

NFI provisional estimates for woodland in Perth and Argyll Conservancy

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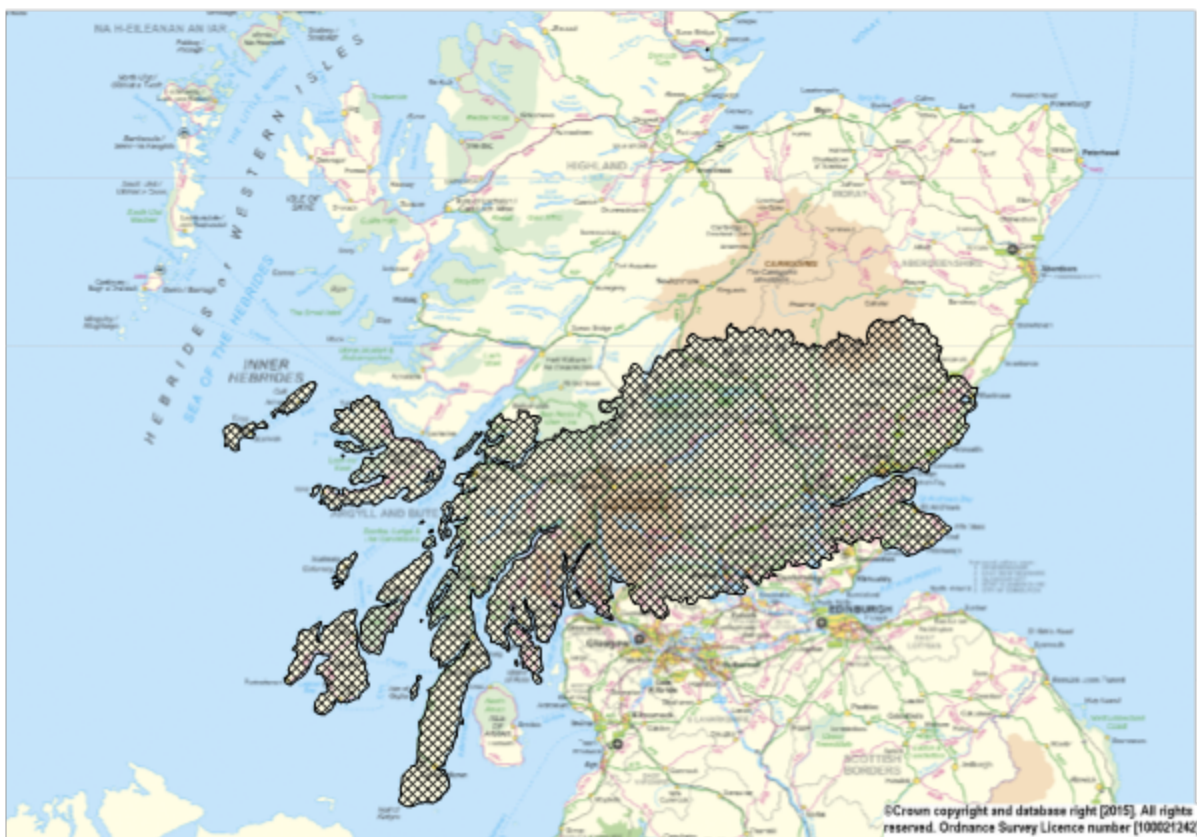
Website: www.forestry.gov.uk/inventory
www.forestry.gov.uk/forecast

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 Perth and Argyll 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 the stocked area, the standing volume and the associated biomass and carbon stocks 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 Perth and Argyll 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

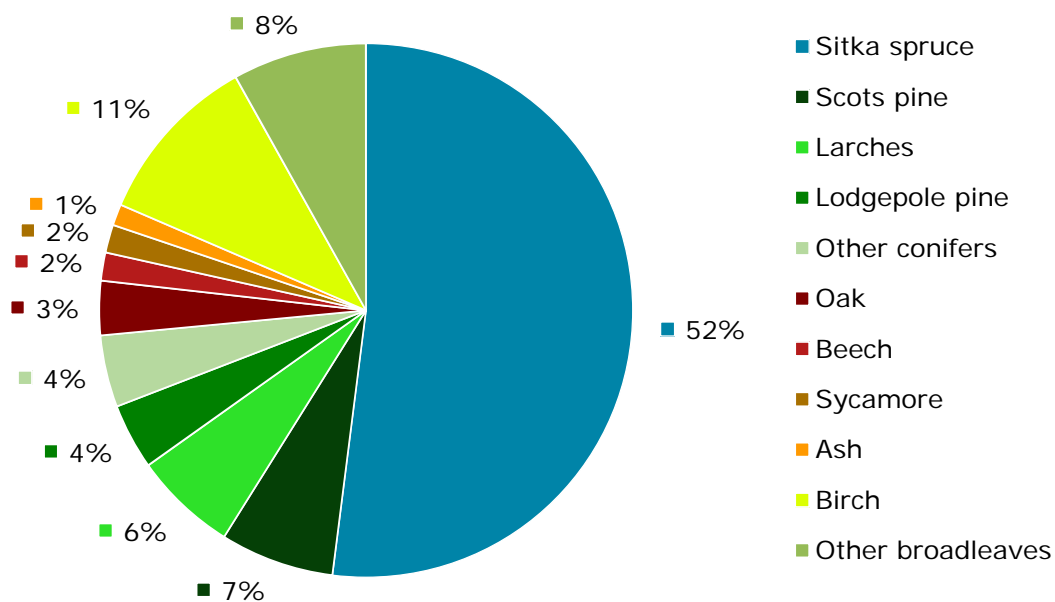


Figure 2 Principal conifer tree species composition by stocked area at 31 March 2012

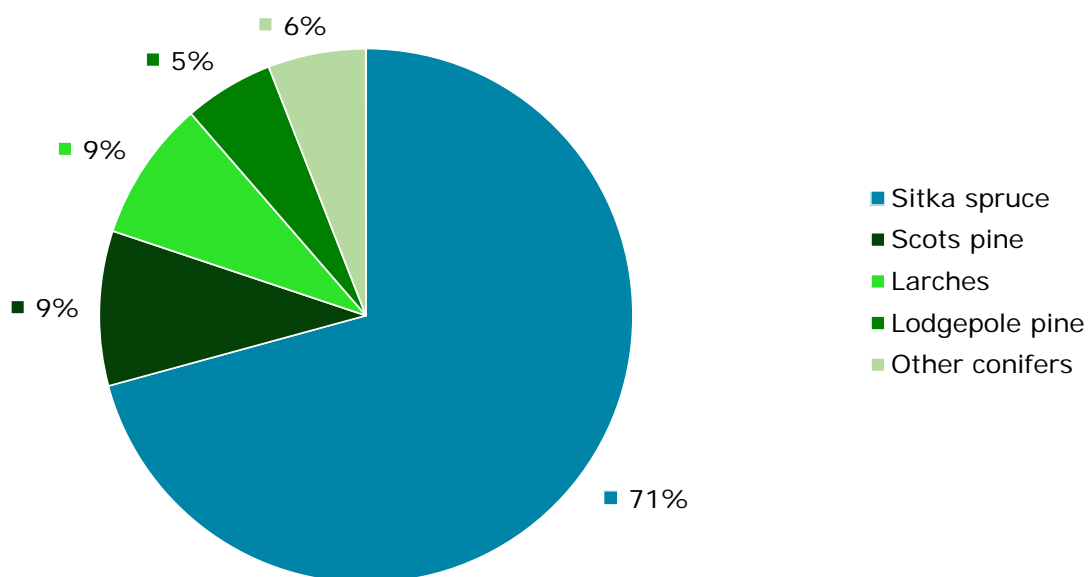


Table 1 Stocked area by principal tree species at 31 March 2012

Principal species	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
Conifers				
Sitka spruce	79.9	83.1	3	163.0
Scots pine	7.3	14.3	10	21.6
Larches	7.2	12.4	10	19.6
Lodgepole pine	8.8	3.7	17	12.5
Other conifers	6.6	7.1	13	13.7
All conifers	109.8	121.8	2	231.6
Broadleaves				
Oak	1.6	8.6	14	10.3
Beech	0.3	5.0	16	5.3
Sycamore	0.1	5.2	15	5.3
Ash	0.2	3.8	18	4.0
Birch	4.3	28.4	6	32.6
Other broadleaves	5.0	20.5	7	25.4
All broadleaves	11.5	71.6	3	83.1
All species				
All species	121.3	193.7	1	315.0

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	11.0	6.3	16	17.3
11–20 years	10.1	16.4	10	26.5
21–40 years	46.8	67.0	5	113.8
41–60 years	33.8	26.2	8	60.0
61–80 years	6.1	3.4	24	9.4
81+ years	2.0	2.5	28	4.5
Total	109.8	121.8	2	231.6
All broadleaves				
0–10 years	0.9	10.0	13	10.9
11–20 years	1.2	8.5	11	9.7
21–40 years	2.0	26.1	7	28.1
41–60 years	1.7	14.6	10	16.3
61–80 years	1.4	6.5	15	7.9
81+ years	4.3	5.9	18	10.2
Total	11.5	71.6	3	83.1
All species				
0–10 years	11.9	16.2	10	28.1
11–20 years	11.3	25.1	8	36.4
21–40 years	48.8	93.4	4	142.2
41–60 years	35.5	40.9	7	76.4
61–80 years	7.5	9.8	13	17.3
81+ years	6.3	8.3	15	14.6
Total	121.3	193.7	1	315.0

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	14.4	8.2	13	22.6
7–10 cm	4.1	15.6	10	19.7
10–15 cm	25.6	16.9	9	42.5
15–20 cm	33.2	27.3	7	60.5
20–30 cm	23.1	37.9	6	61.0
30–40 cm	5.7	9.5	13	15.3
40–60 cm	3.4	5.2	17	8.6
60+ cm	0.3	1.1	32	1.4
Total	109.8	121.8	2	231.6
All broadleaves				
0–7 cm	1.3	12.3	10	13.6
7–10 cm	1.8	14.5	9	16.3
10–15 cm	3.1	12.7	10	15.9
15–20 cm	3.8	8.1	11	11.9
20–30 cm	1.1	8.7	12	9.8
30–40 cm	0.1	5.4	16	5.5
40–60 cm	0.2	7.4	15	7.5
60+ cm	0.0	2.5	24	2.5
Total	11.5	71.6	3	83.1
All species				
0–7 cm	15.7	20.5	9	36.2
7–10 cm	5.9	30.3	7	36.2
10–15 cm	28.7	29.7	7	58.5
15–20 cm	37.0	35.4	6	72.4
20–30 cm	24.2	46.7	5	70.9
30–40 cm	5.8	15.0	10	20.8
40–60 cm	3.5	12.5	11	16.0
60+ cm	0.3	3.6	20	3.9
Total	121.3	193.7	1	315.0

Table 4 Felled area at 31 March 2012

Clearfelled area	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
	7.8	11.0	12	18.8

Standing volume at 31 March 2012

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

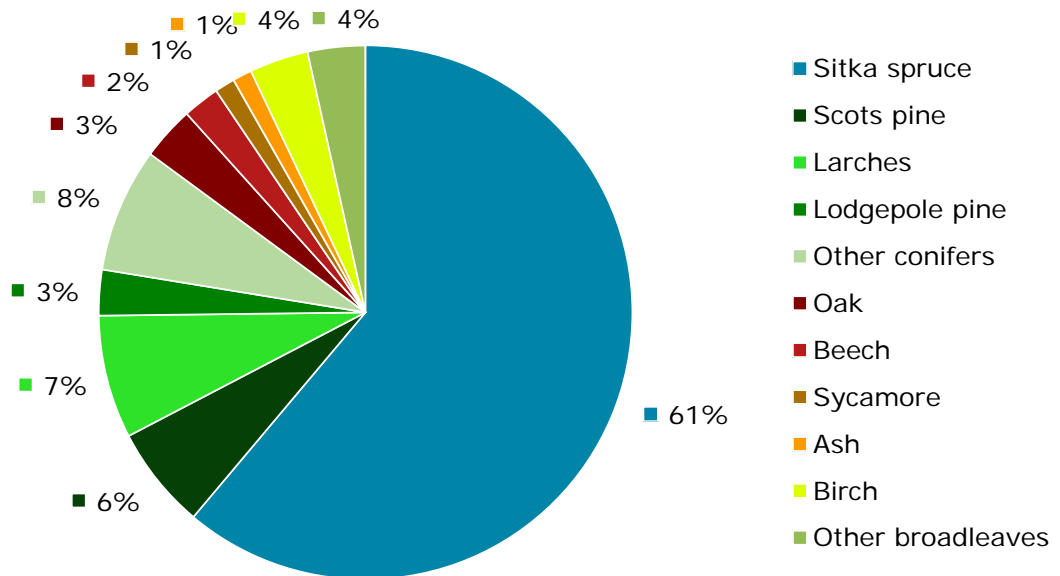


Figure 4 Principal conifer tree species composition by standing volume at 31 March 2012

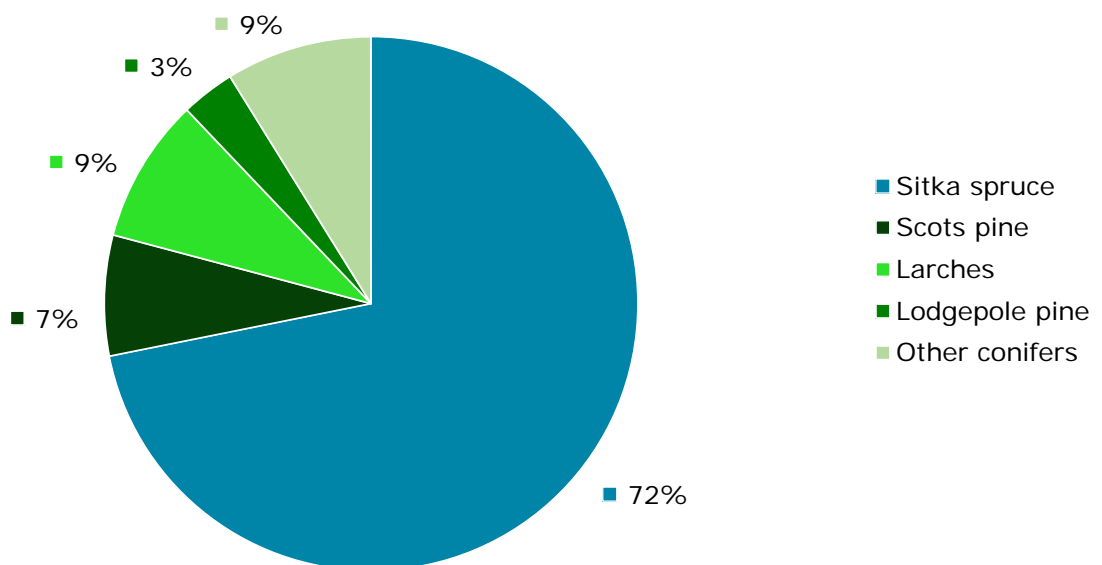


Table 5 Standing volume by principal tree species at 31 March 2012

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	19,701	27,364	5	47,065
Scots pine	1,385	3,407	13	4,792
Larches	1,455	4,276	13	5,731
Lodgepole pine	1,502	633	21	2,135
Other conifers	2,154	3,642	22	5,797
All conifers	26,197	39,699	4	65,897
Broadleaves				
Oak	406	2,087	17	2,493
Beech	62	1,647	26	1,709
Sycamore	18	928	18	946
Ash	24	869	35	893
Birch	642	2,108	9	2,750
Other broadleaves	666	2,015	15	2,681
All broadleaves	1,818	9,685	7	11,503
All species				
All species	28,016	49,414	3	77,430

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	363	997	16	1,360
21–40 years	10,163	20,201	6	30,363
41–60 years	12,206	14,461	9	26,667
61–80 years	2,661	1,903	28	4,564
80+ years	805	2,138	34	2,943
Total	26,197	39,699	4	65,897
All broadleaves				
0–20 years	8	181	19	189
21–40 years	124	2,420	8	2,543
41–60 years	273	2,977	13	3,249
61–80 years	281	1,843	20	2,123
80+ years	1,133	2,264	21	3,397
Total	1,818	9,685	7	11,503
All species				
0–20 years	371	1,182	14	1,554
21–40 years	10,286	22,650	6	32,936
41–60 years	12,479	17,461	8	29,940
61–80 years	2,941	3,740	17	6,681
80+ years	1,938	4,380	20	6,318
Total	28,016	49,414	3	77,430

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	2	12	34	14
7–10 cm	94	406	12	500
10–15 cm	2,993	2,129	11	5,122
15–20 cm	9,089	7,568	8	16,657
20–30 cm	10,431	19,354	7	29,785
30–40 cm	2,182	5,287	15	7,470
40–60 cm	1,260	3,509	18	4,770
60+ cm	145	1,435	44	1,580
Total	26,197	39,699	4	65,897
All broadleaves				
0–7 cm	1	21	22	22
7–10 cm	51	471	10	522
10–15 cm	467	1,141	14	1,608
15–20 cm	876	1,250	13	2,126
20–30 cm	366	1,415	14	1,781
30–40 cm	28	1,024	16	1,052
40–60 cm	24	2,556	18	2,580
60+ cm	5	1,806	26	1,811
Total	1,818	9,685	7	11,503
All species				
0–7 cm	3	33	19	37
7–10 cm	145	884	8	1,028
10–15 cm	3,460	3,280	9	6,740
15–20 cm	9,965	8,813	7	18,779
20–30 cm	10,797	20,791	6	31,588
30–40 cm	2,211	6,321	13	8,531
40–60 cm	1,285	6,036	13	7,321
60+ cm	150	3,256	27	3,406
Total	28,016	49,414	3	77,430

Biomass and carbon stocks at 31 March 2012

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

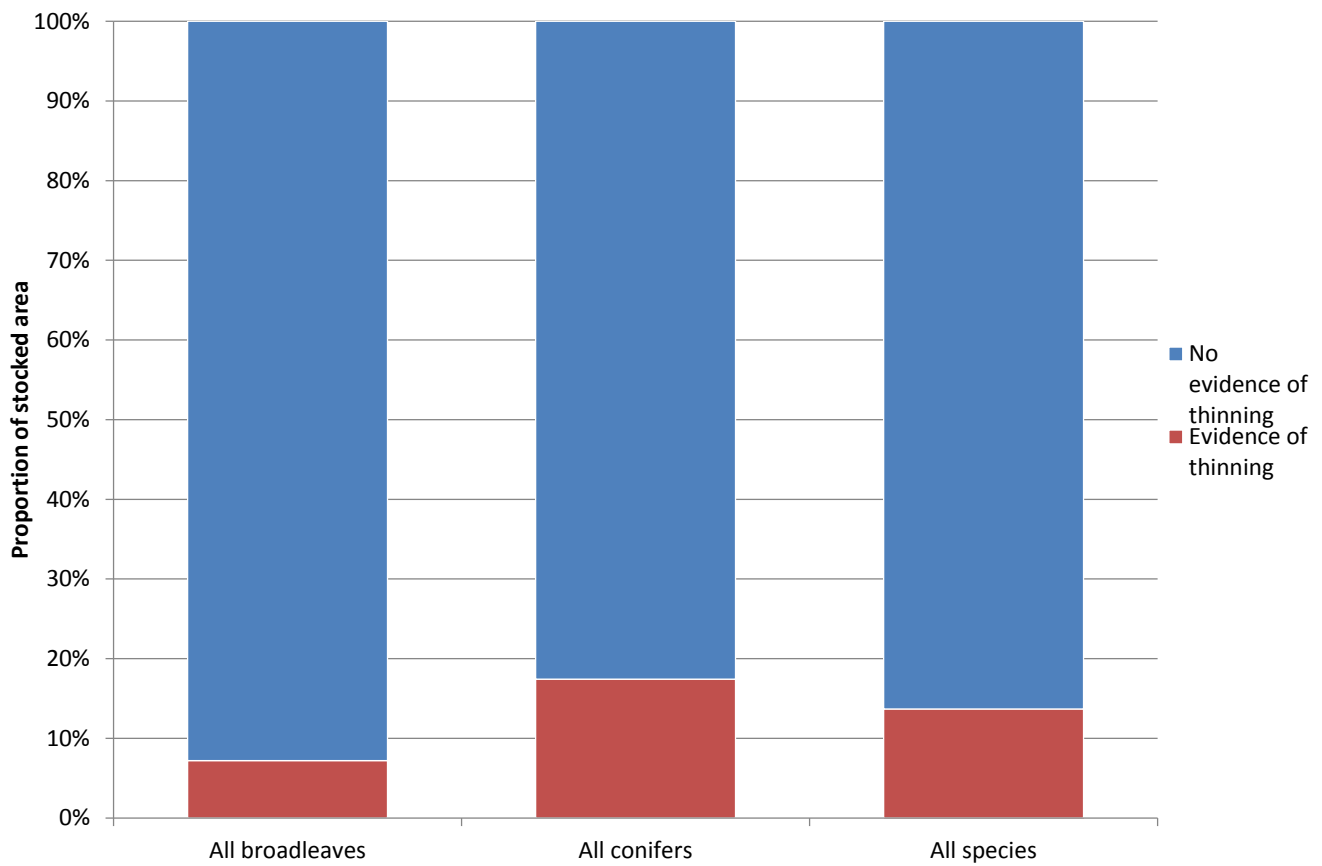
Principal species	FC	Private sector		Total
	biomass (000 odt)	biomass (000 odt)	SE%	biomass (000 odt)
Conifers				
Sitka spruce	13,238	16,433	4	29,671
Scots pine	1,019	2,311	12	3,330
Larches	976	2,530	13	3,506
Lodgepole pine	1,162	479	20	1,641
Other conifers	1,223	1,855	20	3,078
All conifers	17,618	23,836	3	41,454
Broadleaves				
Oak	367	1,817	17	2,184
Beech	64	1,405	24	1,468
Sycamore	17	782	18	799
Ash	22	712	31	735
Birch	619	2,118	8	2,737
Other broadleaves	610	1,903	13	2,513
All broadleaves	1,700	8,765	6	10,465
All species				
All species	19,318	32,629	3	51,946

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	6,619	8,216	4	14,835
Scots pine	509	1,155	12	1,665
Larches	488	1,265	13	1,753
Lodgepole pine	581	239	20	821
Other conifers	611	927	20	1,539
All conifers	8,809	11,918	3	20,727
Broadleaves				
Oak	183	909	17	1,092
Beech	32	702	24	734
Sycamore	9	391	18	399
Ash	11	356	31	367
Birch	309	1,059	8	1,369
Other broadleaves	305	951	13	1,256
All broadleaves	850	4,383	6	5,232
All species				
All species	9,659	16,314	3	25,973

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	1,193	1,663	9	2,856	1,070	2,142	10	3,212	1,068	2,120	9	3,188	1,269	2,157	9	3,426
Sitka spruce	973	1,069	13	2,042	920	1,420	13	2,340	904	1,727	10	2,631	1,084	1,693	11	2,776
Scots pine	29	101	17	130	22	150	25	171	25	149	24	174	25	161	20	185
Larches	59	307	20	366	44	251	16	294	45	137	17	182	52	152	21	204
Lodgepole pine	66	30	71	95	51	17	55	68	53	7	36	60	58	32	46	91
Other conifers	67	149	32	216	33	283	33	316	41	95	21	137	50	102	20	153
All broadleaves	2	119	40	121	1	68	23	69	1	33	21	34	3	25	16	28
Oak	0	3	70	4	0	3	67	3	0	6	63	6	1	3	70	3
Beech	0	4	36	5	0	4	36	4	0	3	38	4	1	3	38	4
Sycamore	0	25	57	25	0	9	35	9	0	7	48	7	0	5	39	5
Ash	0	54	73	54	0	8	47	8	0	2	39	2	0	1	42	1
Birch	0	15	31	16	0	23	25	23	0	7	19	7	0	7	32	8
Other broadleaves	0	18	54	18	0	21	52	21	0	7	33	7	1	6	22	7
All species	1,195	1,783	9	2,977	1,070	2,202	10	3,272	1,069	2,154	9	3,223	1,272	2,183	9	3,455

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	993	2,250	9	3,243	926	2,075	9	3,001	873	1,700	9	2,574	901	1,346	9	2,247
Sitka spruce	857	1,859	11	2,716	802	1,541	11	2,343	727	1,152	11	1,879	714	913	12	1,627
Scots pine	21	108	23	129	18	244	26	263	32	258	24	289	33	156	18	190
Larches	35	120	18	155	34	72	18	106	39	44	19	82	42	51	19	93
Lodgepole pine	53	30	45	83	36	28	36	64	24	112	32	136	11	45	44	57
Other conifers	26	113	23	140	36	169	23	204	53	146	26	198	100	170	29	270
All broadleaves	1	27	15	29	3	38	14	40	7	51	12	58	6	67	22	74
Oak	0	3	66	3	0	4	46	4	3	4	40	7	2	4	38	6
Beech	0	3	37	4	1	6	43	7	0	9	49	9	1	19	71	19
Sycamore	0	4	41	4	0	6	36	6	0	5	35	6	0	10	38	10
Ash	0	1	33	1	0	2	38	2	0	3	39	3	0	5	40	5
Birch	0	6	14	6	0	10	19	10	1	17	13	17	1	16	15	17
Other broadleaves	1	10	26	11	1	9	24	11	3	12	20	15	2	14	17	17
All species	994	2,278	9	3,272	928	2,114	9	3,042	880	1,750	9	2,631	907	1,413	9	2,320

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	1,121	1,062	9	2,182	728	1,145	8	1,874
Sitka spruce	813	689	10	1,502	529	864	9	1,393
Scots pine	73	130	38	204	58	107	28	165
Larches	52	55	22	107	32	58	15	90
Lodgepole pine	98	10	48	108	5	5	62	11
Other conifers	85	173	29	259	104	110	10	215
All broadleaves	11	59	20	69	15	53	11	68
Oak	2	4	32	6	2	5	26	7
Beech	1	3	34	4	1	4	35	5
Sycamore	0	14	73	14	0	2	32	3
Ash	1	4	39	4	0	3	49	3
Birch	2	13	17	15	3	16	17	20
Other broadleaves	5	21	25	26	8	22	17	31
All species	1,131	1,119	9	2,251	743	1,198	7	1,941

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	25,866	38,798	4	64,663
2017–21	26,130	38,117	3	64,247
2022–26	25,608	34,664	3	60,272
2027–31	24,392	32,903	3	57,294
2032–36	23,662	27,638	4	51,300
2037–41	23,460	23,095	4	46,555
2042–46	23,605	19,717	4	43,322
2047–51	24,026	19,021	4	43,047
2052–56	24,027	19,667	4	43,694
2057–61	24,621	21,915	4	46,537
All broadleaves				
2013–16	1,877	9,875	6	11,751
2017–21	1,988	10,816	6	12,804
2022–26	2,115	12,124	5	14,239
2027–31	2,241	13,638	5	15,879
2032–36	2,372	15,151	5	17,523
2037–41	2,506	16,559	4	19,065
2042–46	2,628	17,825	4	20,453
2047–51	2,739	18,910	4	21,649
2052–56	2,842	19,840	4	22,682
2057–61	2,918	20,713	4	23,630
All species				
2013–16	27,742	48,658	3	76,400
2017–21	28,118	48,946	3	77,064
2022–26	27,723	46,824	3	74,546
2027–31	26,632	46,584	3	73,216
2032–36	26,034	42,834	3	68,869
2037–41	25,966	39,699	3	65,665
2042–46	26,233	37,586	3	63,819
2047–51	26,764	37,977	3	64,742
2052–56	26,869	39,554	3	66,423
2057–61	27,539	42,675	3	70,213

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	1,164	1,749	3	2,913
2017–21	1,092	1,732	3	2,824
2022–26	990	1,581	3	2,572
2027–31	936	1,477	3	2,413
2032–36	899	1,300	3	2,199
2037–41	907	1,217	3	2,124
2042–46	934	1,162	3	2,096
2047–51	969	1,264	3	2,234
2052–56	1,004	1,408	3	2,412
2057–61	1,036	1,575	2	2,611
All broadleaves				
2013–16	25	242	9	267
2017–21	26	291	4	317
2022–26	27	321	4	347
2027–31	27	331	4	358
2032–36	28	324	4	353
2037–41	29	308	4	337
2042–46	29	288	4	317
2047–51	29	265	4	294
2052–56	29	244	4	273
2057–61	28	226	4	254
All species				
2013–16	1,190	1,991	3	3,181
2017–21	1,118	2,025	2	3,143
2022–26	1,017	1,904	2	2,921
2027–31	963	1,810	2	2,773
2032–36	927	1,625	3	2,553
2037–41	936	1,526	3	2,462
2042–46	963	1,450	3	2,413
2047–51	998	1,529	3	2,527
2052–56	1,033	1,651	2	2,683
2057–61	1,064	1,800	2	2,864

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

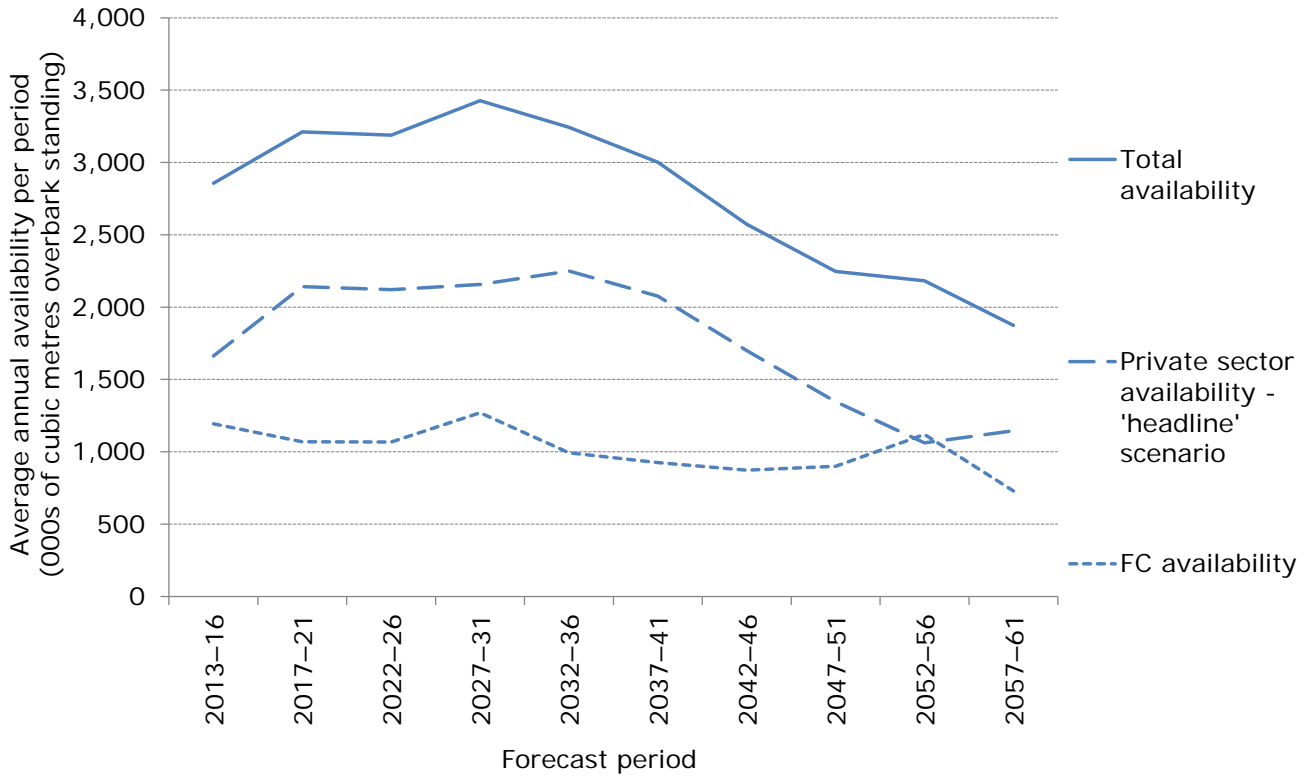


Figure 7 Overview of 50-year forecast of average annual hardwood availability

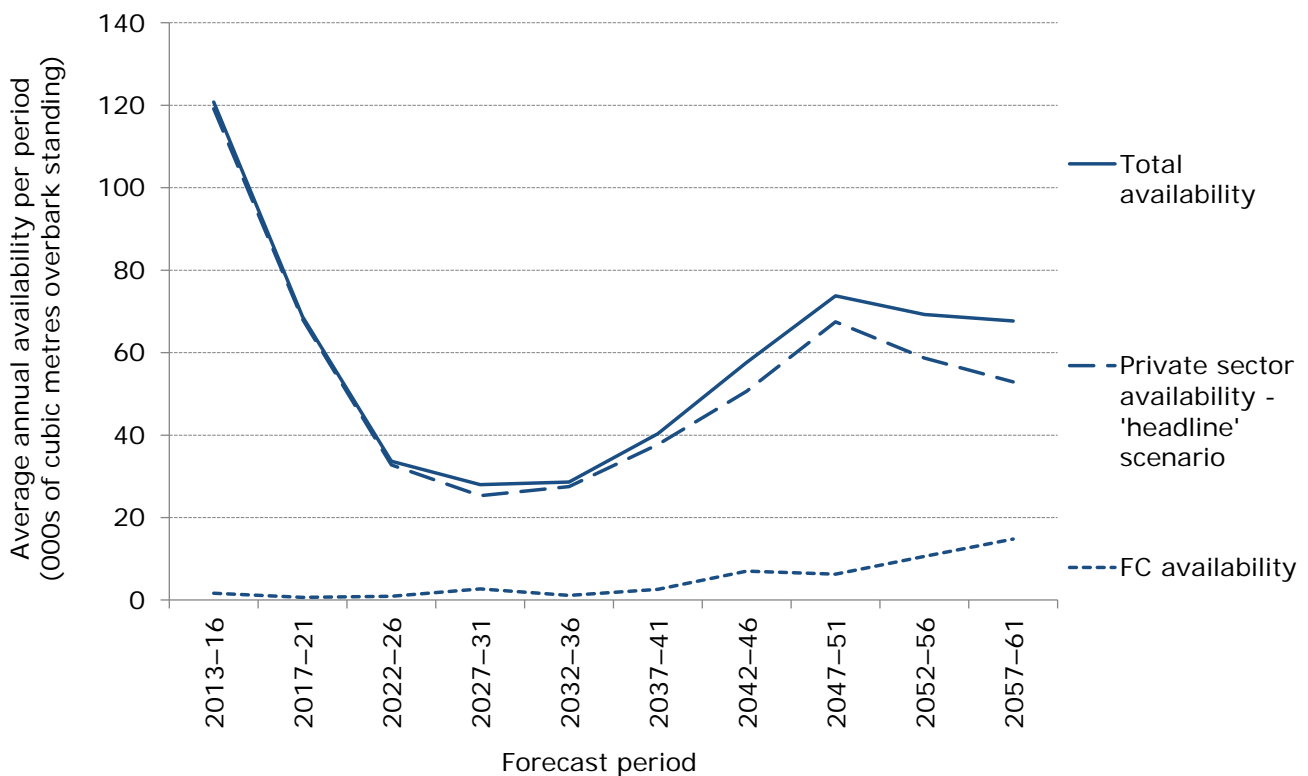


Figure 8 50-year forecast of average annual softwood availability

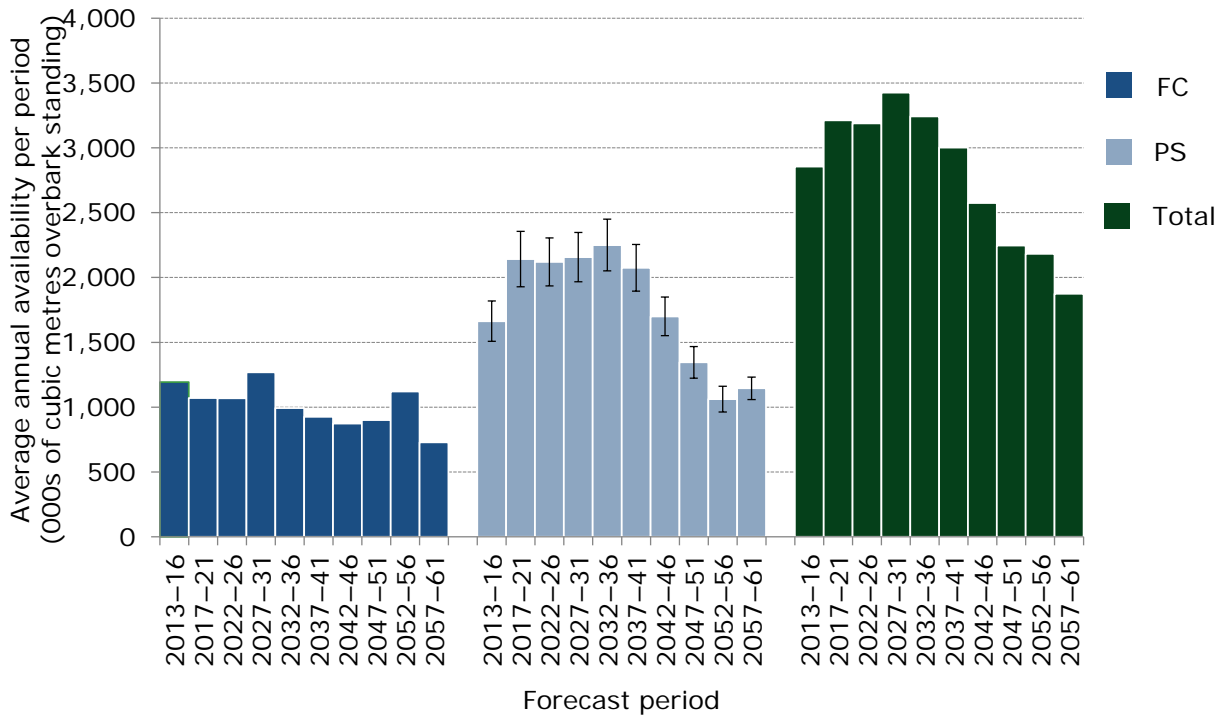


Figure 9 50-year forecast of average annual hardwood availability

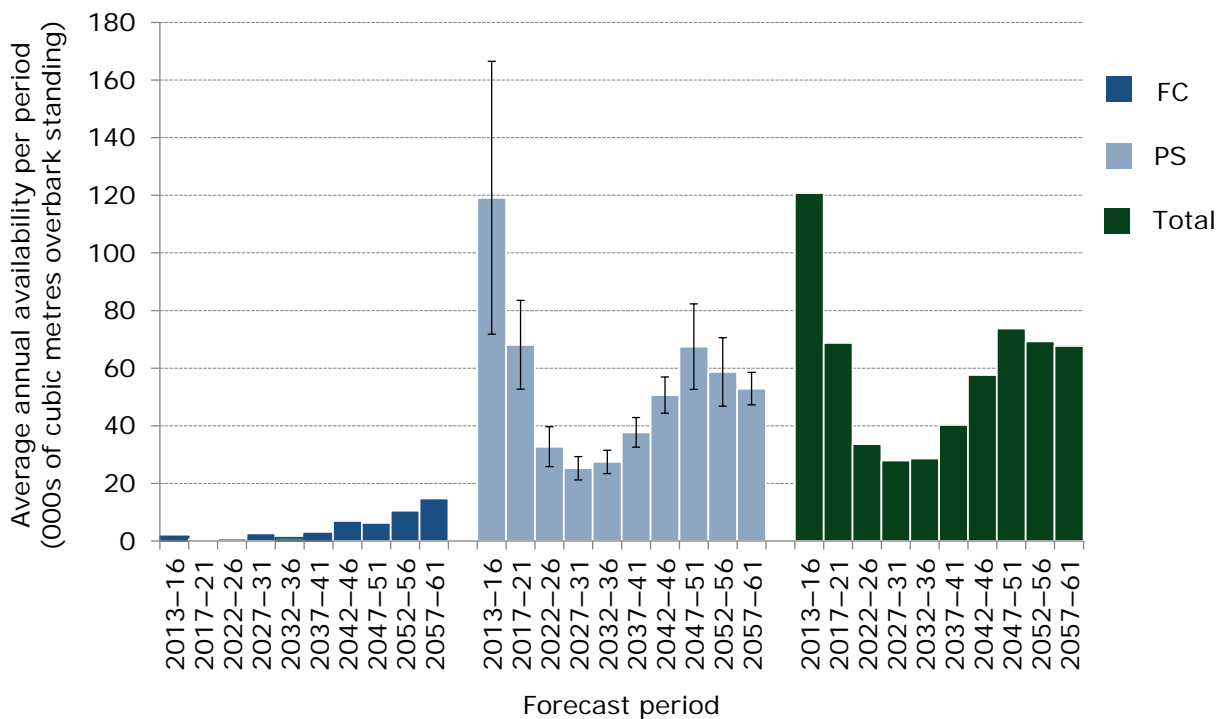


Figure 10 50-year forecast of softwood standing volume, increment and availability

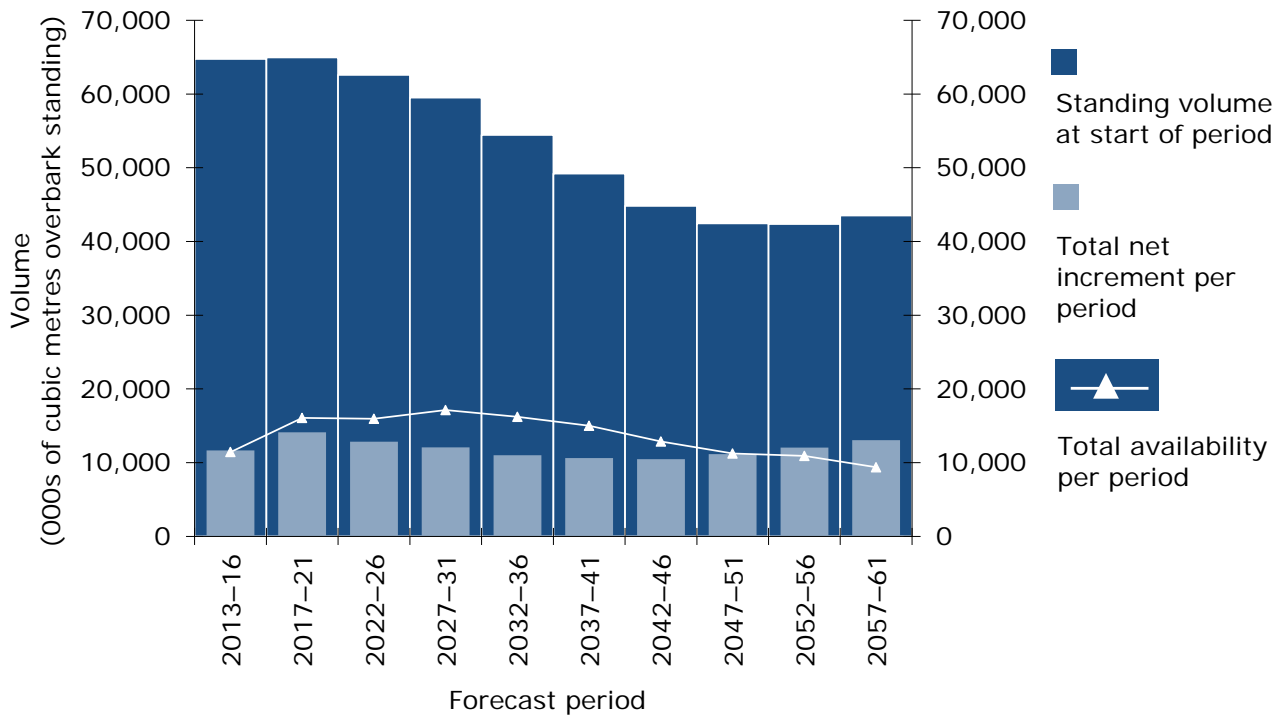
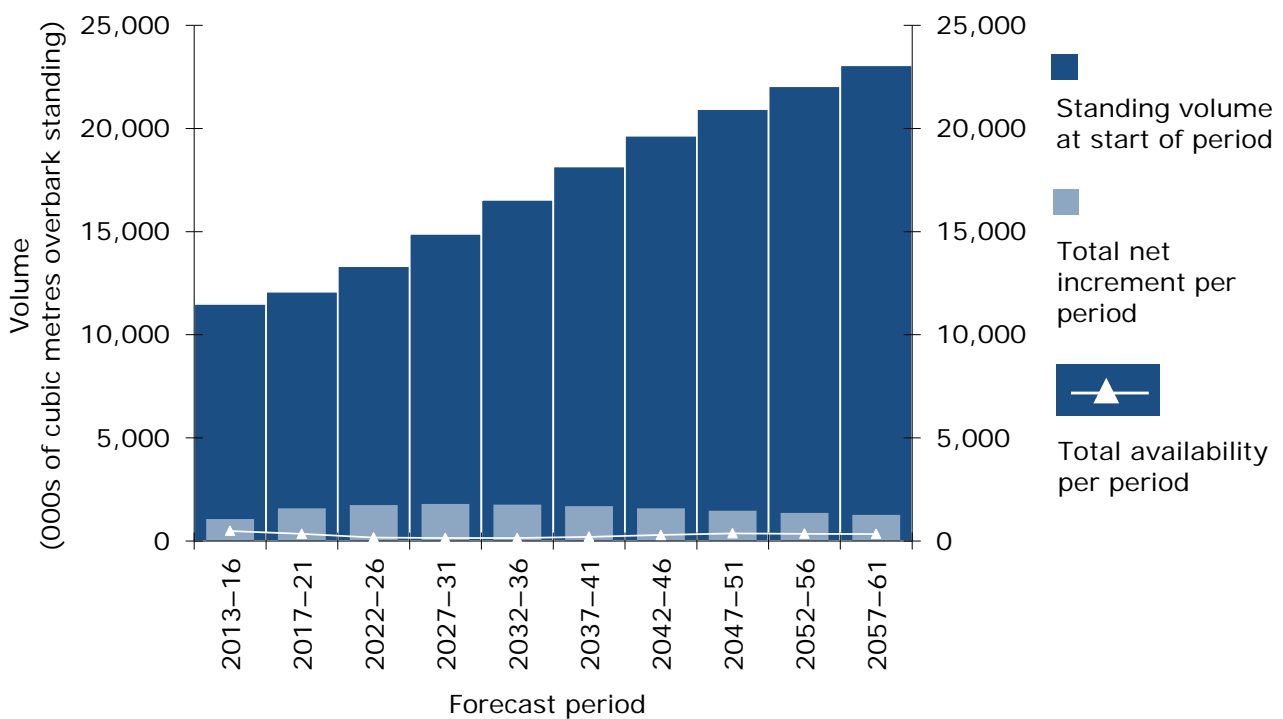


Figure 11 50-year forecast of hardwood standing volume, increment and availability



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	1,193	1,663	9	2,856	1,070	2,142	10	3,212	1,068	2,120	9	3,188	1,269	2,157	9	3,426
Sitka spruce	973	1,069	13	2,042	920	1,420	13	2,340	904	1,727	10	2,631	1,084	1,693	11	2,776
Scots pine	29	101	17	130	22	150	25	171	25	149	24	174	25	161	20	185
Larches	59	307	20	366	44	251	16	294	45	137	17	182	52	152	21	204
Lodgepole pine	66	30	71	95	51	17	55	68	53	7	36	60	58	32	46	91
Other conifers	67	149	32	216	33	283	33	316	41	95	21	137	50	102	20	153
All broadleaves	2	678	14	679	1	510	7	510	1	379	11	379	3	291	13	294
Oak	0	37	25	37	0	36	22	36	0	111	32	111	1	35	24	35
Beech	0	32	34	32	0	30	35	30	0	22	23	23	1	55	61	56
Sycamore	0	103	22	104	0	83	21	83	0	42	26	42	0	21	24	21
Ash	0	140	49	140	0	43	26	43	0	19	21	19	0	11	28	11
Birch	0	170	12	170	0	205	11	206	0	122	13	122	0	102	13	102
Other broadleaves	0	194	30	194	0	111	19	111	0	63	12	63	1	65	15	66
All species	1,195	2,341	8	3,535	1,070	2,643	8	3,714	1,069	2,500	8	3,569	1,272	2,450	8	3,722

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	993	2,250	9	3,243	926	2,075	9	3,001	873	1,700	9	2,574	901	1,346	9	2,247
Sitka spruce	857	1,859	11	2,716	802	1,541	11	2,343	727	1,152	11	1,879	714	913	12	1,627
Scots pine	21	108	23	129	18	244	26	263	32	258	24	289	33	156	18	190
Larches	35	120	18	155	34	72	18	106	39	44	19	82	42	51	19	93
Lodgepole pine	53	30	45	83	36	28	36	64	24	112	32	136	11	45	44	57
Other conifers	26	113	23	140	36	169	23	204	53	146	26	198	100	170	29	270
All broadleaves	1	331	13	332	3	339	12	341	7	258	7	265	6	386	12	393
Oak	0	90	43	90	0	58	34	58	3	25	23	28	2	80	46	82
Beech	0	31	38	31	1	62	48	62	0	23	25	23	1	41	38	41
Sycamore	0	19	19	20	0	31	25	31	0	27	19	28	0	38	26	38
Ash	0	15	25	15	0	13	22	13	0	12	20	12	0	24	43	24
Birch	0	98	13	98	0	98	15	98	1	105	10	106	1	113	12	114
Other broadleaves	1	75	16	76	1	76	15	77	3	67	14	69	2	90	17	93
All species	994	2,583	8	3,577	928	2,417	8	3,345	880	1,958	8	2,839	907	1,733	7	2,640

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			Total volume (000 m ³ obs)	
	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	1,121	1,062	9	2,182	728	1,145	8	1,874
Sitka spruce	813	689	10	1,502	529	864	9	1,393
Scots pine	73	130	38	204	58	107	28	165
Larches	52	55	22	107	32	58	15	90
Lodgepole pine	98	10	48	108	5	5	62	11
Other conifers	85	173	29	259	104	110	10	215
All broadleaves	11	354	16	365	15	359	14	374
Oak	2	18	22	20	2	20	19	22
Beech	1	72	73	73	1	63	72	64
Sycamore	0	39	31	39	0	30	20	31
Ash	1	17	31	17	0	13	33	13
Birch	2	106	13	108	3	131	14	134
Other broadleaves	5	102	15	107	8	102	14	111
All species	1,131	1,416	8	2,547	743	1,505	7	2,248

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	25,866	38,798	4	64,663
2017–21	26,130	38,117	3	64,247
2022–26	25,608	34,664	3	60,272
2027–31	24,392	32,903	3	57,294
2032–36	23,662	27,638	4	51,300
2037–41	23,460	23,095	4	46,555
2042–46	23,605	19,717	4	43,322
2047–51	24,026	19,021	4	43,047
2052–56	24,027	19,667	4	43,694
2057–61	24,621	21,915	4	46,537
All broadleaves				
2013–16	1,877	8,081	7	9,958
2017–21	1,988	7,089	7	9,077
2022–26	2,115	6,178	9	8,293
2027–31	2,241	6,019	9	8,259
2032–36	2,372	5,905	8	8,277
2037–41	2,506	5,847	8	8,354
2042–46	2,628	6,270	7	8,898
2047–51	2,739	6,402	7	9,141
2052–56	2,842	6,559	5	9,401
2057–61	2,918	6,842	5	9,760
All species				
2013–16	27,742	46,865	3	74,607
2017–21	28,118	45,221	3	73,339
2022–26	27,723	40,879	3	68,602
2027–31	26,632	38,959	3	65,592
2032–36	26,034	33,577	3	59,611
2037–41	25,966	28,965	4	54,931
2042–46	26,233	26,000	4	52,233
2047–51	26,764	25,432	4	52,196
2052–56	26,869	26,231	3	53,100
2057–61	27,539	28,760	3	56,299

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	1,164	1,749	3	2,913
2017–21	1,092	1,732	3	2,824
2022–26	990	1,581	3	2,572
2027–31	936	1,477	3	2,413
2032–36	899	1,300	3	2,199
2037–41	907	1,217	3	2,124
2042–46	934	1,162	3	2,096
2047–51	969	1,264	3	2,234
2052–56	1,004	1,408	3	2,412
2057–61	1,036	1,575	2	2,611
All broadleaves				
2013–16	25	243	6	269
2017–21	26	261	5	286
2022–26	27	263	5	289
2027–31	27	279	5	306
2032–36	28	307	5	336
2037–41	29	338	5	367
2042–46	29	376	4	405
2047–51	29	379	4	408
2052–56	29	388	3	417
2057–61	28	387	3	415
All species				
2013–16	1,190	1,993	2	3,182
2017–21	1,118	1,994	2	3,112
2022–26	1,017	1,846	3	2,863
2027–31	963	1,757	3	2,721
2032–36	927	1,608	3	2,535
2037–41	936	1,555	3	2,491
2042–46	963	1,537	3	2,500
2047–51	998	1,643	3	2,641
2052–56	1,033	1,795	2	2,828
2057–61	1,064	1,962	2	3,026

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

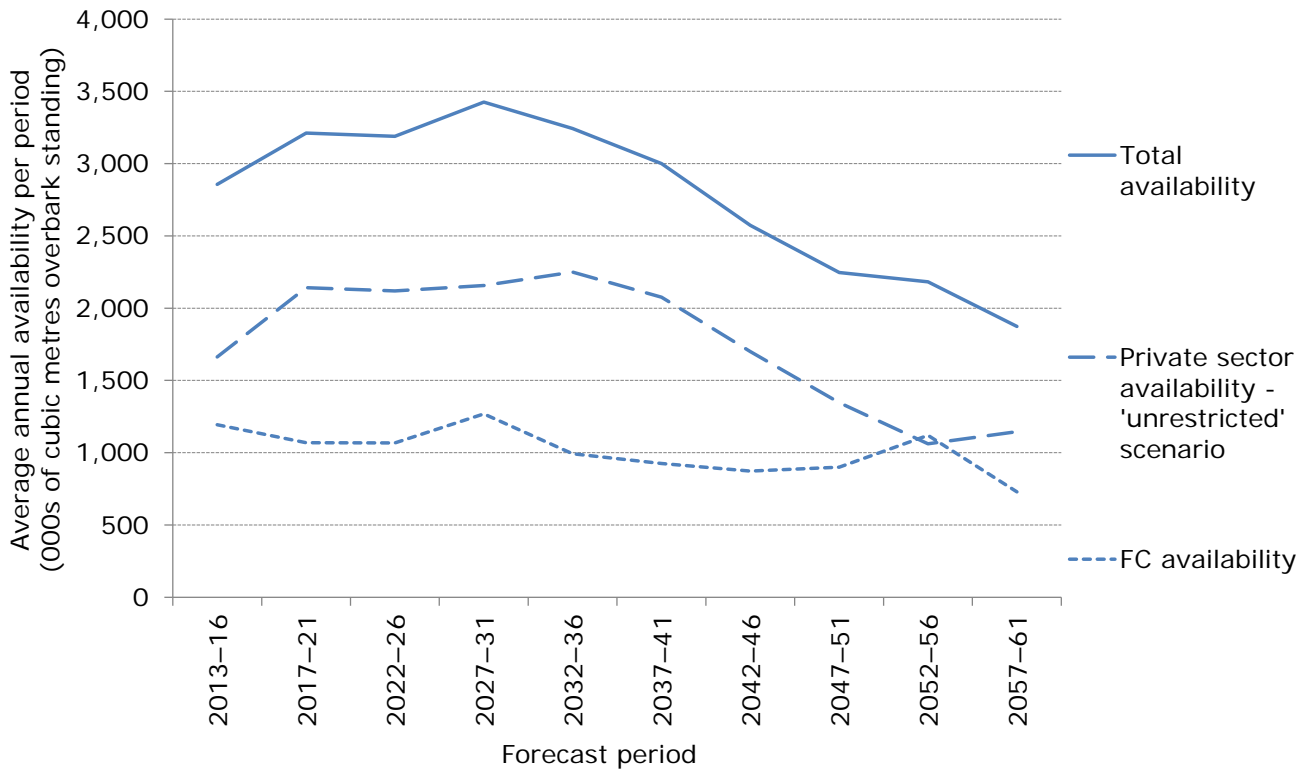


Figure 13 Overview of 50-year forecast of average annual softwood availability – unrestricted biological potential for Private sector hardwoods

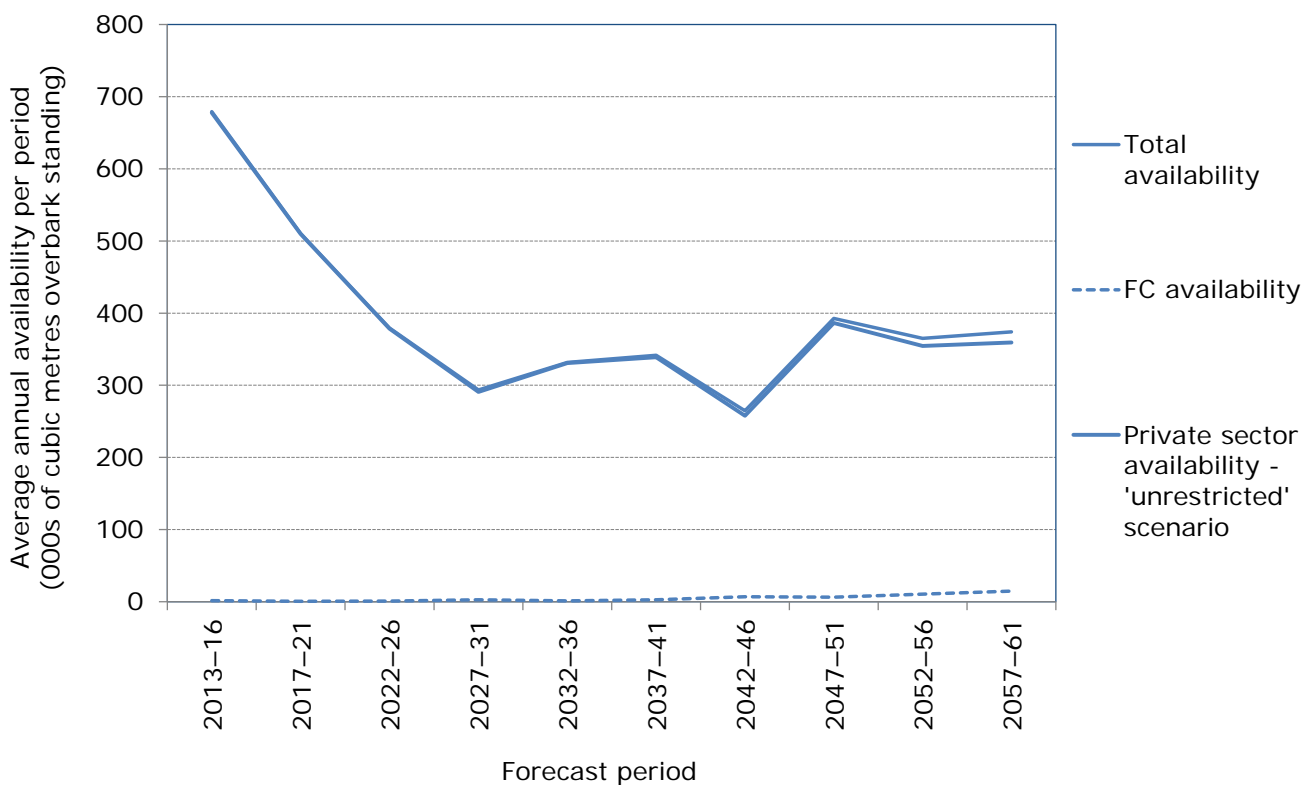


Figure 14 50-year forecast of average annual softwood availability–unrestricted biological potential for Private sector hardwoods

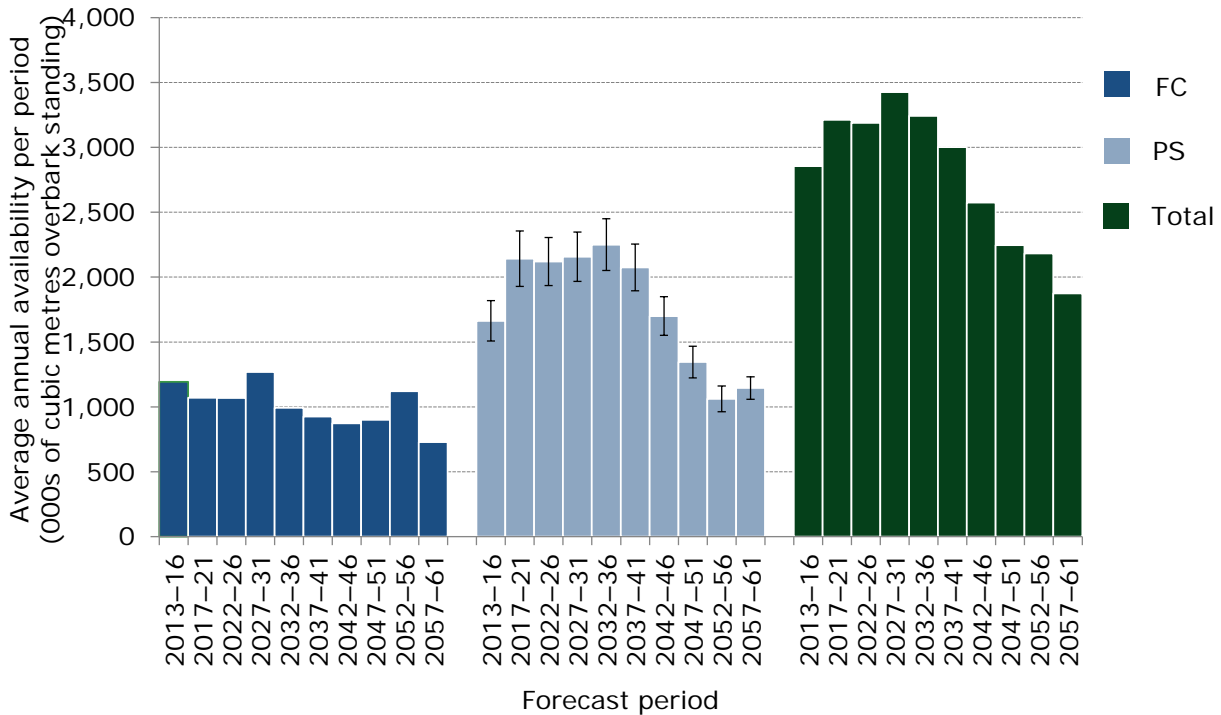


Figure 15 50-year forecast of average annual hardwood availability –unrestricted biological potential for Private sector hardwoods

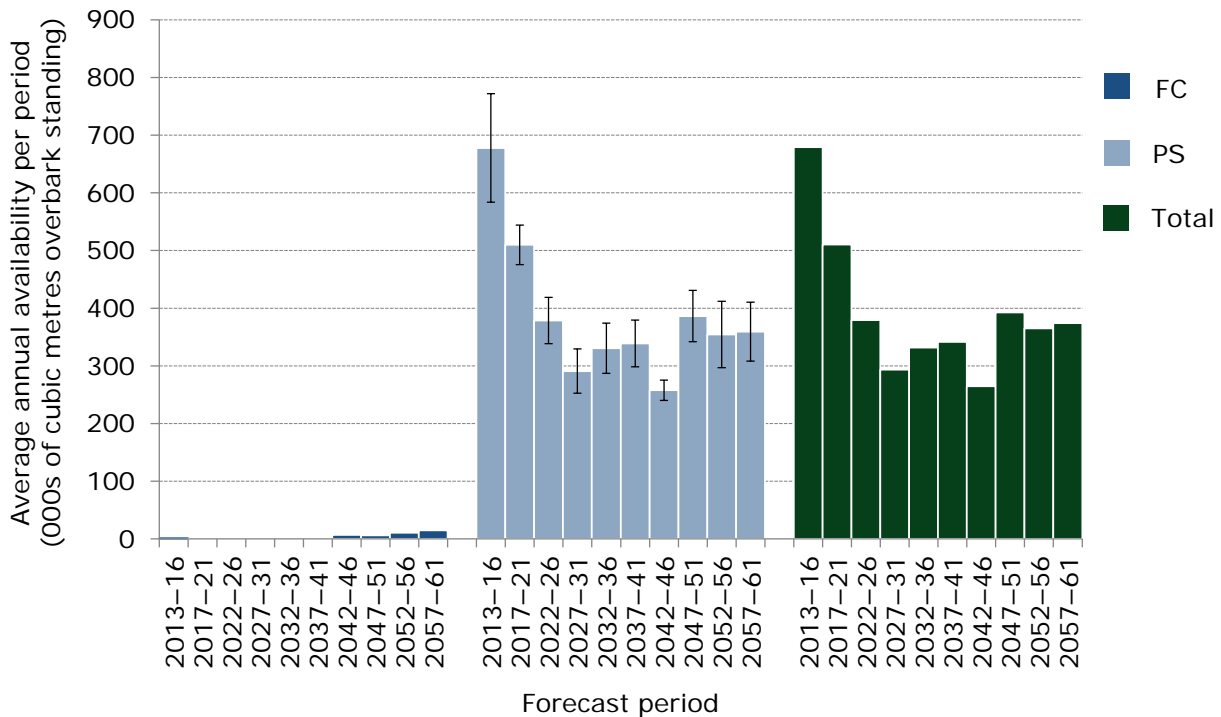


Figure 16 50-year summary of softwood standing volume, increment and availability – unrestricted biological potential for Private sector hardwoods

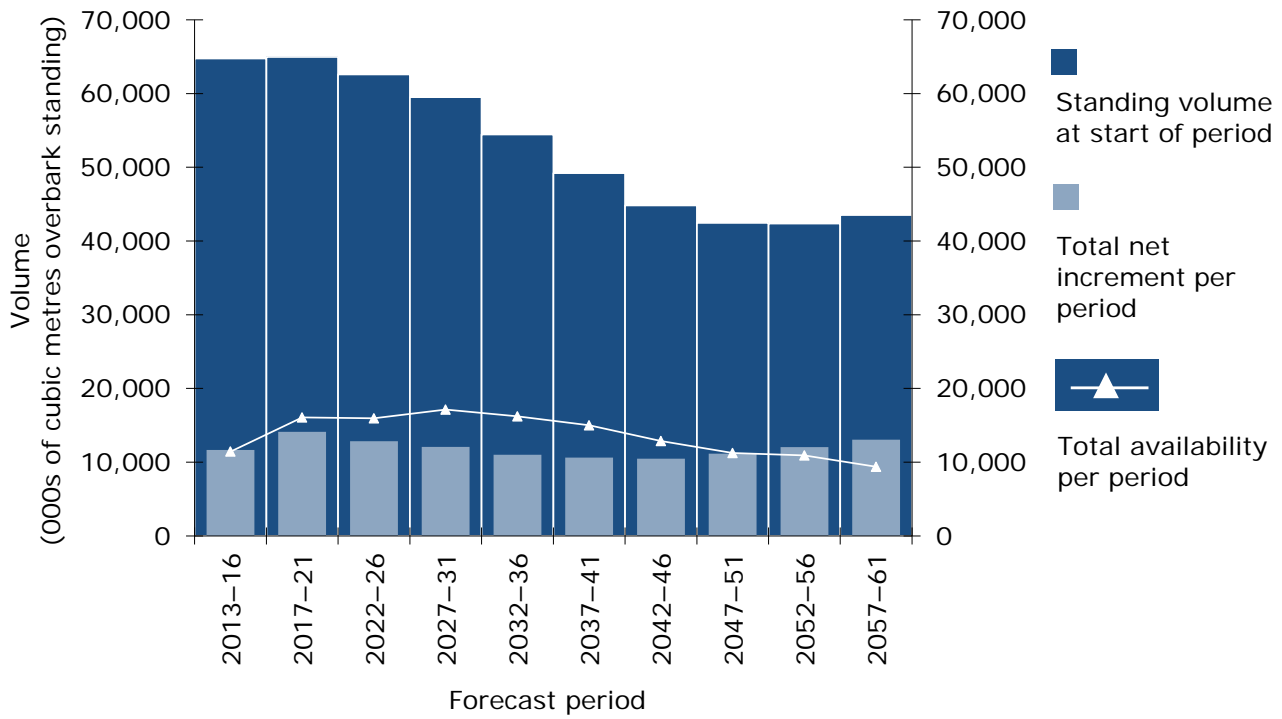
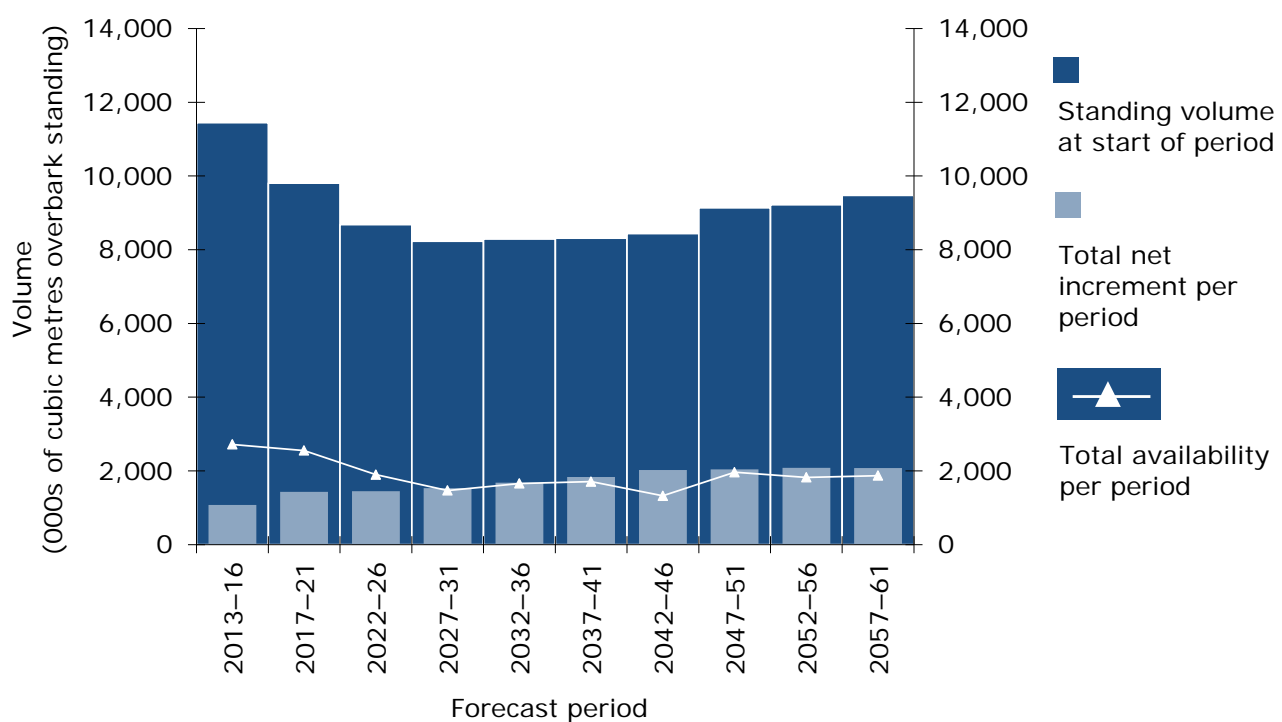


Figure 17 50-year summary of hardwood standing volume, increment and availability – unrestricted biological potential for Private sector hardwoods



Comparison of hardwood production between harvesting scenarios

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

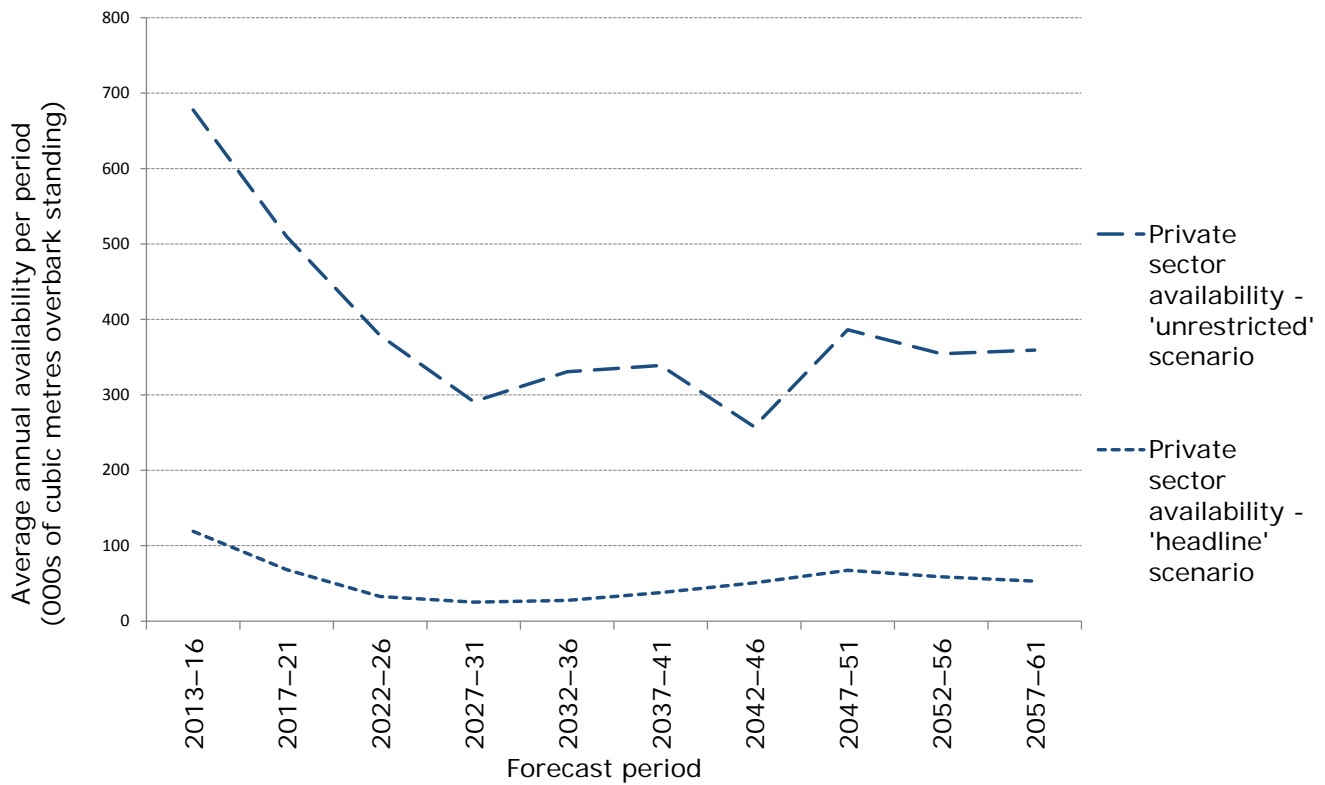
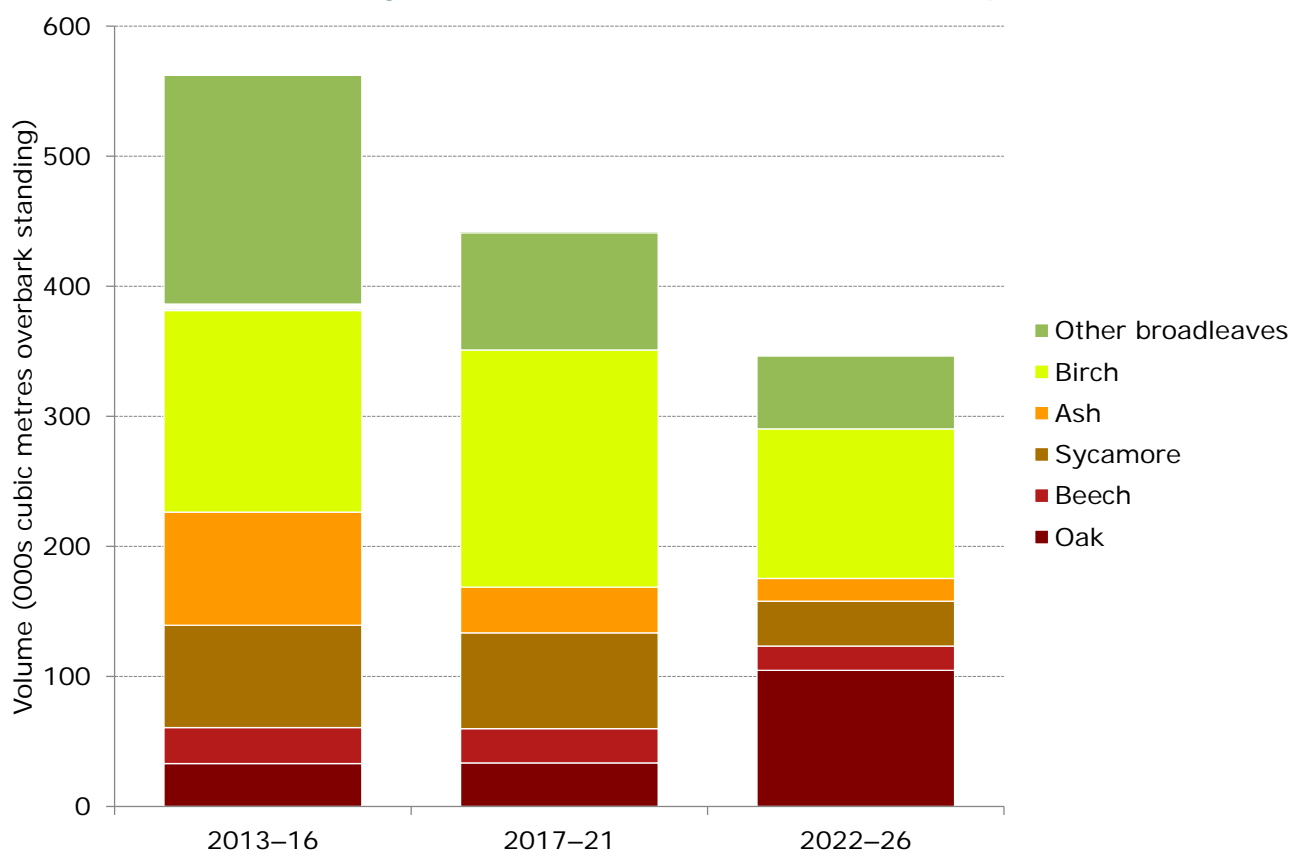


Table 16 15-year forecast comparison of average annual timber availability

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	2,856	2,856	0	3,212	3,212	0	3,188	3,188	0
Sitka spruce	2,042	2,042	0	2,340	2,340	0	2,631	2,631	0
Scots pine	130	130	0	171	171	0	174	174	0
Larches	366	366	0	294	294	0	182	182	0
Lodgepole pine	95	95	0	68	68	0	60	60	0
Other conifers	216	216	0	316	316	0	137	137	0
All broadleaves	121	679	559	69	510	442	34	379	346
Oak	4	37	33	3	36	34	6	111	105
Beech	5	32	28	4	30	26	4	23	19
Sycamore	25	104	79	9	83	74	7	42	34
Ash	54	140	87	8	43	35	2	19	18
Birch	16	170	155	23	206	182	7	122	115
Other broadleaves	18	194	176	21	111	90	7	63	56
All species	2,977	3,535	558	3,272	3,714	441	3,223	3,569	347

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