Wood processing in the Irish Republic: a survey report

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1. Introduction

This paper reports the nature of, and preliminary results from, a recent survey of wood-processing plants in the Irish Republic, carried out as part of a large research study of the role of forestry in rural development in less favoured areas in both parts of Ireland and in Scotland (see Ní Dhubháin, this issue). Similar surveys of wood processors (and of forest contractors) were carried out almost simultaneously in Northern Ireland and in Scotland, but this paper is restricted to the processing sector in the Republic, in the interests of space and homogeneity. The objective of the survey was to investigate the relationship between these enterprises and the rest of the rural economy, either through the purchase of input from, and sale of output to, other rural sectors, or through the maintenance of rural employment.

In the Republic of Ireland, the benefits of forestry employment, especially in the more deprived areas of the West, have been widely recognised amongst policy-makers since the 1930s. The employment potential of forestry was also a major objective of the EC Western Package and more recently, the 1989-1993 Forestry Operational Programme. When large-scale afforestation started in the 1950s, increased attention was given to the contribution of the forestry sector towards manufacturing development in the wood-processing industries (Mather, 1993). Until the 1960s, the wood processing sector consisted of large number of small sawmills located in rural areas, producing non-standardised products. Because production from these plants could not compete with imported wood products, and since forecasts of domestic wood supplies were promising, government assistance was sought and often obtained for the establishment of modern wood-processing plants. However, as a significant number of these new plants were located near towns and cities, this could have reduced the economic benefits of afforestation to rural areas. In recent years, plantations established just before or after the Second World War have matured, and the quantity of wood processed is rapidly increasing (Gardiner, 1991). This has led to the steady development of an Irish wood processing industry consisting of sawmills and wood-based panel mills.

This paper consists of four main sections. The next section presents the survey procedure, Section 3 deals with the analysis of the survey findings, and in more detail with issues such as utilised capacity, employment, wood

Table 1. *The Sawmilling Industry in the Republic of Ireland: Population and Sample*

Sawmills	*Population*	*Sample*	%	*Response*	%
Small (up to 10,000m^3)	51	10	(20)	7	(70)
Medium (10-60,000 m^3)	8	5	(62)	3	(60)
Large (over 60,000 m^3)	8	3	(38)	3	(100)
TOTAL	67	18	(100)	13	(72)

supplies, and the type and destination of output. The last section discusses some conclusions derived from the findings of this survey.

2. Survey Procedure

Data was collected for sawmills, defined as enterprises which convert roundwood timber (home-grown or imported) into "commercially desirable rectangular products" (IDA, 1983).

2.1. Sampling

The first task of the survey was the development of a sampling procedure. A list of 67 sawmills in the whole of the Republic of Ireland, stratified by size and geographical location, was provided by Coillte. Of these, it was decided to survey a non-random sample of 18, classified by size (throughput of wood) – see Table 1. As the information sought was often confidential, firms were approached by a covering letter which indicated the value of the research project both to the study-areas and the wood-processing industry, and gave an assurance that all information supplied would be treated in strict confidence. The survey was carried out in March 1993, with personal visits by two interviewers. The overall response rate was 72 percent, due to relatively lower responses in the smaller-capacity sawmill size classes (Table 1). Data collected referred mainly to year 1991.

3. Analysis

3.1. Utilised Processing Capacity

Table 2 indicates the aggregate available and utilised processing capacities of the sawmills participating in the survey.

Although small sawmills represented 54 percent of the sample, they only accounted for 5 percent of aggregate processing capacity, of which only 75 percent was utilised. Medium-sized sawmills accounted for 22 percent of total capacity, and were slightly more capacity-efficient than their smaller counterparts, with 78 percent of their capacity being utilised in 1991. Large sawmills accounted for 73 percent of the total capacity considered by the survey, and in terms of utilised capacity, they were the most efficient category, with 86 percent of their

Table 2. *Utilisation of Wood Processing Capacity: Republic of Ireland, 1991*

Source: 1993 CAMAR Study Survey

Sawmills	*Processing Capacity ('000m^3)*	*Number of mills*	*Aggregate available capacity ('000m^3)*	*Aggregate utilised capacity ('000m^3)*	*Utilised capacity as % of available capacity*
Small	under 10	7	29	22	75
Medium	10-60	3	126	98	78
Large	over 60	3	426	365	86
Total		13	581	485	83

Sawmill size	Harvesting	Sawmilling	Marketing	Transport	Admin.	Other	Total
Small	0	52	2	4	8	1	67
Medium	0	92	3	4	5	0	104
Large	50	254	14	20	23	0	361
Total	50	398	19	28	36	1	532

Table 3. *Number of Employees (FTE's), by Sawmill Size : Republic of Ireland, 1991*
Source: 1993 CAMAR Study Survey

processing capacity being utilised in 1991. Overall, the (weighted) average utilised capacity of the sawmill sector was 83 percent.

3.2. Employment Characteristics

The surveyed sawmill workforce accounted for a total of 532 employees (full-time equivalents, FTEs) (Table 3). The level of employment in primary production (sawmilling, harvesting), as opposed to service operations (administration, sales and marketing etc.) treats the latter (loosely) as "overheads". Small mills accounted for 13 percent of total employment (compared to 5 percent of capacity – Table 2), while medium-sized mills accounted for 19 percent and large mills for 68 percent of total employment (compared to 30 and 73 percent of total capacity).

The small and medium-sized sawmills did not directly harvest any of their timber inputs. In the small sawmills, 78 percent of the workforce was employed in sawmilling and the remaining 22 percent in service activities. An even higher 88 percent of the workforce in medium-sized sawmills was employed in sawmilling. In large sawmills, 84 percent of the workforce were involved in timber harvesting and sawmilling.

Unit labour costs (Table 4), clearly indicate economies of scale in the sawmill sector, with such costs in the "small" mills four times that of the "large" mills. Unit labour costs in "medium" sawmills are also high relative to that of the large mills.

3.3. Wood supply

Volumes, types, and location of wood supplies (including imports) were identified with a view to investigating demand for raw material by mill size, as well as the economic relationship between these enterprises and other aspects of the rural economy and landscape.

In 1991, Irish sawmills, processed almost exclusively softwood (Table 5, right-hand column). The small-size category purchased 22,000m^3, or 5% of total supplies to the sample, while

Sawmill Size	Sum of Processing Capacity (000m^3)	Sum of Wage Costs (£'000)	Unit Labour Costs (£/m^3)
Small*	24	381	16
Medium	126	823	7
Large	426	1540	4
Total	576	2744	5
* Figures adjusted for non respondents			

Table 4. *Unit Labour Costs by Sawmill Size: Republic of Ireland, 1991*
Source: 1993 CAMAR Study Survey

Table 5. *Volume and Type of Wood Supplies by Sawmill Size: Republic of Ireland, 1991*

Source: 1993 CAMAR Study Survey

	Volume of Supply Type ('000m^3)					
Sawmill size	*Pulpwood*	*Palletwood*	*Small sawlog*	*Large sawlog*	*Total*	*% soft wood*
Small	3	5	8	6	22	98
Medium	11	30	30	27	98	100
Large	59	196	37	73	365	100
Total	73	231	75	106	485	100

98,000m^3 (20 percent) was acquired by the medium-size sector. The large mills surveyed accounted for the remaining 75% of total wood supplies. Palletwood was the most commonly used form of wood, due to the high volumes utilised by the large processors. On the other hand, small and medium-sized mills mainly processed small sawlogs, taking half the aggregate supplies. Pulpwood and small sawlogs each accounted for 15 percent of total wood supply, while a further 22 percent was in the form of large sawlogs.

The geographical source of wood supplies (Table 6) indicates the relationship between the processing sector and the regional economy. Only 14,000m^3, (3 percent of total supplies) were imported by the surveyed sawmills. The remainder was split evenly between local (within 30 miles) and more distant national sources, although differences did occur within the various size sectors. Small-sized sawmills seemed able to obtain a slender majority of their supplies locally, whereas medium-sized mills purchased 58 percent of their supplies from without 30 miles. Large mills also obtained about 50 percent of wood input from their local area; however, due to their size they were directly responsible for 78 percent of local timber marketings.

It seems that in general, small mills tend to favour the more valuable wood types, i.e. the larger-diameter small and large sawlogs, possibly in order to produce specifically for targeted "niche" markets which reward better the use of higher-value wood supplies. On the other hand, low-cost production seems to be characteristic of the large sawmillers.

3.4. Output

Table 7 indicates output volume by size of sawmill. The sawmills surveyed produced a total of 208,000m^3 of sawn timber in 1991. Of this, the small mill-size category was responsible for 7 percent (including 100m^3 of sawn hardwood). Medium-sized sawmills

Table 6. *Location of Supply Sources by Sawmill Size: Republic of Ireland, 1991*

Source: 1993 CAMAR Study Survey

	Volume of supplies ('000 cu.m.) sourced from:			
Sawmill size	*Within 30 miles*	*Rest of the Republic*	*Imported from Northern Ireland*	*Total*
Small	12	8	2	22
Medium	41	57	0	98
Large	183	169	13	365
Total	236	234	15	485

('000m³)				
Sawmill size	*Sawn softwood*	*Sawn hardwood*	*Softwood residues*	*Total*
Small	14	0.1	7.9	22
Medium	39	0	59	98
Large	154	0	211	365
Total	207	0.1	277.9	485

Table 7. *Volume of Output by Output Type and Sawmill Size: Republic of Ireland, 1991*
Source: 1993 CAMAR Study Survey

contributed 40,000m^3 (19 percent) of total softwood output, whilst the large mills surveyed were responsible for 154,000m^3 (74 percent). Of the 277,000m^3 of residue output, the large sawmills produced a rather higher proportion than they did of sawnwood; the small mills produced far less residue per cubic metre of timber output compared to large plants, or at least sold a lower proportion.

In order to determine physical and monetary flows between sectors, the survey attempted to determine the industrial and geographical destination of sales of processed timber (Table 8). With regard to sawmills, the survey revealed that pallets and packaging were the largest output categories overall, with just over 100,000m^3 (48 percent of total output). Construction was the second largest market, accounting for over 25 percent of total production, while fencing came third, with 20 percent. However, differences exist between mill-size categories. Construction was the principal market for the small mills, accounting for 43 percent of output. The furniture market was exclusively provided for by these mills, although only 2 percent of their output was sold in this form. The largest markets for the medium-sized mills were pallets and packaging (44 percent of output) and fencing (37 percent). The largest market outlet for large mills was also pallets and packaging. Within all the markets, except the "niche" furniture sector, large mills dominated in terms of market share.

With regard to geographical destination of output sales (Table 8), surveyed sawmills sold 54 percent of their total output within the Republic (most at a distance of more than 30 miles from the plant), and exported a further 33 percent to Great Britain, with the rest to Northern Ireland. Eighty-one percent of small sawmill output was sold locally (all market sectors represented), with almost all of the remainder sold within Ireland. Medium-sized mills sold 38 percent of their output (including most of construction and fencing sales) elsewhere in the Republic, whilst a further 30 percent (mainly pallets) was exported to England. The remainder was split evenly between local sales (17 percent), and exports to Northern Ireland (31 percent). The large sawmills were notably absent in local markets, selling only 2 percent of their output there, but the majority (48 percent) of their output was sold within the Republic, (90 percent of construction, and a third of all other products sales respectively). The remainder (36 percent) was exported to Great Britain.

Table 8. *Geographical Destination of Output by Volume and Sawmill Size: Republic of Ireland, 1991*

Source: 1993 CAMAR Study Survey

Sawmill size	Market sector	Volume of output ('000m³) sold:					
		Within 30 miles	*Within ROI*	*To NI*	*Exported to Great Britain*	*Exported to elsewhere*	*Total*
Small	Construction	4595	1110	96	0	0	5801
	Pallets & Packaging	1236	638	93	0	0	1967
	Fencing	5037	755	0	0	0	5792
	Furniture	308	0	0	0	0	308
	Other	300	0	0	0	0	300
	Subtotal	11476	2503	189	0	0	14168
Medium	Construction	1000	4300	0	0	0	5300
	Pallets & Packaging	4660	1980	1320	9240	0	17200
	Fencing	165	7472	4230	2683	0	14550
	Board Mills	0	1160	290	0	0	1450
	Other	1000	0	0	0	0	1000
	Subtotal	6825	14912	5840	11923	0	39500
Large	Construction	130	37398	2047	2047	0	41622
	Pallets & Packaging	2200	26124	5581	39625	7410	80940
	Fencing	195	6966	4979	6934	1950	21024
	Other	0	2808	312	7280	0	10400
	Subtotal	2525	73296	12919	55886	9360	153986
All sawmills	Construction	5725	42808	2143	2047	0	52723
	Pallets & Packaging	8096	28742	6994	48865	7410	100107
	Fencing	5397	15193	9209	9617	1950	41366
	Board Mills	0	1160	290	0	0	1450
	Furniture	308	0	0	0	0	308
	Other	1300	2808	312	7280	0	11700
	Total	20826	90711	18948	67809	9360	207654

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4. Summary and Conclusions

This paper reports a recent survey of wood processing plants in the Republic of Ireland, with questionnaire information for a 26 percent sample of main plants. Survey results provide significant information about the structure and characteristics of the different sizes of sawmill in the Republic, as well as their relationship with the rural economy.

The small-sized segment of the sawmill sector represents a very high proportion of total number of plants. However, at least in the survey sample, it accounted for a very low share of total processing capacity (5 percent), produced a similar share of total output volume and employed 13 percent of the sector's labour force. The level of capacity utilisation is the lowest in this sector, whilst labour cost per unit is the highest. On the other hand, the wood-conversion rate is relatively high. However, supplies tend to favour the more expensive wood types, whilst output (mainly construction and fencing) satisfies "niche" local markets. The continued survival of small-sized sawmills suggests the presence of a dual market-structure. It would certainly seem that the ability to identify and manipulate target markets is crucial to the small-size categories of sawmills, since these mills do not seem to be competitive in the major markets.

Medium-sized sawmills account for a third of total processing capacity, and their capacity utilisation is marginally better than that of small sawmills. Wood supplies are almost equally distributed between palletwood and sawlogs, while most of their output (mainly construction and fencing) is either exported or sold at a distance of more than 30 miles from the plant.

Large sawmills appear in the survey results as modern, low-cost, export-oriented wood processors. They account for a significant number of jobs on a full-time equivalent basis, and their production is characterised by comparatively low labour costs per

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unit. Their supplies mainly consist of lower-value home-grown, but not necessarily local, timber, while much of their output (50 percent) is exported. In general, large plants seem to enjoy a strong competitive situation. Cost-efficiency allows them to export most of their production; the mills contribute to the rural economy with regard to input purchases, output sales, and employment provision, The input, output, and employment shares of the small mills seem to be quite low. However, their economic activity is characterised by a strong local element, and in the case of output, a high degree of production flexibility and dependence on niche markets. The medium-sized sector seems to be in an intermediate position, not competitive compared to large plants, and not flexible compared to small mills. Its prospects do not seems very favourable because its market share may be penetrated by larger, more efficient processors.

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