

Economic Benefits of the Forestry Industry in Georgia: 2001

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Georgia Forestry Commission

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Executive Summary

Georgia's forestry industry has many components, which interact with all other sectors of the economy in complex ways. The purpose of this analysis is to: (1) define boundaries of the forestry industry by listing those components, (2) quantify the level of economic activity conducted by them, and (3) estimate economic activity supported in all Georgia sectors by the industry's activities.

There are several industry classification systems used in the data sources needed for this analysis; groups were formed to encompass, to the extent possible, the same components in each system. Those groups, and the level of economic activity represented by them, are shown in Table E-1 for 2001. Economic activity is measured by output (similar to sales revenue), employment, and income (defined as wages and salaries including benefits plus proprietor income). These measures are traditionally used in this type of analysis.

Table E-1 shows the forestry industry employed 77,266 in all forestry industry sectors combined, paid an annual income of over \$3.6 billion, and supported total sales revenue of over \$19.5 billion.

The activities in the sectors shown in Table E-1 bring dollars into the state, which recirculate in a process called the "multiplier effect." The recirculation touches all major industry sectors as goods and services are bought and sold to meet increased demands by businesses and households. The result of the multiplier effect, given by total impacts (which includes the direct impacts), is also measured by output, employment, and income (Table E-2).

Economic activity, including the multiplier effect, supported by the forestry industry in Georgia is almost \$30.5 billion. This activity employs 204,065 people whose income is almost \$7.7 billion.

**Table E-1
Georgia Forestry Industry Economic Activity: 2001**

<u>Sector</u>	<u>Output</u>	<u>Employment</u>	<u>Income</u>
Forest Products (Greenhouses & Nurseries)	\$274,653,024	1,898	\$89,615,368
Logging Camps and Logging Contractors	\$950,030,080	5,258	\$157,755,760
Sawmills and Wood Preservation	\$2,348,375,296	7,689	\$313,189,888
Millwork	\$882,288,512	5,037	\$174,317,328
Veneer and Plywood	\$1,031,417,792	5,105	\$373,540,480
Engineered Wood	\$703,288,256	3,442	\$139,954,944
Containers	\$466,563,040	3,149	\$79,615,280
Mobile Homes	\$930,612,096	5,461	\$167,524,496
Prefabricated Wood Buildings	\$81,591,752	627	\$14,299,701
Pulp Mills	\$929,370,112	2,119	\$172,273,936
Paper Mills, Except Building Paper	\$2,056,720,768	5,465	\$405,871,104
Paperboard Mills	\$1,613,578,880	3,791	\$273,955,840
Paperboard Containers and Boxes	\$1,951,888,896	7,992	\$411,236,736
Bags	\$1,301,681,280	3,786	\$171,214,736
Stationery	\$431,200,928	1,735	\$74,938,984
Other Converted Paper	\$2,113,644,800	4,468	\$263,835,216
Wood Kitchen Cabinets	\$319,743,744	3,018	\$85,710,184
Woodworking Machinery	\$38,392,980	240	\$11,896,424
Paper Industries Machinery	\$15,454,385	108	\$7,079,120
Household Furniture	\$273,165,344	2,527	\$64,588,244
Mattresses and Bedsprings	\$336,644,192	1,563	\$71,981,440
Office Furniture	\$452,982,912	2,695	\$98,470,472
Burial Caskets and Vaults	\$18,736,500	93	\$2,813,828
Total	\$19,522,025,569	77,266	\$3,625,679,508

Source: Georgia Department of Labor ES202 data files for 2001, and Georgia Tech's Economic Development Institute

Table E-2
Total Benefits by Major Industry Sector

<u>Sector</u>	<u>Output</u>	<u>Employment</u>	<u>Income</u>
Agriculture	\$356,398,720	3,670	\$121,064,880
Mining	\$14,044,199	77	\$3,706,434
Construction	\$310,115,776	4,875	\$164,600,112
Manufacturing	\$20,457,463,808	81,270	\$3,786,980,864
Transportation and Public Utilities	\$2,094,322,816	14,806	\$634,078,784
Wholesale and Retail Trade	\$2,836,742,144	42,260	\$1,198,292,736
Finance, Insurance, and Real Estate	\$1,619,370,752	8,681	\$332,911,744
Services	\$2,562,641,152	45,062	\$1,336,142,592
Government	\$208,323,392	1,956	\$82,499,856
Other	<u>\$12,969,080</u>	<u>1,408</u>	<u>\$12,969,080</u>
Total	\$30,472,391,839	204,065	\$7,673,247,082

Source: Georgia Tech's Economic Development Institute

Section 1

Introduction

Georgia’s forestry industry contains many components and supports a significant proportion of the state’s economic activity. This analysis quantifies that activity in terms of economic output, employment, and household income where economic output is defined as business revenues and household income is defined as wages, salaries (including benefits), and proprietor income.

The first step in this process is to define the limits of what constitutes the “forestry industry.” This is not as simple a task as it may appear because the borders of one industry overlap those of other industries, and also because we are now in a transition period from the Standard Industrial Classification (SIC) system to the North American Industrial Classification System (NAICS). Because some of the information on which this analysis is based uses one system and other data use another, the industry definition must be consistent between systems. How this was done and its results appear in Section 2, which also contains estimates of how much economic activity is occurring in each component of the forestry industry.

After the industry was defined and activities quantified, the total economic activity supported by the forestry industry was estimated. Total activity is generally referred to as the “multiplier effect.” This effect occurs whenever dollars are brought into the state’s economy and recirculated before leaking out. Section 3 explains the methodology used to estimate total economic activity and provides perspective on how important these activities are in the overall Georgia economy.

Section 2

Definition of the Forestry Industry in Georgia

The forestry industry in Georgia has many diverse components. Complicating that situation are the multiple frameworks in which a definition of the forestry industry must be used to estimate its impact. These frameworks include the North American Industrial Classification System (NAICS), the Standard Industrial Classification (SIC) system, and the industry classification system used by the Federal Bureau of Economic Analysis (BEA) input-output model. This definition is used in each of these systems as consistently as data allow.

A general definition of the forestry industry would include all service and manufacturing activity related to the growth, harvesting, and use of forest materials that would not exist in Georgia without the presence of extensive forests or forest industries. For example, the paper-making industry would be a part of the forestry industry definition, but retail sales of that paper would not. States without commercial forests still sell paper within their borders.

Therefore, the forestry industry definition used in this analysis includes these broad sectors: forestry, logging, wood products (such as dimension lumber), paper products, manufactured housing, furniture, other miscellaneous wood products, and woodworking and papermaking machinery. Since future updates will rely on the NAICS system, the detailed industry definition will follow that system. The NAICS codes and descriptions comprising the detailed definition are provided in Table 2-1.

The organization of the industries on this list is similar to the SIC system in that the number of digits of the NAICS codes increases as the level of detail increases. The highest level of detail practicable is the six-digit level, which is roughly equivalent to the 4-digit level in the older SIC system. In some cases, however, the six-digit industry is the same as the five-digit industry, so these duplications are not presented in Table 2-1. For example, industry 11311 (timber tract operations) does not break down into smaller components, so the six-digit industry (which would be 113110) is omitted because it's redundant.

In some cases, the higher-level NAICS industries contain components not a part of the forestry industry. For example, metal furniture is included in NAICS 3371, but is not included at the six-digit level. Each component containing only forestry-related industries are indicated by italicized text in the table. Non-forestry-related components have been eliminated.

Table 2-1
Forestry Industry Definition Components: NAICS

<u>NAICS</u>	<u>Description</u>
113	<i>Forestry and Logging</i>
1131	<i>Timber Tract Operations</i>
11311	<i>Timber Tract Operations</i>
1132	<i>Forest Nurseries and Gathering of Forest Products</i>
11321	<i>Forest Nurseries and Gathering of Forest Products</i>
1133	<i>Logging</i>
11331	<i>Logging</i>
321	<i>Wood Product Manufacturing</i>
3211	<i>Sawmills and Wood Preservation</i>
32111	<i>Sawmills and Wood Preservation</i>
321113	<i>Sawmills</i>
321114	<i>Wood Preservation</i>
3212	<i>Veneer, Plywood, and Engineered Wood Product Manufacturing</i>
32121	<i>Veneer, Plywood, and Engineered Wood Product Manufacturing</i>
321211	<i>Hardwood Veneer and Plywood Manufacturing</i>
321212	<i>Softwood Veneer and Plywood Manufacturing</i>
321213	<i>Engineered Wood Member (except Truss) Manufacturing</i>
321214	<i>Truss Manufacturing</i>
321219	<i>Reconstituted Wood Product Manufacturing</i>
3219	<i>Other Wood Product Manufacturing</i>
32191	<i>Millwork</i>
321911	<i>Wood Window and Door Manufacturing</i>
321912	<i>Cut Stock, Resawing Lumber, and Planing</i>
321918	<i>Other Millwork (including Flooring)</i>
32192	<i>Wood Container and Pallet Manufacturing</i>
32199	<i>All Other Wood Product Manufacturing</i>
321991	<i>Mobile Homes</i>
321992	<i>Prefabricated Wood Building Manufacturing</i>
321999	<i>All Other Miscellaneous Wood Product Manufacturing</i>
322	<i>Paper Manufacturing</i>
3221	<i>Pulp, Paper, and Paperboard Mills</i>
32211	<i>Pulp Mills</i>
32212	<i>Paper Mills</i>
322121	<i>Paper (except Newsprint) Mills</i>
322122	<i>Newsprint Mills</i>
32213	<i>Paperboard Mills</i>
3222	<i>Converted Paper Product Manufacturing</i>
32221	<i>Paperboard Container Manufacturing</i>
322211	<i>Corrugated and Solid Fiber Box Manufacturing</i>
322212	<i>Folding Paperboard Box Manufacturing</i>
322213	<i>Setup Paperboard Box Manufacturing</i>
322214	<i>Fiber Can, Tube, Drum, and Similar Products Manufacturing</i>
322215	<i>Nonfolding Sanitary Food Container Manufacturing</i>
32222	<i>Paper Bag and Coated and Treated Paper Manufacturing</i>

322221	<i>Coated and Laminated Packaging Paper and Plastics Film Manufacturing</i>
322222	<i>Coated and Laminated Paper Manufacturing</i>
322223	<i>Plastics, Foil, and Coated Paper Bag Manufacturing</i>
322224	<i>Uncoated Paper and Multiwall Bag Manufacturing</i>
322225	<i>Laminated with Foil for Flexible Packaging</i>
322226	<i>Surface-Coated Paperboard Manufacturing</i>
32223	<i>Stationery Product Manufacturing</i>
322231	<i>Die-Cut Paper and Paperboard Office Supplies Manufacturing</i>
322232	<i>Envelope Manufacturing</i>
322233	<i>Stationery, Tablet, and Related Product Manufacturing</i>
32229	<i>Other Converted Paper Product Manufacturing</i>
322291	<i>Sanitary Paper Product Manufacturing</i>
322299	<i>All Other Converted Paper Product Manufacturing</i>
33321	<i>Sawmill and Woodworking Machinery Manufacturing</i>
333291	<i>Paper Industry Machinery Manufacturing</i>
337	<i>Furniture & Related Product Manufacturing</i>
3371	<i>Household and Institutional Furniture and Kitchen Cabinet Manufacturing</i>
33711	<i>Wood Kitchen Cabinet and Countertop Manufacturing</i>
33712	<i>Household and Institutional Furniture Making</i>
337121	<i>Upholstered Household Furniture Manufacturing</i>
337122	<i>Non-upholstered Wood Household Furniture Manufacturing</i>
337127	<i>Institutional Furniture Manufacturing</i>
337129	<i>Wood Television, Radio, and Sewing Machine Cabinet Manufacturing</i>
337211	<i>Wood Office Furniture Manufacturing</i>
337212	<i>Custom Architectural Woodwork and Millwork Manufacturing</i>
337215	<i>Showcase, Partition, Shelving, and Locker Manufacturing</i>
333	<i>Machinery Manufacturing</i>
3332	<i>Industrial Machinery Manufacturing</i>
33321	<i>Sawmill and Woodworking Machinery Manufacturing</i>
33329	<i>Other Industrial Machinery Manufacturing</i>
333291	<i>Paper Industry Machinery Manufacturing</i>
339	<i>Miscellaneous Manufacturing</i>
3399	<i>Other Miscellaneous Manufacturing</i>
33999	<i>All Other Miscellaneous Manufacturing</i>
339995	<i>Burial Casket Manufacturing</i>

Source: North American Industrial Classification System, and Georgia Tech's Economic Development Institute

Unfortunately, the data bases needed to estimate the impact of this industry are not all available in NAICS codes. Only one major data source (the 1997 Census of Manufacturers) is available using NAICS codes. The others are either in SIC codes or use the BEA input-output model industry definitions. The mapping from one system to another is generally straightforward within major industry groups, although there are also many instances where categories are split. Groupings of industries, however, can reduce this problem; a group of NAICS industries is equivalent to a group of SIC industries, although the individual components of each do not always match. This grouping showing the SICs used to represent each NAICS group is provided in Table 2-2. A bold line separates each group. Where possible, the SIC industry is next to the NAICS industry closest in definition. For example, SIC 2421 is placed next to NAICS 321113 (Sawmills), although SIC 2421 also includes NAICS 337212 (custom architectural woodwork & millwork manufacturing.).

The level of economic activity in each group in Table 2-2 is measured by output, employment, and income. Measures for the 2001 calendar year appear in Table 2-3. This table shows that total employment in all of the forestry industry sectors is 77,266 and these jobs earned annual total wages and salaries (including benefits) of over \$3.6 billion from total sales revenue of over \$19.5 billion.

Within the industry, the only sector not represented by Georgia companies is wood television and radio cabinets – an industry segment that is a holdover from the days when radios and TVs typically came in wooden cases. The highest employment is seen in paperboard containers and boxes, and sawmills and wood preserving with almost 8,000 each. Many segments have employment exceeding 5,000, including paper mills, mobile homes, millwork, and logging. The greatest payrolls come from paperboard containers and boxes, and paper mills. The largest revenues are produced by sawmills and wood preservation, with other converted paper and paper mills following closely behind. All three industries have outputs in excess of \$2 billion.

Table 2-2
Mapping of NAICS into SIC Categories
Forestry Industries Groupings

<u>NAICS</u>	<u>NAICS Description</u>	<u>SIC(s)</u>	<u>SIC Description</u>
113	Forestry and logging	0811; 0813; 0851	Forest Products
1133	Logging	2411	Logging Camps Contractors
337212	Custom architectural woodwork & millwork mfg		
321113	Sawmills	2421	Sawmills and Planning Mills
321114	Wood preservation	2491	Wood Preserving
321211	Hardwood veneer & plywood mfg	2435	Hardwood Veneer and Plywood
321212	Softwood veneer & plywood mfg	2436	Softwood Veneer and Plywood
321213	Engineered wood member (exc truss) mfg		
321214	Truss mfg	2439	Structural Wood Members NEC
321219	Reconstituted wood product mfg	2493	Reconstituted Wood Products
321911	Wood window & door mfg	2431	Millwork Hardwood Dimension and Flooring
321912	Cut stock, resawing lumber & planning	2426	Mills
321918	Other millwork (including flooring)	2429	Spcl Product Sawmills
32192	Wood container & pallet mfg	2448	Wood Pallets and Skids
321999	All other miscellaneous wood product mfg	2499	Wood Products, NEC
		2441	Wood Boxes
		2449	Wood Containers, NEC
321991	Manufactured home (mobile home) mfg	2451	Mobile Homes
321992	Prefabricated wood building mfg	2452	Prefabricated Wood Buildings
32211	Pulp mills	2610	Pulp Mills
322121	Paper (except newsprint) mills	2620	Paper Mills
322122	Newsprint mills		
32213	Paperboard mills	2630	Paperboard Mills
322211	Corrugated & solid fiber box mfg	2650	Paperboard Containers and Boxes
322212	Folding paperboard box mfg		
322213	Setup paperboard box mfg		
322214	Fiber can, tube, drum & similar products mfg		
322215	Non-folding sanitary food container mfg		
322221	Coated & lamnd pkg paper & plastics film mfg	2671	Paper Coated and Laminated Packaging
322222	Coated & laminated paper mfg	2674	Paper Bags
322223	Plastics, foil, & coated paper bag mfg	2672	Paper Coated and Laminated, NEC
322224	Uncoated paper & multiwall bag mfg		
322225	Laminated with Foil for Flexible Packaging		
322226	Surface-coated paperboard mfg		
322231	Die-cut paper & paperboard office supply mfg	2675	Die-Cut Paper and Board
322232	Envelope mfg	2677	Envelopes
322233	Stationery, tablet & related product mfg	2678	Stationery Products
322291	Sanitary paper product mfg	2676	Sanitary Paper Products
322299	All other converted paper product mfg	2679	Converted Paper Products, NEC
33321	Sawmill and Woodworking Machinery Mfg.	3553	Woodworking Machinery

333291	Paper Industry Machinery Mfg.	3554	Paper Industries Machinery
33711	Wood kitchen cabinet & countertop mfg	2434	Wood Kitchen Cabinets
337121	Upholstered household furniture mfg	2512	Upholstered Household Furniture
337122	Non-upholstered wood household furniture mfg	2511	Wood Household Furniture
337127	Institutional furniture mfg	2515	Mattresses and Boxsprings (part)
337129	Wood TV, radio, sewing machine cabinet mfg	2517	Wood TV and Radio Cabinets
337211	Wood office furniture mfg	2521	Wood Office Furniture
337215	Showcase, partition, shelving & locker mfg	2541	Wood Partitions and Fixtures
339995	Burial Casket Manufacturing	3995	Burial Caskets and Vaults

Source: Georgia Tech's Economic Development Institute

Table 2-3
Georgia Forestry Industry Economic Activity: 2001

<u>Sector</u>	<u>Output</u>	<u>Employment</u>	<u>Income</u>
Forest Products (Greenhouses and Nurseries)	\$274,653,024	1,898	\$89,615,368
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Bags	\$1,301,681,280	3,786	\$171,214,736
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Woodworking Machinery	\$38,392,980	240	\$11,896,424
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Mattresses and Bedsprings	\$336,644,192	1,563	\$71,981,440
Office Furniture	\$452,982,912	2,695	\$98,470,472
Burial Caskets and Vaults	\$18,736,500	93	\$2,813,828
Total	\$19,522,025,569	77,266	\$3,625,679,508

Source: Georgia Department of Labor ES202 data files for 2001, and Georgia Tech's Economic Development Institute

Section 3

Economic Benefits

Methodology

Economic impact analysis has used basically the same methods for over 40 years. The tools, although greatly improved in quality and ease of use, are also similar to those in long-time use.

The conceptual basis for estimating economic benefits of an industry is that resources brought into Georgia's economy by the industry raises the level of economic activity. This additional economic activity, commonly called the multiplier effect, supports increased employment, income, and business revenues. These increases are estimated from an input-output model (I/O).

The purpose of an I/O model is to estimate the flows of resources among various economic sectors by using the "recipes" followed by producers. These recipes provide the type and amount of goods and services purchased during production, which are produced by other firms. For example, a pulp mill purchases wood from a logger. The logger, in turn, purchases equipment and fuel from firms, that, in turn, purchase their raw materials from still other firms. Combined with estimates of what percentage of these items are supplied by Georgia firms, the recipes can be used to estimate how much of each item is purchased from Georgia firms and how much is purchased from outside Georgia.

Purchases from sources outside the Georgia economy are known as "leakage," which puts the brakes on the multiplier effect; the higher the leakage, the lower the multiplier effect.

The I/O model used in this analysis is called IMPLAN, devised by the Minnesota IMPLAN Group. It is a nationally recognized model that uses Georgia data to tailor its estimates to the Georgia economy. Still, the model must be modified somewhat to account for differences in specific industry sectors revealed by more current data. For example, the wage and salary data used in this analysis is from 2001, whereas the wage and salary data available to IMPLAN is from 1998.

One area of uncertainty that persists, however, is the level of benefits provided to workers in each of the forestry industry sectors. The available wage and salary information does not include benefits, but the I/O model bases its analysis on wages and salaries that include benefits. An average of 25 percent was assumed for this analysis.

The analytical process includes three steps after the industry sectors are defined, as described in the previous section. The first step is to quantify employment, income, and output associated with each of the defined sectors. Several data sources are used to accomplish this.

The best source for employment and wages is the employment security data collected and maintained by the Georgia Department of Labor. Commonly called ES202 data, it has the advantage of being current, allowing an estimate of the economic benefits occurring in 2001, but it suffers from incomplete coverage because only firms with employees are included. Firms that are family-owned and operated, for example, would not be included. This undercount of employees is not significant in the most important industry sectors with the exception of logging, where it appears the ES202 count was significantly low. The I/O model was used to provide an alternative estimate for this sector.

Output levels are more difficult to estimate because the most recent information was produced from 1997 data reported in the Census of Manufacturers. Estimates of output per employee from that source were converted to current dollars and multiplied by current estimates of employment to estimate current output.

The second task is to divide the forestry industry output into two categories, (1) output that is sold to another Georgia firm and (2) output sold outside the state. Another way to look at this is to recall that the multiplier effect starts from dollars being brought into the Georgia economy. Output not sold to another Georgia firm is, by definition, bringing in resources from outside the Georgia economy, and it is these “exports” that fuel the multiplier effect. Forestry industry output used as an input to another Georgia forestry-industry firm is already accounted for in the multiplier effect; counting it again would result in double-counting and would imply a level of production from the input-supplying industry higher than actually observed. For example, if the multiplier effect is calculated for the paper industry, it will include some of the activities of Georgia logging operations. If the entire output from logging was then added to the multiplier effect for paper, it would double-count the logging output that went to the paper industry. The I/O model is used for these estimations, with the resulting estimates called “direct impacts.”

Direct impacts are measures of the output from, in this case, forestry industries that are exported to entities outside Georgia. These are considered exports even if they only go to Alabama.

The third step is to use the I/O model to estimate total impacts, which are divided into three components. The first is the direct impacts (the value of resources brought into the state); the second is indirect impacts (impacts from recirculation of resources resulting from forestry industry purchases from other industries; and the third is induced impacts, which result from activities in the household sector. Adding direct, indirect, and induced impacts yields total benefits.

Three measures of economic benefits are provided. The first, output, is a measure of how much each industry or sector produced in 2001 - roughly equivalent to a measure of sales revenue. The second measure is income including all household income and employee benefits. The last measure is employment provided by the firms in each industry.

Results

Table 3-1 provides estimates of direct impacts for each of the forestry industry sectors contained in the industry's definition. These differ from the level of economic activity shown in Table 2-3 because Table 3-1 eliminates production consumed by another sector. This eliminates the double counting of production in the multiplier effect of the consuming industry sector. For example, Table 3-1 does not contain output from the logging industry because all of it seems to be consumed by the various Georgia wood-using industries such as paper and millwork. Logging operations are included as part of the multiplier effect by these consuming industries, not as a direct impact separate from them.

Another way to interpret Table 3-1 is to consider the direct impacts to be estimates of the exports of forestry-related industries. This exporting (to anyone outside Georgia) brings resources into the state to support the increase in economic activity estimated by the multiplier effect.

The highest output is achieved by the "Other Converted Paper" sector, which includes sanitary paper and products from pressed pulp such as paper plates and egg cartons. The greatest employment is in the "Paperboard and Containers" sector with about 7,265 employees. The highest payroll, however, is in the "Paper Mill" sector, with over \$400 million in salaries, wages, and benefits. Together, the forestry industry exports almost \$17 billion with this activity supporting 64,392 jobs with a payroll of over \$3 billion.

As dollars brought into Georgia's economy (as measured by the direct impacts) recirculate, a higher level of economic activity is supported. This higher level is estimated by applying the IMPLAN input-output model to the direct impacts provided in Table 3-1. The results of this analysis are presented in Table 3-2. Since all industries in Georgia are affected by the forestry industry, Table 3-2 summarizes the benefits by one-digit SIC sector.

Table 3-1
Direct Impacts by Forest Industry Sector
(Dollars)

<u>Sector</u>	<u>Output</u>	<u>Emp</u>	<u>Income</u>
Forest Prod (Greenhouses and Nurseries)	\$207,509,184	1,434	\$67,707,288
Sawmills & Wood Preservation	\$1,243,670,784	4,072	\$165,861,536
Millwork	\$826,061,696	4,716	\$163,208,368
Wood Kitchen Cabinets	\$306,500,544	2,893	\$82,160,224
Veneer and Plywood	\$824,528,128	4,081	\$298,612,864
Engineered Wood	\$575,176,192	2,815	\$114,460,536
Containers	\$428,929,824	2,895	\$73,193,472
Mobile Homes	\$930,441,664	5,460	\$167,493,808
Prefabricated Wood Buildings	\$81,331,488	625	\$14,254,087
Household Furniture	\$247,762,144	2,292	\$58,581,816
Mattresses and Bedspings	\$318,121,216	1,477	\$68,020,848
Office Furniture	\$445,587,264	2,651	\$96,862,792
Pulp Mills	\$927,615,808	2,115	\$171,948,752
Paper Mills, Except Building Paper	\$2,053,710,080	5,457	\$405,276,960
Paperboard Mills	\$1,610,599,424	3,784	\$273,449,984
Paperboard Containers and Boxes	\$1,774,333,440	7,265	\$373,828,192
Bags	\$1,297,555,456	3,774	\$170,672,048
Stationery	\$430,952,384	1,734	\$74,895,792
Other Converted Paper	\$2,111,752,576	4,464	\$263,599,008
Woodworking Machinery	\$35,513,508	222	\$11,004,193
Paper Industries Machinery	\$10,446,019	73	\$4,784,960
Burial Caskets and Vaults	<u>\$18,736,500</u>	<u>93</u>	<u>\$2,813,828</u>
Total	\$16,706,835,323	64,392	\$3,122,691,356

Source: Georgia Department of Labor ES202 data files for 2001, and Georgia Tech's Economic Development Institute

The largest sector benefits are seen, not surprisingly, in the manufacturing sector, with over \$20 billion in output, 81,270 employees, and almost \$4 billion in household income. A distant second is held by the services sector, with over \$2.5 billion in output, 45,062 employees, and more than \$1.3 billion in income. Together, the economic activity supported by Georgia's forestry industry totals almost \$30.5 billion, involving employment of 204,065 people whose income reaches almost \$7.7 billion. This employment represents about 5 percent of total Georgia employment and 7 percent of household income when compared to 2001 ES202 totals.

Table 3-2
Total Benefits by Major Industry Sector

<u>Sector</u>	<u>Output</u>	<u>Employment</u>	<u>Income</u>
Agriculture	\$356,398,720	3,670	\$121,064,880
Mining	\$14,044,199	77	\$3,706,434
Construction	\$310,115,776	4,875	\$164,600,112
Manufacturing	\$20,457,463,808	81,270	\$3,786,980,864
Transportation and Public Utilities	\$2,094,322,816	14,806	\$634,078,784
Wholesale and Retail Trade	\$2,836,742,144	42,260	\$1,198,292,736
Finance, Insurance and Real Estate	\$1,619,370,752	8,681	\$332,911,744
Services	\$2,562,641,152	45,062	\$1,336,142,592
Government	\$208,323,392	1,956	\$82,499,856
Other	\$12,969,080	1,408	\$12,969,080
Total	\$30,472,391,839	204,065	\$7,673,247,082

Source: Georgia Tech's Economic Development Institute

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