

# A project to stimulate the use of biogas as fuel for city buses

The world is facing increased demand for transportation at the same time that fossil fuel resources are diminishing. On top of this, concern for climate change due to the emission of green house gases is growing. This has boosted the interest for investments in new energy technologies. One technology gaining widespread recognition is that of producing biogas. The Baltic Biogas Bus project aims to prepare for and increase the use of the eco-fuel biogas in public transport. In an interview for *Eurotransport*, along with other members of the project, Lennart Hallgren, Project Manager and Advisor at Stockholm Public Transport (SL) and Manager of the Baltic Biogas Bus project, explains how this project can help reduce environmental impact from the traffic and make the Baltic region a better place to live, work and invest in.

## Renewable fuel for climate neutral public transport

Producing biogas is not only a way to decrease dependency on fossil fuels and lead to less impact on climate change, but biogas is also a fuel fit to reduce other environmental impacts.

"Biogas is part of the natural carbon cycle and therefore has limited climate impact," states Mr. Hallgren. "Compared to diesel or petrol it also reduces local emissions substantially leading to improved air and environmental quality. Take into account that it can easily be produced in urban areas and you can understand that biogas is ideal for use as fuel for public transportation."

## Baltic Biogas Bus project

The Baltic Biogas Bus project is partly funded by



the European Union's Baltic Sea Region Programme and officially started two years ago in June 2009 and will run until September 2012. However, preparations for the project started almost two years earlier.

"Although the preparation phase was time consuming, the meticulous planning of the project has paid off," says Mr. Hallgren. "All partners are very devoted and have a clear idea of what we will achieve together."

The aim of the project is to increase the use of biogas buses in cities within the Baltic Sea Region. The project was initiated by Stockholm Public Transport and consists of 12 partner

organisations from eight countries in the region. Some partners are direct providers of public transport, but research institutes and city municipalities also participate as partners.

"Having a broad spectrum of partners is crucial for the success of the project," explains Mr. Hallgren. "The possibility of interacting with and learning from each other is one of the great advantages of the project."

Apart from the 12 partners of the project, there are several producers and distributors of biogas, bus suppliers, bus operators and other stakeholders participating in the project as associated partners, providing input and sharing experiences.

From a chemical perspective, there is no difference between biogas and natural gas. The big difference lies in how it is generated. While natural gas is a fossil fuel requiring millions of years to materialise, biogas can be produced from what traditionally is considered to be waste in no more than 14 days. This also means that biogas is 100% renewable, whereas natural gas is being depleted.

## Introducing renewable fuels requires strategic sustainable decisions

The project is divided into four major components, each interlinked with the others.

The first regards strategies on how to implement biogas as fuel for public transport.

“There are already good examples of the use of biogas buses, yet these best practices are not widely used in European cities,” explains Sara Anderson, Biogas Expert at Stockholm Public Transport. One direct outcome of the project is a manual on how to introduce biogas buses in public transport. To a high extent, the manual builds on Stockholm Public Transport’s own experiences since biogas buses were introduced in the Swedish capital almost a decade ago.

Today, all public transport in the urban area of Stockholm runs on renewable fuels, of which biogas is an important component. In 2025,

fossil fuels will have been phased out from public transport of the entire Stockholm region.

Ms. Anderson continues: “The manual gives clear guidance to other cities, not only in the Baltic Sea region, interested in introducing biogas buses.”

One of the partners who has already started to work on introducing biogas buses in their public transport system is the city of Tartu.

“The Baltic Biogas Bus project has been very valuable to us. The idea of using biogas is not new to us, but thanks to the project, both funding and experience is available to us,” says Margus Hanson, Member of the Estonian Parliament and Vice-Mayor of Estonia’s second

largest city, which is currently developing an ambitious transport plan for the city where biogas will play a prominent part.

Another partner, the member organisation HOG Energy of Norway, has convinced the city of Bergen to invest in biogas buses in their public transport system.

“Norway is a country with abundant resources of oil and natural gas and investing in biogas is not the most obvious choice for decision makers,” says Stein Bjorlykke at HOG Energy. “However, the city of Bergen understands the environmental benefits of biogas.”

In Norway’s capital Oslo, the public transport provider Ruter – also a member of the project – is making similar investments in biogas buses.

**Supply of biogas**

The second component regards the supply of biogas.

“It does not matter how environmentally friendly biogas is as transport fuel; if there are no guarantees for a stable supply, no transport company will commit to any major investment,” says Wojciech Gis of the Polish Motor Transport Institute in Warsaw. “Therefore we have conducted a study about production potential of biogas in the Baltic Sea Region. This can serve as a basis to convince more transport companies to start using biogas instead of diesel as transport fuel. There is great potential to produce biogas in the region.”

Traditionally, biogas is produced in wastewater treatment plants and landfills. Another partner, the research and development institute ATI erc of Germany, is currently conducting studies using less conventional substrates to produce biogas as well as mixing biogas with hydrogen to improve energy efficiency.

“Traditional sources for producing biogas are not yet fully exploited and there is still a lot of potential to extend production in the region,” explains Petra Seidenberg at ATI erc. “But thanks to the environmental benefits of biogas, demand might soon outgrow potential supply and it is therefore necessary to investigate new sources for production.”

**Distribution of biogas**

Once the biogas has been produced, it has to be distributed. The third component deals with analysis and design of distribution networks, bus

**Working together on climate-neutral public transport**

Better air quality  
Part of the sustainable ecocycle  
Renewable energy source  
Minimised emissions

We are twelve partners in Baltic Biogas Bus – an EU-funded project which seeks to encourage cities and regions to use biogas as a fuel for public transport. Biogas is part of the sustainable ecocycle and contributes to cleaner air in cities thanks to low emissions of particles and nitrogen oxide. Increased use of biogas in urban traffic will help to make our cities more pleasant places to live in. Strengthening climate-neutral public transport also means reduced climate impact from the transport sector – the sector whose emissions are currently contributing the most to climate change. The Baltic Biogas Bus project is supported by the EU, is part of the Baltic Sea Region programme and includes cities, counties and companies in eight countries within the Baltic region. Read more at [www.balticbiogasbus.eu](http://www.balticbiogasbus.eu)

Stockholm Public Transport, BIOGAS, VIT, HOG, HORDALAND COUNTY COUNCIL, Ruter#, RDSB, ATI erc, ITC, KÄRIMO AUTOTRANSIIT

Baltic Biogas Bus

Part financed by the European Union, European Regional Development Fund

depots and fuelling systems. Compared to natural gas, which normally has to be transported long distances, biogas is often produced in or near city centres. In Stockholm, a gas grid is under construction by Stockholm Gas, a subsidiary of energy company Fortum.

distribution of other kinds might be more feasible. HOG Energy is investigating different possibilities to make distribution of biogas more cost efficient. These include analysing different composite materials for tanks and the feasibility of transporting liquid biogas.

broadcasted on the evening news. The interest is not confined to Europe; several Chinese delegations have visited Stockholm Public Transport during the last couple of years to learn more about the advantages of using biogas as fuel.

Apart from the eight partner countries, a regional seminar has also been held in St. Petersburg in cooperation with state university SUAI and another one is on its way.

"For the time being, interest in biogas is limited in Russia, mainly because of the high supply of natural gas and oil," explains Mr. Hallgren. "But even if it is difficult for biogas to compete financially in the short-term, the environmental aspects are becoming more-and-more important also in Russia. Just as in Norway, I firmly believe our message will catch attention."

To a high extent, partners participate in each other's regional dissemination seminars where the results and messages of the project can be spread and partners also receive input from external sources.

Many of the activities are ongoing and most reports are being drafted. When finalised, all results from the project are being made available on the webpage [www.balticbiogasbus.eu](http://www.balticbiogasbus.eu).

To ensure the progress of the project, continuous contact between partners is necessary.

"In order to keep the project moving forward at a quick pace, we have partner meetings twice a year where we can meet and discuss different issues. E-mail and phone calls are part of our everyday work, but it cannot substitute direct encounters, especially taking into account that we are partners from eight different countries. Cultural barriers are much easier to overcome when meeting face-to-face," concludes Mr. Hallgren.



**Lennart Hallgren** has a background as Chief Financial Officer (CFO) at Stockholm Public Transport (SL) and today works with major projects in the field of sustainable development. In recent years, Lennart has been involved in SL's and Stockholm County's commitment to renewable fuels and has been responsible for contracts regarding supply of renewable fuels. Since 2009, Lennart has been the Manager of the Baltic Biogas Bus project. Lennart is also a Member of the SL Board as an employee representative.



The Baltic Biogas Bus project was initiated by Stockholm Public Transport with the aim to increase the use of biogas buses in cities within the Baltic Sea Region.

"Several of our bus depots already get biogas today, but more investments to extend the distribution network are under way," says Mr. Hallgren.

However, a network of pipelines requires substantial investments and for smaller regions

### Use of biogas

The last component concerns the use and supply of biogas buses. Since biogas buses are relatively new on the market, the production volume is limited.

"Stockholm Public Transport is a major user and investor in biogas buses and therefore we have a unique opportunity to influence our suppliers through sharing our experiences with them," says Mr. Hallgren.

Since production volumes for biogas buses are significantly lower than for common diesel buses, producers do not invest huge amounts in research and development. Through some of the research institutes involved in the Baltic Biogas Bus project, studies on technology development and emissions are carried out.













### Communication of results

To disseminate the results of the project, a lot of effort is put on communication. All partners are to arrange at least two regional dissemination seminars during the course of the project. Normally these seminars are directed towards politicians and other stakeholders in the transport sector.

"So far, we have been able to reach out to several hundreds of people directly through these seminars," Mr. Hallgren says.

Interest from media and the general public is also growing. At a 2010 seminar held in Riga the capital of Latvia, national television attended and information about the project was

### Participants in the Baltic Biogas Bus project

-  Ruter, Public Transport for Oslo and Akershus. [www.ruter.no](http://www.ruter.no)
-  HOG Energy. [www.holga.no](http://www.holga.no)
-  Skysst, Hordaland County Council. [www.hordaland.no](http://www.hordaland.no)
-  SL, Stockholm Public Transport. [www.sl.se](http://www.sl.se)
-  Biogas East. [www.biogasost.se](http://www.biogasost.se)
-  VTT Technical Research Centre of Finland. [www.vtt.fi](http://www.vtt.fi)
-  Tartu City. [www.tartu.ee](http://www.tartu.ee)
-  Riga City Council Traffic Department. [www.rdsd.lv](http://www.rdsd.lv)
-  Buses of Kaunas City. [www.kaunoautobusai.lt](http://www.kaunoautobusai.lt)
-  Motor Transport Institute. [www.its.waw.pl](http://www.its.waw.pl)
-  ATI erc – Education, Research, Furtherance of Cooperation. [www.ati-erc.de](http://www.ati-erc.de)
-  ITC Innovations and Trendcenter. [www.itc-bentwisch.de](http://www.itc-bentwisch.de)

The Baltic Biogas Bus project will prepare for and increase the use of the eco-fuel Biogas in public transport in order to reduce environmental impact from traffic and make the Baltic region a better place to live, work and invest in.

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