Business plan tool for small biogas plants

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Objectives

Bio-energy production from waste and crops has long been recognised as a significant potential contributor to meeting future energy needs at a global scale. The use of biogas is not a new technology in Europe. Countries like Germany and Italy have thousands or hundreds of plants installed.
Nowadays there is a reduction of economic benefit to adopting biogas plants to produce renewable energy due to the decrease of energy prices from fossil fuels and to the increasing use of the photovoltaic and wind energy sources. Furthermore, co-products utilised in the large scale biogas plants like maize, wheat, grass, etc. which can also be used as feed for animals have risen in price. For these reasons, the economic feasibility of large-scale co-digesting installations decreased dramatically in last years.
The European project Bioenergy Farm II funded by EASME under the Intelligent Energy Europe program aimed to stimulate the realization of micro-scale biogas installations which mainly use own manure and feed left-overs from the farm as feedstock to producing electricity and heat with a CHP installation, gas upgrading for gas grid feed-in, producing heat in a biogas boiler and upgrading the biogas to a transport fuel.

Methods

Within the project was developed a tool that allows, starting from a complex Excel spreadsheet, using templates to achieve a fast and error-free business plans in pdf format customised for the analysed farm.
The tool built for this purpose is a client-server application, highly customizable to follow the target needs. The tool is based on currently accepted biogas plant engineering design practice and incorporates the effects of incentives resulting from energy policies for member nations of the European Union participating in the Bioenergy Farm II project.

Results

The tool provides a comprehensive database that allows consultants and farmers to conduct the analysis at different levels of granularity. Multilingual support is included.
The tool was validated with success by the partners of the project and was used to conduct over 800 Business plan of micro-scale biogas production plants in Europe.
The tool showed a significant potential to develop targeted, standard business plans that could be useful for further development to banks and investors. In addition, the centralised data collection on the cloud allowed retrieving interesting statistics about performance indicators (payback time, the average cost per kWe power, etc.).