Economic Development Implications of a Biomaterials Industry in North Dakota

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Benefits of a Biomaterial Industry in North Dakota

• Wheat straw is the preferred feedstock and initial processing must occur near the source of the feedstock
  • Higher percentage of cellulose and lignin
  • Lower cost than competing feedstock such as switchgrass

• Early estimates suggest a 50 million gallon per year commercial ethanol biorefinery would require 900,000 tons of wheat straw annually (1.5 million big bales)

• At an ethanol price of $1.80/gallon (2005 average), the biorefinery would earn a positive net return of 7.3%
Benefits of a Biomaterial Industry in North Dakota: One 50 million gallon biorefinery

- Well placed to capture the economic impacts of an emerging industry especially a wheat straw biomaterials project

- An estimated $53 million of $74.6 million of operating costs will be local (in-state) payments to farmers, custom balers, transportation

- Biorefinery would employ 77 workers and result in more than $50 million in annual payments to ND entities

- Biorefinery operations would support 2,000 secondary jobs
Regional Economic Development Implications

- Goal of 35 billion gallons of ethanol by 2017 (State of the Union, 2007)
- Assume 15 billion gallons from agricultural biomass
- Require 300 plants, 50 million gallons each

35 billion gallon goal
- 12 billion corn
- 2 billion biodiesel
- 6 billion other
- 15 billion cellulosic
Regional Economic Development Implications (cont.)

- 75 percent of the potential agriculture biomass supply would come from the Midwest and Northern Great Plains.

- Based on potential biomass supply, 225 plants would be located in the North Central Region.
Benefits of a Biomaterial Industry in North Dakota

- 9.5 percent of NC Region’s potential biomass would come from North Dakota
- 21 plants, 50 million gallons each, could be located in North Dakota
- Initial investment: 3.7 billion (176.5 million each)

<table>
<thead>
<tr>
<th>State</th>
<th>Million Dry Tonnes</th>
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<tbody>
<tr>
<td>Iowa</td>
<td>33.8</td>
</tr>
<tr>
<td>Illinois</td>
<td>24.9</td>
</tr>
<tr>
<td>Minnesota</td>
<td>22.1</td>
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<tr>
<td>North Dakota</td>
<td>17.1</td>
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<tr>
<td>Total N. Central Region</td>
<td>180.2</td>
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</tbody>
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Benefits of a Biomaterial Industry in North Dakota

- Annual direct economic contribution of 21 plants: $1.05 billion
- Annual direct economic contribution of lignite mining, conversion industry, and related activities in North Dakota:
  - $634 million in 2006
  - $734 million in 2006
Questions?

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