(Non) possibilities of energy from bufferstrip

Pilots in the Netherlands  
DLV Plant and LIST

Culture crop

Lagune
Bufferstrip: proved method against pollution from agricultural sources like minerals and chemicals.

Bufferstrip: multiple purpose.

Bufferstrip: by the grace of subsidies.

2014: total review of the CAP (common agricultural policy)

Prices of food are rising.

Develop new possibilities in the use of bufferstrips.

Develop economic value (e.g. biomass)

Reducing dependence of subsidies.
ENERGY FROM BUFFERSTRIPS

Potential: Holland = Waterland

Approx: 330,000 KM of ditches

Indication

<table>
<thead>
<tr>
<th>Ditches</th>
<th>330,000 km</th>
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</thead>
<tbody>
<tr>
<td>Pot surface (3 m)</td>
<td>99,000 ha</td>
</tr>
<tr>
<td>Energy (natural gas)</td>
<td>800,000,000 l/ year</td>
</tr>
<tr>
<td>Houses</td>
<td>400,000/year</td>
</tr>
<tr>
<td>People</td>
<td>1,2 M</td>
</tr>
</tbody>
</table>
**ASSESSED SCENARIOS**

**Life Cycle and Economic Assessment**

**Scenario 1:** Greening (no biomass sourcing)

**Scenario 2:** Agricultural use
(Products for animal feeding and bedding)

**Scenario 3:** Energetic use
(Silage for anaerobic digestion)

**Scenario 4:** Intensive agriculture
(Mix of onions, potatoes, sugar beets and wheat)

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**ECONOMIC ASSESSMENT**

Questions & answers

Questions:
- Total cultivation costs?
- Additional costs compared to greening?
- Market value of the products?

<table>
<thead>
<tr>
<th>Cost/value [€/ha]</th>
<th>Greening</th>
<th>Agricultural use</th>
<th>Energetic use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total cultivation costs</td>
<td>434</td>
<td>647</td>
<td>744</td>
</tr>
<tr>
<td>Market value of the products</td>
<td>-</td>
<td>210</td>
<td>160</td>
</tr>
<tr>
<td>Total net costs</td>
<td>434</td>
<td>437</td>
<td>584</td>
</tr>
</tbody>
</table>

Similar total net costs

Total net costs higher by 35%
ECONOMIC ASSESSMENT
Investigating optimizing possibilities...

Cultivation of cereals much more profitable than for grass

Multiply grass harvesting generates costs higher than the market value of the product

Use of perennial grasses (crops) strongly reduces cultivation costs

ENVIRONMENTAL ASSESSMENT (LCA)
Midpoint impacts and summarised results

Impact on water protection

- Harvesting of biomass increases the impact on the water related categories
- Impacts for energetic valorisation path are higher than for agricultural use
- Intensive agriculture generates impacts 14-57 times higher than greening!

Total environmental impact
- increase by 33% for the agricultural use scenario
- increase by 77% for the energetic use scenario
- 19 times higher impacts for intensive agriculture scenario!
RECOMMENDATIONS
for improved biomass sourcing from buffers strips

Further research including economic and environmental assessment for different perennial cultures to identify those fulfilling both economic and environmental criteria for sustainability

Exploring different valorisation paths

Change of legislation on the European level: permission for harvesting of sustainably cultivated buffer strips within greening measures of the Common Agricultural Policy