

# Cultivating Minnesota's New Rural Economy



Minnesota's agricultural and forestry sectors have provided the historical foundation for the state's economic development and continue to supply a significant percentage of jobs, income and goods. These sectors produced most of the energy and inputs for the economy prior to the 20th century, when fossil fuels overtook bio-based products as the primary fuel and materials source. With the introduction of low-cost fossil fuels, Minnesota farmers and agribusiness shifted production to capture new and growing export markets throughout the world. However, the recent emergence of low-cost producers of grains, oilseeds and lumber in Brazil, China, Russia and other countries has limited further growth in these markets. This has contributed to depressed commodity markets and resulted in many rural communities in Minnesota struggling to find an economic niche.

Concurrent with the stagnation of export agriculture has been the emergence of a new bio-based economy. Innovative technologies now allow Minnesota farmers to not only keep people fed, but also to provide their electricity, fuel their automobiles, construct their homes, and clothe their families. Minnesota companies have been on the cutting edge of developing these new processes that may spur tremendous new opportunities for agricultural production. Our current hydrocarbon-based economy could very well be a brief aberration as we rediscover the carbohydrate economy. The potential benefits to the depressed farming sector, rural communities and the impaired rural environment of such a switch are significant and serve as a major impetus for this change.

## Barriers and incentives for growing the bioindustrial market

▶ An "uneven playing field" between hydrocarbon and bio-based products, due to both unequal government support and the fact that market prices do not reflect the full social and environmental costs of these products.

- ▶ Limited research on specific bio-based products and their associated benefits and costs.
- ▶ The majority of public and private research dollars directed at the most dominant crops and conversion processes, leaving relatively little funding for promising alternative crops, cropping systems and technologies.
- ▶ Inadequate state and federal incentive programs to support the bio-based sector in Minnesota and around the country.

At the same time, there are several drivers that provide momentum for rapid growth in the bioindustrial economy:

- ▶ The rising costs and environmental concerns regarding the procurement, use and impacts of fossil fuels.
- ▶ The development and maturation of bio-based technologies and processes that allow higher performance conversion and production.
- ▶ The potential for this sector to provide new and stable markets and economic opportunities for farmers and rural communities.
- ▶ A growing recognition amongst policymakers, the industrial sector and the general public that bio-based initiatives are important and should be nurtured.

If policymakers will make the commitment to the bioindustrial marketplace, Minnesota is well positioned to reap tremendous rewards in the next few decades. Currently, Minnesota's ethanol industry generates more than \$1.3 billion in economic activity and 5,300 jobs. According to a study by a national research organization, adoption of a renewable energy standard of 20 percent by 2020 would create 5,020 new jobs and generate an additional \$60 million in revenue and \$80 million in gross state product for Minnesota's economy. Payments to farmers for wind tower leases and biomass production are estimated to total \$383 million, with the state getting an additional \$1.7 billion in new capital investment.<sup>1</sup> Without even including the other major, multi-billion dollar markets such as lubricants, fuel, chemicals and plastics of which bio-based

products are rapidly increasing their share, it is abundantly clear that Minnesota has much to gain—or if it does not act, to lose—from the emerging bioeconomy.

Both national and state policymakers have an important role to play in fostering the bio-based economy. Ethanol and wind energy have become state success stories only because of incentive payments, production tax credits, grant and loan programs and a host of other initiatives. The potential multiple benefits and opportunities that the development of the bio-based sector could provide warrant similar public investments and support. However, these programs need to be designed and managed in a manner that assures that Minnesota's bio-based sector benefits not only industry and consumers, but also achieves other societal goals such as revitalizing the farm economy and rural communities, and restoring the environment.

### Recommendations for policymakers

- ▶ Evaluate the true costs and benefits of both hydrocarbon- and bio-based products.
- ▶ Quantify the impact that the bio-based sector will have on the economy, environment and rural communities.
- ▶ Increase public investment in research on bio-based products and bioenergy.
- ▶ Increase market access for the bio-based sector through preferred government procurement programs and portfolio standards.
- ▶ Develop a Minnesota incentive program that supports locally controlled bio-based initiatives.

### Minnesota success stories

**Faribault Mills:** Faribault Mills utilizes some cutting edge natural materials in its wool products. Natureworks has developed a process to produce a polylactic acid (PLA) plastic from corn, which has most of the attributes of traditional petroleum-based plastics without many of the associated waste and energy concerns. PLA is fully compostable and its production utilizes much less energy than the equivalent petroleum-based plastic process. Used for food containers, candy wrappers, disposable dishware and product packaging, PLA can also be turned into a fiber called Ingeo. Faribault Mills experimented with this new bio-based fiber until it was suitable for weaving and finishing. Having succeeded in developing an in-house process for weaving Ingeo, Faribault Mills has introduced several new 100 percent Ingeo and wool and Ingeo blended blankets.

**Rahr Malting:** The Shakopee Mdewakanton Sioux Community and Rahr Malting Company are joining together to form Koda Power. With a 2006-07 expected completion, Koda Power will generate 10 to 15 megawatts of base load electricity and 125 million Btus per hour of process heat. The plant will utilize the waste grains from Rahr's malting process and other biomass byproducts as well as biomass purchased from local farmers. The reliable, dispatchable electricity produced by Koda Power's proposed biomass-to-energy project will be enough to power 4,000 to 6,000 homes from an environmentally friendly, renewable resource. The heat produced will replace all of the natural gas heat currently needed for Rahr's malting processes. To fuel its boilers, Koda Power will require up to 160,000 tons of biomass. This will annually pump \$4.2 million into the local agricultural economy, and the long-term effects of this project will annually cycle over \$15 million through the Minnesota economy.

**Biorefining Inc.:** Biorefining, Inc., based in Golden Valley, works "to develop, commercialize and license proprietary technologies capable of economically converting plant material into value-added products, used primarily for pharmaceutical, nutraceutical, and functional food applications, in addition to food and feed grade products." Biorefining's technologies maximize the number and value of co-products contained in a single raw material, fractioning the biomass in several subsequent levels of processing. The company hopes to help farmers produce multiple high value crops and products.

**Aveda Corporation:** Aveda Corporation, based in Blaine, focuses exclusively on plant-based materials for its cosmetic products. Aveda researchers and scientists are also working with university researchers, farmers and nonprofit organizations in Minnesota and elsewhere to identify and source crops and materials that can be raised locally by farmers. Considering the variety and amount of plant materials that Aveda utilizes, this commitment to local production is a significant opportunity to broaden markets for local farmers and rural communities and increase biodiversity and sustainable production on the rural landscape. ■

Information for this fact sheet was taken from *Cultivating a New Rural Economy: Assessing the Potential of Minnesota's Bioindustrial Sector*. Read full report at [iatp.org/enviroag](http://iatp.org/enviroag).

1. Union of Concerned Scientists "Renewing Minnesota's Economy" available at: <http://www.ucsusa.org/publications/report.cfm?publicationID=902>