

Abstract

Woody biomass has gained considerable attention in the US as a feedstock for producing renewable bioenergy. Nationwide, the pressure is mounting to meet increasing energy demands through renewable local resource mobilization rather than importing unsustainable fossil fuels. Michigan is no exception to this. The state is rich in forest resources that can be used for generating clean energy. However, the availability of woody biomass for bioenergy is determined, among other things, by the capacity of the logging sector and forest products industry within the state. Therefore, identifying the status of existing forest products sector, their strengths, limitations, and the challenges they face are critical for understanding both current and future role of these sectors in bioenergy supply chain. This study provides an insight into Michigan's forest products sector and their perception towards wood-based bioenergy. Though the results indicate positive response towards the introduction of wood-energy facilities in the State, other broader issues such as sustained wood availability, retention and strengthening of the existing operations, and improving their efficiency are identified as critical factors that need consideration for promoting bioenergy in the future.

Introduction

A large forest resource base, good transportation system, and access to the Great Lakes makes Michigan ideal for promoting wood-based bioenergy. The total forest area in the state has increased by 1.4 million acres from 1980 to 2008 (fig 1) and the inventory data indicates greater wood accumulation than removal in recent years (fig 2). Despite these advantages, the availability of woody biomass for bioenergy is determined significantly by the capacity of the logging sector and forest products industry within the state.

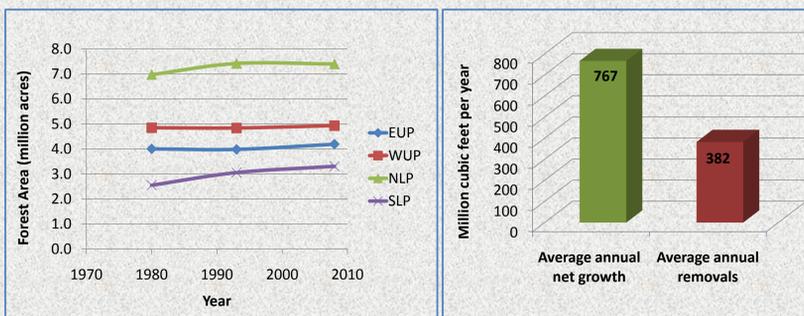


Fig 1. Michigan's forest area by year and regions

Fig 2. Net growth and removals in MI timberlands

Logging firms are responsible for commercial harvest of timber and form a bridge between forest resources and wood based industries. They help meet society's demand for wood products and assist forest owners in realizing varied management objectives. Through these activities, loggers shape the structure and composition of forests determining both present and future productivity.



Fig 3. Wood as a source of energy

The forest products industry accounts for approximately 10% of the state's manufacturing sector jobs and generates \$12 billion in annual revenue. Hence, is vital for Michigan's economy and wellbeing. However, it has been facing difficulties in recent years due to downturns in manufacturing business. Given this situation, an emerging bioenergy market could play an immense role in promoting this sector hard hit by recession. But it is possible only if sufficient resources are made available for different uses. This study thus attempts to explore the status of existing forest products sector and how they feel about wood-based bioenergy.

Methods

A mail survey of all MI logging firms and primary forest products industry was conducted in the fall of 2008, and spring of 2009 respectively using the Tailored Design Method by Dillman. The overall response rates were 28% for the mill survey and 10% for the loggers' survey.

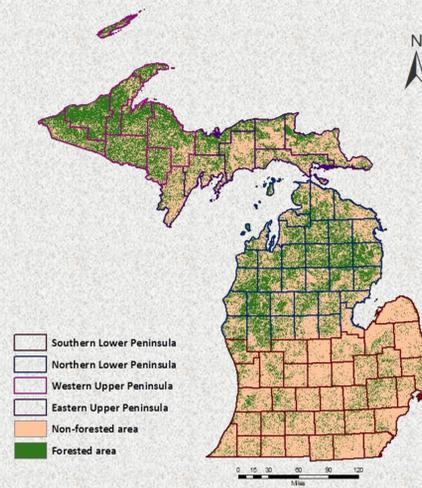


Fig 4. Map of Michigan by region and forested area.

Results

Status of MI logging firms

The average logging firm in MI has been in existence for approximately 29 years. More than half (60%) of them employed fewer than 5 individuals and were found to operate at 82% capacity in 2007. However, 75% are willing to expand the operation in future under favorable market conditions. Logging firms obtained 64% of their timber supply from nonindustrial private forest lands (NIPFs) and delivered the highest percentage (29%) of their output to pulp and paper mills and hardwood sawmills (29%). The majority of the sawlogs (90%) and pulpwood (72%) harvested were delivered within 90 miles of the logging site. Approximately 83% of the respondent logging firms left logging residues on site after harvesting.

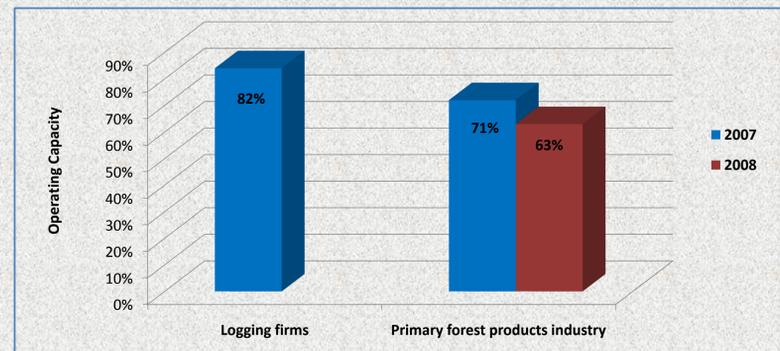


Fig 5. Operating capacity of MI logging firms and primary forest products industry in 2007 and 2008.

Status of primary forest products industry in MI

Forty-six percent of the MI primary mills employed 5 or fewer individuals in 2007, whereas 10% employed more than 100 individuals. The average operating capacity of mills declined from 71% in 2007 to 63% in 2008. Approximately 40% of the wood used in 2007 came from NIPFs and 71% was delivered from within 90 miles distance of the mill site. The majority (97%) of the mill residue generated was utilized either by the mills themselves or sold to others for manufacturing purposes. Significantly higher number of respondent mills rated forest residues, mill residues, and non-merchantable timber as desirable wood use types for new facilities in their wood basket.

Perception towards the introduction of different wood using facilities

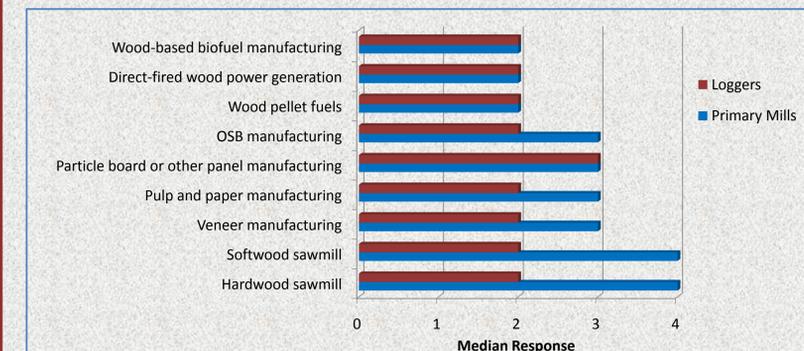


Fig 6. Most desirable wood-based manufacturing additions to the loggers and primary mills operating area in MI (1 = very desirable, 2 = desirable, 3 = neutral, 4 = undesirable, 5 = very undesirable)

Michigan's forest products sector is in favor of introducing wood-based bioenergy facilities within their wood basket.

Barriers to increased harvesting identified by the logging firms	Strategies adopted by the primary mills for promoting business
High stumpage and low mill price	Increasing mill efficiency
Shortage of capable labor force	Improving communication with loggers and landowners
Competition for stumpage	Purchasing wood at lower cost
Insufficient timber supply	Diversifying products
Insufficient sale from public forests	Cutting back production
High fuel prices	Lobbying for more timber harvest from the public lands

Discussion and Conclusion

Recent mill closures in MI have imposed considerable negative impacts on the logging sector and forest products industry, threatening their retention in some cases. Given this scenario, the introduction of new bioenergy market could be a promising step for boosting forest products sector and forest based economies. The positive attitude among loggers and primary mill managers towards wood-to-energy facilities and willingness to expand operation in case of favorable market are encouraging observations. However, current harvesting equipment and technology may not be efficient for collecting feedstock for these new facilities. Thus, exploring the equipment configurations and investment market across the state seems necessary before proceeding any further. Also, as reduced timber supply from both private and public lands was identified as barrier to increased harvesting, strategies to promote harvesting may it be through timber sale aggregation in private lands or through increased allowable harvest from public lands seem necessary.

