Economic evaluation of farm small scale biogas plants

Brussels, 8 February 2016
Business plan tool purpose

- Target of 700 business plan made
- The planned executable application
  - Simplified business plan compilation → template available
  - Automatic printout of the report and saving of data for statistic purposes on an on-line SQL
  - Realtime statistics collected on-line
  - Consistency of formatting, sections in the Business Plan
  - Availability of public report for EU
Tool main interface
Tool main interface

- Share template, data with other users
The excel part of the BP tool
The output of the tool – the business plan report

Figure 14: Printing document window

1 PURPOSE OF THE INVESTMENT

1.1 General reasons to invest

In recent years the interest in the production of renewable energy through anaerobic digestion of animal manure has increasingly grown on farms in the region of Piedmont, mainly due to the national incentives devoted to such production.

"There are interesting reasons to invest in your country."

1.2 Reasons to invest for farmer

The farm Ramere is interested in investing in the anaerobic digestion in order to valorise own biomass and livestock waste produced through an anaerobic digestion plant. The digestate, after a suitable period of storage, is then distributed on the farm’s land closing the circle and it is utilisable as a fertilizer.

"There are interesting reasons to invest for the farmer."

www.bioenergyfarm.eu www.biogas3.eu
Benefits of the tool

• Benefits:
  – Safety of data, reusability of data and BP
  – Always last excel version for data filling and last tool version
  – Secure repository of data
  – Continuous monitoring of progress against deadline
  – Statistic available about investment, power, etc.
Business plans surveyed n=92 (as 31/01/2016)

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of BP made</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>12</td>
</tr>
<tr>
<td>Denmark</td>
<td>9</td>
</tr>
<tr>
<td>France</td>
<td>3</td>
</tr>
<tr>
<td>Germany</td>
<td>4</td>
</tr>
<tr>
<td>Italy</td>
<td>43</td>
</tr>
<tr>
<td>Netherlands</td>
<td>16</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
</tr>
<tr>
<td>Poland</td>
<td>4</td>
</tr>
</tbody>
</table>

All were CHP or biomethane

www.bioenergyfarm.eu
Biomethane unitary investment

\[ R^2 = 0.8606 \]
CHP unitary investment

$R^2 = 0.3782$
Variability on feasibility change country by country: incentives, regulation, investments

R² = 0.2317

www.bioenergyfarm.eu
Biomethane payback time

\[ R^2 = 0.7252 \]

Variability on feasibility change less (only NL projects)

www.bioenergyfarm.eu
# Feasibility of farm small biogas plants

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Payback &lt;=20 Years</th>
<th>Payback &lt;=10 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CHP</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>62</td>
<td>67%</td>
<td></td>
</tr>
<tr>
<td>Payback &lt;=20</td>
<td>51</td>
<td>82%</td>
<td></td>
</tr>
<tr>
<td>Payback &lt;=10</td>
<td>34</td>
<td>55%</td>
<td></td>
</tr>
<tr>
<td><strong>BIOMETHANE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>17%</td>
<td></td>
</tr>
<tr>
<td>Payback &lt;=20</td>
<td>15</td>
<td>94%</td>
<td></td>
</tr>
<tr>
<td>Payback &lt;=10</td>
<td>12</td>
<td>75%</td>
<td></td>
</tr>
<tr>
<td>Combined payback &lt;=20</td>
<td>66</td>
<td>72%</td>
<td></td>
</tr>
<tr>
<td>Combined payback &lt;=10</td>
<td>46</td>
<td>50%</td>
<td></td>
</tr>
<tr>
<td>Not feasible</td>
<td>14</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>92</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[www.bioenergyfarm.eu](http://www.bioenergyfarm.eu)
Conclusions

• 55% CHP and 75% Biomethane BP are feasible with current incentives (technical problems not analyzed → executive project)

• Variability on feasibility change country by country → incentives, regulation, investments

• Tool made for business plan is good also to collect data around europe about feasibility of small farm biogas plants → policy makers use?

• We/EU should reduce this variability with actions on incentives, regulation, training
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