NFI provisional estimates for woodland in Central Scotland Conservancy

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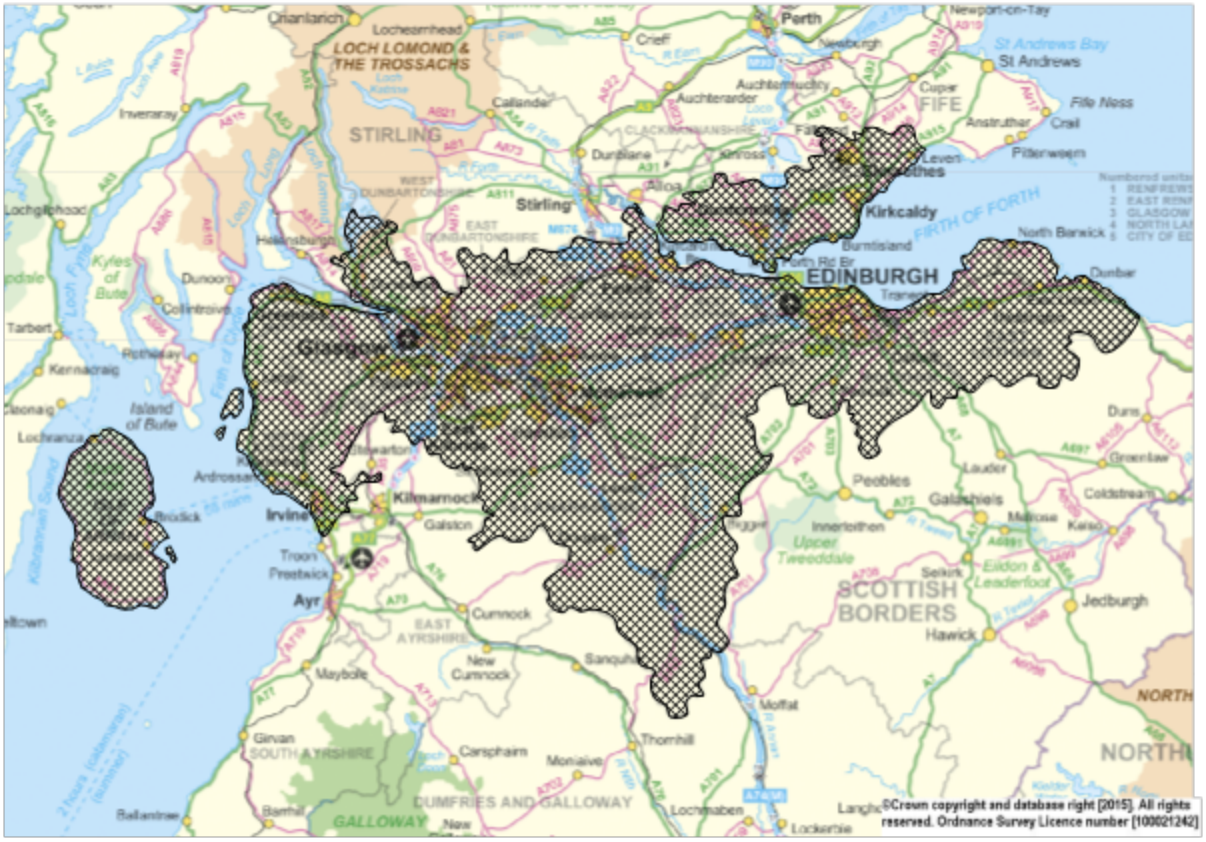
Summary

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 Central Scotland Conservancy. 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 Scotland 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 Central Scotland Conservancy. 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 1–2** and **Tables 1–3**), felled area (**Table 4**), standing volume at 31 March 2012 (**Figures 3–4** 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 5**), the 'headline' 50-year forecast (**Figures 6–11** and **Tables 10–12**) and the 'unrestricted' 50-year forecast

(**Figures 12–17** and **Tables 13–15**). **Figures 18–19** 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

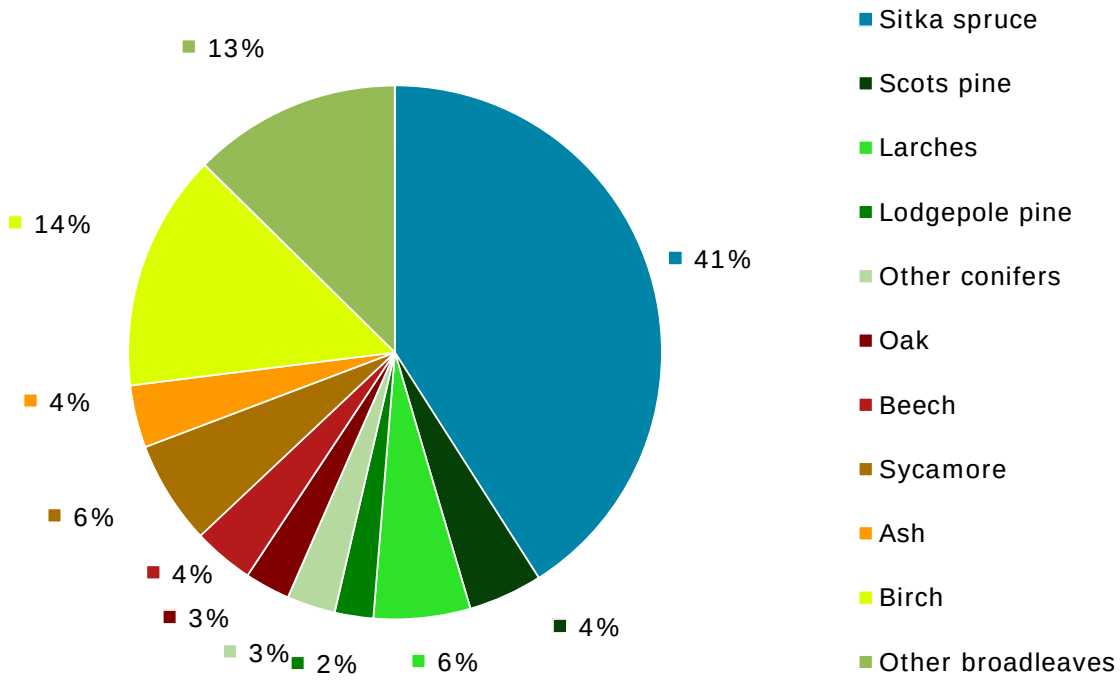


Figure 2 Principal conifer tree species composition by stocked area at 31 March 2012

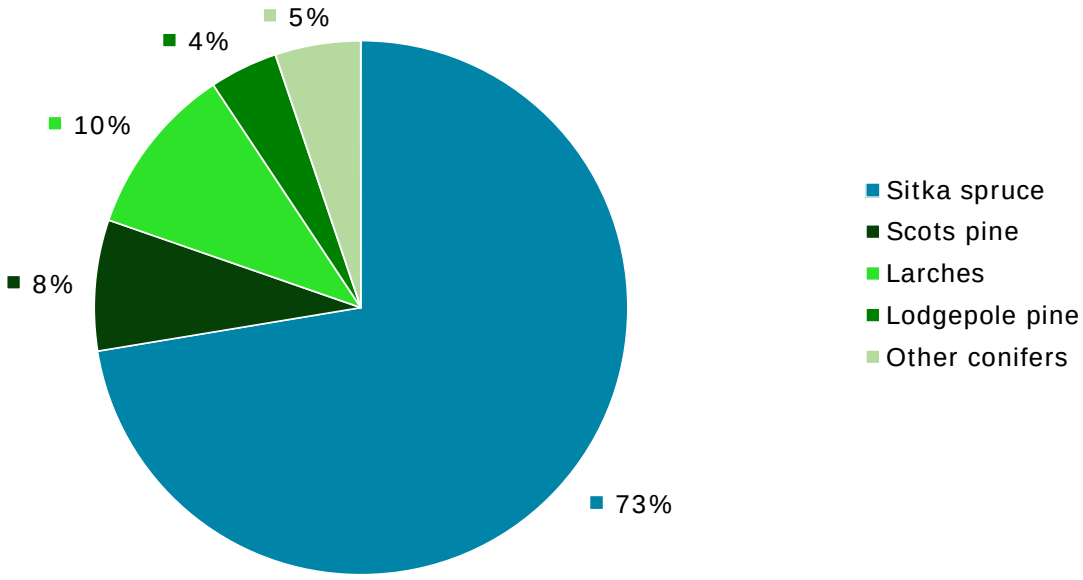


Table 1 Stocked area by principal tree species at 31 March 2012

Principal species	FC	Private sector		Total
	area (000 ha)	area (000 ha)	*SE%*	area (000 ha)
Conifers				
Sitka spruce	11.9	25.4	*6*	**37.3**
Scots pine	1.1	3.0	*21*	**4.1**
Larches	1.0	4.3	*18*	**5.3**
Lodgepole pine	0.9	1.2	*45*	**2.1**
Other conifers	0.6	2.1	*27*	**2.7**
All conifers	**15.5**	**36.5**	***4***	**52.0**
Broadleaves				
Oak	0.1	2.4	*21*	**2.5**
Beech	0.0	3.3	*17*	**3.3**
Sycamore	0.0	5.7	*14*	**5.7**
Ash	0.1	3.3	*17*	**3.4**
Birch	0.4	12.7	*11*	**13.1**
Other broadleaves	1.4	10.1	*11*	**11.5**
All broadleaves	**2.1**	**37.6**	***5***	**39.6**
All species				
All species	**17.6**	**74.1**	***3***	**91.6**

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	1.8	4.0	*22*	**5.8**
11–20 years	0.9	8.0	*15*	**8.9**
21–40 years	8.3	15.2	*12*	**23.5**
41–60 years	4.2	5.7	*20*	**9.9**
61–80 years	0.2	2.2	*29*	**2.5**
81+ years	0.1	1.3	*30*	**1.4**
Total	**15.5**	**36.5**	***4***	**52.0**
All broadleaves				
0–10 years	0.9	6.0	*16*	**7.0**
11–20 years	0.2	5.5	*15*	**5.7**
21–40 years	0.3	14.2	*9*	**14.5**
41–60 years	0.2	6.6	*16*	**6.8**
61–80 years	0.2	3.2	*23*	**3.4**
81+ years	0.2	2.1	*24*	**2.3**
Total	**2.1**	**37.6**	***5***	**39.6**
All species				
0–10 years	2.8	9.9	*13*	**12.7**
11–20 years	1.1	13.6	*11*	**14.7**
21–40 years	8.6	29.4	*8*	**38.0**
41–60 years	4.4	12.3	*13*	**16.7**
61–80 years	0.4	5.4	*19*	**5.8**
81+ years	0.3	3.4	*19*	**3.7**
Total	**17.6**	**74.1**	***3***	**91.6**

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

Mean stand DBH	FC	Private sector		Total
	area (000 ha)	area (000 ha)	*SE%*	area (000 ha)
All conifers				
0–7 cm	2.2	4.2	*22*	**6.3**
7–10 cm	0.3	5.5	*18*	**5.8**
10–15 cm	2.5	4.7	*20*	**7.1**
15–20 cm	7.6	7.2	*16*	**14.7**
20–30 cm	2.4	9.5	*14*	**11.9**
30–40 cm	0.5	3.0	*23*	**3.5**
40–60 cm	0.1	2.2	*25*	**2.3**
60+ cm	0.0	0.2	*67*	**0.3**
Total	**15.5**	**36.5**	***4***	**52.0**
All broadleaves				
0–7 cm	1.0	7.0	*14*	**7.9**
7–10 cm	0.3	8.3	*13*	**8.6**
10–15 cm	0.5	6.6	*14*	**7.0**
15–20 cm	0.2	3.3	*20*	**3.5**
20–30 cm	0.0	4.1	*17*	**4.1**
30–40 cm	0.0	2.8	*17*	**2.8**
40–60 cm	0.0	3.3	*22*	**3.3**
60+ cm	0.0	2.3	*27*	**2.3**
Total	**2.1**	**37.6**	***5***	**39.6**
All species				
0–7 cm	3.2	11.1	*11*	**14.2**
7–10 cm	0.6	13.8	*10*	**14.5**
10–15 cm	2.9	11.2	*12*	**14.2**
15–20 cm	7.8	10.5	*13*	**18.2**
20–30 cm	2.4	13.6	*11*	**16.0**
30–40 cm	0.5	5.9	*14*	**6.4**
40–60 cm	0.1	5.5	*16*	**5.6**
60+ cm	0.0	2.5	*25*	**2.5**
Total	**17.6**	**74.1**	***3***	**91.6**

Table 4 Felled area at 31 March 2012

Clearfelled area	FC	Private sector		Total
	area (000 ha)	area (000 ha)	*SE%*	area (000 ha)
	1.0	3.1	*34*	**4.1**

Standing volume at 31 March 2012

Figure 3 Principal tree species composition by standing volume at 31 March 2012

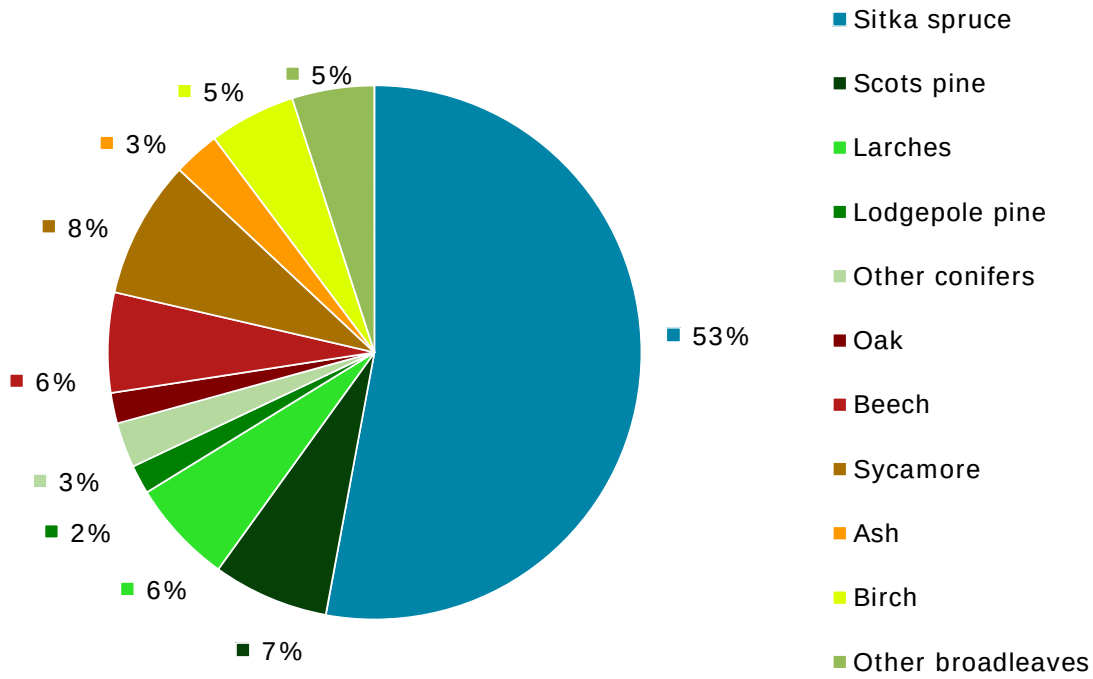


Figure 4 Principal conifer tree species composition by standing volume at 31 March 2012

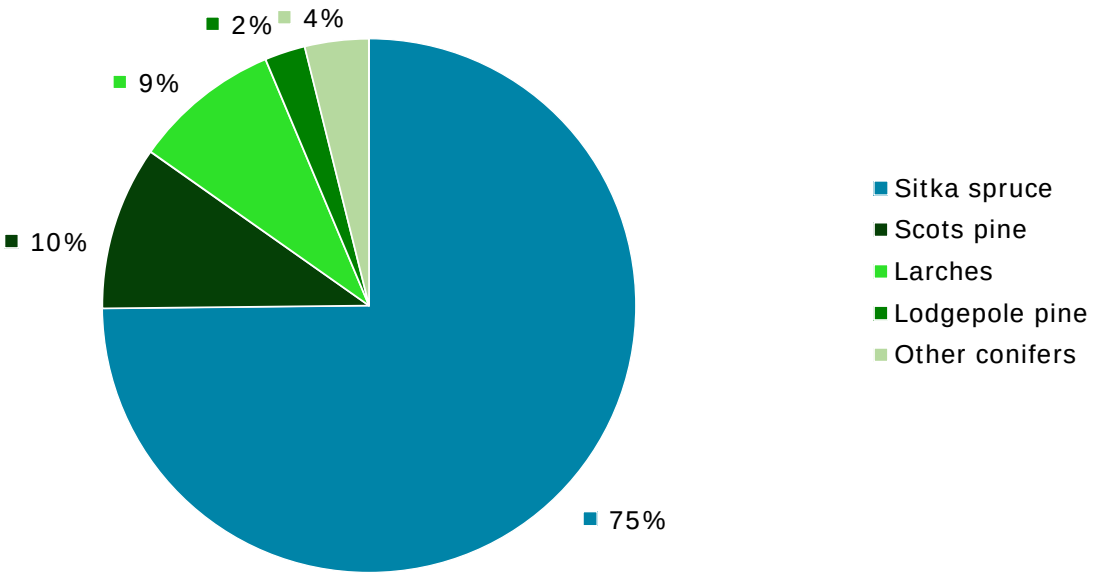


Table 5 Standing volume by principal tree species at 31 March 2012

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	3,090	7,337	*11*	**10,428**
Scots pine	160	1,224	*23*	**1,384**
Larches	145	1,095	*20*	**1,240**
Lodgepole pine	191	153	*65*	**343**
Other conifers	158	382	*28*	**540**
All conifers	**3,744**	**10,225**	***8***	**13,969**
Broadleaves				
Oak	14	349	*24*	**363**
Beech	12	1,182	*26*	**1,194**
Sycamore	6	1,640	*18*	**1,646**
Ash	1	549	*39*	**550**
Birch	26	1,010	*13*	**1,035**
Other broadleaves	89	892	*22*	**981**
All broadleaves	**148**	**5,623**	***9***	**5,771**
All species				
All species	**3,892**	**15,855**	***6***	**19,747**

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				
0–20 years	27	396	*20*	**423**
21–40 years	2,128	5,142	*16*	**7,271**
41–60 years	1,472	2,953	*21*	**4,425**
61–80 years	89	910	*32*	**998**
80+ years	28	824	*46*	**852**
Total	**3,744**	**10,225**	***8***	**13,969**
All broadleaves				
0–20 years	2	113	*23*	**115**
21–40 years	25	1,910	*11*	**1,935**
41–60 years	27	1,230	*20*	**1,258**
61–80 years	37	1,113	*30*	**1,150**
80+ years	57	1,257	*30*	**1,314**
Total	**148**	**5,623**	***9***	**5,771**
All species				
0–20 years	29	511	*17*	**540**
21–40 years	2,153	7,052	*12*	**9,206**
41–60 years	1,499	4,186	*16*	**5,685**
61–80 years	125	2,024	*22*	**2,149**
80+ years	86	2,081	*25*	**2,167**
Total	**3,892**	**15,855**	***6***	**19,747**

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

Mean stand DBH	FC	Private sector		Total
	volume (000 m^3 obs)	volume (000 m^3 obs)	*SE%*	volume (000 m^3 obs)
All conifers				
0–7 cm	0	0	-	**0**
7–10 cm	8	138	*20*	**146**
10–15 cm	302	487	*23*	**789**
15–20 cm	2,174	1,900	*20*	**4,073**
20–30 cm	1,064	4,292	*16*	**5,356**
30–40 cm	163	1,809	*32*	**1,972**
40–60 cm	32	1,160	*26*	**1,192**
60+ cm	2	439	*78*	**441**
Total	**3,744**	**10,225**	***8***	**13,969**
All broadleaves				
0–7 cm	0	11	*23*	**11**
7–10 cm	7	273	*18*	**280**
10–15 cm	70	658	*15*	**728**
15–20 cm	48	422	*18*	**470**
20–30 cm	17	725	*20*	**743**
30–40 cm	4	910	*14*	**913**
40–60 cm	2	1,233	*26*	**1,235**
60+ cm	0	1,392	*30*	**1,392**
Total	**148**	**5,623**	***9***	**5,771**
All species				
0–7 cm	0	11	*23*	**11**
7–10 cm	15	412	*14*	**426**
10–15 cm	372	1,145	*13*	**1,517**
15–20 cm	2,222	2,322	*17*	**4,545**
20–30 cm	1,082	5,019	*14*	**6,100**
30–40 cm	167	2,720	*22*	**2,887**
40–60 cm	34	2,394	*18*	**2,427**
60+ cm	2	1,832	*29*	**1,833**
Total	**3,892**	**15,855**	***6***	**19,747**

Biomass and carbon stocks at 31 March 2012

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

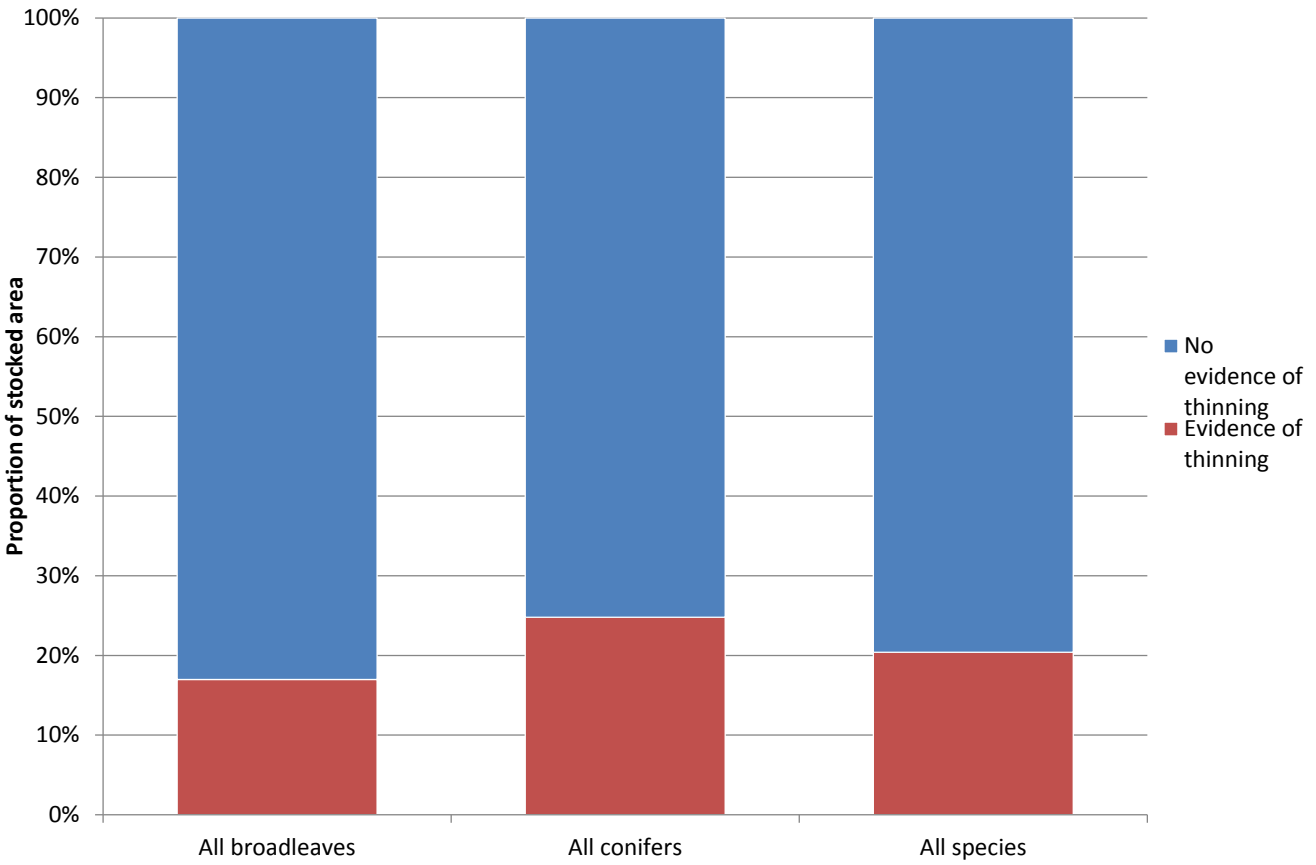
Principal species	FC	Private sector		Total
	biomass (000 odt)	biomass (000 odt)	*SE%*	biomass (000 odt)
Conifers				
Sitka spruce	2,121	4,445	*10*	**6,567**
Scots pine	115	852	*23*	**967**
Larches	106	662	*19*	**768**
Lodgepole pine	142	110	*63*	**252**
Other conifers	91	227	*28*	**317**
All conifers	**2,575**	**6,321**	***7***	**8,896**
Broadleaves				
Oak	13	308	*23*	**321**
Beech	12	1,032	*25*	**1,044**
Sycamore	5	1,333	*17*	**1,339**
Ash	1	455	*36*	**456**
Birch	26	1,023	*12*	**1,049**
Other broadleaves	84	820	*17*	**904**
All broadleaves	**141**	**4,974**	***8***	**5,115**
All species				
All species	**2,716**	**11,301**	***5***	**14,018**

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	1,061	2,223	*10*	**3,283**
Scots pine	57	426	*23*	**484**
Larches	53	331	*19*	**384**
Lodgepole pine	71	55	*63*	**126**
Other conifers	45	113	*28*	**159**
All conifers	**1,288**	**3,160**	***7***	**4,448**
Broadleaves				
Oak	6	154	*23*	**161**
Beech	6	516	*25*	**522**
Sycamore	3	667	*17*	**669**
Ash	1	227	*36*	**228**
Birch	13	511	*12*	**525**
Other broadleaves	42	410	*17*	**452**
All broadleaves	**71**	**2,487**	***8***	**2,558**
All species				
All species	**1,358**	**5,651**	***5***	**7,009**

Evidence of thinning

Figure 5 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 Scotland 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 Scotland and GB context.

In **Figures 6–11** 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 6–11** 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

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

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.

In **Figures 12–17** 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 18–19 and **Table 16** compare the Private sector hardwood timber availability under the two scenarios. **Figure 18** shows the Private sector hardwood availability for the two scenarios during the 50-year forecast while **Figure 19** and **Table 16** compare the hardwood availability in the 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	**287**	**393**	***24***	**680**	**229**	**326**	***19***	**554**	**190**	**756**	***20***	**946**	**141**	**581**	***20***	**722**
Sitka spruce	252	309	*31*	560	209	193	*28*	402	170	640	*23*	810	135	512	*23*	647
Scots pine	5	18	*29*	23	0	46	*44*	46	5	47	*34*	51	0	15	*29*	16
Larches	6	48	*32*	54	6	61	*35*	67	5	46	*44*	51	3	31	*29*	34
Lodgepole pine	19	3	*73*	22	8	3	*74*	11	6	3	*66*	9	0	3	*64*	3
Other conifers	6	15	*28*	21	5	23	*40*	27	4	19	*34*	23	3	18	*29*	21
All broadleaves	**1**	**79**	***27***	**80**	**1**	**61**	***23***	**62**	**1**	**55**	***23***	**57**	**0**	**30**	***20***	**30**
Oak	0	2	*44*	2	0	2	*38*	3	0	13	*62*	13	0	2	*34*	2
Beech	0	12	*42*	13	0	13	*38*	14	0	11	*42*	11	0	11	*41*	11
Sycamore	0	39	*48*	39	0	23	*50*	23	0	6	*41*	6	0	3	*35*	3
Ash	0	4	*52*	4	0	5	*44*	5	0	3	*28*	3	0	3	*35*	3
Birch	0	8	*38*	8	0	11	*33*	11	1	16	*40*	17	0	5	*25*	5
Other broadleaves	0	14	*64*	14	0	6	*36*	7	0	7	*33*	7	0	6	*30*	6
All species	**288**	**472**	***21***	**761**	**230**	**387**	***17***	**617**	**191**	**811**	***19***	**1,003**	**141**	**610**	***19***	**751**

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	**94**	**659**	***20***	**754**	**55**	**509**	***19***	**563**	**74**	**478**	***17***	**552**	**93**	**352**	***19***	**445**
Sitka spruce	83	524	*24*	607	47	416	*23*	462	55	348	*22*	403	73	275	*24*	348
Scots pine	4	87	*48*	91	1	35	*38*	36	9	39	*31*	47	4	26	*27*	30
Larches	4	25	*22*	30	2	19	*24*	21	5	45	*44*	50	7	24	*31*	31
Lodgepole pine	1	3	*57*	5	0	22	*64*	23	1	22	*98*	23	1	6	*91*	7
Other conifers	2	18	*56*	20	4	13	*34*	17	4	24	*35*	28	7	20	*24*	27
All broadleaves	**1**	**109**	***37***	**109**	**0**	**33**	***16***	**34**	**2**	**39**	***21***	**41**	**1**	**52**	***24***	**54**
Oak	0	2	*42*	2	0	5	*58*	5	0	2	*42*	2	0	7	*65*	7
Beech	0	70	*55*	70	0	3	*34*	3	0	3	*33*	3	0	16	*64*	16
Sycamore	0	8	*40*	8	0	4	*35*	4	0	7	*30*	7	0	4	*36*	5
Ash	0	9	*41*	9	0	2	*25*	2	1	4	*24*	4	0	4	*23*	4
Birch	0	13	*46*	13	0	13	*20*	13	0	15	*40*	16	0	12	*18*	13
Other broadleaves	0	6	*29*	6	0	7	*28*	7	1	8	*25*	8	0	9	*23*	9
All species	**95**	**768**	***18***	**863**	**55**	**542**	***18***	**597**	**76**	**517**	***16***	**593**	**94**	**404**	***17***	**499**

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	**53**	**557**	***17***	**610**	**63**	**583**	***16***	**646**
Sitka spruce	34	471	*19*	505	46	427	*20*	473
Scots pine	7	22	*24*	30	4	33	*23*	36
Larches	5	21	*24*	26	6	18	*23*	24
Lodgepole pine	2	12	*86*	14	1	30	*83*	31
Other conifers	6	23	*20*	29	7	68	*50*	75
All broadleaves	**3**	**38**	***18***	**41**	**3**	**34**	***18***	**36**
Oak	0	3	*37*	3	0	3	*34*	4
Beech	0	3	*31*	3	0	3	*31*	3
Sycamore	0	6	*52*	6	0	4	*36*	4
Ash	0	6	*31*	6	0	2	*41*	2
Birch	0	8	*26*	9	1	6	*27*	7
Other broadleaves	2	13	*37*	15	2	16	*31*	18
All species	**56**	**595**	***16***	**651**	**66**	**616**	***16***	**683**

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

Forecast period	FC	Private sector		Total
	volume (000 m^3 obs)	volume (000 m^3 obs)	*SE%*	volume (000 m^3 obs)
All conifers				
2013–16	3,479	10,431	*8*	**13,911**
2017–21	2,918	10,914	*7*	**13,832**
2022–26	2,445	10,445	*7*	**12,890**
2027–31	2,183	9,774	*8*	**11,957**
2032–36	2,115	8,472	*8*	**10,587**
2037–41	2,370	7,955	*8*	**10,325**
2042–46	2,753	7,630	*8*	**10,383**
2047–51	3,147	7,625	*8*	**10,773**
2052–56	3,598	7,576	*8*	**11,174**
2057–61	4,118	7,168	*8*	**11,286**
All broadleaves				
2013–16	153	5,835	*9*	**5,988**
2017–21	167	6,413	*8*	**6,580**
2022–26	185	7,148	*8*	**7,333**
2027–31	218	8,030	*7*	**8,247**
2032–36	262	8,798	*7*	**9,061**
2037–41	310	9,359	*7*	**9,668**
2042–46	352	10,071	*7*	**10,422**
2047–51	388	10,704	*6*	**11,091**
2052–56	417	11,237	*6*	**11,653**
2057–61	436	11,775	*6*	**12,212**
All species				
2013–16	3,633	16,267	*6*	**19,900**
2017–21	3,085	17,330	*6*	**20,414**
2022–26	2,630	17,596	*5*	**20,226**
2027–31	2,400	17,808	*5*	**20,208**
2032–36	2,377	17,276	*5*	**19,653**
2037–41	2,680	17,318	*5*	**19,998**
2042–46	3,105	17,704	*5*	**20,809**
2047–51	3,535	18,331	*5*	**21,866**
2052–56	4,014	18,818	*5*	**22,832**
2057–61	4,554	18,948	*5*	**23,502**

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

Forecast period	FC	Private sector		Total
	volume (000 m^3 obs)	volume (000 m^3 obs)	*SE%*	volume (000 m^3 obs)
All conifers				
2013–16	159	483	*6*	**642**
2017–21	128	500	*6*	**628**
2022–26	102	494	*6*	**596**
2027–31	101	466	*7*	**567**
2032–36	113	419	*7*	**532**
2037–41	132	415	*7*	**547**
2042–46	151	417	*7*	**567**
2047–51	163	429	*7*	**592**
2052–56	166	441	*6*	**607**
2057–61	163	447	*6*	**611**
All broadleaves				
2013–16	3	177	*7*	**180**
2017–21	4	196	*6*	**201**
2022–26	6	213	*6*	**218**
2027–31	8	213	*6*	**221**
2032–36	10	205	*6*	**215**
2037–41	10	190	*6*	**200**
2042–46	9	175	*6*	**184**
2047–51	9	163	*6*	**171**
2052–56	8	151	*6*	**158**
2057–61	7	142	*7*	**148**
All species				
2013–16	162	660	*5*	**822**
2017–21	133	696	*5*	**829**
2022–26	107	707	*4*	**814**
2027–31	109	679	*4*	**788**
2032–36	123	624	*5*	**747**
2037–41	142	605	*5*	**747**
2042–46	160	591	*5*	**751**
2047–51	172	591	*5*	**763**
2052–56	173	591	*5*	**765**
2057–61	170	589	*5*	**759**

Figure 6 Overview of 50-year forecast of average annual softwood availability

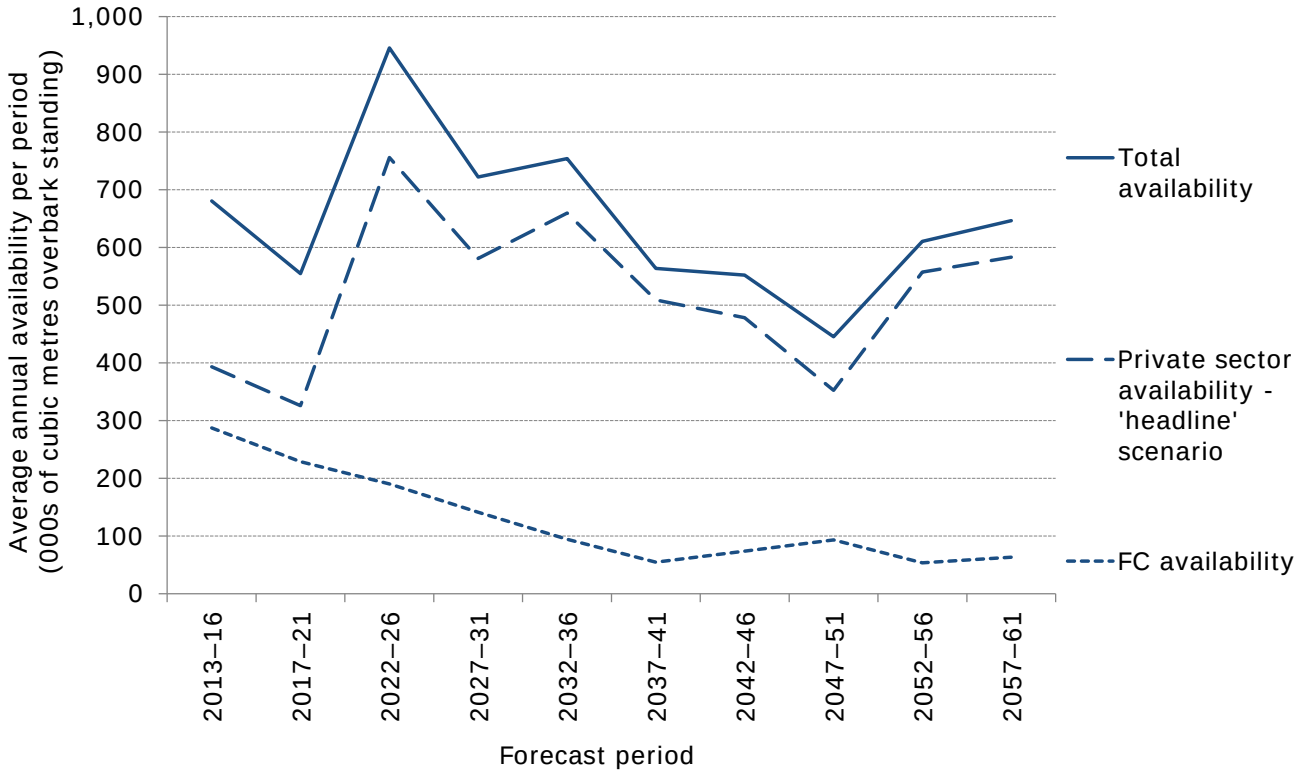


Figure 7 Overview of 50-year forecast of average annual hardwood availability

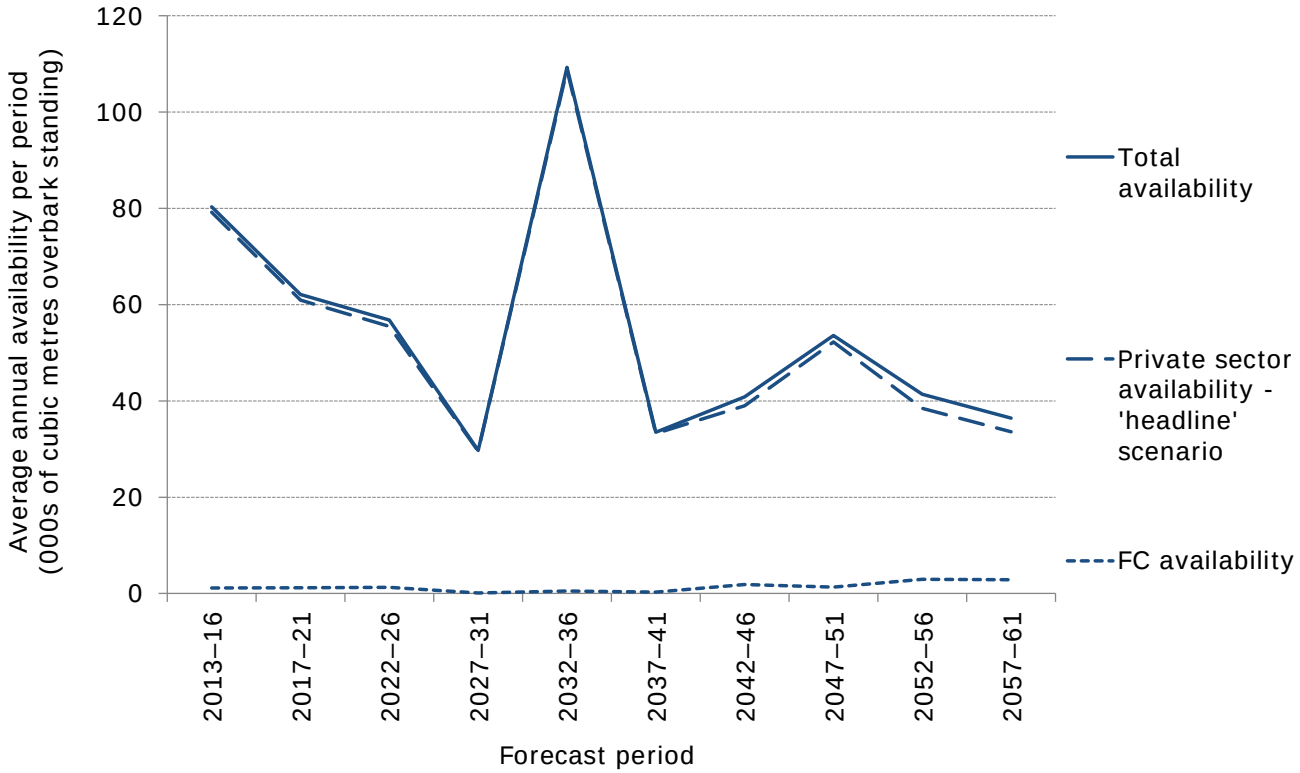


Figure 8 50-year forecast of average annual softwood availability

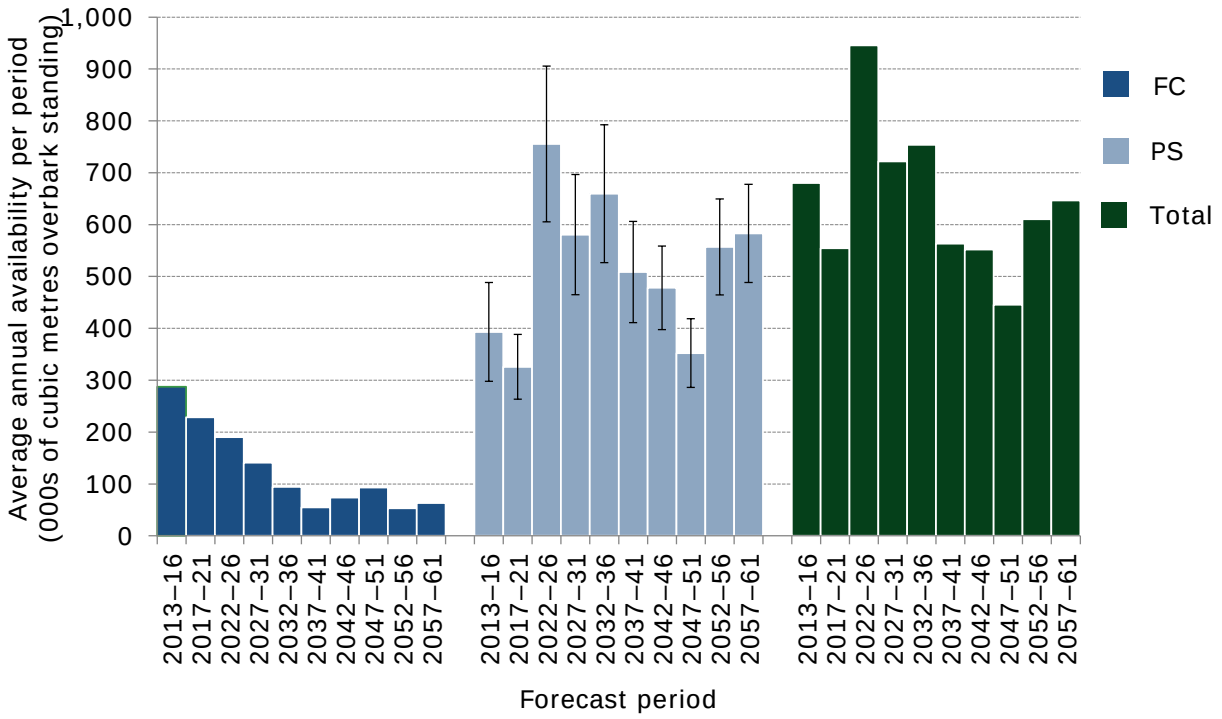


Figure 9 50-year forecast of average annual hardwood availability

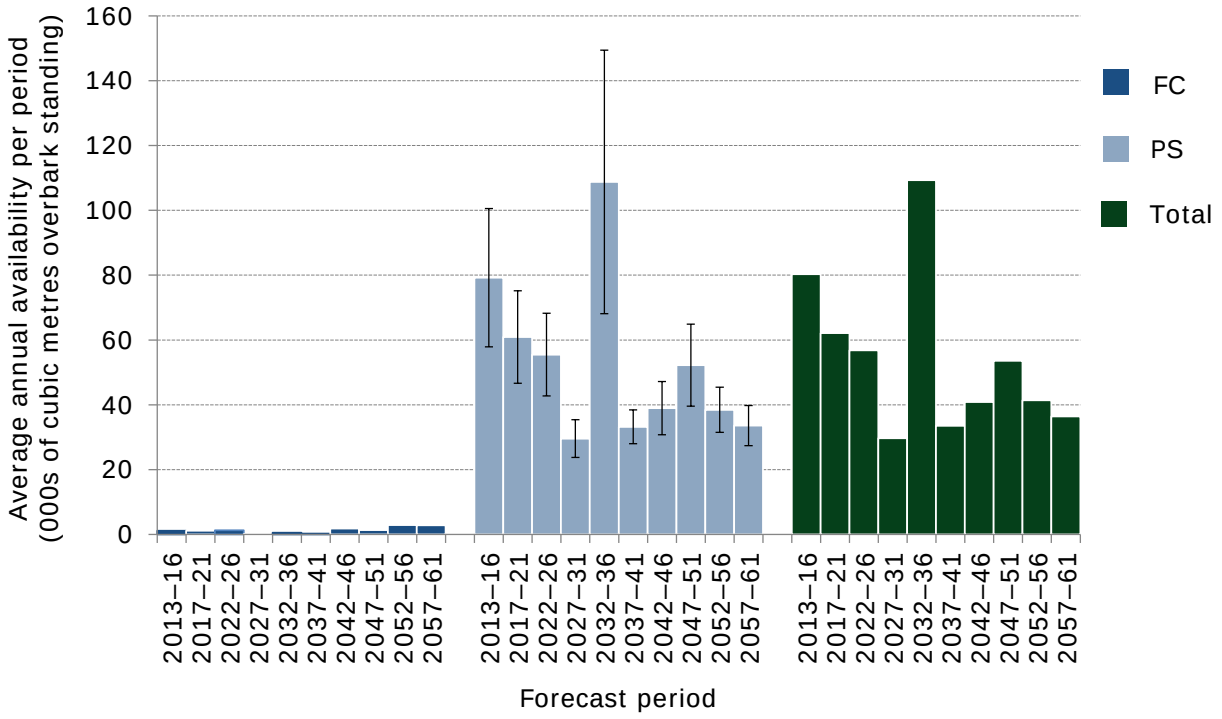


Figure 10 50-year forecast of softwood standing volume, increment and availability

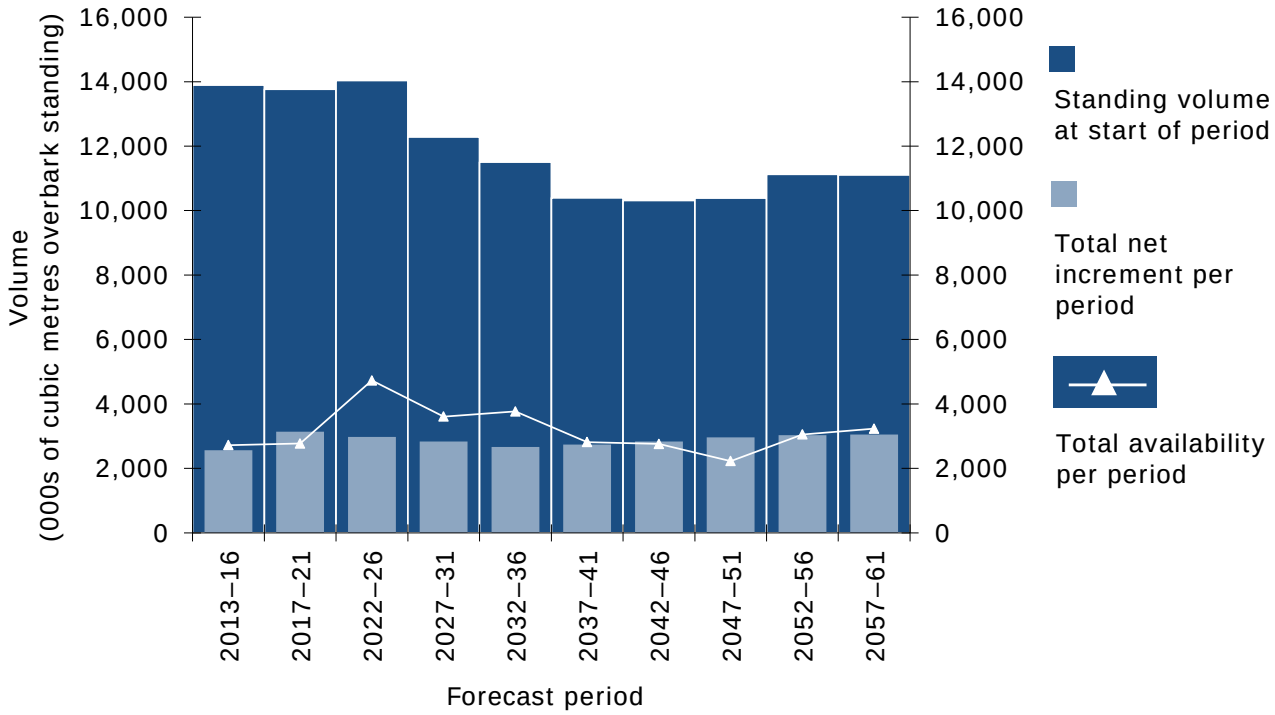
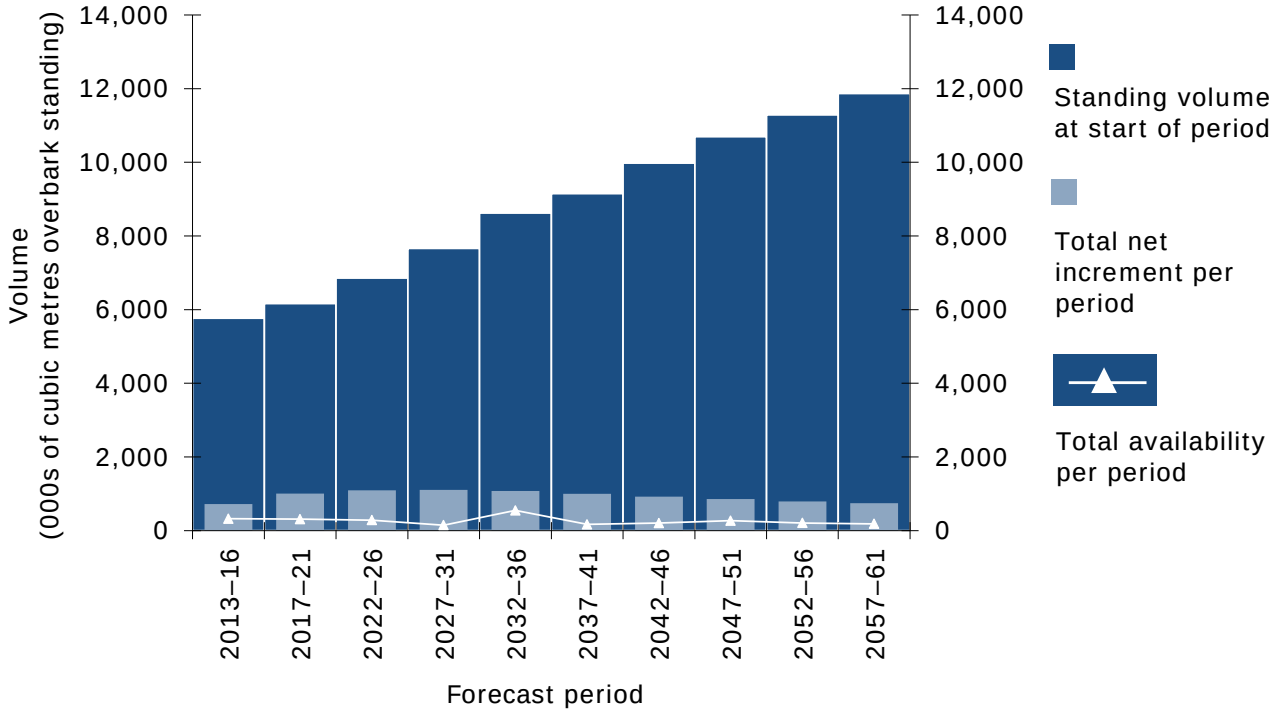


Figure 11 50-year forecast of hardwood standing volume, increment and availability



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	**287**	**393**	***24***	**680**	**229**	**326**	***19***	**554**	**190**	**756**	***20***	**946**	**141**	**581**	***20***	**722**
Sitka spruce	252	309	*31*	560	209	193	*28*	402	170	640	*23*	810	135	512	*23*	647
Scots pine	5	18	*29*	23	0	46	*44*	46	5	47	*34*	51	0	15	*29*	16
Larches	6	48	*32*	54	6	61	*35*	67	5	46	*44*	51	3	31	*29*	34
Lodgepole pine	19	3	*73*	22	8	3	*74*	11	6	3	*66*	9	0	3	*64*	3
Other conifers	6	15	*28*	21	5	23	*40*	27	4	19	*34*	23	3	18	*29*	21
All broadleaves	**1**	**479**	***15***	**480**	**1**	**339**	***11***	**340**	**1**	**261**	***11***	**262**	**0**	**135**	***10***	**135**
Oak	0	6	*26*	6	0	6	*23*	6	0	29	*49*	29	0	6	*19*	6
Beech	0	27	*32*	27	0	28	*30*	28	0	25	*33*	25	0	24	*33*	24
Sycamore	0	211	*21*	211	0	134	*21*	134	0	53	*21*	53	0	18	*28*	18
Ash	0	59	*41*	59	0	52	*43*	52	0	20	*27*	20	0	15	*20*	15
Birch	0	64	*15*	64	0	85	*15*	85	1	105	*20*	106	0	47	*18*	47
Other broadleaves	0	112	*37*	112	0	34	*22*	35	0	30	*14*	30	0	25	*12*	25
All species	**288**	**872**	***14***	**1,160**	**230**	**665**	***11***	**895**	**191**	**1,017**	***15***	**1,208**	**141**	**716**	***16***	**857**

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	**94**	**659**	***20***	**754**	**55**	**509**	***19***	**563**	**74**	**478**	***17***	**552**	**93**	**352**	***19***	**445**
Sitka spruce	83	524	*24*	607	47	416	*23*	462	55	348	*22*	403	73	275	*24*	348
Scots pine	4	87	*48*	91	1	35	*38*	36	9	39	*31*	47	4	26	*27*	30
Larches	4	25	*22*	30	2	19	*24*	21	5	45	*44*	50	7	24	*31*	31
Lodgepole pine	1	3	*57*	5	0	22	*64*	23	1	22	*98*	23	1	6	*91*	7
Other conifers	2	18	*56*	20	4	13	*34*	17	4	24	*35*	28	7	20	*24*	27
All broadleaves	**1**	**241**	***18***	**241**	**0**	**181**	***11***	**182**	**2**	**189**	***10***	**191**	**1**	**240**	***17***	**241**
Oak	0	10	*40*	10	0	9	*32*	9	0	14	*12*	14	0	17	*35*	18
Beech	0	77	*50*	77	0	23	*56*	23	0	9	*20*	9	0	60	*62*	60
Sycamore	0	30	*19*	31	0	25	*18*	25	0	36	*22*	36	0	27	*18*	27
Ash	0	23	*22*	23	0	16	*23*	16	1	26	*23*	27	0	23	*25*	23
Birch	0	60	*19*	60	0	64	*18*	64	0	71	*19*	71	0	71	*17*	72
Other broadleaves	0	40	*23*	40	0	45	*20*	45	1	33	*14*	33	0	42	*17*	43
All species	**95**	**901**	***15***	**996**	**55**	**689**	***14***	**744**	**76**	**668**	***12***	**744**	**94**	**593**	***13***	**687**

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	**53**	**557**	***17***	**610**	**63**	**583**	***16***	**646**
Sitka spruce	34	471	*19*	505	46	427	*20*	473
Scots pine	7	22	*24*	30	4	33	*23*	36
Larches	5	21	*24*	26	6	18	*23*	24
Lodgepole pine	2	12	*86*	14	1	30	*83*	31
Other conifers	6	23	*20*	29	7	68	*50*	75
All broadleaves	**3**	**185**	***10***	**188**	**3**	**180**	***13***	**183**
Oak	0	8	*25*	8	0	9	*27*	9
Beech	0	15	*32*	15	0	28	*75*	28
Sycamore	0	42	*21*	42	0	39	*18*	39
Ash	0	31	*32*	31	0	10	*31*	10
Birch	0	46	*14*	46	1	40	*13*	41
Other broadleaves	2	44	*17*	46	2	54	*16*	55
All species	**56**	**741**	***13***	**797**	**66**	**763**	***13***	**829**

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

Forecast period	FC	Private sector		Total
	volume (000 m^3 obs)	volume (000 m^3 obs)	*SE%*	volume (000 m^3 obs)
All conifers				
2013–16	3,479	10,431	*8*	**13,911**
2017–21	2,918	10,914	*7*	**13,832**
2022–26	2,445	10,445	*7*	**12,890**
2027–31	2,183	9,774	*8*	**11,957**
2032–36	2,115	8,472	*8*	**10,587**
2037–41	2,370	7,955	*8*	**10,325**
2042–46	2,753	7,630	*8*	**10,383**
2047–51	3,147	7,625	*8*	**10,773**
2052–56	3,598	7,576	*8*	**11,174**
2057–61	4,118	7,168	*8*	**11,286**
All broadleaves				
2013–16	153	4,550	*9*	**4,704**
2017–21	167	3,834	*9*	**4,001**
2022–26	185	3,134	*10*	**3,319**
2027–31	218	3,234	*10*	**3,452**
2032–36	262	3,375	*9*	**3,637**
2037–41	310	3,354	*9*	**3,664**
2042–46	352	3,656	*8*	**4,008**
2047–51	388	3,836	*7*	**4,224**
2052–56	417	3,932	*7*	**4,349**
2057–61	436	4,093	*7*	**4,529**
All species				
2013–16	3,633	14,984	*6*	**18,616**
2017–21	3,085	14,751	*6*	**17,836**
2022–26	2,630	13,581	*6*	**16,212**
2027–31	2,400	13,011	*6*	**15,411**
2032–36	2,377	11,848	*6*	**14,225**
2037–41	2,680	11,313	*6*	**13,993**
2042–46	3,105	11,288	*6*	**14,392**
2047–51	3,535	11,456	*5*	**14,991**
2052–56	4,014	11,502	*6*	**15,516**
2057–61	4,554	11,252	*5*	**15,806**

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

Forecast period	FC	Private sector		Total
	volume (000 m^3 obs)	volume (000 m^3 obs)	*SE%*	volume (000 m^3 obs)
All conifers				
2013–16	159	483	*6*	**642**
2017–21	128	500	*6*	**628**
2022–26	102	494	*6*	**596**
2027–31	101	466	*7*	**567**
2032–36	113	419	*7*	**532**
2037–41	132	415	*7*	**547**
2042–46	151	417	*7*	**567**
2047–51	163	429	*7*	**592**
2052–56	166	441	*6*	**607**
2057–61	163	447	*6*	**611**
All broadleaves				
2013–16	3	168	*8*	**171**
2017–21	4	170	*7*	**174**
2022–26	6	174	*7*	**180**
2027–31	8	192	*7*	**200**
2032–36	10	215	*7*	**225**
2037–41	10	229	*6*	**239**
2042–46	9	244	*6*	**253**
2047–51	9	244	*6*	**253**
2052–56	8	232	*5*	**240**
2057–61	7	224	*5*	**231**
All species				
2013–16	162	651	*5*	**813**
2017–21	133	670	*5*	**802**
2022–26	107	669	*5*	**776**
2027–31	109	659	*5*	**767**
2032–36	123	634	*5*	**758**
2037–41	142	644	*5*	**786**
2042–46	160	660	*5*	**820**
2047–51	172	673	*5*	**845**
2052–56	173	673	*4*	**846**
2057–61	170	671	*4*	**841**

Figure 12 Overview of 50-year forecast of average annual softwood availability – unrestricted biological potential for Private sector hardwoods

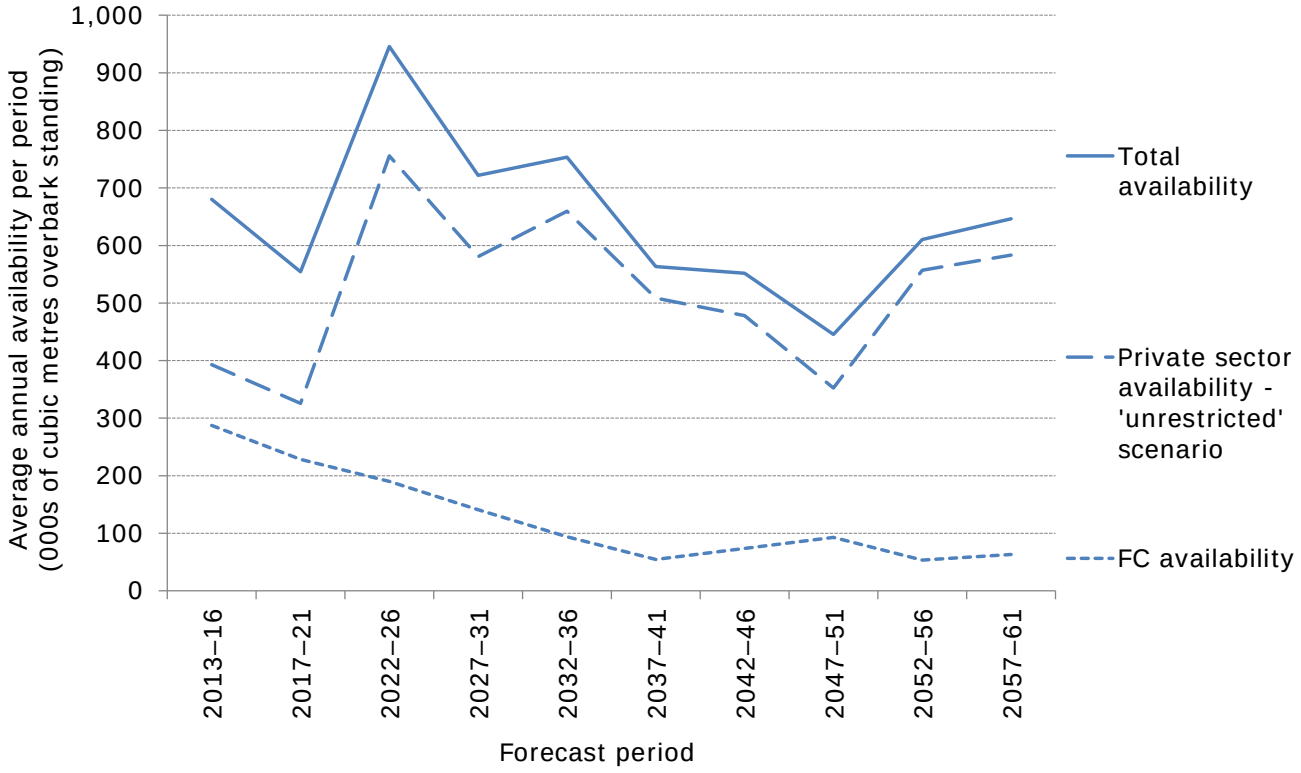


Figure 13 Overview of 50-year forecast of average annual hardwood availability – unrestricted biological potential for Private sector hardwoods

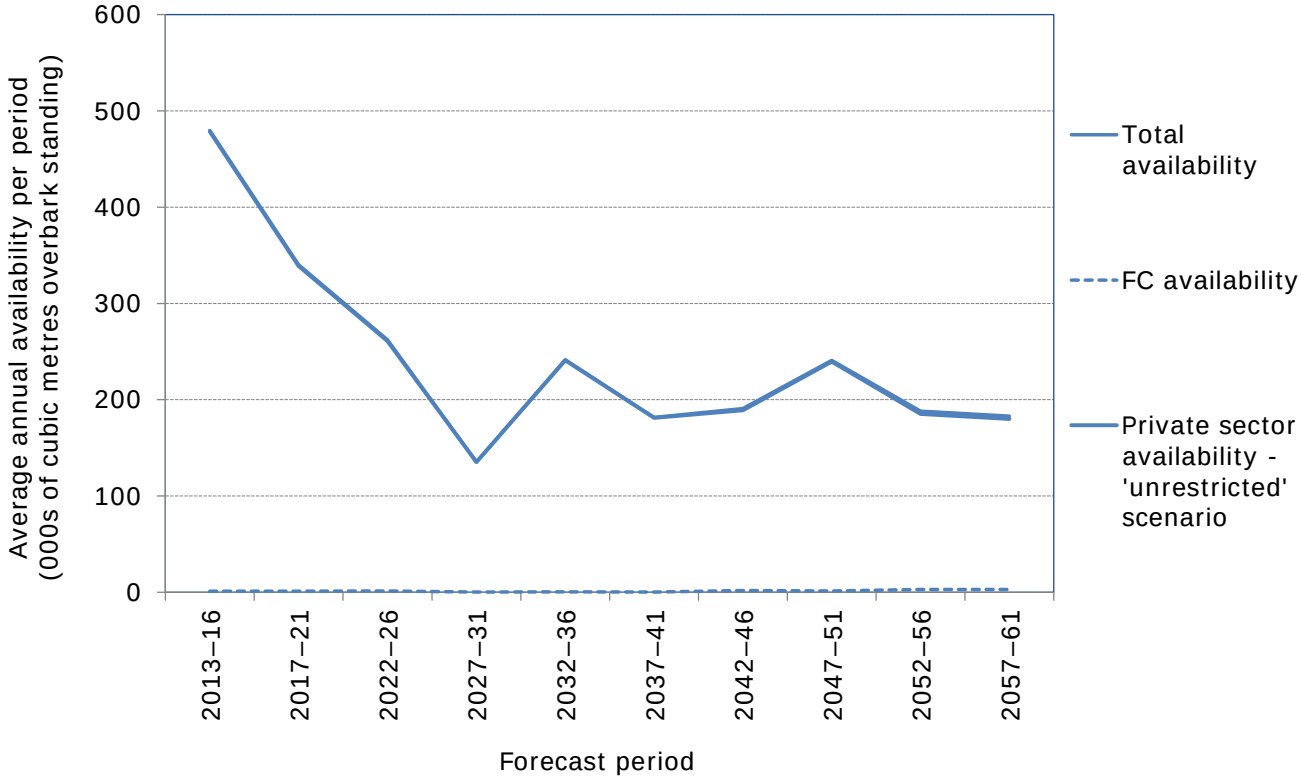


Figure 14 50-year forecast of average annual softwood availability– unrestricted biological potential for Private sector hardwoods

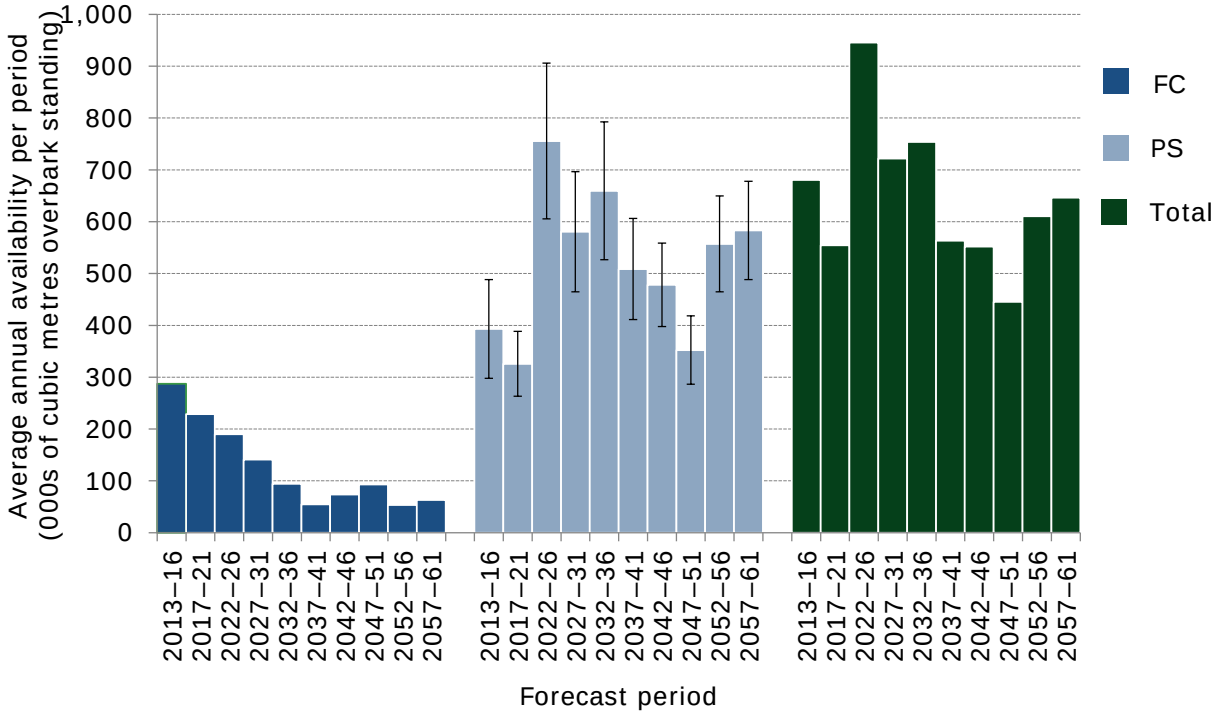


Figure 15 50-year forecast of average annual hardwood availability – unrestricted biological potential for Private sector hardwoods

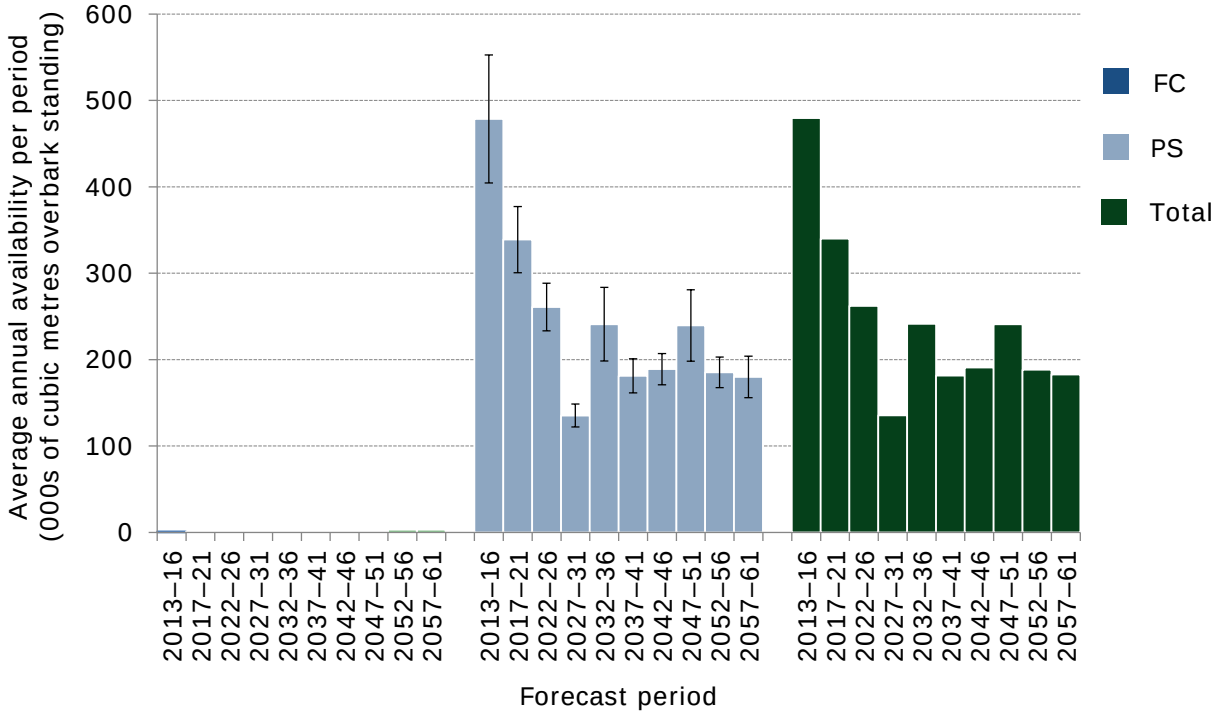


Figure 16 50-year summary of softwood standing volume, increment and availability – unrestricted biological potential for Private sector hardwoods

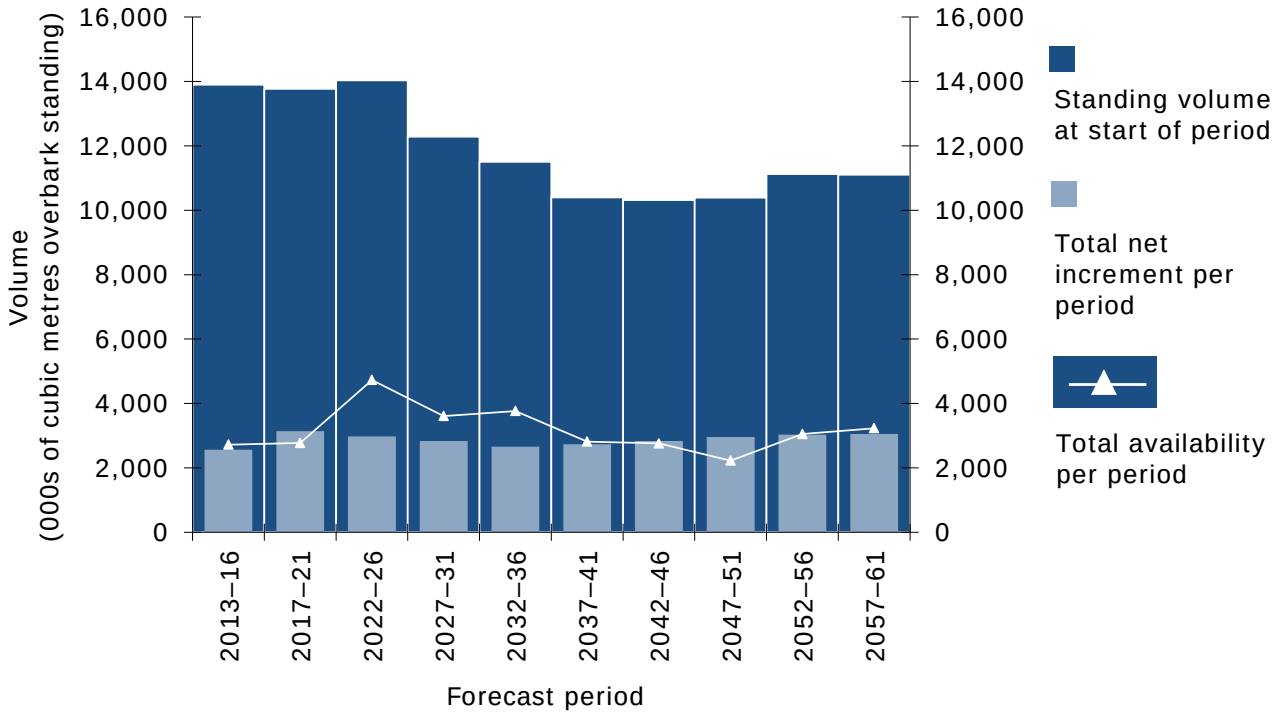
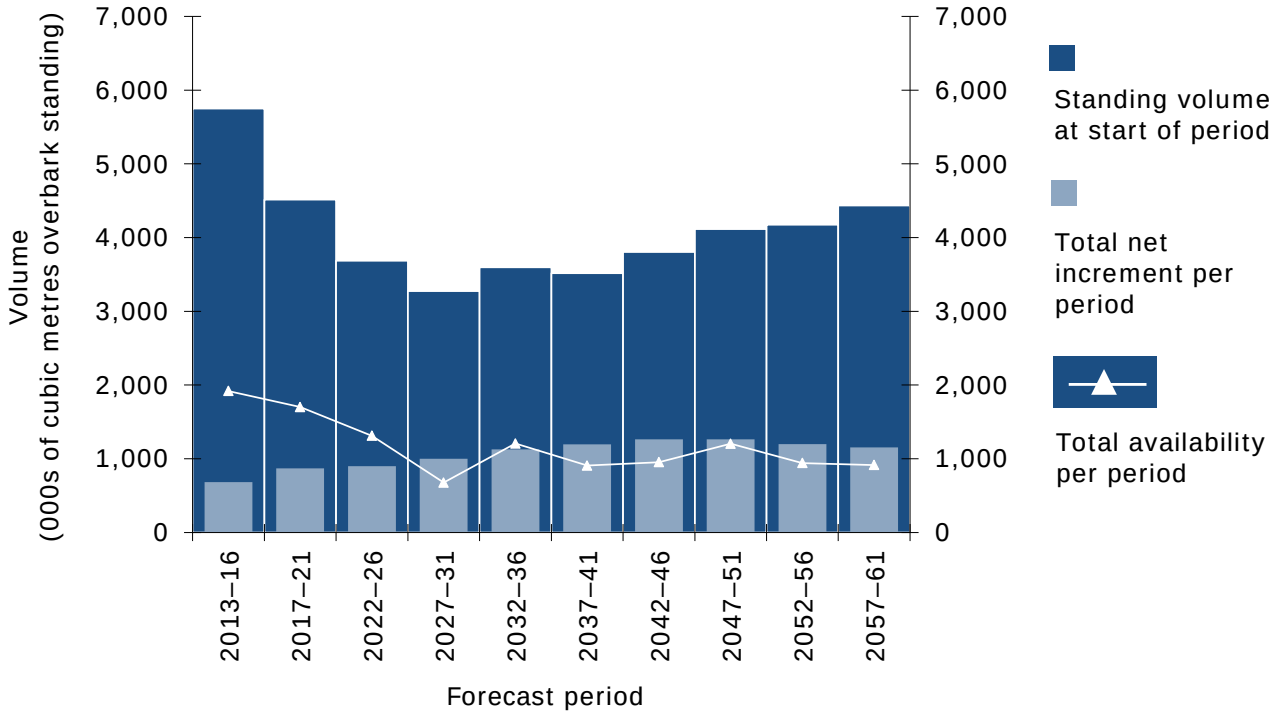


Figure 17 50-year summary of hardwood standing volume, increment and availability – unrestricted biological potential for Private sector hardwoods



Comparison of hardwood production between harvesting scenarios

Figure 18 50-year forecast comparison of average annual hardwood timber availability

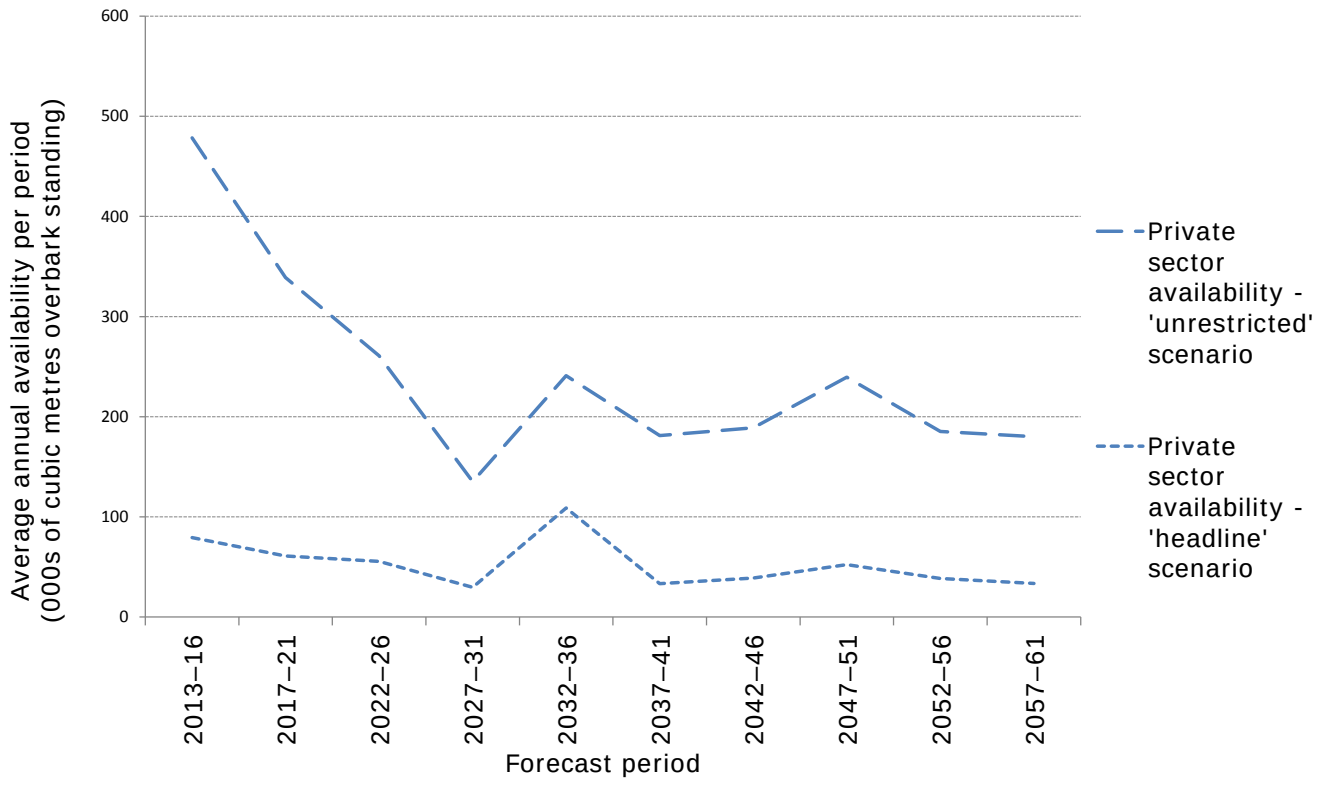
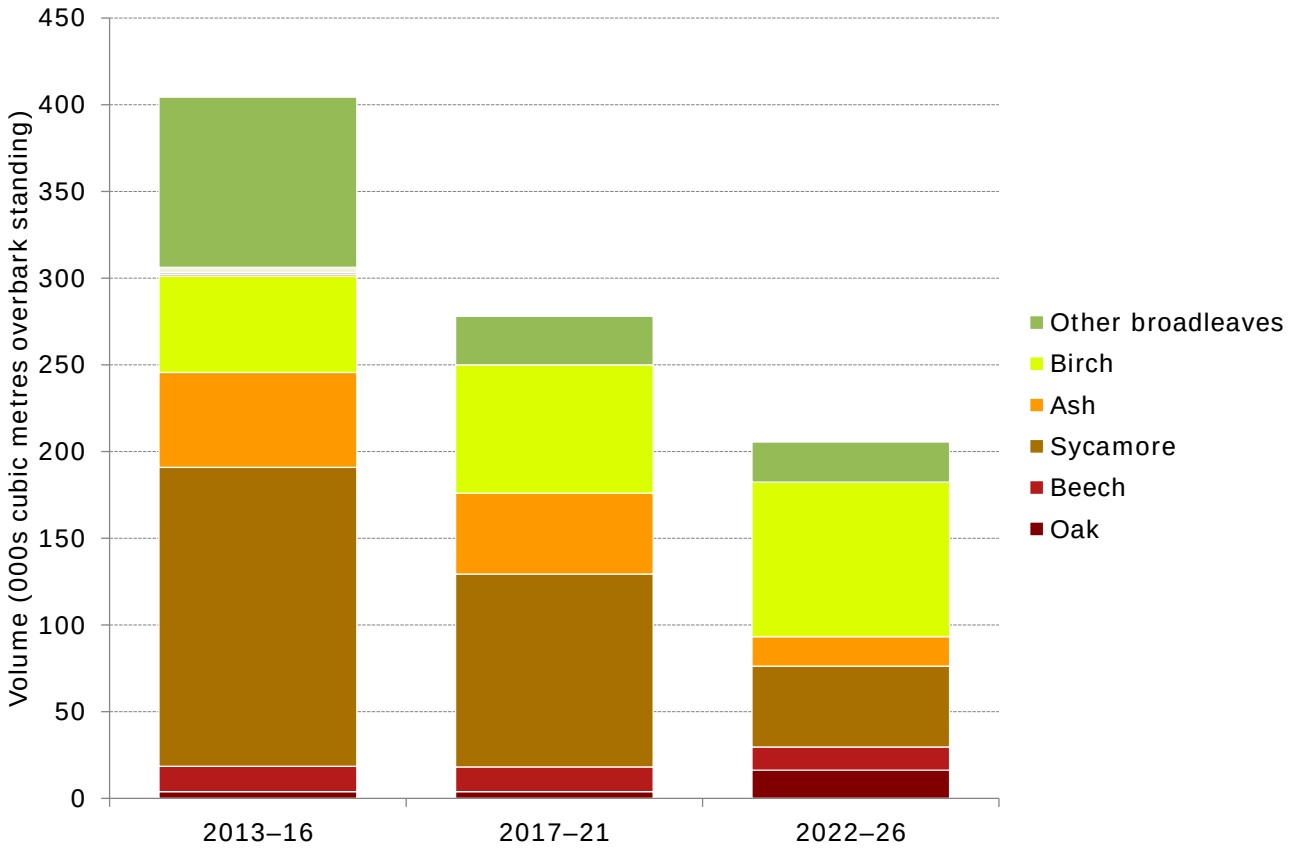


Table 16 15-year forecast comparison of average annual timber availability

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	**680**	**680**	**0**	**554**	**554**	**0**	**946**	**946**	**0**
Sitka spruce	560	560	0	402	402	0	810	810	0
Scots pine	23	23	0	46	46	0	51	51	0
Larches	54	54	0	67	67	0	51	51	0
Lodgepole pine	22	22	0	11	11	0	9	9	0
Other conifers	21	21	0	27	27	0	23	23	0
All broadleaves	**80**	**480**	**399**	**62**	**340**	**278**	**57**	**262**	**205**
Oak	2	6	4	3	6	4	13	29	16
Beech	13	27	15	14	28	14	11	25	13
Sycamore	39	211	172	23	134	111	6	53	47
Ash	4	59	55	5	52	47	3	20	17
Birch	8	64	56	11	85	74	17	106	89
Other broadleaves	14	112	98	7	35	28	7	30	23
All species	**761**	**1,160**	**399**	**617**	**895**	**278**	**1,003**	**1,208**	**206**

Figure 19 Species composition of the difference in hardwood availability under the alternative harvesting scenarios in the first three forecast periods



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