

WP 5

Results from case studies/feasibility studies – gas vehicles and gas car expansion plans

D.5.4

Summary of Deliverables (D.5.3.1. – 5.3.13)

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Partner	Country	Region	Executed feasibility studies	Name/Title
SEA (1) and ESS (13)	Sweden	South Sweden	2	Taxikalkyl, Mercedes and Volkswagen
GEA (2) and StGW (3)	Austria	Styria, Vienna, Salzburg, Upper and Lower Austria	3	Taxi 878, Styrian Administration Post AG
AEA (15)	Austria	Upper and Lower Austria	1	Dorf- und Stadterneuerung
OPL (4)	UK	Somerset	1	South Somerset District Council
BE (5)	Germany	Berlin/Brandenburg	4	Consultancy ITDZ, Mercedesöl, VV Vertriebsvereinigung, Bezirksamt Mitte
San Valero (6)	Spain	Aragon/La Rioja/Castilla y Leon	1	Alosa bus company
EnergaP (7)	Slovenia	Podravje (Maribor)	2	TUS oil company, Municipality of Maribor
SEVEn (8)	Czech rep.	City of Prague, South Bohemia and Pardubice	5	Prazske sluzby Dopravni podnik hl. m. Prahy a.s. LeasePlan ČR, s.r.o. Sixt green rent Prag ZOO
LEI (9)	Lithuania	Vilnius/Kaunas/Klaipėda	1	Vilniaus autobusai
PAE (11)	Poland	Podkarpacka/Malopolskie	1	Zakład Cukierniczo Piekarniczy IZA, bakery
BoRAEM (12)	Bulgaria	Bourgas	1	Burgabus Ltd
Malarnet (14)	Sweden	Mälardalen	1	Taxi Stockholm
IEO (10)	Poland	Mazowieckie	2	Wawa Taxi Conversion LTI TX 4

This document is a summary of all WP 5.3 deliverables and is listing experiences, barriers and solutions to overcome these barriers as well as success factors and final conclusions and recommendations. Identifying this factors out of the case and feasibility studies it is easy to understand what is needed for vehicles expansion also in the future in the respective countries.

When it comes to **vehicle expansion** the following points can be listed in general:

- Political statement – pro natural gas and biomethane
- Commitment from government and gas supplier
- More support (policy, administration and car dealers)
- More vehicles (available and serial cars); different models
- Pressure to decision makers
- Subsidies for NGV procurement
- Concerned action on the level of state & administration
- Tax assurance for natural gas and biomethane
- Information about vehicles and about filling stations
- Information about advantages (economic and environmental)
- Filling stations are needed first – then there will be investment in vehicles
- Denser filling station network
- More involvement of major fleets; cooperation with large fleet companies (also for heavy duty vehicles)
- Lower purchase price of vehicles
- Public relation to promote biogas and stress the advantages
- Support for certification of BioErdgas as sustainable fuel
- Acceptance from general public, conviction of decision makers to CNG and biomethane as safe, clean fuel for transport, incentives from government
- Need to inform about technical, legal and economical aspects of biomethane and natural gas
- Cooperation with key partners and actors
- Exemption from road tax or congestion charge
- Reference projects
- Marketing, media and press events for constant awareness raising and information

Del. 5.4. – Common document comparing results from case studies, feasibility studies matching gas car expansion plans (5.000 more cars within Madegascar)

Partners	Experiences with customers, car dealers etc.	Barriers, Problems	Solutions to over-come barriers	Description, comparison of measures	Success factors	Executed expansion, reached results	Conclusions, recommendations
Feasibility study SEA/ESS	<i>Target group: taxi companies and car dealers (event for both)</i>	<i>CNG unknown fuel; lack of filling stations, perception of low power engine</i>	<i>Argumentation, general information and about financial support; environmental performance</i>		<i>General information materials about NGV's and CNG, filling stations locations</i>	<i>Some purchases were made (number not specified); Car dealer is offering eco and safe driving courses</i>	<i>Reduced costs and emissions, awareness of customers</i>
Additional remarks from discussion at Berlin meeting: SEA	<i>No understanding why selling gas car</i>	<i>Lack of interest</i>	<i>Argumentation is needed Background information</i>	<i>Phone calls, meeting at events, breakfast seminar</i>	<i>If one starts to buy its easier for others to follow (snowball effect)</i>		<i>Never give up, keep going, visiting the same person several times</i>
Additional remarks from discussion at Berlin meeting ESS	<i>No natural gas grid Problems with filling station density</i>	<i>Profitability of a filling station</i>	<i>Huge users (busses, garbage trucks) are needed</i>	<i>Training for municipalities</i>			<i>Start with gas busses</i>
STGW	<i>Customer: delivery service with 400 – 600 cars in operation; Save fuel cost, high ecological awareness</i>	<i>Higher purchase price, availability of CNG filling stations</i>	<i>Establish cooperation with car dealer/car importer, free fuel voucher</i>	<i>consulting, free calculation of profitability, establishing the co-operation organizing press conference</i>	<i>Calculating of profitability, giving information on public support possibilities</i>	<i>50 – 100 CNG cars; regular meetings and post calculation of savings</i>	<i>Establish co-operations, make use of third party actors; difficult to compare cars with different performance</i>

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GEA	<p>Save fuel costs, high ecological awareness, shining example. Wish to have a creative design when driving on CNG. Some vehicles are nicely designed on the vehicle tail to show that it is driving on gas</p> <p>Very motivated customer; shining example; save costs</p>	<p>Higher purchase price, limitation of suited CNG vehicles for the taxi business. Mercedes was the favorite fleet vehicle (image), increasing necessity and trend to transport more people on one ride (around 6 persons); drivers are self employed → decisions for changing to CNG are always taken on the individual basis</p> <p>Vehicle power!</p>	<p>Wait till suitable vehicles are on the market. The B-class was at the time we had the personal advice not available. Discussion with various self employed taxi drivers within the 878 fleet, fuel voucher</p> <p>Drive training event, information and advice, big press conference after acquisition of vehicles</p>	<p>Consulting, calculation of profitability, personal advice and constant contact; information about financial support</p> <p>Consulting, calculation of profitability, personal advice and constant contact; high motivation of Styrian Administration to change</p>	<p>Experience exchange about actual vehicle suitability and practicability</p> <p>Constant close contact and advice, events for publicity and image</p>	<p>First vehicles were bought, other follow constantly; they have now 3 Mercedes E200 and 2 Mercedes B180 in the CNG versions in operation</p> <p>7 CNG Opel Zafira were bought, other vehicles will follow</p>	<p>If limited to a favorite car brand, a switch is financially difficult to realize. The B-class is cheaper and makes a switch to CNG easier. Together with financial support and CNG voucher a fleet conversion is achievable</p> <p>A very motivated client is helpful. Turbo charging engines are welcome regarding vehicle power. Keep contact to fleet manager for follow up activities and experience exchange</p>
AEA	<p>Target group: Municipalities</p>	<p>petrol station network not yet comprehensive no subsidies for associations</p>	<p>cost-effectiveness</p> <p>environmental-friendliness</p>	<p>free advice including calculation of cost-effectiveness</p>	<p>Excel calculation tool</p>	-	<p>Difficult to change to CNG for this client; lack of interest for calculation of savings potential</p>

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OPL	South Somerset District Council (municipality), large fleet with high profile Insisting on using only biomethane, not fossil CNG Meeting carbon reduction target	If sufficient bio-methane from food waste is available; long persuasion period – customer belief that bioethanol might be a better fuel No vehicles on the market	Meetings and information, integration of various actors	Phone calls, meetings and presentations to the customer, but also with CNG vehicles manufactures and with a waste management company	Organic Power's feasibility study tool Photographs and statistics of NGVs	35 vehicles will switch to biomethane (Mercedes Sprinter, VW Caddy, Iveco Daily ,forklift truck)	Meetings and presentations are important, identification of leasing and service company is important Flagship for other local authorities
Additional remarks from discussion at Berlin meeting: OPL			Large users (busses) are needed, Change politics				Inform people about increase in NGVs even if regular car sales are down
BE¹	Economical and ecological advantage is visible; saving fuel costs	Availability of CNG at all filling stations and range; availability of CNG cars as leading cars Higher costs for repair service	Map of gas filling stations, explanation of saving costs and CO2-emissions; con-tact to gas supplier; advice to download gas filling stations on navigation system; information about leasing companies	Description of Biomethane (Sustainability; CO2-savings); Data sheet, Biomethane brochure; Excel tool for computation of CO2-savings	Marketing of Bio CNG	3 vehicles; 15 Mercedes Sprinter and 6 VW transporters Decision between VW Caddy and Ford Focus is still open 12 Mercedes Sprinter, 3 Skoda Roomster	Open minded customer helps a lot; positive perception and experience helps to change more vehicles in the fleet Persuasion about advantages and technique is important. Test vehicles before changing fleet

¹ BE conducted also a study *Vermarktungsstrategien für Heimbetankungsanlagen in Berlin/Brandenburg (Marketing strategies for home fuelling plants in Berlin/Brandenburg)* which is mentioned in WP 4 but also of relevance for WP 5. Please check end of the document for additional information.

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Additional remarks from discussion at Berlin meeting: BE		Number of gas vehicles is not increasing that much (e-mobility in Berlin and Hamburg), Natural gas as solution of the future?					Reliable information about different alternative fuels (hydrogen, gas, electricity etc.)
San Valero	Private bus company dealing with interurban passenger transport; emission and cost reduction as goal	Space reduction, higher cost, lack of filling points, less power of engine; buses 20 % more expensive Characteristics (technically more inefficient than gasoil, slower filling system, lower acceleration	Positive image of the company, public support at regional and national level noise pollution reduction, emissions reduction Best practice examples of EU countries	Technical meetings with key stakeholders involved, SWOT analysis	Cooperation with actors and stakeholders of the network	Decision not yet made	Installation of filling stations comes first In Spain data is only available for busses in Spain – therefore the study was a direct result of the Spanish network partners in close cooperation with them
Energap	The CNG technology is unknown in Slovenia	Lack of legislative documents and no technical or financial support from local and regional governments High price of natural gas; environment is not a crucial factor		Phone calls, meetings	-	No marketing activities possible without filling stations and with many legal and financial barriers	First steps – develop legal and financial framework in the country National legislation should be changed in favour of using CNG or biogas

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Additional remarks from discussion at Berlin meeting: Energap		<i>Legislation is not allowing gas filling stations in general (private and public) due to security reasons</i>	<i>Studies how it is possible to change legislation</i>				
SEVEN	<p><i>The primary motivation is to contribute to the better city environment, lower running costs only offset higher initial investment costs</i></p> <p><i>Operator of public transportation system</i></p> <p><i>Comprehensive report which assessed CO2 abatement potential of various measures</i></p>	<p><i>More expensive CNG vehicle</i></p> <p><i>Early discussion about NGV busses. Anticipation of management that negative aspects (economic, operational, safety) will overweigh positive (environmental) ones</i></p> <p><i>Convincing about CNG as alternative</i></p>	<p><i>Calculation, partial subsidy of Prag city to lower investment cost, helpful tools for advice</i></p> <p><i>Comprehensive feasibility study by Seven</i></p> <p><i>Convincing the client about advantages (EEV standard emissions etc.)</i></p> <p><i>Recommendation to look for additional financing</i></p> <p><i>Prove the economic viability of CNG-based commercial vehicles</i></p>	<p><i>Objective overview was needed</i></p> <p><i>Take into consideration all the related aspects and evaluated their importance and influence</i></p> <p><i>Worldwide program named GreenPlan (environmental issues); Show fuel reduction and economic efficiency of CNG models</i></p> <p><i>Calculation of different models</i></p>	<p><i>Calculations of emissions savings, difference in fuel costs and resulting economic effectiveness taking into consideration higher initial costs of procurement of NGVs</i></p> <p><i>Message CNG really pays off" in the GreenPlan Programme</i></p> <p><i>Press conference about this program and other CO2 abatement measures</i></p>	<p><i>50 heavy duty vehicles</i></p> <p><i>100 - 150 busses in discussion</i></p> <p><i>10 CNG models for SIXT</i></p> <p><i>2 passenger NGVs for Prag ZOO</i></p>	<p><i>Shorten pay back period for the investors (subsidies)</i></p> <p><i>Public sector is important (taxation reductions and provision of investment subsidies)</i></p> <p><i>Bus operators are very reluctant to diversify their fleets (different models and fuels) if they do not get financial support</i></p> <p><i>Low number of filling stations discourage prospective owners from purchasing CNG models</i></p>

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SEVEN	<i>Introduction of CNG-based cars into the car fleet of Prague ZOO is part of a more complex strategy. The primary motivation would be to present that ZOO and its staff are using more environmentally friendly forms of transportation</i>	<i>To offer customers of the company the possibility to rent eco -friendly vehicles; filling stations are available in each bigger city and using CNG offers lower running costs</i>	<i>Co communicate this message in the framework of the GreenPlan Programme for customers. This was met with the positive reaction e.g. by DHL which procured gradually more than 5 NGVs to use them in daily delivery service</i>	<i>SEVEN only advised that cars using alternative fuels including CNG are exempted from road tax (about 100 - 200 EUR/car.a)</i>	<i>The company actively promotes the availability of CNG models for rent in its fleet under the product "SIXT GREEN"</i>		<i>SIXT pioneered on the Czech market the possibility to rent also eco-friendly vehicles which save fuel costs. (increase clients interest, improve company competitiveness)</i> <i>The Prague ZOO Possibility to "green" its car fleet by CNG vehicles for Prague ZOO. Future goal to utilize biowastes for producing fuel. MADEGASCAR contributed to the design of such a model which may be hopefully implemented ultimately</i>
Additional remarks from discussion at Berlin meeting: SEVEN	<i>Investment will be needed for filling station</i>	<i>Prices for buses and vehicles are too high</i> <i>Technical reliability; Lack of filling stations</i>	<i>More filling stations</i> <i>More fleet operators to increase gas sale</i>				<i>Lower prices for buses, affordable price of biogas; differentiate biogas from natural gas (most advanced second generation biofuels; better official policy)</i>

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LEI		Excise tax for CNG, economical crisis in the country No financial support or favourable condition for credits for CNG transport; No economic interest for transport companies and for private users	Solve ecological problems No excise tax for CNG for public and private transport		Best practice examples from other Madagascar partners	No CNG vehicles	Consequently a more favourable Special Programme for development CNG industry in country must be created (international program!)
Additional remarks from discussion at Berlin meeting: LEI	Increased interest	Cheap LPG price					Support is needed
IEO	Customer: Taxi Company Wawa Taxi hesitates between diesel and CNG cabs	Lack of knowledge concerning conversion cars to CNG among general public Low promotion of natural gas, no calculations of profitability	Tool for economic profitability of conversion car to CNG has been prepared, information and dissemination activities	Giving information, supported by application for refunding car costs	Economical feasibility	20 Seats and 200 LTI TX 4 for Wawa Taxi	More filling stations are needed

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PAE	<i>Customer: Bakery; Long time convincing work that "it's worth"</i>	<i>Insufficient number of natural gas filling stations</i>	<i>Convince that CNG / Biomethan is a future fuel and it's price will be quite stable</i>		<i>Save fuel cost, availability of car refunding from support program RPO</i>	<i>2 IVECO for bakery</i>	<i>The gas technology is rather seen as LPG. Cars are only theoretically available</i>
BoRAEM	<i>Public transport delivery service</i>	<i>High purchase price, limited finances</i>	<i>Apply for co-finance and bank loan</i>	<i>Consultations, calculation of the profitability and savings, organizing a good media coverage</i>	<i>Profitability calculations</i>	<i>20 buses</i>	<i>It is not really easy to be economical reasonable, but the calculations shows a good savings, so the only difficult part is to secure the start-up investment</i>
MalarNet	<i>Taxi Stockholm</i>	<i>Reduced space for luggage in taxi cars; demand for automatic vehicles</i> <i>Problems finding CNG cars with large enough gas tanks. Supply of gas has earlier been a problem. Fuel stations have been out of biogas frequently. Since 2008, supply is backed up with natural gas and shortages are rare</i>	<i>Create workshops to build information, market vehicles</i>	<i>Continuous dialogue with car companies, about the size of gas tanks in CNG cars and with the suppliers of gas about how to avoid shortages</i>		<i>350 additional CNG vehicles (at present 181 CNG cars)</i>	<i>Media attention is important; The company recommends other companies that want to switch to CNG cars to keep a steady dialogue with suppliers of CNG cars in order that they develop suitable car models</i>

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Additional remarks from discussion at Berlin meeting: Malarnet	Filling stations are not working reliable (short supply), car dealers are very interested, promotional stickers on the car very successful	Malfunction of biomethane filling stations	Create workshops to build information, market vehicles	development of stickers	Constant information, awareness raising		Creating promotional material (high demand); brochures, news articles; posting materials onto the webpage; word of mouth advertising

BE - Marketing strategies for home fuelling stations in Berlin/Brandenburg

Aim of the study: Comparison of different marketing channels for home fuelling stations in Berlin/Brandenburg with the goal of higher market penetration of gas vehicles a higher customer liaison as well as a higher gas sale. The pro / contra list was made from a customer view.

	Sale (with/without financial support); single payment	Compensation over gas price	Payment in installments
Pro	No constant payments Better planning No gasnet tie	Exact billing No disadvantage if prevailing filling station infrastructure is used Full Service by operating company	Most wanted model of potential customers Attractive fuel price Faster amortization of additional costs of NGVs Full service of operator
Contra	Overtaking of insurance and liability Overtaking of maintenance, TÜV and approval Obligation of usage	No insight into price formation Safety of price security is unclear Prices might be higher than at filling stations Binding to gasnet; minimum contract duration	Obligation of usage Gasnet binding Minimum contract duration

Strategy recommendations:

The charge for usage should not exceed 500 euro per year. If the price is set at 300 euro, it permits an end customer price of 0,66 €/kg, which is competitive with natural gas prices at filling stations. A full service package including service, insurance and permission for filling station is recommended.