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Improved Timber Utilisation Statistics

A Short Study
for the Forestry Commission

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Introduction:

Wood is available in a wide variety of types, species and forms. This variety ensures that wood, when converted into timber, has an enormous range of uses. Forestry and timber industry organisations, as well as businesses in the sector, regularly receive enquiries about the production of wood and the consumption of timber in the UK, with most enquirers keen to obtain information about usage within the principal market sectors, i.e. construction, joinery, packaging/pallets and fencing/timber garden products. Until the publication of this report, it was not possible to provide an accurate response to such enquiries, as no official statistics existed.

No recent industry estimates have been made and as a consequence, enquiries from within the timber industry and also from organisations and people not involved in the industry were not adequately answered.

The absence of information on the utilisation of timber by major market is a significant problem for the sector as a whole and from discussions held by the Forestry Commission Committee, the Expert Group on Timber and Trade Statistics, it was broadly agreed that there was a need for indicative figures.

Aim of the Study:

To conduct a small scale study to investigate the nature and apparent accuracy of data currently available, with a view to producing an estimate of wood consumption in the UK, by principal market sector.

Study Objectives:

1. To produce an analysis of the type and accuracy of current sources of information available, methods of data collection employed, differences and/or inconsistencies between sources and identification of gaps in available information.

2. Using available information, produce an estimate of consumption (for the latest year where 12 months data is available) of sawn softwood and sawn hardwood by main market: construction, pallets & packaging, fencing & outdoor uses and other markets.

Methodology:

To meet the objectives of the study within the specified time and cost constraints, the simplest, quickest and cheapest method of achieving these objectives was considered to be through desk research.

The nature of the desk research used for this study was:

- The combination of official published statistics and estimated timber usage in construction markets - timber usage analysis
- Participation of the Forestry Commission's Expert Group on Timber and Trade Statistics (EGTTS)
- Collection of information from third parties.

The first method has been used to identify the likely volumes of imported sawn softwood entering the new homes construction market. This has enabled a better estimation of the size of sawn softwood utilisation in the construction market in the United Kingdom (UK).

By combining published data, such as the housing starts series provided by the Office of the Deputy Prime Minister (ODPM), with the estimated quantity of sawn softwood used in new housing (of different types), it has been possible to determine an estimate for the amount of sawn softwood used in the construction of new homes for any one year.

The second method - participation of the EGTTS (and the Commission itself) – has provided data on UK production and exports and the EGTTS has further supported this work through the review of the study's results and the application of common sense judgements.

The third method - the involvement of third parties - has been invaluable in gathering information on specific markets. Information was requested from the following sources.

Timber Committee (UNECE) data
Forest Industries Intelligence Ltd
British Woodworking Federation
Timber Trade Federation
UKTimber Frame Manufacturers Association
United Kingdom Forest Products Association
Timber Decking Association
Fencing Contractors Association
TIMCON
CEI-BOIS
BRE
TRADA
School of Agricultural and Forest Sciences, University of Wales
Napier University
British Furniture Manufacturers Association
Office of the Deputy Prime Minister (ODPM)
Construction Products Association
NHBC
Trussed Rafter Association (TRA)
Charles Ransford & Son Ltd
Howarth Timber Ltd

Objectives and Initial Findings:

Objective 1

The first objective of this study was to produce an analysis of the type and accuracy of current sources of information available, methods of data collection employed, differences and/or inconsistencies between sources and identification of gaps in available information.

The table in Annex I to this report presents the responses from all of the organisations contacted, in answer to this first objective, but not all organisations were able to provide information and the usefulness of the information supplied naturally differed. However the responses that were eventually used in the development of findings are shown in table 1 below.

Table 1: Type of Information Available & Used

Respondent	Specific Content of Information	Supplier of Information	Latest Information
Timber Committee (UNECE)	The UK Timber Market Statement	Forestry Commission	2004
Timber Trade Federation	Import & Export Statistics Pallet usage from TIMCON End-use study 1985 updated	*timbertrends* TIMCON TTF	2005 2004 1989
UK Timber Frame Manufacturers Association	Timber usage data in new house building Mix of Housing Types	UKTFA UKTFA/NHBC	2004 2004
United Kingdom Forest Products Association	Input to the Forestry Commission Sawmill Survey	Forestry Commission	2004
Timber Decking Association	Market Development by Value	TDA	2004
TIMCON	Pallet & Packaging Volumes	John Mead	2004
School of Agricultural and Forestry Sciences, University of Wales	DTI Timber Use in Construction BTS 2004 End-uses in Softwood	Davis Langdon Forestry Commission Anders Baudin	2003 2004 1993
BWPDA	Volume of Treated Timber in UK (not creosote)	Wood Protection Association	2003
CPA	Construction Industry Trends, Trade Surveys and Forecasts	CPA	2005
TRADA	Timber into Pallets Market utilisation data, 1995 Timber usage data in new house building	TRADA TRADA/DETR TRADA	2004 1998 2004
TRA	Timber Utilisation in End-use Markets	Peter Grimsdale	1998
CEI-BOIS	Road Map 2010 + Support Reports	Jaakko Poyry Indufor BRE	2002/03

Of the twenty organisations contacted, twelve were able to supply information that has been used to inform this study. A number of informal conversations were also held with senior members of the timber trade. The methods of data collection employed by all respondents to this study can be viewed from the tables available in Annex I.

The information supplied by the twelve organisations above has been used to provide useful background comment on each of the markets under review or, specifically in calculation of market sizes.

Background information on markets was supplied by the Wood Protection Association, part of the BWPDA, the Construction Products Association (CPA) and CEI-BOIS, the European Woodworking Federation.

Specific data used in the calculation of market sizes was supplied by the Timber Trade Federation (TTF), the United Kingdom Forest Products Association (UKFPA), the United Kingdom Timber Frame Association (UKTFA), the Timber Decking Association (TDA), the Pallets and Packaging Association (TIMCON), the School of Agricultural and Forest Sciences of the University of Wales, the Timber Research and Development Association (TRADA) and the Trussed Rafter Association (TRA).

Only a very few differences or inconsistencies between sources became evident during the course of the study. This was because of the discrete market sectors served by, especially, the trade associations named above. Where differences did occur, this was mainly due to the timing of the work conducted. As an example, timber usage data in new house building in 1990 was clearly different to that in 2004.

The first objective of the study also called for identification of gaps in available information.

At the very top-level of information supply, the Timber Trade Federation measures the volume of timber imports to the UK and the Forestry Commission (with assistance from their Expert Group on Timber and Trade Statistics and support to the Sawmill Survey provided by the UKFPA) measures the volume of production of sawn softwood and hardwood from UK sawmills.

Below this level, with the exception of the Trussed Rafter Association (TRA) and the Forestry Commission, there exists no firm information on the size of the key markets and their various sectors in terms of timber usage.

In summary, this study has confirmed the lack of information available to measure the sizes and trend developments of the main timber consuming markets of construction, packaging (including pallets), fencing and other outdoor uses and the collection of uses and applications in ‘Other’ markets.

Objective 2

The second objective of this study was, using available information, produce an estimate of consumption (for the latest year where 12 months data is available) of sawn softwood and sawn hardwood by the main markets: construction, pallets & packaging, fencing & outdoor uses and other markets.

Using available information of timber usage from those organisations contacted and piecing together this and other information, estimates of timber utilisation by main market for sawn softwood have been constructed, but not for sawn hardwood.

Executive Summary

This study has confirmed that the UK timber industry does not have a readily available measure of sawn hardwood or softwood utilisation by the main markets of construction, packaging, fencing and outdoor and the group of other markets collectively called 'others'.

The essential purpose of this study was to understand if any sources of information on timber utilisation existed and if so, use these to arrive at an estimate of timber (hardwood and softwood) usage by main market.

Hardwood

Information available for sawn hardwood usage is scarce. The only information available, from which a number of conclusions have been made, is the known total volumes produced by UK sawmills, the volumes imported as determined from import and export trade statistics and empirical evidence of the use of hardwood from the hardwood trade.

Below this 'top line' level which identifies consumption of sawn hardwood at 805,000m^3 in 2004 (production less exports plus imports), there is little information available from which to estimate hardwood usage by market. Consequently, estimates of hardwood utilisation by market have not been produced.

Softwood

The demand for softwood is more diverse and substantially greater than for hardwoods and these different conditions have led to a greater understanding of the final destinations for sawn softwood.

Some specific market information was made available from which usage estimates have been made for the main timber markets of construction, packaging, fencing and outdoor and 'others'.

Information available from the Forestry Commission and the pallets and packaging association, TIMCON, resulted in estimates of the size of the pallets and packaging market for sawn softwood. The information available from the Forestry Commission on the fencing and outdoor markets (and construction and 'other' markets) and intimate knowledge of the these markets provide by Charles Ransford & Son Ltd, Howarth Timber Ltd and the Timber Decking Association enabled good estimates to be made of the size of this market also. Estimates of the market for 'other' markets were derived from the totals declared by the Forestry Commission of UK produced sawn softwood entering these markets; from an understanding of the general health of some of the largest of the 'other' markets (e.g. furniture) and from the work of previous studies.

The residual total would be the quantity of sawn softwood used by the construction industry.

Efforts to verify the estimated totals consumed by the construction industry were necessary and these would also serve to support or weaken the estimates provided for usage in the other main markets.

The outcome from this work of piecing together the 'knowns', combining specific usage data with published data (e.g. softwood usage in housing with ODPM data) and using the foundations laid by previous studies of this nature has resulted in estimates of sawn softwood utilisation by main market in 2004, as described in table 2 below.

Table 2: Estimated Softwood Utilisation by Main Market by Volume, 2004

000S cbm	UK Producers	Imports	Total
Construction	781	5,918	6,699
Pallets & Packaging	733	1,595	2,329
Fencing & Outdoor	804	200	1,004
Other Markets	47	213	260
TOTAL	2,366	7,926	10,292

The work of verifying the totals provided for the construction market facilitated the identification of softwood usage in the new house building market in the UK and for the grouped remainder of construction markets defined as ‘RMI and Other construction markets’ which includes the Repair, Maintenance and Improvement (RMI) markets in housing and non-housing construction, Infrastructure Projects and all Other Non-housing New Work.

Information supplied by the UK Timber Frame Association, the Trussed Rafter Association and TRADA, and information collected by *timbertrends*, led to an assessment of the volume of sawn softwood utilised in the market for new housing. The balancing figure was the total usage in the RMI and Other construction markets.

This balancing figure in the RMI and Other construction markets was then tested against the growth in of construction activity from the DTI and other published sources and viewed against the work of previous utilisation studies dating back to the mid-1980s.

As will be shown in the main body of this report, the indicative volumes provided for the construction market appear to be reasonable.

This sub-division of the construction market, to verify the volumes assigned, has enabled a slightly more detailed breakdown of softwood utilisation by market to be made and this is shown in table 3 below.

Table 3: Estimated Softwood Utilisation by Main Market and Construction Sector by Volume, 2002-2004

000s cbm	UK Producers	Imports	Total
Construction	781	5,918	6,699
New Housing	94	582	676
RMI & Other	687	5,337	6,023
Pallets & Packaging	733	1,595	2,329
Fencing & Outdoor	804	200	1,004
Other Markets	47	213	260
TOTAL	2,366	7,926	10,292

By using a similar methodology for previous years, it was also possible to provide a short-term trend analysis of the movement of softwood utilisation by main market between 2002 and 2004, the latest year for which information was available.

There are two weakness associated with this short study into timber utilisation in the UK.

The single most important weakness has been the dearth of information on the end use markets for sawn hardwood.

The major area of weakness in this study for sawn softwood is the lack of information available for measuring the collection of markets defined as ‘Others’ and the RMI and Other Construction market.

However, any margin of error in quantification of the market for ‘others’ does not significantly affect the reliability of the estimate derived for the construction market. Importantly, the verification tests conducted on the estimates of softwood usage in the construction market provide confirmation of the scale of softwood utilisation in construction.

This study has provided only broad estimates of utilisation by main market and the deeper understanding of usage within specific sectors of the construction industry especially, e.g. industrial, commercial and by specific application type, such as joinery and structural works, remain outside the scope of this study and largely unknown.

Nevertheless, it is believed that this study has provided an understanding and quantification of softwood utilisation and has adequately measured the trend development within main market for 2002 to 2004.

The methodology and systems used in this work have also provided the foundation for measuring utilisation in the years ahead.

Main Findings:

Hardwood

Little published and third party information is available to determine the destination by market of sawn hardwood produced in the UK or imported.

The contacts made through this study - even from those specialising in the hardwood market - were unable to provide any information that could lead to a better understanding of the volumes of hardwood entering the main markets for timber products: construction, packaging, fencing and outdoor markets and ‘other’ markets.

The only information available, from which a number of conclusions have been made, is the known total volumes produced by UK sawmills, the volumes imported as determined from trade statistics and empirical evidence of the use of hardwood from the hardwood trade.

Unlike the market for sawn softwood, there are no individual estimates of usage by market and no data on the quantities of hardwood used in specific applications, e.g. the volume of hardwood used in a typical domestic hardwood floor.

It has not been possible therefore to provide any detailed utilisation statistics for the hardwood market.

The information available on total production, exports and imports identifies that the consumption of sawn hardwood in the UK in 2004 was 805,000m^3 of which 759,000m^3 was imported (*timbertrends* information), 61,000m^3 produced by UK sawmills and, according to Forestry Commission data, 15,000m^3 was exported.

This volume was a little less than 1% lower than the 811,000m^3 consumed in the UK in 2003.

The work for this short study into timber utilisation has determined that there exists little further information available to identify with any accuracy where these volumes are used. The only source is the Forestry Commission, which estimated that 81% of UK produced hardwood entered the construction market and 4% of production was consumed by the pallets and packaging market. Consequently, around 49,000m^3 of UK produced hardwood was consumed in the construction market and 2,000m^3 in pallets and packaging.

There are few clues that lead to an approximation of the quantity of imported hardwood used in the various market places.

The only evidence of usage readily available is from trade comments, company statements and press articles. These sources suggest that there has been an increasing usage of hardwoods in recent years for flooring, joinery, decking and garden furniture, hardwood windows and external cladding. Notably, most of these applications are within the construction industry, indicating that utilisation of hardwoods has increased in this market in recent times.

Lower and possibly falling usage has been reported for shopfitting applications, mouldings and significantly for furniture making. The difficulties encountered by the furniture industry in the UK have been well documented elsewhere and it is highly likely that reducing consumption of hardwoods will have been experienced in this market place.

In general terms, it is likely that hardwood utilisation has increased in recent years in the construction industry and probably also in the decking (defined in this report as part of the “fencing and outdoor” market) and garden furniture markets.

The ability to quantify these changes in the different markets for hardwoods and determine the various sizes of these markets has not been possible through the work for this report.

The first objective of this study was to analysis the type and accuracy of current sources of information available, methods of data collection employed, differences and/or inconsistencies between sources and identification of gaps in available information.

For sawn hardwoods in the UK, there is very little information available. Simply, the lack of quantitative information on sawn hardwoods is a clear gap in information available for members of the timber industry and others interested in its development.

Softwood

The consumption by volume, of sawn softwood in the UK, is around twelve times greater than sawn hardwood. This, much larger consumption or usage, has generated considerable interest within and from outwith the timber industry, in terms of the ultimate destinations of sawn softwood produced in the UK and imported from a very wide range of different countries.

The volume of sawn softwood utilised in the UK in 2002 was a little over 10 million cubic metres and remained over the 10 million mark in 2003 and in 2004.

Quantification by main market was supplied by the Forestry Commission from the work conducted on behalf of domestic producers in the UK, but little published information was available on imported softwood; hence the ability to measure the market utilisation of imported material has proved more difficult.

Nevertheless, estimates have been made and the remaining sections of this report are concerned entirely with the measurement of sawn softwood utilisation.

Main Markets

Assumptions on the share, or participation, of sawn softwood in various market sectors have been necessary in order to arrive at estimates of sawn softwood usage. These estimates have then been checked against available published data (especially on the construction market) and against previous studies of this type.

Consequently, the mid-range estimate of softwood usage by main market and by UK produced and imported sources in the UK in 2004 was as follows.

Table 4: Estimated Softwood Utilisation by Main Market by Volume, 2004

000S cbm	UK Producers	Imports	Total
Construction	781	5,918	6,699
Pallets & Packaging	733	1,595	2,329
Fencing & Outdoor	804	200	1,004
Other Markets	47	213	260
TOTAL	2,366	7,926	10,292

The proportions of UK produced and imported softwood, as a percentage of the total for each, is shown in table 5 below.

Table 5: Estimated Proportion of Softwood Utilisation by Main Market, by Source, by Volume, 2004

%	UK Producers	Imports	Total
Construction	33.0%	74.7%	65.1%
Pallets & Packaging	31.0%	20.1%	22.6%
Fencing & Outdoor	34.0%	2.5%	9.8%
Other Markets	2.0%	2.7%	2.5%
TOTAL	100.0%	100.0%	100.0%

Information on the likely destination for UK produced softwood was available from the Forestry Commission (Sawmill Surveys and United Kingdom Timber Statistics 2004) but no such specific market information existed for imported softwood.

Available information therefore consisted of 'known' data per main market for **UK produced softwood** and, as previously indicated, a number of pieces of information that when combined, permitted estimates to be made of **imported softwood** in some of the main markets.

In order to arrive at the estimates of imported softwood, as shown in table 2, it was necessary to identify if **total UK** estimates of softwood existed, or could be calculated, for the main markets or sub-sectors of those markets.

The Packaging Market

Packaging was a market for which timber utilisation data was readily available; through the work conducted by John Mead for TIMCON. According to these data, the total volume of softwood consumed in the packaging market (consumption of new pallets, cases, drums etc.) in 2004 was 2,329,000m^3, derived from the tonnage values provided.

This volume was calculated from the TIMCON tonnage total of pallets, cases, boxes, crates, cable drums, casks and barrels manufactured in the UK, based on UK manufacturers' sales and exports. No allowance has been made for stock changes and for the purposes of this report have been treated as having a neutral impact on UK sales and exports.

A market-related conversion factor of tonnage to cubic metres was than applied, based upon the different types of softwood used. It is believed that a relatively high quantity of pallets is still manufactured from timber that has not been kiln-dried or otherwise treated prior to manufacture. This has the effect of reducing the volume of packaging materials that can be manufactured from a given tonnage.

The volumes declared by TIMCON may be higher than used in this report, because of adjustments made by TIMCON when using a different methodology of determining the quantity of new pallets and packaging materials consumed in the UK and also because of the different conversion factor used by TIMCON.

This calculated volume of 2,329,000m^3 was broken down into raw material (softwood) sourced from UK producers and from imported material.

The volume of UK produced softwood entering the packaging market, as provided by the Commission and as confirmed by TIMCON, shown in table 2, was around 733,000m^3 in 2004. Therefore, the quantity of imported softwood entering the packaging market was, by deduction, a volume of around 1,595,000m^3.

From this analysis, the first reasonable market estimate of imported material was in place and therefore ‘the first piece of the market jigsaw’ was identified and placed within the known framework of softwood consumption, or utilisation, in the UK in 2004 of 10.29 million cubic metres.

The Fencing and Outdoor Market

The fencing and outdoor applications market presented a more difficult problem. The study brief called for other outdoor applications to be joined with fencing products to provide a broader definition for this particular market. Consequently, this market area will include not just fencing products, but decking, sheds, pergolas and similar constructions, but not garden furniture.

The Fencing Contractors Association, although keen to provide assistance, was unable to quantify the use of sawn softwood in the UK fencing market. There appears to be no other source of information for this information. One part of the material supply to the fencing and outdoor applications market was known however: once again the information supplied by the Commission. As shown in table 2, the volume of UK produced sawn softwood used in the fencing and outdoor applications markets was 804,000m^3. To attempt to quantify the volume of imported material, the Timber Decking Association and trade sources were contacted. The outcome from this consultation, for 2004, suggested that imported material accounted for approximately a quarter of the UK market. If this consensus was correct, the scale of the fencing and outdoor applications market would be around 1 million cubic metres for 2004. Hence, an estimate of 200,000m^3 of imported softwood was added to the UK produced total to arrive at the 1,004,000m^3 shown in table 2.

Although essentially based on a ‘trade’ estimate, the scale of the fencing and outdoor applications market was determined.

This permitted further detail to be added to what was to become table 2. At this stage of analysis, inserting the known UK totals and the estimates for the packaging and the fencing and outdoor markets, table 2 appeared thus:

Estimated Softwood Utilisation by Main Market by Volume, 2004 (Tables 2 & 4)

000s cbm	UK Producers	Imports	Total
Construction	781		
Pallets & Packaging	733	1,595	2,329
Fencing & Outdoor	804	200	1,004
Other Markets	47		
TOTAL	2,366	7,926	10,292

The consumption of UK production by main market, leading to a total of 2.366 million cubic metres in 2004 was known and the total of 7.926 million cubic metres of imported softwood was also known from existing *timbertrends* information. Together, the aggregated volume consumption of sawn softwood in the UK, at the primary stage of distribution from UK mill and imported source amounted to 10.29 million cubic metres in 2004.

The 'gaps' in knowledge of imported softwood utilisation at this stage were in the construction market and 'Others'. Although utilisation of UK produced timber by main market, including the construction market, was known, this left **total** utilisation in the UK construction market - long believed to be the largest market for timber products - and the residual collection of markets categorised as 'Others' as the missing pieces of the jigsaw.

Other Markets

The quantification of the collection of these 'Other' markets presented the most difficult task. These markets consist of everything that is not normally classified as construction, packaging or fencing and outdoor. Some of the markets that fit beneath this 'umbrella' are furniture, mining, transport, boat building, ladders, signage and hoardings, exhibition contractors, theatre/concert/events set building, picture framing, domestic and commercial articles (clock bases, plaques, ornamentation) and model making.

No association or other body of assistance was uncovered in the attempt to quantify such a diverse market and any indications of the health or otherwise of individual sub-market activity were simply not available.

The only two clues available were, a) previous studies of this kind and b) the research for this study which identified estimates of 'Other' markets available from the Forestry Commission.

Previous studies had attempted to quantify this group defined in this study as 'Others' and small adjustments have been made to the data contained in these studies to provide, as much as possible, consistency of definitions with this current work and between previous studies.

Previous work reviewed for this study was that conducted by the Timber Trade Federation (TTF 1985 – updated for 1989) Peter Grimsdale of the Trussed Rafter Association (TRA 1988), Anders Baudin, courtesy of Roger Cooper at the University of Wales (Baudin 1990) and the Timber Research and Development Association (TRADA 1995).

The quantification of the collection of markets classified as 'Others' for each of these previous studies - attempting to achieve consistency of definition wherever possible - was as follows:

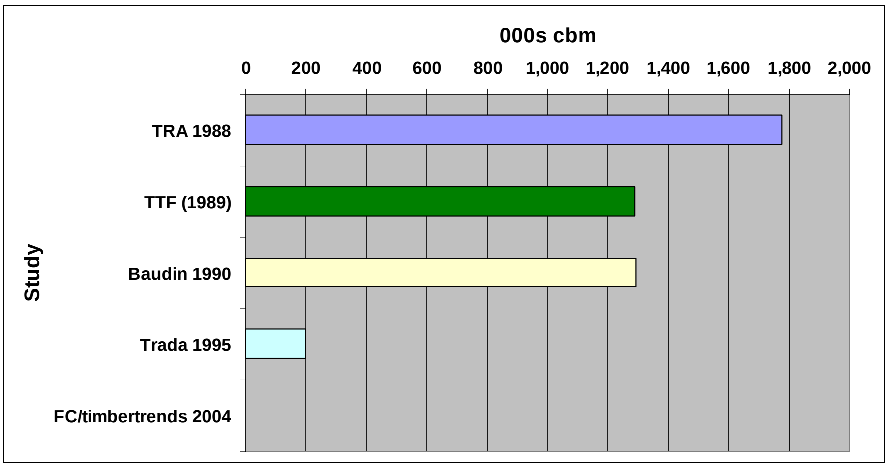
TTF 1985 updated for 1989 - 1,290,000$m^{3;}$ TRA 1988 - 1,775,000$m^{3;}$
Baudin 1990 - 1,294,000m^3 ; TRADA 1995 - c200,000m^3.

Whilst different values would be expected over different time periods, the scale of change, particularly between the TRA 1988 work and the Baudin 1990 work is cause for concern in terms of understanding the likely size of this collection of markets.

From observation over the years in question, it is clear that the scale of some of the markets has declined (e.g. mining) or the market demand for softwood within these markets has declined. Many applications previously using softwood have been replaced by other materials, notably aluminium and plastics and more recently composites have

taken precedence over timber in some markets. As with mining, vehicle production and other transport related markets in the UK were, in 2004, substantially smaller than twenty years previously. Further support for the contention that this collection of other markets has declined, probably significantly over the years, is the severe decline in UK furniture manufacturing with the consequent loss in volume for timber products, especially softwood.
Presenting the results of these previous studies graphically in chart 1, it can be seen that the volumes in the collection of ‘Other’ markets have fallen - albeit irregularly – by the time of each subsequent study.

Chart 1: Estimated Volume in ‘Other’ Markets from Previous Studies



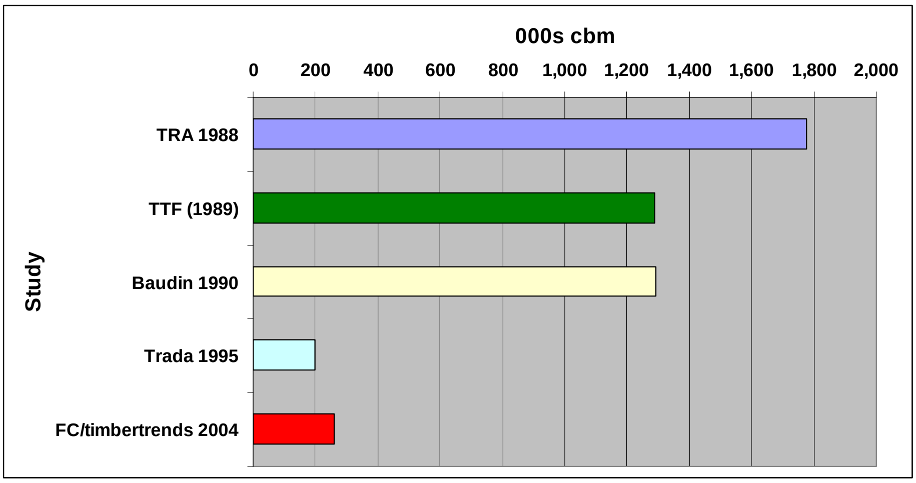
It is possible that the studies conducted between 1985 (the TTF study) and the work of Anders Baudin for 1990 used similar sources, which would account for the approximate consistency of sizes presented by these studies for the ‘Others’ market. There is a difference however between the above mentioned and that of the TRA, however, market definitions used by each study may not have been precisely the same.

The TRADA work for 1995 clearly identified the falling trend of volume, although the estimate appears to have been too low, compared to the previous three studies.

The work from this current study reveals a possible clue to the scale of these ‘other’ markets and is, once again, provided by the Forestry Commission from the regular survey of UK sawmillers. In table 2, ‘Others’ consumed 47,000m^3 of UK producers sawn softwood. Imports tend to be consumed in larger quantities than domestic softwood in most markets and it is likely that this characteristic of the market also applies in this collection of ‘Other’ markets. If domestic supply to ‘Others’ accounts for around 2-3% of the total of domestic supply, it would not be unrealistic to suggest that a similar proportion of the total of imported material is consumed by ‘Others’.

At 2.5% of total softwood consumption in the UK in 2004, the market for ‘Others’ would account for around 260,000m^3 of which, 213,000m^3 would have been imported. Reproducing chart 1, with this volume added, chart 2 below provides an estimate for use in this timber utilisation study and a comparison to the previous works.

Chart 2: Estimated Volume in 'Other' Markets, Current and Previous Studies



This estimate is the weakest, in terms of supporting evidence, but a reasonable estimate of the one remaining market, the construction market, would help to support or indicate amendment of this estimate for the 'Others' market.

The Construction Market

The construction market is normally defined by the collection of building and repair activities as used in the reporting classifications used by the Department of Trade Industry (DTI). For the purposes of this timber utilisation study, these classifications have been consolidated into the two categories of "New Housing" and "Repair, Maintenance and Improvement and Other" (RMI & Other). This second category includes RMI Housing, RMI Other Work, Infrastructure Projects and all Other Non-housing New Work.

This simple split facilitates the use of a combination of data sources to arrive at a relatively accurate assessment of timber utilisation in the first of these two categories, "New Housing".

When this 'known' softwood usage in the "New Housing" sub-sector of construction is added to the estimates for the packaging, fencing and outdoor and 'other' markets and deducted from the overall known volume of softwood consumed for 2004 of 10.29 million cubic metres, the balance would be the volume consumed by the "RMI and Other" construction sub-sector.

As a check on the reliability of these estimates, the relative overall performance of these two construction market sectors can be matched against the estimated softwood consumed by these sectors, to help determine whether the softwood volume estimates are in line with market performance.

The estimated volume of sawn softwood consumed by the sub-sector market for "New Housing" in the UK in 2004 was around 676,000 m^3

Table 2, previously showing just the four main markets of construction, packaging, fencing and outdoor and 'Others' can now be expanded to show the two construction sectors as defined, the volume estimated for "RMI and Other" being the residual amount, following estimation of the packaging, fencing and outdoor, 'Other' and new housing construction. The information from table 2 can therefore be re-cast below, in table 6.

Table 6: Estimated Softwood Utilisation by Main Market and Construction Sector by Volume, 2004

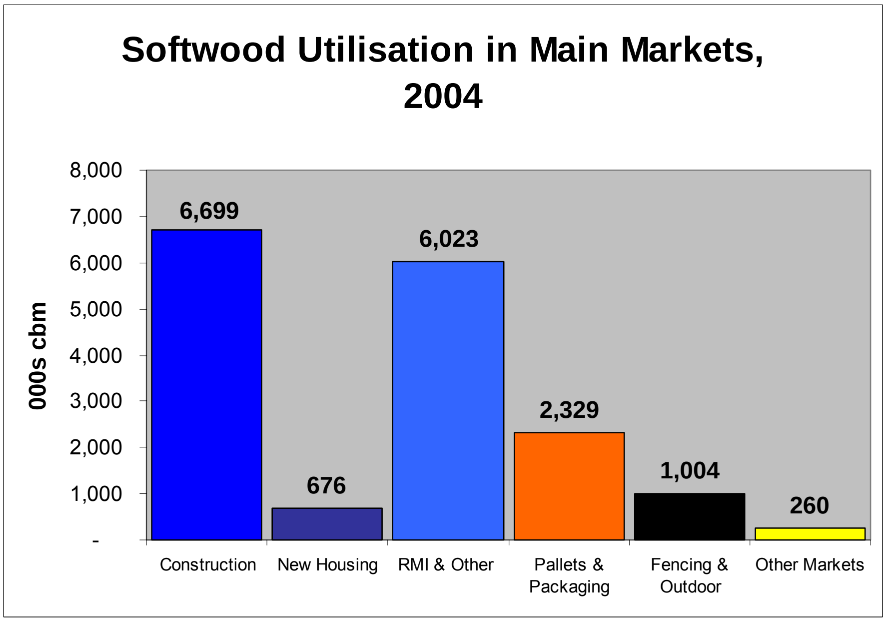
000s cbm	Total
Construction	6,699
New Housing	676
RMI & Other	6,023
Pallets & Packaging	2,329
Fencing & Outdoor	1,004
Other Markets	260
TOTAL	10,292

The volume of softwood entering the "New Housing" was derived from a series of calculations using official published new house building data from the Office of the Deputy Prime Minister (ODPM) and the National House Building Corporation (NHBC) and combining this with usage data per type of dwelling supplied by the United Kingdom Timber Frame Association (UKTFA), TRADA, the Trussed Rafter Association (TRA) and from *timbertrends'* own information.

Much of the softwood used in the "New Housing" construction sector is imported, especially in the area of this market which builds by the method of timber framing. Consequently, a useful check on the volumes derived was to quantify the volume of further processed sawn softwood (planed and sanded), especially whitewood imported to the UK in 2004. The volume of further processed whitewood imported in 2004 was around 720,000m^3 much of which was consumed in the various structural and other applications for the building of new homes.

Through a process of estimation, calculation and elimination, an overall assessment of the scale of softwood utilisation by main market (with construction sub-divided) can be determined and is given in chart 3 below.

Chart 3: Softwood Utilisation by Main Market, 2004



This quantification for the 2004, the latest year for which data was available, helps to place each of the main timber consuming markets into context, but part of the brief for this study was to attempt to use available information to provide an estimation of market performance over the last three years.

Consequently, using similar methods to those used to construct the information presented in chart 3, market data for 2002 and 2003 has been produced.

For 2003, market size by volume is shown in chart 4 and for 2002 in chart 5.

Chart 4: Softwood Utilisation by Main Market, 2003

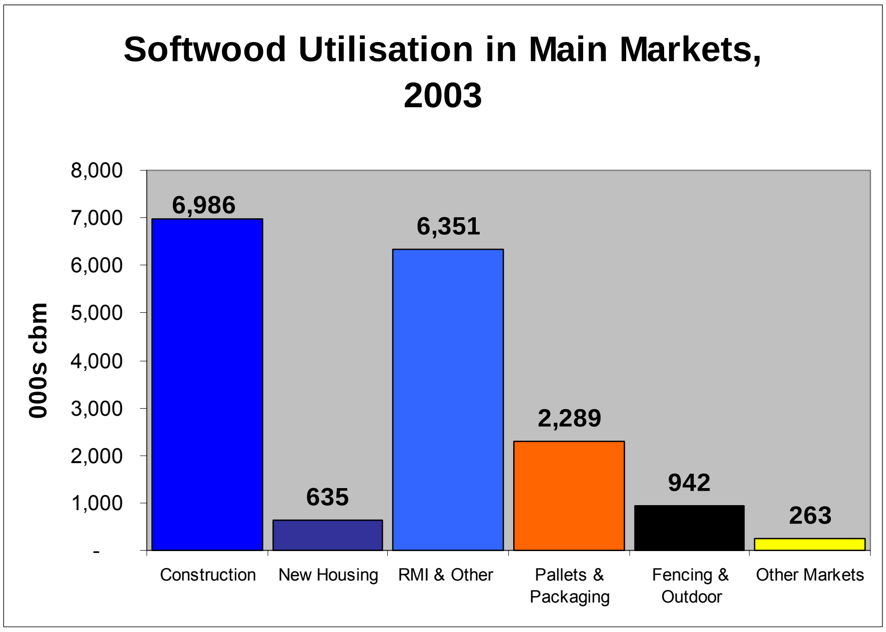
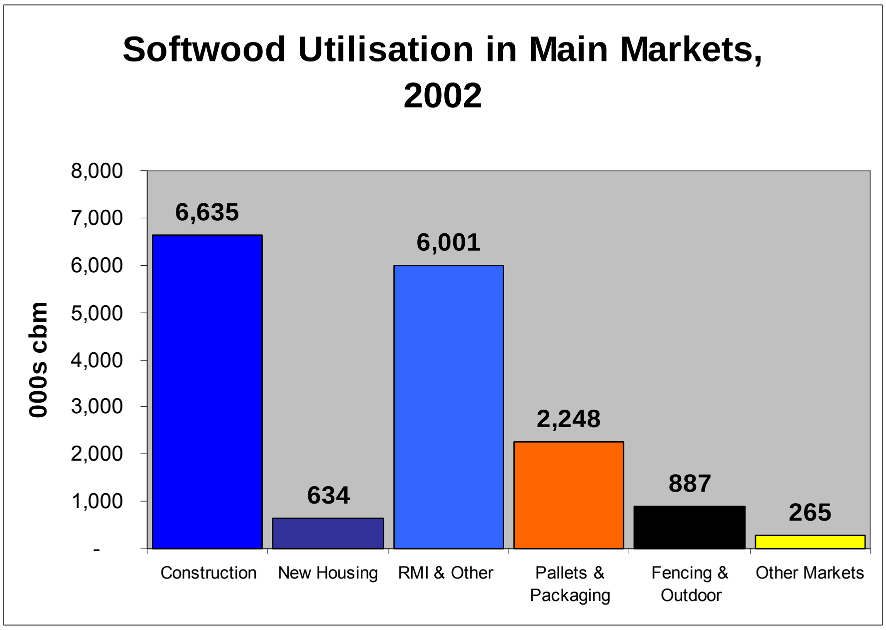
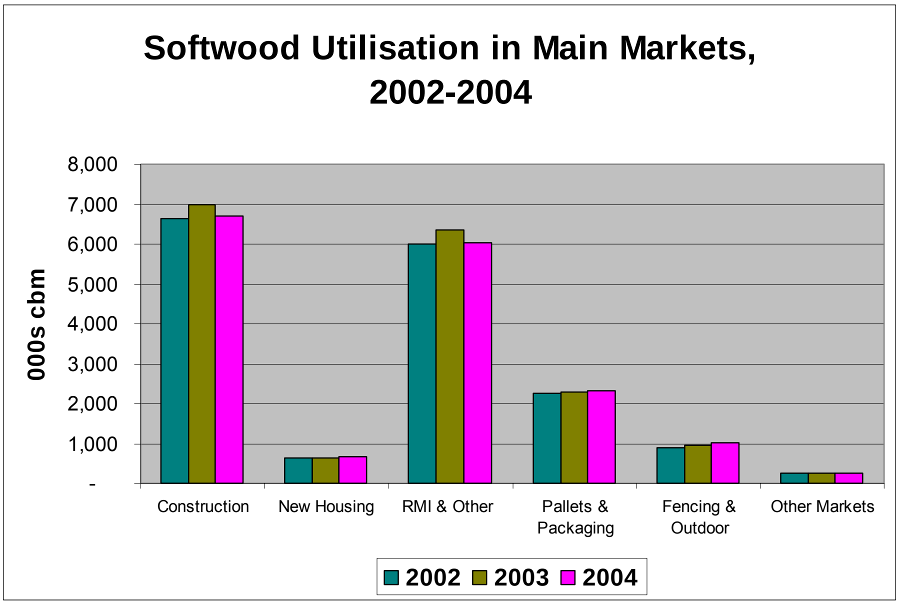


Chart 5: Softwood Utilisation by Main Market, 2002



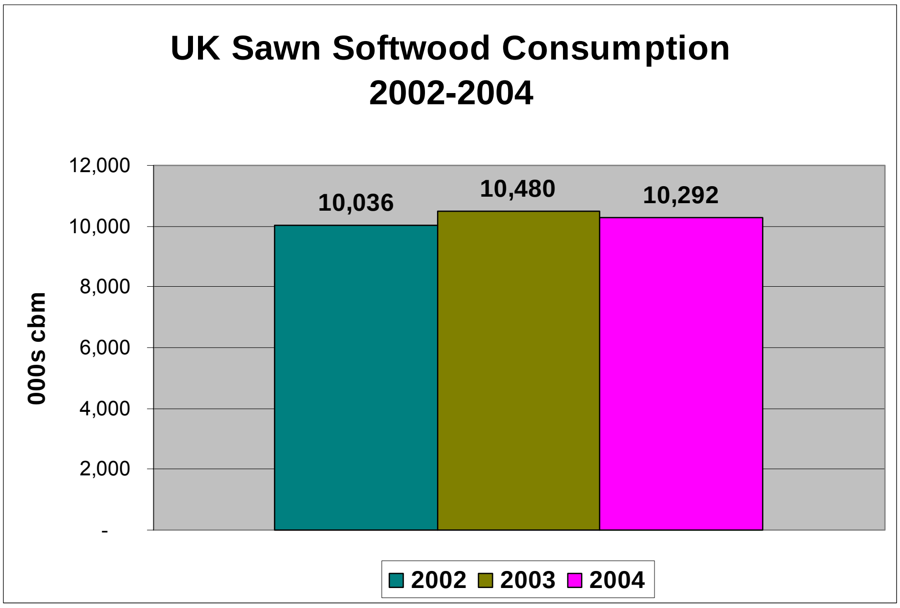
Reproducing the volumes for each of the three years, chart 6 describes the relative changes that have occurred over the period.

Chart 6: Softwood Utilisation, 2002-2004



Total softwood consumption for the UK (all markets combined) over these three years was as follows.

Chart 7: UK Sawn Softwood Consumption, 2002-2004

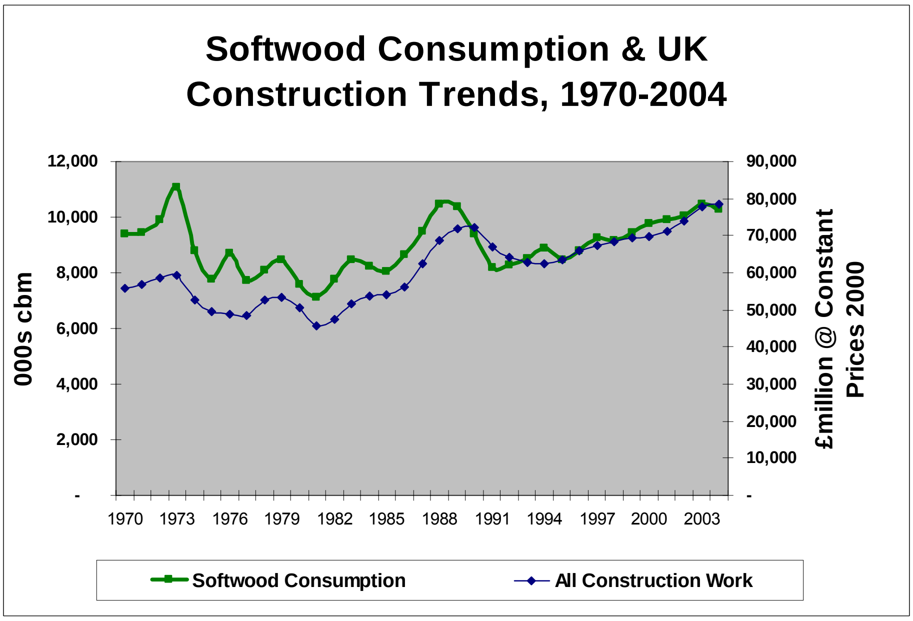


The fall in consumption in 2004 was mainly due to lower volumes consumed by the construction industry and specifically, the RMI and Other sector of the construction industry, as shown in charts 3 through to 6. Volume in the 'Other' markets also fell, whereas packaging volumes have increased marginally while fencing and outdoor volumes have risen strongly in comparison.

Despite the relatively better performance over the last three years in the packaging and fencing and outdoor markets, the scale of utilisation by the construction industry has the greatest influence upon the health of softwood consumption in the UK.

To demonstrate this further, chart 8 plots the trend of softwood consumption in the UK (for all markets) against the volume of "All Work" in the construction industry between 1970 and 2004.

Chart 8: Softwood Consumption & Volume of All Construction in the UK, 1970-2004



With construction such an important market for sawn softwood, the total of all softwood consumption in the UK unsurprisingly follows the general trend development of the construction industry. At times of higher levels of construction activity, softwood consumption is higher and conversely, when construction volumes dip, then so too does softwood consumption.

Through the work of this study, it has been possible to make separate estimates of softwood utilisation in each of the two construction sub-sectors identified, This has allowed a strict comparison between the general health of each of these two sub-sectors as provided by official statistics supplied by the DTI and the amount of softwood estimated to have been consumed by these sub-sectors.

As previously mentioned, the accuracy of estimates of softwood consumption in the sub-sector market of "New Housing" is believed to be of an acceptable level.

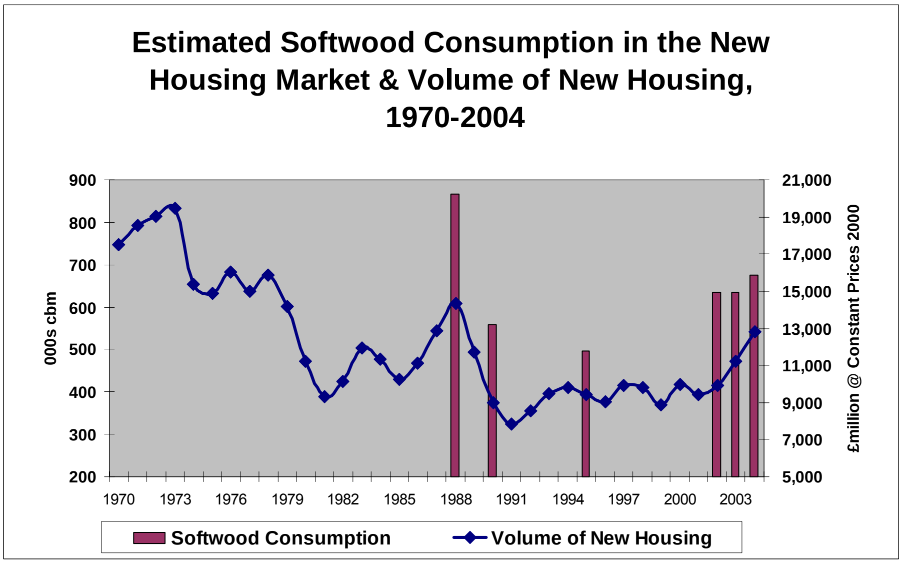
The estimates for the "RMI and Other" sub-sector of the construction market was derived from a balancing figure, once the volumes of all other markets were known. A further check of such a figure is considered necessary, especially as the market estimates for the imported proportion of these other markets was dependent upon information supplied by third-parties.

It was considered that the overall trend development of the two sub-sectors of the construction industry as defined would help to either substantiate or cast doubt upon these softwood consumption estimates.

Consequently, the volume of these sub-sectors (as measured by values at constant 2000 prices) has been compared to the utilisation volumes identified through this study and those from previous work.

In chart 9 below, estimated softwood utilisation in the market for new housing in the UK - as provided by this timber utilisation study and the work of previous studies - is matched against the volume of new housing activity as measured by the value of new housing at constant 2000 prices.

Chart 9: Estimated Softwood Utilisation in the New Housing Market in the UK, 1970-2004

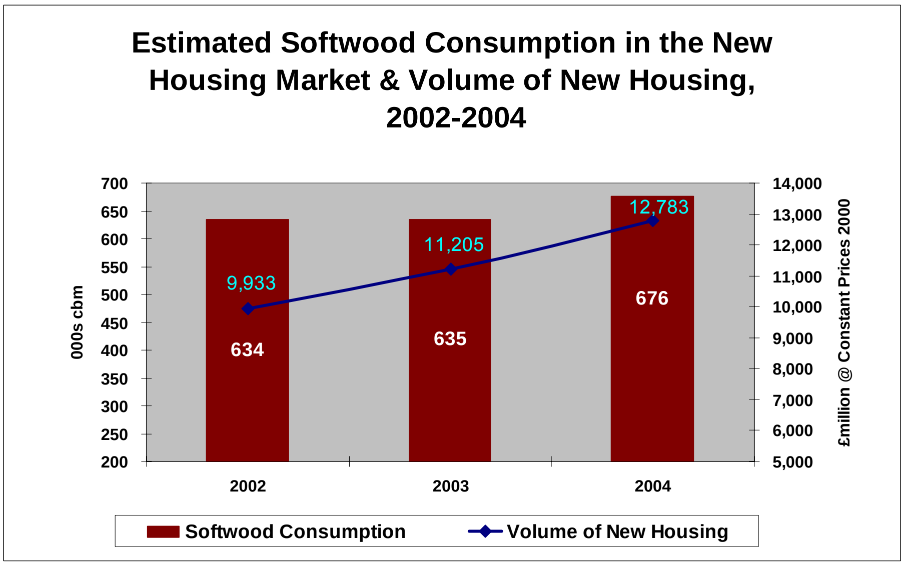


The final three 'softwood consumption' bars in chart 9 are the estimates from this timber utilisation study while the other three bars refer to the estimates derived from the work of Peter Grimsdale of the TRA in 1988, the Anders Baudin work of 1990 and the TRADA work from 1995. The work of these other studies, although using different methodologies, appears to broadly reflect the long-term trend of softwood utilisation in the new housing market.

More precisely, the softwood consumption estimates from 2002, 2003 and 2004 for this study are not only a reflection of the overall trend of the market, but have been calculated using the data that forms the very recent trend in new housing where significant changes in the number and type of new housing constructed between 2002 and 2004 have taken place.

Reviewing the three years 2002 to 2004 in detail, the volume of new housing work as reported by the DTI and the estimated consumption of softwood in this market is shown in chart 10.

Chart 10: Estimated Softwood Utilisation in the UK New Housing Market, 2002-2004



A further review of the development of the new house building market in the UK is by the measure of housing starts and completions, as issued by the Office of the Deputy Prime Minister (ODPM).

Housing starts (time-lagged by one Quarter for comparisons with softwood usage) for 2002 totalled 193,000, for 2003 the number was 203,000 and for 2004 the estimated total was 221,000.

From comparison of the growth in housing starts; the volume of new work in new housing as described in chart 9 and the estimated timber usage in new housing, the development of timber usage appears to have fallen behind the development of the market. These growth rates are given in table 7.

Table 7: Growth Rates of New House Building and Softwood Utilisation in New Housing

	2002	2003	2004	2004/2003	2003/2002
Volume of New Work - £million	9,933	11,205	12,783	14.1%	12.8%
Housing Starts - 000	193	203	221	8.9%	5.2%
Softwood Usage - 000s cbm	634	635	676	6.5%	0.2%

This suggests there may have been an under-estimation of the softwood volumes consumed in new housing.

The suspicion of an under-estimate is further strengthened when it is known that the growth of timber frame house construction has grown faster than other methods of construction and with greater quantities of softwood used in timber frame buildings, the increase in total softwood utilisation in the new housing market would have been expected to be larger than that shown in table 7. Conventional wisdom would suggest that with greater numbers of new dwellings built, combined with a greater proportion of this number being built in timber frame, this should have resulted in more softwood used?

However, the relative growth rates shown in table 7 are probably the most accurate of all the estimates provided for this study. The reason for this relatively confident estimate of softwood consumption in new housing over the period 2002 to 2004 is because of detailed information provided by the United Kingdom Timber Frame Association and through the information supplied by other third parties in the calculation of softwood usage in new house building.

The lower than expected utilisation of softwood in new house construction can be explained by the change in the housing mix.

More softwood per unit is used in the construction of detached (and semi-detached and terraced dwellings) than in the building of flats. Whether the method of building is timber frame or brick and block construction, less softwood is used per unit of construction in flatted developments than in detached dwellings.

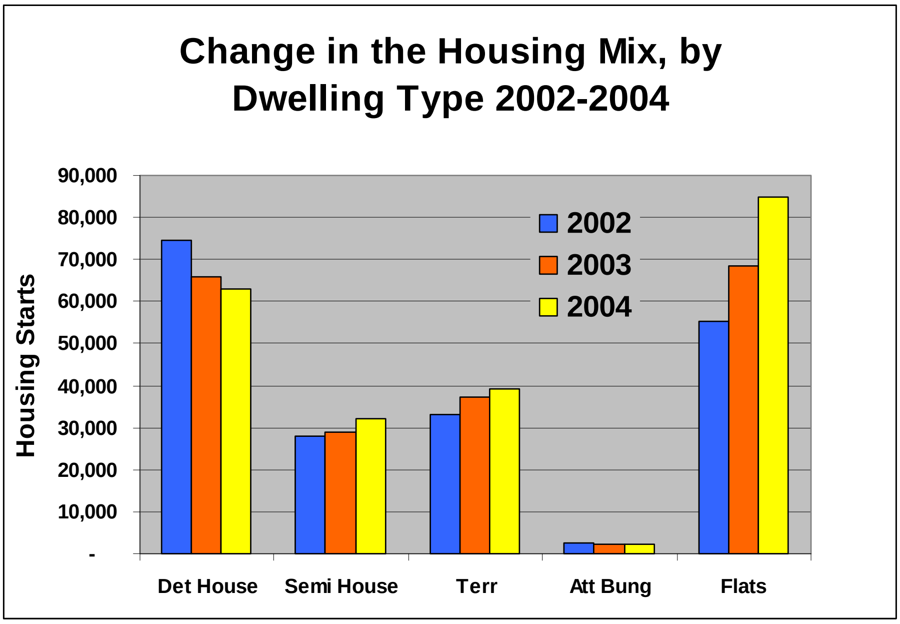
For all building methods combined, the average usage of sawn softwood in detached housing in 2004 was estimated to be approximately $5.3m^3$ per unit, but only around $2.1m^3$ in flatted developments per unit. Average usage for previous years was similar, but not exactly the same, because of the increasing penetration of timber frame construction and other factors, but for the purposes of demonstrating the impact that the changing mix of housing types has on softwood consumption, the small differences are not significant.

Of greater significance has been the change away from the building of detached dwellings in favour of flatted developments.

The building of fewer dwellings that utilise $5.3m^3$ per unit coupled with a greater number of dwellings built that only use $2.1m^3$ per unit has reduced the overall average of softwood usage (for all dwelling types) between 2002 and 2004.

The change in the housing mix is described in chart 11.

Chart 11: Change in the Dwelling Type Built in the UK New Housing Market, 2002-2004



During this period, the number of detached dwellings started has declined by 15% while the number of flatted developments started has risen by over 50%.
However, the greater number of housing starts in 2004 has more than compensated for reduced average softwood usage in new housing. Of course, had the mix of new housing not changed and the proportion of detached dwelling construction remained at around

the 2002 level of 39% (29% in 2004), softwood utilisation in the new housing market would have been far greater. It is for this reason that softwood utilisation has not kept pace with growth in the in new housing market, as presented in table 7 above.

The estimate provided of approximately 676,000m^3 of sawn softwood consumed by the new housing market in 2004 is therefore considered to be realistic.

As previously mentioned and described in chart 6 above, assuming that all other market estimates are of reasonable accuracy, the balance between the total of all softwood consumed and the totals of estimated utilisation within the packaging, fencing and outdoor, the other and the new housing market would represent the volume of softwood utilisation in the “RMI and Other” construction market sector.

It was also stated earlier that the relative overall performance of the two construction market sectors can be matched against the estimated softwood consumed by these sectors, to determine whether the softwood volume estimates are broadly in line with market performance. This appears to have been proven with softwood consumed in the new housing market.

The next stage of trying to verify the findings of this study was to match the derived utilisation in the “RMI and Other” sector to the actual level of market performance.

Before doing so, chart 6 above is reproduced in tabular form as a summary by market of softwood utilisation between 2002 and 2004.

This is shown in table 6 below.

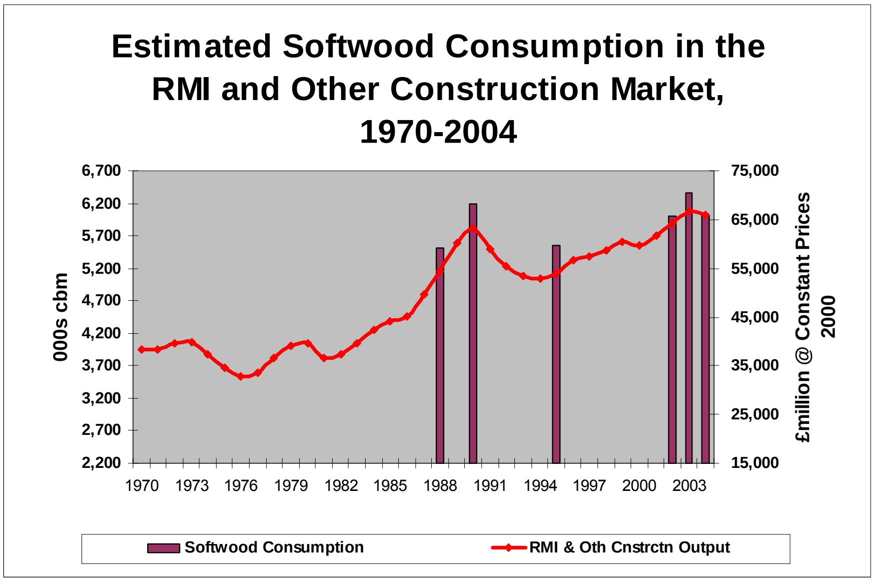
Table 8: Estimated Softwood Utilisation by Main Market and Construction Sector by Volume, 2002-2004

000s cbm	2002	2003	2004
Construction	6,635	6,987	6,699
New Housing	634	635	676
RMI & Other	6,001	6,352	6,023
Pallets & Packaging	2,248	2,288	2,329
Fencing & Outdoor	887	942	1,004
Other Markets	265	263	260
TOTAL	10,036	10,480	10,292

The Department of Trade Industry (DTI) classifications used to assemble the data for the performance of the “Repair, Maintenance and Improvement and Other” (RMI & Other) market sector includes RMI Housing, RMI Other Work, Infrastructure Projects and all Other Non-housing New Work.

The long-term trend of activity in this sector is matched against the volume of softwood consumed as determined from this study and the corresponding estimates from previous studies in chart 12 below.

Chart 12: Estimated Softwood Utilisation in the RMI and Other Construction Market in the UK, 1970-2004

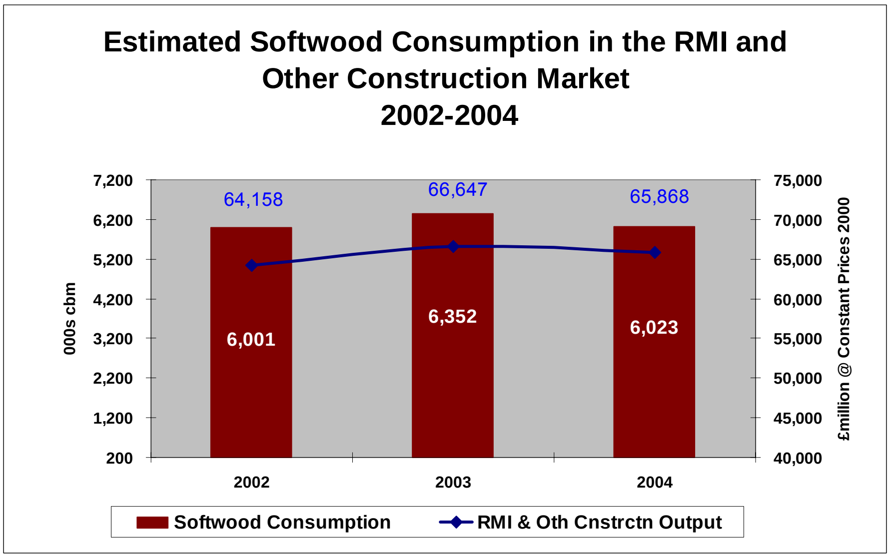


The relative sizes and trends of development of softwood utilisation estimates and volume performance of the market sector support the findings of this study and indicate that estimates made from previous work from 1988 were also probably reasonable at the time.

Specifically for this study, the latest performance of the market is mirrored by the estimated volume of softwood consumed by the market.

Focusing on the years 2002 to 2004, chart 13 below describes these movements.

Chart 13: Estimated Softwood Utilisation in the RMI and Other Construction Market, 2002-2004



The RMI and Other market sector is large and consists of a number of sub-sectors that have experienced varying fortune over the years, therefore, caution needs to be exercised when reviewing utilisation trends.
The sheer scale and diversity, unlike the market for new housing, precludes the ability to support the findings of this study through specific usage data.

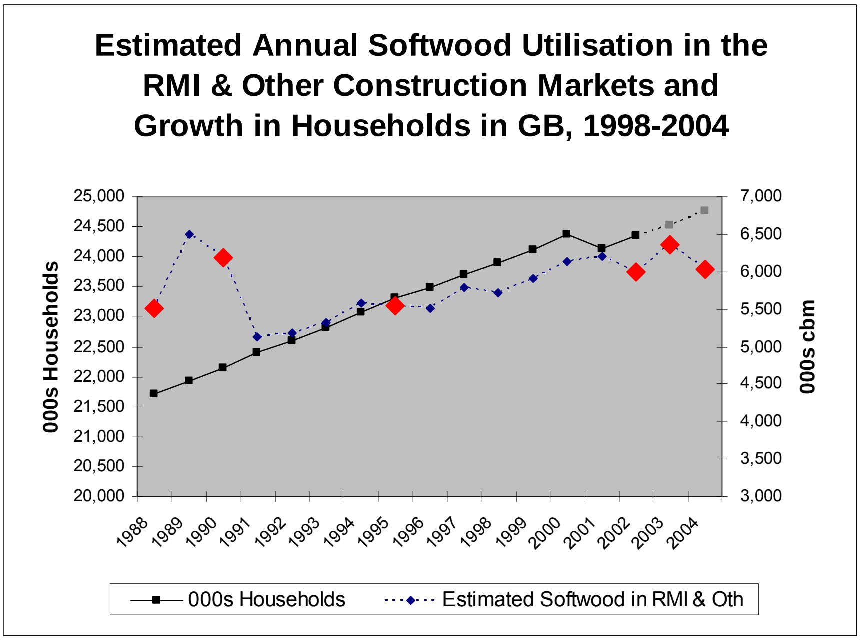
Fortunately, output statistics from DTI data on the RMI and Other construction markets provide supporting evidence for the findings on softwood volume entering these markets as described in charts 12 and 13. A further verification is given by matching the trend of softwood utilisation in the RMI and Other construction markets with the development of households in Britain; under the assumption that the growth in households will generate, to varying degrees, growth in softwood utilisation in these markets.

To view this relationship, it is necessary to interpolate the annual development of softwood usage in the RMI and Other Construction market from this current work and from previous studies.

The interpolated annual development of softwood utilisation in this market from 1988 has been estimated by using an average proportion of softwood utilised by the RMI and Other markets in the current and previous studies. This average softwood usage for the years 1988, 1990, 1995, 2002, 2003 and 2004 where estimates are available is nearly 63% of all softwood consumption.

The resulting development of this estimated softwood utilisation, matched against the development of households in Great Britain, as provided by the ODPM, is described in chart 14 below.

Chart 14: Estimated Softwood Utilisation in the RMI and Other Construction Market and the Growth in Households in Great Britain, 1988-2004



The red marked points on the softwood utilisation line are the data from the current and previous utilisation work and the connecting dotted lines are the derived estimates. Although, as would be expected, there is an irregular volume of softwood consumed over the period on an annual basis, the overall trend is upward and is consistent with the growth in households over the same period.
This finding provides further supporting evidence for the general direction of softwood utilisation in the RMI and Other construction markets over the period and for the volume of softwood entering these markets.

Weaknesses in Statistics discovered through this Study

The single most important weakness discovered through the work of this study has been the dearth of information on the end use markets for sawn hardwood.

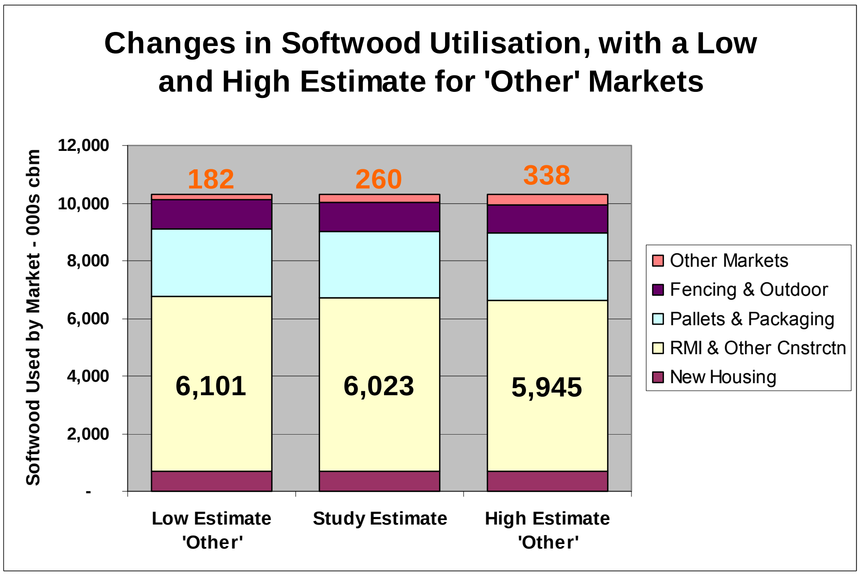
The estimates of sawn softwood utilisation by market for 2002 to 2004 are, however, provided with a reasonable degree of confidence. This confidence in the reliability of the estimates in the packaging, fencing and outdoor and new housing markets is derived from the good information provided by third parties and the ensuing results of calculations that are consistent with expectations within the different market places.

The major area of weakness in this study for sawn softwood is in the available information for the collection of markets defined as ‘Others’ and the RMI and Other Construction market.

Estimates for the ‘Others’ market have been provided through this study, but are based on very limited information. Once again, the only available information on this market has come from the UK sawn softwood production sector as analysed and published by the Forestry Commission. This information, coupled with knowledge of the general trends within each of the main sub-markets, has allowed estimates to be made. Softwood utilisation in ‘Others’ is fortunately small, in comparison to the main markets, and any possible large errors in calculation in this market do not substantially affect the size calculations of the residual RMI and Other Construction market. Therefore, any errors in calculation of the ‘Others’ market has only a marginal affect on volumes in the RMI and Other Construction market.

To demonstrate this, even if the margin of error in the ‘Others’ market was as high as 30% (either way), the general shape and scale of the main markets for sawn softwood would not alter. This is shown in chart 15 below.

Chart 15: The Effect of Quantification Errors in the ‘Others’ Market, 2004



The study estimate of softwood usage in the ‘Others’ market was 260,000m^3 which (assuming usage in other markets is known) leaves a residual volume for the large RMI and Other Construction market of just over 6.0 million cubic metres.

If the margin of error for the ‘Others’ market was as high as 30%, both above and below the study estimate, the impact on the size of the residual RMI and Other Construction market would be small; at only 1.3%.

The estimates provided for the utilisation of sawn softwood in the main markets in the UK are therefore considered to be realistic.

This study has provided only broad estimates by main market of course and the deeper understanding of utilisation within specific sectors of the construction industry especially, e.g. industrial, commercial and by specific application type, such as joinery and structural works, remain outside the scope of this study and largely unknown.

Nevertheless, it is believed that this study has provided an understanding and quantification of softwood utilisation that existed in only in out-of-date studies from the previous two decades. Moreover, the foundation has been provided for the measurement of the trend development within main market (2002 to 2004 and possibly beyond) and perhaps stimulated thought as to the possible future development of studies of this kind.

***timbertrends* - 22 May, 2006**

ANNEX 1

Study Objective

3. To produce an analysis of the type and accuracy of current sources of information available, methods of data collection employed, differences and/or inconsistencies between sources and identification of gaps in available information.

Information Provider	Nature/Form of Information	Timber Statistics	Timber Use/Utilisation Statistics	Availability	Frequency	Accuracy	Method of Data Collection	Perceived Gap relative to the Study
timbertrends	Forestry & Timber Industry Statistics & Market Intelligence	Yes	Limited	Commercial/ Restricted	On demand	High	Purchased Official Statistics & Industry Sources	
Timber Committee (UNECE)	Region and country reports by product	Yes	No	Freely available on the Internet & printed formats	Mostly annually	Medium	Through country federations & other official organisations	Any form of UK, European or Global utilisation data
Forest Industries Intelligence Ltd	Hardwood Import & Export Statistics by country and product	Yes	No	Commercial/ Restricted	Monthly	High	Purchased Official Statistics & Industry Sources	Hardwood utilisation data
British Woodworking Federation	Qualitative Trend Surveys	No	No	Restricted to Members		High	Member Surveys	Knowledge of joinery products volumes
Timber Trade Federation	Import & Export Statistics by country and product	Yes	Limited	Commercial/ Restricted	Monthly	High	Purchased Official Statistics & Industry Sources	Knowledge of utilisation data

Information Provider	Nature/Form of Information	Timber Statistics	Timber Use/Utilisation Statistics	Availability	Frequency	Accuracy	Method of Data Collection	Perceived Gap relative to the Study
UK Timber Frame Manufacturers Association	Annual Market Report & Ad hoc communications	No	Yes	Restricted to Members	Annually	Medium-High	Member Survey	Knowledge of application timber usage, but industry volume data offered confidentially
United Kingdom Forest Products Association	Input to the Forestry Commission Sawmill Survey	Yes	Yes	Aggregated data supplied to the Forestry Commission	Annually	Medium-High	Member Survey	
Timber Decking Association	Market Development by Value	No	No	Total Market Values Supplied Freely – other Restricted to Members	Annually	Medium-High	Member Survey	Knowledge of decking product volumes
Fencing Contractors Association	None	No	No					Knowledge of fencing product volumes
TIMCON	Pallet Volumes	Yes	Yes	Selectively		Medium-High	Member Survey & Published Statistics	

Information Provider	Nature/Form of Information	Timber Statistics	Timber Use/Utilisation Statistics	Availability	Frequency	Accuracy	Method of Data Collection	Perceived Gap relative to the Study
BRE			(No response)					
TRADA	Research Reports	Yes	Yes, Softwood quantities used in new build	Selectively		Medium-High	Industry Research & Surveys	
University of Wales	Historical information on end-use studies	Yes	Yes	Selectively				
Napier University	None	No	No					
British Furniture Manufacturers Association	None	No	No					
Office of the Deputy Prime Minister (ODPM)	Housing Statistics & Intelligence	Yes	No	Freely				
Construction Products Association	Construction Industry Publications	No	No	Restricted to Members				
NHBC	None	No	No					
TRA	Ad hoc	Yes	Yes	Selectively		Medium-High	TRA Secretariat	

Acknowledgements

The ability to measure the utilisation of sawn softwood by main market in the UK in this short study would not have been possible without the contribution of many people from different parts of the timber industry.

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