NFI provisional estimates for woodland in the North York Moors, Coast and Hills LEADER area

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Summary

This report provides a detailed picture of the stocked area in woodland, the standing volume of timber and the associated live biomass and carbon stocks for woodland in the North York Moors, Coast and Hills LEADER programme area. These estimates are a subset of those published as part of the 2012 growing stock information presented in the National Forest Inventory (NFI) *50-year forecast of softwood timber availability* (2014) and *50-year forecast of hardwood timber availability* (2014). NFI reports are published at www.forestry.gov.uk/inventory.

In addition, the report provides forecasts of timber availability, standing volume and increment for softwoods and hardwoods arising from the stocked area and standing volume. Forecasts are based on the 'headline' harvesting scenario described in the 50-year forecasts NFI reports. An alternative forecast is provided using a harvesting scenario which brings all Private sector broadleaved woodland into production.

The estimates provided in this report are provisional in nature.

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Approach

The approach taken in the derivation of these results and to be used in their interpretation is described in the full suite of forecast reports which can be found at www.forestry.gov.uk/forecast. Refer to the *Standing timber volume for coniferous trees in Britain* (2012) and the *NFI preliminary estimates of quantities of broadleaved species in British woodlands with special focus on ash* (2012) reports for a description of the underlying methodologies and interpretation, and also for the England and Great Britain (GB) context. Refer to the *NFI forecasts methodology* (2012) overview report for a detailed description and discussion of forecasting future availability of timber from NFI field survey data and from information in the Forestry Commission's sub-compartment database (SCDB). The wider context of forecasts of timber production from woodland in GB and its constituent countries under a range of harvesting scenarios can be found in the *50-year forecast of softwood timber availability* (2014) and the *50-year forecast of hardwood timber availability* (2014).

The estimates reported here are based upon field samples assessed between October 2009 and August 2013, the results of which have been subjected to rigorous data quality assurance procedures. These field samples constitute approximately two-thirds of the sites to be sampled within the first cycle of NFI field sampling. As a consequence, the estimates in this report are classed as provisional.

Results

The results presented in this report are estimates of standing volumes and stocked areas at 31 March 2012, and 50-year forecasts of softwood and hardwood availability under the 'headline' harvesting scenario and also under a scenario assuming all hardwoods are harvested in Private sector woodland in the NYMCH LEADER area. The data sources used for the compilation of these estimates are the same as described in the NFI reports *Standing timber volume for coniferous trees in Britain* (2012), the *50-year forecast of softwood availability* (2014) and the *50-year forecast of hardwood availability* (2014). Estimates for the Forestry Commission (FC) estate are derived from the FC's SCDB, while those for the Private sector (i.e. non-FC) estate are derived from information collected in the NFI field survey. A fuller description of these data sources and how they are used in the production of estimates, including sampling standard errors (SEs) attached to the Private sector estimates, is provided in the earlier documents.

Results are provided for stocked area at 31 March 2012 (**Figures 1–1a** and **Tables 1–3**), felled area (**Table 4**), standing volume at 31 March 2012 (**Figures 2–2a** and **Tables 5–7**), biomass and carbon stocks at 31 March 2012 (**Tables 8–9**), evidence of thinning in Private sector stands from the NFI field survey (**Figure 3**), the 'headline' 50-year forecast (**Figures 4–8** and **Tables 10–12**) and the 'unrestricted' 50-year forecast

(**Figures 9–13** and **Tables 13–15**). **Figures 14–15** and **Table 16** compare the hardwood production under the two scenarios.

The values in the tables have been independently rounded, so may not add to the totals shown. In some breakdowns of Private sector estimates, the estimates in the body of the table may not sum to the quoted total because each individual value, including the total, has been independently generated by the estimation procedure used for results from the NFI sample survey. Sampling SEs attached to Private sector estimates are expressed in relative terms (%) to the right of the relevant estimate. Percentages in the pie charts may also not sum to 100 due to rounding.

Stocked area at 31 March 2012

Figure 1 Principal tree species composition by stocked area at 31 March 2012

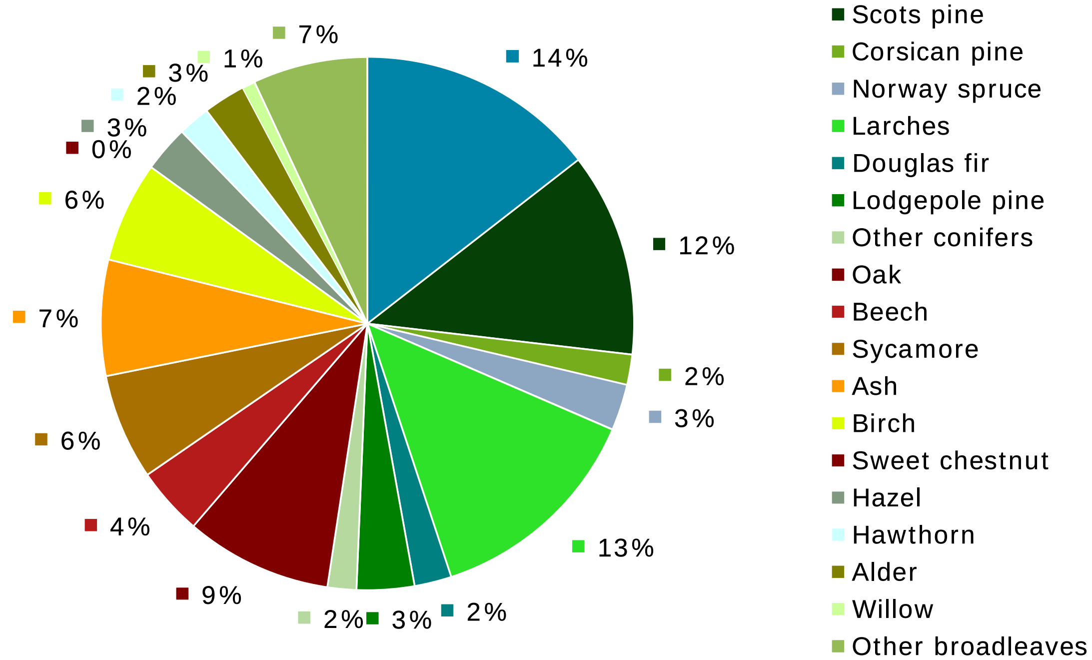


Figure 1a Principal conifer tree species composition by stocked area at 31 March 2012

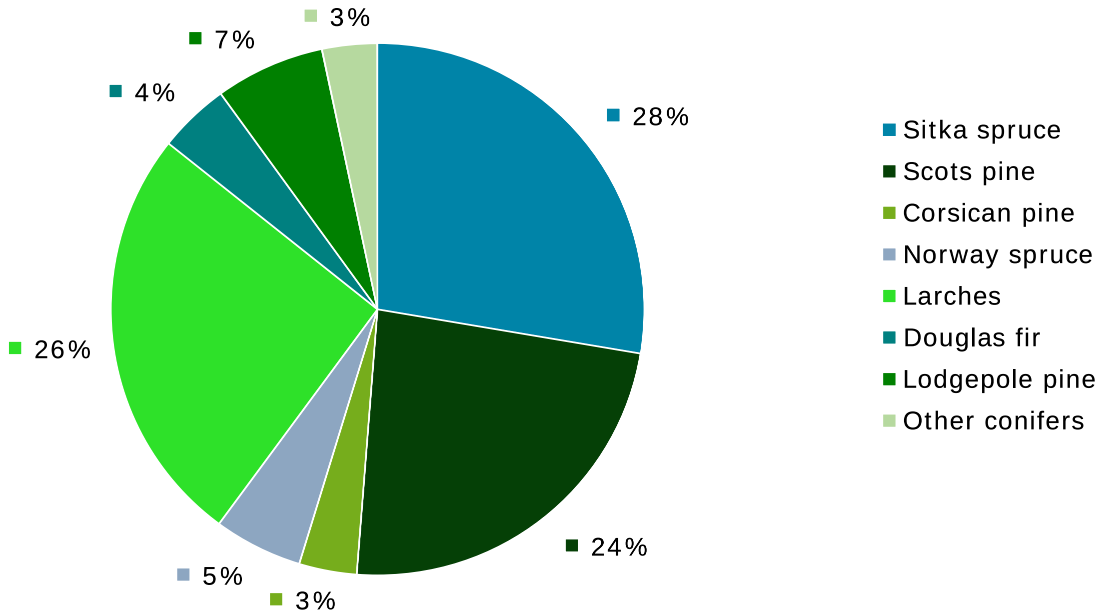


Table 1 Stocked area by principal tree species at 31 March 2012

Principal species	FC	Private sector		Total
	area (000 ha)	area (000 ha)	*SE%*	area (000 ha)
Conifers				
Sitka spruce	4.1	1.0	*24*	**5.2**
Scots pine	3.0	1.4	*18*	**4.4**
Corsican pine	0.2	0.4	*33*	**0.7**
Norway spruce	0.4	0.6	*22*	**1.0**
Larches	2.9	1.9	*12*	**4.8**
Douglas fir	0.5	0.3	*29*	**0.8**
Lodgepole pine	1.0	0.3	*33*	**1.2**
Other conifers	0.4	0.2	*92*	**0.6**
All conifers	**12.6**	**6.2**	***8***	**18.8**
Broadleaves				
Oak	0.3	2.9	*15*	**3.2**
Beech	0.3	1.1	*18*	**1.5**
Sycamore	0.2	2.1	*16*	**2.3**
Ash	0.2	2.4	*21*	**2.5**
Birch	0.6	1.6	*15*	**2.2**
Sweet chestnut	0.0	0.0	-	**0.0**
Hazel	0.0	1.0	*39*	**1.0**
Hawthorn	0.0	0.7	*21*	**0.7**
Alder	0.0	0.9	*33*	**0.9**
Willow	0.0	0.3	*44*	**0.3**
Other broadleaves	0.6	1.8	*14*	**2.5**
All broadleaves	**2.3**	**14.8**	***6***	**17.1**
All species				
All species	**14.9**	**21.1**	***4***	**36.0**

Table 2 Stocked area by age class at 31 March 2012

Age class	FC	Private sector		Total
	area (000 ha)	area (000 ha)	*SE%*	area (000 ha)
All conifers				
0–10 years	1.2	0.1	*35*	**1.3**
11–20 years	1.8	0.7	*19*	**2.4**
21–40 years	2.8	1.7	*23*	**4.5**
41–60 years	4.8	2.9	*14*	**7.7**
61–80 years	1.5	0.7	*27*	**2.2**
81–100 years	0.6	0.1	*72*	**0.6**
100+ years	0.0	0.0	-	**0.0**
Total	**12.6**	**6.2**	***8***	**18.8**
All broadleaves				
0–10 years	0.1	1.1	*19*	**1.2**
11–20 years	0.4	2.3	*13*	**2.6**
21–40 years	0.4	2.8	*15*	**3.2**
41–60 years	0.6	2.1	*17*	**2.7**
61–80 years	0.5	2.8	*22*	**3.3**
81–100 years	0.1	2.7	*17*	**2.8**
100+ years	0.2	1.1	*30*	**1.3**
Total	**2.3**	**14.8**	***6***	**17.1**
All species				
0–10 years	1.3	1.2	*17*	**2.5**
11–20 years	2.1	3.0	*11*	**5.1**
21–40 years	3.2	4.5	*13*	**7.8**
41–60 years	5.4	5.0	*12*	**10.4**
61–80 years	2.0	3.5	*19*	**5.5**
81–100 years	0.7	2.8	*17*	**3.4**
100+ years	0.2	1.1	*30*	**1.3**
Total	**14.9**	**21.1**	***4***	**36.0**

Table 3 Stocked area by mean stand DBH class at 31 March 2012

Mean stand DBH	FC area (000 ha)	Private sector area (000 ha)	Private sector *SE%*	Total area (000 ha)
All conifers				
0–7 cm	1.2	0.1	*33*	**1.4**
7–10 cm	1.0	0.5	*19*	**1.5**
10–15 cm	1.8	0.8	*25*	**2.6**
15–20 cm	1.7	0.8	*29*	**2.6**
20–30 cm	2.7	1.9	*14*	**4.6**
30–40 cm	2.7	1.5	*18*	**4.2**
40–60 cm	1.4	0.4	*28*	**1.8**
60–80 cm	0.1	0.0	*51*	**0.1**
80+ cm	0.0	0.1	*105*	**0.1**
Total	**12.6**	**6.2**	***8***	**18.8**
All broadleaves				
0–7 cm	0.2	1.3	*15*	**1.5**
7–10 cm	0.4	3.3	*13*	**3.8**
10–15 cm	0.1	1.7	*16*	**1.9**
15–20 cm	0.3	1.8	*19*	**2.1**
20–30 cm	0.5	2.0	*24*	**2.4**
30–40 cm	0.4	1.4	*21*	**1.8**
40–60 cm	0.2	1.4	*17*	**1.5**
60–80 cm	0.1	1.0	*31*	**1.0**
80+ cm	0.0	1.0	*32*	**1.1**
Total	**2.3**	**14.8**	***6***	**17.1**
All species				
0–7 cm	1.5	1.4	*14*	**2.9**
7–10 cm	1.4	3.8	*11*	**5.2**
10–15 cm	1.9	2.5	*15*	**4.5**
15–20 cm	2.0	2.6	*16*	**4.7**
20–30 cm	3.2	3.9	*14*	**7.1**
30–40 cm	3.1	2.9	*14*	**6.0**
40–60 cm	1.6	1.8	*14*	**3.4**
60–80 cm	0.1	1.0	*30*	**1.1**
80+ cm	0.1	1.1	*31*	**1.2**
Total	**14.9**	**21.1**	***4***	**36.0**

Table 4 Felled area at 31 March 2012

Clearfelled area	FC area (000 ha)	Private sector area (000 ha)	Private sector *SE%*	Total area (000 ha)
	1.3	0.4	*41*	**1.7**

Standing volume at 31 March 2012

Figure 2 Principal tree species composition by standing volume at 31 March 2012

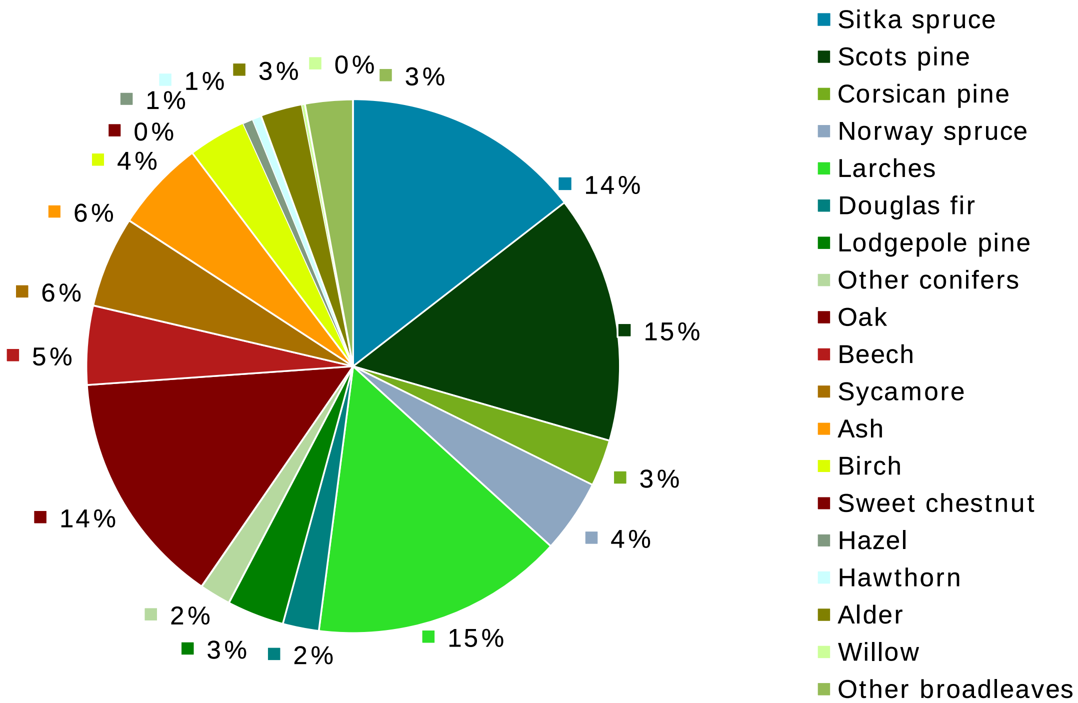


Figure 2a Principal conifer tree species composition by standing volume at 31 March 2012

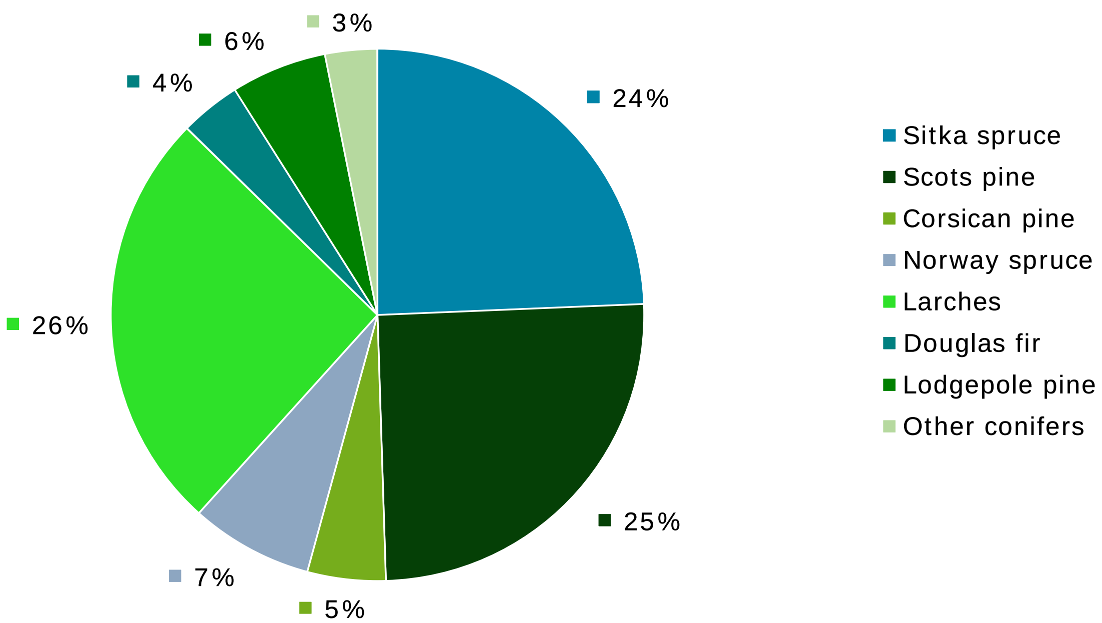


Table 5 Standing volume by principal tree species at 31 March 2012

Principal species	FC	Private sector		Total
	volume (000 m^3 obs)	volume (000 m^3 obs)	*SE%*	volume (000 m^3 obs)
Conifers				
Sitka spruce	695	342	*35*	**1,037**
Scots pine	632	441	*19*	**1,073**
Corsican pine	61	141	*45*	**202**
Norway spruce	100	216	*27*	**316**
Larches	478	617	*14*	**1,095**
Douglas fir	90	67	*39*	**157**
Lodgepole pine	169	79	*46*	**248**
Other conifers	87	48	*60*	**135**
All conifers	**2,311**	**1,951**	***9***	**4,262**
Broadleaves				
Oak	41	980	*21*	**1,021**
Beech	50	293	*23*	**343**
Sycamore	34	361	*24*	**395**
Ash	23	372	*27*	**395**
Birch	40	212	*23*	**252**
Sweet chestnut	0	0	-	**0**
Hazel	0	44	*32*	**44**
Hawthorn	0	39	*22*	**39**
Alder	4	176	*28*	**180**
Willow	0	14	*53*	**14**
Other broadleaves	60	147	*19*	**207**
All broadleaves	**251**	**2,666**	***9***	**2,918**
All species				
All species	**2,563**	**4,641**	***6***	**7,204**

Table 6 Standing volume by age class at 31 March 2012

Age class	FC	Private sector		Total
	volume (000 m^3 obs)	volume (000 m^3 obs)	*SE%*	volume (000 m^3 obs)
All conifers				
0–10 years	1	0	-	**1**
11–20 years	68	38	*36*	**107**
21–40 years	507	437	*30*	**943**
41–60 years	1,118	1,030	*13*	**2,147**
61–80 years	441	422	*25*	**863**
81–100 years	170	24	*73*	**194**
100+ years	7	0	-	**7**
Total	**2,311**	**1,951**	***9***	**4,262**
All broadleaves				
0–10 years	0	2	*45*	**2**
11–20 years	2	154	*45*	**157**
21–40 years	28	246	*18*	**274**
41–60 years	86	422	*22*	**508**
61–80 years	83	654	*23*	**737**
81–100 years	15	816	*21*	**831**
100+ years	38	372	*30*	**410**
Total	**251**	**2,666**	***9***	**2,918**
All species				
0–10 years	1	2	*45*	**3**
11–20 years	71	193	*37*	**264**
21–40 years	535	697	*21*	**1,232**
41–60 years	1,204	1,443	*12*	**2,646**
61–80 years	524	1,093	*17*	**1,617**
81–100 years	185	841	*21*	**1,025**
100+ years	45	372	*30*	**417**
Total	**2,563**	**4,641**	***6***	**7,204**

Table 7 Standing volume by mean stand DBH class at 31 March 2012

Mean stand DBH	FC volume (000 m³ obs)	Private sector volume (000 m³ obs)	Private sector *SE%*	Total volume (000 m³ obs)
All conifers				
0–7 cm	0	0	-	**0**
7–10 cm	18	15	*21*	**32**
10–15 cm	174	117	*28*	**291**
15–20 cm	344	168	*30*	**512**
20–30 cm	601	715	*19*	**1,316**
30–40 cm	687	588	*16*	**1,276**
40–60 cm	457	248	*28*	**706**
60–80 cm	26	22	*58*	**48**
80+ cm	4	77	*58*	**82**
Total	**2,311**	**1,951**	***9***	**4,262**
All broadleaves				
0–7 cm	0	6	*27*	**6**
7–10 cm	11	115	*17*	**126**
10–15 cm	19	244	*29*	**264**
15–20 cm	46	222	*15*	**268**
20–30 cm	64	457	*24*	**521**
30–40 cm	59	367	*25*	**426**
40–60 cm	27	372	*18*	**400**
60–80 cm	15	504	*34*	**518**
80+ cm	10	379	*30*	**389**
Total	**251**	**2,666**	***9***	**2,918**
All species				
0–7 cm	1	6	*27*	**7**
7–10 cm	28	130	*15*	**158**
10–15 cm	193	365	*22*	**558**
15–20 cm	391	395	*16*	**786**
20–30 cm	665	1,152	*15*	**1,817**
30–40 cm	746	977	*13*	**1,723**
40–60 cm	485	631	*15*	**1,115**
60–80 cm	41	527	*33*	**567**
80+ cm	14	459	*27*	**473**
Total	**2,563**	**4,641**	***6***	**7,204**

Biomass and carbon stocks at 31 March 2012

Table 8 Standing biomass by principal tree species at 31 March 2012

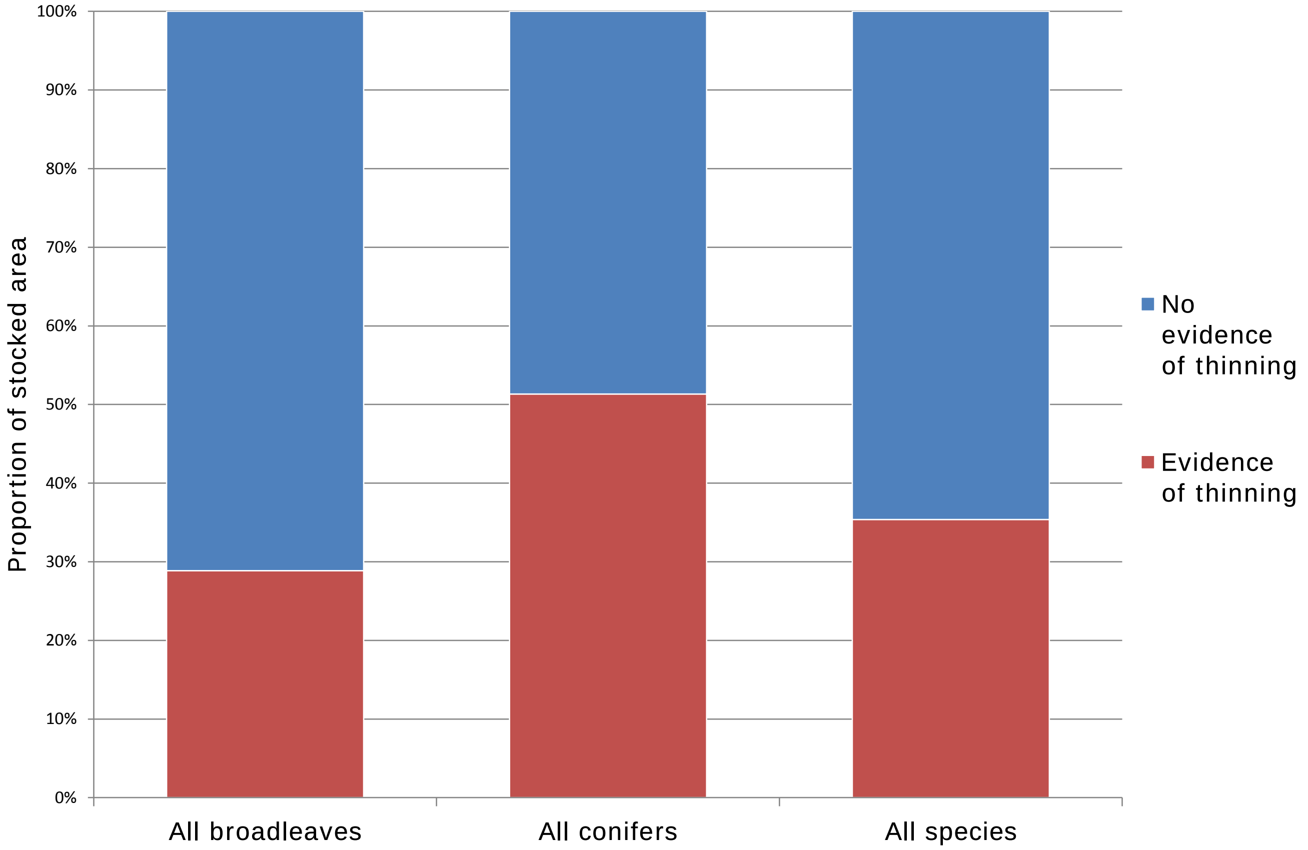
Principal species	FC	Private sector		Total
	biomass (000 odt)	biomass (000 odt)	*SE%*	biomass (000 odt)
Conifers				
Sitka spruce	459	196	*33*	**656**
Scots pine	455	304	*19*	**759**
Corsican pine	36	79	*43*	**115**
Norway spruce	54	114	*26*	**168**
Larches	314	373	*13*	**687**
Douglas fir	67	45	*39*	**111**
Lodgepole pine	121	53	*45*	**174**
Other conifers	50	27	*71*	**77**
All conifers	**1,556**	**1,190**	***8***	**2,747**
Broadleaves				
Oak	39	844	*20*	**883**
Beech	49	260	*21*	**309**
Sycamore	31	305	*24*	**335**
Ash	21	324	*25*	**346**
Birch	40	203	*21*	**243**
Sweet chestnut	0	0	-	**0**
Hazel	0	47	*29*	**47**
Hawthorn	0	47	*22*	**47**
Alder	3	140	*27*	**143**
Willow	0	14	*52*	**14**
Other broadleaves	57	152	*18*	**209**
All broadleaves	**241**	**2,354**	***8***	**2,594**
All species				
All species	**1,797**	**3,560**	***6***	**5,357**

Table 9 Total carbon stocks in principal tree species at 31 March 2012

Principal species	FC	Private sector		Total
	carbon (000 t)	carbon (000 t)	*SE%*	carbon (000 t)
Conifers				
Sitka spruce	230	98	*33*	**328**
Scots pine	228	152	*19*	**379**
Corsican pine	18	40	*43*	**57**
Norway spruce	27	57	*26*	**84**
Larches	157	186	*13*	**344**
Douglas fir	33	22	*39*	**56**
Lodgepole pine	60	27	*45*	**87**
Other conifers	25	13	*71*	**38**
All conifers	**778**	**595**	***8***	**1,373**
Broadleaves				
Oak	19	422	*20*	**441**
Beech	24	130	*21*	**155**
Sycamore	15	152	*24*	**168**
Ash	11	162	*25*	**173**
Birch	20	101	*21*	**122**
Sweet chestnut	0	0	-	**0**
Hazel	0	23	*29*	**23**
Hawthorn	0	24	*22*	**24**
Alder	2	70	*27*	**71**
Willow	0	7	*52*	**7**
Other broadleaves	28	76	*18*	**104**
All broadleaves	**120**	**1,177**	***8***	**1,297**
All species				
All species	**898**	**1,780**	***6***	**2,678**

Evidence of thinning

Figure 3 Evidence of thinning in Private sector sites



50-year forecast of timber availability

Refer to the NFI report *50-year forecast of softwood timber availability* (2014) for a description of the underlying methodology and interpretation of the softwood forecast, and also for the England and GB context.

Refer to the NFI report *50-year forecast of hardwood timber availability* (2014) for a description of the underlying methodology and interpretation of the hardwood forecast, and also for the England and GB context.

In **Figures 4–8 and Tables 10–12** the estimates for the Forestry Commission are based on harvesting regimes derived from Forestry Commission felling and thinning plans as of 31 March 2012.

For the Private sector, information for **Figures 4–8 and Tables 10–12** is based on a scenario which assumes felling at age of maximum mean annual increment with moderate wind risk measures for conifers. For broadleaves, however, only those areas where there is evidence of thinning are assumed to be managed in future. This is a highly conservative assumption but better reflects current practice than assuming all stands will be managed. In turn it is assumed that these broadleaved stands are managed to felling at age of maximum mean annual increment with moderate wind risk measures.

Restocking assumptions for conifer stands clearfelled during the forecast period have been implemented that assume:

- a 10% reduction in the area of conifers on the subsequent rotation
- restocking of currently clearfelled land
- a change in the composition of conifer species on restocking

Restocking assumptions for broadleaved stands clearfelled during the forecast period have been included that assume:

- no reduction in stocked area
- like-for-like species choices are used for broadleaves
- 50% of the land associated with the reduction in conifer stocked area arising from the assumption above is stocked with broadleaves

A full description of the restocking assumptions is to be found in Table D3 of the *50-year forecast of softwood timber availability* (2014). The same restocking assumptions have been applied to both the Forestry Commission and Private sector forecasts.

Woodland that is classed as currently clearfelled will be restocked according to the restock prescription.

In **Figures 9–13** and **Tables 13–15** the management assumptions for the Private sector hardwoods have been changed to assume all hardwoods are thinned and felled rather than only those in areas that have evidence of thinning. In this report, the tables and figures for estimates under this management scenario will be labelled as ‘unrestricted’.

Figures 14–15 and **Table 16** compare the Private sector hardwood timber availability under the two scenarios. **Figure 14** shows the Private sector hardwood availability for the two scenarios during the 50-year forecast. **Figure 15** and **Table 16** compare the hardwood availability in first 15 years of the forecast under the two scenarios.

50-year forecast of timber availability under the ‘headline’ harvesting scenario

Table 10 50-year forecast of timber availability by time period and principal species

Principal species	2013–16				2017–21				2022–26				2027–31			
	FC	Private sector		Total	FC	Private sector		Total	FC	Private sector		Total	FC	Private sector		Total
	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)
All conifers	**118**	**101**	***16***	**219**	**106**	**92**	***16***	**199**	**108**	**96**	***15***	**204**	**88**	**96**	***29***	**184**
Sitka spruce	40	24	*42*	63	37	12	*25*	49	35	11	*27*	46	35	49	*56*	83
Scots pine	34	9	*24*	44	26	26	*45*	53	31	26	*36*	57	22	14	*39*	36
Corsican pine	4	5	*40*	9	3	11	*48*	14	3	4	*35*	7	1	4	*33*	5
Norway spruce	4	21	*47*	25	3	6	*30*	9	4	18	*42*	22	3	4	*32*	7
Larches	23	27	*16*	50	21	31	*21*	52	17	21	*15*	39	12	19	*14*	31
Douglas fir	4	2	*38*	6	3	2	*32*	5	3	8	*65*	11	4	2	*25*	6
Lodgepole pine	7	10	*76*	17	10	1	*40*	11	12	5	*71*	17	8	1	*44*	9
Other conifers	3	2	*111*	4	2	2	*76*	5	2	2	*82*	4	2	2	*95*	4
All broadleaves	**3**	**55**	***19***	**58**	**3**	**54**	***20***	**57**	**3**	**42**	***21***	**45**	**2**	**15**	***15***	**17**
Oak	0	4	*41*	4	0	7	*37*	8	0	4	*35*	4	0	3	*39*	3
Beech	1	3	*28*	4	1	3	*25*	4	1	12	*39*	13	1	4	*33*	4
Sycamore	1	26	*35*	26	1	26	*35*	26	1	12	*38*	13	1	1	*27*	2
Ash	0	11	*28*	12	0	9	*30*	9	0	3	*25*	3	0	1	*32*	1
Birch	0	5	*29*	6	0	4	*32*	5	0	7	*43*	7	0	1	*40*	1
Sweet chestnut	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0
Hazel	0	0	*54*	0	0	0	*55*	0	0	0	*53*	0	0	0	*46*	0
Hawthorn	0	0	*35*	0	0	0	*29*	0	0	0	*53*	0	0	0	*48*	0
Alder	0	2	*56*	2	0	2	*59*	2	0	5	*75*	5	0	2	*62*	2
Willow	0	0	*65*	0	0	0	*64*	0	0	0	*73*	0	0	0	*68*	0
Other broadleaves	1	2	*39*	2	0	2	*34*	2	0	3	*26*	3	0	1	*18*	2
All species	**122**	**158**	***12***	**280**	**109**	**148**	***12***	**257**	**111**	**140**	***12***	**251**	**90**	**113**	***26***	**203**

Table 10 (cont'd) 50-year forecast of timber availability by time period and principal species

Principal species	2032–36				2037–41				2042–46				2047–51			
	FC	Private sector		Total	FC	Private sector		Total	FC	Private sector		Total	FC	Private sector		Total
	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)
All conifers	**96**	**92**	***15***	**188**	**79**	**52**	***17***	**131**	**69**	**47**	***13***	**116**	**84**	**63**	***16***	**147**
Sitka spruce	37	12	*35*	49	42	7	*38*	50	39	10	*29*	49	45	8	*26*	53
Scots pine	23	31	*37*	54	10	18	*42*	28	9	9	*27*	18	12	11	*39*	23
Corsican pine	1	4	*35*	5	1	3	*33*	4	1	3	*33*	3	1	8	*68*	9
Norway spruce	2	7	*29*	8	2	8	*35*	10	2	6	*31*	8	3	16	*40*	19
Larches	16	24	*19*	40	12	11	*16*	23	10	9	*17*	19	12	11	*16*	22
Douglas fir	5	3	*20*	7	7	3	*16*	9	5	3	*14*	8	7	6	*25*	13
Lodgepole pine	9	2	*49*	12	2	1	*30*	3	1	5	*80*	5	1	0	*36*	2
Other conifers	3	9	*67*	13	3	1	*142*	4	4	2	*177*	5	4	2	*40*	6
All broadleaves	**3**	**22**	***21***	**25**	**3**	**18**	***14***	**21**	**3**	**39**	***19***	**42**	**3**	**20**	***14***	**23**
Oak	0	3	*40*	3	0	3	*42*	3	0	2	*42*	3	0	3	*39*	3
Beech	1	5	*49*	6	1	3	*40*	4	1	12	*44*	13	1	3	*53*	3
Sycamore	1	3	*29*	3	0	5	*28*	6	1	8	*23*	9	1	5	*28*	6
Ash	0	2	*26*	2	0	3	*24*	3	0	8	*36*	8	0	3	*23*	3
Birch	0	4	*87*	5	1	1	*24*	2	1	4	*34*	4	1	3	*34*	4
Sweet chestnut	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0
Hazel	0	1	*69*	1	0	0	*41*	0	0	1	*67*	1	0	0	*54*	0
Hawthorn	0	0	*30*	0	0	0	*27*	0	0	0	*25*	0	0	0	*34*	0
Alder	0	0	*71*	0	0	0	*72*	0	0	0	*65*	0	0	1	*43*	1
Willow	0	0	*59*	0	0	0	*59*	0	0	0	*59*	0	0	0	*59*	0
Other broadleaves	0	3	*33*	3	0	2	*18*	2	0	2	*16*	3	0	2	*18*	2
All species	**99**	**114**	***14***	**213**	**82**	**70**	***13***	**152**	**72**	**86**	***11***	**158**	**87**	**83**	***13***	**170**

Table 10 (cont'd) 50-year forecast of timber availability by time period and principal species

Principal species	2052–56				2057–61			
	FC	Private sector		Total	FC	Private sector		Total
	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)
All conifers	**52**	**66**	***30***	**118**	**222**	**68**	***16***	**290**
Sitka spruce	21	12	*22*	33	113	11	*20*	124
Scots pine	11	22	*85*	33	30	10	*23*	39
Corsican pine	1	7	*58*	8	3	5	*32*	8
Norway spruce	3	5	*25*	7	7	16	*59*	24
Larches	7	9	*16*	16	47	10	*15*	57
Douglas fir	4	5	*14*	10	14	10	*19*	25
Lodgepole pine	1	1	*60*	2	2	0	*38*	2
Other conifers	4	4	*26*	8	7	6	*20*	12
All broadleaves	**3**	**31**	***30***	**34**	**8**	**21**	***16***	**29**
Oak	1	2	*38*	3	1	2	*36*	3
Beech	1	9	*72*	10	1	3	*35*	4
Sycamore	1	9	*32*	9	1	5	*31*	5
Ash	0	3	*29*	3	0	4	*42*	4
Birch	1	2	*25*	2	3	3	*22*	6
Sweet chestnut	0	0	-	0	0	0	-	0
Hazel	0	0	*38*	0	0	0	*45*	0
Hawthorn	0	1	*43*	1	0	0	*39*	0
Alder	0	1	*49*	1	0	1	*49*	1
Willow	0	0	*59*	0	0	2	*80*	2
Other broadleaves	0	4	*41*	4	2	2	*35*	4
All species	**54**	**97**	***22***	**151**	**229**	**89**	***13***	**319**

Table 11 50-year forecast of standing volume; average annual volumes within periods

Forecast period	FC volume (000 m^3 obs)	Private sector volume (000 m^3 obs)	*SE%*	Total volume (000 m^3 obs)
All conifers				
2013–16	2,280	1,784	*9*	**4,064**
2017–21	2,391	1,698	*10*	**4,089**
2022–26	2,374	1,552	*11*	**3,926**
2027–31	2,418	1,273	*9*	**3,691**
2032–36	2,490	1,076	*10*	**3,566**
2037–41	2,557	994	*10*	**3,550**
2042–46	2,660	977	*11*	**3,636**
2047–51	2,833	1,004	*11*	**3,837**
2052–56	2,984	1,001	*10*	**3,985**
2057–61	2,924	997	*9*	**3,921**
All broadleaves				
2013–16	263	2,670	*9*	**2,933**
2017–21	290	2,708	*9*	**2,998**
2022–26	320	2,808	*9*	**3,128**
2027–31	349	2,994	*9*	**3,343**
2032–36	377	3,224	*8*	**3,601**
2037–41	403	3,439	*8*	**3,842**
2042–46	427	3,613	*8*	**4,040**
2047–51	449	3,765	*8*	**4,215**
2052–56	469	3,922	*8*	**4,391**
2057–61	479	4,036	*8*	**4,515**
All species				
2013–16	2,543	4,478	*6*	**7,021**
2017–21	2,681	4,428	*6*	**7,109**
2022–26	2,694	4,379	*6*	**7,073**
2027–31	2,767	4,273	*6*	**7,040**
2032–36	2,867	4,297	*6*	**7,164**
2037–41	2,960	4,428	*6*	**7,388**
2042–46	3,087	4,581	*6*	**7,668**
2047–51	3,283	4,759	*6*	**8,042**
2052–56	3,453	4,911	*6*	**8,364**
2057–61	3,403	5,020	*6*	**8,423**

Table 12 50-year forecast of net increment; average annual volumes within periods

Forecast period	FC volume (000 m^3 obs)	Private sector volume (000 m^3 obs)	Private sector *SE%*	Total volume (000 m^3 obs)
All conifers				
2013–16	89	69	*10*	**159**
2017–21	111	63	*10*	**174**
2022–26	103	56	*11*	**159**
2027–31	102	51	*11*	**153**
2032–36	100	47	*11*	**147**
2037–41	102	49	*10*	**150**
2042–46	103	54	*10*	**157**
2047–51	107	64	*9*	**170**
2052–56	109	67	*9*	**177**
2057–61	111	71	*8*	**182**
All broadleaves				
2013–16	8	60	*6*	**68**
2017–21	9	64	*6*	**73**
2022–26	9	65	*6*	**73**
2027–31	8	63	*6*	**72**
2032–36	8	64	*6*	**72**
2037–41	8	65	*7*	**72**
2042–46	7	63	*7*	**70**
2047–51	7	58	*7*	**65**
2052–56	7	54	*7*	**61**
2057–61	7	50	*7*	**57**
All species				
2013–16	97	131	*5*	**229**
2017–21	119	129	*5*	**248**
2022–26	112	121	*5*	**233**
2027–31	111	114	*5*	**225**
2032–36	108	111	*5*	**219**
2037–41	109	112	*5*	**222**
2042–46	110	116	*4*	**226**
2047–51	114	121	*4*	**235**
2052–56	116	121	*5*	**237**
2057–61	118	121	*5*	**238**

Figure 4 Overview of 50-year forecast of average annual softwood availability

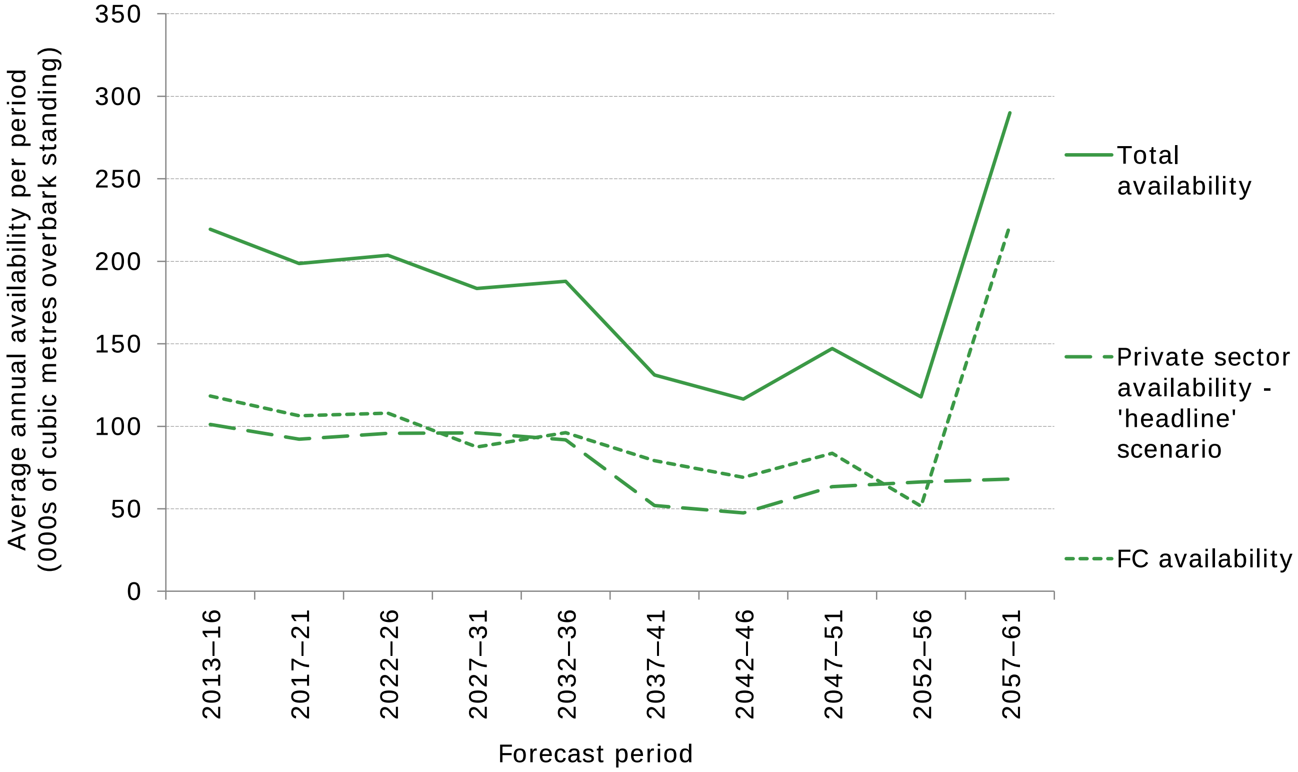


Figure 5 50-year forecast of average annual softwood availability

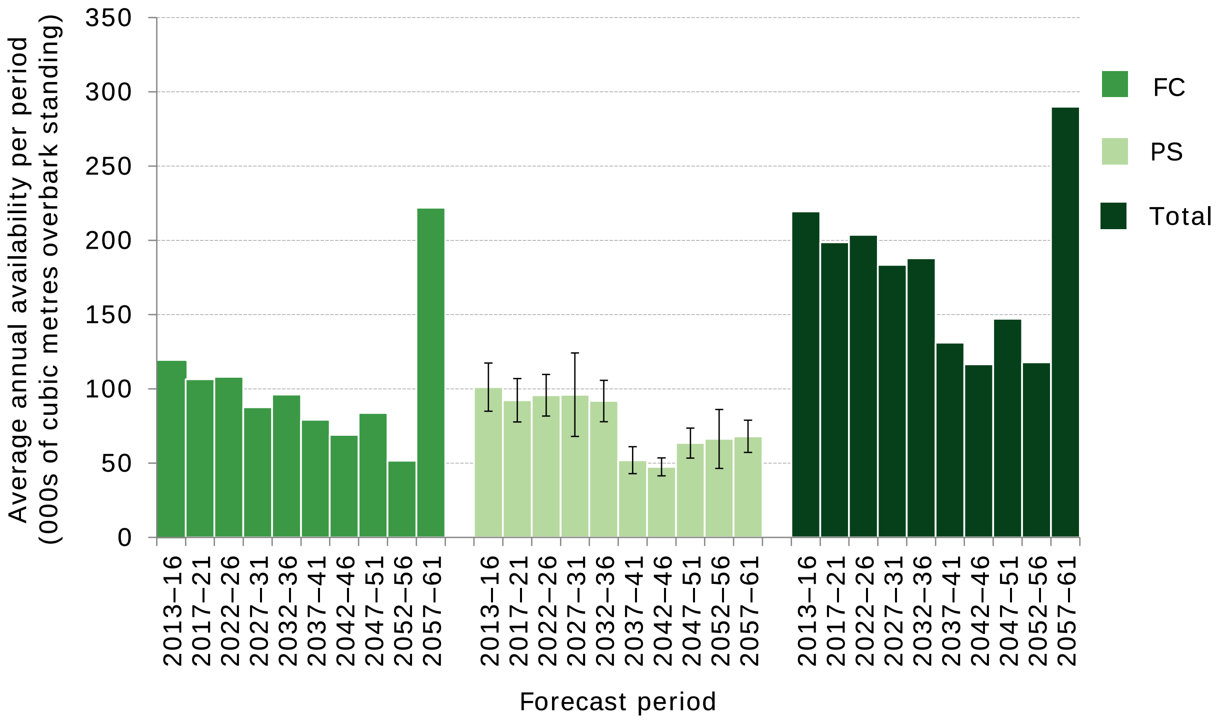


Figure 6 50-year forecast of average annual hardwood availability

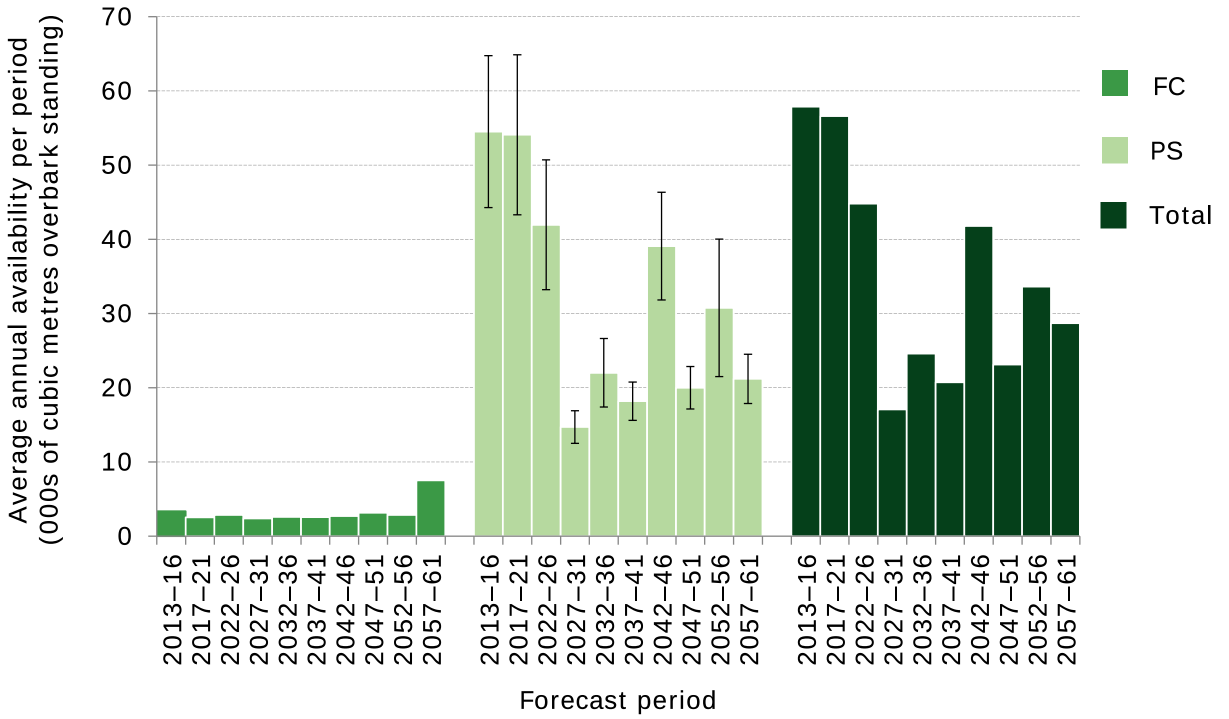


Figure 7 50-year forecast of softwood standing volume, increment and availability

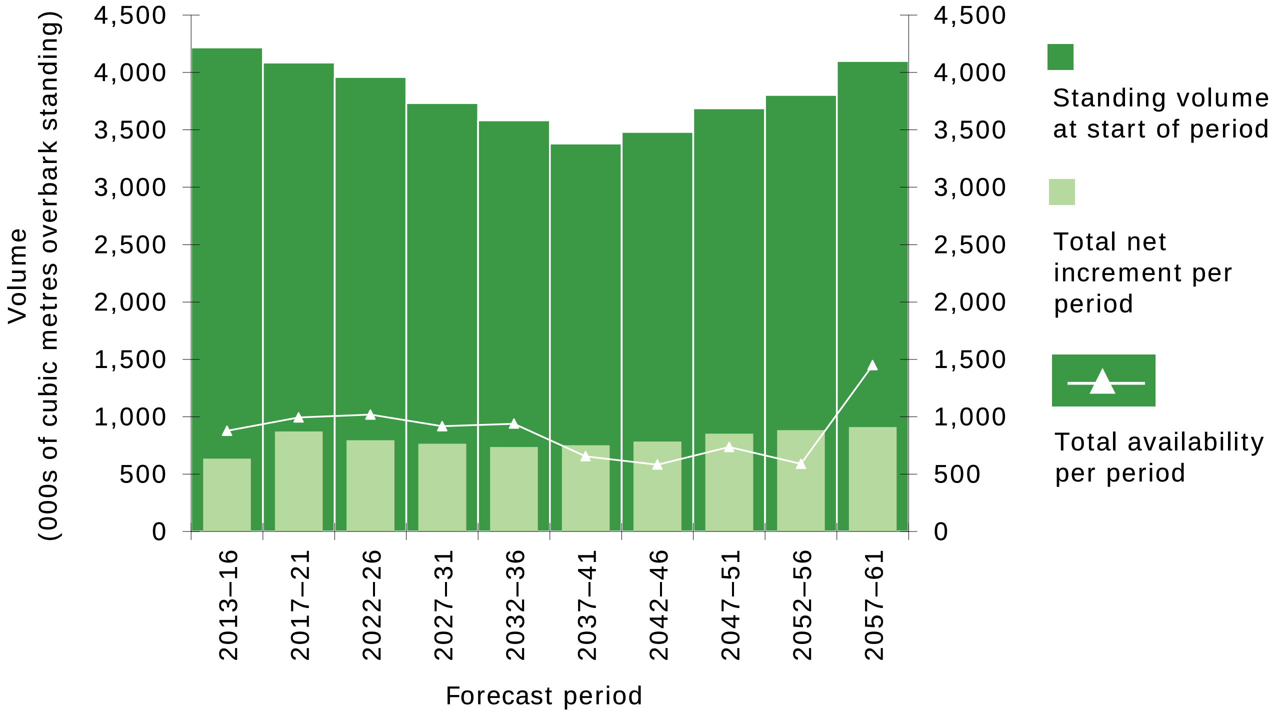
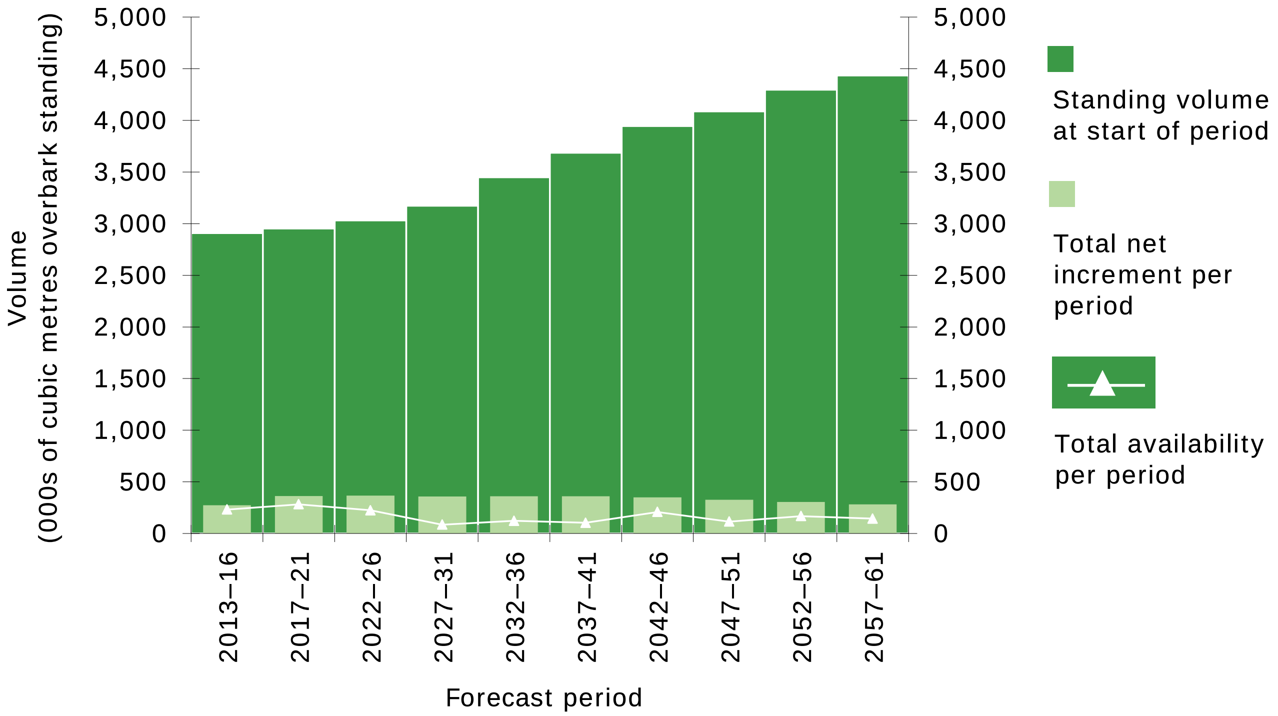


Figure 8 50-year forecast of hardwood standing volume, increment and availability



50-year forecast of timber availability under the ‘unrestricted’ scenario

Table 13 50-year forecast of timber availability by time period and principal species – unrestricted biological potential for Private sector hardwoods

Principal species	2013–16				2017–21				2022–26				2027–31			
	FC	Private sector		Total	FC	Private sector		Total	FC	Private sector		Total	FC	Private sector		Total
	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)
All conifers	**118**	**101**	***16***	**219**	**106**	**92**	***16***	**199**	**108**	**96**	***15***	**204**	**88**	**96**	***29***	**184**
Sitka spruce	40	24	*42*	63	37	12	*25*	49	35	11	*27*	46	35	49	*56*	83
Scots pine	34	9	*24*	44	26	26	*45*	53	31	26	*36*	57	22	14	*39*	36
Corsican pine	4	5	*40*	9	3	11	*48*	14	3	4	*35*	7	1	4	*33*	5
Norway spruce	4	21	*47*	25	3	6	*30*	9	4	18	*42*	22	3	4	*32*	7
Larches	23	27	*16*	50	21	31	*21*	52	17	21	*15*	39	12	19	*14*	31
Douglas fir	4	2	*38*	6	3	2	*32*	5	3	8	*65*	11	4	2	*25*	6
Lodgepole pine	7	10	*76*	17	10	1	*40*	11	12	5	*71*	17	8	1	*44*	9
Other conifers	3	2	*111*	4	2	2	*76*	5	2	2	*82*	4	2	2	*95*	4
All broadleaves	**3**	**175**	***12***	**178**	**3**	**166**	***11***	**168**	**3**	**95**	***10***	**98**	**2**	**46**	***9***	**48**
Oak	0	36	*29*	36	0	40	*26*	40	0	17	*20*	17	0	12	*23*	12
Beech	1	4	*22*	5	1	5	*19*	6	1	23	*27*	24	1	5	*26*	6
Sycamore	1	32	*29*	33	1	36	*27*	36	1	18	*33*	18	1	6	*31*	7
Ash	0	47	*29*	47	0	31	*32*	31	0	10	*21*	10	0	4	*18*	5
Birch	0	19	*26*	19	0	19	*25*	20	0	13	*25*	13	0	4	*23*	4
Sweet chestnut	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0
Hazel	0	3	*29*	3	0	6	*47*	6	0	1	*20*	1	0	1	*32*	1
Hawthorn	0	2	*27*	2	0	2	*25*	2	0	2	*23*	2	0	2	*22*	2
Alder	0	18	*30*	18	0	15	*32*	15	0	8	*48*	8	0	3	*41*	3
Willow	0	1	*53*	1	0	1	*52*	1	0	1	*54*	1	0	1	*45*	1
Other broadleaves	1	9	*26*	10	0	10	*24*	10	0	8	*15*	8	0	7	*18*	8
All species	**122**	**279**	***9***	**400**	**109**	**260**	***9***	**369**	**111**	**193**	***9***	**304**	**90**	**144**	***20***	**234**

Table 13 (cont'd) 50-year forecast of timber availability by time period and principal species – unrestricted biological potential for Private sector hardwoods

Principal species	2032–36				2037–41				2042–46				2047–51			
	FC	Private sector		Total	FC	Private sector		Total	FC	Private sector		Total	FC	Private sector		Total
	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)
All conifers	**96**	**92**	***15***	**188**	**79**	**52**	***17***	**131**	**69**	**47**	***13***	**116**	**84**	**63**	***16***	**147**
Sitka spruce	37	12	*35*	49	42	7	*38*	50	39	10	*29*	49	45	8	*26*	53
Scots pine	23	31	*37*	54	10	18	*42*	28	9	9	*27*	18	12	11	*39*	23
Corsican pine	1	4	*35*	5	1	3	*33*	4	1	3	*33*	3	1	8	*68*	9
Norway spruce	2	7	*29*	8	2	8	*35*	10	2	6	*31*	8	3	16	*40*	19
Larches	16	24	*19*	40	12	11	*16*	23	10	9	*17*	19	12	11	*16*	22
Douglas fir	5	3	*20*	7	7	3	*16*	9	5	3	*14*	8	7	6	*25*	13
Lodgepole pine	9	2	*49*	12	2	1	*30*	3	1	5	*80*	5	1	0	*36*	2
Other conifers	3	9	*67*	13	3	1	*142*	4	4	2	*177*	5	4	2	*40*	6
All broadleaves	**3**	**67**	***10***	**70**	**3**	**59**	***10***	**62**	**3**	**85**	***11***	**88**	**3**	**60**	***10***	**63**
Oak	0	8	*18*	8	0	7	*19*	7	0	7	*19*	7	0	7	*17*	7
Beech	1	11	*38*	11	1	5	*30*	6	1	14	*38*	15	1	6	*30*	7
Sycamore	1	7	*25*	7	0	13	*27*	14	1	14	*17*	15	1	10	*24*	10
Ash	0	14	*30*	14	0	10	*16*	10	0	18	*24*	18	0	11	*21*	12
Birch	0	11	*42*	11	1	5	*17*	5	1	13	*25*	14	1	8	*19*	9
Sweet chestnut	0	0	-	0	0	0	-	0	0	0	-	0	0	0	-	0
Hazel	0	2	*34*	2	0	2	*31*	2	0	2	*42*	2	0	2	*55*	2
Hawthorn	0	2	*33*	2	0	2	*30*	2	0	1	*25*	1	0	1	*24*	1
Alder	0	2	*67*	2	0	4	*61*	4	0	4	*52*	4	0	6	*41*	6
Willow	0	1	*46*	1	0	1	*44*	1	0	1	*46*	1	0	1	*46*	1
Other broadleaves	0	9	*25*	9	0	10	*20*	11	0	9	*19*	10	0	10	*41*	10
All species	**99**	**159**	***10***	**258**	**82**	**111**	***9***	**192**	**72**	**132**	***8***	**204**	**87**	**123**	***10***	**210**

Table 13 (cont'd) 50-year forecast of timber availability by time period and principal species – unrestricted biological potential for Private sector hardwoods

Principal species	2052–56				2057–61			
	FC	Private sector		Total	FC	Private sector		Total
	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)	volume (000 m^3 obs)		*SE%*	volume (000 m^3 obs)
All conifers	**52**	**66**	***30***	**118**	**222**	**68**	***16***	**290**
Sitka spruce	21	12	*22*	33	113	11	*20*	124
Scots pine	11	22	*85*	33	30	10	*23*	39
Corsican pine	1	7	*58*	8	3	5	*32*	8
Norway spruce	3	5	*25*	7	7	16	*59*	24
Larches	7	9	*16*	16	47	10	*15*	57
Douglas fir	4	5	*14*	10	14	10	*19*	25
Lodgepole pine	1	1	*60*	2	2	0	*38*	2
Other conifers	4	4	*26*	8	7	6	*20*	12
All broadleaves	**3**	**69**	***16***	**72**	**8**	**60**	***11***	**67**
Oak	1	13	*31*	13	1	9	*16*	10
Beech	1	12	*58*	13	1	10	*44*	11
Sycamore	1	11	*26*	11	1	7	*22*	8
Ash	0	7	*22*	7	0	9	*25*	9
Birch	1	4	*16*	5	3	5	*15*	9
Sweet chestnut	0	0	-	0	0	0	-	0
Hazel	0	3	*38*	3	0	2	*46*	2
Hawthorn	0	2	*22*	2	0	4	*59*	4
Alder	0	4	*50*	4	0	4	*48*	4
Willow	0	5	*66*	5	0	3	*66*	3
Other broadleaves	0	8	*24*	9	2	6	*22*	7
All species	**54**	**135**	***16***	**190**	**229**	**128**	***10***	**357**

Table 14 50-year forecast of standing volume; average annual volumes within periods – unrestricted biological potential for Private sector hardwoods

Forecast period	FC volume (000 m³ obs)	Private sector volume (000 m³ obs)	Private sector *SE%*	Total volume (000 m³ obs)
All conifers				
2013–16	2,280	1,784	*9*	**4,064**
2017–21	2,391	1,698	*10*	**4,089**
2022–26	2,374	1,552	*11*	**3,926**
2027–31	2,418	1,273	*9*	**3,691**
2032–36	2,490	1,076	*10*	**3,566**
2037–41	2,557	994	*10*	**3,550**
2042–46	2,660	977	*11*	**3,636**
2047–51	2,833	1,004	*11*	**3,837**
2052–56	2,984	1,001	*10*	**3,985**
2057–61	2,924	997	*9*	**3,921**
All broadleaves				
2013–16	263	2,333	*9*	**2,596**
2017–21	290	1,876	*10*	**2,166**
2022–26	320	1,538	*12*	**1,858**
2027–31	349	1,508	*12*	**1,857**
2032–36	377	1,539	*12*	**1,916**
2037–41	403	1,606	*12*	**2,010**
2042–46	427	1,663	*11*	**2,091**
2047–51	449	1,743	*11*	**2,193**
2052–56	469	1,829	*11*	**2,298**
2057–61	479	1,908	*11*	**2,387**
All species				
2013–16	2,543	4,139	*6*	**6,683**
2017–21	2,681	3,595	*7*	**6,276**
2022–26	2,694	3,106	*8*	**5,800**
2027–31	2,767	2,785	*8*	**5,553**
2032–36	2,867	2,610	*8*	**5,477**
2037–41	2,960	2,593	*8*	**5,553**
2042–46	3,087	2,629	*8*	**5,716**
2047–51	3,283	2,734	*7*	**6,017**
2052–56	3,453	2,814	*7*	**6,267**
2057–61	3,403	2,888	*7*	**6,291**

Table 15 50-year forecast of net increment; average annual volumes within periods – unrestricted biological potential for Private sector hardwoods

Forecast period	FC volume (000 m^3 obs)	Private sector volume (000 m^3 obs)	Private sector *SE%*	Total volume (000 m^3 obs)
All conifers				
2013–16	89	69	*10*	**159**
2017–21	111	63	*10*	**174**
2022–26	103	56	*11*	**159**
2027–31	102	51	*11*	**153**
2032–36	100	47	*11*	**147**
2037–41	102	49	*10*	**150**
2042–46	103	54	*10*	**157**
2047–51	107	64	*9*	**170**
2052–56	109	67	*9*	**177**
2057–61	111	71	*8*	**182**
All broadleaves				
2013–16	8	59	*6*	**67**
2017–21	9	59	*6*	**68**
2022–26	9	58	*7*	**67**
2027–31	8	61	*7*	**69**
2032–36	8	70	*8*	**78**
2037–41	8	80	*9*	**87**
2042–46	7	86	*9*	**94**
2047–51	7	86	*9*	**93**
2052–56	7	83	*8*	**90**
2057–61	7	82	*7*	**89**
All species				
2013–16	97	130	*5*	**227**
2017–21	119	124	*6*	**244**
2022–26	112	115	*6*	**227**
2027–31	111	111	*5*	**222**
2032–36	108	116	*6*	**225**
2037–41	109	127	*6*	**237**
2042–46	110	140	*5*	**250**
2047–51	114	149	*5*	**263**
2052–56	116	150	*5*	**266**
2057–61	118	153	*5*	**271**

Figure 9 Overview of 50-year forecast of average annual softwood availability – unrestricted biological potential for Private sector hardwoods

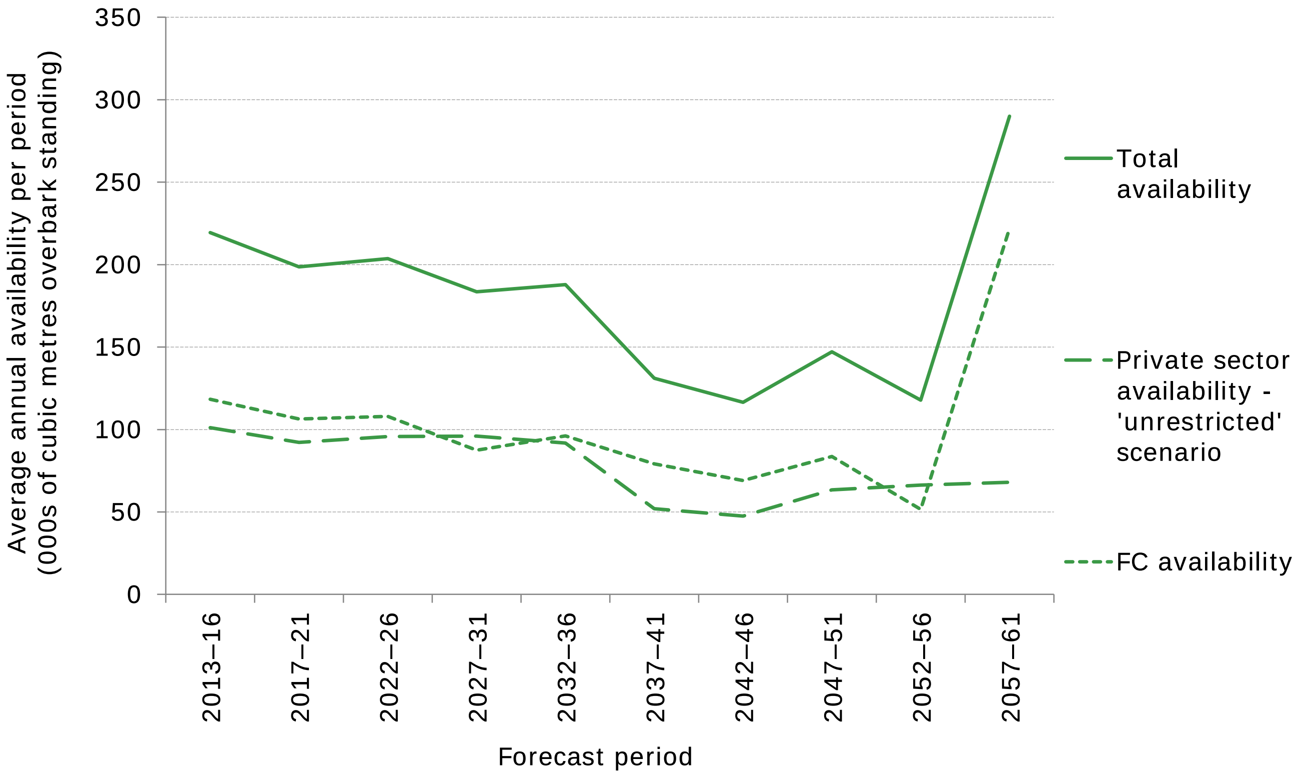


Figure 10 50-year forecast comparison of average annual softwood availability– unrestricted biological potential for Private sector hardwoods

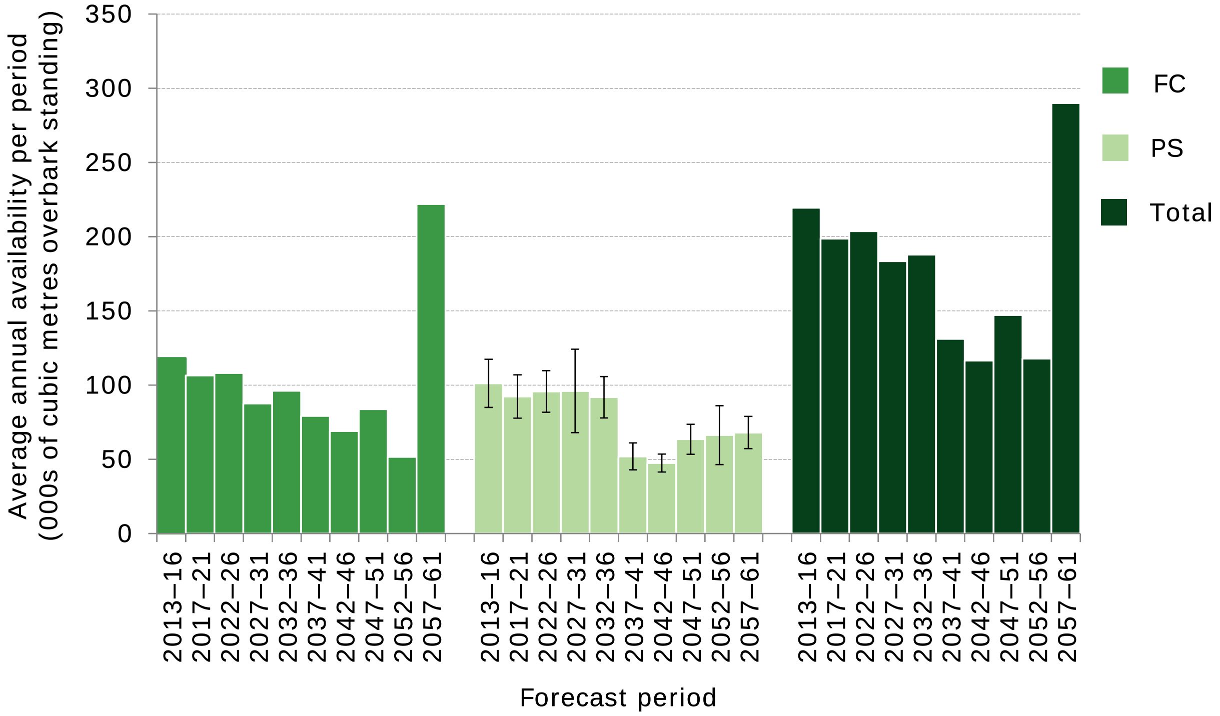


Figure 11 50-year forecast comparison of average annual hardwood availability – unrestricted biological potential for Private sector hardwoods

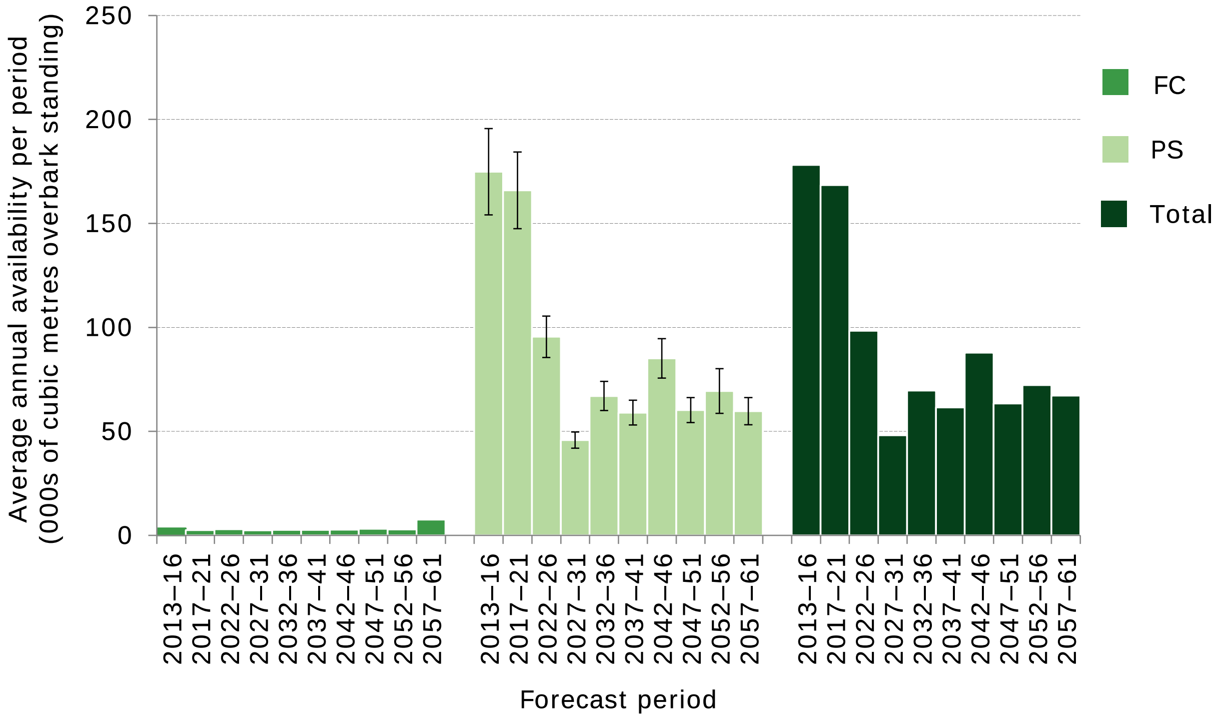


Figure 12 50-year summary of softwood standing volume, increment and availability – unrestricted biological potential for Private sector hardwoods

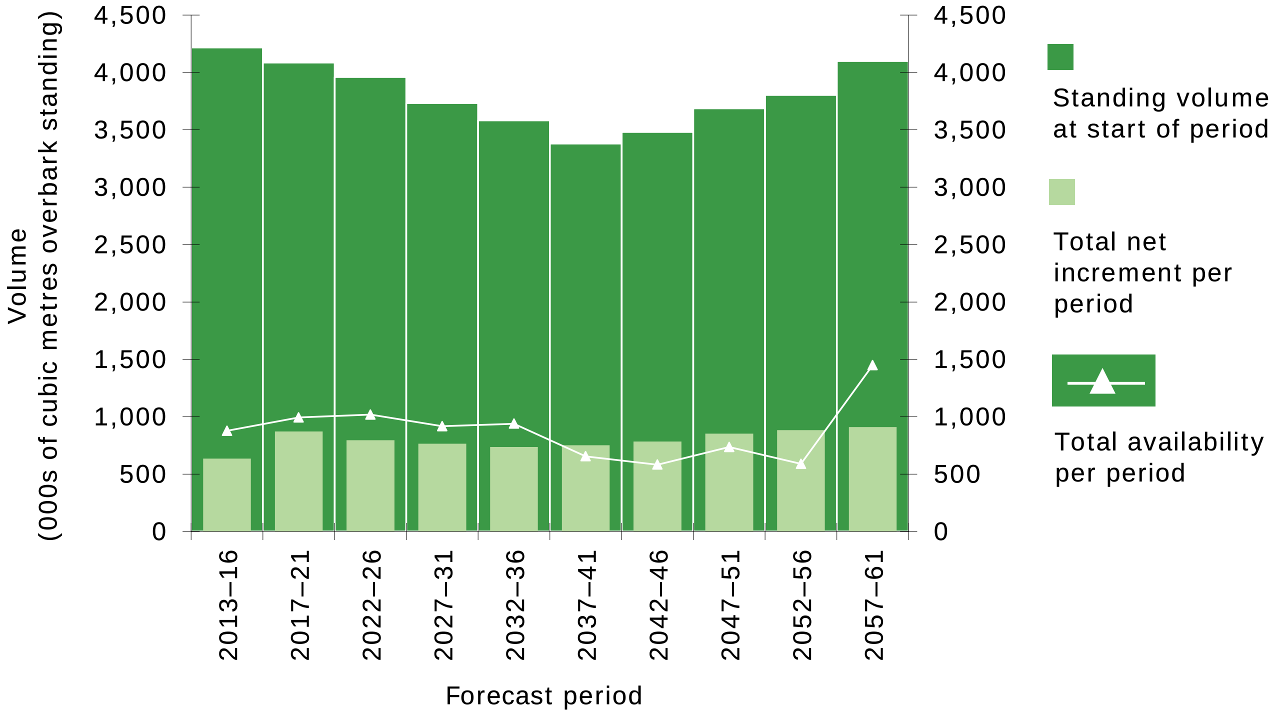
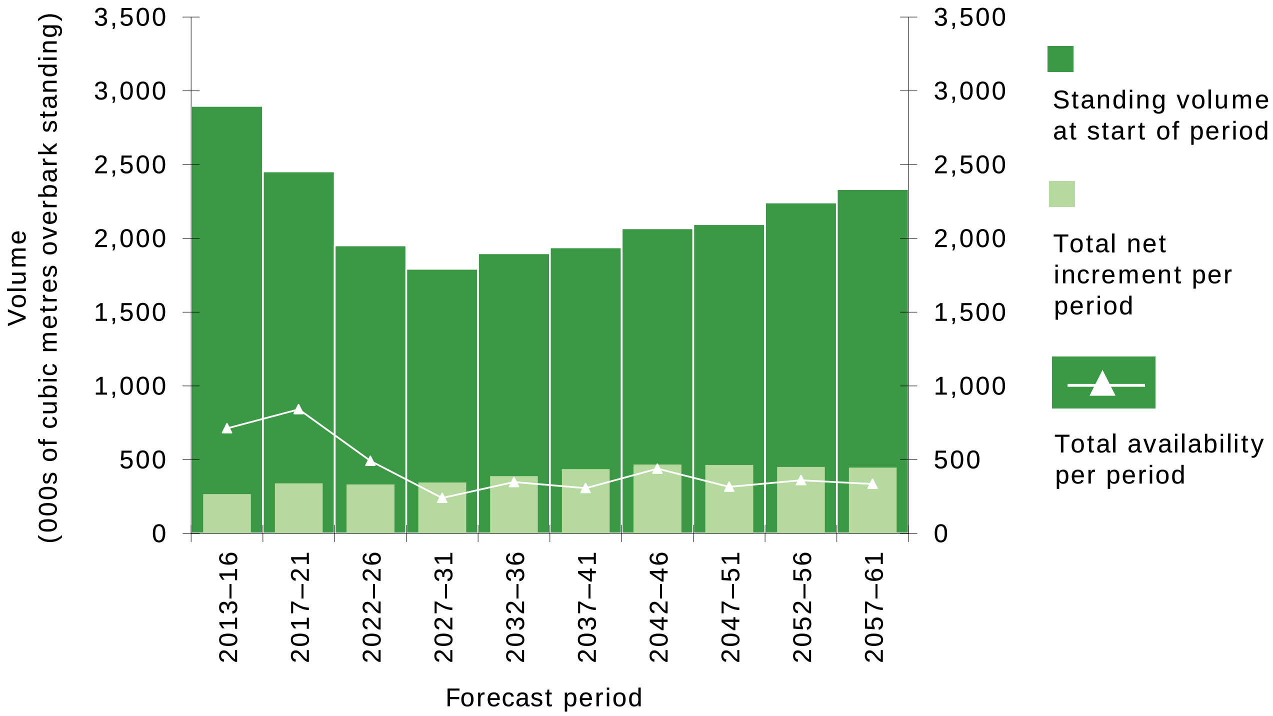


Figure 13 50-year summary of hardwood standing volume, increment and availability – unrestricted biological potential for Private sector hardwoods



Comparison of hardwood production between harvesting scenarios

Figure 14 50-year forecast comparison of average annual hardwood timber availability

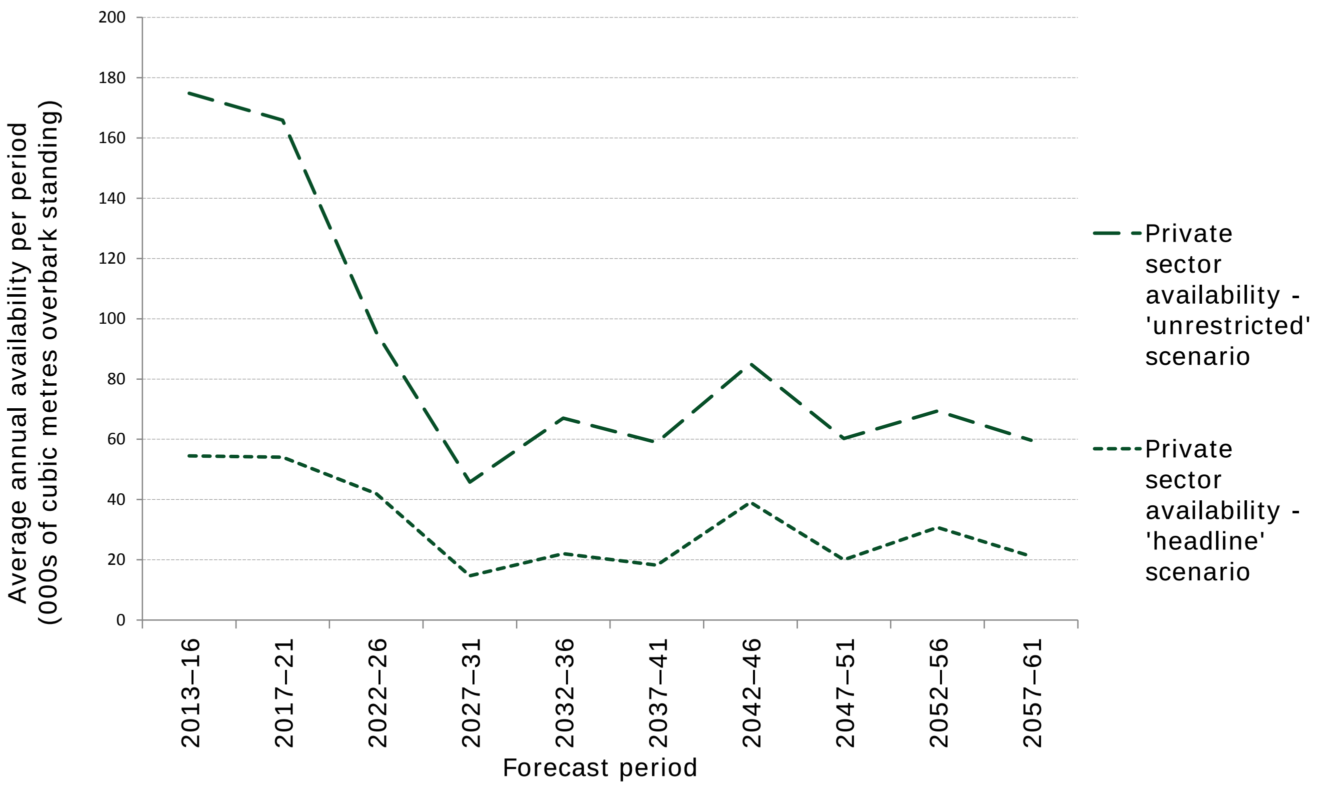


Figure 15 15-year forecast comparison of average annual hardwood timber availability

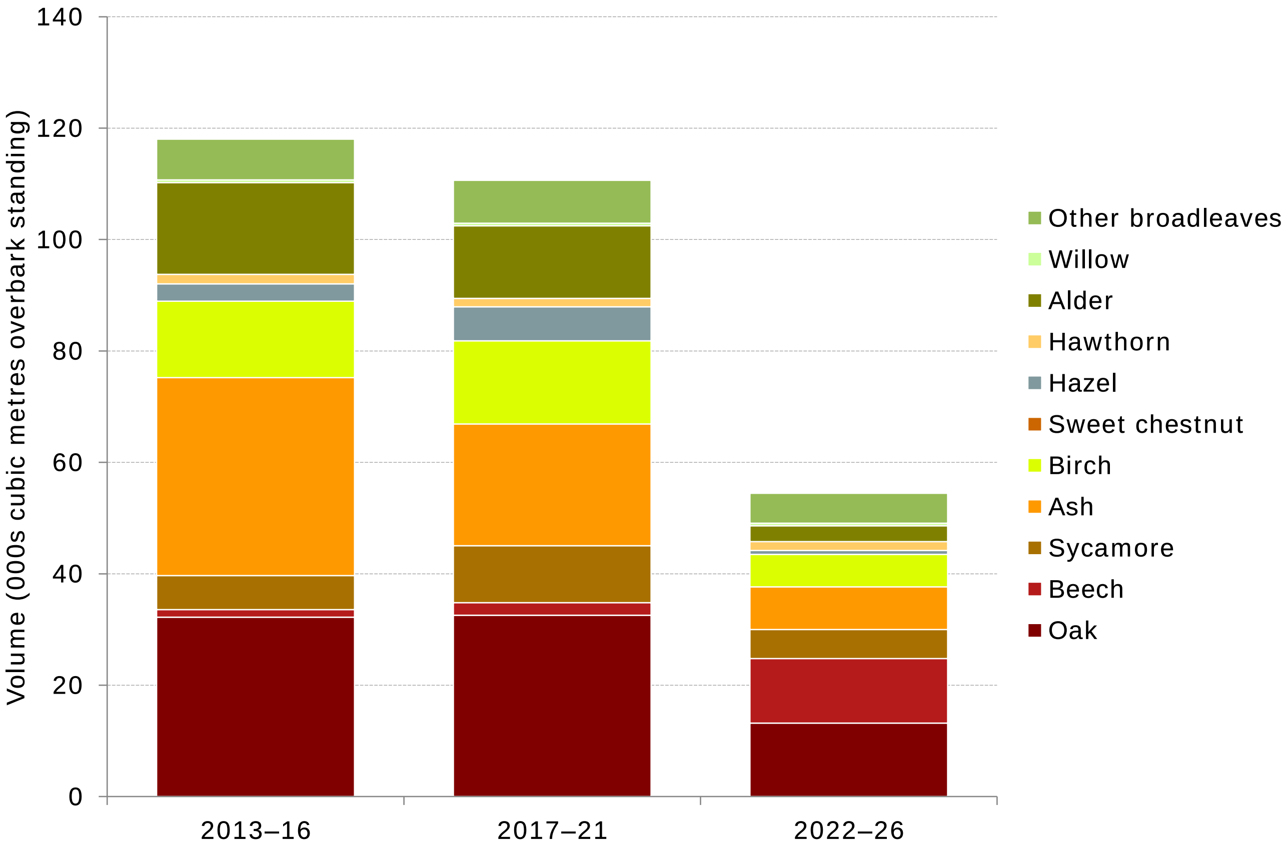


Table 16 15-year forecast comparison of average annual timber availability

Principal species	2013–16			2017–21			2022–26		
	Headline	Unrestricted	Difference	Headline	Unrestricted	Difference	Headline	Unrestricted	Difference
	volume (000 m^3 obs)			volume (000 m^3 obs)			volume (000 m^3 obs)		
All conifers	**219**	**219**	**0**	**199**	**199**	**0**	**204**	**204**	**0**
Sitka spruce	63	63	0	49	49	0	46	46	0
Scots pine	44	44	0	53	53	0	57	57	0
Corsican pine	9	9	0	14	14	0	7	7	0
Norway spruce	25	25	0	9	9	0	22	22	0
Larches	50	50	0	52	52	0	39	39	0
Douglas fir	6	6	0	5	5	0	11	11	0
Lodgepole pine	17	17	0	11	11	0	17	17	0
Other conifers	4	4	0	5	5	0	4	4	0
All broadleaves	**58**	**178**	**120**	**57**	**168**	**112**	**45**	**98**	**54**
Oak	4	36	32	8	40	33	4	17	13
Beech	4	5	1	4	6	2	13	24	12
Sycamore	26	33	6	26	36	10	13	18	5
Ash	12	47	36	9	31	22	3	10	8
Birch	6	19	14	5	20	15	7	13	6
Sweet chestnut	0	0	0	0	0	0	0	0	0
Hazel	0	3	3	0	6	6	0	1	1
Hawthorn	0	2	2	0	2	2	0	2	2
Alder	2	18	16	2	15	13	5	8	3
Willow	0	1	1	0	1	0	0	1	0
Other broadleaves	2	10	7	2	10	8	3	8	5
All species	**280**	**400**	**121**	**257**	**369**	**112**	**251**	**304**	**54**

NFI national reports and papers

The principal themes reported on for the 2011 woodland profile and future forecasts are:

- 2011 preliminary estimates of broadleaved species in British woodlands
- 2011 standing coniferous timber volume
- 25-year forecast of softwood availability
- 25-year forecast of coniferous standing volume and increment
- 2011 biomass in live woodland trees in Britain
- 2011 carbon in live woodland trees in Britain

The principal themes reported on for the 2012 woodland profile and future forecasts are:

- 50 year forecast of softwood availability
- 50 year forecast of hardwood availability

Each theme has a series of reports, papers and data, tailored for different audiences and uses. All the documents and data can be found on the NFI website www.forestry.gov.uk/inventory.

Glossary

A glossary of terms is presented in the full suite of forecast reports which can be found at www.forestry.gov.uk/forecast.

Official Statistics

This is an Official Statistics publication. More information about Official Statistics and the UK Statistics Authority is available at www.statisticsauthority.gov.uk

National Forest Inventory Statistician: Alan Brewer