

# **Economic Impact of the Texas Forest Sector, 2004**

Forest Resource Development and Sustainable Forestry

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# **Economic Impact of the Texas Forest Sector**

## **INTRODUCTION**

This study evaluates the forest sector's direct and total impacts in 2004 to the overall Texas economy in terms of total industry output, value-added, employment, and labor income. Since most of the commercial forestland base and primary wood product manufacturing activities are in East Texas (Figure 1), this study also estimates the impact of the forest sector in this region to the East Texas economy.

## **METHODS**

This study uses the input-output method to estimate the direct and total economic impact of the Texas forest sector in 2004. The IMPLAN system, a computerized input-output modeling system and associated databases for year 2004, from the Minnesota IMPLAN Group (MIG), were utilized for estimating the direct and total economic impact of the Texas forest sector. The multipliers used in this study are type SAM multipliers, which capture the total economic impact of economic sectors including direct, indirect and induced effects. The databases used by the IMPLAN system were compiled by the MIG based on data from various U.S. governmental agencies such as Bureau of Economic Analysis, Bureau of Labor Statistics, Census Bureau, Department of Agriculture, and Geological Survey (MIG, Inc. 2002). All values estimated here are in 2004 dollars.

The Texas forest sector is divided into six sub-industries, including forestry, logging, primary solid wood products, secondary solid wood products, primary paper & paperboard products, and secondary paper & paperboard products. Each sub-industry includes several IMPLAN sectors as defined by the MIG in Table 1. The table shows that the IMPLAN sectors used in this study are different than the ones used in the 1999 study, which creates some problem in direct comparison on some sub-industry level for the economic impact data of these two points in time. Most of the IMPLAN sectors in Table 1 are self-explanatory, with a few exceptions. As a part of Forestry sub-industry, the industry output of "Hunting and trapping on Forestland" was estimated from IMPLAN sector 17, "Hunting and trapping." The estimation was based on the correlation coefficient between the county level hunting and trapping output and county level

forestland acres. Agriculture land, pasture land, and range land acres in East Texas were also included in the analysis. Federal lands in East Texas were counted as forestlands. Proprietary income, other property income, and indirect business tax of the sector were adjusted proportionally to output. As a part of Forestry sub-industry, the industry output of “Forestry support activities” was estimated from IMPLAN sector 18, “Agricultural support activities,” based on the proportion of the output from the Sector 15, “Forest nurseries, forest products, and timber tracts,” and the output from all sectors for crop and animal productions. Proprietary income, other property income, and indirect business tax of the sector were estimated using the same method. It is worth noting that the logging sector include stumpage value as a major input of the sector. Also, IMPLAN sector 121, “manufactured home, mobile home, manufacturing” was excluded from the secondary solid wood products.

## **RESULTS**

### Economic Impact of the Texas Forest Sector

The direct economic impact of the Texas forest sector in 2004 is reported in Table 2. The Texas forest sector produced \$17.5 billion of industry output, \$5.5 billion of which was value-added. It employed 75,846 workers and paid \$2.7 billion wages, salaries, and benefits in the same year. Compared to 1999, the industry output of the Texas forest sector in 2004 increased 35.4 percent, most increases were from secondary manufacturing sectors. The total employment of the Texas forest sector decreased 4.6 percent from 1999 to 2004, most of the employment reductions were from the primary manufacturing sectors.

The annual total economic impact of the Texas forest sector was \$30.6 billion in 2004, \$12.4 billion of which was value-added. In the same year, the Texas forest sector generated 173,434 jobs and created \$7.6 billion in labor income (Table 3). These impacts were estimated based on type SAM multipliers for output, value-added, employment, and labor income in Table 4. Compared to 1999, the total economic impact of the Texas forest sector in 2004 increased 38.8 percent.

## Economic Impact of the Forest Sector in East Texas

The forest sector in East Texas produced \$6.8 billion of goods and services in 2004. It generated \$2.3 billion in value-added, 27,023 jobs, and \$1.4 billion in labor income (Table 5). The characteristics of the forest sector in East Texas in terms of value-added to output ratio, output to employment ratio, and labor income to employment ratio in each sub-industry were similar to Texas as a whole. Compared to 1999, the industry output of the East Texas forest sector in 2004 increased 12.4 percent, with most increases from secondary manufacturing sectors. The total employment of the Texas forest sector decreased 17.2 percent from 1999 to 2004, with most reductions in East Texas from primary manufacturing sectors.

East Texas produced 39% of the total industry output from the Texas forest sector in 2004. Over two thirds of all forestry and logging industries and the great majority of the primary forest product manufacturing industries in Texas are located in East Texas. The output from primary solid wood products industry in East Texas accounted for 90.2% of all primary solid wood manufacturing in Texas. The output from the primary paper & paperboard products in East Texas accounted for 74.3% of the total primary paper & paperboard industry output in Texas. On the other hand, most of the secondary forest product manufacturing facilities in Texas are located outside of East Texas. In 2004, only 25.4% of the state's total output for secondary solid wood products industry was from East Texas. East Texas' share dropped to 12.9% for secondary paper & paperboard products industry (Table 8).

The total estimated impact of the East Texas forest sector was \$12.1 billion of output in 2004, \$4.9 billion of which was value-added impact. The total employment impact of the East Texas forest sector was 62,727 jobs. The East Texas forest sector provided \$2.9 billion in payroll in 2004 for the region (Table 6). The total economic impact of the forest sector in East Texas was estimated based on type SAM multipliers in Table 7. Compared to 1999, the total economic impact of the forest sector in East Texas in 2004 increased 10.3 percent.

## LITERATURE

MIG, Inc. 2002. User's Guide, Analysis Guide, Data Guide for IMPLAN Professional Version 2.0.

MIG, Inc. 2006. The 2004 IMPLAN Structural Matrices and Texas Input and Output Data.

## GLOSSARY

**Total industry output** is the total value of production by industry for a given time period.

**Value-added** consists of four components: employee compensation, proprietor income, other property income, and indirect business tax.

**Employment** includes full-time and part-time employees, and self-employed.

**Labor income** includes wages, salary and benefits of employees as well as income for self-employed individuals. The economic activities in one sector have three kinds of effects to the over all economy: direct effects, indirect effects, and induced effects.

**Direct effects** refer to the sector's own production, value-added, employment and labor incomes.

**Indirect effects** refer to the economic activities in other sectors impacted by the forest sector's purchase of goods and services.

**Induced effects** are economic activities from consumption of goods and services using incomes generated from the direct and indirect effects.

**SAM** is the acronym for Social Accounting Matrices, a macro accounting system widely used by many countries for analyzing relationships of economic activities such as production, consumption and trade between various economic entities.

**Direct economic impact** of a sector includes only direct effects.

**Total economic impact** of a sector includes all three effects generated by the sector.



















