

Biogas plants decentralized sources of renewable energy

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Třeboň



- cca 8000 inhabitants
- well known for its nature, fishponds, spa with excellent reputation, history and many other attractions, for example...



... the oldest large scale agricultural biogas plant in Central Europe was built in 1974 in Třeboň.

- in operation 1974 – 2011 = 37 years !!!
- processing pig's manure + WWTP sludge



The electricity produced from the biogas plant was used to power the wastewater plant, while heating was used to heat the stables. The plant was in function every day for 37 years, until 2011, when pig's farm was closed.

Reasons for construction:

- odour elimination of manure during storage and application
- production of **heat** and electricity

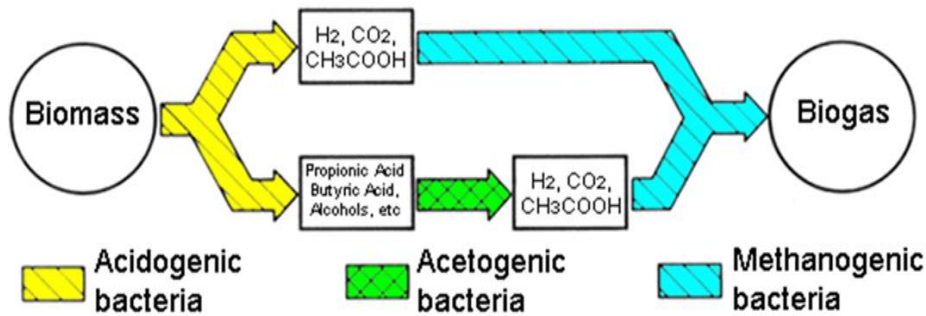
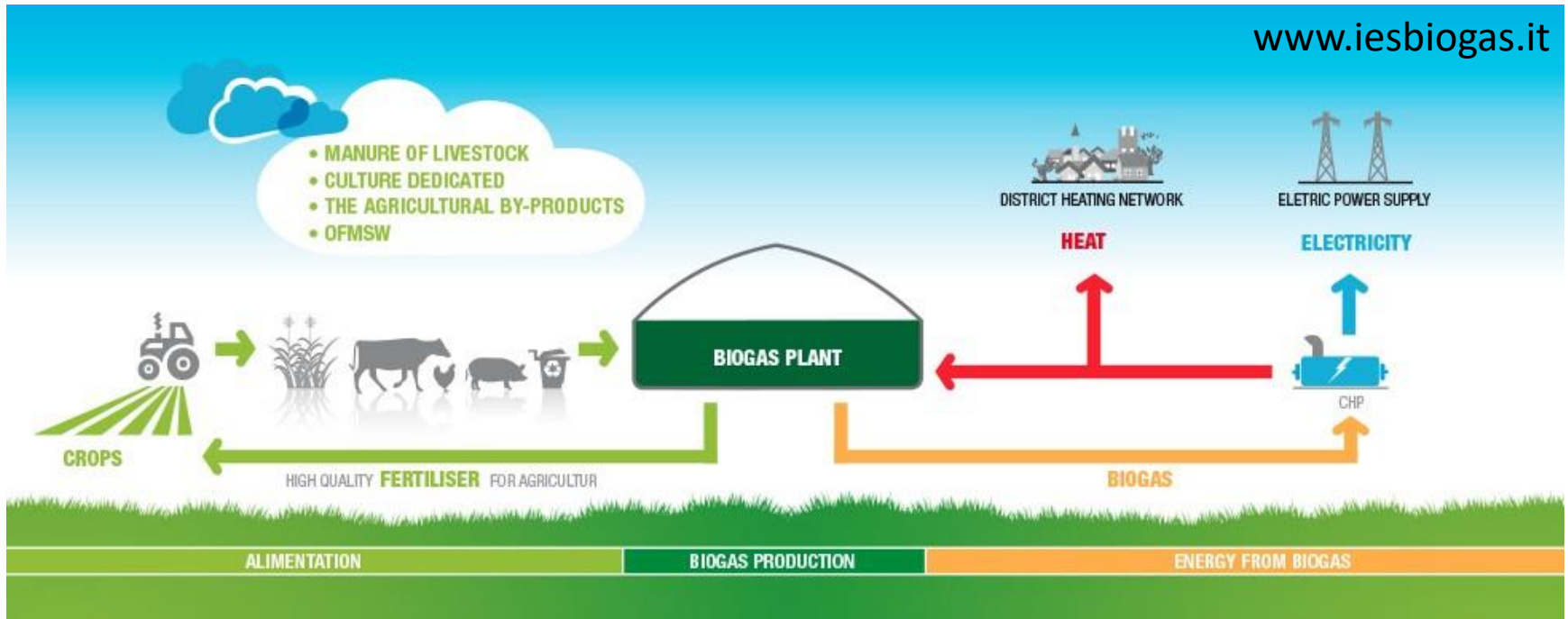


**... biogas plant with high degree of heat utilization ,
energy efficiency (energy efficiency rating)**



Biogas plant

www.iesbiogas.it



Compound	Biogas	Natural gas
<u>Methane</u> (CH ₄)	50 - 75 %	80 - 90 %
Carbon Dioxide (CO ₂)	25 - 50 %	0,5 - 2,5

Biogas: utilization for heat, electricity, biomethane

BGP Třeboň in operation from 2009

Reasons Why:

1. production of electricity and **heat**
2. to stabilize agricultural activities in region, because:
 - = *dramatic decline in cattle and pigs production*
 - = *relatively low prices of plant products*
 - = *decline in milk production (cash flow)*
3. processing of grass from floodplains



BGP Třeboň

Installed el. power: 1 000 kW = disponibile cca 7000 MWh/y

Installed heat power: 1 000 kW = disponibile cca 8000 MWh/y

Substrates: maize, grass, manure

**4.3 km of the biogas pipeline to
the heat consumption point
(Municipal Spa)**



BGP Třeboň

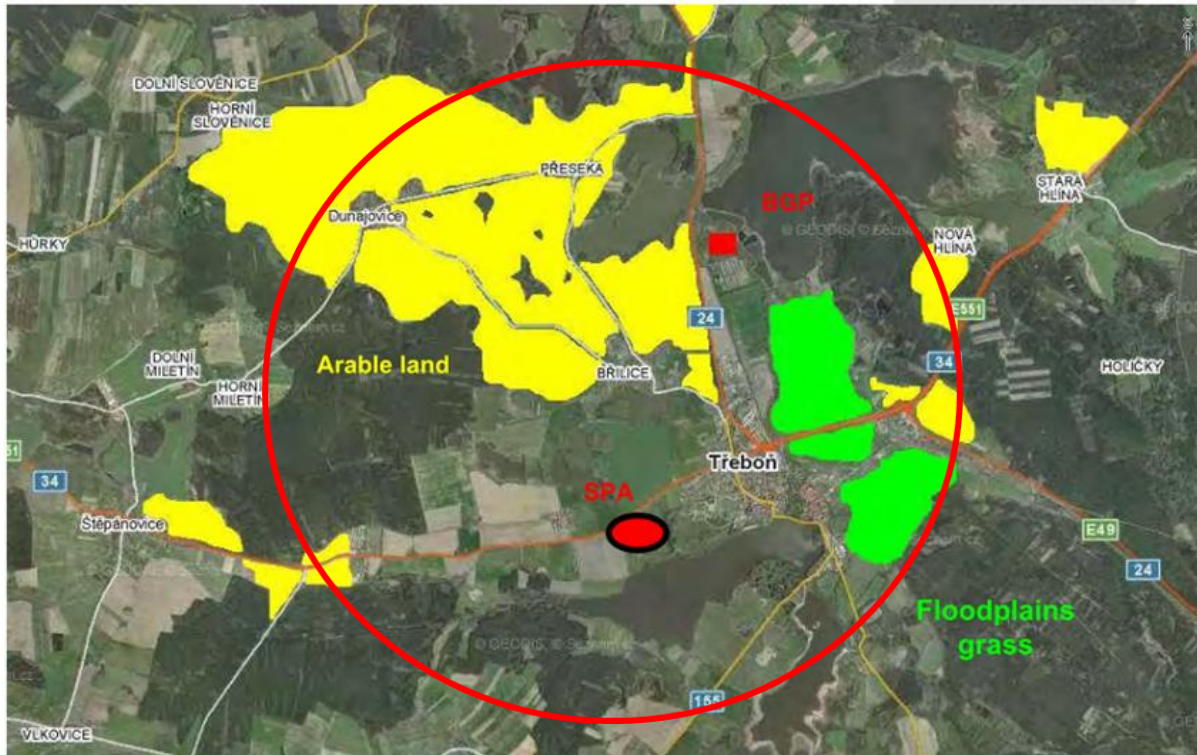
- Heat utilization – spa owned by municipality , apartment blocks
- The spa uses heat for space heating, heating of swimming pool and thermal baths.
- Win-win project 10 % lower price for heat than from natural gas
- It's saved about 1 million m³ of natural gas annually



Regional project:

diameter 4 km = area 50 km²

farmers, biomass, staff, production of energy, consumption of heat and „electricity“ = everything is regional



8 km

Energy consumption in Třeboň

8000 inhabitants

	Heat <i>MWh/year</i>	Electricity <i>MWh/year</i>
Household	24 000	12 000
From Biogas Plant production	8 000 heat equivalent	7 000
Share	33 %	58 %

Average annual consumption in CZ

Electricity	1,5 MWh/person/y
Heat	3,0 MWh/person/y

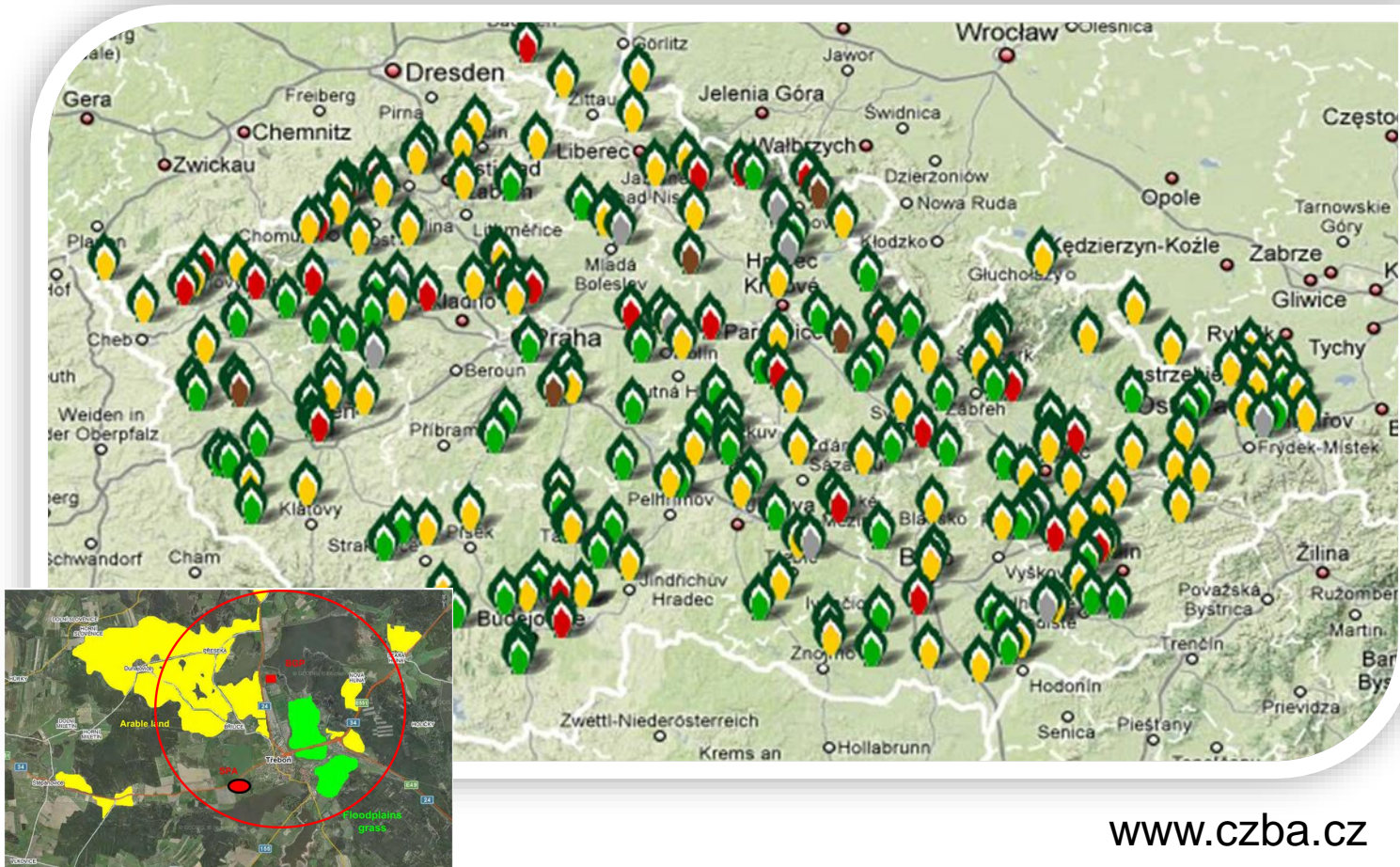
Biogas plant can be an excellent decentralized source of energy for human settlements (villages, towns) in rural districts

Radius	Area	20 % of area for biomass	Biomass production	Biogas production	Electricity	Heat	Electricity 1,5 MWh/ p./year	Heat 3 MWh/ p./year
			(30 t/ha)	(170 m ³ /t)				
km	ha	ha	FM tons	mil. m ³ /y	MWh/y	MWh/y	people	people
1	314	63	1890	0,3	643	643	426	107
3	2 826	565	16 956	2,9	5 044	5 044	3 400	1 681
4	5 024	1005	30 144	5,1	8 968	8 968	6 000	3 000

Biogas plants in the Czech Republic

total area 78 866 km²

576 BGP, 360 MW inst. el.



**Thank you
for your attention**

and greetings from Třeboň !

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