

Economic Impacts

In many parts of the state, forests are a base of the economic activity. Both tourism and timber production contribute significantly to the state's overall economy. Other, less quantifiable, economic returns of forests include environmental benefits like carbon sequestration, erosion control, and heat mitigation. Forests also have an impact on land values and business recruitment.

Estimating the economic impacts of forest use raises a complex set of issues that are only partially addressed through traditional means. The reasons for this are many. Two primary difficulties specific to forest resources include the simple facts that: 1) forests provide the raw material for a substantial amount of economic activity but they are not the sole input into the production process; and 2) many of the values we associate with forests are of a non-market value.

In analyzing the contributions of forest resources and activities to economic growth, it has been argued that a more accurate view of the situation could be achieved through a more 'green' accounting structure that integrates the level and quality of resource stocks into regional economic models. Unfortunately, models integrating these ideas have not yet been developed.

However, analyzing two clearly forest-based economic activities, it was found that in 1994, roughly 12% of the Gross State Product and 18% of the jobs in Wisconsin are somehow tied to either wood-based industries or tourism sensitive sectors.

A simple measure of the resource stock can be inferred from the ratio of growth to removals of timber. A value greater than one indicates a growing resource base, less than one indicates a shrinking base. Statewide, Wisconsin's growth to removals ratio is above one. Therefore we know that the forest resource base is expanding in the state as a whole.

Whatever method is used to calculate the exact contribution of forest-based economic activity, it cannot be denied that forests provide the primary means of support for many families in Wisconsin. Forest-based activities have a dramatic effect on the viability of regional households in both rural forested regions and in regions where wood-based manufacturing is prevalent. The employee compensation (wages paid to workers) portion of value added accounted for approximately 25% of total wood products output and 35% of tourism-sensitive output. Average jobs in tourism-sensitive sectors earned almost \$11,000 per year while wood-based industries paid approximately \$36,800 per year. These figures are compared to average statewide earnings per job of almost \$25,000 per year.

Regional Differences

The forest that these economic activities rely on is extremely varied in extent and character throughout the state. It follows that there are significant regional differences in both the extent and character of timber related activity and tourism, as well.

For example, even though much of the reconstituted wood products sector (paper-making) is focused on the southeastern region, wood-products and tourism sensitive sectors account for only about 10% of this region's output. In northeast Wisconsin, on the other hand, almost 30% of the regional output is somehow tied to wood products and tourism.

Indeed the central and northern parts of the state are much more reliant upon wood products and tourism sensitive firms for regional economic activity when compared to the southeastern portion of the state.

Wood-based Industries

Traditionally, forest-based economics has referred to the wood-based industries. Logging and papermaking are intertwined with the state's economic and cultural history. What is now termed the "wood-based industries" - timber production, primary and secondary wood processing and reconstituted wood products production - is still a very important portion of Wisconsin's economy.

Timber production is the growth of trees, the annual output of which is reflected in the stumpage values of removals. (Stumpage value is a measure of the pre-harvest value of standing timber. It is the value of the timber to the owner.) Primary wood processing begins with timber harvesting (logging) and includes sawmills and other primary log processors. Secondary wood processing includes the value-added sectors of turning dimensional timber into final use products such as wooden cabinets or furniture. Finally, reconstituted wood products include those industries that reconstitute wood fibers into final products, examples of which include fiberboard manufacturing and the pulp/paper industry.

Table 2 — Selected economic characteristics for wood-based sectors(State of Wisconsin, 1994)

	Industry output (MMS)	Employee compensation (MMS)	Employment (# of jobs)
Wood-based sectors			
Timber production	209.001	34.303	3152
Primary wood processing	956.862	152.635	7346
Secondary wood processing	3412.918	954.96	37925
Reconstituted wood products	10346.688	2510.89	50895
Total in wood- based sectors	14925.469	3652.788	99318
Total (all sectors)	242,514.17	76201.309	3070532

In 1994, timber production provided a partial basis for primary, secondary and reconstituted wood products sector activity that accounted for approximately 6% of Wisconsin's gross state product (roughly \$15 billion of \$242 billion). The bulk of timber production appears to occur on non-industrial private forest lands with a surprising amount of sawtimber value being realized in the southwestern part of the state.

The market value of timber is influenced by the species or type of tree harvested the size or product class, and the harvest costs. In general, hardwood species are more valuable than softwoods. Some of the more valuable species include red and white oak, walnut and hard maple. Less valuable hardwoods include aspens, birch, and soft maples. Softwood species (conifers) tend not to vary as much in value from species to species.

Table 3 — Value of annual timber removals in Wisconsin in millions of 1996 dollars

Ownership type and product class	NW	NE	CTRL	SW	SE	Total
Public forests, federal						
sawtimber	3.063	10.829	0.459	0	0	14.351
pulpwood	2.216	2.426	0.38	0	0.059	5.081
Public forests, state						
sawtimber	0.974	0.648	1.539	0.548	0	3.709
pulpwood	0.225	0.406	0.528	0.009	0	1.168
Public forests, county						
sawtimber	3.707	1.666	2.376	0.004	0	7.753
pulpwood	1.829	2.436	1.715	0.06	0	6.04
Private forests, industrial						
sawtimber	2.76	8.481	0.195	0	0	11.436
pulpwood	1.435	1.5	0.144	0	0	3.079
Private forests, non-industrial						
sawtimber	11.754	18.828	50.226	51.21	8.369	140.385
pulpwood	4.847	4.457	5.239	1.745	0.701	16.989
Total	32.81	51.677	62.801	53.57	9.129	209.991

Size of harvested trees is another important feature as it determines what uses the timber is suited for. The larger and more valuable size class is called sawtimber, and timber that meets the sawtimber size requirements is used for veneer and dimensional uses. Pulpwood, or poletimber, is the other, less valuable, size class. Pulpwood is used in reconstituted wood products and paper-making.

The cost associated with harvest and marketing is the third element determining timber's value. Generally, transportation cost is the largest determinant in the cost of harvest. This is directly influenced by how far away the timber is harvested from its destination.

With respect to tourism sensitive sectors, tourism retail sectors dominate with almost \$10 billion of output and roughly 350,000 jobs. To be sure, the jobs in tourism retail are not the same types of jobs offered by the reconstituted wood products sector. In general, tourism retail jobs are more apt to be seasonal, part-time and pay relatively lower wages than manufacturing jobs.

Recognizing the connectivity of forest-based tourism and the wood-based industries can help managers and planners understand more fully the many economic benefits of the forests. Because both activities rely on the same resource base it will become more and more important to coordinate activities in a way that will allow many uses of the forest.