



Landshypotek Bank

Green Bond Impact Report

17 May 2019

This report has been prepared within Landshypotek Bank's Green Bond Framework published 24 April 2018.
This is the first impact report following the issue of the first green bond on 25 May 2018.

Stockholm, 17 May 2019

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CEO

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Issued bond – brief facts

Issue date: 25 May 2018

Tenor: 5 years

Nominal amount: SEK 5.25 billion

Maturity date: 25 May 2023

Type of bond: covered bond

Coupon rate: 0.75%

ISIN: XS1824244807

Green assets linked to the bond as of 31 March 2019:
SEK 5.63 billion

Number of projects financed by the bond: around 1,300

Forestry terminology

BEF (Biomass Expansion Factor) = conversion multiple for finding the total dry biomass.

Site quality = The land's natural capacity to produce timber. Expressed in m3ob/ha/year.

Carbon Fraction (CF) = carbon content of dry wood.

Net change in growing stock = The change in the standing growing stock measured in m3ob, that is growth less harvesting.

Volume over bark (m3ob) = This metric shows the forest stand's wood volume and includes the entire trunk above the normal stump height. Branches, stumps and roots are excluded.

The carbon dioxide effect = Through this green bond there are two carbon dioxide effects – absorption and avoidance. As the forest grows, carbon dioxide is stored and absorbed in the tree and the amount of carbon dioxide is reduced from the atmosphere. When harvesting forest and when forest raw materials are replacing other material the carbon dioxide emissions are reduced and carbon dioxide emissions are avoided and stored through substitution.

FSC = Forest Stewardship Council

PEFC = the Programme for the Endorsement of Forest Certification

Green Bond Impact Report

Background

In May 2018, Landshypotek Bank issued the first SEK denominated green covered bond. Earlier that spring, the bank launched its first Green Bond Framework. The framework has been reviewed by CICERO (Center for International Climate and Environmental Research-Oslo) and has been awarded the highest shade of green; Dark Green. Under the framework, Landshypotek can issue covered bonds, senior bonds and subordinated notes. The proceeds raised by Landshypotek through the green bonds are to be used to finance sustainable forestry, renewable energy or green buildings.

At the time of publication of this Impact Report, Landshypotek had issued one green bond within the Green Bond Framework. The bond is a covered bond and the proceeds are used exclusively to finance sustainable forestry. The total nominal amount issued was SEK 5.25 billion. The bond attracted considerable interest from Swedish and international investors. This Report solely describes the impact from the underlying projects that meet the framework's sustainable forestry criteria.

“The bank has financed Sweden’s forests for almost 200 years and, each day, we work to promote a richer life country-wide. I view it as a natural progression for Landshypotek Bank to continue with green bonds based on Sweden’s sustainable forestry.”

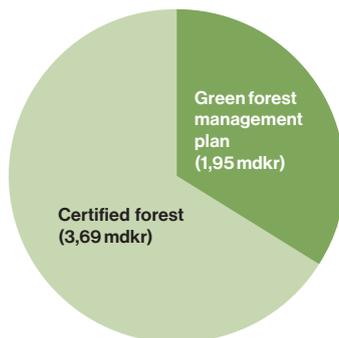
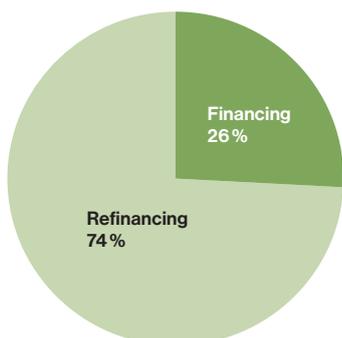
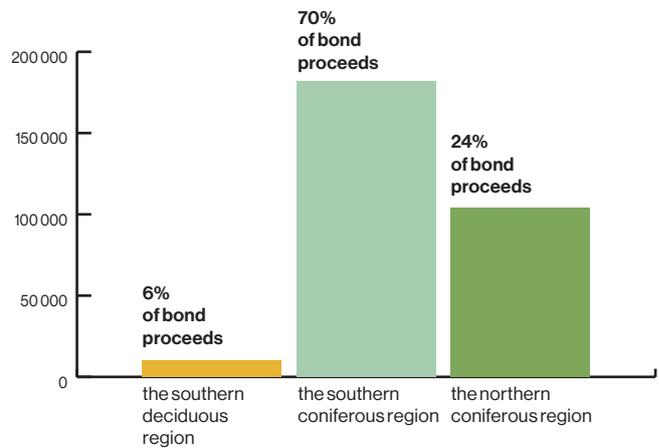
– Martin Kihlberg,
Chief Sustainability Officer, Landshypotek Bank

Landshypotek Bank and the forest

Landshypotek has financed forestry since 1836. The bank is owned by Landshypotek Ekonomisk Förening (the association), in which all of the Bank's loan customers in the farming and forestry sector are members, and thereby own the bank. All of the bank's profits are reinvested in the bank or distributed to the association's members – Sweden's farmers and foresters. Being the first institution to issue a green covered bond backed by Sweden's forests was unique and fully aligned with the objective of Landshypotek's vision, namely to make a real impact in promoting a sustainable society based on the daily activities by entrepreneurs across the country.

Impact reporting

A growing forest absorbs carbon dioxide from the atmosphere. The more the forest grows, the more carbon dioxide is stored. The total net growth after harvesting at the properties financed through the green bond was estimated at a volume over bark of 496,000 cubic metres for the past year. This corresponds to annual carbon sequestration and avoidance of around **1.4 million tons of CO₂**. This means that for every SEK 1 million invested in the bond, around **267 tons of CO₂** has been absorbed and avoided. The figures also include substitution effects but have not taken into account loan-to-value ratios, refer to the section Growth and climate benefit calculations.



9,8 % of the covered bonds issued by Landshypotek Bank are green

8,3 % of all senior and covered bonds issued by Landshypotek Bank are green

296 000 ha sustainable forest has been financed with this green bond

Sustainable Development Goals – SDGs



Goal 13: Climate action

13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries



Landshypotek's contribution: Sustainable forestry binds carbon dioxide and can also replace fossil fuels used for energy in the form of fuel and other products. This means a reduction in carbon dioxide levels in the atmosphere and greenhouse gas emissions, and thereby strengthens the resilience and ability to adapt to climate-related dangers and natural disasters.

The minimum target of five per cent deciduous tree that is included in the bank's Green Bond Framework criteria also means that the resilience of individual forests also increases in terms of natural disasters such as fires and storms.



Goal 15: Life on land

15.1: By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements

15.2: By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally



Landshypotek's bidrag: Landshypotek's contribution: The Swedish Forestry Act states that the forest is a renewable resource, which is to be managed to ensure a sustainable yields of good returns, while taking into consideration the natural and cultural environments, reindeer husbandry and other interests. An obligation to replant after harvesting is also contained within the law. The bank's framework requires customers to comply with the law, and also includes requirements in terms of a green forest management plan, that at least five per cent is set aside for nature conservation measures and that there are targets for inclusion of a minimum proportion of deciduous tree. The forest can also be certified through FSC/PEFC, both of which set at least equivalent requirements. These measures promote more long-term sustainable use of forests and accord with the international agreements implemented in Swedish legislation.

Selection process for green assets

Landshypotek Bank has a Green Bond Committee that determines which assets can be financed with the green bonds issued under the framework. Following the issue of the bond, the Green Bond Committee has held two meetings to decide on the addition of further green assets. Even if the entire proceeds from the issue were initially used to finance sustainable forestry, repayments are made continuously over the year, which is one of the reasons that new assets may need to be added for the green bond. The bank has a buffer to ensure that, at any time, the volume of green assets backing the bond exceed the nominal amount by a healthy margin. At 31 March 2019, the volume of green assets backing the bond amounted to SEK 5.63 billion, and comprised exclusively sustainable forestry.

Review

Under the framework, Landshypotek's independent credit risk department is appointed to control and review, at least annually, that the allocations of Green Bond net proceeds are made in accordance with the Green Bond Framework. Since 2018 was the first year that the bank issued a green bond, the review has placed particular focus on ensuring the appraisal of properties is correct, so that the value of the forest included in the green cover pool is updated. The review was conducted mainly through testing samples and the findings were presented to Landshypotek's Green Bond Committee. The review found that overall, the valuations were fair and no credits had to be transferred out of the green cover pool.

Importance of sustainable forestry – for growth and climate benefit

One of the greatest challenges of our times is limiting global warming. The growing forest has a significant role to play in countering climate change. 30 per cent of the surface of the earth is covered by forest. The forest embodies a key to the transition to a fossil-free society, since the forest is included as a natural part of the carbon cycle and absorbs carbon dioxide from the atmosphere. In Sweden, the forest covers almost two thirds of the total land area and is seen as a national asset and resource. Its size makes it important to use and manage forests sustainably with a long-term perspective, thereby ensuring that growth in the forests remains high, while concurrently preserving biodiversity and maintaining the natural variations of the landscape.

Photosynthesis – function and impact

Photosynthesis is a natural process, whereby plants absorb carbon dioxide from the atmosphere and then convert it into energy. While some carbon dioxide is returned immediately through respiration, a considerable portion is allocated into the plant/tree. As the tree grows, carbon is also allocated into the ground via the roots. Active use and management of forests lead to increased growth and, accordingly, greater carbon sequestration, which in itself results in a greater climate benefit. When harvesting forest, forest raw materials are extracted for further consumption. Forest raw materials have numerous applications, for example, biofuel, paper pulp, wood or new products that are developed in the market. The stored carbon is released directly to the atmosphere on combustion, whereas the carbon built into buildings is stored for the building's lifetime. Moreover, there is a substitution benefit, since forest raw materials replace other fossil materials or materials that consume large amounts of energy in their extraction. The substitution benefit often outweighs the primary benefit arising from the carbon sequestration in forest growth, but it is difficult to calculate exactly since this requires information about the manufactured products and their lifespans as well as the materials they replace. An average value for the substitution effect in Sweden is around 500 kg CO₂/harvested m³ob¹.

A growing forest binds carbon dioxide from the atmosphere. The more the forest grows; the more carbon dioxide that is stored, which also means that sequestration by Sweden's forests varies according to the location of the forest. Site quality, defined as the soil's innate capacity to produce timber, is determined by the soil, the climate, moisture conditions and exposure, and is expressed in volume over bark (m³ob) per hectare and year. There are considerable differences in site quality in Sweden, 11 m³ob in the south to 2 m³ob in the north.

1.) Lundmark, T., Bergh, J., Hofer, P., Lundström, A., Nordin, A., Poudel, B.C., Sathre, R., Taverna, R., och Werner, F. (2014) Potential Roles of Swedish Forestry in the Context of Climate Change Mitigation, *Forests* 2014, 5(4),557-578.

Growth and climate benefit calculations

Within the framework of this report, the locations of forest properties have been divided into three geographic areas – the southern deciduous region (10.7 m³ob/ha/yr), the southern coniferous region (8.0 m³ob/ha/yr) and the northern coniferous region (4.1 m³ob/ha/yr). Based on the Forest statistics 2018 from the Swedish University of Agricultural Sciences' Swedish National Forest Inventory, the average site quality has been defined for the three regions. Thereafter, the average site quality has been used as a growth multiple for calculating the change in the growing stock.

To calculate carbon sequestration at the forest properties financed by Landshypotek, the following formula has been used:

Total carbon sequestration (tons) = change in growing stock net (m³ob) * BEF * CF

BEF (Biomass Expansion Factor) = conversion multiple for finding the total dry biomass

CF (Carbon Fraction) = carbon content of dry wood

For calculation purposes, the BEF has been set at 0.75² which is a weighted average for pine and spruce. CF has been set at 0.51³. To convert carbon sequestration into carbon dioxide sequestration, the following formula has been used:

Total carbon dioxide sequestration (tons) = carbon sequestration (tons) * (CO₂ molecule's weight/C molecule's weight)

In 2018, the growing stock in the financed project increased by 1.98 million m³ob (5 per cent of the growth was in the southern deciduous region, 73 per cent of the growth was in the southern coniferous region and 22 per cent of the growth was in the northern coniferous region). On the assumption that 75 per cent of the growing forest is harvested and is used to replace other material, a substitution benefit arise of 700,000 tons in avoided carbon dioxide emissions. The remaining standing forest contributes to a net carbon sequestration of around 695,000 tons.

The project's average loan-to-value ratio is 0.47, which means that 0.66 million tons of CO₂ is a direct result of the financing and 1,4 million tons of CO₂ indirectly (when the entire property is included).

The calculations are based on site quality, which is the growth at the culmination of the average growth rate. To date, 2018 has been an exceptional year in terms of drought, forest fires and storms, which has impacted growth and harvesting of the forest. Accordingly, growth has been adjusted down, but otherwise these calculations have been carried out without any adjustment.

2.) Lehtonen, Aleksi & Mäkipää, Raisa & Heikkinen, Juha & Sievänen, Risto & Liski, Jari. (2004). Biomass expansion factors (BEFs) for Scots pine, Norway spruce and birch according to stand age for boreal forests. *Forest Ecology and Management*. 188. 211-224. 10.1016/j.foreco.2003.07.008.
3.) 2006 IPCC guidelines for National Greenhouse Gas Inventories.



Two voices for sustainable forestry

“The forest is my source of relaxation and far more than just a source of income”

Ingvar Pålsson is the sixth generation to manage the forest on the property located between Perstorp and Klippan in the north of Skåne in southern Sweden. The name of the property that Ingvar took over and continued to invest in is Lycke. The forest is dominated by deciduous trees, the most common being beech, birch and oak, but the property also contains a considerable amount of pine and spruce. What sets Ingvar’s forestry apart is the combination of productive forestry and recreational forest.

In 2015, Ingvar purchased a further 80 hectares of forest a small distance from the main property. The main property has four natural zones with different types of forestry practices. The eastern section has a traditional family forestry nature and furthest to the west, production forestry practices take over. In between lies a large recreational forest (36 ha) with valleys and water courses.

Ingvar goes out into the forest to clear for a few hours each day, and next year he will be devoting even more of his time to working in the forest together with his sons. In 1997, Ingvar chose to certify his forest in accordance with PEFC and in 2006, he decided to also certify in accordance with FSC. For Ingvar, it was plain sailing, the requirements set by the different certification

systems were requirements that he essentially already satisfied since the forest was well diversified and large areas had already been set aside voluntarily.

“Everyone looks after their forest in their own way. Problems only arise when the forestry practices fall outside of the norms, which can create problems with the Swedish Forest Agency,” says Ingvar.

Ingvar points out that everyone has their own way of tending their forest. He informs that just a few weeks ago, he felled an old tree just by the roadside and allowed it to lie there to decompose over time and, during that time, become an important source for biodiversity. A passing neighbour thought it looked messy by the roadside.

“Everyone views nature differently, I find it natural to leave trees behind to maintain the natural cycle,” says Ingvar.

Continuity is a maxim for Ingvar and his family. Forestry is conducted for production purposes but is done with consideration and a long-term perspective for future generations.

What challenges do you see ahead?

“As we are certified, we are subject to a requirement that not more than 5 per cent of the productive forest may be comprised of exotic species of tree, which may become a challenge over





time in a climate where infestations of pest insects are increasing and also with increasingly strong winds that demand other types of root systems. The material is incredibly important and must be adapted to the surroundings and the conditions.

During last spring, a lot of cleaning and thinning has been carried out. In addition, 8 hectares of pine was planted. Unfortunately, levels of precipitation have been very limited, as it experienced in other parts of Sweden in summer 2018 when there was a drought.

Otherwise, Ingvar places considerable focus on husbandry of the broadleaved forest. In these parts, large areas of pine were planted at the end of the 1950s and start of the 1960s, which means that large areas are becoming ready for harvesting at the same time, which requires planning for regeneration and replanting.

“I am a proponent of active forestry with cleaning, thinning and planning for the long term. The more you cut, the more it grows,” concludes Ingvar.

County: Skåne

Municipality: Klippan

Productive forest land: 266 ha of which 36 ha comprises recreational forest

Site quality: 9.1 m³ob per ha

Growth: 5.4 m³ob per ha

Estimated climate benefit: 1,040 tons of CO₂ per year (the climate benefit is calculated using the same model for the entire portfolio, however as the growth factor, figures for actual growth according to the applicable forest management plan have been used instead of the site quality).

Breakdown of forest by management targets

P - Production target with environmental stewardship: 205.7 ha

PF - Production target with strengthened environmental stewardship (production): 3.1 ha

PF - Production target with strengthened environmental stewardship (nature conservation): 2.5 ha

NS - Nature conservation targets with management: 17.1 ha

NO - Nature conservation targets, untouched: 1.7 ha

R - Recreation: 35.8 ha



“The greatest pleasure from owning forest is taking care of it – clearing and thinning”

Beatrice Wikman purchased the first forest property of her own three years ago together with her husband Marcus. The forest has always been a major part of Beatrice’s life and is a keen interest that she shares with Marcus. The property they acquired is in Burträsk, close to the farm where she grew up. Her parents have conducted milk production on the farm together with forestry operations since the mid-1970s.

Over the year, Beatrice has certified her forest to PEFC, which means she gets a better price for the forest and, moreover, had already met the requirements for certification of the parcels. They have prepared green forest management plans for the properties to base this on.

“A green forest management plan is good for keeping track of this as well as for controlling the work in the forest. It is an excellent tool and assistance for getting the forest to grow, stay healthy and look good. Sometimes I stop by the roadside when out driving when I see a really nice and well-kept forest. And I think, one day, our forest parcels will also look like that and someone else who is driving past our property will stop like I did. The plan is the world’s best workbook,” says Beatrice.

At the moment, Beatrice and her family are making a generational change with the help of Landshypotek and Norra

Skogsägarna, who have both been very helpful according to Beatrice. Her father passed away a few years ago, which prompted her to start thinking. She has four older siblings who have their own operations, so it seemed natural that Beatrice and her husband would take over the farm from her mother, who had left the farm.

The last dairy cows were sent to the abattoir in 2013. Beatrice has plans to reintroduce a few animals to the farm, but will probably start with chickens.

“Goats would also be nice, mainly for grazing to keep the pastures open. I am a firm believer in self-sufficiency and locally produced food,” says Beatrice.

The house located in a forest property that they had bought previously has been renovated and has now been parcelled off. The couple’s requirement of the buyer was that it would be someone who would live there on a permanent basis and not just during the summer so as to try and maintain life in the community. And they found such a buyer.

Most of the forest and the land in the area is held within the family and it is not often that new forest properties appear on the open market

What are your thoughts on forests and forestry?

“For me, it is an investment and a lifestyle. There are few other investments that provide such high returns for relatively low risk. I feel at home in the countryside and always have been, so it is fantastic that my husband Marcus also likes the forest and the land. Since we hunt as much moose as we do, we almost never buy meat and I hope that next year we will be able to buy even

less and really become self-sufficient. I am also considering building a new greenhouse to extend the somewhat short growing season, but also to be able to grow other crops that require warmth," says Beatrice.

The forest stand is 50/50 spruce and pine with deciduous forest accounting for 14 per cent and 5 per cent on the two respective properties.

Beatrice explained their plans to apply to conduct a rationalisation acquisition to merge the two properties.

Around 2,000 cubic metres was harvested over the winter and new spruce plants were planted in a large parcel that was harvested when Beatrice's father was still alive.

"It has taken a few years, but it will soon be covered with forest again, which will be wonderful. The greatest pleasure from owning forest is taking care of it – clearing and thinning. Planting may not be the most enjoyable activity out there but the wonderful thing about a monotonous task such as clearing or thinning is you can turn your mind off for a while. You don't need to think about what should be saved and what should be thinned – it is automatic when walking in the forest. And furthermore, you improve the value of your forest when it is looked after and maintained properly," says Beatrice.

Beatrice says that she and her husband share the tasks in the forest equally and want to both be capable of doing everything.

"We see security in both of us being able to do every task. It is important to think about safety and I give Marcus a hard time when he works too quickly or is too stressed out in the forest. I say stop

and we take a well-deserved break. There are some things that one does not do by oneself out in the forest. Accidents can happen very quickly," says Beatrice.

She concludes jokingly: "forest owners go into debt when young, work like slaves all their lives, and die rich to then leave their children quarrelling.

County: Västerbotten

Municipality: Skellefteå

Productive forest land: 135 ha

Site quality: 4.0 m³ob per ha

Growth: 5.0 m³ob per ha

Estimated climate benefit: 490 tons of CO₂ per year (the climate benefit is calculated using the same model for the entire portfolio, however as the growth factor, figures for actual growth according to the applicable forest management plan have been used instead of the site quality)

Breakdown of forest by management targets

P/PG - Production target with environmental stewardship: 127.7 ha

NS - Nature conservation targets with management: 5.7 ha

NO - Nature conservation targets, untouched: 1.6 ha





Further information about Landshypotek Bank Green Bonds are found at <https://www.landshypotek.se/en/about-landshypotek/investor-relations/green-bond-framework/>