteristic odor.	32%	
						15-25m	Deciduous tree/ hardwood	40-60 dbh	Medium (60 years) Annual growth: 14-17 m3/ha	*Castanea sativa*	Sweet chestnut		D24	II: High tannic acid content accelerates corrosion of metals but allows untreated outdoor application.	x (CLT in development)	x	Frame, Door, furniture, façade, roof, floor	Easier to process than oak	Light brown to dark brown. Resembles oak, but slightly lighter, with beautifull grain. Little sapwood.	-	-	
						25-30m	Deciduous tree/ hardwood	?	Fast (40 years) Annual growth: 9,4m3/ha	*Robinia pseudoacacia*	Black locust		D30	II: Known as one of the most durable woods in Europe.	x	x	Frames, door, staircases, façade		Color of the heartwood is light yellow-green to brown-green, turning golden brown after exposure to light. In sharp contrast with with the 10-20 mm wide gray-yellow sapwood.	-	53%	

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Scots pine *(Pinus sylvestris)*

Yael →

Roots	Soil	Shadow/light	Growing site	Indigenous	Pioneer tree	Height	Tree type	Target diameter (minimum)	Growth rate	Latin name	Tree species	Tree photo	Strength	Durability (heartwood)	Laminated	Solid	Other	Remarks	Sight	Smell	Teach (affinity relative to palm)	Wood photo
Lateral	All types of soil (loess, silt, peat, heavy clay, light clay, sand, loam)	Sunny to semi-shaded sites	Deciduous forests, hillside forests, calcareous forests, wooded banks, hedges, shrublands, along roads and stream banks.	x		15-20m	Deciduous tree/ hardwood	45 dbh	Medium	*Carpinus betulus*	European hornbeam											
Lateral	Loess, silt, light clay, sand, loam	Sunny sites	Dune forests, riparian forests along large rivers, forest edges, shrublands and roadsides.	x	x	15-20m	Deciduous tree/ hardwood	50 dbh	Fast (15-25 years) Annual growth: 15m3/ha	*Populus alba*	Silver poplar											
Heart	Loess, silt, heavy clay, light clay, sand, loam	Sunny to semi-shaded sites	Along roads, along ditches in meadows, along rivers, wet marshes, pocket forests, willows and wet forest edges.	x	x	15-25m	Deciduous tree/ hardwood	100 dbh	Fast (25 years)	*Salix alba*	White willow											
Lateral	Loess, silt, peat, sand, loam	Sunny to semi-shaded sites	Deciduous forests, coniferous forests, marsh forests, forest edges, wooded banks, logging plains, heathland, along fens, dry dune slopes, inner dune edges, wasteland and in large cavities of decayed walls.	x	x	Max 30m	Deciduous tree/ hardwood	45 dbh	Medium (50-60 years) Annual growth: 8-15m3/ha	*Betula pendula*	Silver Birch		?	V	x		Floor tiles	Untreated not suitable as construction wood, decays too quickly in moist air	White, silverish, with little difference between heartwood and sapwood	-	42%	
Heart	Loess, silt, light clay, sand, loam	Shaded sites	Deciduous forests, parks and dune forests.	x		20-30m	Deciduous tree/ hardwood	60 dbh	Medium-slow (50-80 years)	*Fagus sylvatica*	European beech		D35, D40	V	x	x	Threshold, stairs, floor	Very good to glue. Expands a lot in contact with water. Not to be used outdoors.	Heartwood whitish to light brown. Steamed is pink to light red.	-	41%	
Tap	Loess, heavy clay, light clay, loam	Sunny to semi-shaded sites	Deciduous forests, dune forests and scrubland.	x		Max 40m	Deciduous tree/ hardwood	60 dbh	Medium (60 years) Annual growth: 6,4m3/ha	*Fraxinus excelsior*	European ash		D40	V	x (CLT in development)	x	Roof, doors, staircases, floor	Heavy, hard but excellent to work with. Highly underrated in construction, grows fast, is hard and has beautiful markings.	Very broad sapwood, contrasting with the brownish heartwood. White to creamy white color. Uniform texture. Light yellow exposed to daylight Nice grain with beautiful markings.	-	39%	
Tap	Loess, silt, light clay, sand, loam	Sunny	Coniferous forests.			25-45m	Coniferous tree/softwood	50 dbh	Fast (40 years) Annual growth: 10,5m3/ha	*Larix decidua*	European larch		C14, C18, C24, C30: Similar in properties to pine but heavier, harder and stronger.	II-III: One of the most durable coniferous tree species in Europe. Larch sapwood is less susceptible to blue mold than spruce sapwood and much less so than pine sapwood. Can be used outdoors untreated.	x	x	Frames, façade, interior, staircases and roofhouses, foundation pole	Larch wood ranks above pine in utility value, but below that of larch, Douglas fir and pinus. Takes twice as long to dry as pine. Does not work, warps fairly quickly.	Sapwood: dirty white. Heartwood: yellowish brown to reddish brown. discolored over time.	Contains a large amount of resin, pronounced resin smell.	32%	
Tap	Loess, silt, light clay, sand, loam	Sunny sites	Heathland, sand drifts, bogs, pine forests and sometimes in the dunes.	x		Max 40m	Coniferous tree/softwood	45 dbh	Medium-slow (75-80 years)	*Pinus sylvestris*	Scots pine		C14, C18, C24, C30: Less resilient and tough than spruce and pine and therefore less suitable for long joists.	III: Sapwood very nondurable.	x	x	Frames, door, floors, interior, fences	Disadvantage compared to silver fir and spruce is the strong perspiration of resin. Easy to process.	Fresh heartwood: light brown. Sapwood: white to white-yellow. Clear difference between light-colored earlywood and thinner-colored latewood. Becomes darker over time.	High resin content creates a pleasant resin smell. Disappears over time but when old wood is newshad it smells like new again.	32%	
Lateral	All types of soil (loess, silt, peat, heavy clay, light clay, sand, loam)	Sunny, open places	Forest edges, shrublands, wooded banks, pioneer on logging plains, clearings in forests, dunes, roadsides and along railroad tracks.	x	x	20 - 30m	Deciduous tree/ hardwood	50 dbh	Fast (15-25 years) Annual growth: 15m3/ha	*Populus nigra*	Black poplar		C22. In terms of mechanical properties as strong as a spruce.	V. For indoor use it is durable but outdoors it does not last long.	x	x	Floor	Dries relatively quickly. Wear-resistant and difficult to ignite. Strange that poplar wood is hardly used in construction in NL.	Practically colourless.	Odorless, resinless.	29%	
Lateral	Loess, heavy clay, light clay, loam	Semi-shaded to shaded sites	Coniferous forests.			Max 45m	Coniferous tree/softwood	50 dbh	Medium-fast (40-60 years)	*Picea abies*	European spruce		C14, C18, C24, C30	IV. Unlike other woods, spruce sapwood is considered equivalent (in durability and other properties) to heartwood for most applications after drying. Not to be used outdoors untreated.	x	x	Frames, doors, staircases, floors, interior, furniture, foundation pole, façade	Easy to process	Almost white to pale yellow-brown. Freshly sawn almost white. Yellow-brown due to exposure to light and air. 1-6cm of sapwood.	Resinous but lacking the distinctive resin smell found in pine.	32%	
Tap	All types of soil (loess, silt, peat, heavy clay, light clay, sand, loam)	Sunny to semi-shaded sites	Coniferous forests.	x (established)		Max 50m	Coniferous tree/softwood	60-80 dbh	Medium (75 years) Annual growth: 125m3/ha	*Pseudotsuga menziesii*	Douglas fir		C14, C18, C24, C30	III: Can be used outdoors untreated.	x	x	Frames, façade, interior, foundation pole	Fir is known for laying down a consistently high proportion of strong, dense summerwood, which is what makes it such a good structural timber.	Heartwood is light red, to brownish red. Sapwood is light yellow. Yearrings are well defined. 1-2 cm of sapwood.	Relatively resinous.	32%	
Tap	Loess, silt, light clay, sand, loam	Sunny to semi-shaded sites	Deciduous forests, forest edges, hedgerows, on the heads of old river dunes, drifting sands, heathland and calcareous places in the dunes.	x		15-30m	Deciduous tree/ hardwood	60-70 dbh	Slow (150 years)	*Quercus robur*	Pedunculate oak		D18/D24/D30	II-III: Keeps well when dry or continuously in water.	x (CLT in development)	x	Frames, doors, floor	Steaming reduces shrinking and swelling. Wood works in one direction, can cause cracks	When fresh: yellowish white, later yellowish-red. Steamed pink to pale red. In contact with steel blue/black due to the reaction of tannic acids with the metal which will corrode.	Odorless	41%	
Heart	Loess, silt, light clay, sand, loam	Sunny to semi-shaded sites	Along streams and rivers, deciduous forests, ravine forests, hedgerows and along hollow roads and open field.	x		20-35m	Deciduous tree/ hardwood	45-60 dbh	Fast (25 years)	*Ulmus laevis*	White elm		Elm is barely inferior to oak in quality as construction or work wood.	IV	?	x	Door, staircase, furniture		Relatively high percentage of sapwood, color light yellow. Heartwood color light brown to dull dark brown, sometimes with a greenish sheen.	Said to release unpleasant odor during processing.	-	
						30-45m	Deciduous tree/ hardwood	60 dbh	Medium	*Abies alba*	Silver fir		C14, C18, C24, C30	IV. Little resistance to insect attacks. Susceptable to blue mold.	x	x	Frames, door, staircases		Yellow to grayish white. Contains many knots and coarse yearrings.	Little resin, no characteristic odor.	32%	
						15-25m	Deciduous tree/ hardwood	40-60 dbh	Medium (60 years) Annual growth: 14-17 m3/ha	*Castanea sativa*	Sweet chestnut		D24	II: High tannic acid content accelerates corrosion of metals but allows untreated outdoor application.	x (CLT in development)	x	Frame, Door, furniture, façade, roof, floor	Easier to process than oak	Light brown to dark brown. Resembles oak, but slightly lighter, with beautifull grain. Little sapwood.	-	-	
						25-30m	Deciduous tree/ hardwood	?	Fast (40 years) Annual growth: 9,4m3/ha	*Robinia pseudoacacia*	Black locust		D30	II: Known as one of the most durable woods in Europe.	x	x	Frames, door, staircases, façade		Color of the heartwood is light yellow-green to brown-green, turning golden brown after exposure to light. In sharp contrast with with the 10-20 mm wide gray-yellow sapwood.	-	53%	

← Mathilde

↓

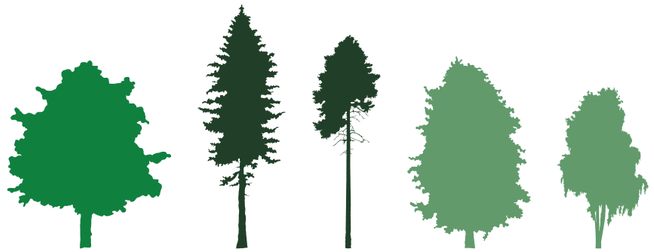


Beech *(Fagus sylvatica)*

Yael ⟶

⟵ Mathilde

Roots	Soil	Shadow/light	Growing site	Indigenous	Pioneer tree	Height	Tree type	Target diameter (minimum)	Growth rate	Latin name	Tree species	Tree photo	Strength	Durability (heartwood)	Laminated	Solid	Other	Remarks	Sight	Smell	Teach (affinity relative to palm)	Wood photo
Lateral	All types of soil (loess, silt, peat, heavy clay, light clay, sand, loam)	Sunny to semi-shaded sites	Deciduous forests, hillside forests, calcareous forests, wooded banks, hedges, shrublands, along roads and stream banks.	x		15-20m	Deciduous tree/ hardwood	45 dbh	Medium	*Carpinus betulus*	European hornbeam											
Lateral	Loess, silt, light clay, sand, loam	Sunny sites	Dune forests, riparian forests along large rivers, forest edges, shrublands and roadsides.	x	x	15-20m	Deciduous tree/ hardwood	50 dbh	Fast (15-25 years) Annual growth: 15m3/ha	*Populus alba*	Silver poplar											
Heart	Loess, silt, heavy clay, light clay, sand, loam	Sunny to semi-shaded sites	Along roads, along ditches in meadows, along rivers, wet marshes, pocket forests, willows and wet forest edges.	x	x	15-25m	Deciduous tree/ hardwood	100 dbh	Fast (25 years)	*Salix alba*	White willow											
Lateral	Loess, silt, peat, sand, loam	Sunny to semi-shaded sites	Deciduous forests, coniferous forests, marsh forests, forest edges, wooded banks, logging plains, heathland, along fens, dry dune slopes, inner dune edges, wasteland and in large cavities of decayed walls.	x	x	Max 30m	Deciduous tree/ hardwood	45 dbh	Medium (50-60 years) Annual growth: 8-15m3/ha	*Betula pendula*	Silver Birch		?	V	x		Floor tiles	Untreated not suitable as construction wood, decays too quickly in moist air	White, silverish, with little difference between heartwood and sapwood	-	42%	
Heart	Loess, silt, light clay, sand, loam	Shaded sites	Deciduous forests, parks and dune forests.	x		20-30m	Deciduous tree/ hardwood	60 dbh	Medium-slow (50-80 years)	*Fagus sylvatica*	European beech		D35, D40	V	x	x	Threshold, stairs, floor	Very good to glue. Expands a lot in contact with water. Not to be used outdoors.	Heartwood whitish to light brown. Steamed is pink to light red.	-	41%	
Tap	Loess, heavy clay, light clay, loam	Sunny to semi-shaded sites	Deciduous forests, dune forests and scrubland.	x		Max 40m	Deciduous tree/ hardwood	60 dbh	Medium (60 years) Annual growth: 8,4m3/ha	*Fraxinus excelsior*	European ash		D40	V	x (CLT in development)	x	Roof, doors, staircases, floor	Heavy, hard but excellent to work with. Highly underrated in construction, grows fast, is hard and has beautiful markings.	Very broad sapwood, contrasting with the brownish heartwood. White to creamy white color. Uniform texture. Light yellow exposed to daylight Nice grain with beautiful markings.	-	39%	
Tap	Loess, silt, light clay, sand, loam	Sunny	Coniferous forests.			25-45m	Coniferous tree/softwood	50 dbh	Fast (40 years) Annual growth: 10,5m3/ha	*Larix decidua*	European larch		C14, C18, C24, C30: Similar in properties to pine but heavier, harder and stronger.	II-III: One of the most durable coniferous tree species in Europe. Larch sapwood is less susceptible to blue mold than spruce sapwood and much less so than pine sapwood. Can be used outdoors untreated.	x	x	Frames, façade, interior, staircases and roofhouses, foundation pole	Larch wood ranks above pine in utility value, but below that of larch, Douglas fir and pinus. Takes twice as long to dry as pine. Does not work, warps fairly quickly.	Sapwood: dirty white. Heartwood: yellowish brown to reddish brown. discolored over time.	Contains a large amount of resin, pronounced resin smell.	32%	
Tap	Loess, silt, light clay, sand, loam	Sunny sites	Heathland, sand drifts, bogs, pine forests and sometimes in the dunes.	x		Max 40m	Coniferous tree/softwood	45 dbh	Medium-slow (75-80 years)	*Pinus sylvestris*	Scots pine		C14, C18, C24, C30: Less resilient and tough than spruce and pine and therefore less suitable for long joists.	III: Sapwood very nondurable.	x	x	Frames, door, floors, interior, fences	Disadvantage compared to silver fir and spruce is the strong perspiration of resin. Easy to process.	Fresh heartwood: light brown. Sapwood: white to white-yellow. Clear difference between light-colored earlywood and thinner-colored latewood. Becomes darker over time.	High resin content creates a pleasant resin smell. Disappears over time but when old wood is newshad it smells like new again.	32%	
Lateral	All types of soil (loess, silt, peat, heavy clay, light clay, sand, loam)	Sunny, open places	Forest edges, shrublands, wooded banks, pioneer on logging plains, clearings in forests, dunes, roadsides and along railroad tracks.	x	x	20 - 30m	Deciduous tree/ hardwood	50 dbh	Fast (15-25 years) Annual growth: 15m3/ha	*Populus nigra*	Black poplar		C22. In terms of mechanical properties as strong as a spruce.	V. For indoor use it is durable but outdoors it does not last long.	x	x	Floor	Dries relatively quickly. Wear-resistant and difficult to ignite. Strange that poplar wood is hardly used in construction in NL.	Practically colourless.	Odorless, resinless.	29%	
Lateral	Loess, heavy clay, light clay, loam	Semi-shaded to shaded sites	Coniferous forests.			Max 45m	Coniferous tree/softwood	50 dbh	Medium-fast (40-60 years)	*Picea abies*	European spruce		C14, C18, C24, C30	IV. Unlike other woods, spruce sapwood is considered equivalent (in durability and other properties) to heartwood for most applications after drying. Not to be used outdoors untreated.	x	x	Frames, doors, staircases, floors, interior, furniture, foundation pole, façade	Easy to process	Almost white to pale yellow-brown. Freshly sawn almost white. Yellow-brown due to exposure to light and air. 1-6cm of sapwood.	Resinous but lacking the distinctive resin smell found in pine.	32%	
Tap	All types of soil (loess, silt, peat, heavy clay, light clay, sand, loam)	Sunny to semi-shaded sites	Coniferous forests.	x (established)		Max 50m	Coniferous tree/softwood	60-80 dbh	Medium (75 years) Annual growth: 125m3/ha	*Pseudotsuga menziesii*	Douglas fir		C14, C18, C24, C30	III: Can be used outdoors untreated.	x	x	Frames, façade, interior, foundation pole	Fir is known for laying down a consistently high proportion of strong, dense summerwood, which is what makes it such a good structural timber.	Heartwood is light red, to brownish red. Sapwood is light yellow. Yearrings are well defined. 1-2 cm of sapwood.	Relatively resinous.	32%	
Tap	Loess, silt, light clay, sand, loam	Sunny to semi-shaded sites	Deciduous forests, forest edges, hedgerows, on the heads of old river dunes, drifting sands, heathland and calcareous places in the dunes.	x		15-30m	Deciduous tree/ hardwood	60-70 dbh	Slow (150 years)	*Quercus robur*	Pedunculate oak		D18/D24/D30	II-III: Keeps well when dry or continuously in water.	x (CLT in development)	x	Frames, doors, floor	Steaming reduces shrinking and swelling. Wood works in one direction, can cause cracks	When fresh: yellowish white, later yellowish-red. Steamed pink to pale red. In contact with steel blue/black due to the reaction of tannic acids with the metal which will corrode.	Odorless	41%	
Heart	Loess, silt, light clay, sand, loam	Sunny to semi-shaded sites	Along streams and rivers, deciduous forests, ravine forests, hedgerows and along hollow roads and open field.	x		20-35m	Deciduous tree/ hardwood	45-60 dbh	Fast (25 years)	*Ulmus laevis*	White elm		Elm is barely inferior to oak in quality as construction or work wood.	IV		x	Door, staircase, furniture		Relatively high percentage of sapwood, color light yellow. Heartwood color light brown to dull dark brown, sometimes with a greenish sheen.	Said to release unpleasant odor during processing.	-	
						30-45m	Deciduous tree/ hardwood	60 dbh	Medium	*Abies alba*	Silver fir		C14, C18, C24, C30	IV. Little resistance to insect attacks. Susceptable to blue mold.	x	x	Frames, door, staircases		Yellow to grayish white. Contains many knots and coarse yearrings.	Little resin, no characteristic odor.	32%	
						15-25m	Deciduous tree/ hardwood	40-60 dbh	Medium (60 years) Annual growth: 14-17 m3/ha	*Castanea sativa*	Sweet chestnut		D24	II: High tannic acid content accelerates corrosion of metals but allows untreated outdoor application.	x (CLT in development)	x	Frame, Door, furniture, façade, roof, floor	Easier to process than oak	Light brown to dark brown. Resembles oak, but slightly lighter, with beautifull grain. Little sapwood.	-	-	
						25-30m	Deciduous tree/ hardwood	?	Fast (40 years) Annual growth: 6,4m3/ha	*Robinia pseudoacacia*	Black locust		D30	II: Known as one of the most durable woods in Europe.	x	x	Frames, door, staircases, façade		Color of the heartwood is light yellow-green to brown-green, turning golden brown after exposure to light. In sharp contrast with with the 10-20 mm wide gray-yellow sapwood.	-	53%	

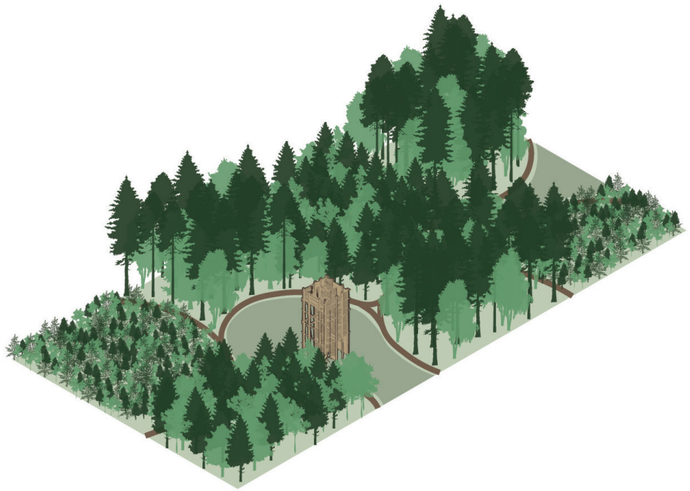


Birch *(Betula pendula)*

3 DYNAMIC PRODUCTION FORESTS



Type A: The Buffer Forest



Type B: The Wood Factory



Type C: The Clear-cut Living

TYPE A: THE BUFFER FOREST

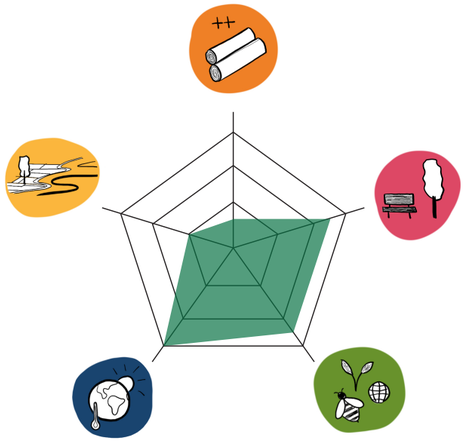


Type A: The Buffer Forest

Type B: The Wood Factory

Type C: The Clear-cut Living

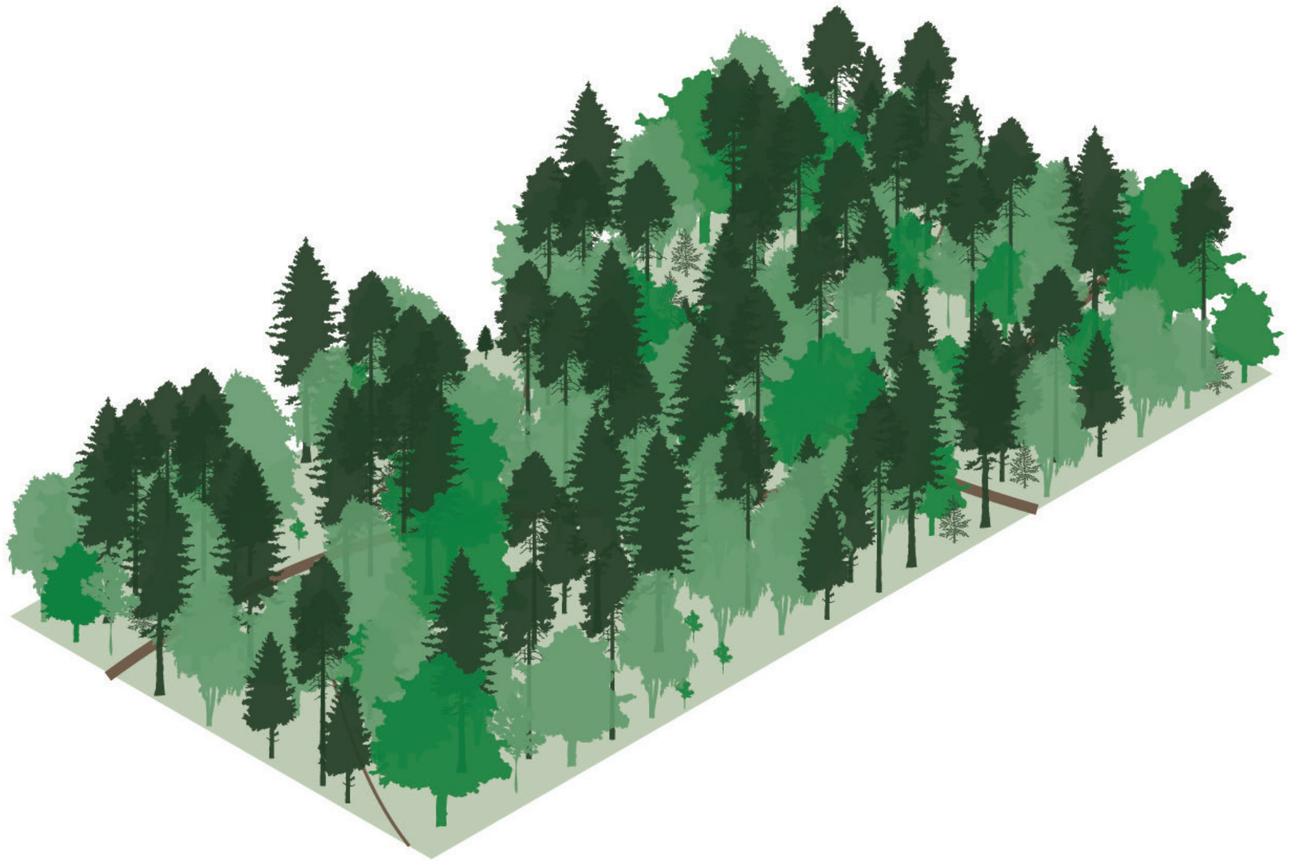
TYPE A: THE BUFFER FOREST







sand clay peat

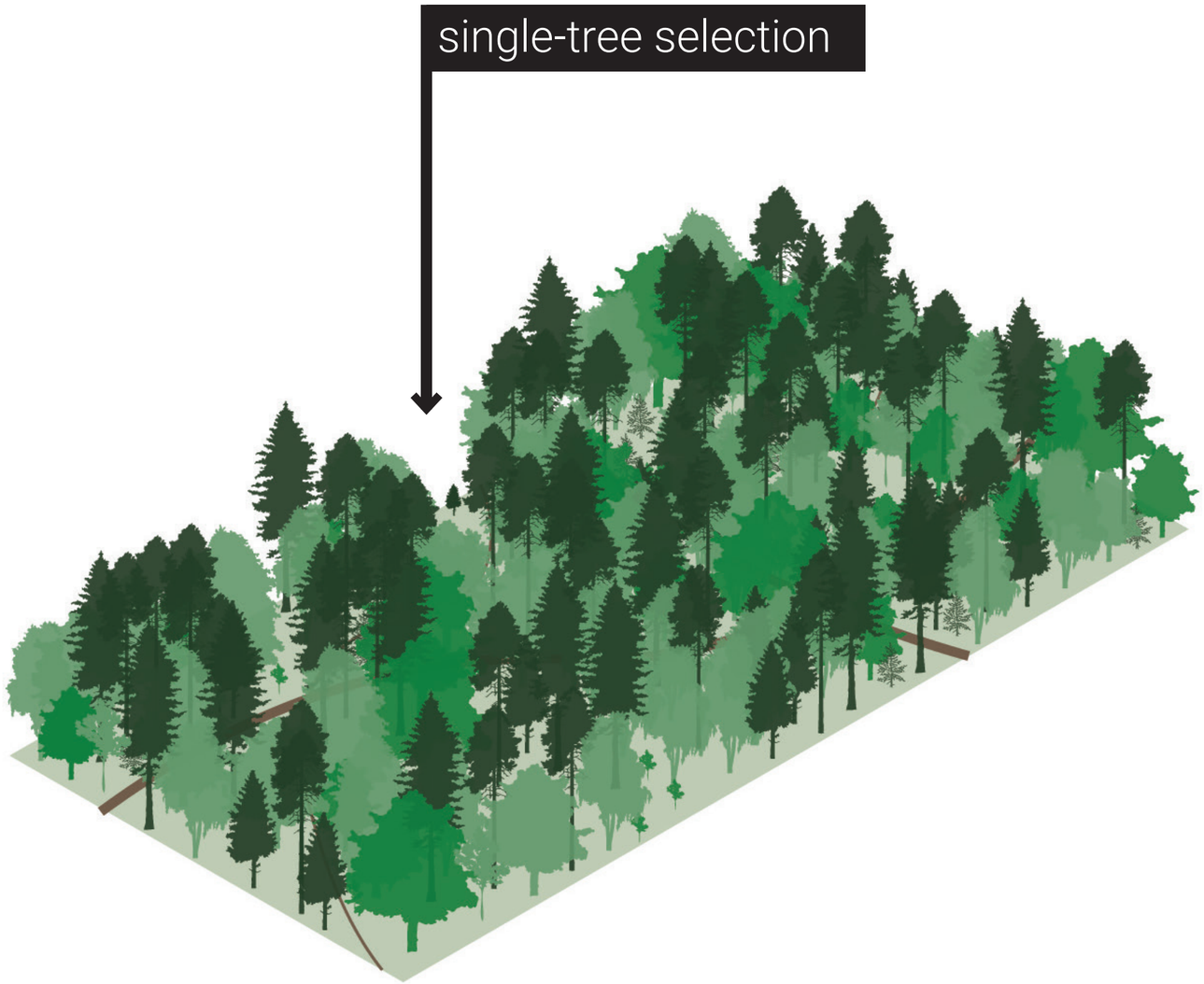


MANAGEMENT

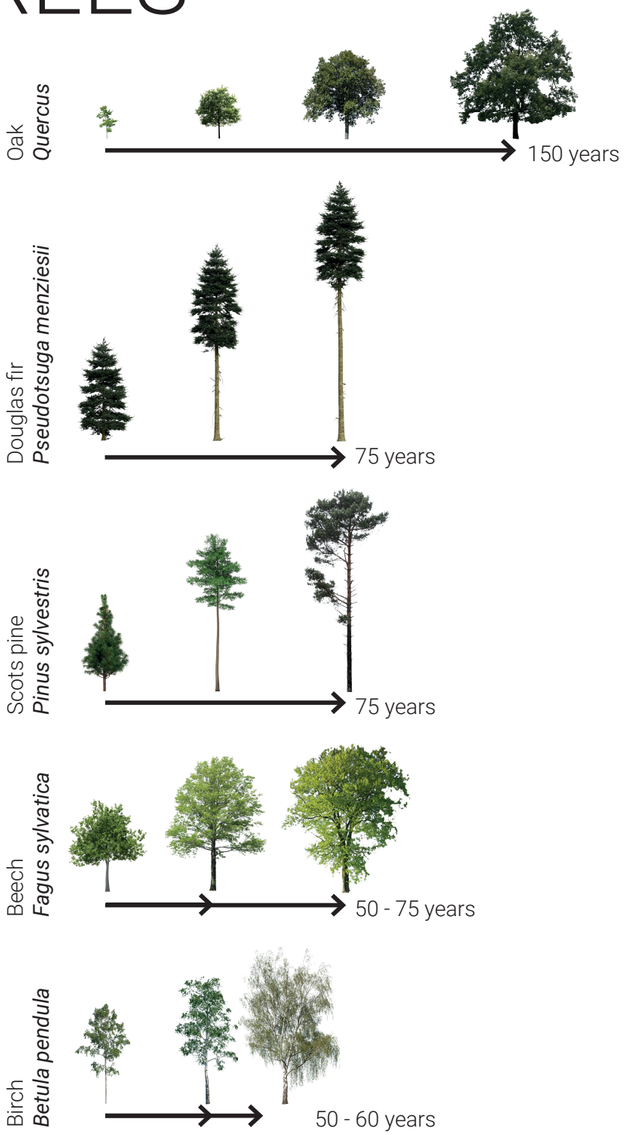




sand clay peat



TREES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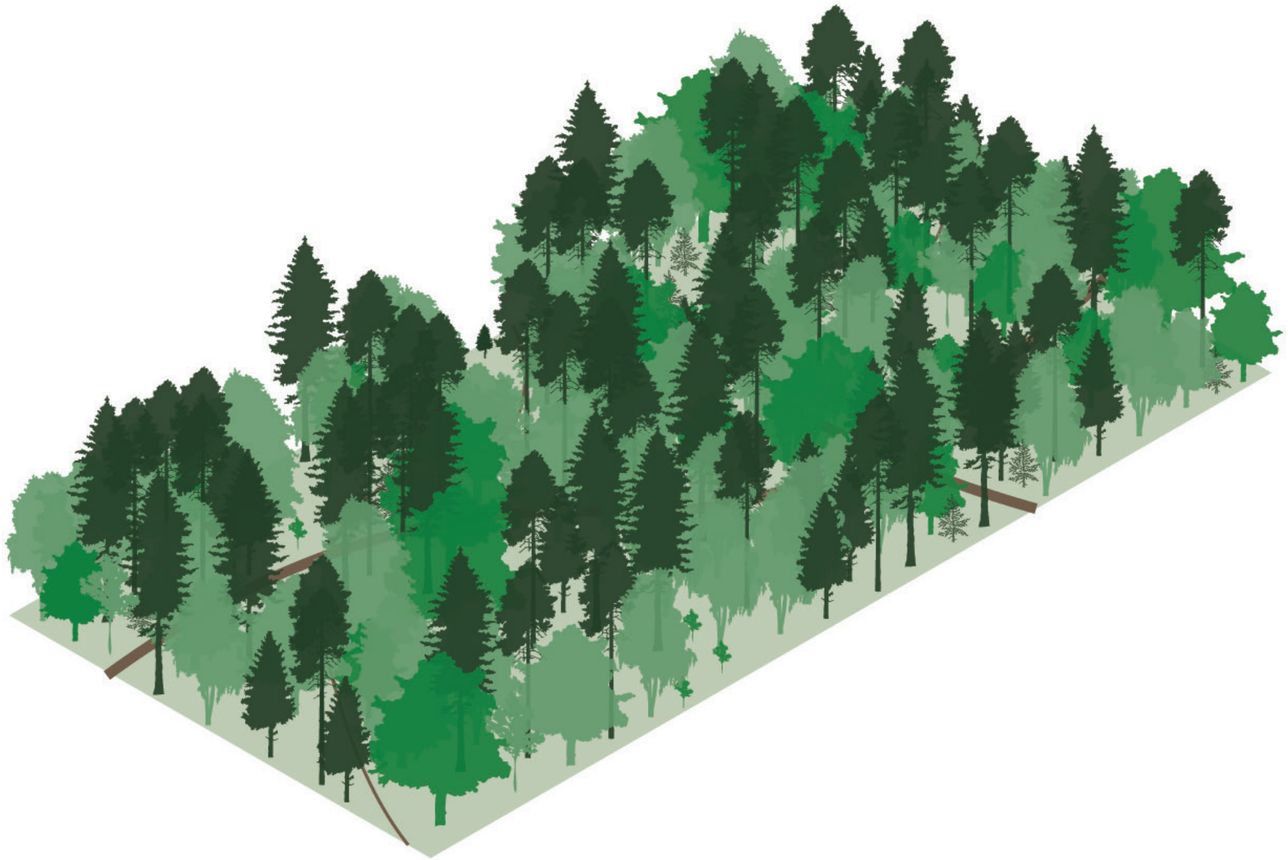
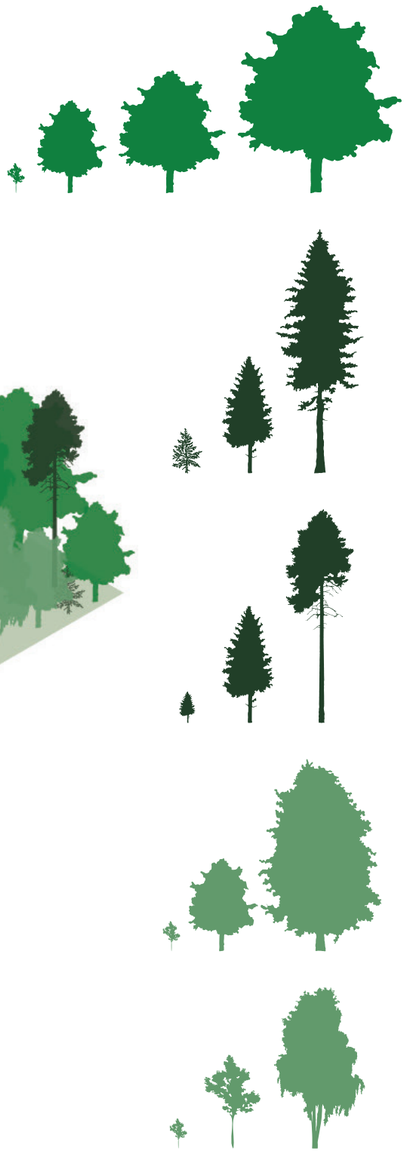
Quercus
150 years
Douglas fir
Pseudotsuga menziesii
75 years
Scots pine
Pinus sylvestris
75 years
Beech
Fagus sylvatica
50 - 75 years
Birch
Betula pendula
50 - 60 years

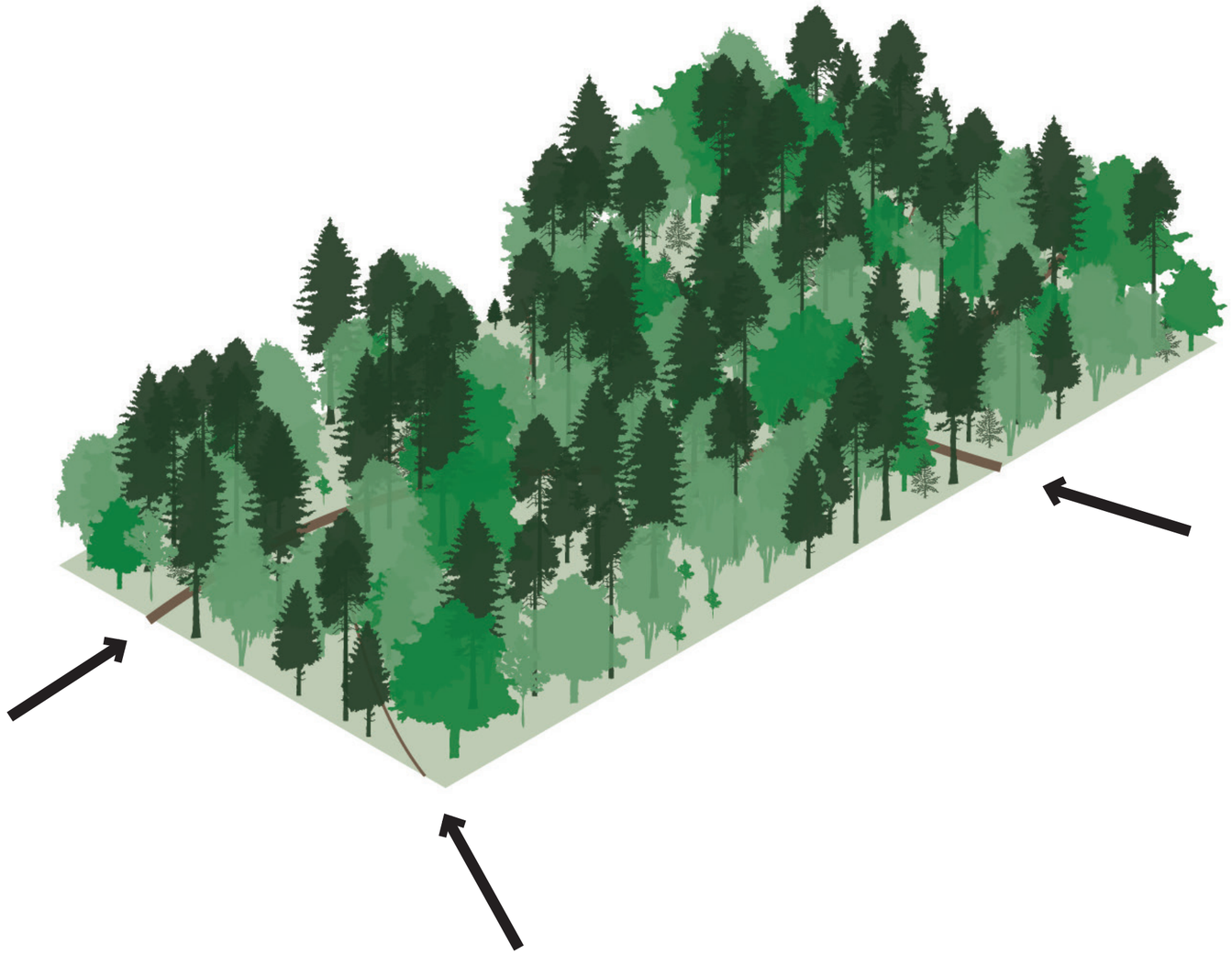




RECREATION

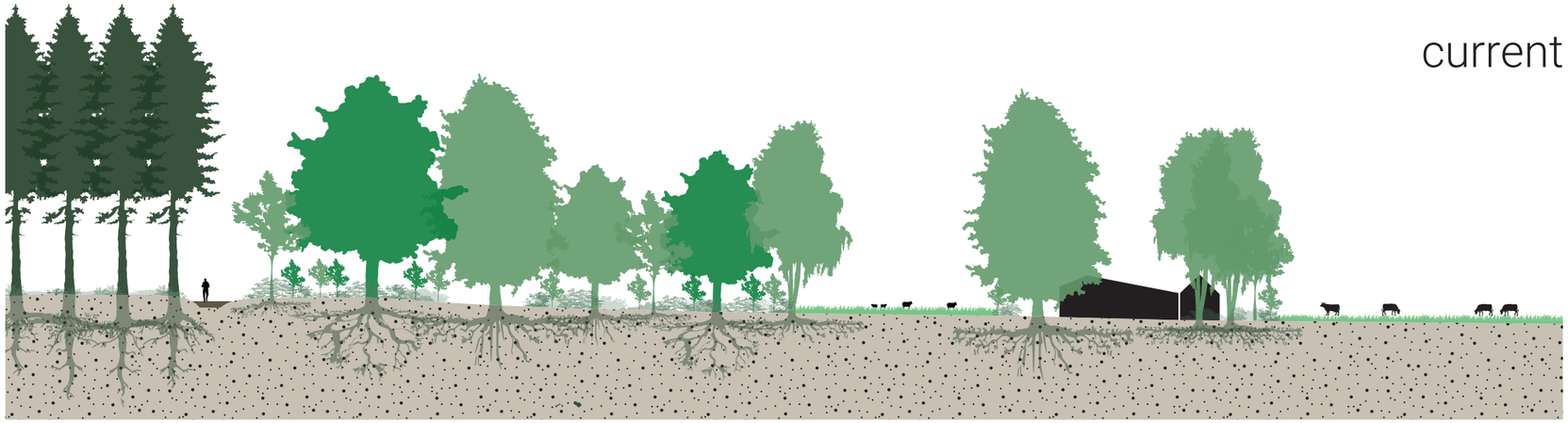






SECTION

current



2 30 35

future situation 75 < years



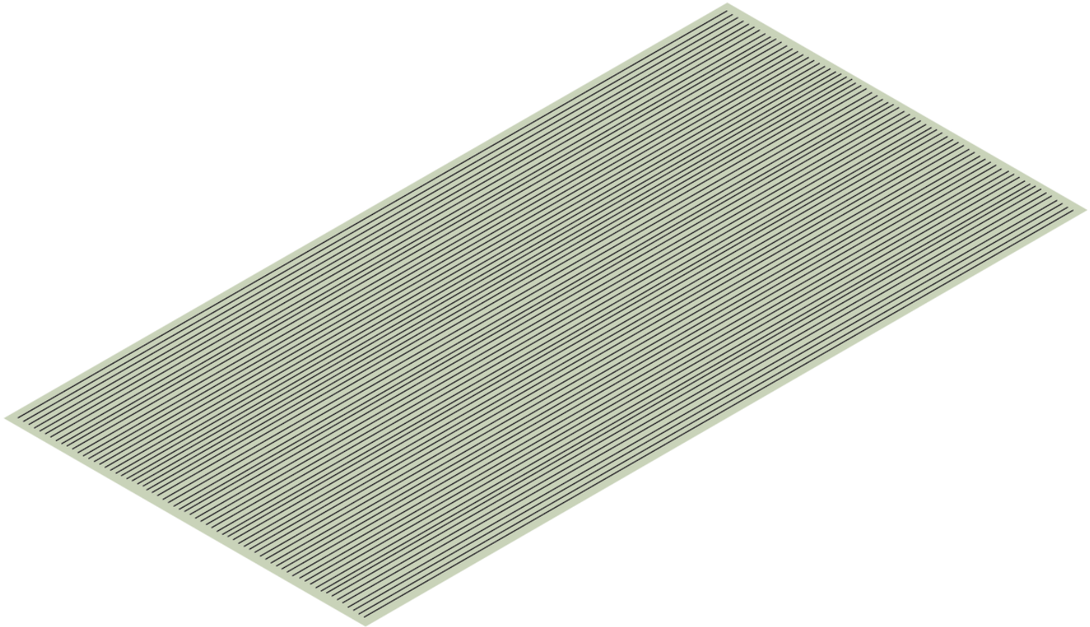
1:500 2 35



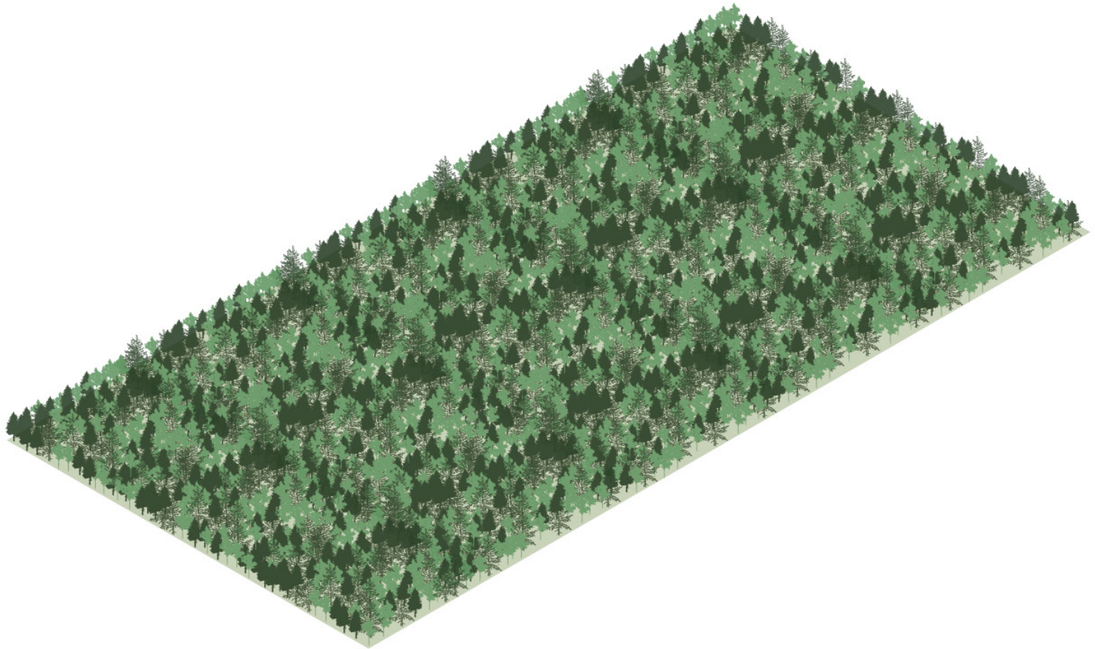


sand clay peat

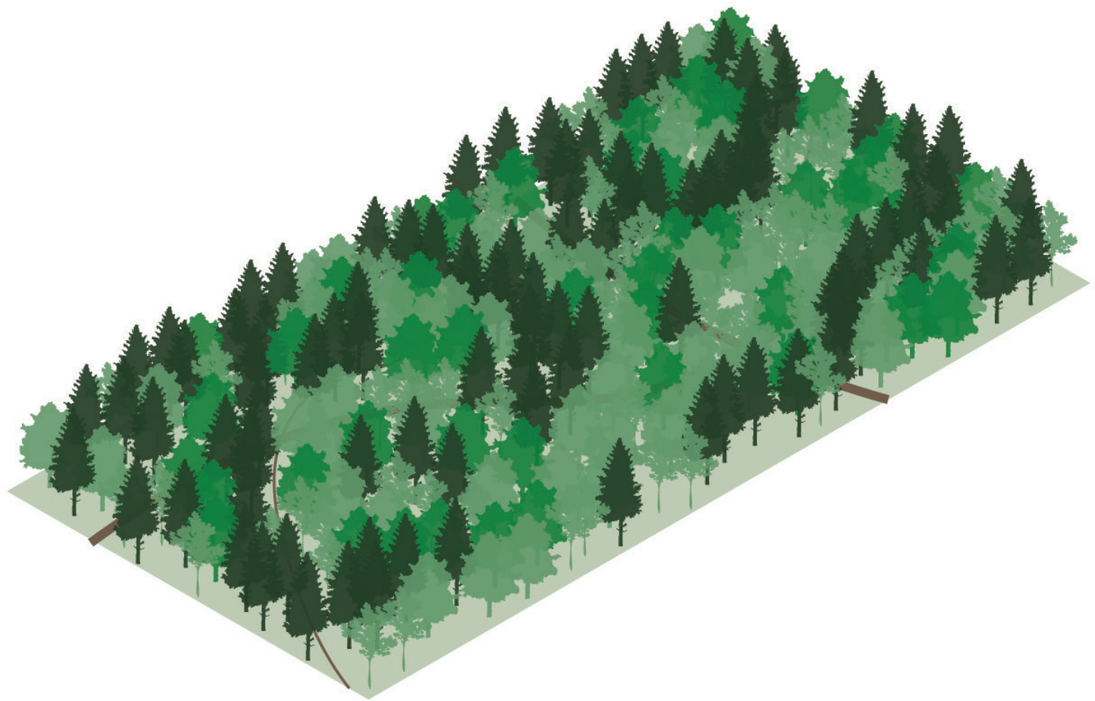
START



AFTER 25 YEARS



AFTER 50 YEARS



AFTER 75 YEARS

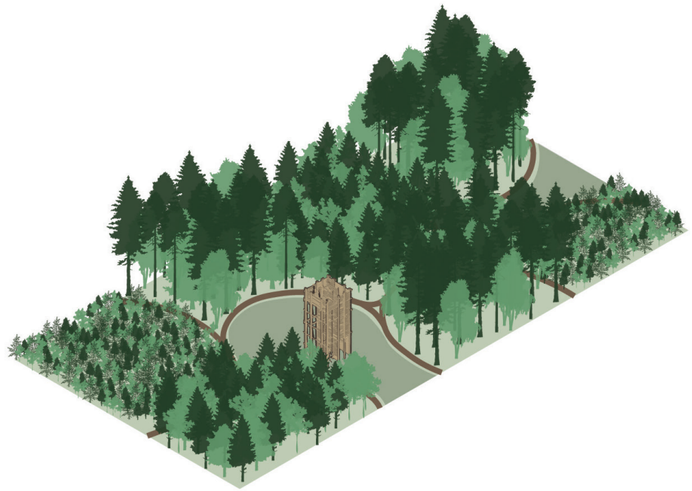


AFTER 80 YEARS



TYPE B: THE WOOD FACTORY

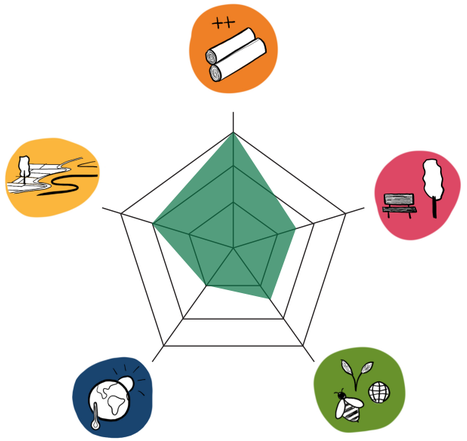
Type A: The Buffer Forest



Type B: The Wood Factory

Type C: The Clear-cut Living

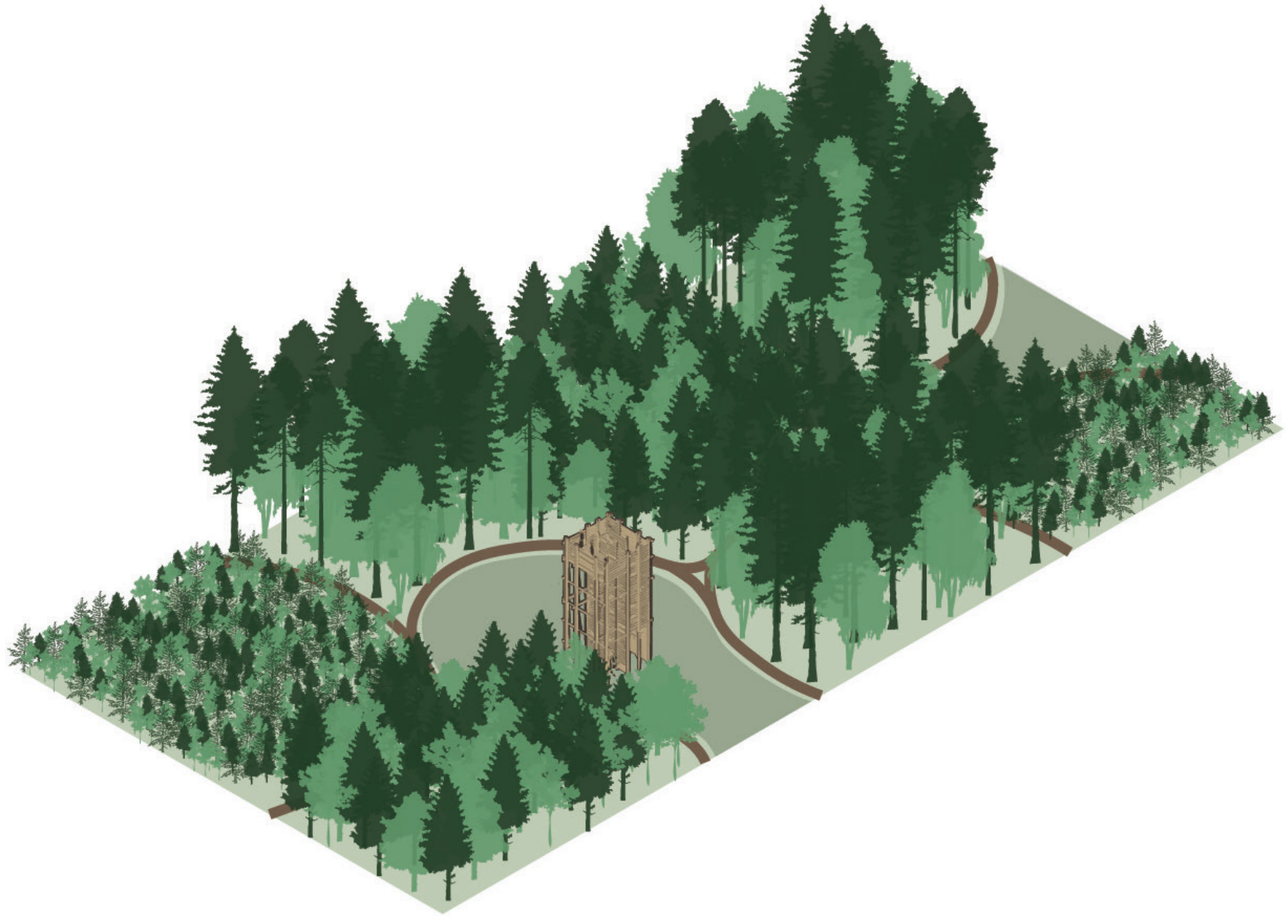
TYPE B: THE WOOD FACTORY



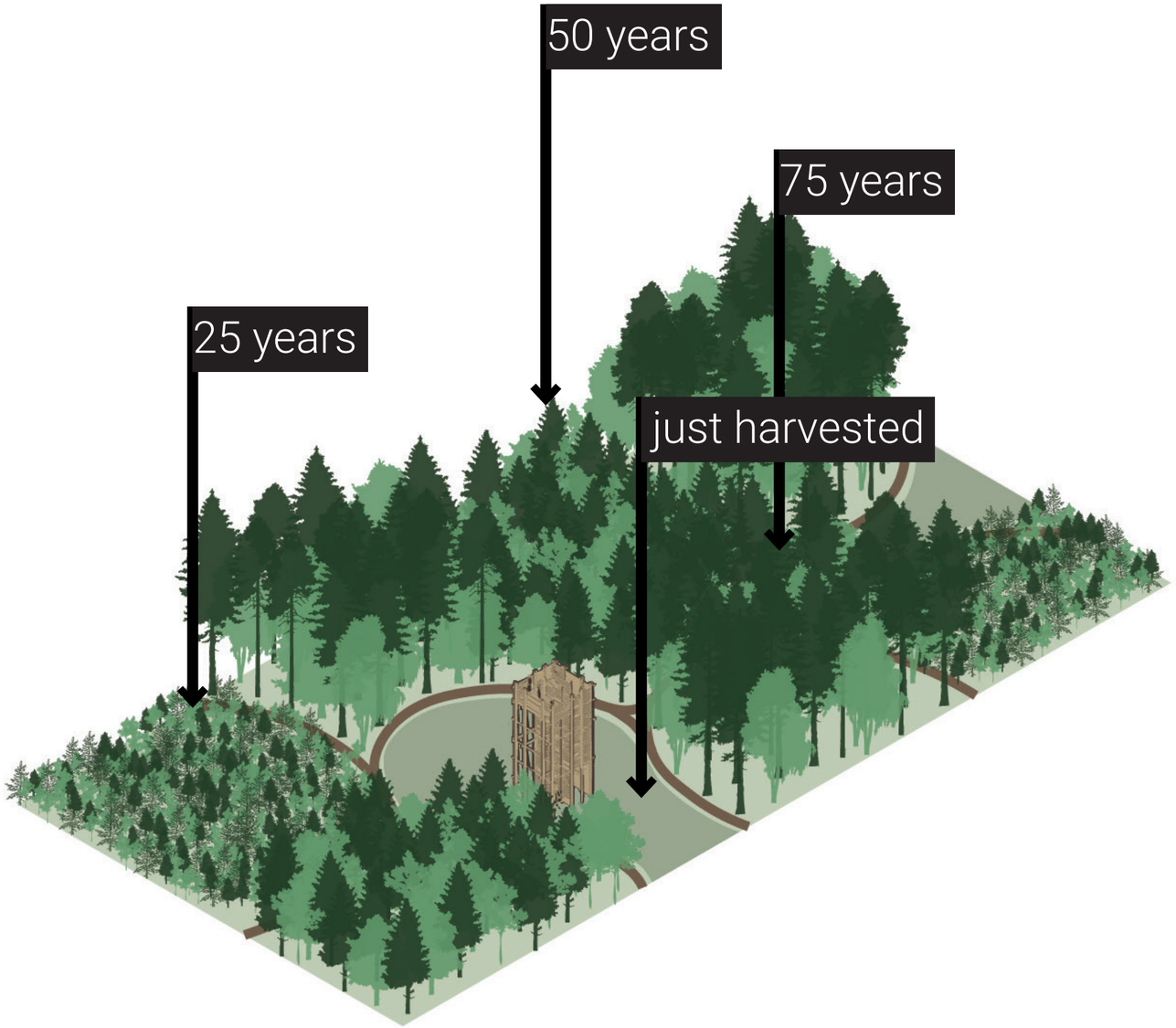




sand clay peat



MANAGEMENT

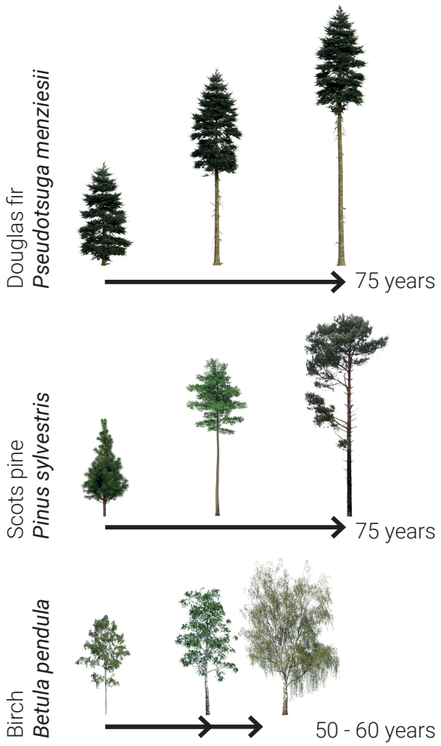


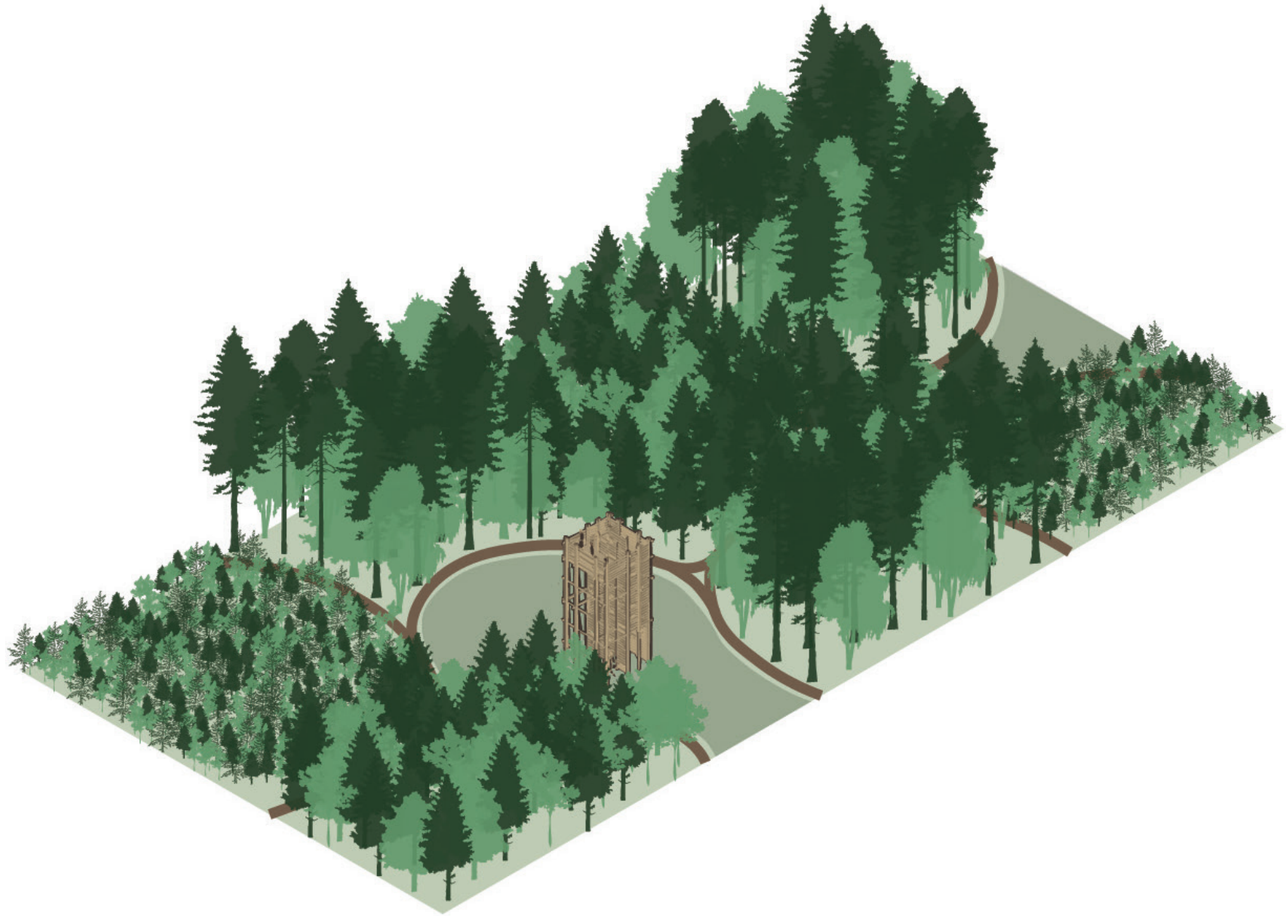




sand clay peat

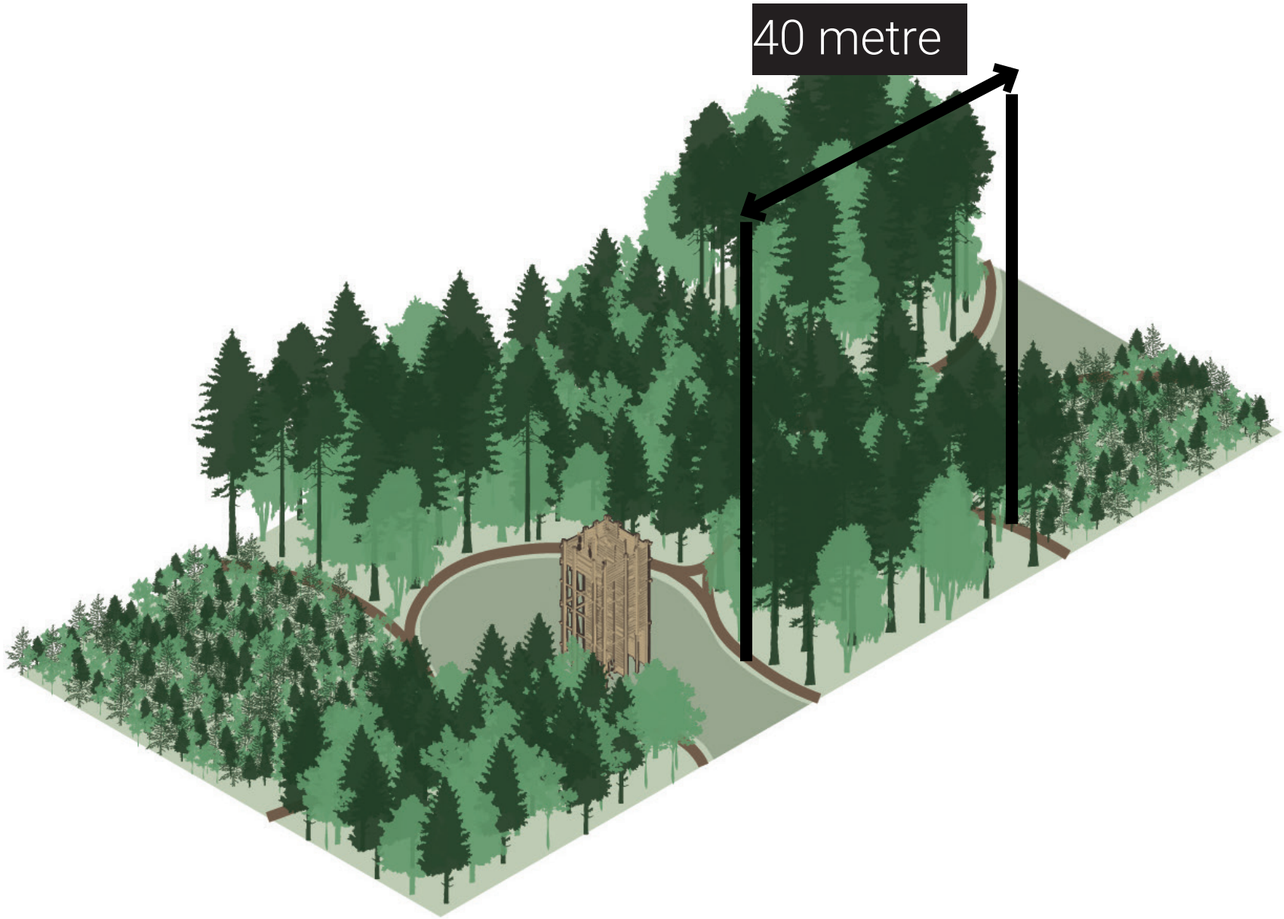
TREES


Douglas fir
Pseudotsuga menziesii
75 years
Scots pine
Pinus sylvestris
75 years
Birch
Betula pendula
50 - 60 years





RECREATION



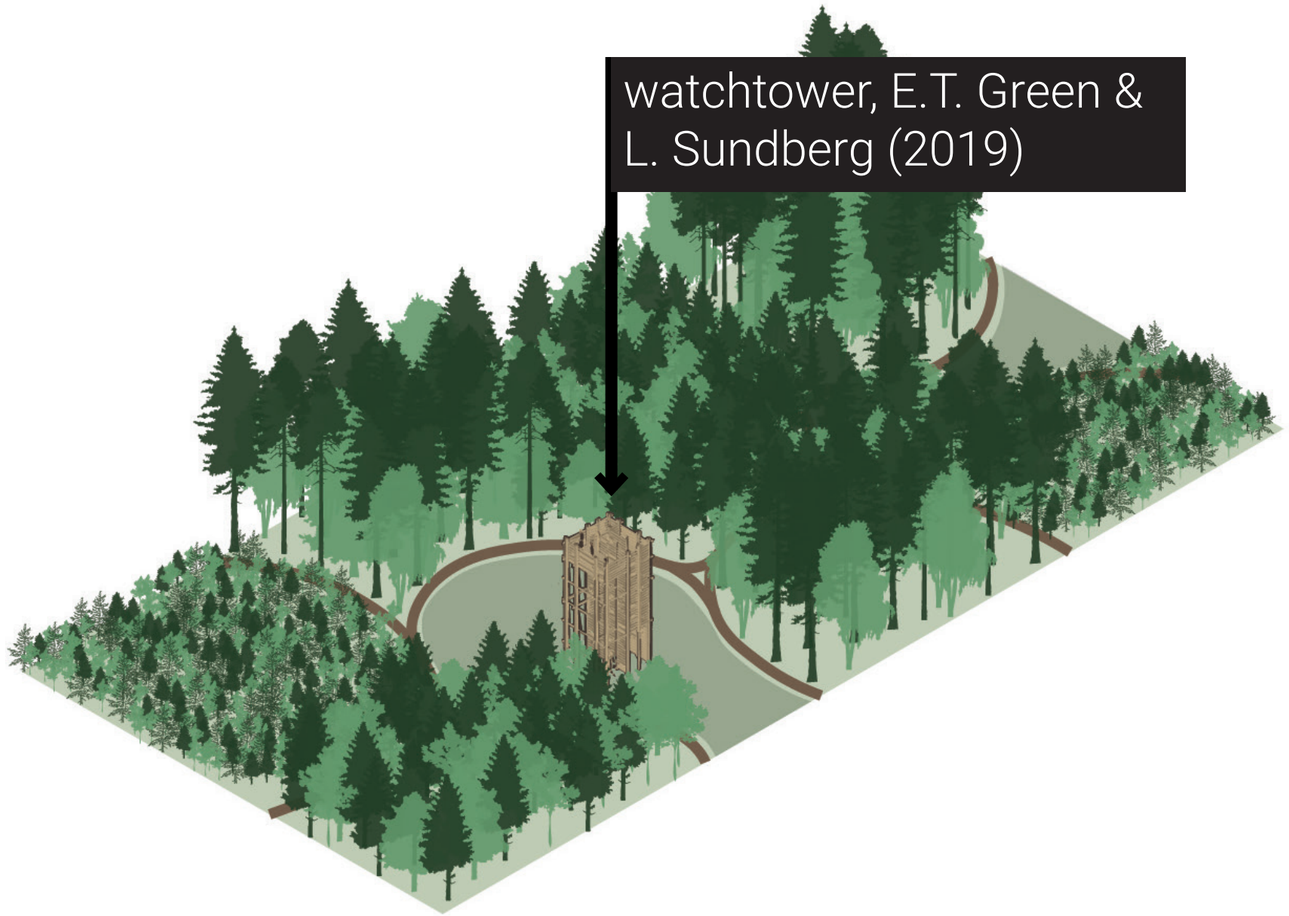




PLACE MAKING

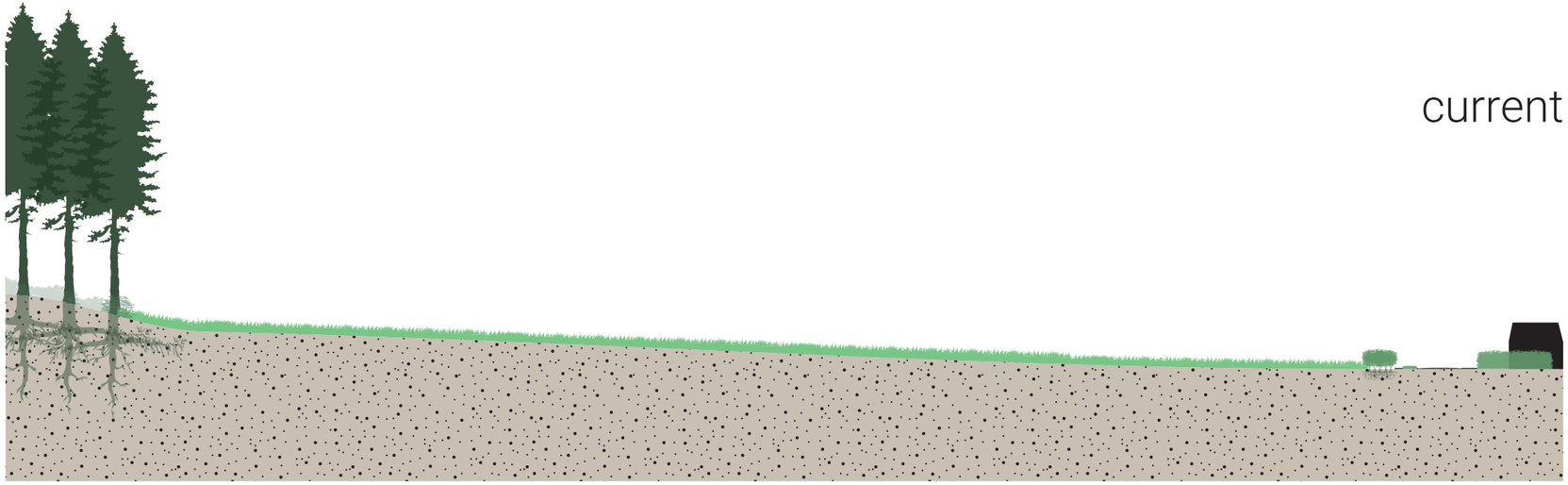


sand clay peat

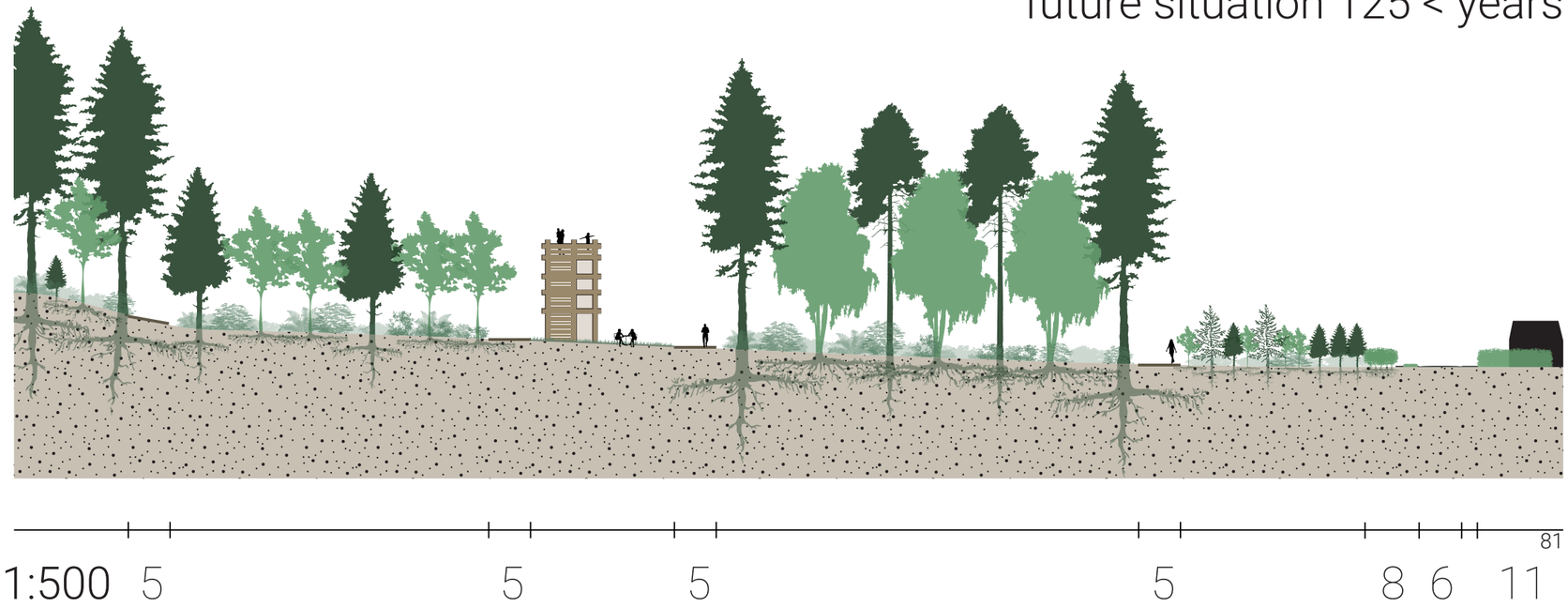


SECTION

current



future situation 125 < years



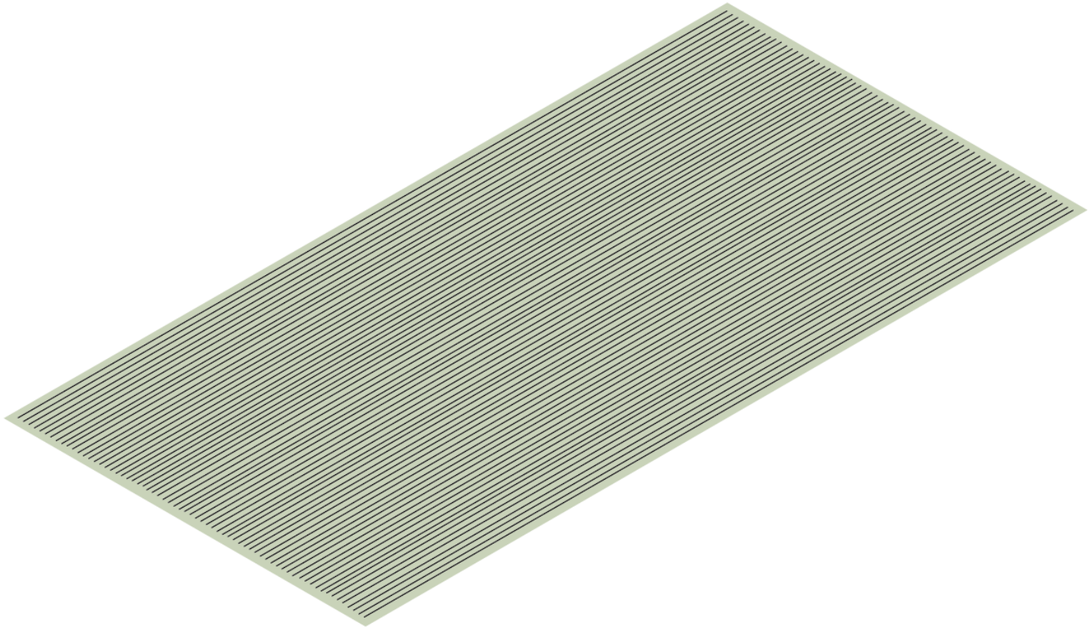




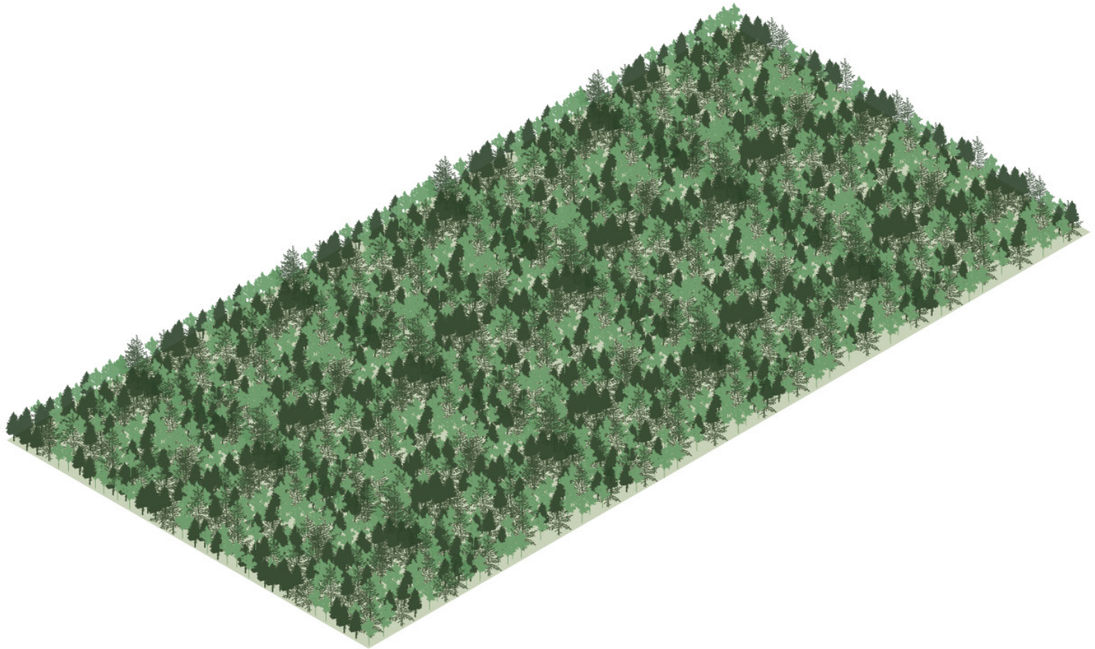
sand clay peat

P5: Dynamic Production Forests - Yael Hagar von Mengden

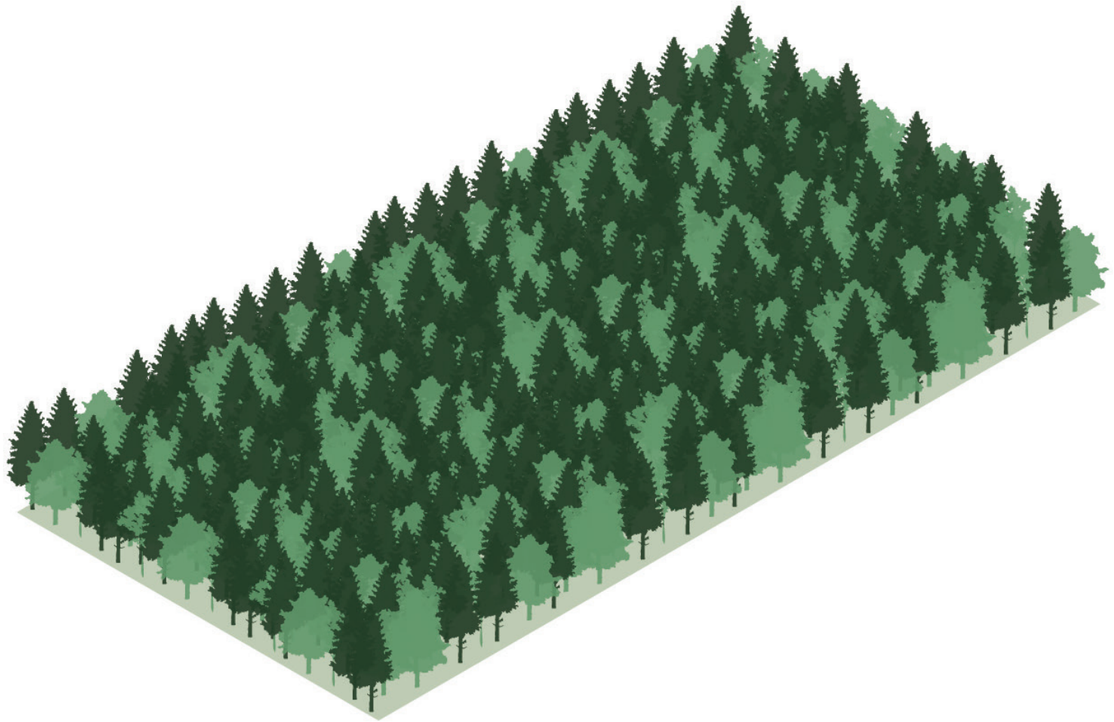
START



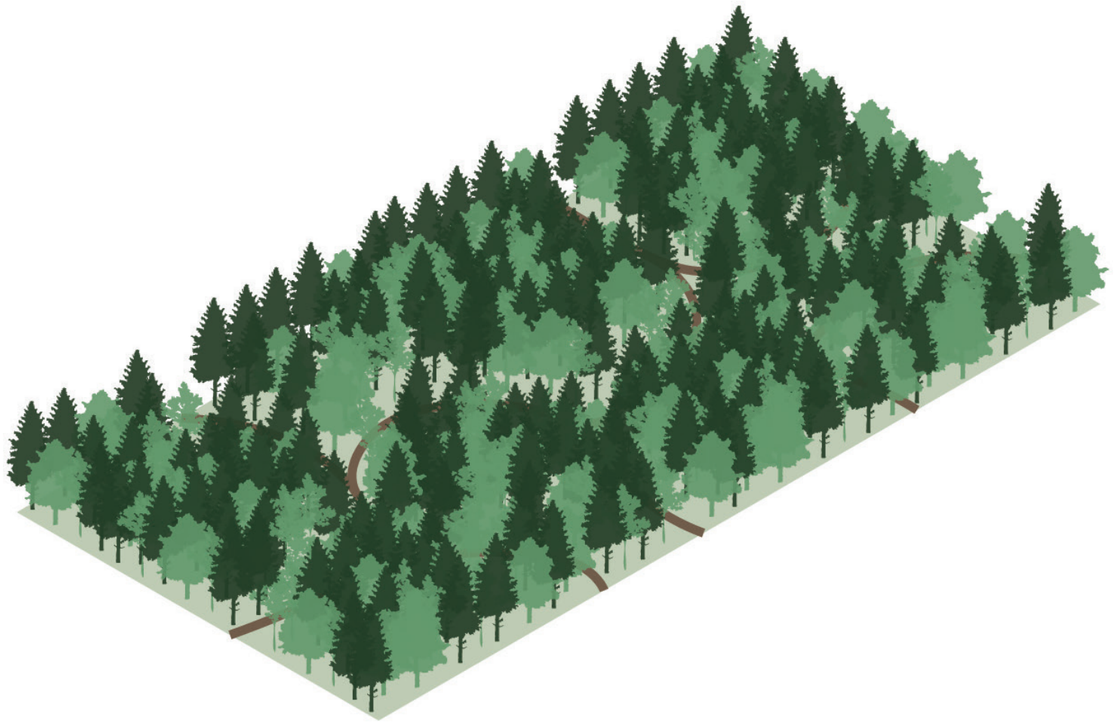
AFTER 25 YEARS



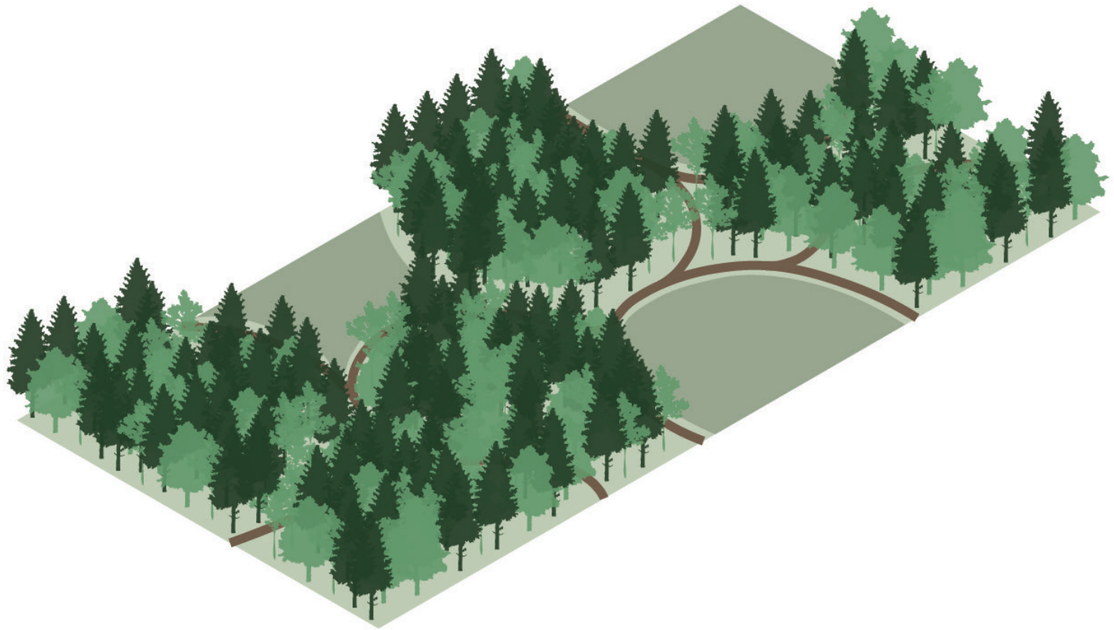
AFTER 50 YEARS



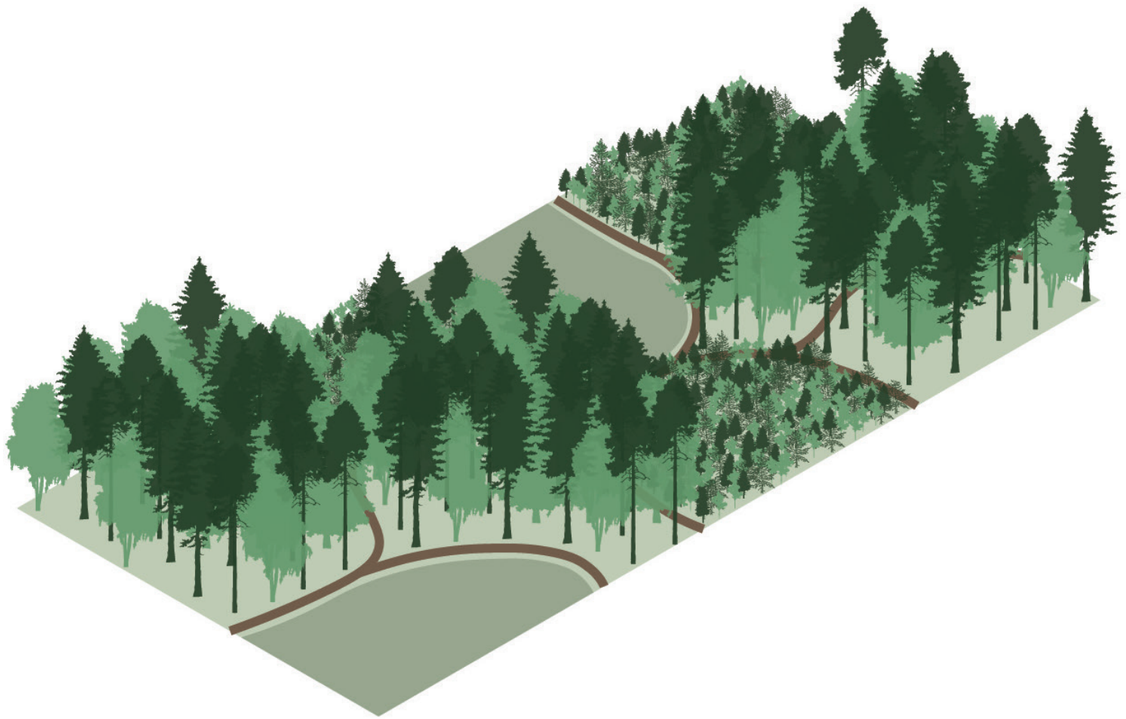
AFTER 50 YEARS



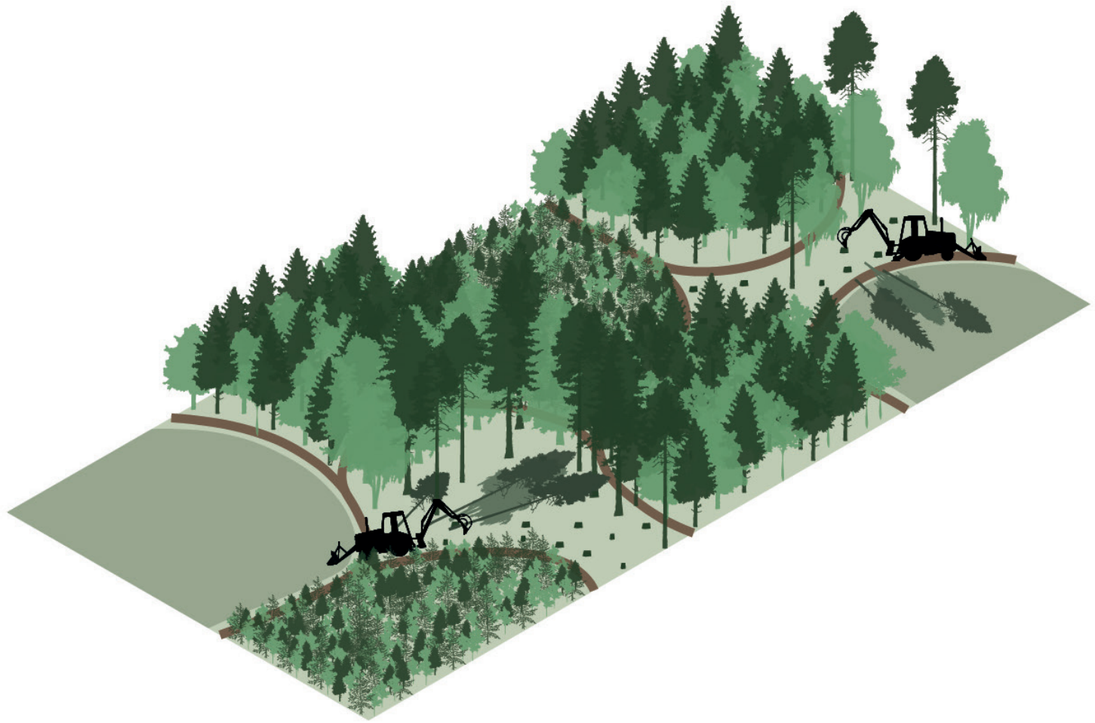
AFTER 50 YEARS



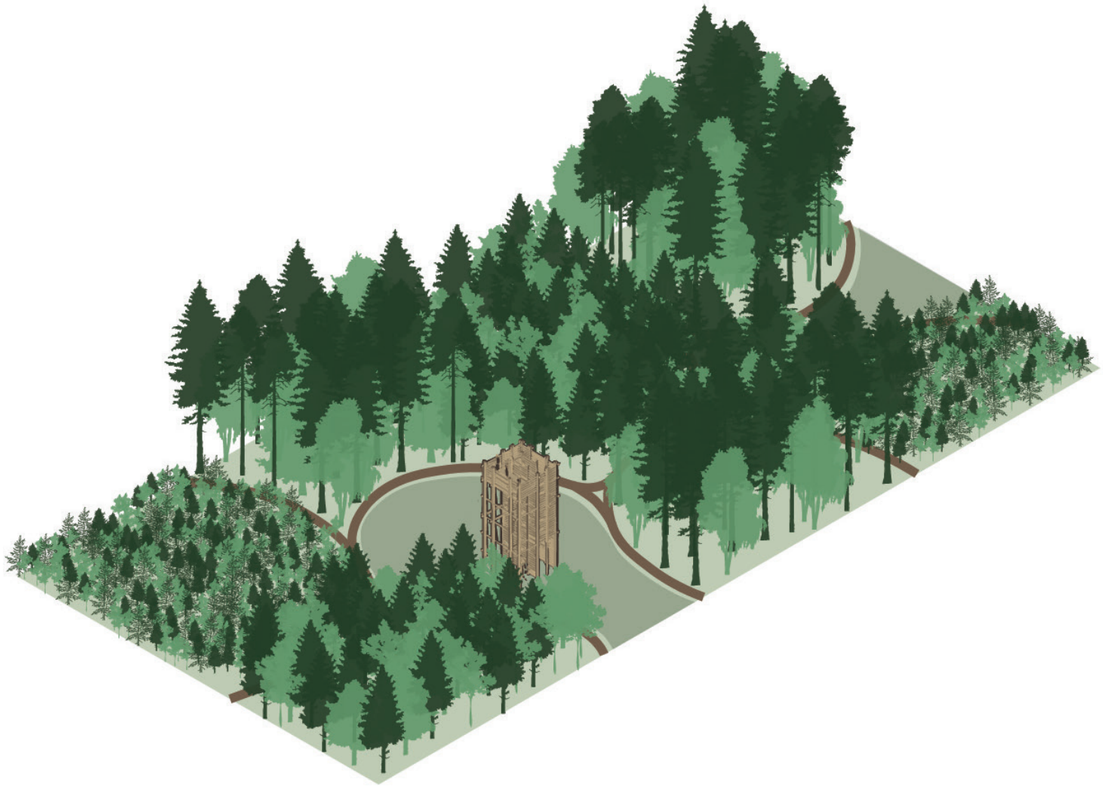
AFTER 75 YEARS



AFTER 100 YEARS



AFTER 125 YEARS



TYPE C: THE CLEAR-CUT LIVING

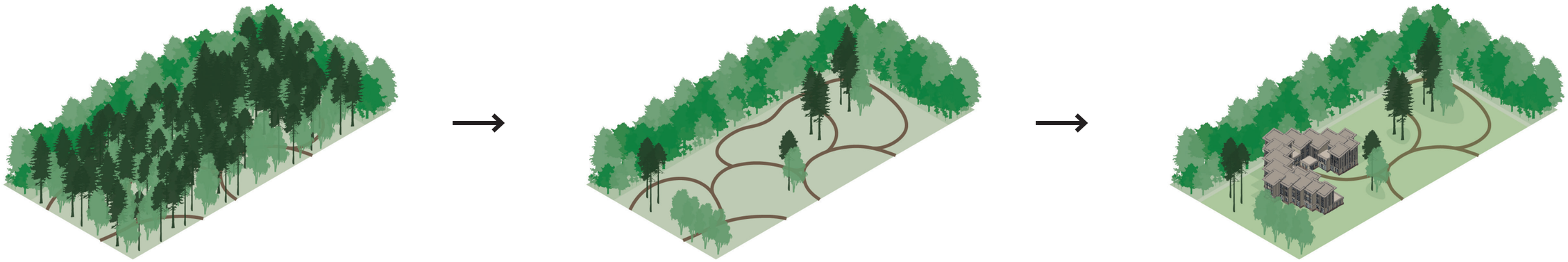
Type A: The Buffer Forest

Type B: The Wood Factory



Type C: The Clear-cut Living

THE CLEAR-CUT PRINCIPLE



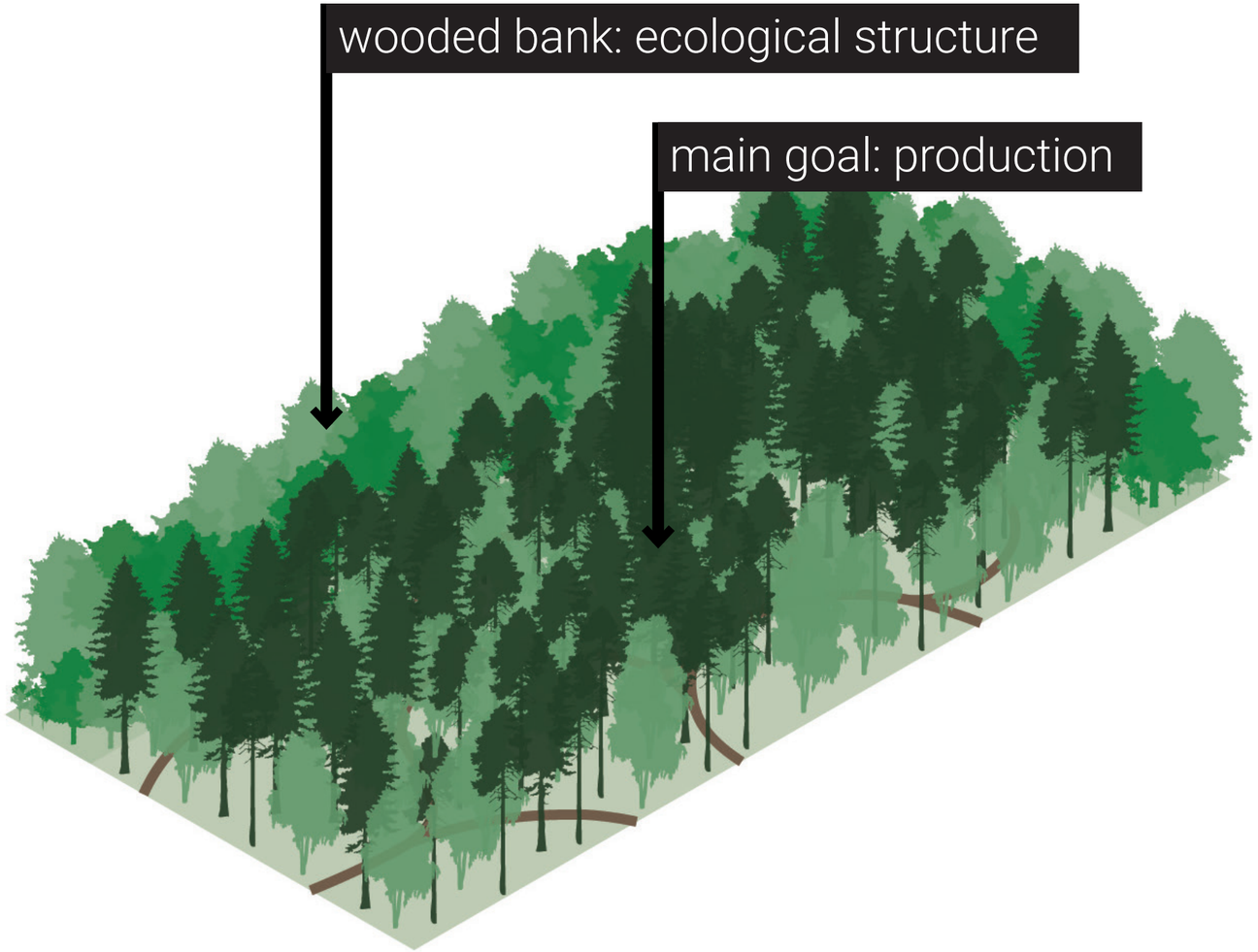
TYPE C: THE CLEAR-CUT LIVING



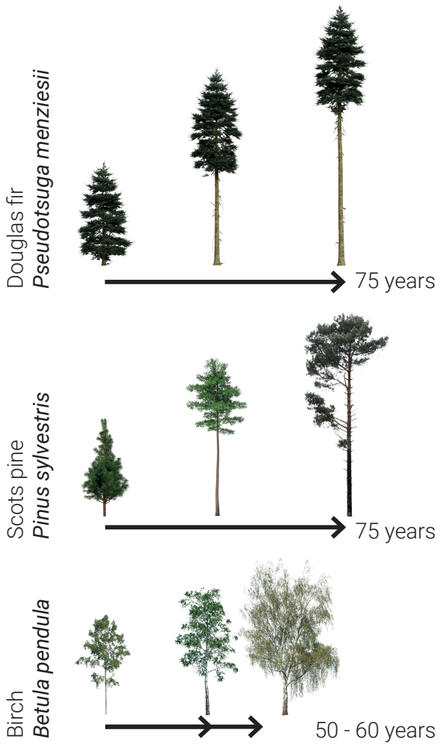


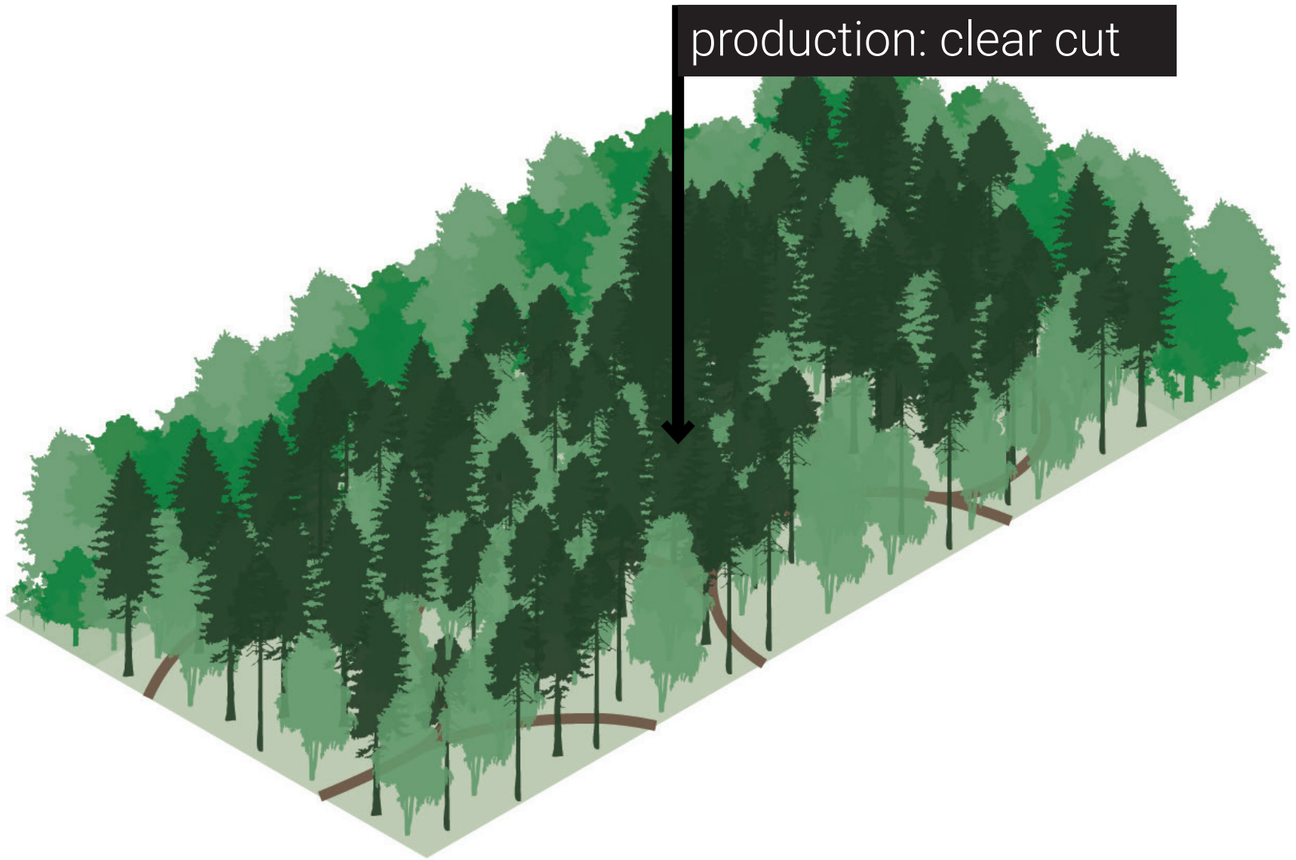


sand clay peat



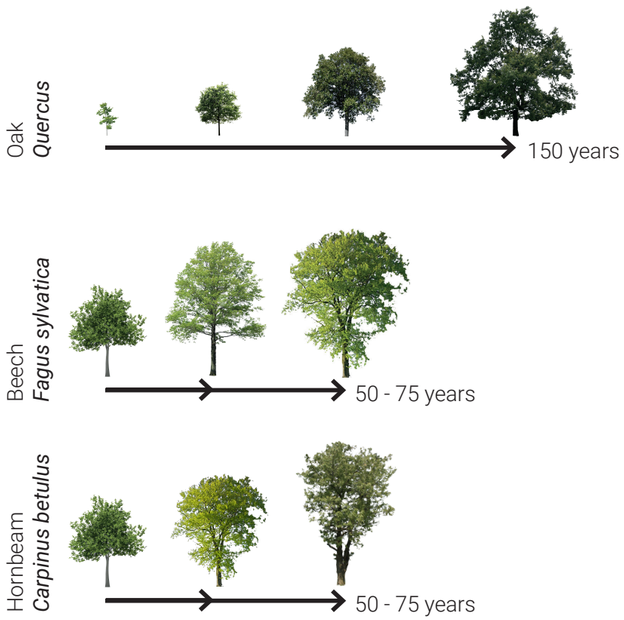
TREES

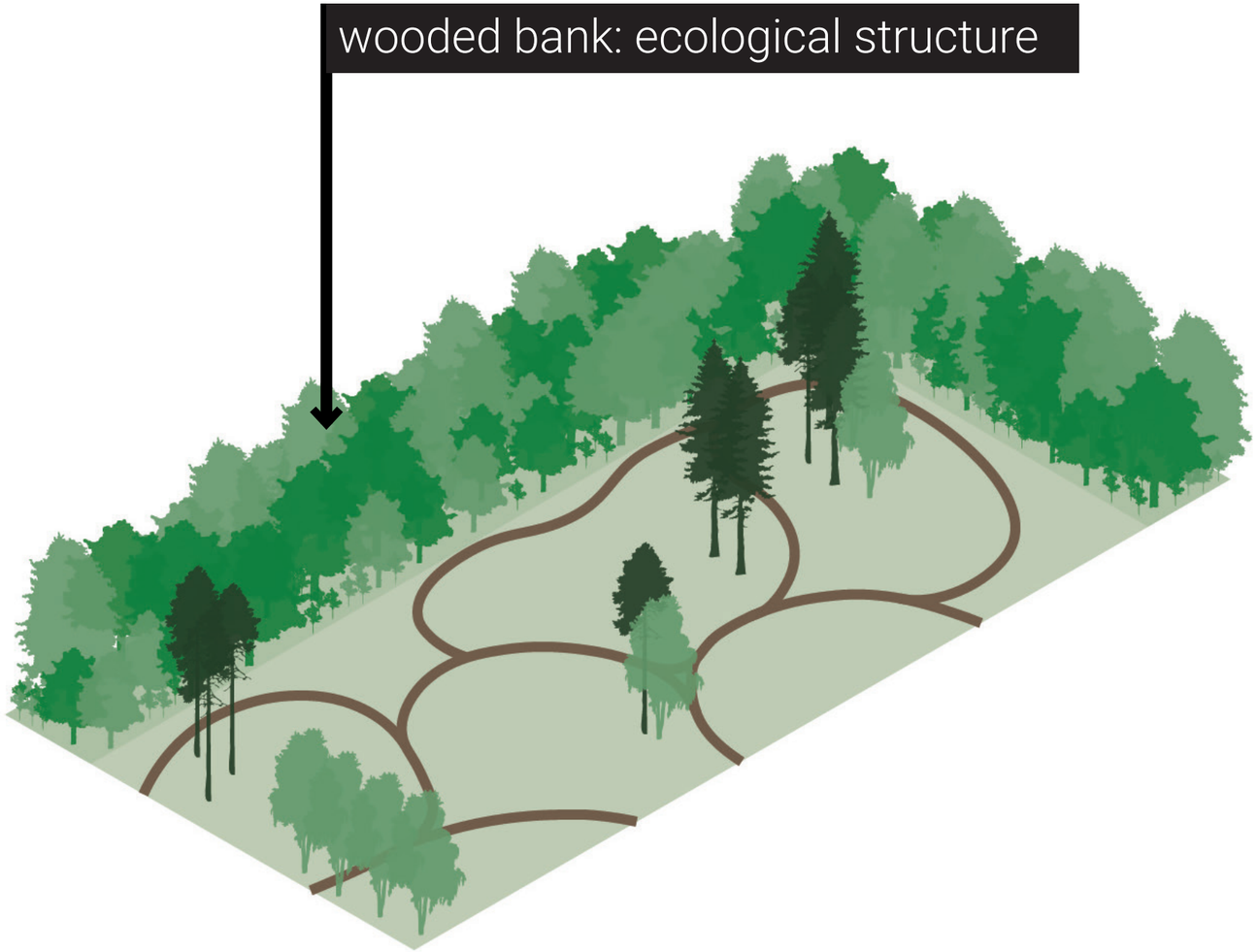

Douglas fir
Pseudotsuga menziesii
75 years
Scots pine
Pinus sylvestris
75 years
Birch
Betula pendula
50 - 60 years


production: clear cut



TREES


Oak
Quercus
150 years
Beech
Fagus sylvatica
50 - 75 years
Hornbeam
Carpinus betulus
50 - 75 years


wooded bank: ecological structure



TYPE C: THE CLEAR-CUT LIVING





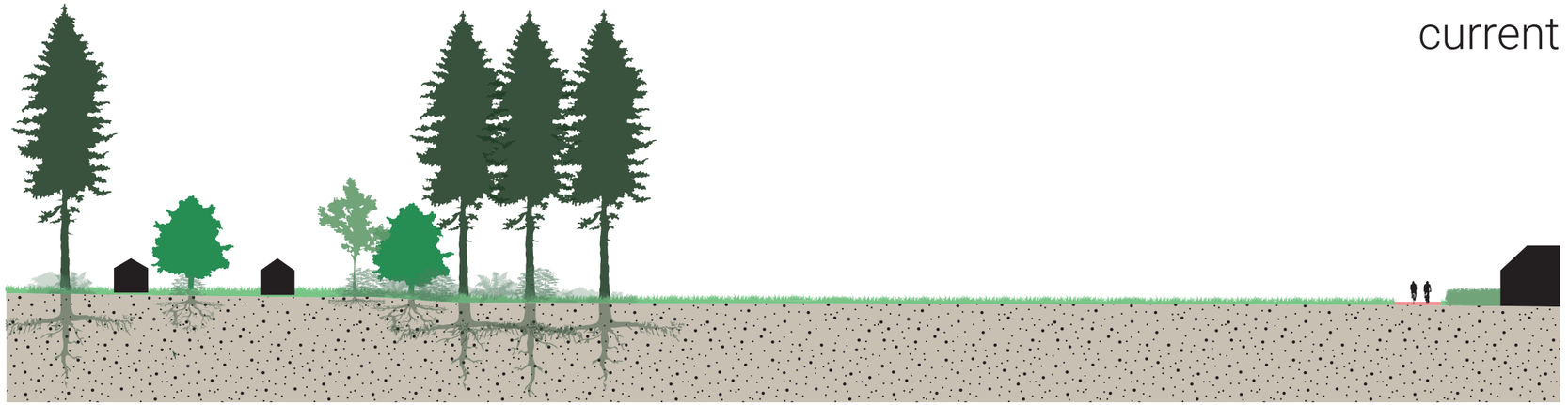


sand clay peat



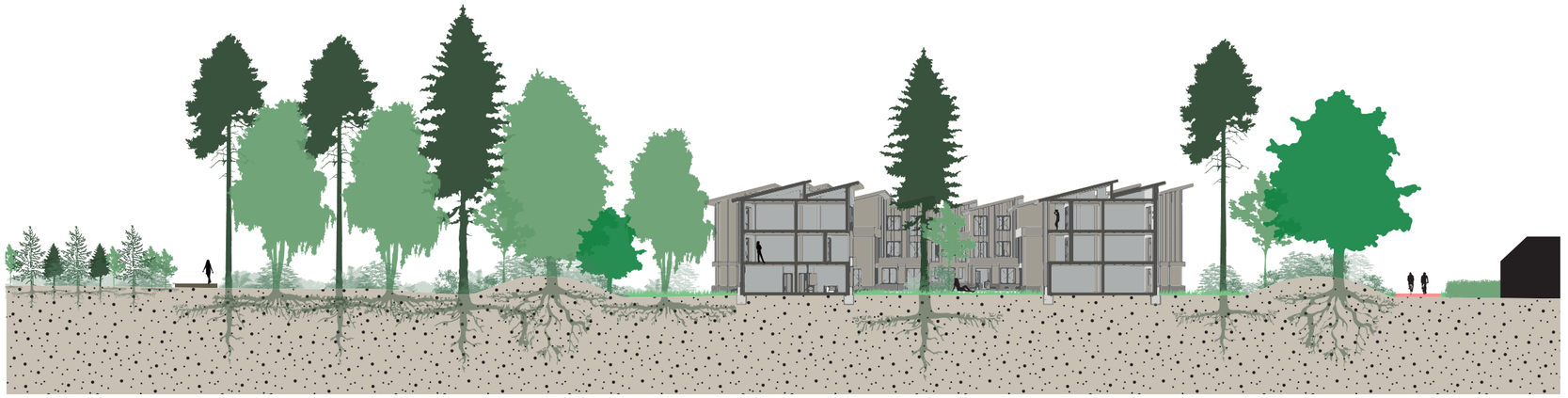
SECTION

current



85 8

future situation 75 < years



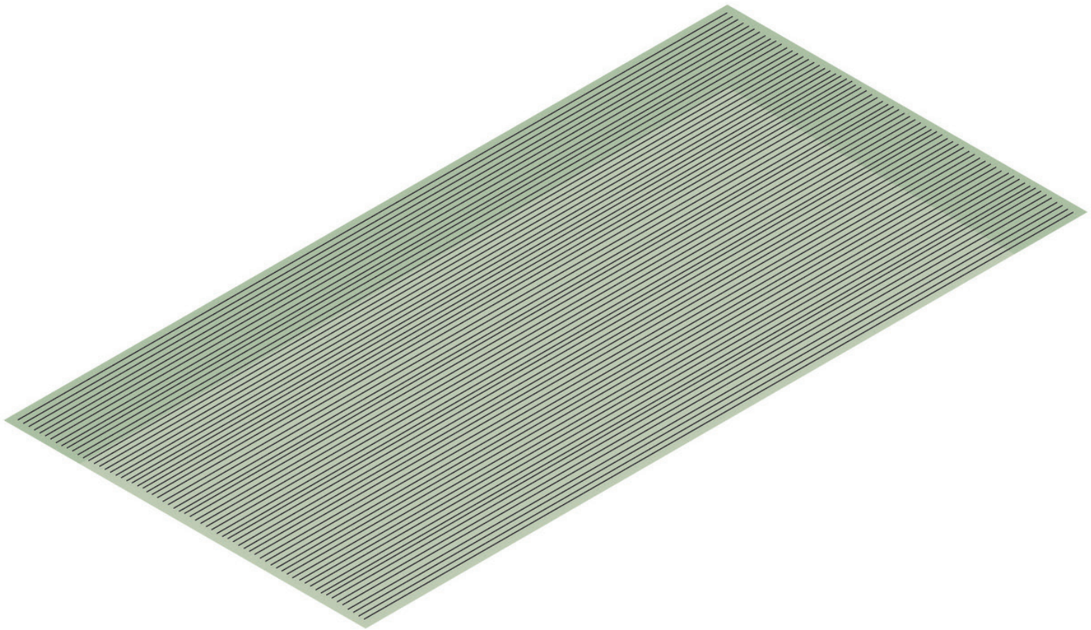


sand clay peat

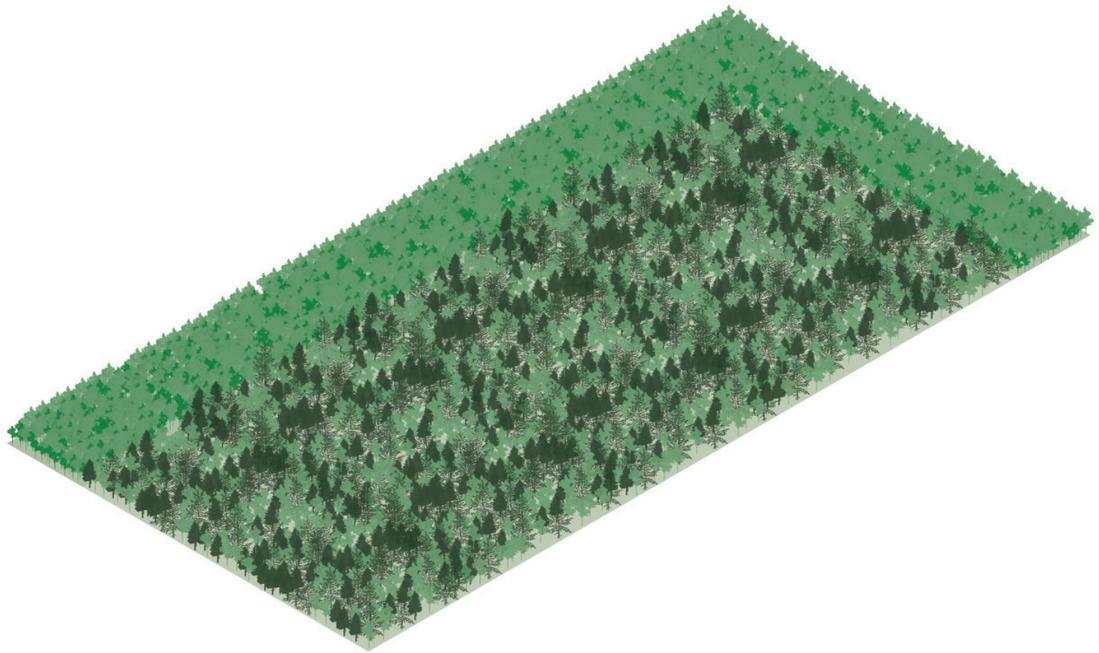
1:500 5 30 40 30 8

P5: Dynamic Production Forests - Yael Hagar von Mengden

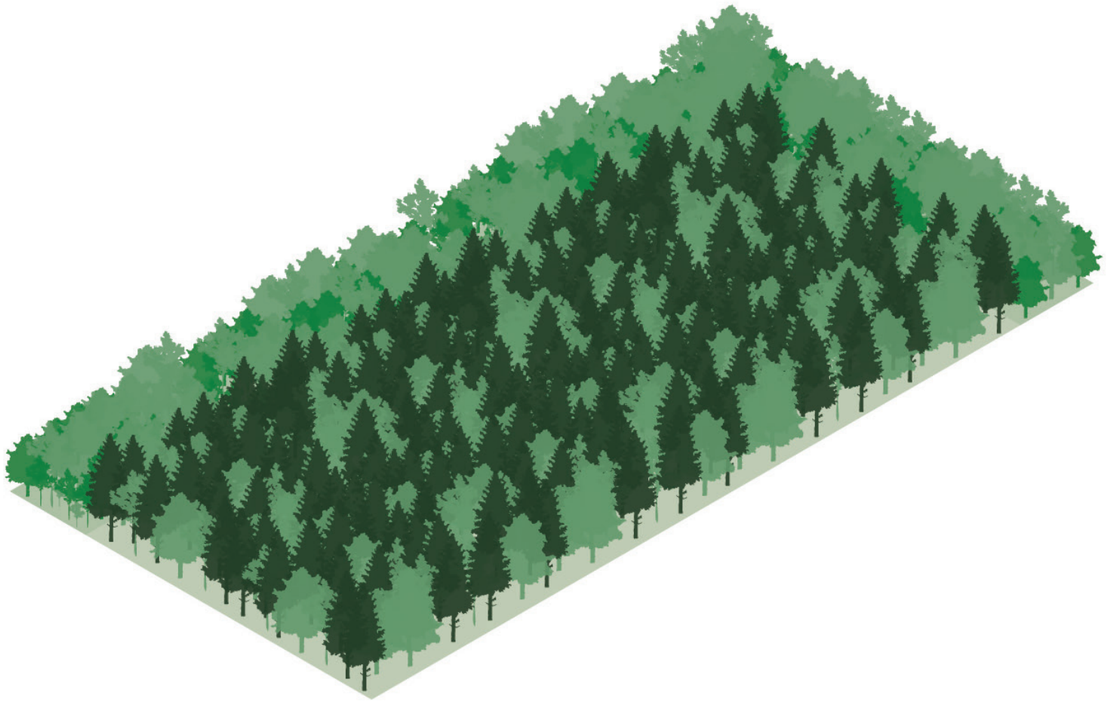
START



AFTER 25 YEARS



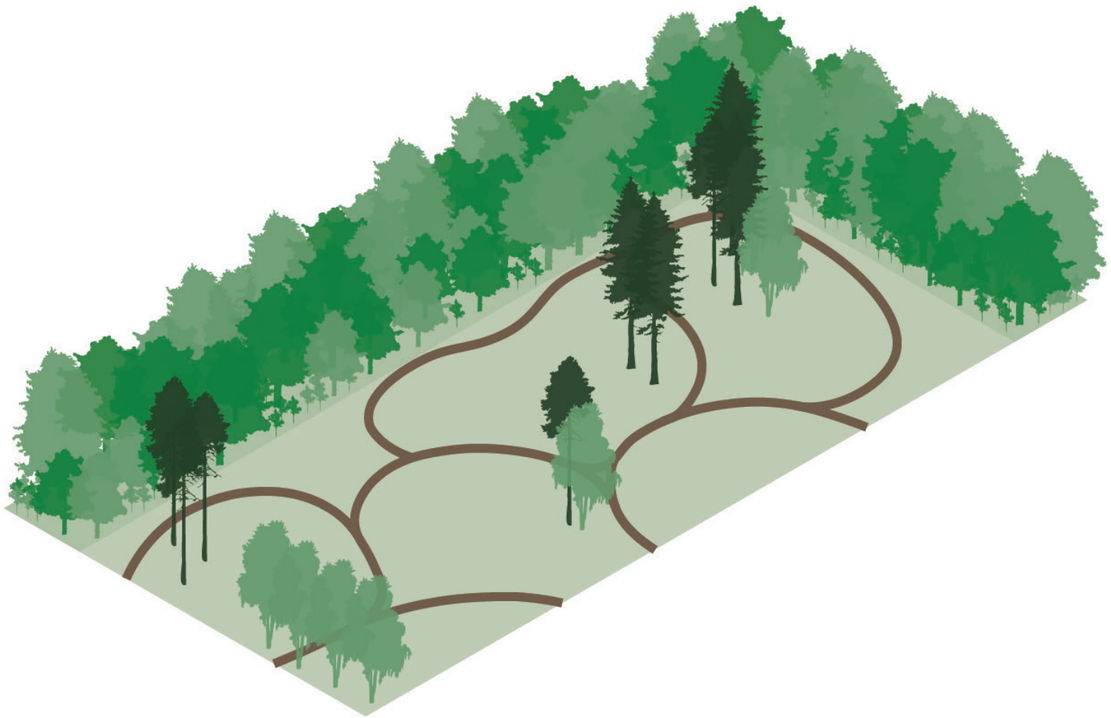
AFTER 50 YEARS



AFTER 75 YEARS



AFTER 75 YEARS

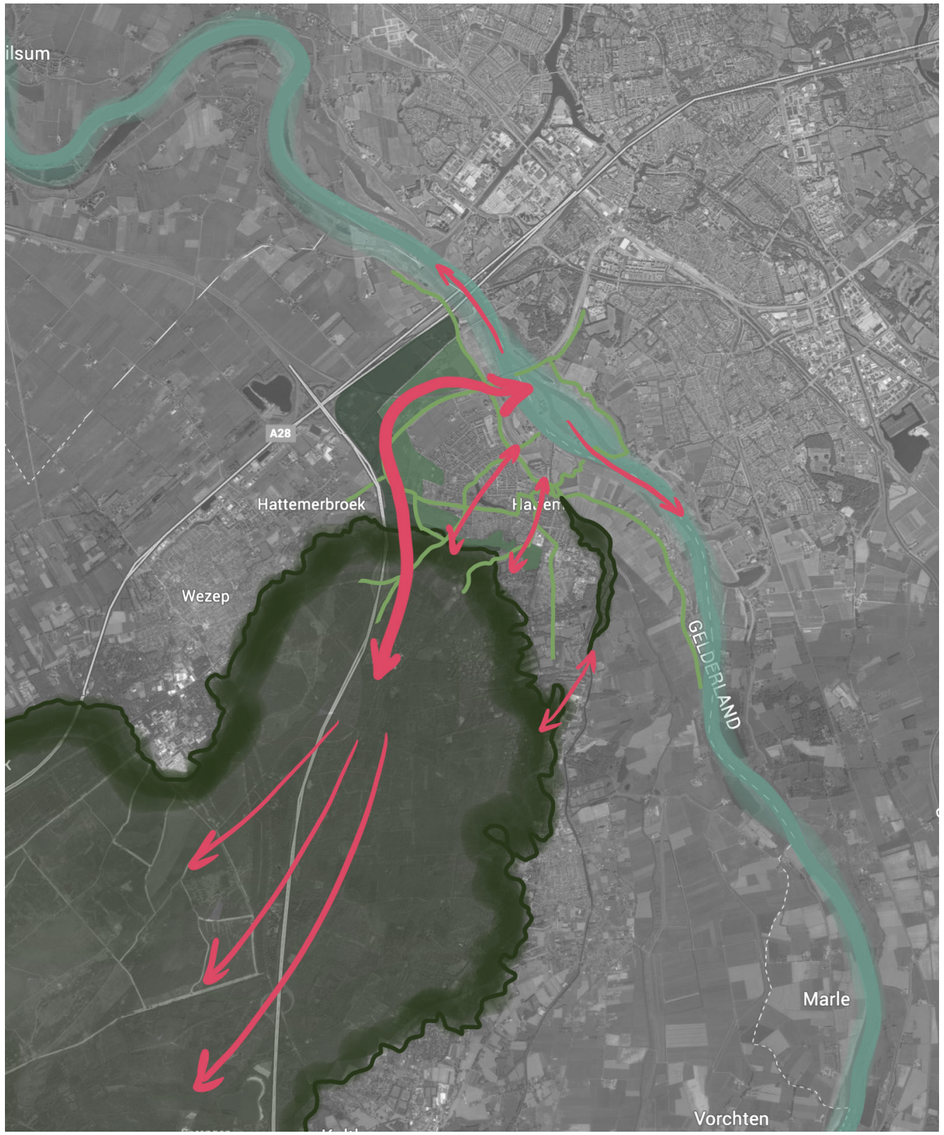


AFTER 80 YEARS



EFFECT OF NEW FOREST

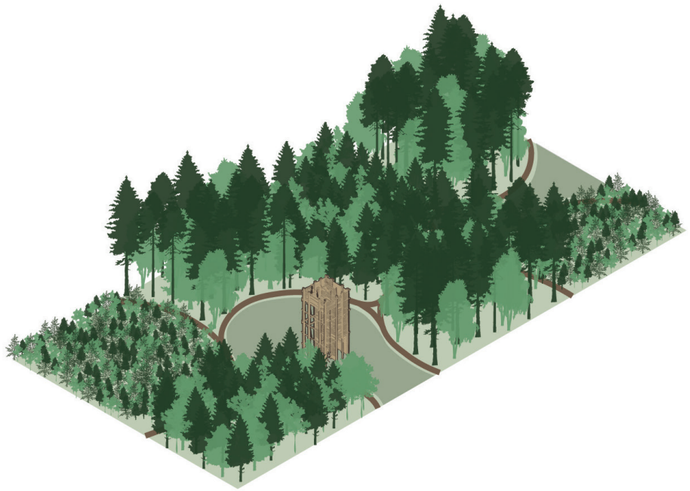
- NATURA 2000 AREA, VELUWE
- NATURA 2000 AREA, IJSSEL
- DESIGNED ECO-CORRIDOR
- DESIGN EFFECT



3 DYNAMIC PRODUCTION FORESTS



Type A: The Buffer Forest

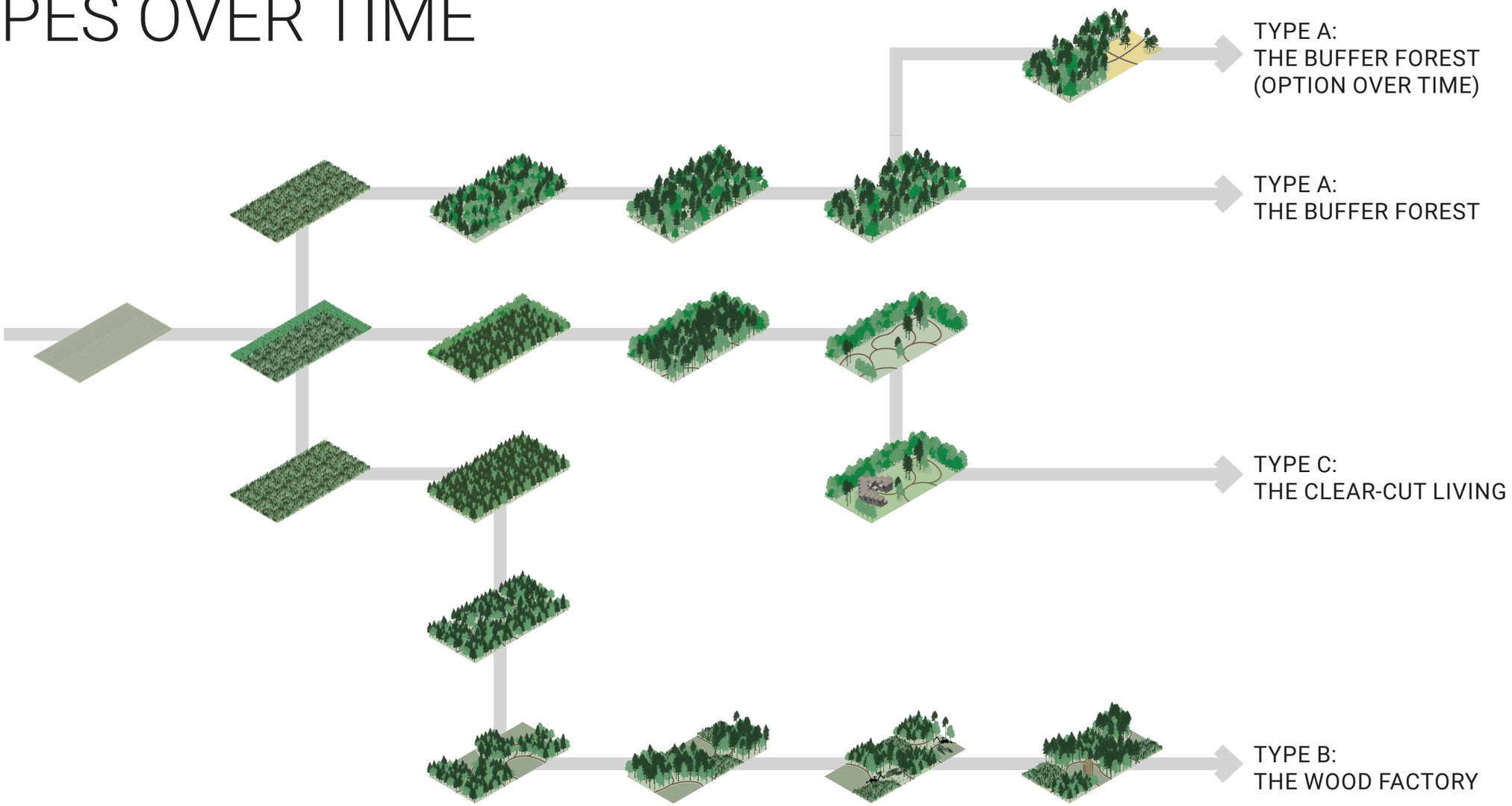


Type B: The Wood Factory



Type C: The Clear-cut Living

TYPES OVER TIME

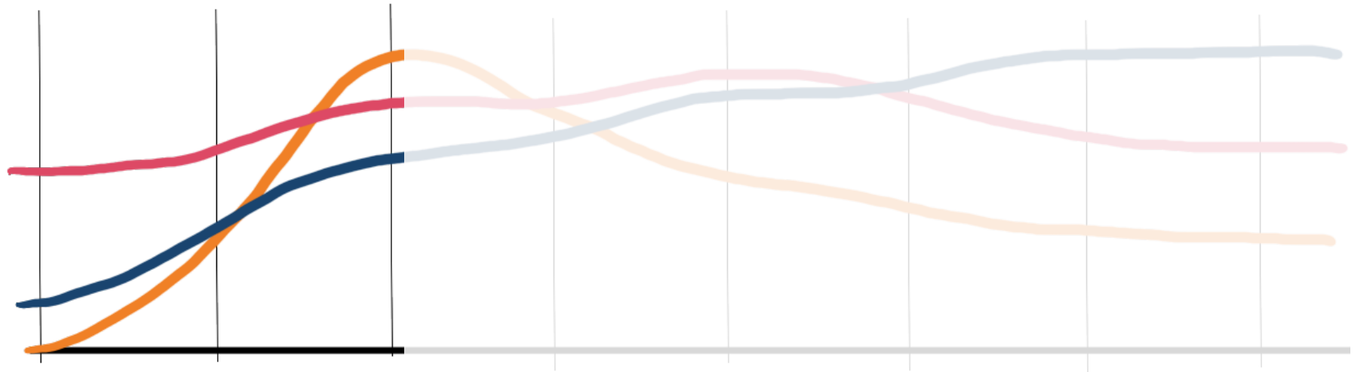


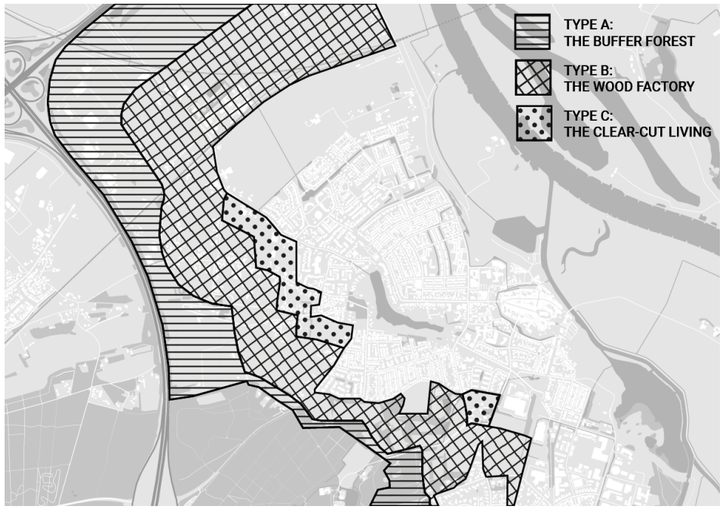
CHANGING NEEDS

Type A: The Buffer Forest

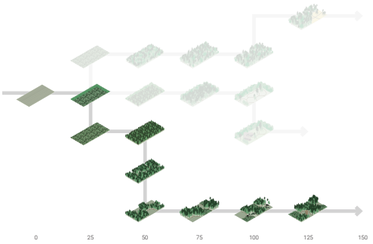
Type B: The Wood Factory

Type C: The Clear-cut Living





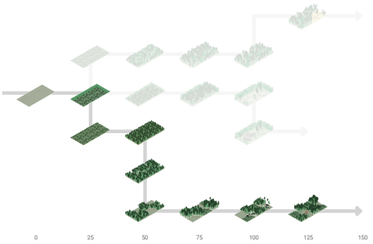
2023







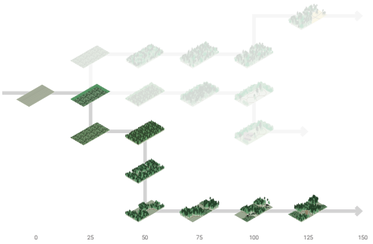
2025







2050

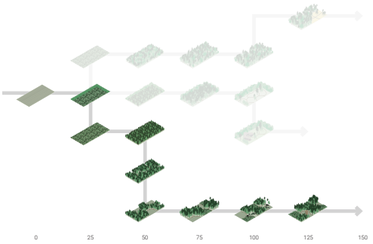






2150

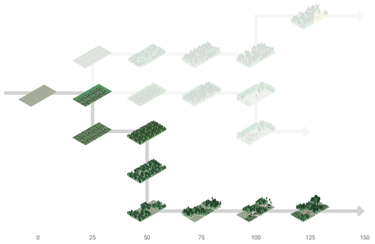






2150 (one week later...)





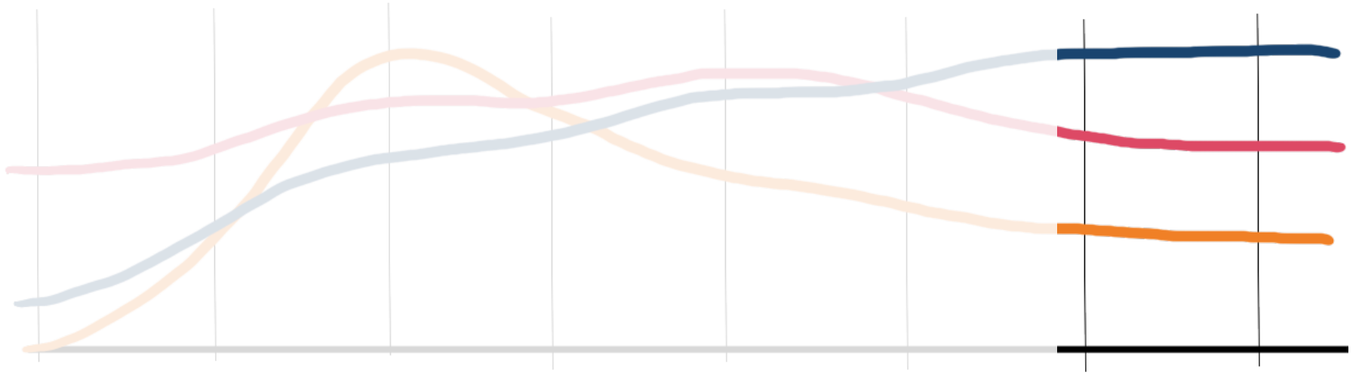


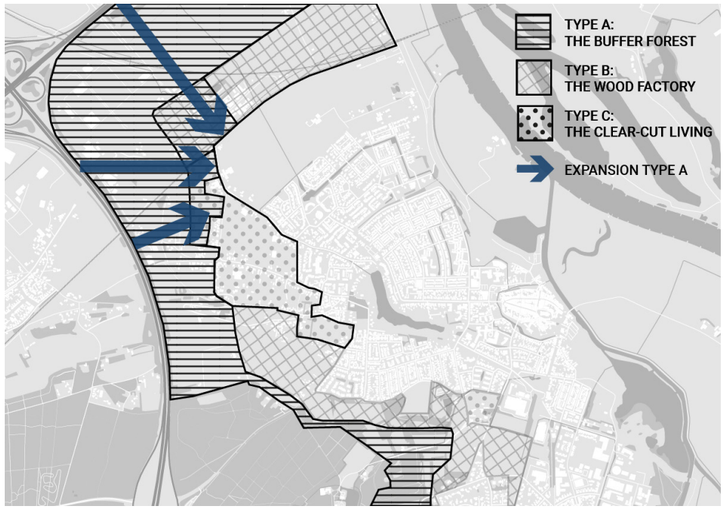
CHANGING NEEDS

Type A: The Buffer Forest

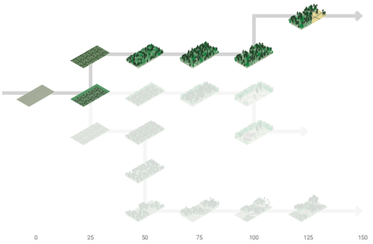
Type B: The Wood Factory

Type C: The Clear-cut Living





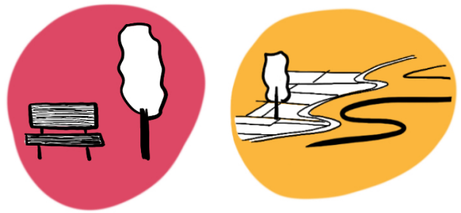
2150





BACK TO THE BEGINNING





“HOW CAN A **SUSTAINABLE** AND **MULTIFUNCTIONAL PRODUCTION FOREST** BE DESIGNED IN THE NETHERLANDS?”



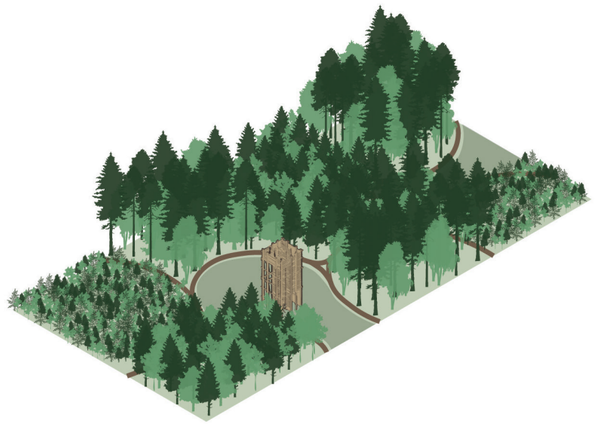
3 DYNAMIC PRODUCTION FORESTS





Type A: The Buffer Forest





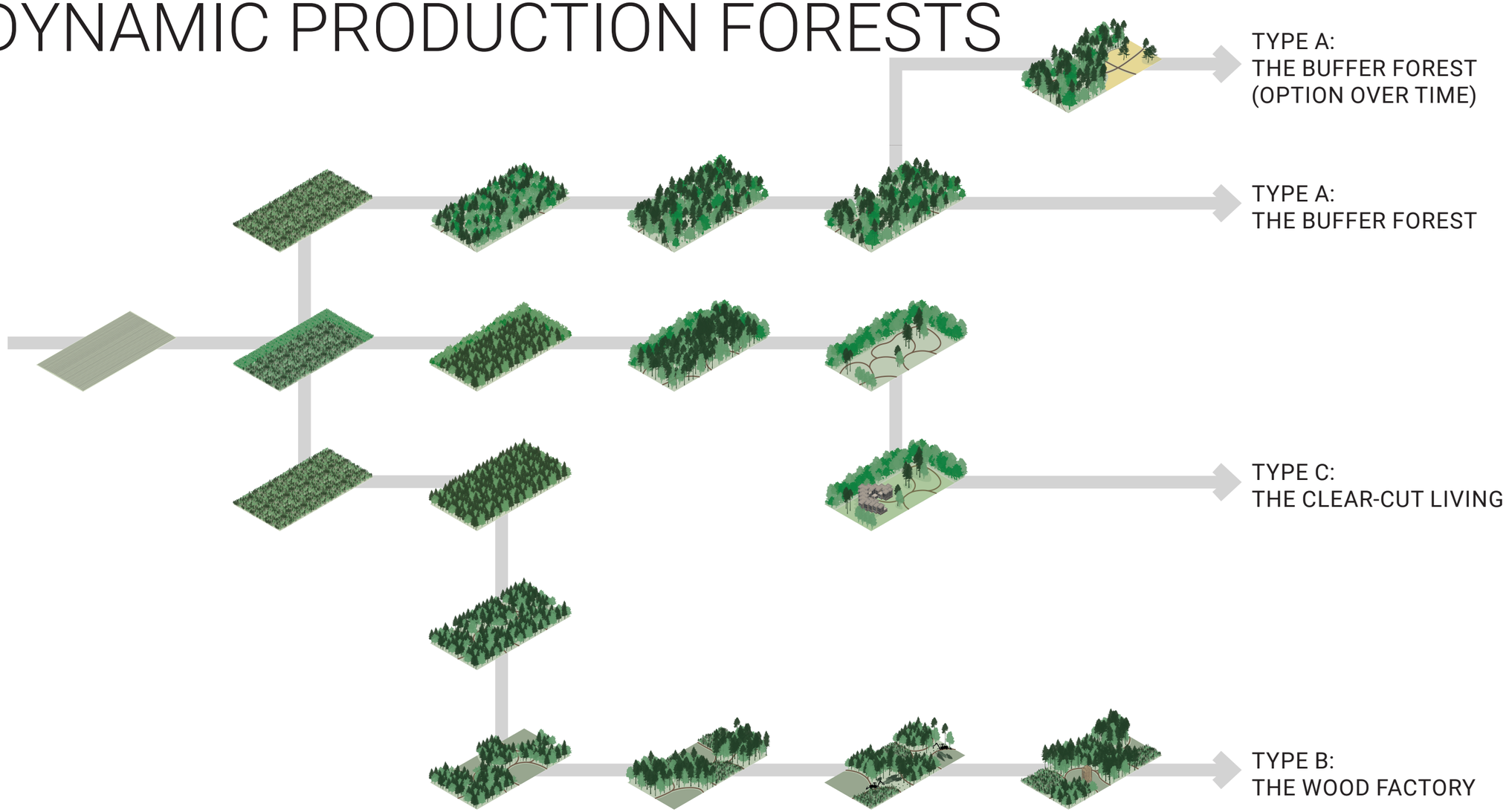
Type B: The Wood Factory



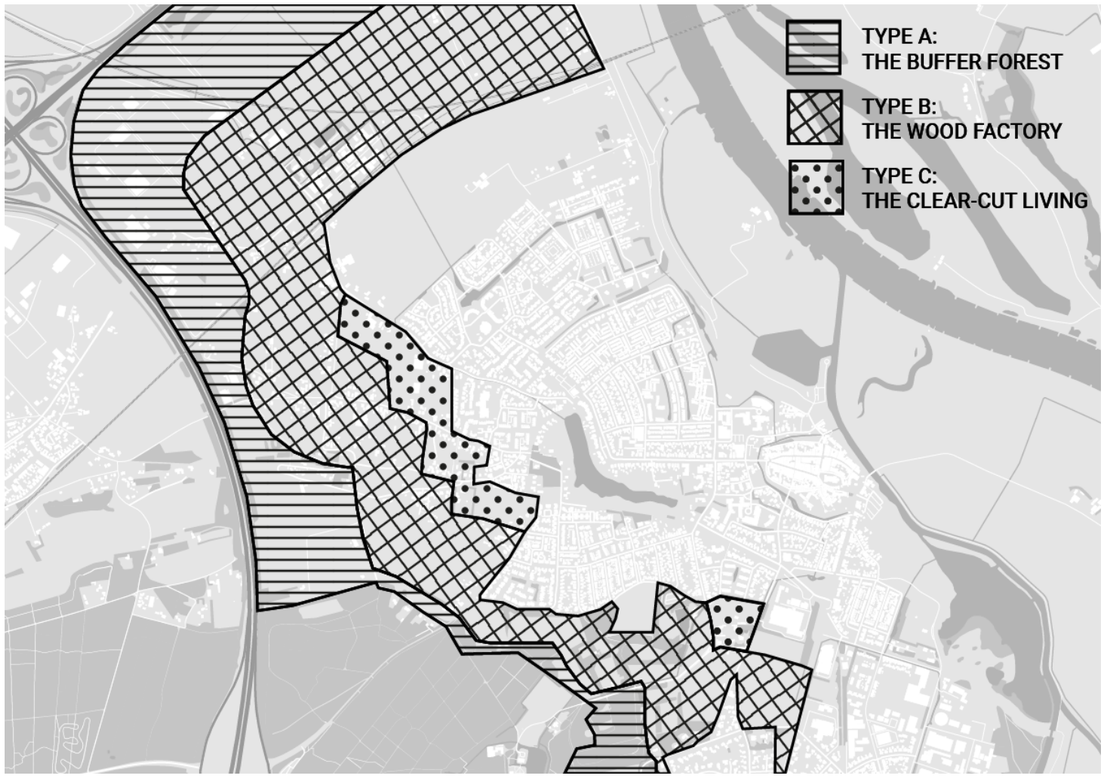


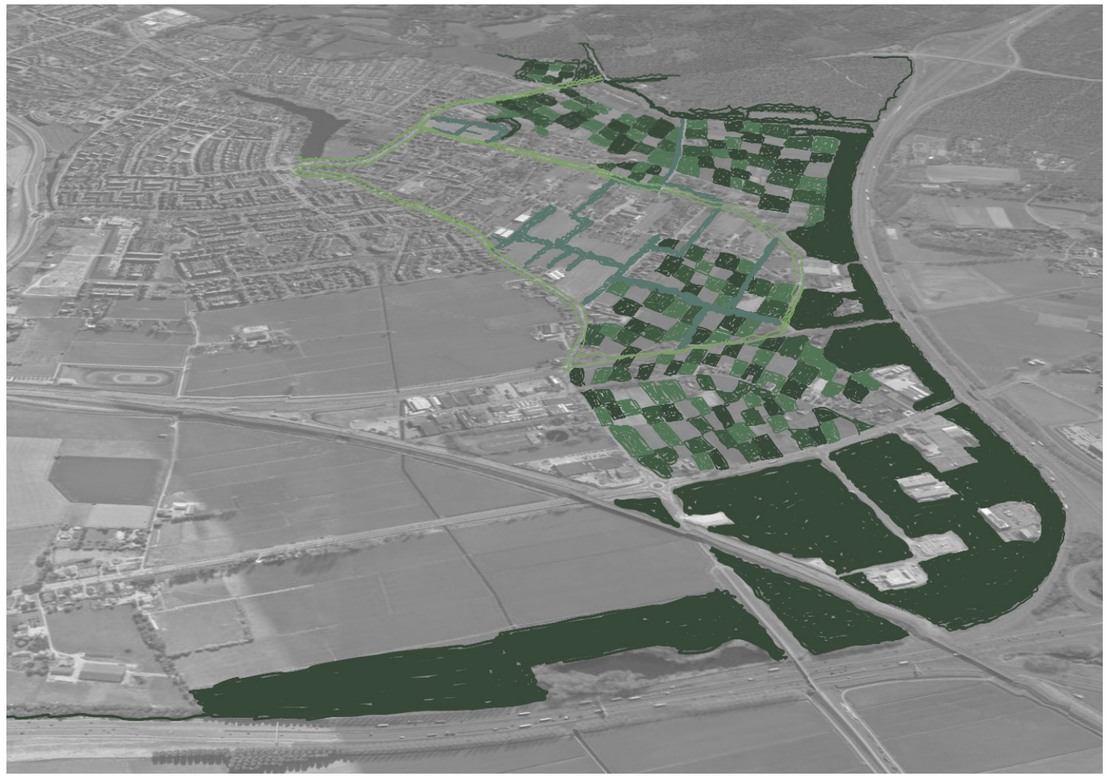
Type C: The Clear-cut Living

3 DYNAMIC PRODUCTION FORESTS



HATTEM: WOOD IT BE ENOUGH?

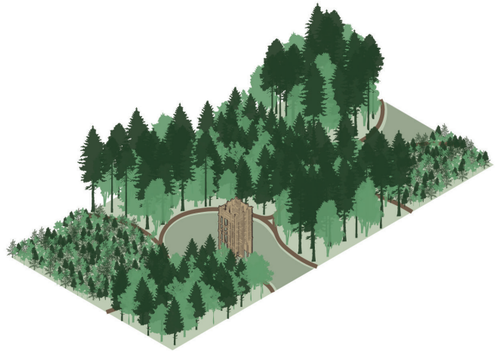




2,25m³ p/y/h

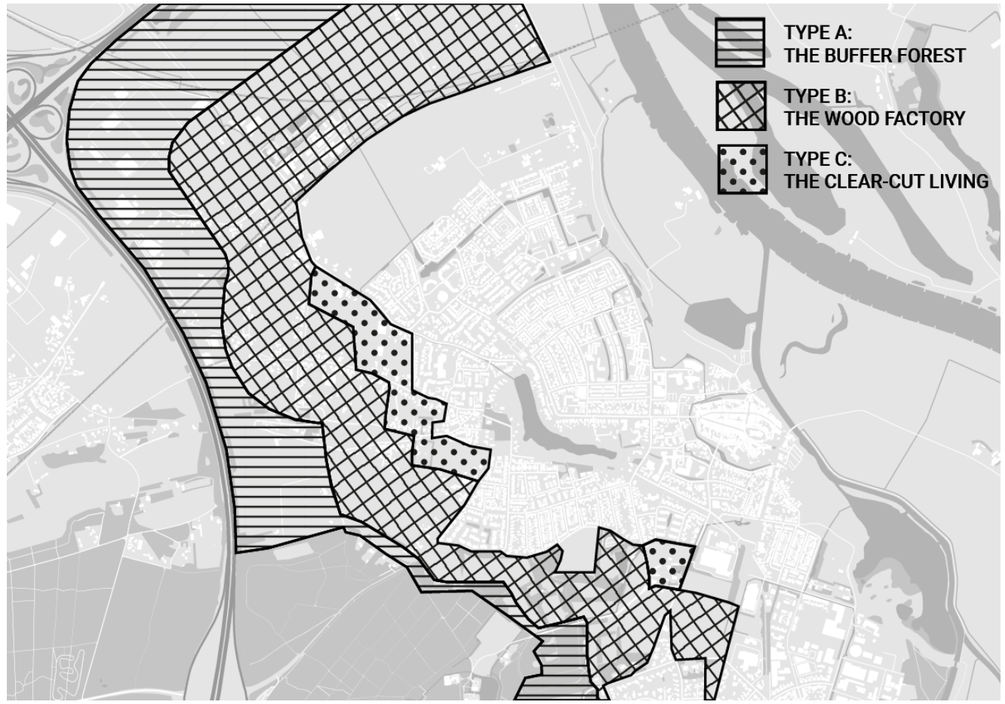


5 m³ p/y/h



3,75m³ p/y/h



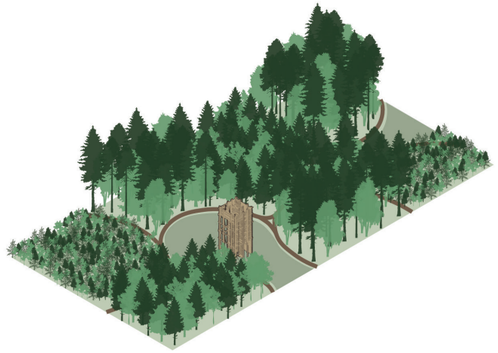


In 2150 the harvest will be...

2,25m³ p/y/h

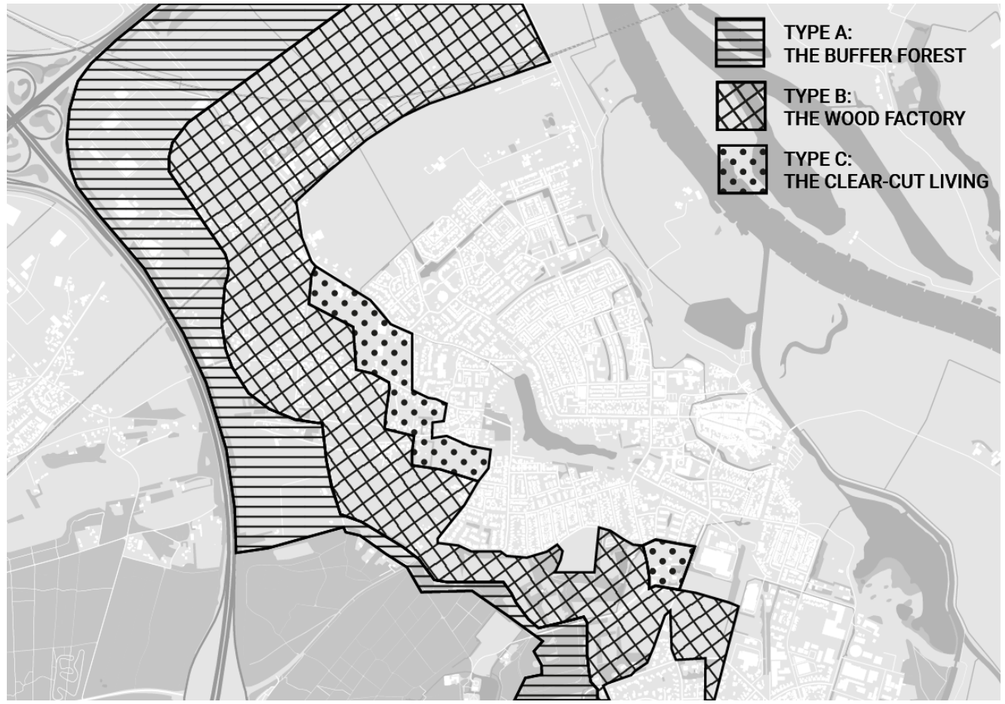


3,75m³ p/y/h



5 m³ p/y/h





In 2150 the harvest will be **1.162,5 m³ wood** being **38 houses** of 3 people households

SO WHY NOT?

1. Relationship humans and landscape changed > detachment awareness origin materials





SO WHY NOT?

1. Relationship humans and landscape changed > detachment awareness origin materials
2. Circular way of thinking > complex and not transparant

SO WHY NOT?

1. Relationship humans and landscape changed > detachment awareness origin materials
2. Circular way of thinking > complex and not transparant
3. Developments of landscapes takes a long time > cathedral thinking



https://mein.toubiz.de/api/v1/article/07548756-4320-4e00-a600-09dd2e58b97a/mainImage?-format=image/jpeg&width=1900

SO WHY NOT?

1. Relationship humans and landscape changed > detachment awareness origin materials
2. Circular way of thinking > complex and not transparant
3. Developments of landscapes takes a long time > cathedral thinking

Introducing production forests opportunity:
- create awareness
- reintroduce way of thinking

