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Wood Packaging Study

Quantification of the Manufacture, Recycling and Re-use of Wood Packaging in the UK, 2010

A Study

for

Timcon and the Forestry Commission

timcon
timber packaging and pallet confederation

Forestry Commission

by

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Background to the Research:

The first Wood Packaging Study conducted in 2010 for the year 2009 was required to report on the ability of pallet and packaging manufacturers to respond to possible EU legislation concerned with the flow of wood packaging materials within Europe and to quantify wood packaging manufacturing, recycling and re-use activity in the UK.

Timcon, the Timber Packaging and Pallet Confederation wished to understand whether there was sufficient capacity within UK pallet manufacturing specifically, should legislation require all wood packaging materials to be heat-treated to guard against the proliferation of pests in wood packaging. The Forestry Commission of Great Britain also, through its responsibility to safeguard indigenous forests and woodlands, wished to understand how the pallets industry in the UK could respond to the demand for heat-treated packaging.

Such information would help formulate packaging, plant health and forest industry policy in the UK, ensuring that the best interests of the pallets and packaging industry are represented both in the UK and in Europe.

The first Wood Packaging Study was also charged with estimating the volumes of wood packaging produced in the UK in order to inform the task of measuring the usage of sawn softwood in this industry, as quantified in the Forestry Commission's timber utilisation studies.

Timcon and the Forestry Commission commissioned *timbertrends*, an independent analyst, to carry out this work and following the publication of the report in July 2010 a follow-up study was commissioned to assess the development of the findings from the first report in order to understand the changes that had taken place between 2009 and 2010.

Also, the need to confirm a number of the findings from the first report was considered an important part of this, the second Wood Packaging Study report.

From the measurement of activity, as determined in this 2010 report, the potential to provide added value for Timcon through the provision of information on packaging waste was recognised and this additional work has been carried out for this, the second Wood Packaging Study. This can be found in Annex IV of this report.

Objectives of the Research:

To estimate the volume and value of new pallets and packaging materials manufactured and recycled (repaired and re-manufactured) in the UK, leading to an estimate of softwood and hardwood usage. This would involve providing:

1. Estimates of turnover by value of new pallet manufacture and recycling in the UK
2. Estimates of the volume of pallets by:
    - size of pallet
    - type (2-way/4-way)
    - treated (ISPM15)
    - reusable
3. Estimates of timber consumption by pallet and packaging manufacturers in the UK, including estimates of timber supply by country
4. Estimates of the productive capacity of ISPM15 heat treated and kiln dried pallet manufacture.

Scope of the Research:

The scope of the research for this second Wood Packaging Study was the same as the initial study and was designed to engage with manufacturers of pallets and packaging in the UK within the Timcon membership and members of the Wood Packaging Material Marking Scheme (WMS), less those already in Timcon membership.

Methodology:

The methodology adopted for this second study was similar to the first study, with e-mail with selected use of the telephone as the preferred method of contact.

The questionnaire devised for this second study was very similar to the first, but adapted to provide a simpler assessment of the ability of packaging manufacturers to heat-treat their products. A copy of this questionnaire can be found in Annex I of this report.

Measuring the supply of manufactured, recycled and re-used pallets and packaging in the UK required a careful and deliberate approach, because of the structure of the industry.

The market comprises many small firms, a good number of middle-sized firms, larger firms and a number of very large firms operating within the industry. The activities of these companies are not homogenous, with differing emphases on manufacturing and recycling and also different ways of getting to market. This is exemplified by the difference between manufacturers and pallet pool operators with manufacturers mostly selling their output while pallet pool operators rent pallets for use by customers.

Further detail of the methodology used can be found in Annex II to this report.

Programme of Work:

The programme of work included the following processes:

1. Formulating and seeking approval for the survey questionnaire
2. Production of the questionnaire
3. Compiling the survey sample
4. Writing and seeking approval for the covering letter to accompany the survey questionnaire
5. Building the survey and analysis database to be used in the despatch and receipt of questionnaires
6. Despatch of the questionnaires to the survey sample
7. Receipt, checking and input of data to the analysis database
8. Chasing selected companies for response
9. Analysis and interpretation
10. Presentation of initial findings at the Timcon Annual General Meeting
11. Writing of draft report
12. Production of final report

Executive Summary

Turnover
From the work of this second Wood Packaging Study it is estimated that the turnover of the pallets and packaging industry in 2010 was approximately £420 million, an 8.6% increase on the revised turnover of £386 million in 2009.

Employment
This 2010 Wood Packaging Study has provided a revised estimate of the number of employees engaged in the packaging industry for 2009 and the change in employment for 2010. In 2009, it was estimated that just over 4,000 people were employed in the packaging industry and this had grown to nearly 4,300 (4,284) in 2010.

Quantity of Pallets Manufactured, Recycled and Re-used
In 2010, it is estimated that the total number of pallets manufactured, recycled and re-used by UK producers and recyclers amounted to approximately 81.6 million; this was an 8.9% increase over the 2009 total of nearly 74.9 million.

Pallet Sizes
The proportion of newly manufactured pallets of dimension 1,000mm x 1,200mm is estimated to have accounted for 33% of the total in 2010. A further 25% of newly manufactured pallets were of 800mm x 1,200mm and approximately 42% of other sizes. The proportions of recycled pallets by size were estimated to be: 83% for 1,000mm x 1,200mm, 9% for 800mm x 1,200mm and 7% for the remainder.

Pallet Types
The proportion of newly manufactured 2-way pallets in 2010 was estimated to be around 25% of the total, leaving the proportion for newly manufactured 4-way pallets at 75% of the total. The 4-way type is the most commonly recycled, accounting for 95% of all recycled pallets. For re-used pallets, 92% were of the 4-way type.

Timber Usage
In 2010, it is estimated that 1.48 million cubic metres of timber products were consumed by the UK pallets and packaging industry, down by a little less than 2% from the 1.50 million cubic metres consumed in 2009.

The volume of pallet manufacturing and recycling was higher by around 6.5 million units, an increase of 9.5%, but because of the greater proportion of repairs and re-manufactures and fewer new pallets manufactured, timber usage fell slightly.

The proportion of softwood consumption remained at 81% of the total in 2010, but a slightly higher volume of hardwoods used in pallet production raised the proportion of hardwoods used from 11% in 2009 to 13% in 2010. The remaining volumes used were panel products, mostly plywood.

Heat Treatment and Kiln Drying
Heat treatment capacity is predicted to continue to increase across Europe but any extension of ISPM 15 by the European Commission would need to be restricted - on practical grounds alone - to NEW pallets and packaging.

The number of newly manufactured heat treated pallets estimated to have been produced in 2010 was approximately 7.7 million, which represents around 30% of the 25.4 million pallets manufactured by Timcon members. Should the output of heat treated pallets be raised to its theoretical maximum, this would increase the number of newly manufactured heat treated pallets to 14.5 million or around 57% of the total output of Timcon manufacturers.

At current levels of kilning capacity, it is clear that future legislation on wood packaging, if required to be effective, would need to carefully take account of industry's ability to meet the demands placed upon it.

Key Findings:

Industry Turnover
Estimates of turnover by value of new pallet manufacture and recycling in the UK.

The turnover estimates from the first Wood Packaging Study for all wood packaging produced and recycled in the UK, based on work for this second study, have been revised to take account of an element of double-counting of recycled pallets.

For manufactured and recycled pallets in the UK for 2009, the original turnover estimate of £285 million has been revised to £260 million, around 9% lower.

This revision was based on more information available for comparison provided by this second study and amendments supplied by some companies for the year 2009.

This revised estimate for 2009 compares with the ProdCom[1] total for flat pallets 2009 of £279 million, which rose to £286 when box pallets were included.

In 2010, this second Wood Packaging Study estimated that turnover of pallet production (newly manufactured and recycled) had increased to £267 million, an increase of 6.9% over 2009.

The Wood Packaging Study, by virtue of requesting information from members of the Wood Packaging Members Marking Scheme, was able to provide estimates of the value of non-pallet packaging manufacturing in 2010.

This estimate, based upon the survey conducted among Timcon and WMS members, gave a turnover of non-pallet packaging manufacturing of £137 million (£136,589,927), which compares to the 2009 total of £121 million (£121,079,023), an increase of nearly 13%.

During the time of writing of this report the provisional ProdCom for 2010 was published.

ProdCom is a comprehensive data series of production of PRODucts of the European COMmunity and is a European Union (EU) wide survey. This series covers around 3,866 products classified to around 234 industries in manufacturing, but also in service, repair and distribution industries. Companies involved in the annual ProdCom Inquiry supply sales data for the products they manufacture, as well as non-manufacturing income.

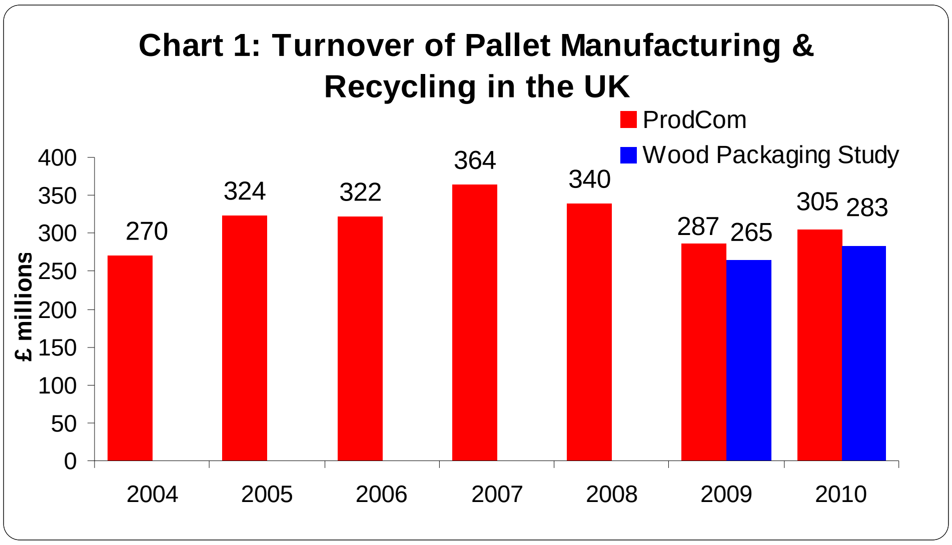
According to the provisional ProdCom estimates for 2010, the total turnover of the combined activities of pallet manufacturing and recycling in the UK in 2010 was £295 million for flat pallets and with box pallets added, £305 million (£304,706,000).

With non-pallet packaging, (cases, boxes, crates and cable drums, in addition to pallets, but not casks, tubs etc) added to pallets turnover, the 2010 Prodcom total was £401 million (£401,006,000).

The total turnover derived from the Wood Packaging Study for 2010 was £420 million, 4.6% higher than the ProdCom total.

[1] Annex III

Focusing specifically upon pallet turnover, the value of pallet production in the UK as measured by ProdCom from 2004 to 2010 is shown in chart 1 below. Turnover estimates from the two wood packaging studies conducted for 2009 and 2010 are shown alongside the ProdCom totals for these two years. The ProdCom totals include sales of box pallets in addition to flat pallets.



The comparison of these two sources of information can be found in Annex III of this report.

The turnover estimate of £283 million from the 2010 Wood Packaging Study includes estimates of the turnover of Timcon member companies and those belonging to the Wood Packaging Marking Scheme.

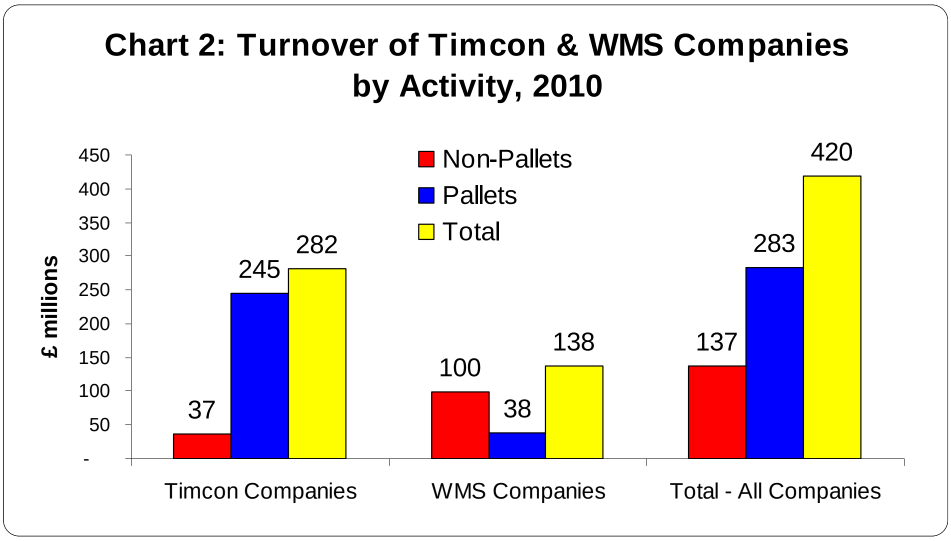
Returning to the measurement of all types of packaging, industry turnover from the Wood Packaging Study was estimated to be £420 million in 2010, broken down into Timcon member companies' turnover of £282 million and the turnover of WMS companies was estimated to be around £138 million. It should be noted that those companies within Timcon membership that are also WMS members were not included in the estimate for WMS companies' turnover.

The rise in Timcon member companies' turnover of just under £22 million (for all types of packaging) in 2010 was an increase of 8.4%.

The rise in WMS member companies' turnover of just over £11 million was a rise of 13.5%.

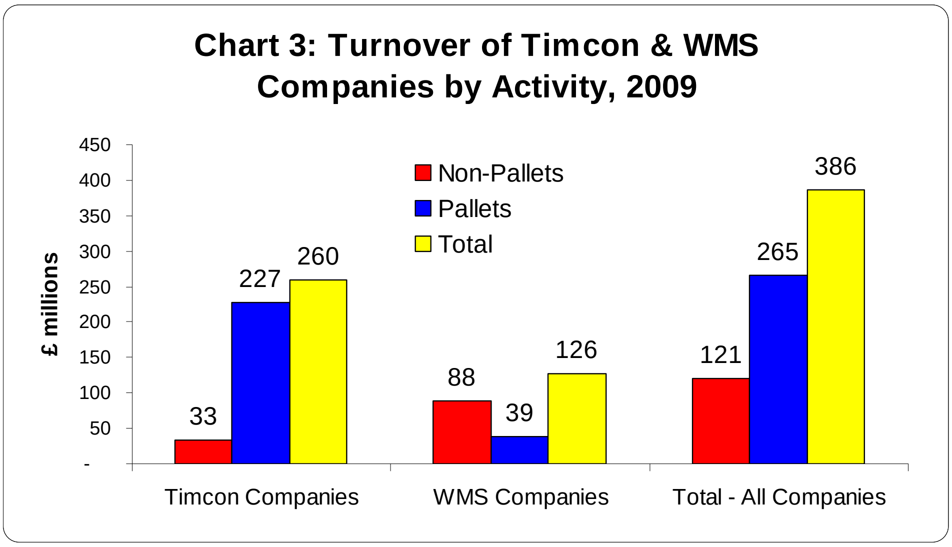
By virtue of requesting information from both memberships on manufacturing activity, it was possible to identify the turnover within each membership of non-pallet and pallet manufacturing activity.

Chart 2 below shows the breakdown of different activity by Timcon and WMS member companies.



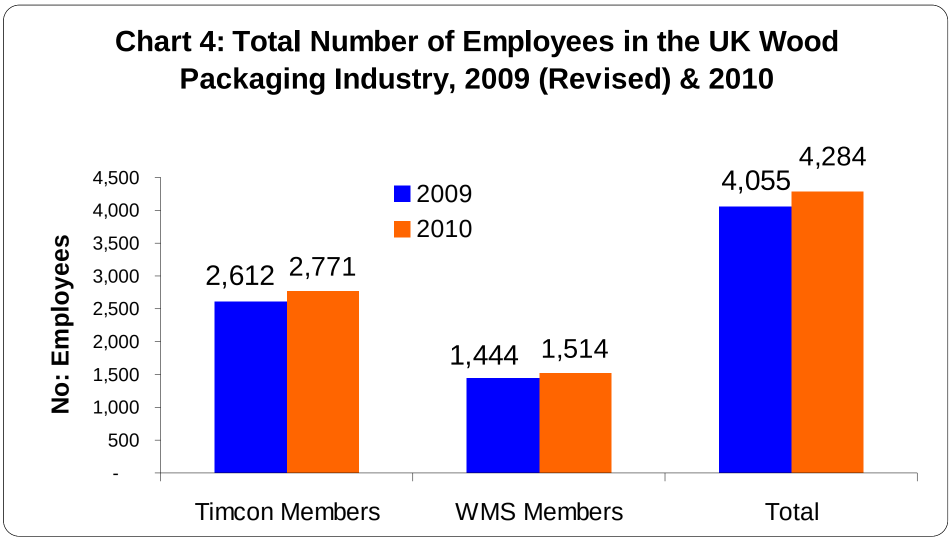
The turnover of pallet manufacturing and recycling of Timcon member companies at £245 million in 2010 accounts for 87% of all pallet turnover, while WMS member companies account for the majority of non-pallet turnover in 2010.

The changes between 2010 and 2009 can be compared by viewing the different turnover estimates from the two wood packaging studies for each of the two main types of activity and the total for Timcon and WMS member companies in charts 2 and 3.



Industry Employment

The number of people employed in the packaging and pallets industry in 2010 is estimated to have grown by around 5.6% in 2010, to nearly 4,300. The 2009 total of employees has been revised, following identification of a calculation error in the 2009 report. Estimates of the total of employees is derived by applying the average turnover per employee for each activity from the survey carried out among Timcon and WMS member companies to the estimated turnover for each activity. This has resulted in an industry-wide average turnover per employee in 2010 of £107,000, compared to £101,000 per employee in 2009.

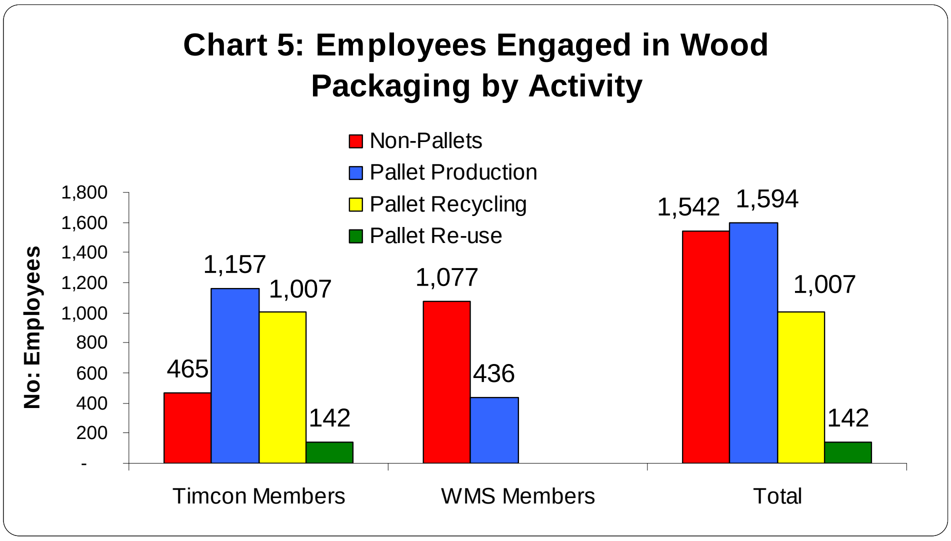


According to these measures, employment within Timcon member companies grew by 6% in 2010 and around 5% in WMS member companies.

With an estimated 2,771 employees, Timcon member companies accounted for approaching two-thirds of all employees in the packaging and pallet industry in the UK in 2010.

A further breakdown of employment by activity within each group has been possible, providing an estimate of employment in non-pallet packaging and the various categories of pallet manufacture and re-use.

Chart 5 below identifies this breakdown of employment for 2010.



As would be expected, the great majority of employees within the group of Timcon manufacturing companies are engaged in pallet production, recycling or re-use. The proportion employed in non-pallet manufacture within Timcon member companies was 17%, with the remaining 83% involved in pallet manufacturing, recycling and re-use.

In 2010, the proportion of people employed in non-pallet manufacturing by WMS member companies was 71%, with the remaining 29% involved in pallet manufacturing.

Pallet Values & Volumes

Estimates of the volume of newly manufactured and recycled pallets by: size of pallet; type (2-way/4-way); treated (ISPM15); reusable.

As shown in chart 2 earlier in this report, the turnover of pallet production in the UK in 2010 was £283 million. Of this total, it is estimated that £205 million was accounted for by newly manufactured pallets (£180 million in 2009), £62 million by recycled pallets (£70 million in 2009) and around £15 million by re-used pallets, very similar to the turnover of re-used pallets in 2009.

In percentage terms, the turnover of newly manufactured pallets comprised 73% of the total (68% in 2009), recycled 22% (27% in 2009) and re-used pallets contributed 6% to industry turnover.

The breakdown of these activities by quantity for 2010 was, approximately: 30 million newly manufactured, nearly 45 million recycled and 6 million re-used. Proportionately, newly manufactured pallets accounted for 37% of total production, recycled accounted for 55% and re-used 8% of the total.

The Wood Packaging Study also requested information on timber products usage and it was therefore possible to determine the volumes, in cubic metres, of these products purchased.

For newly manufactured pallets, timber usage (softwood, hardwood and panel products) was – as will be seen later in this report under the section on timber usage – 936,000m^3 (1,019,000m^3 in 2009) and for recycled pallets, timber usage was 136,000m^3 (101,000m^3 in 2009).

The proportion of timber usage in pallet production continues to be heavily orientated towards new manufactures, accounting for 87% of all timber products used with the remaining 13% used in recycling. It is assumed that no timber is used in the re-use of pallets.

The higher selling prices of newly manufactured pallets compared to recycled or re-used ensures that new pallets take the major share of total pallet turnover which, in 2010 accounted for 72.5% of total revenue of all pallets produced.

The trend noted in the 2009 wood packaging report of an increasing quantity of recycled pallets (in large part due to the need for pallet users to keep down costs) continued in 2010 and recycled pallets accounted for nearly 60% of all production (51% in 2009).

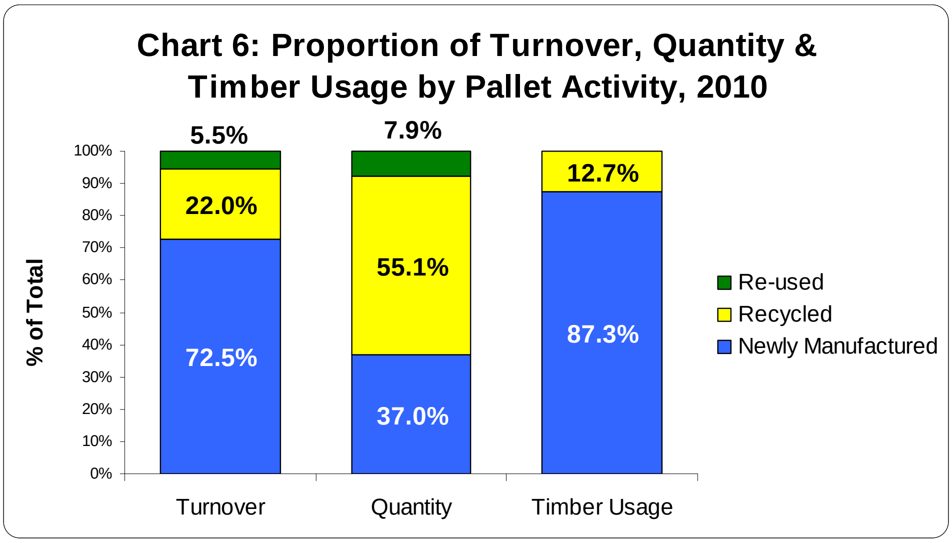
Another driver of the growing proportion of recycled pallets in 2010 was the increase in timber prices.

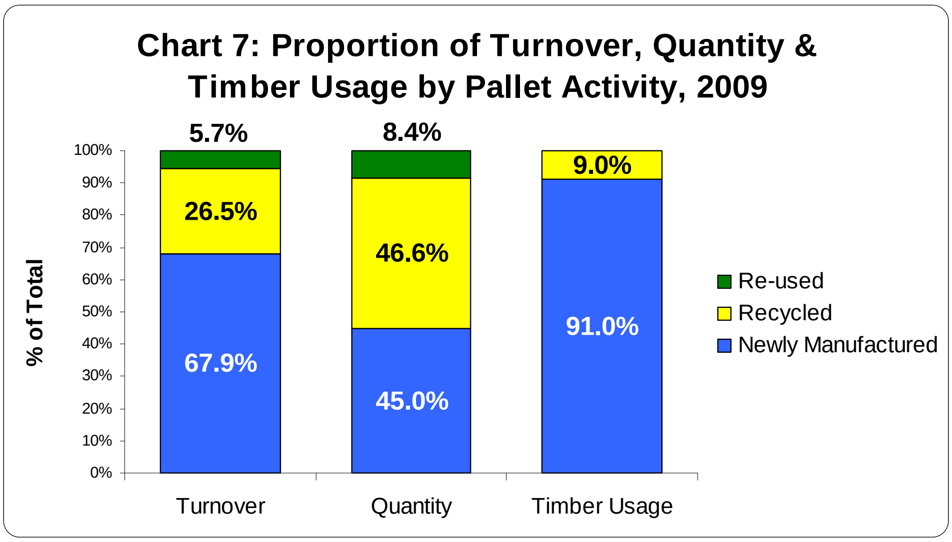
Average prices for softwood in 2010 rose by around 19% which, with substantially less wood used in recycling, encouraged a greater amount of recycling. Average wood usage in new pallet manufacturing in 2010 was 0.031m^3 per pallet compared to 0.0031m^3 per recycled pallet.

The steep rise in timber prices was a highly influential factor in sharply rising new pallet prices in 2010 and this in turn contributed to lower demand for newly manufactured pallets.

These factors contributed to the greater quantities of recycled pallets produced and placed onto the market in 2010.

The proportions of newly manufactured, recycled and re-used pallets by industry turnover, quantities and timber usage for 2010 and 2009 are shown below in charts 6 and 7.





Turnover
In 2010, an increasing proportion of pallet industry turnover (72.5%) was accounted for by newly manufactured pallets as prices for new pallets rose during the year.

Quantity
As a proportion of all pallet production the quantity of recycled pallets increased substantially in 2010 to 55.1% from 46.6% in 2009.

Timber Usage
With greater quantities of recycled pallets produced, the proportion of timber used in recycling rose in 2010 to nearly 13% of all timber usage (9% in 2009).

The table below provides a quantitative breakdown of pallet activity turnover, quantities and timber usage for 2010.

Table 1: Pallet Turnover, Quantity and Timber Usage, 2010

	Pallet Turnover - £000s	000s Pallets	000s m3
WMS Pallet Production	31,863	4,844	160
Timcon Pallet Production	173,394	25,370	776
Total Pallet Production	205,257	30,214	936
Timcon & WMS Pallet Recycling	62,256	44,926	138
All Pallets Manufactured & Recycled	267,513	75,139	1,074
Re-used Pallets	15,441	6,438	-
Total	282,954	81,578	1,074

From the data in table 1, it is possible to derive average values and usages per activity, as shown in table 2 below.

Table 2: Pallet Values and Material Usage, 2010

	£/Pallet	m3/Pallet
WMS Pallet Production	6.58	0.0330
Timcon Pallet Production	6.83	0.0306
Total Pallet Production	6.79	0.0310
Timcon & WMS Pallet Recycling	1.39	0.0031
All Pallets Manufactured & Recycled	3.56	
Re-used Pallets	2.40	
Total	3.47	

For the purpose of comparing the development of these key indicators, the revised data for 2009 is reproduced below.

Table 3: Pallet Turnover, Quantity and Timber Usage, 2009

	Pallet Turnover - £000s	000s Pallets	000s m3
WMS Pallet Production	30,812	5,470	162
Timcon Pallet Production	149,258	28,258	857
Total Pallet Production	180,070	33,729	1,019
Timcon & WMS Pallet Recycling	70,186	34,918	101
All Pallets Manufactured & Recycled	250,256	68,646	1,120
Re-used Pallets	15,092	6,282	-
	-	-	-
Total	265,348	74,928	1,120

Comparing the total turnover, the quantity of pallets and the timber usage in 2010 with 2009, the percentage changes were +6.6%, +8.9% and – 4.1% respectively.

The total average value from all activity combined in 2010 was £3.47 per pallet – marginally lower than the £3.54 per pallet in 2009. This marginal change was brought by quite substantial increases in the price of newly manufactured pallets and a large fall in the price of recycled pallets. It should be noted that the fall in the price of recycled pallets reported here may be a little over-estimated, because of the relatively low number of respondents to the survey conducted among Timcon manufacturers, which increases the potential for error, however, it is of worth to note that the increase in the price of newly manufactured pallets in 2010 was 27% (as quantity fell by 10.4%) while the decrease in price of recycled pallets was just over 30% (as quantity increased by 33%).

Table 4: Pallet Values and Material Usage, 2009

	£/Pallet	m3/Pallet
WMS Pallet Production	5.63	0.0296
Timcon Pallet Production	5.28	0.0303
Total Pallet Production	5.34	0.0302
Timcon & WMS Pallet Recycling	2.01	0.0029
All Pallets Manufactured & Recycled	3.65	0.0163
Re-used Pallets	2.40	-
Total	3.54	-

The average usage of timber products for newly manufactured pallets is, once again in 2010, similar between Timcon and WMS companies and at an average level of 0.0310m^3 per pallet, very close to the average usage that has been used for many years by Timcon in the reporting of packaging waste statistics.

The material usage of recycled pallets, quantified at 0.0031m^3 per pallet in 2010 was very similar to the 2009 quantity of 0.0029m^3 per pallet, which confirms that the 'average' repair constitutes around 10% of a pallet, or the odd deckboard or stringer replacement.

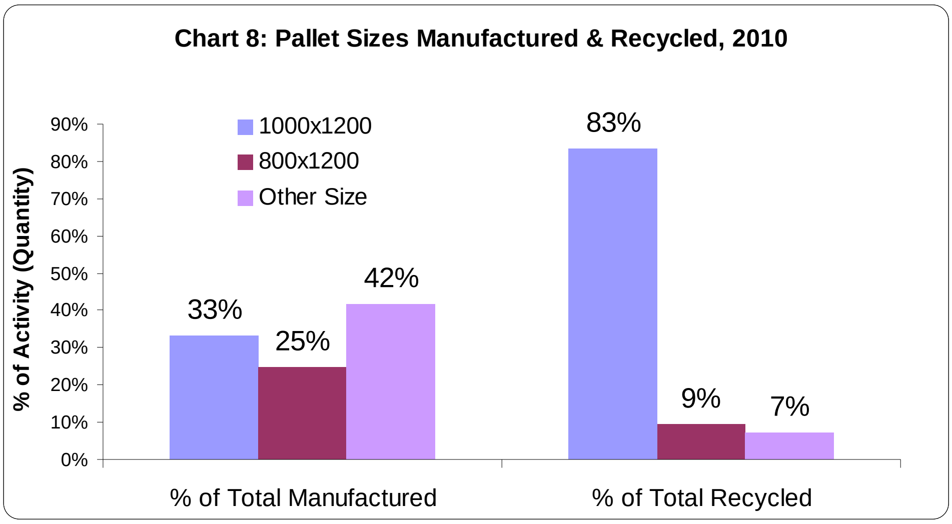
Pallet Sizes

Information was sought on the quantity manufactured or recycled of the two most common pallet sizes, 1000mm x 1200mm or 1200mm x 1000mm and 800mm x 1200mm. As for the 2009 study, response to this request revealed that other sizes too, were produced and recycled.

Despite a relatively low level of response to the survey, the conclusions drawn for 2010 are consistent with the results from 2009.

In 2010, it was estimated that 63% of all pallets newly manufactured and recycled were of the 1000mm x 1200mm size; around 16% were 800mm x 1200mm and the remaining 21% were of a variety of different sizes, very similar to the results from 2009. Of the estimated 75 million pallets manufactured and recycled in 2010, a total of 47.5 million pallets were of the 1000mm x 1200mm size, nearly 12 million were of the 800mm x 1200mm size and nearly 16 million of other sizes were produced.

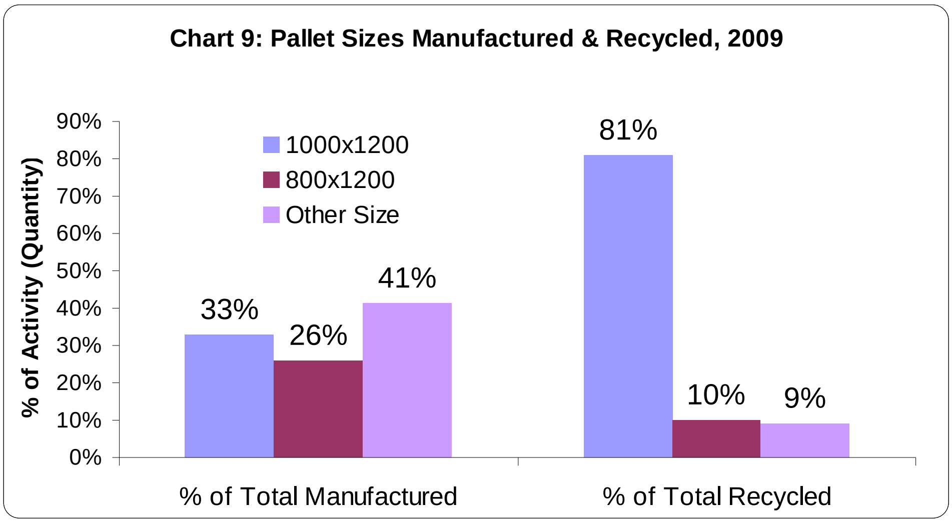
Within these totals, differences in the size of pallets by the type of activity were noted and are presented in chart 8 below with comparative results for 2009 shown in chart 9.



In the manufacture of new pallets, the 'standard' sized pallets of 1000mm x 1200mm and 800mm x 1200mm (combined) accounted for 58% of all new pallets, with various other sizes, at 42%, the remainder.

The great majority of recycled pallets were 1000mm x 1200mm, with 83% of the total of all recycled pallets of this size.

As indicated above, comparison between 2010 and 2009 is made by reference to chart 9 below.

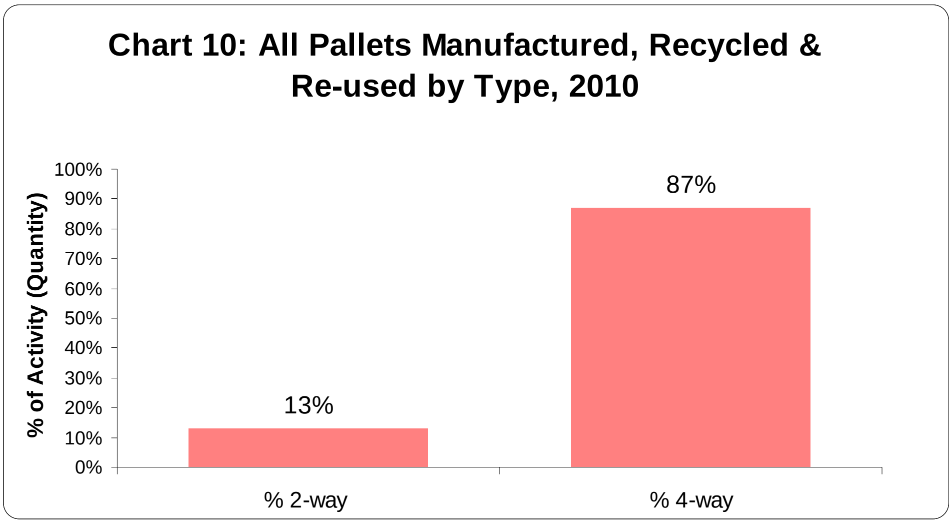


The changes in 2010 over 2009 are slight in percentage terms, but because of the slightly higher proportion of 1000mm x 1200mm recycled pallets and the greater number of recycled pallets in 2010, the increase in the number 1000mm x 1200mm recycled pallets was 9.2 million, or a 32% increase.

Pallet Types

Information was also sought on the type of pallet manufactured and recycled – either 2-way or 4-way entry.

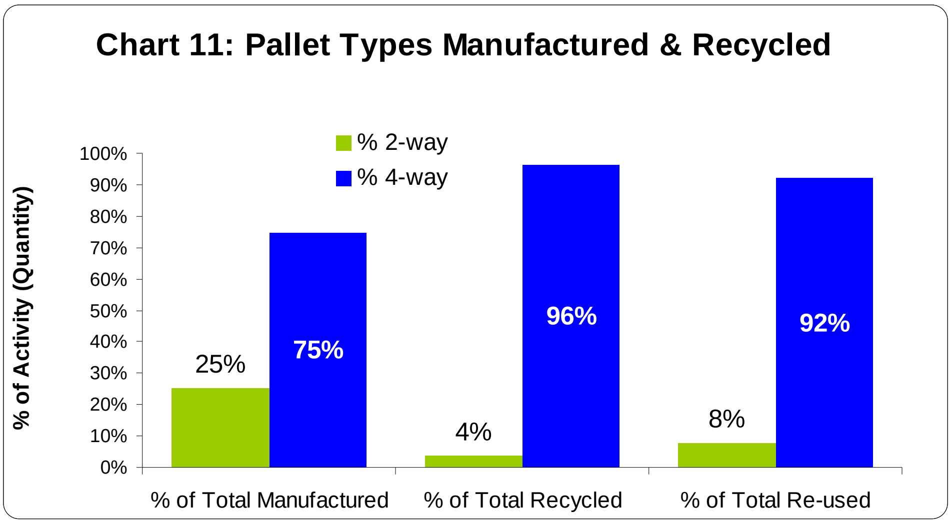
In 2010, it was estimated that 13% of all pallets, both newly manufactured and recycled combined, were 2-way entry with 87% reported to be 4-way pallets and this is presented graphically below.



These results are also very similar to those in the 2009 study where the percentage of 2-way pallets was 15% and 4-way 85%.

Based on the estimate of 75 million pallets manufactured and recycled in 2010, just over 10 million pallets were of the 2-way type with the remaining 65 million of the 4-way type.

Within these totals, differences in pallet type by type of activity were noted and are presented in chart 11 below.

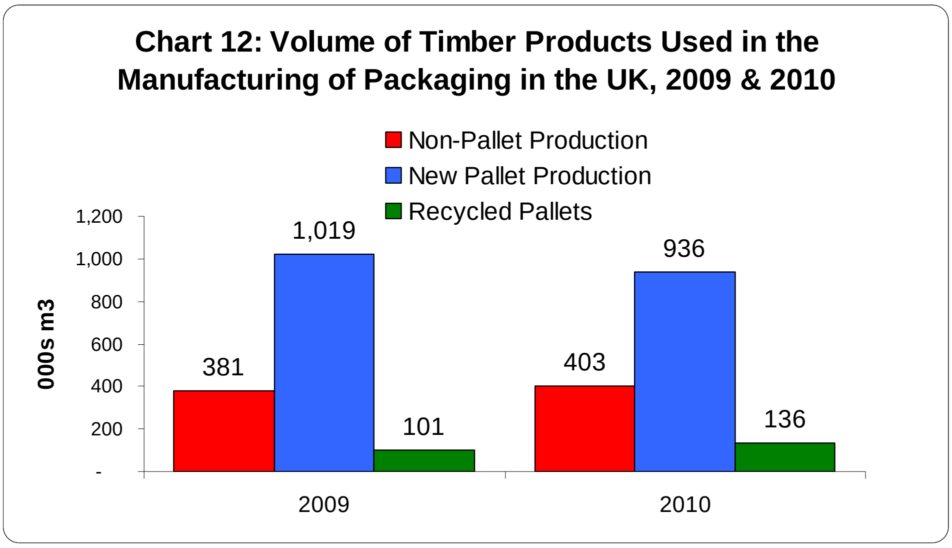


The greater quantity of recycled pallets in 2010 resulted in a higher number of 4-way pallets being recycled in 2010. Of the 71 million 4-way pallets manufactured, recycled and re-used in 2010, 42.5 million were recycled. This compares with the total of 63.7 million 4-way pallets manufactured, recycled and re-used in 2009, of which, 32.7 million were recycled, an increase of around 30%.

Estimates of Timber Consumption by UK Pallet Manufacturers

Timcon is part of the pallet and packaging community within Europe and reports regularly to both national and international bodies on the state of the UK market for packaging, which includes quantification of the volume of timber used in the industry. The Forestry Commission also gathers this information to measure timber utilisation (of all main markets) in the UK. Once again in 2010, the Wood Packaging Study asked Timcon and WMS members companies to quantify the volume of timber products used in their various activities.

This resulted in an estimated usage in 2010 of 1.48 million cubic metres of softwood, hardwood and panels products. This volume was separately identified by activity type and this shown in chart 12 below alongside the results from the 2009 study.



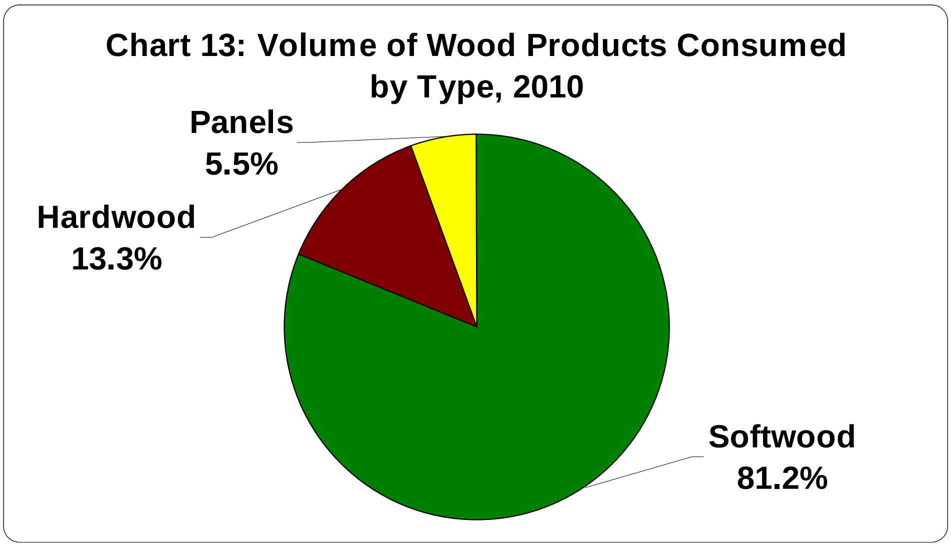
The total volume of timber and panel products consumed by the pallet and packaging industry in 2009 was nearly 1.5 million cubic metres, therefore timber usage was around 2% lower in 2010.

Whilst new pallet manufacture continues to consume the greatest volume of timber products - accounting for around 63% of total consumption of all packaging in 2010 - because of the lower quantity of new pallets produced in 2010 compared to 2009, the total volume of timber products used in new pallet manufacturing fell by just over 8%.

Higher quantities of recycled pallets in 2010 resulted in a greater volume of timber used in recycling. Timber usage increased by over a third and the average amount of timber used per recycled pallet also increased marginally in 2010 to $0.0031m^3$ per recycled pallet.

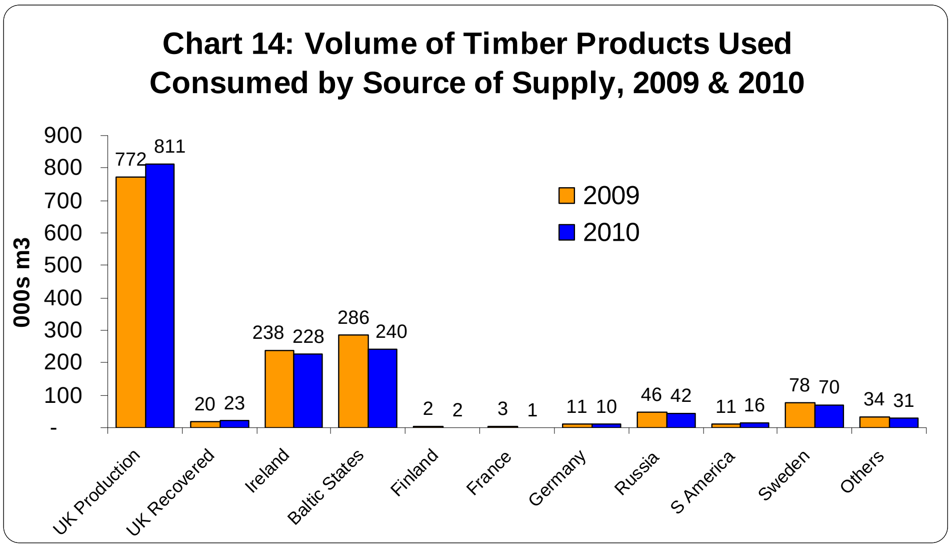
Of all timber products consumed by manufacturers of pallets and packaging materials, softwood is the most used product type.

Chart 13 below describes the percentage breakdown of the approximate 1.48 million cubic metres of timber products consumed in 2010.



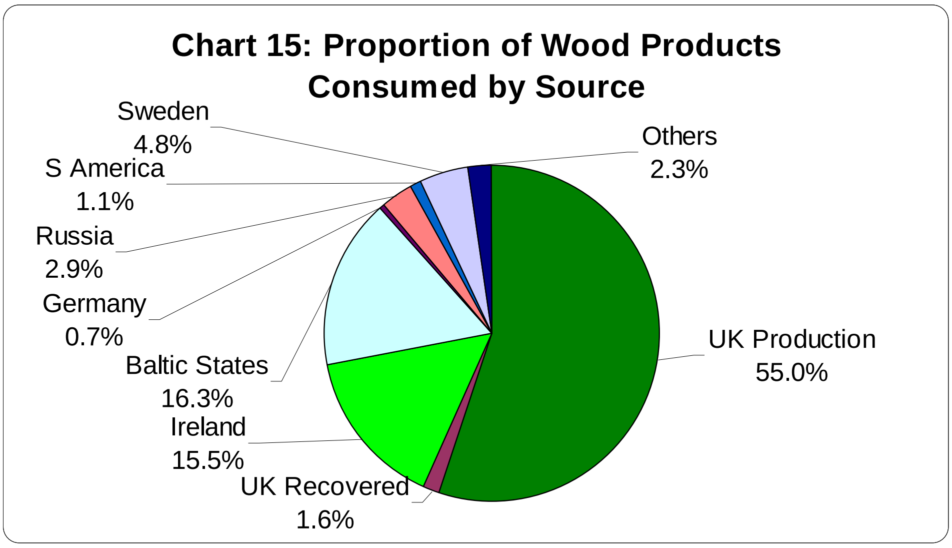
Hardwood usage in the packaging industry, in absolute terms and also the proportion of hardwood, grew in 2010. Hardwood volumes were around 16% higher and accounted for just over 13% of all timber and panel products usage.

Manufacturers were also requested to identify the source of timber products supplied and the estimate of consumption by source, by volume and for 2010 compared to 2009 is shown below.



UK produced timber products accounted for 55% of all pallets and packaging consumption in 2010, a rise from the 51% achieved in 2009. Timber products supply from all other overseas sources was lower in 2010 although the combined supply of UK produced, Irish and Baltic States' timber products, by virtue of the increase in UK produced, improved very slightly to 86.7% of the total in 2010.

The proportional breakdown of supply from all main sources is shown in chart 15.



Heat Treatment and Kiln Drying Capacity in the UK

The European pallet and packaging industry (FEFPEB) and the European Commission are in discussion regarding the possible extension of ISPM 15 for all intra-Community movements of wooden pallets and packaging. This proposal is designed to protect Europe's forests from the spread of invasive species of pests that can destroy trees.

There is an acceptance by all parties that this proposal has very significant trade and economic implications for Europe and the introduction of legislation to make heat treated packaging a mandatory requirement would need to be justified on scientific, economic and practical grounds.

As shown in this report, there is an important distinction between newly manufactured pallets and the entire parc of pallets in Europe, which includes recycled and re-used pallets. FEFPEB estimates that 450 million new pallets are manufactured within the EU each year, but the parc of pallets is in excess of 3 billion pallets. Hence, the question of available heat treatment capacity being adequate to meet the proposed extension of ISPM 15 depends very much on how recycled pallets are regulated. Discussions on proposed legislation continue, despite a recent industry-sponsored, in-depth study in Portugal involving respected plant health scientists which identified a negligible risk of re-infestation of forests from existing pallets.

As will be demonstrated in this section of the report, currently, the UK does not have sufficient existing capacity to heat treat all of its new pallet manufacturing and many other European countries are in a similar position.

Heat treatment capacity is predicted to continue to increase across Europe but it is likely that any extension of ISPM 15 by the European Commission would need to be restricted - on practical grounds alone - to NEW pallets and packaging, with the requirement for existing pallets to be repaired using heat treated timber components.

Consequently, within the UK, it was therefore of paramount importance that Timcon, the Forestry Commission and other bodies understood the extent to which UK manufacturers could respond to the requirement for newly manufactured wood packaging used in intra community trade within the EU to be heat treated to the ISPM15 standard.

Questions in the Wood Packaging Study survey for 2010 asked, “What is the cubic capacity of the drying chambers you possess able to fulfil ISPM15 standard?” and “What is the usual number of charges of heat treated wooden packaging that you complete in 24 hours?”

It was also asked what the maximum number of heat treated charges would be possible during the course of 24 hours.

The responses to these questions provided a basis for estimating the current output of heat treated pallets by Timcon manufacturing members and also determining a theoretical maximum output.

Using the quantity of heat treated pallets produced by respondents to the survey and estimating the quantity of heat treated pallets from non-respondents (by applying the proportion of HT pallets produced by respondents to the production of non-respondents), it was ascertained that the number of heat treated pallets estimated to have been produced in 2010 was approximately 7.7 million.

The number of new pallets manufactured in 2010 by Timcon manufacturers was estimated to be 25.4 million, consequently, the 7.7 million heat treated pallets represent around 30% of the total of new pallets produced.

Consequently, if it became a mandatory requirement to produce only heat treated pallets in the production of new pallets, Timcon manufacturers would need to increase heat treatment capacity by a factor of a little over 3. It should be noted that this does not include pallets made from timber heat treated by a third party. Depending on the demand for construction timber there could be a significant amount of kiln dried heat treated timber available from the sawmilling sector with which to make heat treated pallets. However, as first shown in the 2009 study, this constitutes a small proportion of current production.

In answer to the question on the maximum number of heat treated charges that could be conducted, it was determined that the current ‘usual’ activity could be increased by a factor of 1.89, and possibly doubled.

This would increase the output of heat treated pallets to around 14.5 million and bring the current (2010) maximum capacity utilisation for all Timcon manufacturers for these products to approximately 57%.

The position identified in the 2009 study has been confirmed in this 2010 study.

Timcon has advised FEFPEB that it estimates it would take 2 years for the UK pallet and packaging industry to be in a position to supply all of their output ISPM15 compliant for intra community movement.

In conclusion, the multiple demands to produce ISPM15 compliant pallets, kiln dried pallets and recycled pallets which are fit for purpose, place considerable pressure on manufacturers’ current productive capability.

New demands to provide ISPM15 compliant pallets would impact manufacturers’ capability to provide kiln dried pallets which in turn, as this Wood Packaging Study has revealed, would affect manufacturers' ability to maintain or increase the number of recycled pallets placed onto the market.

It is clear that future legislation on wood packaging, if required to be effective, would need to carefully take account of industry's ability to meet the demands placed upon it.

Annex I
Survey Questionnaire

Forestry Commission

timcon
timber packaging and pallet confederation

This short survey form provides you with the opportunity to add your information to that of other organisations in the pallets and packaging industry.
The results of this work are intended to measure the industry's capabilities opposite possible new EU legislation and help direct packaging, plant health and industry policy policy in the UK. The results will aslo help pallet and packaging suppliers to understand trends in the market and help companies to measure individual performance.

A confidential survey of TIMCON & Wood Packaging Material Marking Programme members on behalf of the Forestry Commission and Timcon. Individual company data will not be seen by Timcon members, Executive Committee or the Forestry Commission.

E-mail Survey Form - Please input the required information in grey, green and ochre boxes and save this form on your server/computer. Then click on the e-mail address survey@timbertrends.net below, and attach the saved file to your e-mail and send.

Where the question requires a percentage answer precise calculation is not necessary; you only need to give **your best estimate** from your everyday knowledge of your business

Questionnaire relates to activity in	2010

Q1 - Quantitative Data	Measure	Wooden Packaging Activity (carried out by yourself)			
		New Wooden Packaging Excluding Pallets	New Wooden Pallet Production	Recycled Wooden Pallets (Repaired, Newlife, remanufactured)	Re-used Wooden Pallets (not repaired or remanufactured)
a. Sales Turnover per activity in £	£				
b. No: Employees engaged per activity	Number				
c. Quantity of wood packaging items processed per activity	Number of units				
d. Timber consumption of all sources and types	Cubic Metres				

Q2 - % Produced by Type	Measure	New Wooden Packaging Excluding Pallets	New Wooden Pallet Production	Recycled Wooden Pallets (Repaired, Newlife, remanufactured)	Re-used Wooden Pallets (not repaired or remanufactured)
a. 2-way entry	% of Q1c	N/A			
a. 4-way entry	% of Q1c				

Q3 - % Produced by Size	Measure	New Wooden Packaging Excluding Pallets	New Wooden Pallet Production	Recycled Wooden Pallets (Repaired, Newlife, remanufactured)	Re-used Wooden Pallets (not repaired or remanufactured)
a. 1000 x 1200 or 1200 x 1000	% of Q1c	N/A			
b. 800 x 1200	% of Q1c				

Q4 - Recycled Wooden Pallets by Type	Measure	New Wooden Packaging Excluding Pallets	New Wooden Pallet Production	All Recycled & Reused Wooden Pallets
a. Repaired (less than 33% of components replaced)	% of Q1c	N/A		
b. Remanufactured (Newlife or remanufactured pallets from reclaimed wood more than 33% of components replaced)	% of Q1c			

Q5 -Timber Consumption by Source.	Measure	All Wooden Packaging
a. UK Production	% of Q1 d	
b. UK Recycled/Recovered	% of Q1 d	
a. Republic of Ireland	% of Q1 d	
b. Baltic States	% of Q1 d	
c. Finland	% of Q1 d	
d. France	% of Q1 d	
e. Germany	% of Q1 d	
f. Russia/Belorussia/Ukraine	% of Q1 d	
g. South America	% of Q1 d	
h. Sweden	% of Q1 d	
i. Other - specify	% of Q1 d	

Q6 - Percentage of Wood consumption by type	Measure	All Wooden Packaging
a. Softwood (coniferous species, e.g. pine, spruce)	% of Q1d	
b. Hardwood (non-coniferous species, e.g. poplar(aspen), birch alder)	% of Q1d	
c. Manufactured Wood (OSB, Plywood, Composite Blocks etc.)	% of Q1d	

Q7 - ISPM15 Capacity	Measure	All Wood Packaging
a. What is the cubic capacity of the drying chambers you posses able to fulfil ISPM15 standard? (Note this is the usable internal volume of all of your chambers)	Cubic Metres	
b. What is the cubic capacity of drying chambers that you *plan to install over the next 12 months*. (Note this is the usable internal volume of your proposed chambers)	Cubic Metres	
c. What is the usual number of charges of Heat Treated wooden packaging that you complete in 24 hours?	Number	
d. What is the *maximum* number of charges of Heat Treated wooden packaging that you could complete in 24 hours?	Number	

Q8 - ISPM15 Activity	Measure	New Wooden Packaging Excluding Pallets	New Wooden Pallet Production	All Recycled & Reused Wooden Pallets
a. What percentage of the wooden packaging activity that you carry out is carried out with ***bought in*** heat treated wood in accordance with the ISPM15 standard?	% of Q1c			
b. What percentage of all of the wooden packaging activity that you carry out is ***treated by you*** to ISPM15.	% of Q1c			

Q9 - Kiln Drying Capacity	Measure	All Wood Packaging
a. What is the usual number of charges of Kiln Dried (including Heat Treatment) wooden packaging that you complete in 24 hours?	Number	
b. What is the *maximum* number of charges of Kiln Dried wooden packaging that you could complete in 24 hours?	Number	

Annex II
Methodology

The approach to and the methodology used for this 2010 Wood Packaging Study was very similar to that used for the 2009 study, in order to facilitate meaningful comparisons between the two years.

The structure of the pallets and packaging manufacturing and recycling industry is different from many of the industries that operate in the UK economy.

The market comprises many small firms, a good number of middle-sized firms, larger firms and a number of very large firms operating within the industry. The activities of these companies are not homogenous, with differing emphases on manufacturing and recycling and also different ways of getting to market. This is exemplified by the difference between manufacturers and pallet pool operators, with manufacturers mostly selling their output while pallet pool operators only rent pallets for use by customers.

Consequently, the research methodology adopted for this work required a different approach from ‘normal’ stratified research sampling methods used in markets where there is less differentiation between companies.

There was also the important consideration to safeguard the results of the Wood Packaging Study from revealing – through detailed analysis – the likely individual response provided by the very large companies.

Consequently, as for the 2009 study an approach was developed which aimed to deliver information that was representative of the market; not skewed towards the few very large companies and at the same time protecting individual company data from view.

Data from individual respondents to the survey were aggregated to determine the scale of different layers, or strata, within the overall survey sample.

The survey data was augmented by the addition of data from the Timcon membership database which allowed estimates of turnover (among other features) to be made for the entire Timcon membership – but specifically, for manufacturing members of Timcon, as opposed to supplier members.

The calculation of turnover of Timcon members was made by taking the mid-point of each turnover band and simply aggregating the turnover of companies in each band to arrive at a notional total of turnover for the Timcon membership.

Where companies responded to the survey, their individual actual data was then reintroduced to the analysis, with the mid-point turnover figure for these individual companies withdrawn from the notional total.

Consequently, a highly representative turnover figure could be derived, notwithstanding that some companies would fall below the mid-point turnover mark while others would be above that mark.

This process of ‘adding-back’ individual survey results to the mid-point aggregate turnovers for each band resulted in a good estimate from which to establish the detailed analysis that followed.

Annex III
Prodcom and Comparison to the Wood Packaging Study

Prior to the work of the Wood Packaging Study, the only measure of the packaging industry's size was through the ProdCom series of reports published by the Office for National Statistics.

An initial study into the pallets and packaging market for the Forestry Commission in 2008, "To improve the accuracy of measuring the packaging and pallets market in the UK; for use in the programme of Improving Timber Utilisation Statistics" identified a relatively large standard error of estimation in ProdCom estimates. In that 2008 Forestry Commission report, which reviewed the Prodcom analysis for 2006, the total of pallets manufactured in the UK was 74.7 million. Using the standard error (in value) declared by ONS, this would, if converted to provide a possible range of volumes produced, result in a range in 2006 of between 67 and 83 million pallets.

This confirms that the Prodcom estimates are not precise. It also suggests – assuming the findings of this Wood Packaging Study are relatively representative – that the Prodcom Inquiry is not taking into account the entire market, when providing estimates.

Such a large variance in estimation is not uncommon in an industry such as the packaging industry which is highly populated with small to medium sized companies, but comparisons between ProdCom data and the output of the work of the Wood Packaging Study in 2009 and more recently for this 2010 report has revealed further discrepancies within the ProdCom measurement of the industry.

The composition of the Prodcom sample for the 2006 ProdCom report, stratified by number of employees, was follows:

No: of Employees	Total of All Businesses	Total Sampled
1-9	333	5
10-19	88	34
20-49	58	58
50-99	21	21
>100	6	6

All wooden container manufacturers employing 20 or more people formed part of the PRODCOM Inquiry.

This, apparently, guarantees that 85 of the largest companies in the industry contribute data to the Prodcom series. However, only 40% of companies employing between 10 and 19 employees were included in the Prodcom inquiry and only 5 companies employing less that 10 employees contribute data to the Prodcom inquiry. The low number of sampled companies in the smallest employee band is because of the requirement within the Prodcom Inquiry to limit the burden on small businesses.

ONS claim that allowance is made for the smaller companies, with estimates for that sector of the market included in the totals published.

The 2009 Wood Packaging Study concluded that Prodcom's measurement of a proportion of recycled pallets was insufficient. The causes for this were considered to be due to one or a number of factors.

These were,

- that the Prodcom Inquiry has failed to gather data from companies or operating units of companies that are engaged in pallet recycling, or

- Prodcom has incorrectly interpreted sales as being (mostly) newly manufactured pallets and made estimates based upon this incorrect assumption, or

- that some companies completing the Prodcom Inquiry have (incorrectly) omitted or mis-interpreted the requirement to report recycling activity.

Additional investigation resulted in a short interim report in March 2011 entitled, "Production of Pallets in the UK - A Short Report on the Differences between ProdCom and (the Wood Packaging Study for) Timcon".

This short report stated that the central difference between ProdCom and the Timcon Wood Packaging Study is with the quantity of recycled activity.

According to ONS, from 2008, "Repair and Maintenance" was to be a separate (from manufacturing) activity within ProdCom.

Consequently, the 57.9 million pallets produced as estimated by ProdCom for 2009 would, according to ONS, not have included recycled activity. The Wood Packaging Study estimated that the volume of recycled activity alone, in 2009, was 35 million units (revised).

Therefore, if the Wood Packaging Study was correct in terms of estimating recycled activity and ProdCom was correct in estimating newly manufactured pallets (at 57.9 million) the total produced in 2009 would have amounted to 92.9 million?

This is 24.3 million more than the Wood Packaging Study total for both newly manufactured and recycled.

The immediate conclusion from this is that either ProdCom has not removed all of the recycled activity from its production number of 57.9 million, or the Wood Packaging Study has underestimated the total of newly manufactured?

Further contact with ONS confirmed the suspicion that ProdCom was not including all repaired and re-manufactured (recycled) pallets. According to ONS, only sales of new pallets (and possibly pallets with a substantial amount of repair) would be counted by ProdCom. The term "sales" is used as a proxy for production as only manufacturers' data are collected.

Consequently, there continued to be confusion over **where** the data on repaired and reconditioned pallets are located within the ProdCom series. The Office for National Statistics indicated in 2007 that these should be quantified in ProdCom Division 33.19, a separate division for the repair of a number of different products. However, ONS did not give any timing for this change. Consequently, it appeared that repaired and reconditioned pallets were still being quantified within ProdCom Division 16.24, along with new manufactures beyond 2008.

There was a clear need to gain further clarification and ONS confirmed that pallet repairs should not be classified as production but placed within Division 33.19 of ProdCom (not Division 16 pallet production) under the heading “repair or reconditioning of wooden pallets, shipping drums or barrels, and similar items”.

However, ONS do not collect these data as there is not a requirement placed upon it by Eurostat (the European body responsible for collection of EU statistics) to do so.

Further discussion with ONS has revealed that pallet rentals would not be included in Division 16 (pallet production) either. This activity would be coded to Division 77.39 “Renting and leasing of other machinery, equipment and tangible goods n.e.c”. This includes pallets.

Intriguingly, if the recycled activity of the **pool operators** is deducted from the totals in the Wood Packaging Study for 2009, this leaves a quantity that is similar to the number of items produced within ProdCom, but its composition is very different.

In the Wood Packaging Study, there is a clear identification of newly manufactured and recycled.

Although pool operators contribute to the total of recycled pallets, the majority of recycling is undertaken by Timcon manufacturing members, therefore, if this analysis is correct, ProdCom has been counting all activity as manufacturing but in reality it is a mixture of newly manufactured and recycled.

Two of the three largest pool operators were contacted and clarification sought over their contact with ProdCom and it can be stated that Pool operators do not contribute to ProdCom, either in Division 16 or Division 33 or any other Division.

Consequently, the repairs to pallets made by pool operators are not recorded at all by ProdCom.

It is also very likely that a pallet manufacturer’s £ sales value of annual production in the ProdCom Inquiry would include newly produced pallets and repaired and re-manufactured pallets (and possibly re-used) all of which are likely to be reported as sales.

ProdCom claim to gather information from all companies with more than 20 employees and state that less than 2% of the many smaller companies in the industry are contacted, with estimates of their turnover made.

If it is assumed that the identities of the ProdCom respondents for pallet production were broadly the same as for the Wood Packaging Study, this would leave 12 companies in the ProdCom Inquiry not included in the Wood Packaging Study, each with an average turnover of £3.3 million. This, based on industry experience, would seem unlikely.

It would appear that there are some estimation anomalies within the ProdCom for pallets.

Annex IV
Wood Packaging Production

Timcon is required to provide estimates of wood packaging production to the Department for Environment, Food and Rural Affairs (DEFRA) as part of its packaging waste responsibilities.

The following four tables provide information for 2009 and 2010, based upon the published ProdCom estimates, but also provide pallet making estimates derived from the Wood Packaging Study.

If the ProdCom totals have mis-recorded recycling activity over the years as suggested in this report, the declarations to DEFRA of packaging waste emanating from the pallets and packaging market have been overstated for many years.

In 2009, the ProdCom estimate of production of all packaging materials in tonnes was 1.26 million.

Substituting the pallets data (including recycling) from the Wood Packaging Study for the pallets data in ProdCom for 2009 and maintaining ProdCom data for all other non-pallets packaging, results in a tonnage of 0.89 million – a difference of 29%.

For 2010, using the same basis for comparison, the ProdCom estimate was 1.29 million tonnes and the Wood Packaging Study estimate indicated that 0.84 million tonnes were produced – a difference of 35%.

The ProdCom for 2010, being provisional does not include imports and exports which are therefore excluded from the tables shown for this year.

It should be noted that the tonnage (and values and timber usage) estimated from the Wood Packaging Study is a combination of material used in newly manufactured pallets and the additional material that is used in recycling. For recycled pallets, only the additional material used for repair is counted – not all of the material for the whole pallet. This is because the part (most) of the pallet that was not repaired would already have been accounted for previously in production.

In the following, “UK Wooden Packaging Production Estimates – **Wood Packaging Study & ProdCom**” tables, the Wood Packaging Study values, items and tonnages have been inserted into the flat pallets section and the ProdCom values are used for other categories of packaging, e.g. cases, drums.

In the “UK Wooden Packaging Production Estimates – **ProdCom**” tables, none of the Wood Packaging Study values, items and tonnages have been inserted and all data are from ONS.

UK Wooden Packaging Production Estimates 2009 - ProdCom

Timcon Estimated Annual Growth			
Source Data: Timcon Wood Packaging Study 2010 & ProdCom PRA 16400 "Wooden Containers".	**£,000**	**Items (,000)**	**2009 tonnes (,000)**
1133 Flat Pallets & Pallet Collars of wood			
UK manufacturers sales	279,217	57,935	985
Exports	9,838	2,041	35
Imports	12,801	2,656	45
Imports less exports	2,963	615	10
UK Net Supply	282,180	58,550	995
1135 Box Pallets & Load Boards of Wood			
UK manufacturers sales	7,339	1,389	24
Exports	2,685	508	9
Imports	2,845	539	9
Imports less exports	160	30	1
UK Net Supply	7,499	1,420	24
1213 Cases, Boxes & Crates			
UK manufacturers sales	76,108	23,921	139
Exports	4,545	1,428	8
Imports	3,611	1,135	7
Imports less exports	-934	-294	-2
UK Net Supply	75,174	23,627	137
1215 Cable Drums of Wood			
UK manufacturers sales	17,288	3,273	115
Exports	2,549	483	17
Imports	756	143	5
Imports less exports	-1,793	-339	-12
UK Net Supply	15,495	2,934	125
1250 Casks, Barrels etc excluded			

Total Exports	**19,617**		**69**
Total Imports	**20,013**		**66**
Imports-Exports			
Total UK Net Supply	**380,348**		**1,281**

Total UK Manufacturers Sales	**379,952**		**1,262**

UK Wooden Packaging Production Estimates 2009

Wood Packaging Study 2010 &ProdCom 2009

Timcon Estimated Annual Growth			
Source Data: Timcon Wood Packaging Study 2010 & ProdCom PRA 16400 "Wooden Containers".	**£,000**	**Items (,000)**	**2009 tonnes (,000)**
1133 Flat Pallets & Pallet Collars of wood			
UK manufacturers sales	250,256	68,646	612
Exports	9,838	1,882	35
Imports	12,801	2,320	45
Imports less exports	2,963	438	10
UK Net Supply	253,219	69,084	622
1135 Box Pallets & Load Boards of Wood			
UK manufacturers sales	7,339	1,389	24
Exports	2,685	508	9
Imports	2,845	539	9
Imports less exports	160	30	1
UK Net Supply	7,499	1,420	24
1213 Cases, Boxes & Crates			
UK manufacturers sales	76,108	23,921	139
Exports	4,545	1,428	8
Imports	3,611	1,135	7
Imports less exports	-934	-294	-2
UK Net Supply	75,174	23,627	137
1215 Cable Drums of Wood			
UK manufacturers sales	17,288	3,273	115
Exports	2,549	483	17
Imports	756	143	5
Imports less exports	-1,793	-339	-12
UK Net Supply	15,495	2,934	125
1250 Casks, Barrels etc excluded			

Total Exports	**19,617**		**69**
Total Imports	**20,013**		**66**
Imports-Exports			**-3**
Total UK Net Supply	**351,387**		**908**

Total UK Manufacturers Sales	**350,991**		**889**

UK Wooden Packaging Production Estimates 2010 - ProdCom

Timcon Estimated Annual Growth			
Source Data: Timcon Wood Packaging Study 2010 & ProdCom PRA 16400 "Wooden Containers".	**£,000**	**Items (,000)**	**2010 tonnes (,000)**
1133 Flat Pallets & Pallet Collars of wood			
UK manufacturers sales	294,732	59,665	1,014
Exports			
Imports			
Imports less exports	0		
UK Net Supply	294,732	59,665	1,014
1135 Box Pallets & Load Boards of Wood			
UK manufacturers sales	9,974	1,172	20
Exports			
Imports			
Imports less exports	0		
UK Net Supply	9,974	1,172	20
1213 Cases, Boxes & Crates			
UK manufacturers sales	78,807	24,769	144
Exports			
Imports			
Imports less exports	0		
UK Net Supply	78,807	24,769	144
1215 Cable Drums of Wood			
UK manufacturers sales	17,493	3,312	116
Exports			
Imports			
Imports less exports	0		
UK Net Supply	17,493	3,312	116
1250 Casks, Barrels etc excluded			

Total Exports	**0**		**0**
Total Imports	**0**		**0**
Imports-Exports			
Total UK Net Supply	**401,006**		**1,294**

Total UK Manufacturers Sales	**401,006**		**1,294**

UK Wooden Packaging Production Estimates 2010 -
Wood Packaging Study & ProdCom

Timcon Estimated Annual Growth			
Source Data: Timcon Wood Packaging Study 2010 & ProdCom PRA 16400 "Wooden Containers".	**£,000**	**Items (,000)**	**2010 tonnes (,000)**
1133 Flat Pallets & Pallet Collars of wood			
UK manufacturers sales	267,513	75,139	564
Exports			
Imports			
Imports less exports	0	0	0
UK Net Supply	267,513	75,139	564
1135 Box Pallets & Load Boards of Wood			
UK manufacturers sales	9,974	1,172	20
Exports			
Imports			
Imports less exports	0	0	0
UK Net Supply	9,974	1,172	20
1213 Cases, Boxes & Crates			
UK manufacturers sales	78,807	24,769	144
Exports			
Imports			
Imports less exports	0	0	0
UK Net Supply	78,807	24,769	144
1215 Cable Drums of Wood			
UK manufacturers sales	17,493	3,312	116
Exports			
Imports			
Imports less exports	0	0	0
UK Net Supply	17,493	3,312	116
1250 Casks, Barrels etc excluded			

Total Exports	**0**		**0**
Total Imports	**0**		**0**
Imports-Exports			**0**
Total UK Net Supply	**373,787**		**843**

Total UK Manufacturers Sales	**373,787**		**843**

If the results of the Wood Packaging Study are more representative of activity in the packaging market, especially in pallet supply, the ProdCom totals would have over-estimated the weight of packaging material produced by at least a third in 2010 (1.294 million tonnes in ProdCom and 0.843 million tonnes in the Wood Packaging Study).