

# Supply and utilisation of biogas and natural gas in Maribor, Slovenija

- *An overview of the present situation, norms & legislation and available vehicles*

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## Introduction

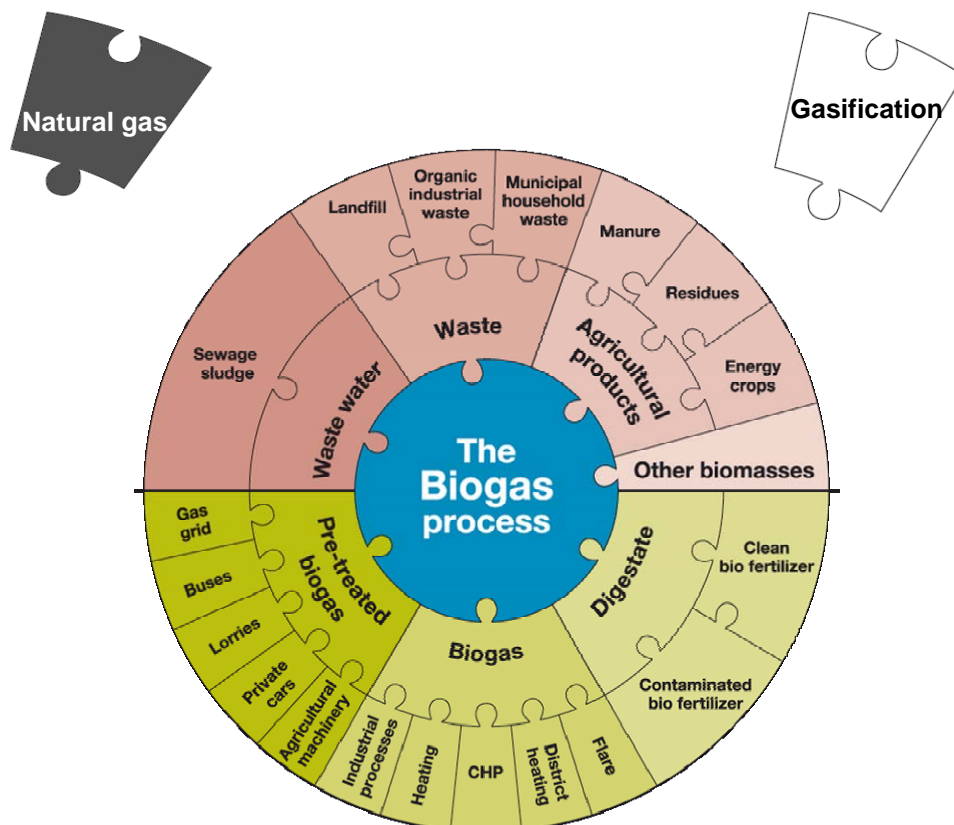
Biogas and natural gas are very clean energy sources, when combusted the amount of particles, NO<sub>x</sub>, CO etc are lower than most other fuels. Biogas is also a renewable fuel. If petrol or diesel is replaced with biogas produced from manure, the CO<sub>2</sub> emissions can be reduced with up to 180 % . The MADEGASCAR project aims at improving the conditions for a growing market for gas driven cars and light transport vehicles (NGVs) and also increase the supply of biogas and natural gas for these vehicles.

To expand the market for supply and use of gas as a fuel for vehicles it is of high importance to understand the present situation of use and supply of gas. This text sums the present situation of supply, treatment & distribution and the final use of biogas and natural gas in the region.

One chapter deals with norms and legislation. This chapter concern laws around biogas production plants, distribution of biogas and natural gas, and the use of methane gas in vehicles. The current management control measures that are used in the region to support gas vehicles are also summed in this chapter.

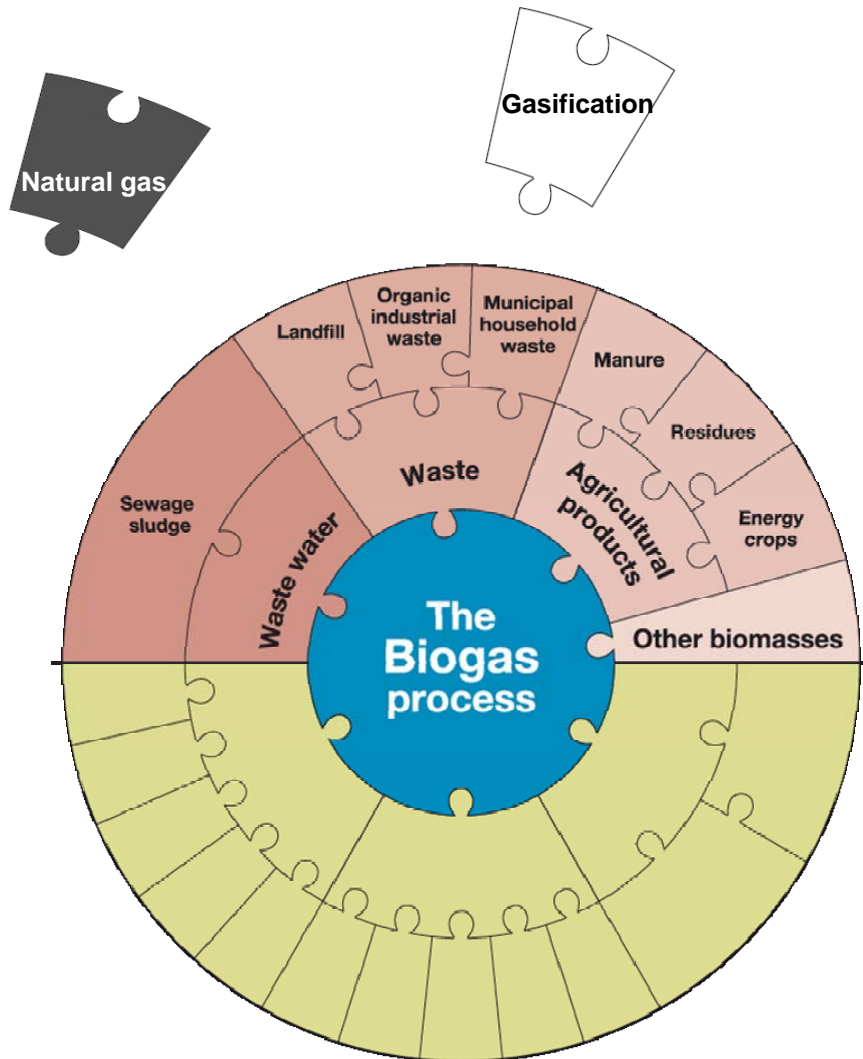
The use of LPG as vehicle fuel is also of interest for the MADEGASCAR project because of the possibility to convert these vehicles to propulsion with methane.

This text also contains an overview of the range of available NGVs in the region.



## Supply

This section handles the present supply situation of biogas, natural gas and bio methane (gasification) in the region.



## Biogas production plants

### Background

#### *Legislation*

**Energy law** (Energetski zakon (uradno prečiščeno besedilo), Uradni list RS, št. [27/2007](#))

**Ordinance about gas market** (Uredba o delovanju trga z zemeljskim plinom Ur.l.RS 95/2007)

**Ordinance about the use of biofuels as a car fuel** (Uredba o pospeševanju biogoriv in drugih obnovljivih goriv za pogon motornih vozil, Ur.l.RS 103/2007)

#### *State of the art*

There is no tradition in biogas production in Slovenia. Biogas is used for production of heat and electricity since 2002.

### Present situation

#### Waste Water

- 6 Waste water plants digests the sludge in biogas reactors
- 0,002 GWh in total production per year

#### Waste

- 4 Co-digestion plants
- 0,0026 GWh in total production per year
- 0 plants upgrades the biogas to natural gas quality

#### Agricultural products

- 4 biogas plant
- 0,004 GWh per year

## Bio methane (gasification)

### Background

No action within this field

### Present situation

- No research in the field?
- None pilot plants

### Future perspectives

There are no activities planned in the near future.

# Natural gas

## Background

### *Legislation*

**Energy law** (Energetski zakon (uradno prečiščeno besedilo), Uradni list RS, št. [27/2007](#))

**Ordinance about gas market** (Uredba o delovanju trga z zemeljskim plinom Ur.l.RS 95/2007)

**Ordinance about the use of biofuels as a car fuel** (Uredba o pospeševanju biogoriv in drugih obnovljivih goriv za pogon motornih vozil, Ur.l.RS 103/2007)

### *State of the art*

The use of the primary energy in Slovenia in 2007 was 315329 TJ, 13% was the use of natural gas. Slovenia import ca 100% of natural gas. The use of the natural gas in 2007 was 1.100 mil Sm<sup>3</sup>, 60% in industry, 16% for transformation, 14% for other useage and 10% for non-energetic use.

Slovenia has three import points, 959 km of transpiort lines (system's operater of transport nets is Geoplin). Slovenia has 3121 km of distribution lines, operated by 17 distribution companies. There are 2 gross seller of natural gas and around 20 distributors

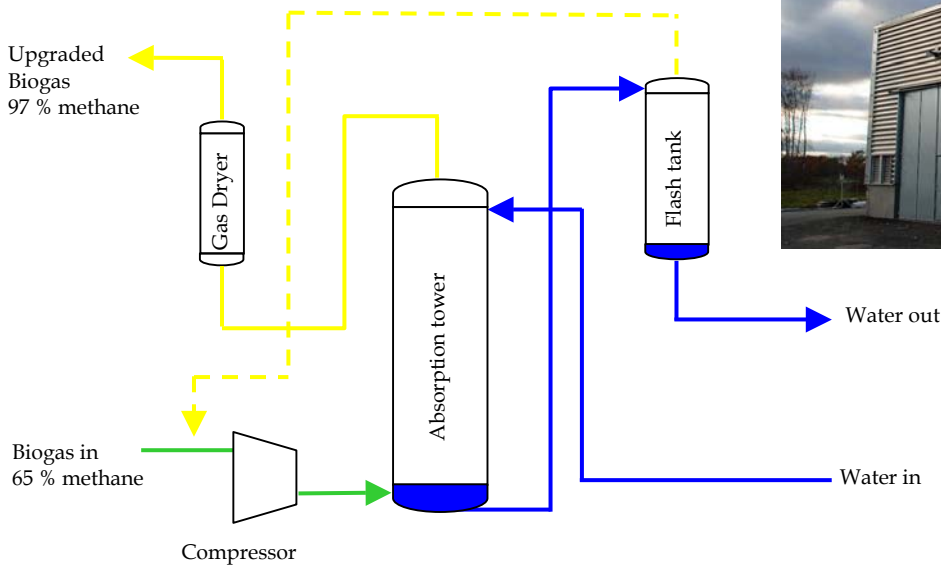
## Present situation

- 22 gas companies delivers natural gas within the country
- The Energy value of the gas is \_ca 9,5\_ kWh per Nm<sup>3</sup>
- The total number of costumers in the region is \_\_????
- The amount of sold/used gas is \_\_10450\_GWh/year

## Future perspectives

## Treatment and distribution

This section handles the present situation of biogas treatment plants and distribution systems for biogas and natural gas in the region. The number of gas fuelling stations will also be found in this section.



## Treatment of biogas (upgrading)

### Background

No background about upgrading biogas.

### Present situation

- No upgrading plants

## Gas grid

### Background

There is no biogas grid.

There is 959 km of gas transport grid and 3121 km of distribution grid in Slovenia

## Non grid transportation

### Background

Transport of the bottles for households and tanks for larger users in the form of LPG.

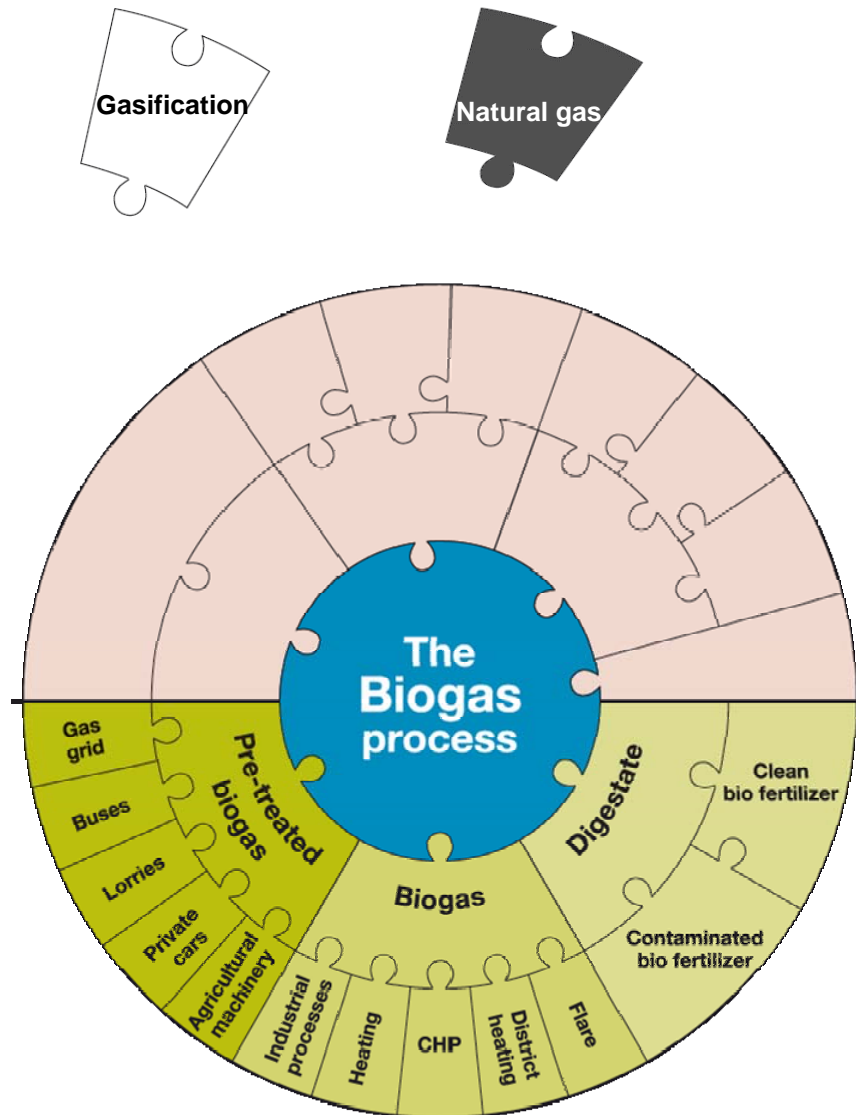
## Gas filling stations

### Background

There are no gas filling stations in the region

## Utilisation of biogas and natural gas

This section sums the use of biogas and natural gas in the region. The focus lays on use of gas for vehicles, but the use in fixed applications as heating and CHP will also be ventilated to get a better overview of the entire gas market.



## Utilisation of upgraded biogas and natural gas in vehicles

### Background

No use of biogas or natural gas in vehicles in the region

## Biogas for non transport applications

### Background

## Natural gas for non transport applications

### Background

## Norms and Legislation

### Gas norms

- Energetski zakon (uradno prečiščeno besedilo), Uradni list RS, št. [27/2007](#)
- Zakon o graditvi objektov (uradno prečiščeno besedilo), Uradni list RS, št. [102/2004](#) in [14/2005](#)
- Resolucija o Nacionalnem energetskem programu, Uradni list RS, št. [57/2004](#)
- Uredba o energetski infrastrukturi, Uradni list RS, št. [62/2003](#), [88/2003](#)
- Uredba o zagotavljanju zanesljivosti oskrbe z zemeljskim plinom, Uradni list RS, št. [8/2007](#)
- Uredba o pospeševanju biogoriv in drugih obnovljivih goriv za pogon motornih vozil Ur.l. RS 10372007
- Uredba o pogojih in postopku za izdajo ter odvzem licence za opravljanje energetske dejavnosti, Uradni list RS, št. [21/2001](#), [31/2001](#), [66/2005](#)
- Uredba o delovanju trga z zemeljskim plinom, Uradni list RS, št. [95/2007](#)
- Uredba o vzdrževanju del v javno korist na področju energetike, Uradni list RS, št. [125/2004](#)
- Splošni pogoji za dobavo iz odjem zemeljskega plina iz prenosnega omrežja Ur.l. RS št. 89/2005

### Supply

- Zakon o varstvu okolja Ur. l. RS št. 39/2006
- Zakon o urejanju prostora Ur. l. RS, št. 110/2002
- Zakon o graditvi objektov (uradno prečiščeno besedilo), Uradni list RS, št. [102/2004](#) in [14/2005](#)
- Resolucija o Nacionalnem energetskem programu, Uradni list RS, št. [57/2004](#)

### Treatment and distribution

- [Splošni pogoji za dobavo in odjem zemeljskega plina iz prenosnega omrežja](#) Ur.l. RS, št. [89/2005](#)
- Uredba o načinu izvajanja gospodarske javne službe dejavnost sistemskega operaterja prenosnega omrežja zemeljskega plina, Uradni list RS, št. [97/2004](#) in [8/2005](#)
- Akt o določitvi metodologije za obračunavanje omrežnine za prenosno omrežje zemeljskega plina, Uradni list RS, št. [131/04](#) in [132/04](#)
- Akt o določitvi metodologije za določitev omrežnine in kriterijev za ugotavljanje upravičenih stroškov za prenosno omrežje zemeljskega plina, Uradni list RS, št. [131/04](#)
- [Sistemska obratovalna navodila za prenos zemeljskega plina](#) Ur.l. RS, št. [89/2005](#)
- Pravilnik o tehničnih pogojih za graditev, obratovanje in vzdrževanje plinovodov z največjim delovnim tlakom do vključno 16 barov, Uradni list RS, št. [26/02](#), [54/02](#)

- Akt o določitvi metodologije za obračunavanje omrežnine za distribucijsko omrežje zemeljskega plina, Uradni list RS, št.[87/05](#) in [102/05](#)
- Akt o določitvi metodologije za določitev omrežnine in kriterijev za ugotavljanje upravičenih stroškov za distribucijsko omrežje zemeljskega plina, Uradni list RS, št.[87/05](#) in [102/05](#)
- Akt o določitvi metodologije za določitev splošnih pogojev za dobavo in odjem zemeljskega plina iz distribucijskega omrežja, Uradni list RS, št.[87/05](#) in [102/05](#)

## Available vehicles

There are no vehicles available in the region, neither personal cars or light transport vehicles.

## **MADEGASCAR**

MADEGASCAR - market development of gas driven cars, is a project which aims at developing the market for gas driven vehicles – natural gas and biogas fuelled vehicles. Strengthening the supply and distribution infrastructure of biogas and natural gas to fuel vehicles is also a goal for the project.

### **Intelligent Energy – Europe**

Intelligent Energy - Europe is the EU's tool for funding action to improve the conditions for energy saving and the use of renewable energy sources in Europe

### **Energy agency of Podravje – Institution for sustainable energy use**

Local energy agency was established in June 2006 and is cofinanced by European Commission programme Intelligent Energy Europe. EnergaP covers the area of Municipality of Maribor and 15 smaller municipalities in Podravje region together around 180.000 inhabitants. We support the introduction of good energy management practices, advocate the concept of sustainability, provide information and guidance, and offer a number of other local services based on specific local energy needs. We operate impartially on both energy demand and supply issues and reflect the local situations, economic and social circumstances and the geographical size of the relevant local area.

We provide :

- Information, advice and training on energy management issues
- Support for the implementation of local/regional energy plans
- Energy audits of public and private buildings
- Raising awareness on energy efficiency, renewable energy sources and transport issues
- Search for energy-management incentive funds at national and international level

We can give wide-ranging advice on all aspects of energy, as well as technical assistance in the design of energy projects, heritage and infrastructure and provision of public information on these topics. The EnergaP acts as a contact point for relations with European networks and institutions as well as an intermediary to local, regional and national players.

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