

FOR THE TREES

SEE THE FOREST

TRANSITIONS IN SWEDISH PRODUCTION LANDSCAPES



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Les Enfants Trouvés, René Magritte

SUMMARY

Climate

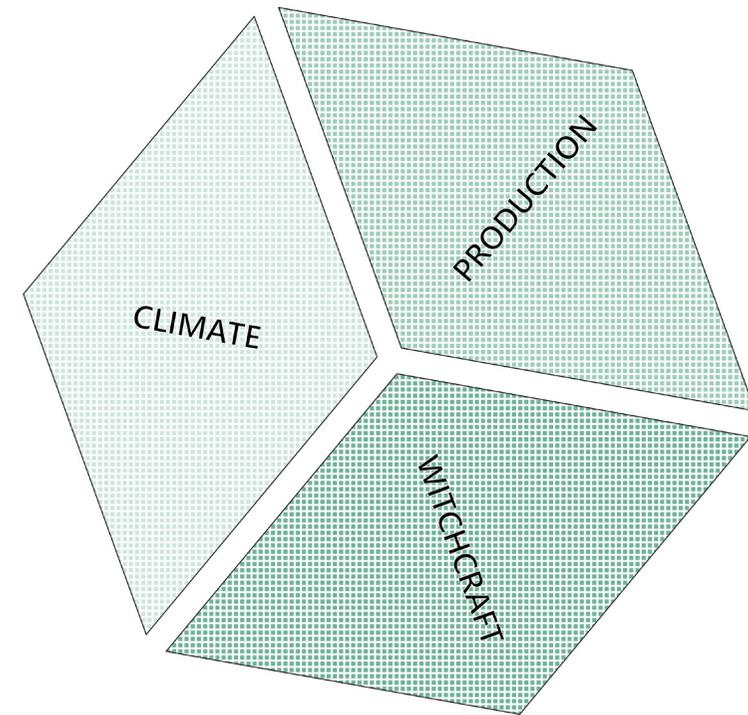
The Swedish forest is primarily a space of production. It is debatable whether this forest should be called forest or not, since it lacks biodiversity and ecological networks. The productive forest could as well be described as a land of planted trees. Forest industry is emitting 85 million ton CO₂. That exceeds the remainder the rest of the emissions in the country, which correspond to 63 million ton CO₂. (Säfve, 2021) Sweden has set a goal to become climate neutral in 2045. The forest is chosen as one of five key components to reach the targets of the Swedish Climate Act. (Regeringen, 2017)

Witchcraft

Swedish forests are affected by problems like wildfires, insect infestations, storms, and acidification of waters. These are issues that can be related to climate change. (Herdesang, 2018) The current debate on how to handle climate change is polarized. It is a battle. On one side, those who want to preserve and downsize. On the opposite side, those who believe in innovation and technology. (C. Mann, 2018) In a Swedish forestry context, while activists want to protect, and the industry invests in the bioeconomy. I aim to be aware about the positions I take and what role this project has in the discussion. In the chapter “Witchcraft” I will elaborate on my approach which is dualist and explorative.

Production

Today’s productive forests are remote hidden places with close to none human interaction. A way of bringing these spaces into presence would be to make both production and ecosystems more visible to us. The architectural interventions in the project will both expose the supply chain by visualizing the steps of it and emphasise the qualities of a more natural forest. I think we need to be present in these forests to ground ourselves. The prolongation of this certain awareness about these fortests could be an understanding for the importance of climate action



3 scales

The manufacturing of wood is part of global and local systems as well as levels in between. This project has three main scales. The national, which is about strategy and organization. The regional, being both diagrammatic and specific about the ecosystems of forests. The local, exploring existing structures and proposing prototypes. In summary, the project will regard new strategies for forest industry and proposals for architectural interventions. It is about envisioning an alternative forest practice and visualising a future vision for Swedish forests.

UN GOALS

This diploma project will work actively with the Sustainable Development Goals set by the UN. The selected goals are related to the context of Swedish forestry, issues that will be investigated with an architectural methodology.



Key Goals

Goal 9: Industries, innovation and infrastructure

Build resilient infrastructure, promote sustainable industrialization and foster innovation



Goal 13: Climate action

Take urgent action to combat climate change and its impacts



Goal 15: Life on land

Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss



Complementary

Goal 8: Decent work and economic growth

Promote inclusive and sustainable economic growth, employment and decent work for all



Goal 12: Responsible consumption and production

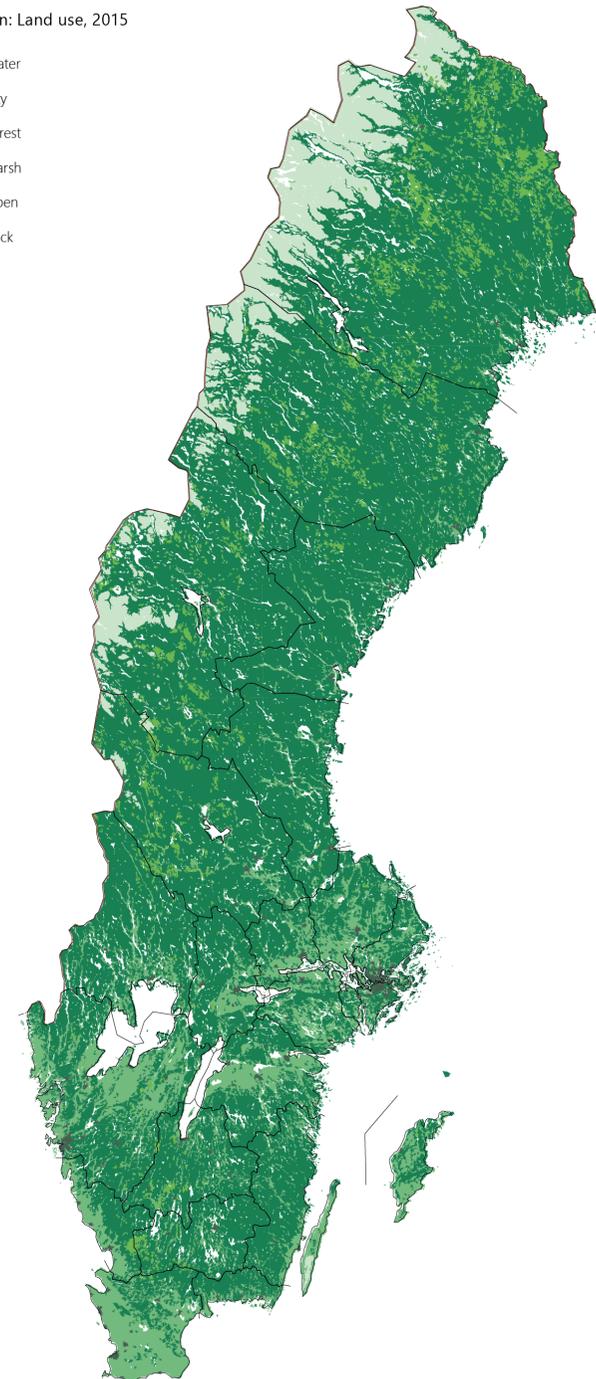
Ensure sustainable consumption and production patterns



Goal 17: Partnership for the goals

Revitalize the global partnership for sustainable development

Sweden: Land use, 2015



INTRODUCTION

FOREST

What is a forest?

“Land spanning more than 0,5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds *in situ*.” (FRA, 2015) That is the international definition of the concept “forest”, set by the UN. This concept does not differentiate industrial plantations from forests in natural systems. The discrepancy may have major impact on how we perceive, manage, and plan future forests. In prolongation, the classification may also result in losses of natural habitat, natural disasters, and climate changes. The natural forests are complex places of trees, plants, animals, bugs, and fungi. These organisms work together, having different roles. The trees enable carbon storage and most of it is stored in the ground.

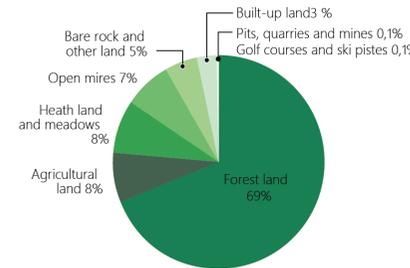
Alternative forestry

The main forestry method of today is clear-cutting, and many old trees have been replaced with even-age trees of one species. As a consequence, more than 80 percent of the Swedish forest is younger than 100 years old. (Aspsjö, 2018) Young forest do not have the same ability to provide products and services that are crucial to our society. The need for alternative forestry methods is required to reach sustainability goals. (Herdesang, 2018) This project proposes a transition to forestry adapted to forest ecosystems; a protective system for monitoring the regeneration of forests, where trees grow for a longer time.

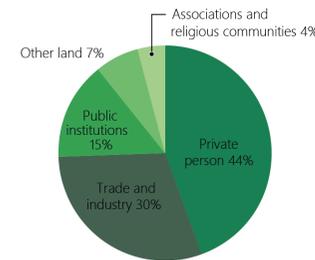
See the forest

Instead of being part of ecosystems, plantations are managed as a bunch of trees that should produce as much wood as possible in a short period of time. The expression “can’t see the trees for the forest” means that when you observe a detail you might overlook the bigger picture; you might not realize that the trees go together to make a forest. In a plantation the trees are treated as separated and self-sufficient. In a natural forest the trees are not separated from the ecosystems they are part of. A forest is a complex system where trees play a crucial role in cleaning water, supplying other species with nutrients, and storing carbon.

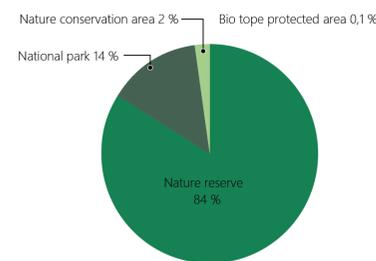
Sweden: Land use, 2015



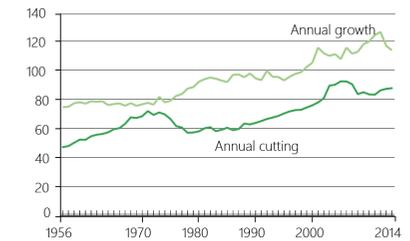
Sweden: Ownership, 2015



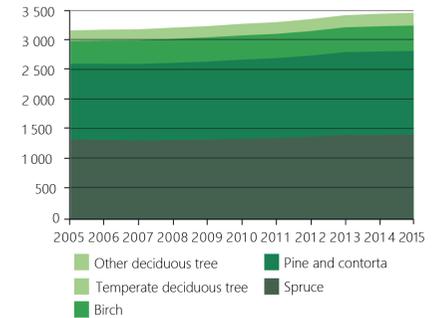
Sweden: Protected forests, 2015



Annual tree cutting and growth, 1956-2014, million m³sk



Timber stockpile, 2005-2015, million m³sk



Dry weight of tree biomass, 2015, million ton

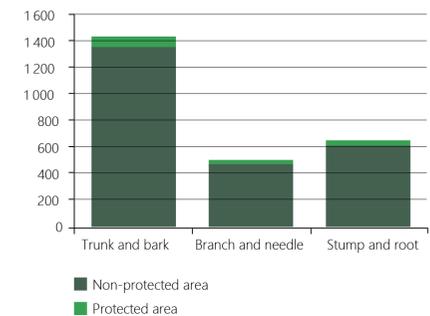




Photo: Johannes Söderqvist



Photo: Cathrine Ljungqvist

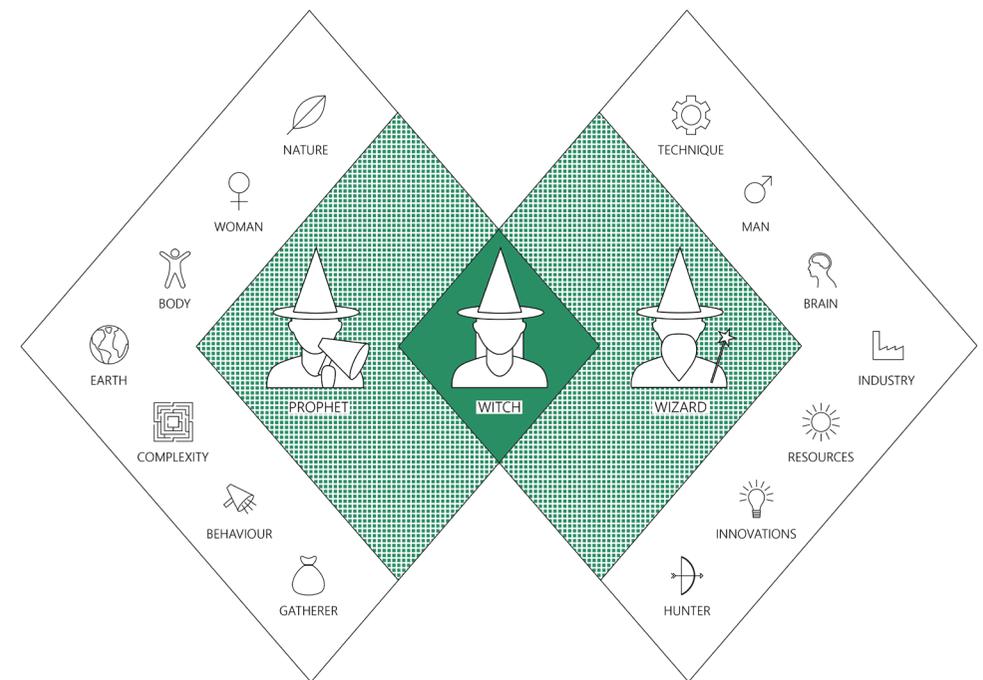
WITCHCRAFT

Climate debate

The climate debate can be described as a battle between "prophets" and "wizards" (C. Mann, 2018). The prophets who advocate preserving, downsizing and stop consuming. The wizards who see innovation and technology as the main solution. We usually take one position and dig ourselves deeper into our positions. I think we need both characters and their thinking. From my perspective, the "witch" is a symbol for this combination. The witch is present in the forest observing, learning, and experimenting. He/she is creating a close relationship between nature and technology. I believe that this dualism is crucial to approach the climate issue, formulating an alternative to the current practices.

Dualism

The term "cyborg" has been used to explain interconnections, how nature and technology shape politics, economy, and our beliefs. (Haraway, 1991) "All species on the planet are in some way affected by the offsprings of technology. Humans and other species can be described as bodies of both animal and machine. This dualism is not a contradiction, because there is no clear border between the natural and artificial. The forest is interacting with the earth's climate, as well as with human interventions. The tree itself becomes a construction of natural and human made. Biological and industrial mechanisms are assemblages that make the forest a cyborg." (Arrland, 2020)



Witch

In this diagram the prophet is described as someone relying on mother earth; an object perceived as a woman body. She nurtures, provide us with goods and saves us from natural disasters. Opposite to this character, there is the wizard who believes in the human made; also defined as the male intellect. He concurs the world with technological solutions. The witch is a merge of these characteristics. He/she states that the human does not have to dominate and exploit. There are other ways. (Le Guin, 1986) The witch sees the complexity of mother earth by valuating care-taking, relationships and the environment. From this world view he/she gains the ability to create and coexist.

SOCIETAL CHANGE

POLITICS

Policy, law, regulation

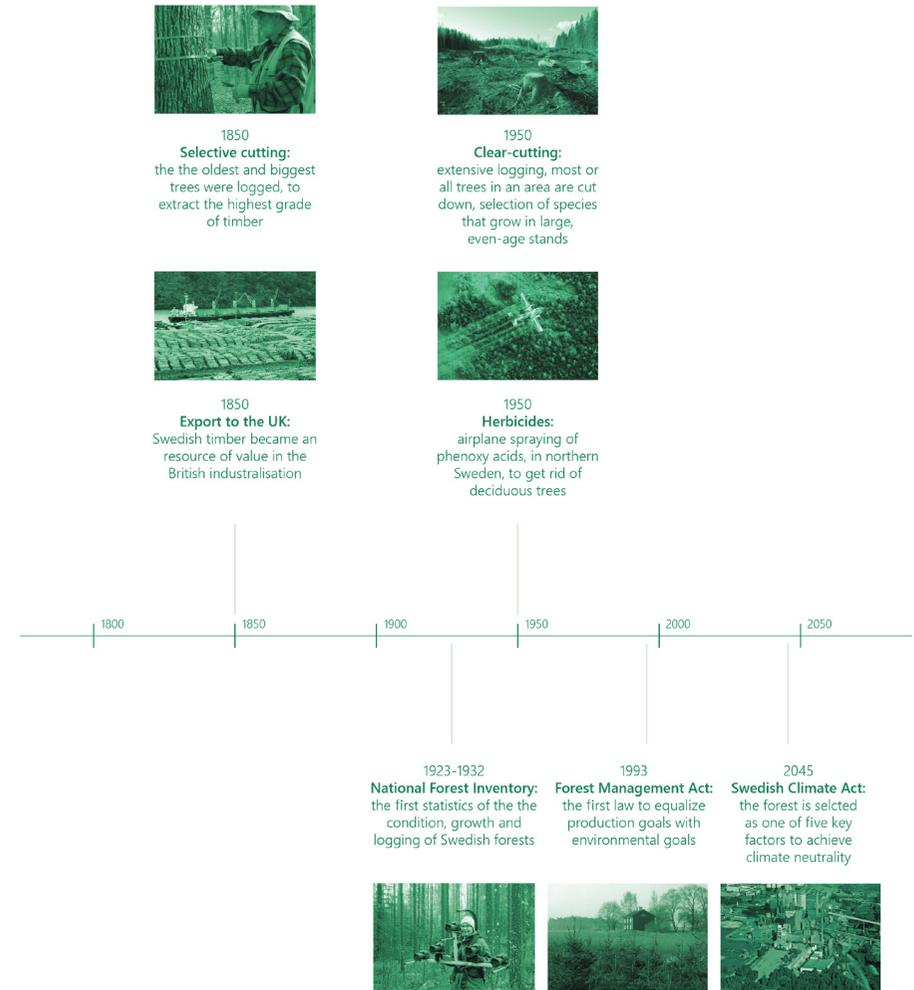
In Sweden, we lack a holistic view on forest policy. Today's policies are characterized by constant changes, which generate instability not only in the forest sector but to the forest itself. A comprehensive policy must consider many factors such as timber supply, climate, biodiversity, environment, water, culture, prosperity, nature tourism, outdoor life, etcetera. It is a challenge to incorporate all these needs and interests. One issue is that the forest policy has been reduced to act as a singular and isolated sector. The question of forest management only involves two actors – the state and the forest owners. (Nilsson, 2021)

EU Taxonomy

The current debate is about the taxonomy programme carried out by the EU in 2020, as part of the European Green Deal. The taxonomy is a tool to classify investments as more or less sustainable. Swedish politicians have claimed deforestation to be a green investment. They say that wood can be used as a renewable product for construction, fuel, and heating. The EU has been critical of the forestry plan that Sweden submitted, as it focuses on the production and less on climate actions like restoring forests.

Forest Investigation

In 2019 the debate was about the state investigation about forest ownership: "The Forest Investigation would examine the possibilities and submit proposals for measures of strengthening the ownership of forests, new flexible forms of protection and compensation for the protection of forest land". No one was satisfied with the outcome of the investigation. The Forest industry claims there are too much emphasis on protecting nature and limiting the productive use of it. While the Swedish Society for Nature Conservation is strongly critical, saying that the forest protection is insufficient.



Inventory of Key Biotopes

In 2018, the Inventory of Key Biotopes was carried out. It aimed to identify, define, and register areas with endangered or rare species that need space and natural resources for their survival. Key biotopes have no formal protection in the law but play a role in the certification systems, since you cannot sell wood from key biotope areas. The forest industry has criticized the concept and methodology, saying that the assessments are subjective and too strict.

SOCIETAL CHANGE

TRANSITION

Access

Our relationship with nature has been changing over time. The concept Right of Public Access was established in 1940 and became a law in 1994 stating that “everyone should have access to nature”. It gives us the freedom to roam anywhere if we do not disturb or destroy. We have the right to move freely, to make short stays and to pick mushrooms, berries, and other plants. The concept has something to say about Swedish mentality – the individual’s right and obligation to care for the environment and the common good. The Forest Management Act has been constructed in a similar way; the law declares “with freedom comes responsibility” and the law equates environmental and production goals.

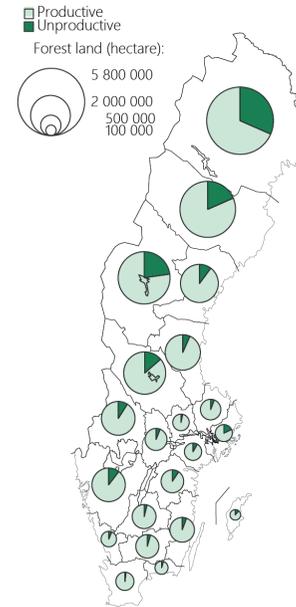
Non-places

The productive forests, no matter ownership, are covered by the Right of Public Access but it does not mean that people actually visit it. These forests tend inaccessible because of distant location, typography, and the industrial activity. Typically, these plantations consist of coniferous trees planted in a dense and symmetrical way. Sometimes these forests are even exceptions to the law, the forests may be fenced. By removing people from the equation, the plantations become hidden and remote non-places. Places that would have the potential to host biodiversity, other ecosystem services and being a climate buffer.

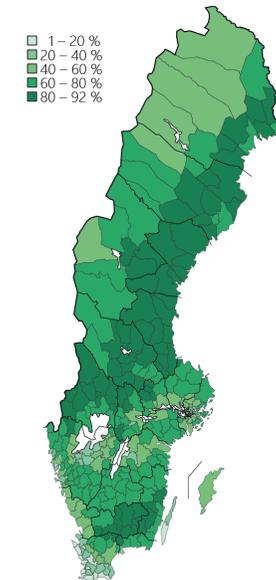
Future

Stig-Olof Holm, researcher at Umeå University Department of Ecology and Environmental Sciences says: “There are conditions for nature tourism, but the more you harvest and convert forests into plantations, the worse the conditions will be. If you look at the employment within the tourism sector in Sweden, it is larger than the employment in the forestry sector. This is a future industry that is being destroyed in a way that causes major environmental costs and climate impact.” The cultural value of forests is an argument for a transition to more liveable forests.

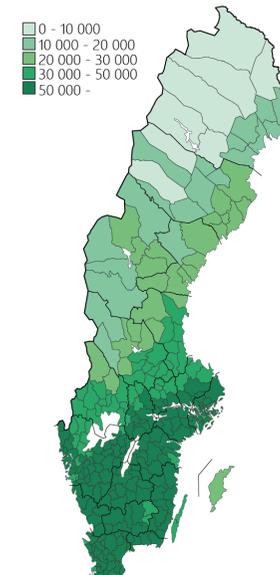
Sweden: Forest production, 2015



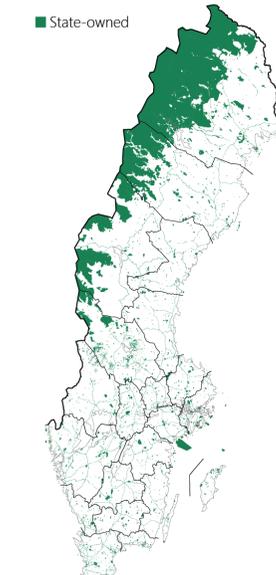
Sweden: Forest production, 2015



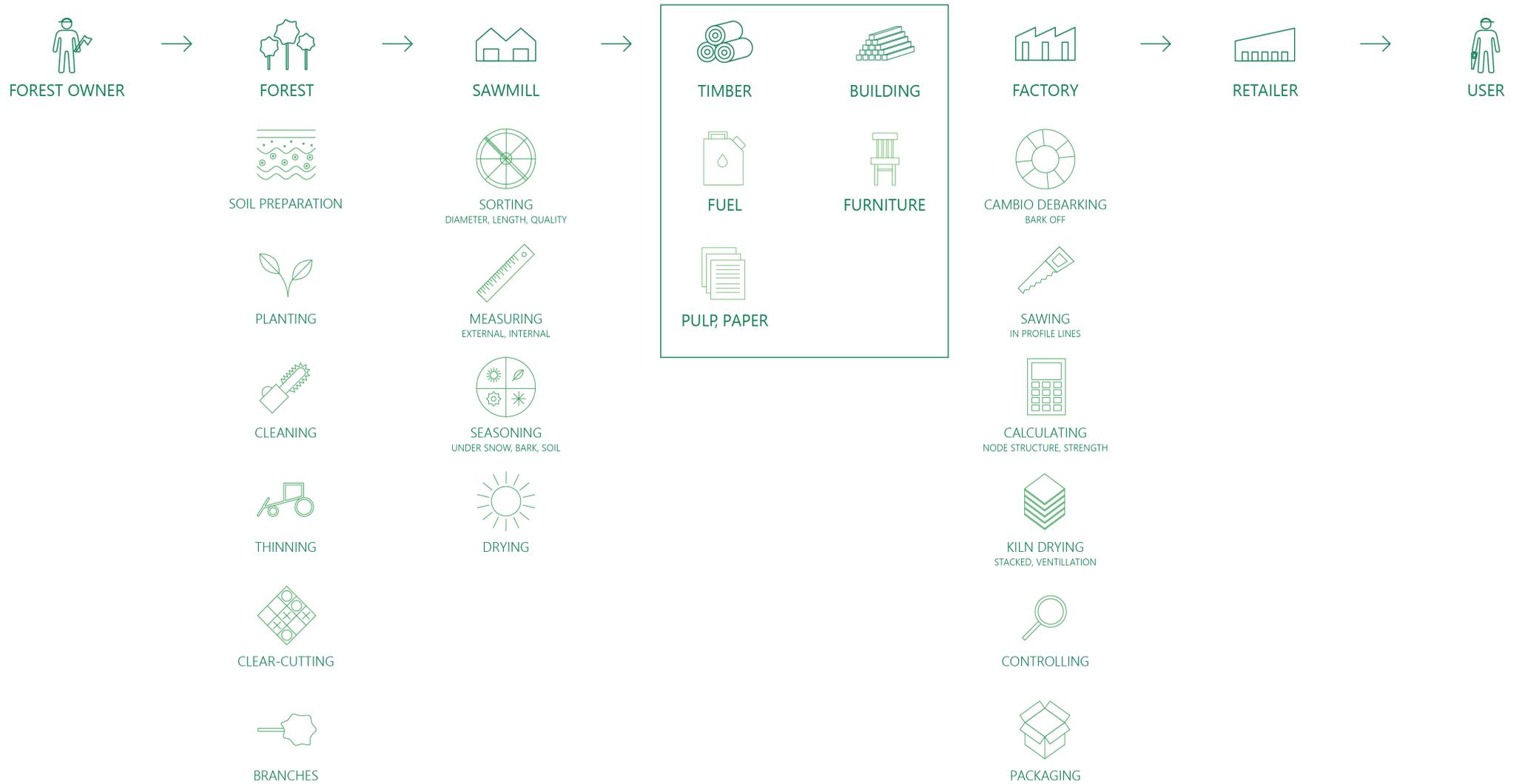
Sweden: Forest production, 2015
Ratable value, SEK per hectare



Sweden: State-owned land, 2015



FORESTRY SUPPLY CHAIN



INTERDISCIPLINE

Contacts

This project will have a collaborative approach where I will be in contact with forest owners, ecologists, manufacturers, and others. The aim is to weave together interests, knowledge and ideas. My first contacts are the students Julia and Jenny with backgrounds in natural science, who are also working on their diploma projects about Swedish forestry. I have learned a lot from talking to the forest owner Karl, who will also show me around in his forest. These discussions have been about production as well as nature values. I will continue to reach out to people with different professions and be open to their perspectives.

Architect

In learning about a subject, I believe that architects need to connect to different actors, disciplines, and sectors. “We should know about the materials we are using and be concerned about the systems they are part of. We should ask about the conditions for producing wood, the effects of this production and how we can contribute to a more ecological way of manufacturing it.” This practice of understanding a material engages a range of actors in different disciplines. Architects can participate in all parts of the process – in the initial decision of material, in the production of it and the practical use of it.” (Arrland, 2020) To me, the architect is both a generalist and specialist. Generalist when being in contact with other professions, specialist when creating a design proposal.

Vision

In this project I want to position myself as someone who can visualise and communicate a future vision on multiple scales. I am an aspiring architect who engages in global issues, with a focus on ecological concerns. I want to make a planning proposal that is about societal transformation. The vision should not be either or, it should allow for a multitude of views, propositions, and outcomes. It is less about architecture as the main solution but rather creating coherence between sectors to formulate a future vision.



FORESTER

Name: Karl Månsson **Occupation:** Engineer, independent consult at KAMAN Konsult
Interests: Operational leadership, consultant, and forest owner
Forest relation: Being in the forest is both a hobby and a work. He focuses on production and maintaining nature values.
Forest vision: The forest should evolve over time, adapted to climate changes. It is an important source for raw materials. It should also be accessible for people to visit for recreational purposes.



ECOLOGIST

Name: Jenny Bergenheim **Occupation:** Student, Environmental Studies and Sustainability Science, Lund University
Forest interest: Master thesis about forest policy and forestry in relation to forest birds.
Forest relation: Grew up close to a nature reserve and spent a lot of time there with her family, and has always loved spending time in forests.
Forest vision: Envisions a future of forestry in Sweden using more broad-leaved trees and mixed forests for production, that also mimic natural disturbance regimes rather than predominately relying on clear-cutting.



ECOLOGIST

Name: Julia Elmqvist **Occupation:** Student, Climate Strategy, Center for Environmental and Climate Science, Lund University
Forest interest: Master thesis about the biodiversity and bioeconomy in forestry.
Forest relation: Forest is part of her identity, like many other Swedes. She grew up with forest close by, but it is not a unique relationship.
Forest vision: Nothing specific, but it is important that all interests are taken into consideration, above all a biological diversity.



GABRIELLA ARRLAND

Forest relation: Mainly curiosity. I grew up in the south of Sweden where there is less forest than in many other parts of the country. I like to visit the forest and is fascinated about everything that is unexplored about it. I want to learn much more.
Forest vision: Forest politics should be based on knowledge and long-term goals. It seems like ecological concerns have been overlooked for a long time. A transition of Swedish forestry is essential to economic, cultural and ecological matters.



MANUFACTURER



ECOLOGIST



RESEARCHER



INVESTOR



ARCHITECT



MANUFACTURER



FORESTER



RESEARCHER

RANSERÖD



Site: Ranseröd-Tryggaröd **Congregation:** Stoby **Property name:** 5:8
Municipality: Hässleholm **County:** Skåne **Owner:** Karl Månsson

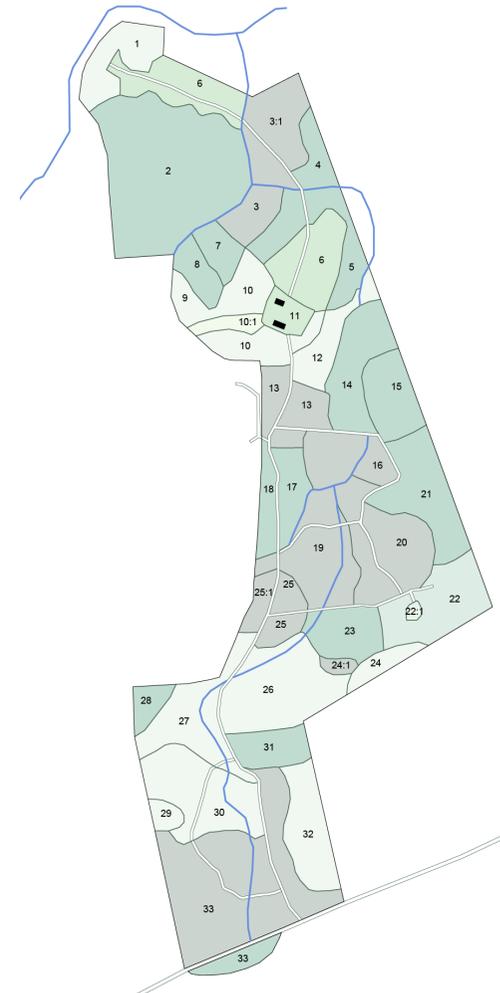
Description

The chosen site is supposed to show the different typologies of a forest, the climatic issues and the possibility of alternative forestry methods. The typologies of the Ranseröd forest vary since the forest owner aims at both production and nature conservation. Like other forests, it is divided into stands that are given certain specifications. Each patch has a description of its characteristics including its volume and type of trees, the planned work for the coming years and the amount wood that it will produce.

Climate challenges

The forest was hit by the storm Gudrun in 2005 and certain areas could hardly be recognized after the event. In total, 272 000 hectares were felled in the southern parts of Sweden, which corresponds to 5,6 percent of the forest (Fridh, 2006). Severe storms occur with intervals of a few decades and climate change contribute to storms with higher wind speeds and more precipitation. (Rockström, 2011) Such storms cause large damage; it takes a lot of work to move away the storm-felled trees and the earnings for selling the wood is low. Trees that fall because of hard wind is a common problem for forest owners, the forest of Ranseröd has been less affected in the last years. Usually, it is monocultural forests of middle-aged spruce planted on agricultural land that fell are targeted under such weather conditions. When these forests are thinned, openings in the tree cover make the trees more vulnerable to winds.

Other risks related to climate change in this area are insect wildfires, infestation, acidification. In 2019 there were a fire outside Hästveda where 160 hectares burnt. Insect infestations are a reoccurring issue since the dry summer in 2018. The spruce bark beetle attacks trees with reduced water supply, usually at higher altitudes. Also, acidification is a problem, both from acid rain but also mercury leakage from diking, soil preparation and felling.



	Hectare	Age	Class	Species
1	1	87	S2	P 10, D 10, O 70, B10
2	4,6	82	G1	P 70, S 10, B20
3	1	12	R2	S 70, B 30
3.1	1	5	R1	D 50, B 20, A 30
4	1,3	47	G1	S 70, B 30
5	0,4	37	G1	S 50, D 10, B 20, O 10, Be 10
6	2,4			
7	0,4	27	G1	S 100
8	0,5	30	G1	A 100
9	0,3	57	S1	P 40, S 30, D 30
10	1,4	87	S3	D 20, B 30, O 40, T 10
10.1	0,3	0	K1	
11	0,4			
12	0,7	52	S1	S 100
13	1	5	R1	S 80, B 20
14	1,3	37	G1	S 100
15	1	37	G1	S 100
16	0,2	5	R1	S 50, B 50
17	0,7	55	G1	S 30, Be 60, B 10
18	0,5	37	G1	B 100
19	2,5	8	R2	S 70, B 30
20	1,9	12	G1	S 90, B 10
21	1,7	42	G1	S 100
22	1,5	17	G1	S 100
22.1	0,1			
23	0,9	27	G1	S 90, B 10
24	0,4	57	S1	S 100
24.1	0,1	14	R2	S 90, B 10
25	0,7	5	R1	S 80, B 20
25.1	0,3	5	R2	B 100
26	2,1	87	S2	P 30, S 70
27	1,4	87	S2	S 20, Be 30, O 30, B 20
28	0,4	37	G1	S 100
29	0,2	77	S1	P 100
30	2	52	S1	S 100
31	0,7	17	G1	S 100
32	1	62	S2	S 10, D 30, Be 20, O 10, B 20
33	4,2	5	R1	S 90, B 10
34	0,4	42	G1	B 100

Species: Alder, Birch, Beech, Deciduous, Oak, Pine, Spruce,

- G1 - young thinning forest
- K1 - untreated land
- R1 - young cleaning forest, shorter than 1,3 m
- R2 - young cleaning forest, taller than 1,3 m
- S1 - final felling forest
- S2 - final felling forest, more urgent
- S3 - final felling forest, for nature conservation
- None

LOGISTICS

Roads

The plot is adjacent to the county road 119 from Stoby to Ryd. One main road is leading up to the house in the north. The road is made of gravel and is wide enough for timber trucks to use it. It needs to be maintained constantly. Gravel is added every fifth year and vegetation along the road must be cleared regularly. When trucks drive through, there may be need for additional efforts like felling trees. This year there will be new classifications for roads, which might suggest that the main road will no longer allow for trucks. The tree cover must frequently be opened for machines to be able to pass. Then there are a few corridors for machines, called skid roads. The skid roads are planned when the trees are planted, preparing for future machine work.

Production

Many years of clearing and thinning is heavy work with limited financial income. Felling is the main goal of tree production. The Ranseröd forest consists of a range of different tree species and ages. For the production, the standing volume accounts for 62 percent spruce and 13 percent pine. The production trees are up to 90 years, most of them are five and 85 years old. It means that the forest is equally divided into the categorizes R clearing forest (35 percent), G thinning forest (38 percent) and S felling forest (27 percent). The forest owner Karl is in contact with the Forest Owners' Association Södra and the company Sydved to decide how the forest should be managed.

Felling

There is always work to do in the forest, mainly clearing and thinning. Moreover, windthrown trees will have to be cut into pieces. When there is a need for bigger efforts, like felling, Karl seeks help from others. He rents machines from his neighbours or the company Sydved. A scarifier is used to do the soil preparation and a harvester cuts the trees. A forwarder will load the tree trunks and transport it to the closest road. Södra and Sydved will come with timber trucks to pick it up. The timber will be transported to a sawmill. The closest sawmill is ten kilometres away in Hästveda, called Vida.

ECOLOGY

Taking care

Forest management is regulated by state law, balancing interests of the industry with concerns of conservation and protection of natural habitat. In practice, this balance is expressed in the decisions of max volume versus max quality. The individual forester decides to what extent he/she wants to favour a forest of economic profit or other values such as diversity, aesthetics, and biodiversity. Karl tries to balance considerations of production with nature conservation. For example, he will leave some dead wood on the forest floor for species to inhabit it. Opposite to his father, he does not consider it to be waste. His father would move away the dead wood and then get a practical use of it as firewood or similar. Forestry methods change over time, dependent on technology, current regulations and today's cultural understanding.

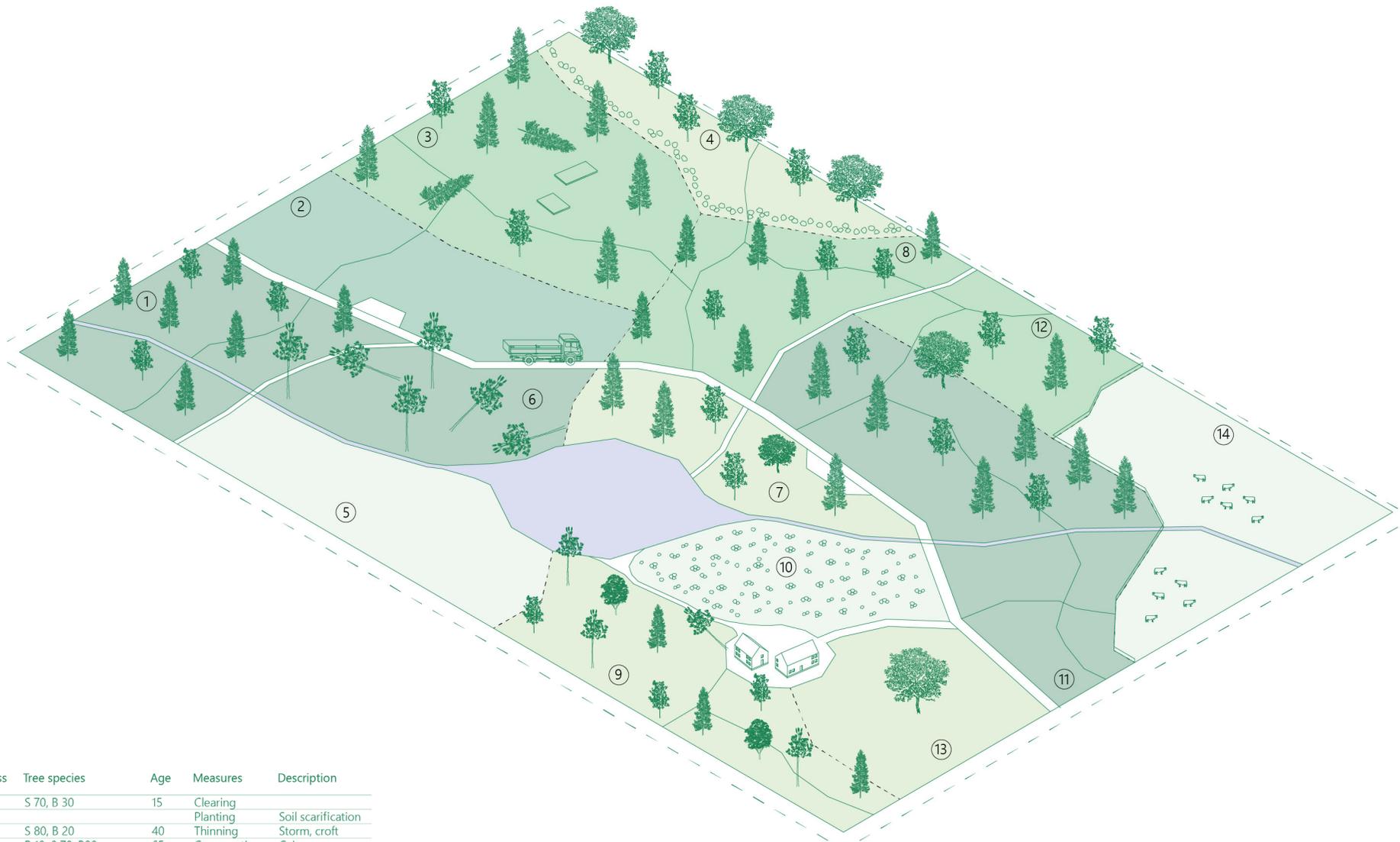
Recreation

Karl goes to the forest for both work and leisure reasons. He always brings his folding chair, to be able to take a break, sit down and observe the details around him. A typical day at work he would walk around, clear some of the debris of the trees and plan for future work. Sometimes he would light a fire when he is taking his lunch break. There are not many people visiting the forest. The lake Kallsjön is on the north side of the plot and there are also some small vacation houses. When people do pass by, they may be on their way to the lake, going for a swim.

Landscape

The forest consists of many different types of land – like pasture, peat, meadow, and gravel pit. Most of the area is covered with trees. Besides coniferous trees there is nine percent birch, five percent beech, five percent oak and two percent alder. The birch species thrive in the Ranseröd forest and is self-generating. Karl wants to get a broader mix of tree species and allow for more deciduous trees in some places. Some of the trees are old and therefore called eternity trees. In one corner of the old oaks are protected by nature conservation laws.

FOREST TYPOLOGIES



Class	Tree species	Age	Measures	Description
1	G1 S 70, B 30	15	Clearing	
2	K1		Planting	Soil scarification
3	R1 S 80, B 20	40	Thinning	Storm, croft
4	S2 P 10, O 70, B20	65	Conservation	Cairn
5				Peat
6	G1 P 100	25	Thinning	Storm
7	S2 S 10, Be 40, O 10, B 30	30	Diverse	
8	R2 S 70, B 30	10	Clearing	
9	S1 P 40, S 30, B 30	10	Regeneration	
10				Gravel pit
11	G1 S 50, B 30, O 10, Be 10	55	Thinning	
12	R2 S 70, B 30	35	Clearing	Storm
13	S3 O 100	70	Conservation	Building
14				Meadow, pasture

Species: Alder, Birch, Beech, Deciduous, Oak, Pine, Spruce

- G1 - young thinning forest
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- R2 - young cleaning forest, taller than 1,3 m
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- S2 - final felling forest, more urgent
- S3 - final felling forest, for nature conservation
- None

3 SCALES

The project will be examined on three scales: the productive forests on a national scale, the typology of earthly systems, and the layout of a specific forest. Each scale should inform and be reflected in the other scales, to generate a coherent and multi-layered project.



National

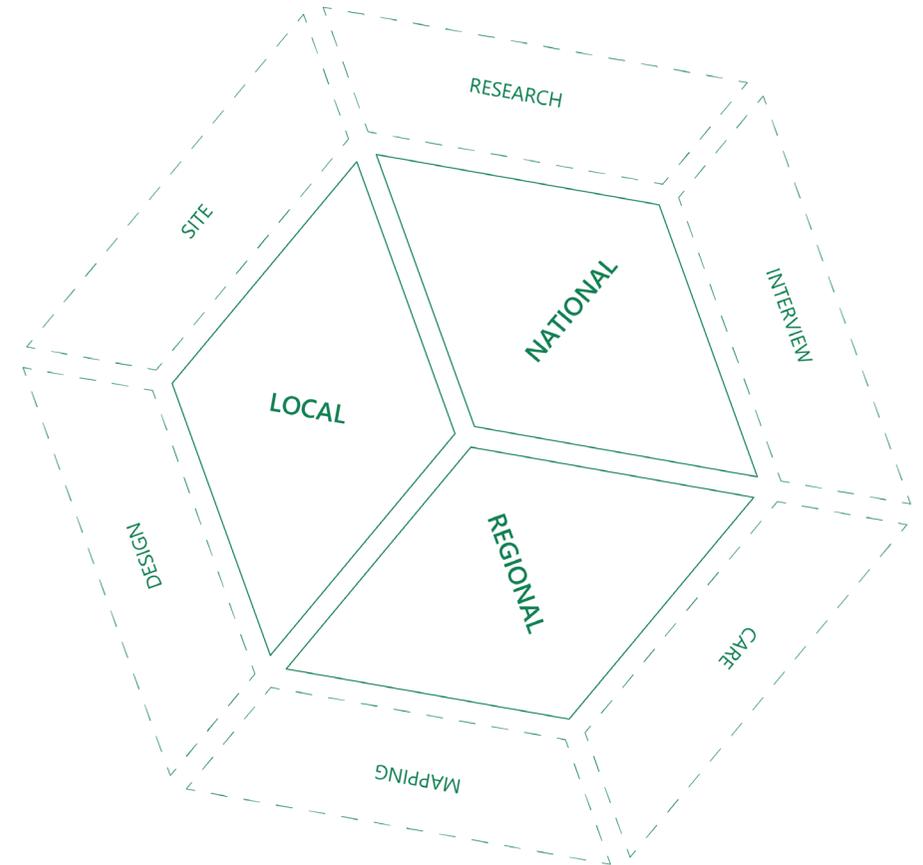
A strategy for future development of Swedish forestry. The vision is articulating a position in relation to current societal challenges and future uncertainties. It includes three main themes which are climate changes in forestry, alternative production methods and human connection to nature.

Regional

A planning proposal based on the national strategy. It will explore the typologies of the forest landscape, by describing and developing ecosystems and infrastructures of the site in a broader meaning. This scale examines a diagrammatic methodology, by analysing logistics, stake holders, and supply chains. Also, natural systems, animals, and human activity.

Local

An intervention showing the implications of the large-scale propositions. The intervention will be explored in relation to its organisation, spatial qualities, and atmosphere in relation to the surrounding environments and systems. The design approach is about presence, connection and taking care of both natural and human structures.



PROGRAMME
DESIGN

Division

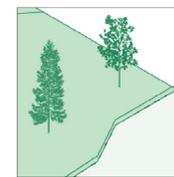
Some people have a rather spiritual relationship to the forest. The concept of “forest bathing”, or “shinrin-yoku” in Japanese, is about being in the forest and opening up our senses. In this experience we can bridge a gap between ourselves and nature. When observing details in the forest we understand the importance of ecological processes: how trees grow, live in symbiosis with other species, and dies. These are the details we remove when trying to control a forest. I wonder what would happen if the strict division of monocultures and biodiverse forests would be dissolved.

Shinto

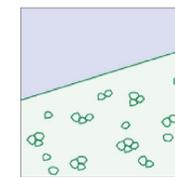
I want to use Shinto religion to formulate the design principles of the project. If Shinto represents the presence of humans in interaction with nature, the religion can be used to exemplify how inaccessible hidden places of the production forest can be transformed. Shinto has been described as a practice that worships nature – with the aim to retain harmony between human beings and the environment. “Chinju no mori” are forest patches surrounding a shrine, often small and old growth. Usually, they have great historical connection to the local communities, thought of as a divine protection for the village. Also, they maintain a symbolic link between the present and the past.

Dualism

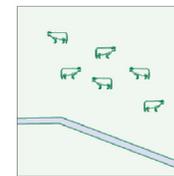
I will look further into Shinto and its design since it is a practice about creating and coexisting. The Shrine is an example of an architectural intervention being part of the forest typology. It has a dependent relationship to its environment. I think there are reasons to make the Swedish productive forest more of a spiritual place – for us to reconnect to the ecosystems our existence depend on. The design will focus on the situations where natural and human made meets, conflicts, and connects. As described in the chapter “Witchcraft”, this is a dualist approach. The diagrams show some of the places where the forest ecology meets forestry infrastructure. Instead of dividing these spaces and qualities, they will be dissolving, merging, and bringing together.



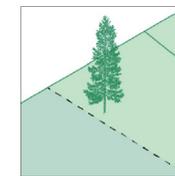
1 - Fenced
Relation: Nature - culture
Examples: Fence, cairn
Design: Invite - reject
Examples: Experience, observe



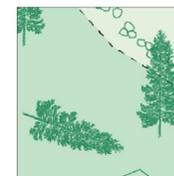
5 - Lake
Relation: Water - land
Examples: Peat, gravel, cairn, etc
Design: Control - adaption
Examples: Ecosystem, diversificati



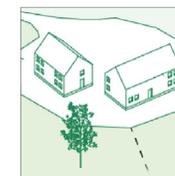
2 - Animals
Relation: Human - other species
Examples: Meadow, pasture
Design: Ecology - resources
Examples: Expanded natural habitat



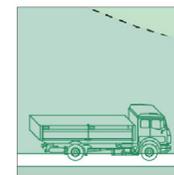
6 - Plantation
Relation: Land - tree
Examples: Scarification, planting, cleaning, thinning, cutt
Design: Division - connection
Examples: Mixed forest



3 - Storm felling
Relation: Climate - nature
Examples: Storm, insect infestations, fire, acidification
Design: Time - use
Examples: Preservation, old-growth



7 - Building
Relation: Forest - human
Examples: Building, croft
Design: Living with - living off
Examples: Taking care



4 - Logistics
Relation: Human - machine
Examples: Forwarder, scarifier, clearing saw, harvester, timber truck
Design: Incorporate - separate
Examples: Organization, management



8 - Skid roads
Relation: Forest - machine
Examples: Truck road, car road, sk
Design: Technology - human
Examples: Cutting methods

DELIVERABLES

National

Strategy and organization of Swedish forestry
Scale 1:1 000 000 (Sweden on a A0 paper) models/drawings

Regional

Planning and ecology of forest area
(typologies, ecosystems, stake holders and supply chains)
Scale 1:10 000 models/drawings

Local

Existing forest and architectural interventions
Scale 1:500-1:200 models/drawings

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TERMINOLOGY

Forest Investigation: Skogsutredningen

Forest Management Act: Skogsvårdslagen

Forest Owners' Association: Skogsägarförening

Inventory of Key Biotopes: Nyckelbiotopsinventeringen

Right of Public Access: Allemansrätten

Swedish Climate Act: Sveriges klimatmål

Swedish Forest Agency: Skogsstyrelsen

Swedish Society for Nature Conservation: Naturskyddsföreningen

Swedish University Agricultural Sciences: Sveriges lantbruksuniversitet

CV

Education

Master of Architecture, Urbanism and Societal Change
Royal Danish Academy, Copenhagen (2019-2021)

Bachelor of Architecture, Institute of Technology
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Experience

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Model maker at the architectural practice 3XN
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Intern at the municipal urban planning department
Lund (2018)

