European Business Congress Study - 2012

Study "Legal and Regulatory Environment for the Construction and Operation of CNG Filling Stations in European Countries"

BACKGROUND TO THIS PROJECT (2011-2012)

- Sponsor: European Business Congress
- Primary Contractor: National Gas Vehicle Association Russia, assisted by Clean Fuels Consulting
- Project Scope
  - 21 European NGV Country Profiles (West & East Europe) – PowerPoint file
  - Legal & regulatory environment to build fuelling station network – Excel File
  - Strategic approaches to create NGV fuel infrastructure – PowerPoint file
  - NGV Infrastructure Calculation Tool (NICA) – Excel File

PURPOSE OF THE PROJECT

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The European market for natural gas vehicles has been expanding steadily since 1994 when there were 524,000 natural gas vehicles (NGVs) and 1,693 CNG fuelling stations. Today the European market has expanded to 1.5 million NGVs and 4,000 fuelling stations; growth of 286% and 236% respectively.

While NGVs and the fuelling infrastructure are a practical potential business opportunity they compete with the 'politically attractive' technologies such as hydrogen fuel cells and electric battery vehicles.

Thus, the time is right for the wider European business community to be made aware of the 'NGV potential.' This is best done by highlighting the excellent opportunities to invest in a sustainable fuel and technology that addresses today's important concerns about energy and the environment through the wider use of NGVs, whether they run on fossil natural gas, liquefied natural gas or renewable biomethane.

The European Business Congress has recognized this need and now is seeking a way to inspire new investments in the CNG fuelling infrastructure across Europe. Once in place, this can lead to a much more widespread development of the European NGV market in individual countries that are linked across Europe along the normal transportation corridors.

ACKNOWLEDGMENTS

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The project sponsors wish to thank the following individuals for their dedicated research and analysis in making this project possible

- EBC Project Coordinator: Detlef Wessling, E.On Ruhrgas
- NGVRUS Project Manager: Eugene Pronin, Gazprom
- Clean Fuels Consulting
- Principal Investigator: Dr. Jeffrey M. Seisler
- Research Assistant: Marco Dal Pont
- Project engineer for the Natural Gas Infrastructure Calculation Tool (NICA): Gijs van Schoonhoven (Ingenieurbüro van Schoonhoven)

NGV COUNTRY PROFILES

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NGV Country profiles provide, in a PowerPoint format, a template of information that represents in-depth analyses on a country-by-country basis. The profiles focus on the specific elements that are important to understand the investment environment to develop a CNG fuelling infrastructure. Taken together, these country profiles provide a unique window into individual markets that may be attractive to different commercial interests investing in the NGV infrastructure.

BELGIUM
(July 2011)

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COUNTRY PROFILE TEMPLATE

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- NGV Profile
- Motivation
- Energy Profile (oil & gas/imports & exports)
- Vehicles
- Fuelling Infrastructure
- Government Support
- Gas Industry Support
- Conclusions

NGV PROFILE

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- Number of NGVs: 176
- NGVs are 0,003% of total vehicle population
- 0,16 NGVs per 1000 population
- CNG fuelling stations: 8
- 22 vehicles per fuelling station
- Price differential CNG-Petrol/diesel:
  - CNG equivalent per liter gasoline: 0,59 €/liter
  - Regular Gasoline: 1,42 €/liter

  Natural gas costs 58% less then gasoline

Source (July 2011)
www.metanoauto.it
http://www.drive-alive.co.uk/fuel_prices_europe.html

MOTIVATION

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- Environmental considerations (Belgium has, with the Netherlands, Luxembourg and Germany West (Ruhr area), one of the highest rate air pollution in Europe)
- Economics

ENERGY PROFILE

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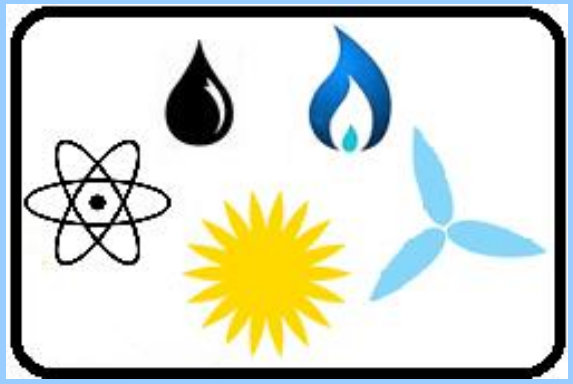


ENERGY PROFILE SUMMARY

Oil, natural gas and coal provide over 70% of Belgium's total primary energy supply. With no domestic production of fossil fuels, Belgium is fully dependent on imports

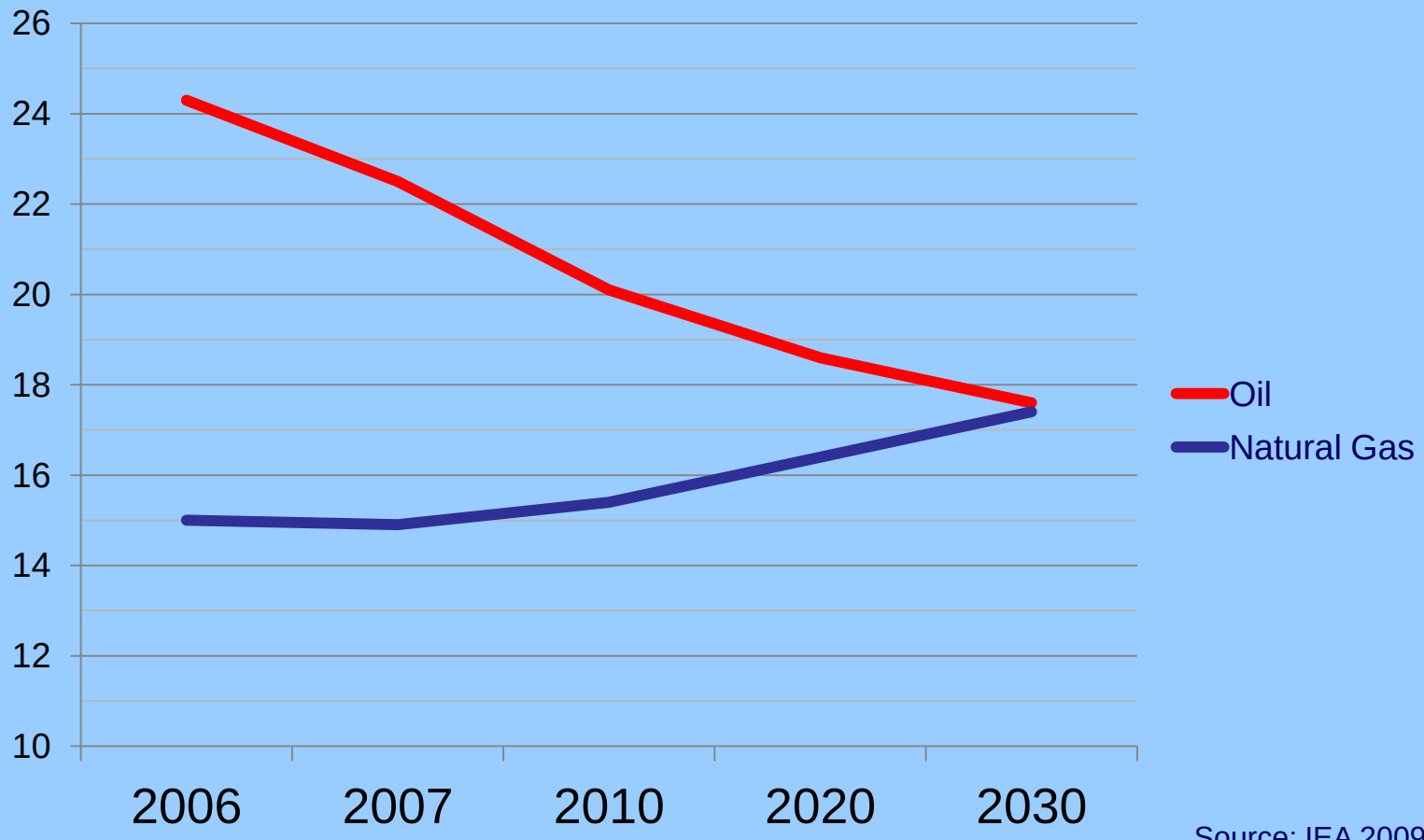
- Belgium is 15th in world ranking for oil imports
- Belgium is 13th in world ranking for natural gas import
- Belgium is 35th in world ranking for natural gas consumption

ENERGY PROFILE

- Oil
  - production: 11.220 bbl/day
  - consumption: 608.200 bbl/day
  - imports: 1,12 million bbl/day
  - exports: 433.700 bbl/day
  - reserves: 0
- Natural gas
  - production : 0 m^3
  - consumption: 16,87 million m^3
  - imports: 16,87 million m^3
  - exports: 0 m^3
  - reserves: 0 m^3

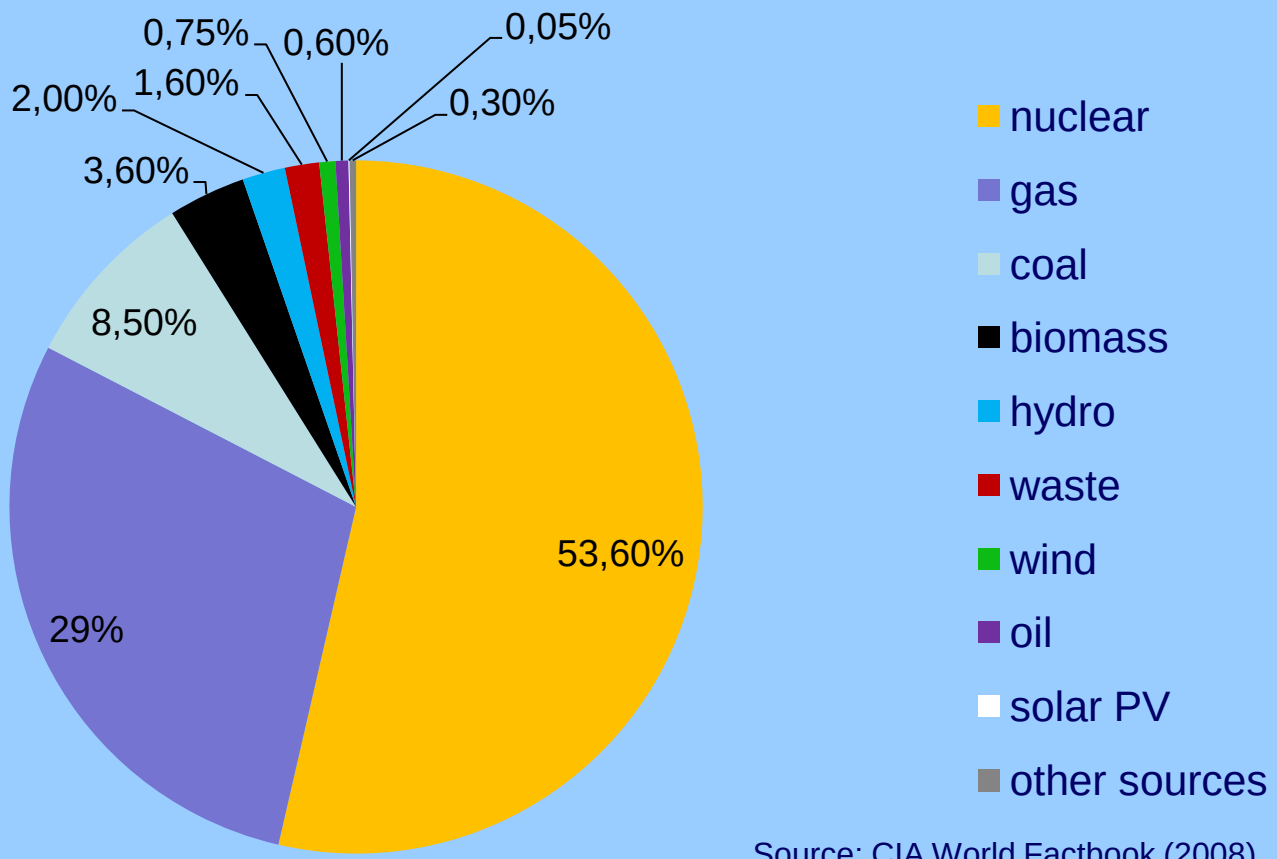
Source: CIA World Factbook 2011

Oil imports will decline as natural gas supply grows (unit: Mtoe/year)



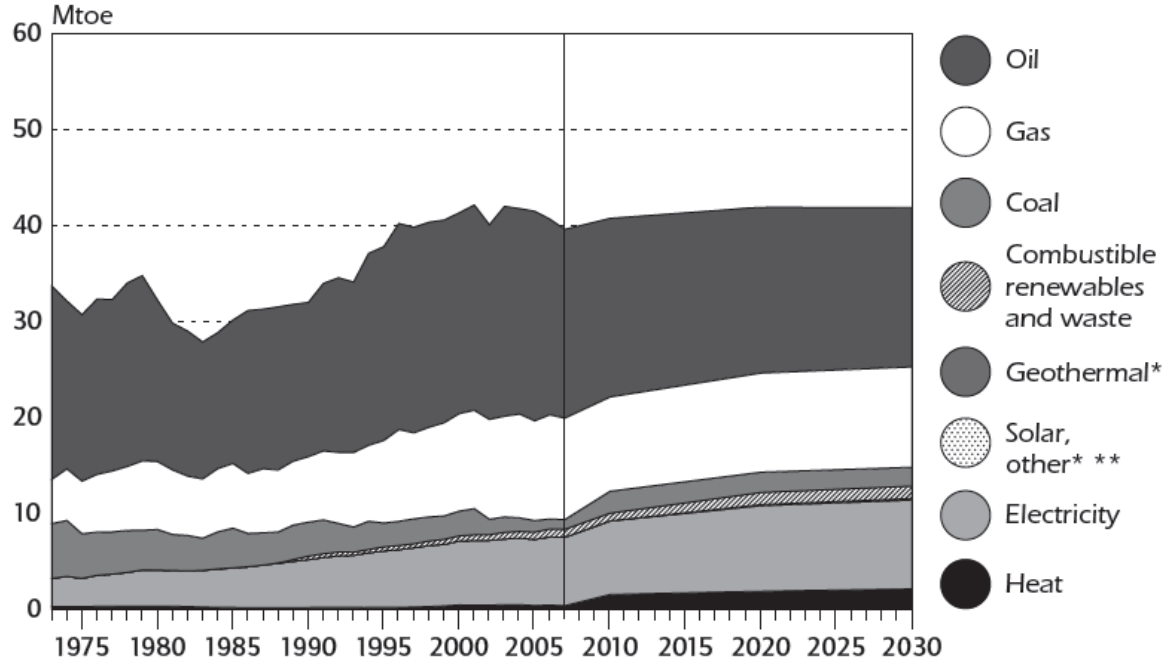
Source: IEA 2009

Electricity production is dominated by nuclear power and natural gas



Source: CIA World Factbook (2008)

Fossil energy dominates consumption



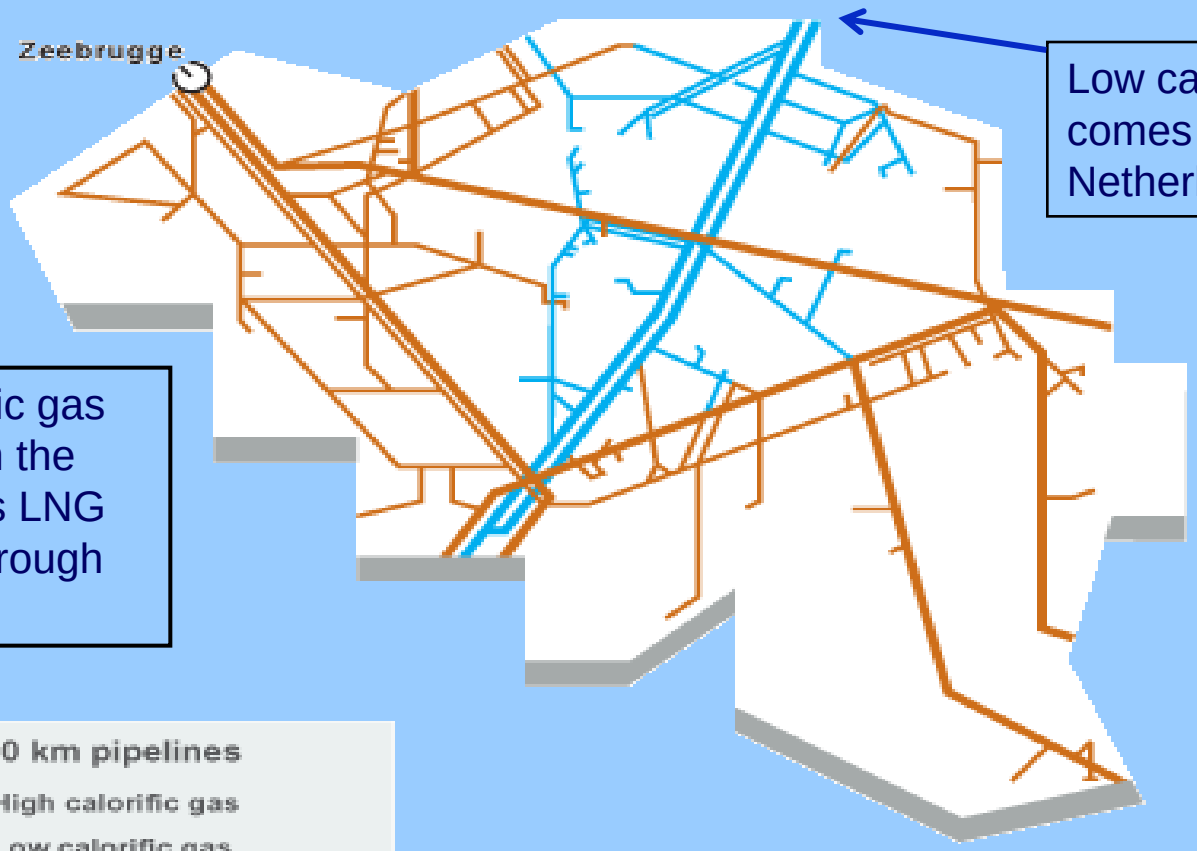
* negligible.

** other includes ambient heat used in heat pumps.

Sources: *Energy Balances of OECD Countries*, IEA/OECD Paris, 2009 and country submission.

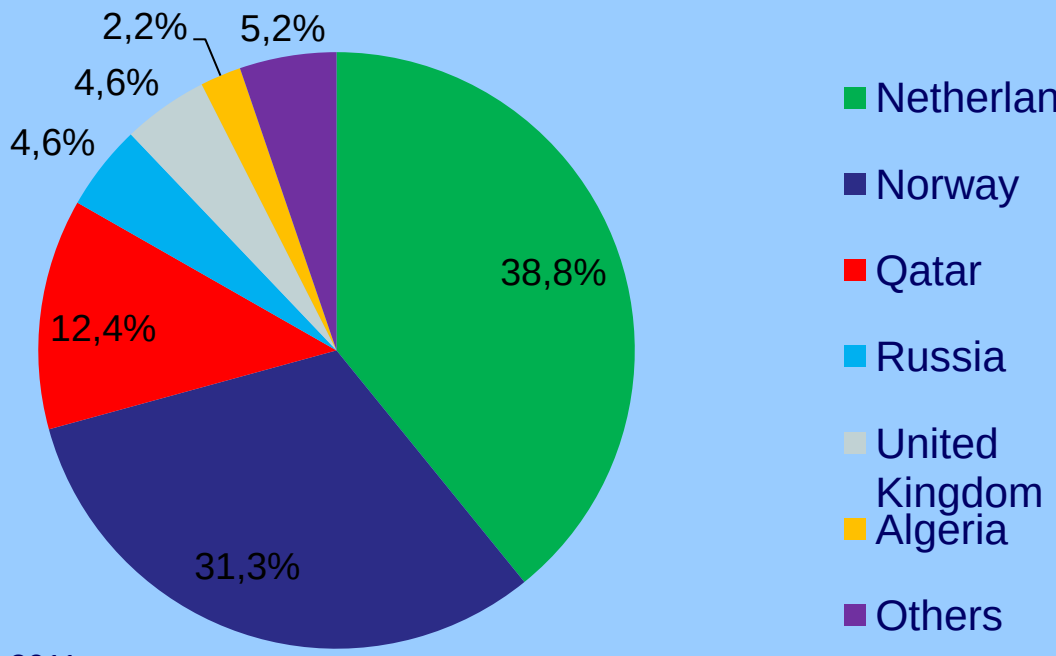
NATURAL GAS PIPELINE MAP

Natural gas is available in most parts of the country



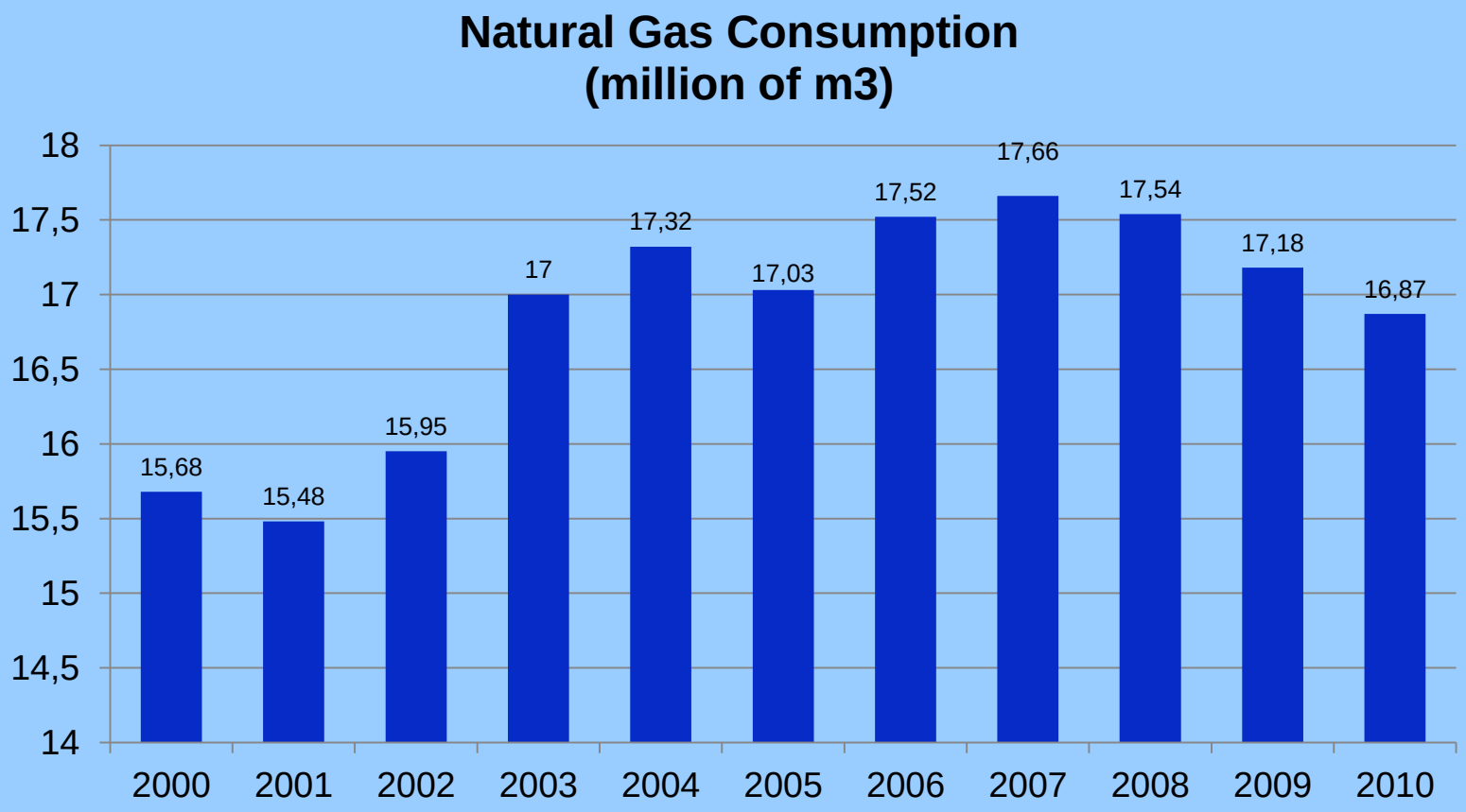
Belgium relies 100% on imported natural gas

- Dutch, Russian and some Norwegian natural gas is transported to the Belgian border via underground pipelines. British natural gas - and some Norwegian natural gas - is moved to Belgium through subsea pipes



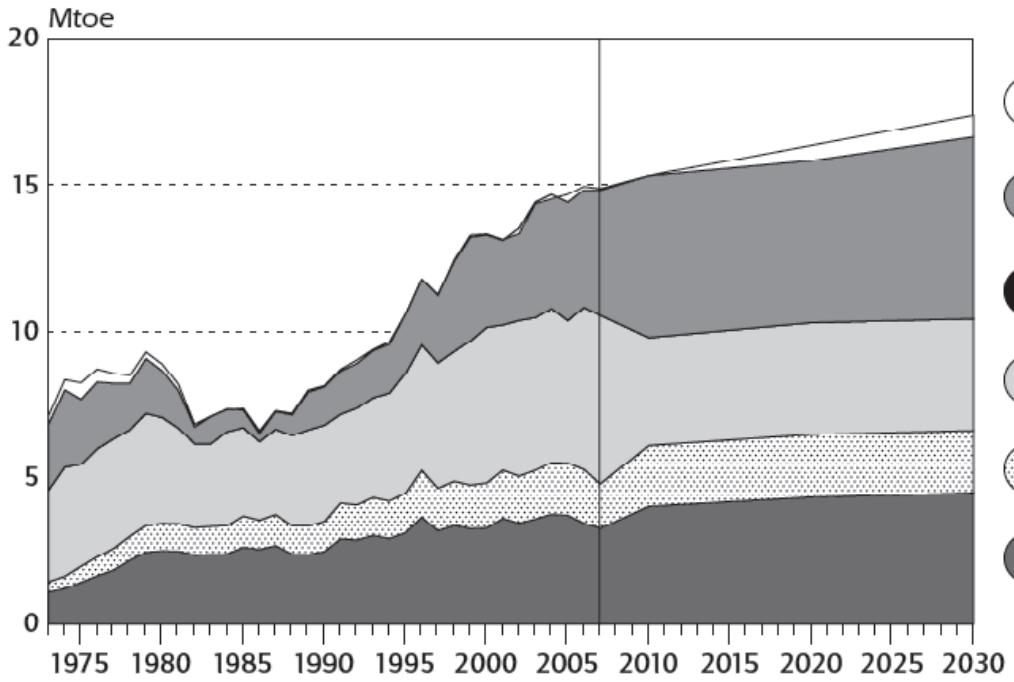
Source: IEA statistics, 2011

Natural gas consumption has declined in recent years



Source: CIA World Factbook

Natural gas consumption is highest in the electricity production sector



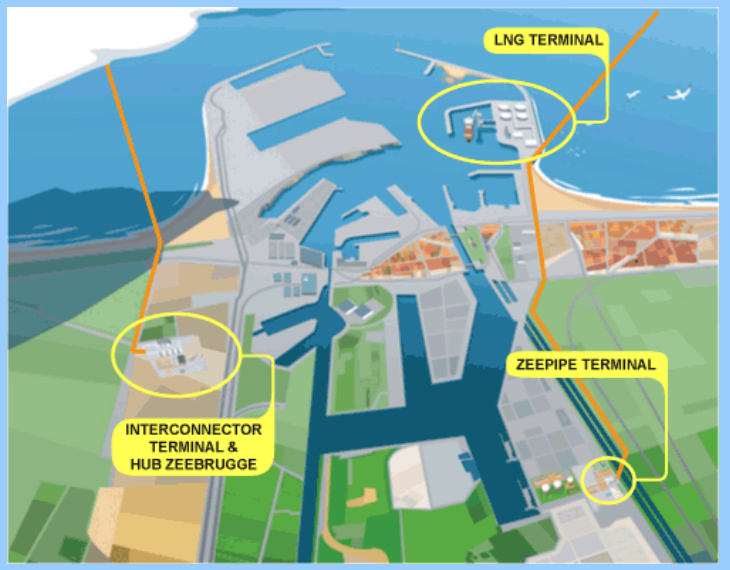
* total primary energy supply by consuming sector. Other includes other transformation and energy sector consumption. Industry includes non-energy use. Commercial includes commercial, public services, agriculture, forestry, fishing and other final consumption.

** negligible.

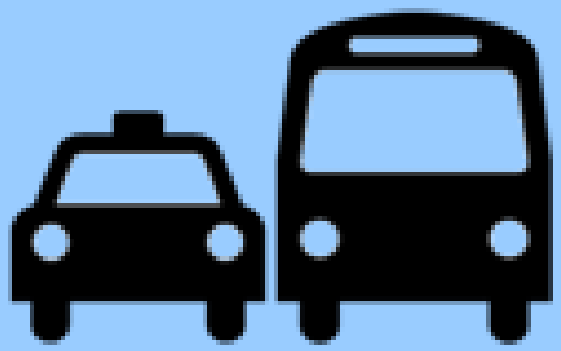
Sources: *Energy Balances of OECD Countries*, IEA/OECD Paris, 2009 and country submission.

LNG terminal in Zeebrugge is operated by Fluxys

- Capacity of 12000 m3 LNG/hour
- Depending on the level and the nature of the market interest Fluxys LNG could increase existing send-out capacity of the Zeebrugge terminal or add one or more LNG storage tanks



VEHICLE PROFILE



VEHICLES PROFILE

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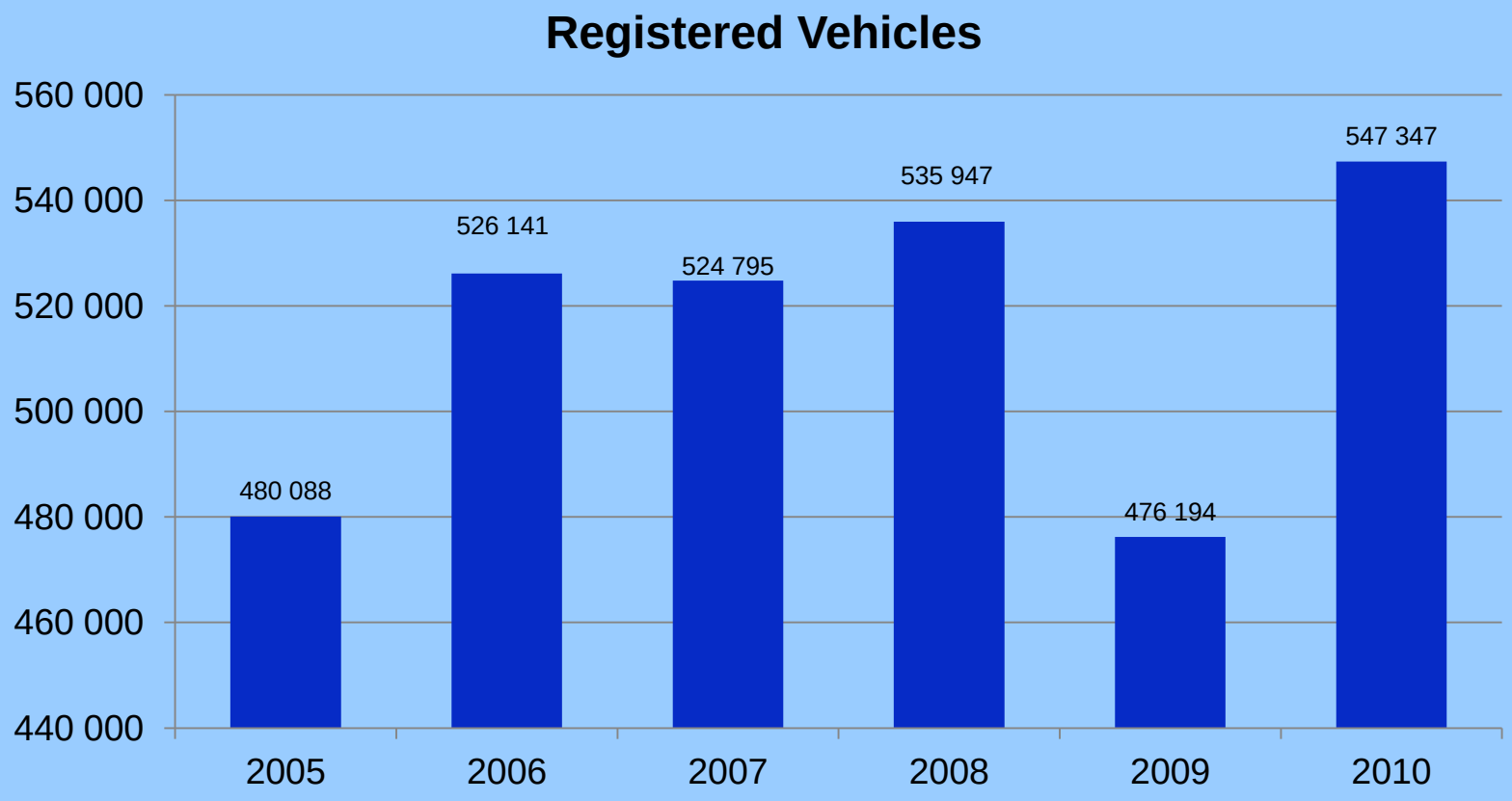
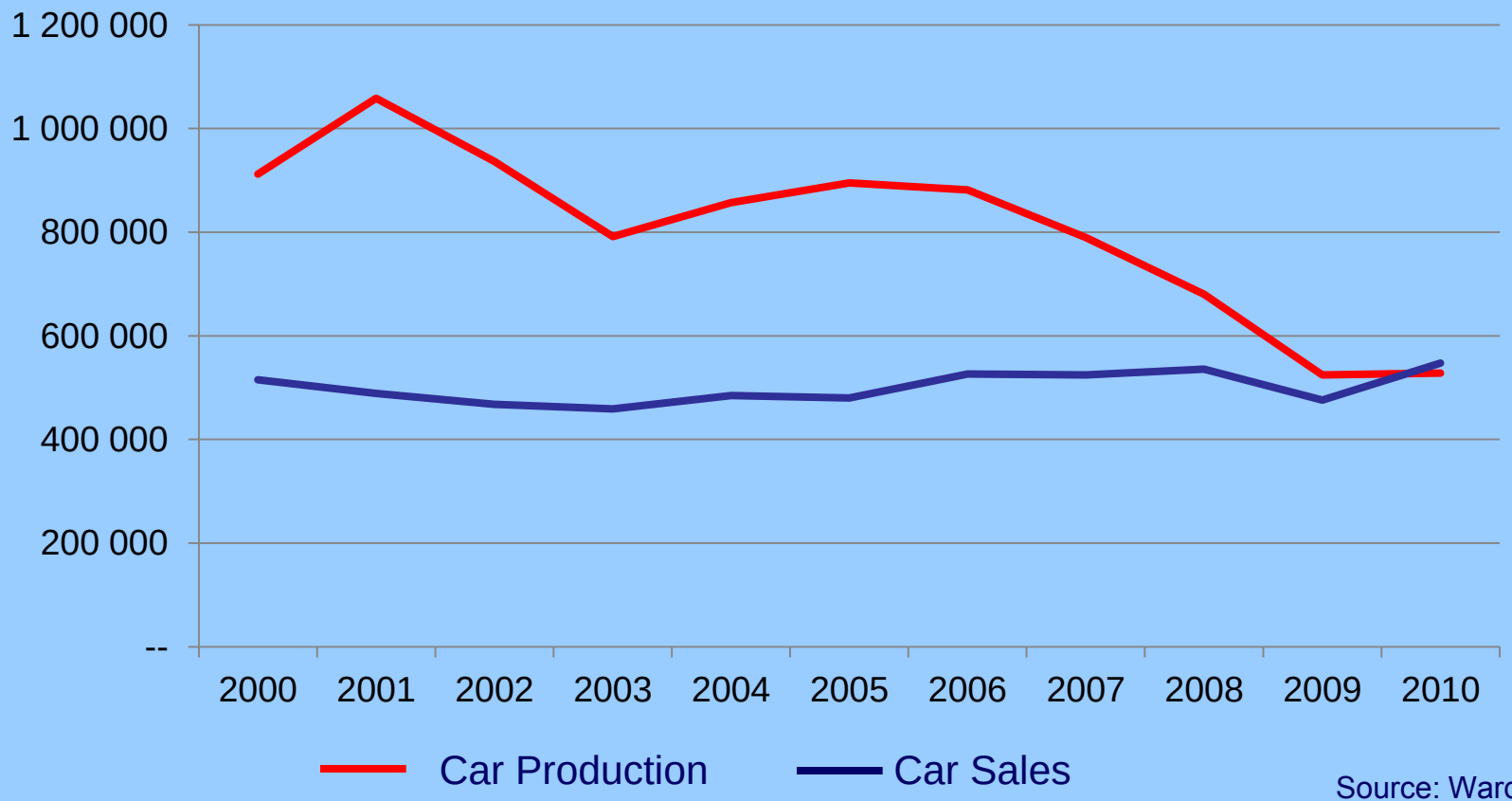
- More than 6.3 million registered vehicles, of which 5 million are cars
- 78% of the traffic consists of travel by car
- More than 525,000 new vehicle registrations per year (94% cars, 5%Trucks, 1% Buses)
- More than half (57.4%) of the total passenger car fleet are diesel-fuelled
- LPG driven cars have increased from about 60,000 in 2000 to more than 74,000 in 2002. After 2002 the numbers decreased to 51,000 in 2007
- Transport is the sector that experienced the largest growth in emissions since 1990 (+29.5%)

Belgium is a reasonably strong market for new vehicles



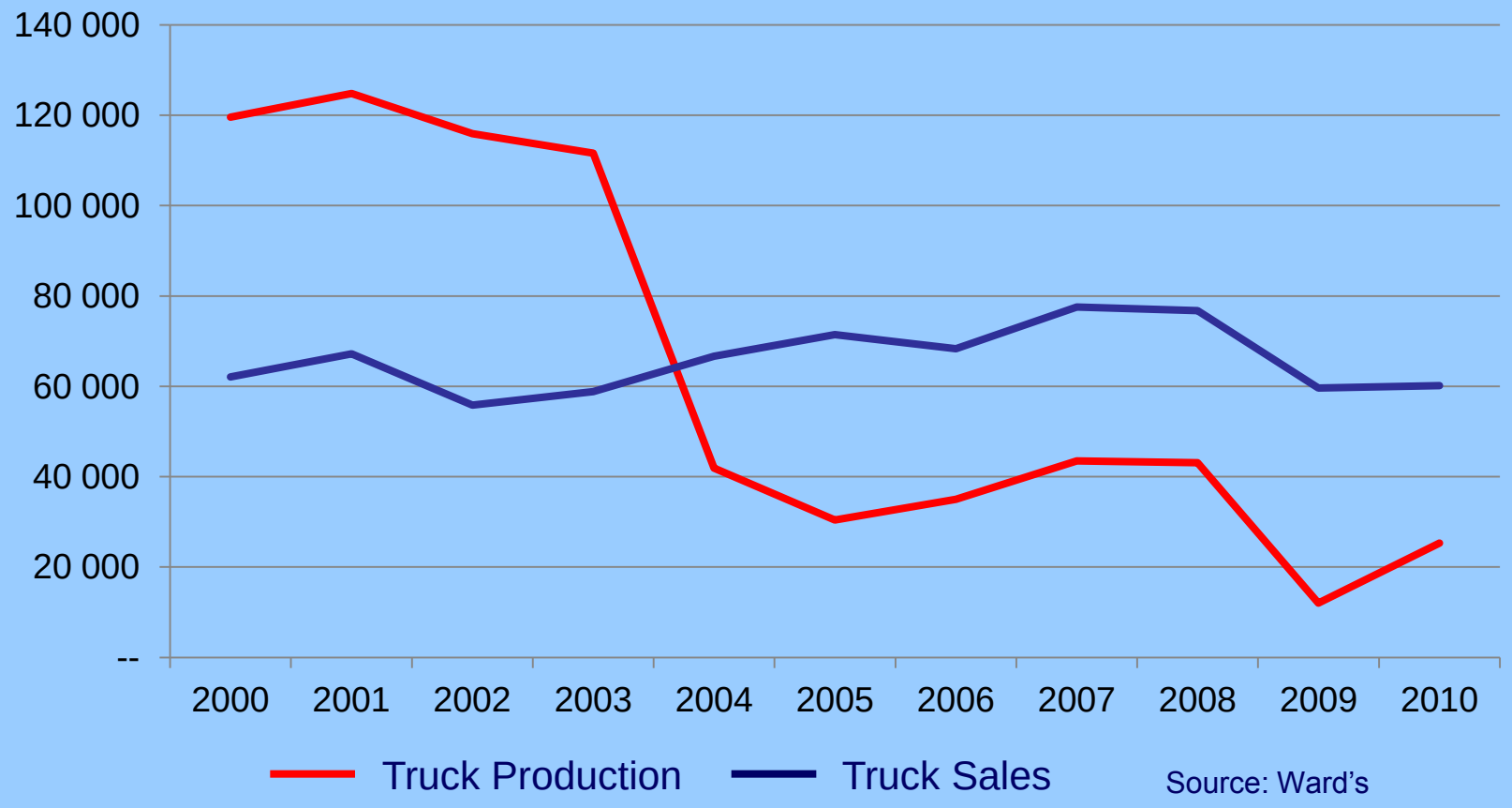
Source: SPF Mobilité & Transports - FEBIAC

Last year, for the first time, car sales was higher than car production

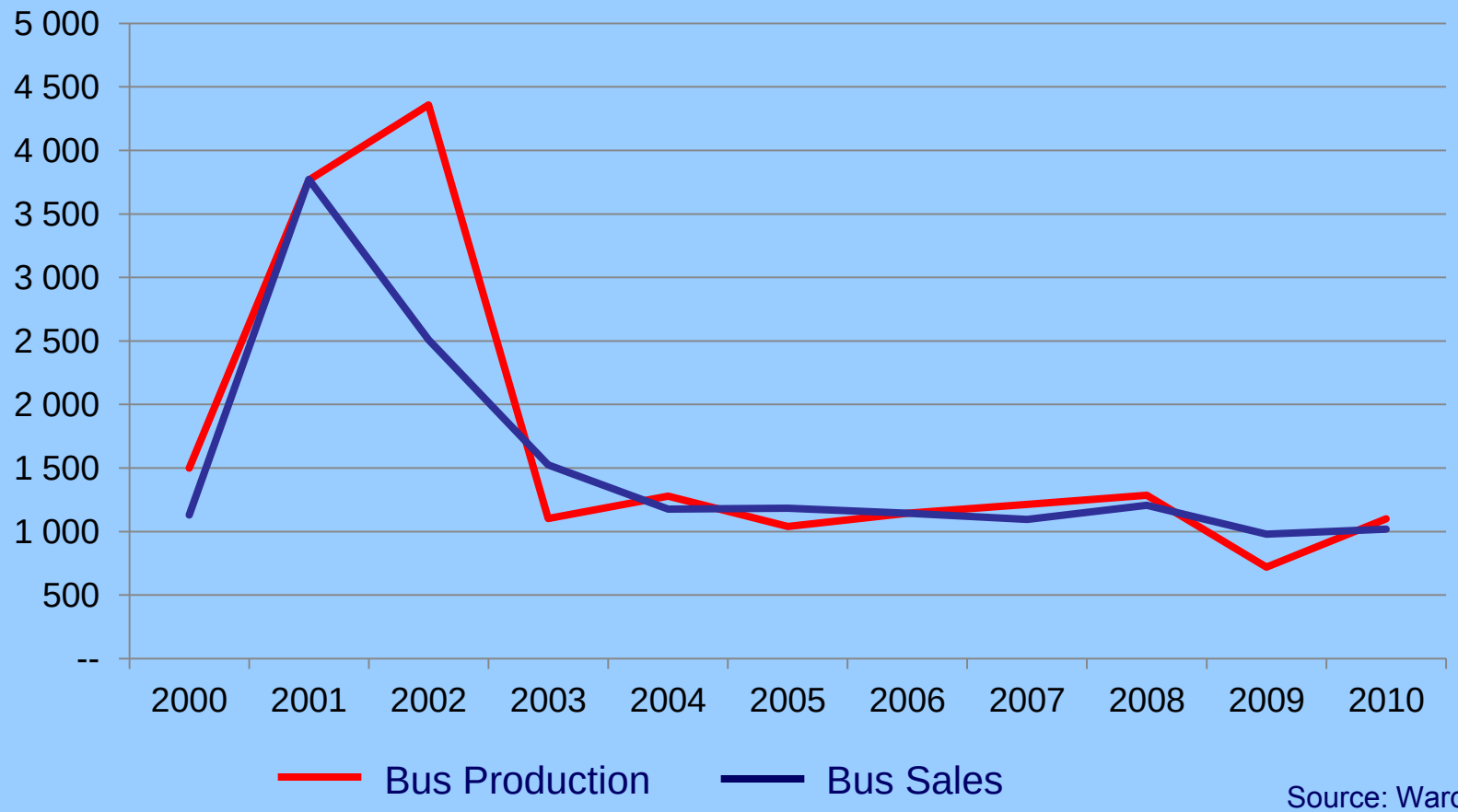


Source: Ward's

Truck production had a steep decrease in 2004, while the sales remained constant

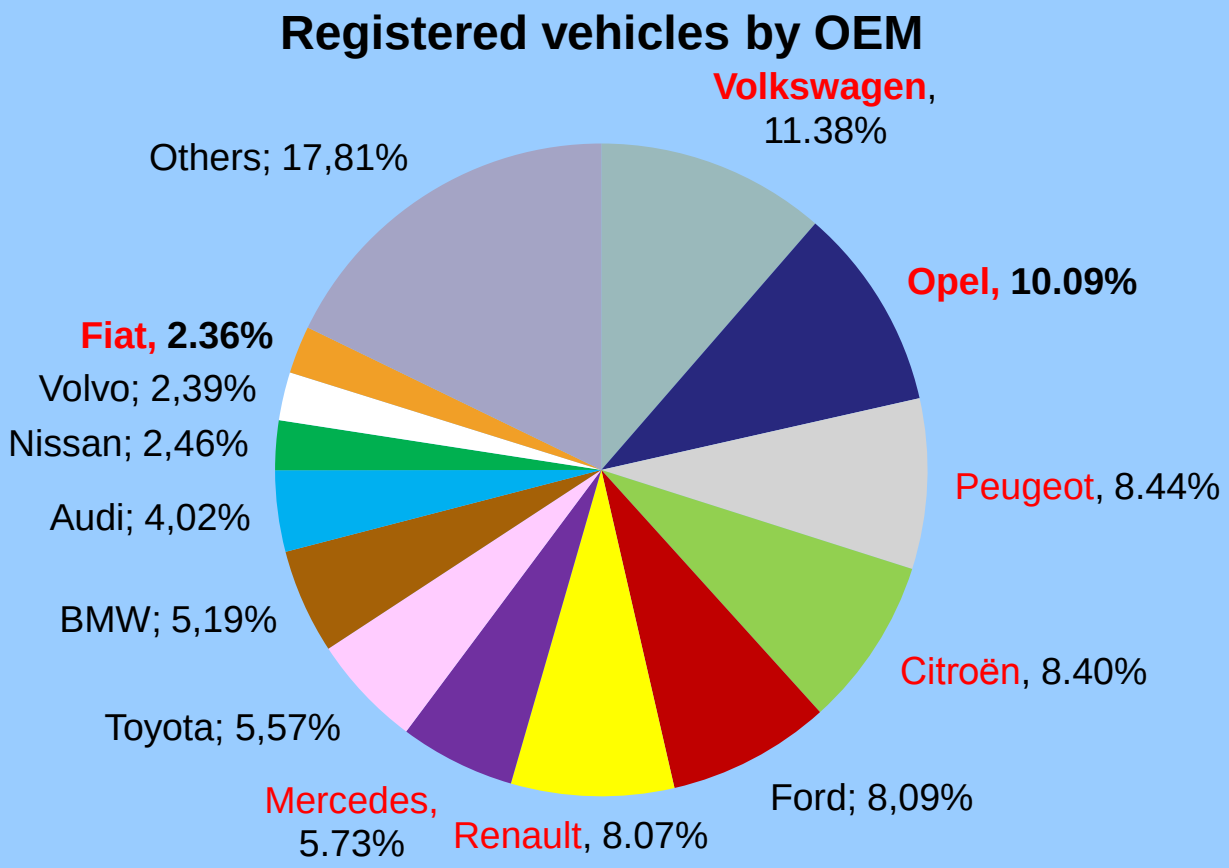


After a big crisis in 2003, bus production and sales remained constant and at the same level



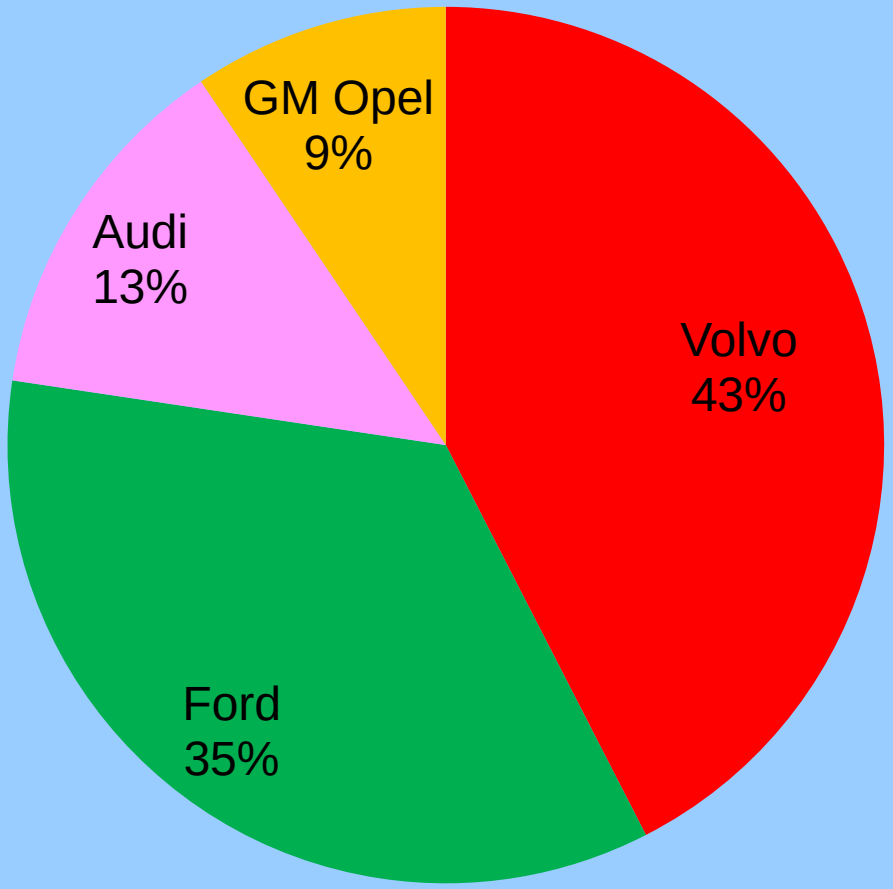
Source: Ward's

The most popular OEMs in Belgium also make NGVs

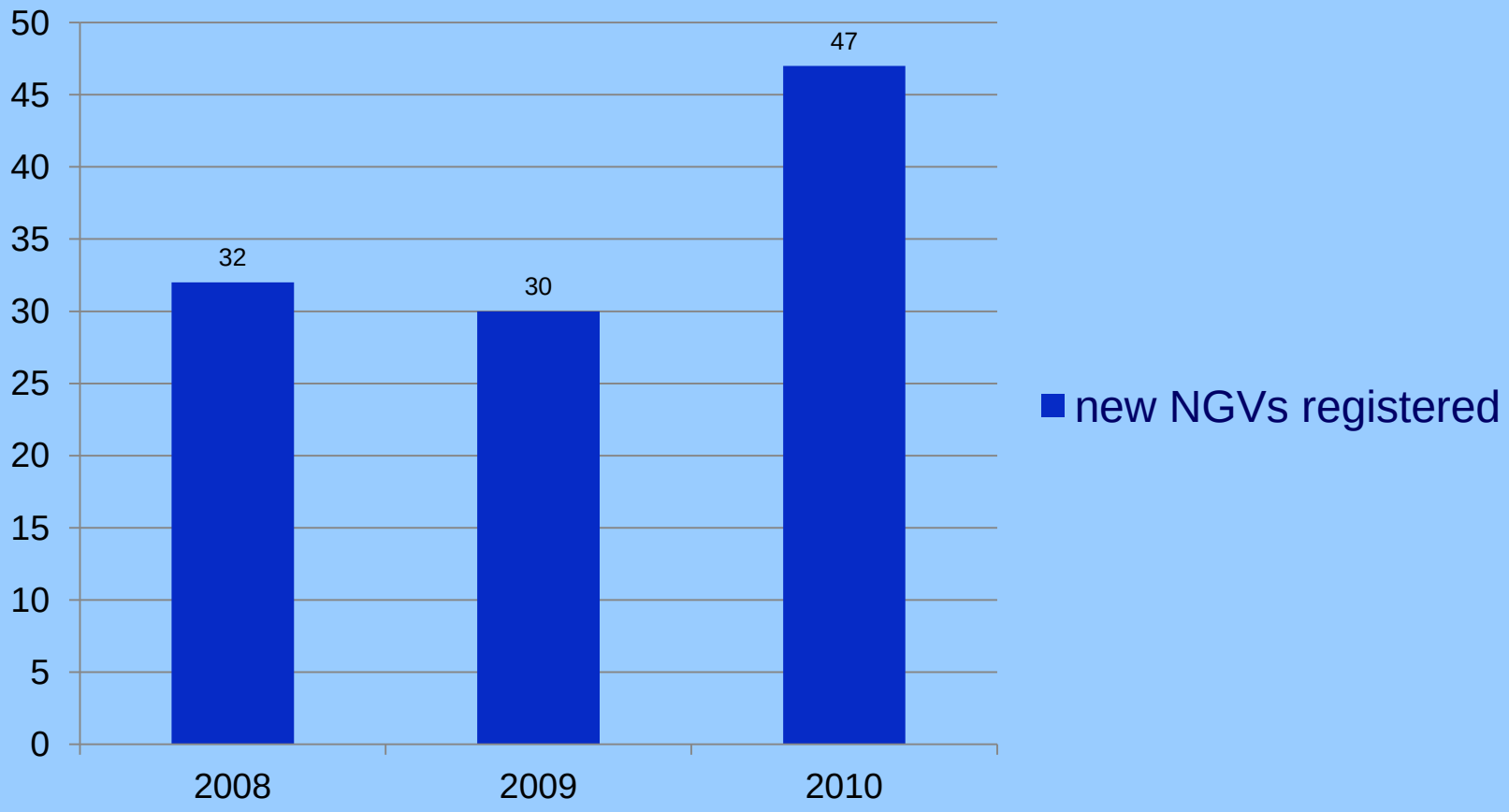


Source: SPF Mobilité & Transports – FEBIAC (2010)

4 Manufacturers produce cars in Belgium

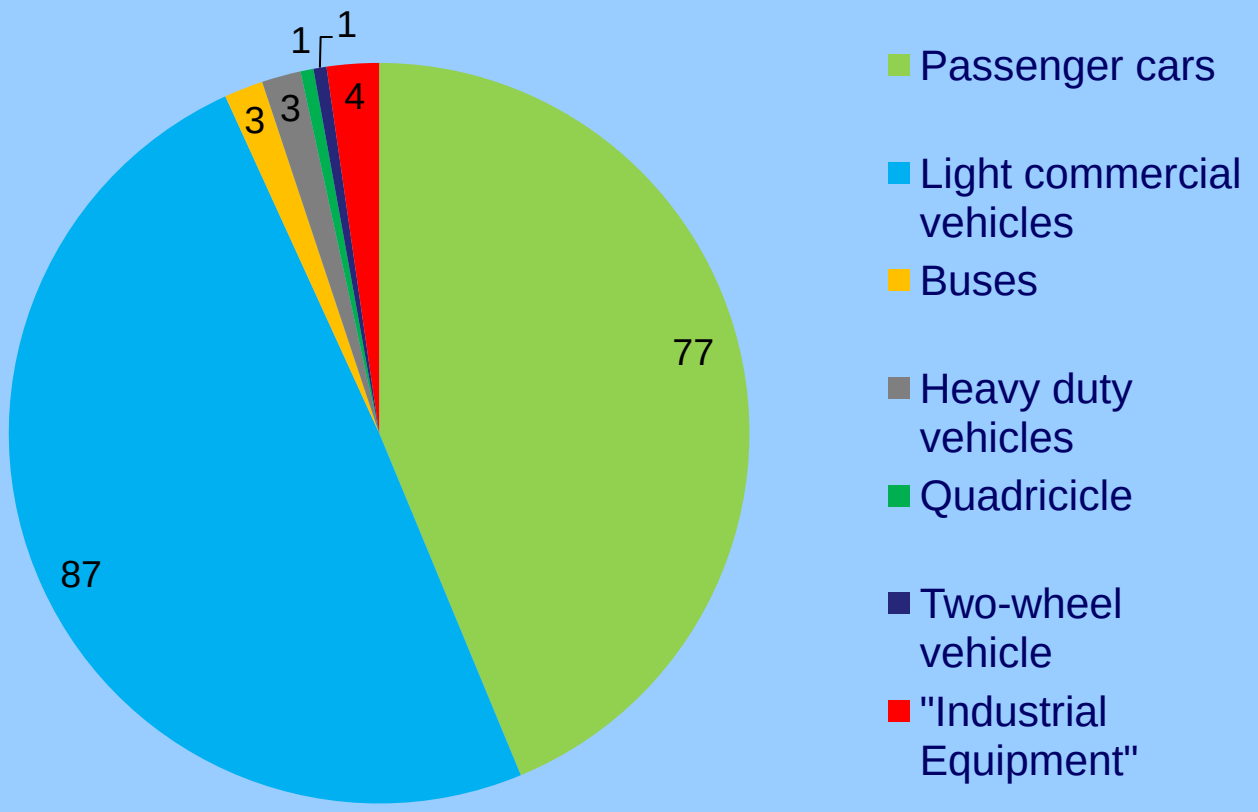


NGVs registered are a small fraction of the vehicle population

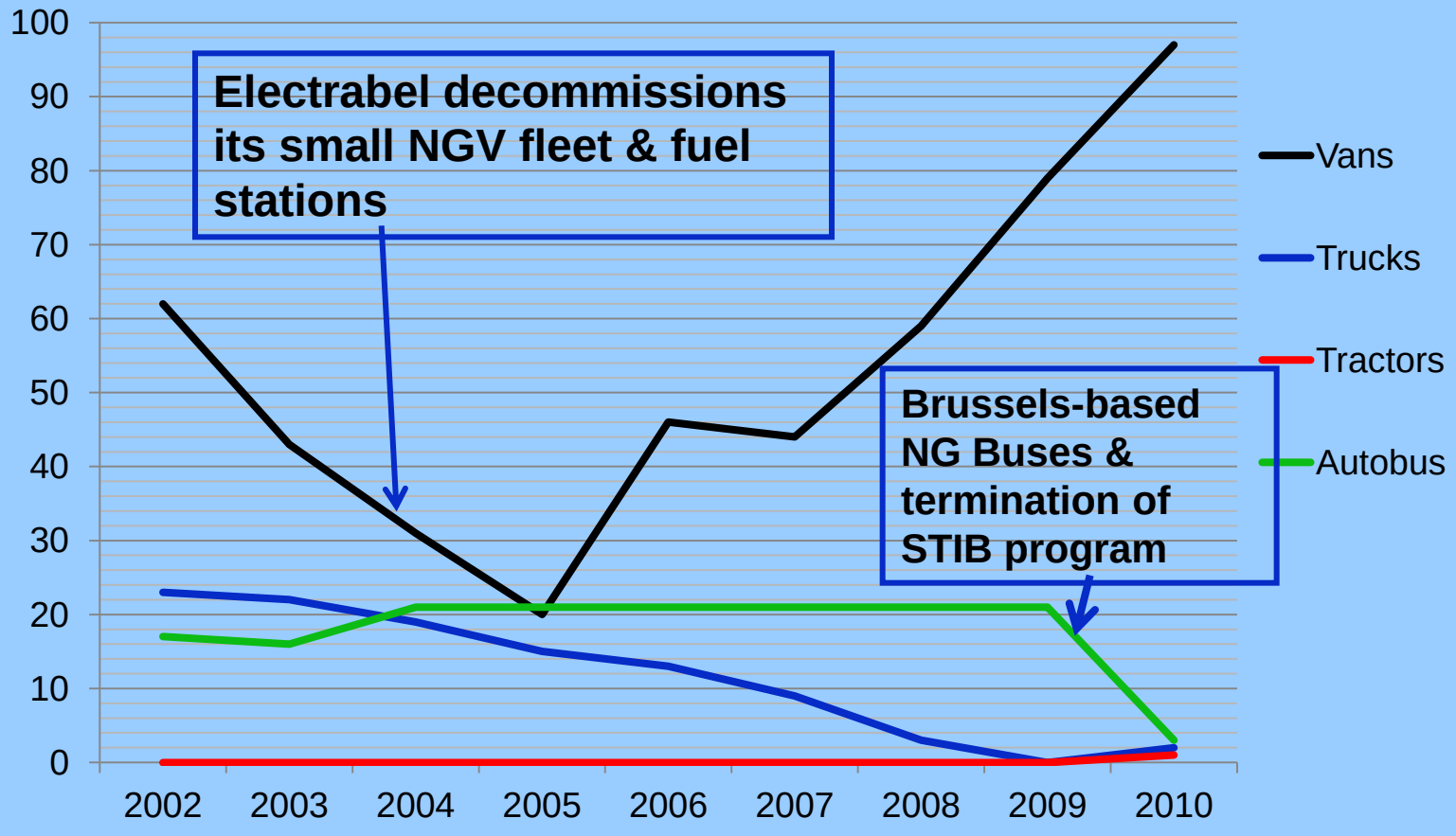


Source: SPF Mobilité & Transports - FEBIAC

Passenger cars and light commercial vehicles are the majority of the small NGV population in Belgium



Commercial NGVs by type



Source: Service public federal mobilite et transports (mobilit.fgov.be)

FIAT and Volkswagen have the biggest variety of passengers cars

FIAT
- Grande Punto
- Panda
- Doblò

Ford
- Focus

Opel
- Zafira

Mercedes
- B Class 180
- E 200

Volkswagen
- Touran
- Passat Variant
- Caddy

source: cngdrive.be

FIAT and Volkswagen dominated also the commercial vehicles

FIAT
- Doblò Cargo
- Doblò Cargo Maxi
- Fiorino
- Qubo

Ford
- Transit

Opel
- Combo

IVECO
- Daily

Mercedes
- Sprinter

Volkswagen
- Transporter
- Caddylife
- Caddy Maxi

source: cngdrive.be

Heavy-Duty Commercial NGVs are not widely available

IVECO Stralis

Mercedes Econic

source: cngdrive.be

Proposition de résolution 1548/001, 6° November 2008

- Members of the Belgian Parliament Jef Vand den Bergh, Jenne De Potter, Nathalie Muylle (CD&V) asked to Government to take action to reach:

- 20.000 NGVs in the next 3 years
- 75.000 NGVs in 5 years

NGV FUELLING INFRASTRUCTURE

CNG fuelling infrastructure is spotty but will expand

Private sector entrpreneurs are building the CNG infrastructure

- **Green Point** supplies is trying to set up a network of small stations (<49 m3/hr)
- Green Point is setting up 2-3 stations in Flanders, where they are focused; 10 stations are planned by the end of 2011/2012
- **DATS24**, owned by large food conglomerate Colruyt, plans on ~25 stations to help foster their 'green' image
- Stations are not anticipated to make profit

8 Fuelling stations present in Belgium

- Antwerpen (Flanders)
- Berchem (Flanders)
- Brugge (Flanders)
- Halle (Flanders)

- Mechelen (Flanders)
- Ninove (Flanders)
- Seraing (Walloon)
- Anderlecht (Brussels)

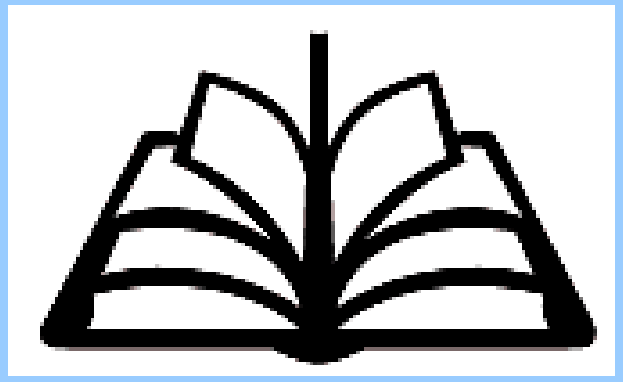
Source: metanoauto.it

Other alternative fuelling stations

- LPG supplier Primagaz lists 179 LPG refuelling stations; the European Technology Atlas lists more than 400 LPG refuelling stations in various regions in Belgium
- The only European hydrogen station along the motorway (E19) is that of Total in Ruisbroek. This station is developed in cooperation between Total and BMW

Source: CleanVehiclePortal

STANDARDS & REGULATIONS



Fuelling station payment is oriented to bank & credit cards

- Multi-fuel stations: allowed
- No limits on opening hours
- Self service: allowed
- Payment practices at the pump: cash, credit card and company fuel cards

No regulation in Belgium so there is some uncertainty for investors

- There are regulations on stations up to 20m³/hr in Flanders but they are quite flexible
- Expect a new regulation in Flanders for larger stations to provide a 'regulatory framework' where safety distances are specified. But for Brussels and Walloon there is nothing now or foreseen in the near future

No rules of access to gas systems but there is a cost issue

- The gas network is wide-spread and CNG stations can be installed in most locations
- But if large volumes of gas are needed the cost of the connection to the grid is increasing
- Specific metering for large volumes can add up to €10,000 to the cost of the station

Gas pricing policies are based on the open market environment, with no specific restrictions

Divided in two parts:

- The energy cost (free market cost)
- The transportation cost from the border to the customer meter

The Dutch CNG station standard is being adapted and will come into force in 2011 (in Flanders only)

- NGV stakeholders are modifying the Dutch CNG station standard as a Flanders regulation. It should come into force by the end of 2011.Flanders will create their own regulations, but only for Flanders
- There are no fuel station regulations for Wallonia or Brussels (although Brussels is in Flanders)
- Station developers hope that some elements of uncertainty can be removed now that a regulation will be in place

GOVERNMENT SUPPORT

Government transportation policy tends to focus on CO2

- By relying on low CO2 and the European norms they are indirectly promoting diesel vehicles because of a subsidy for low CO2 cars
- Gas industry stakeholders claim that there is little knowledge about the advantage of NGVs and of biogas. NGVs are not generally identified by the policy makers as a leading fuel alternative

Discount on the purchase price of a vehicle:

- Vehicles that emit less than 105 grams of CO2 per km receive a tax discount of 15% off the purchase price (VAT included) for the purchase of a vehicle that emits less than 105 grams of CO2 per km
- For calendar year 2011, the tax reduction is limited to a maximum of € 4640 (net indexed)
- Vehicles that emit between 105 and 115 grams of CO2 per/km receive a discount of 3% of the purchase price (VAT included)\
- For the calendar year 2011, the reduction is limited to a maximum of € 870 (net indexed)
- (Program Law of 27 April 2007)

Source: http://www.minfin.fgov.be/portail2/fr/themes/transport/vehicles-purchase.htm#C1

Tax deductibility for the purchase of company cars depends on CO2 emissions

Emissions – Diesel	Emissions - Gasoline	Deduction
O g/km	0 g/km	120%
< 60 g/km	< 60 g/km	100%
60-105 g/km	60-105 g/km	90%
105-115 g/km	105-125 g/km	80%
115-145 g/km	125-155 g/km	75%
145-170 g/km	155-180 g/km	70%
170-195 g/km	180-205 g/km	60%
>195 g/km	>205 g/km	50%

(Program Law of 23 December 2009)

"Ecoscore" database rates vehicles according to their environmental impact

- Free accessible database
- Developed and maintained in cooperation of the three Belgian regions with initiatives and research institutes VITO
- Contains cars and small vans, motorbikes, mopeds and some lorries
- Gives basic information on the environmental performance of each vehicle and creates a ranking from 0-100 points (with 0 points being the lowest rank)

Source: http://www.vito.be/VITO/EN/HomepageAdmin/Home/Subsites/Transport/Projecten/Ecoscore.htm

«Eco-Malus» in Walloon Region

- On March 5, 2008, the Walloon Region adopted a decree on the "creation of an “eco-malus” on emissions of CO2 from motor vehicles of individuals"
- Anyone living in the Walloon Region has to pay an “eco-malus” for the purchase of a higher polluting car. **This eco-penalty is added to the amount of the fee for release**

Source: http://www.minfin.fgov.be/portail2/fr/themes/transport/vehicles-registration.htm

Calculation of Wallonian «Eco-Malus»: the amount of eco-claims can be determined by applying the following table

Emissions	Tax to pay	Emissions	Tax to pay
0-155 g/km	€ 0	206/215 g/km	€ 600
156/165 g/km	€ 100	216/225 g/km	€ 700
166/175 g/km	€ 175	226/235 g/km	€ 1000
176/185 g/km	€ 250	236/245 g/km	€ 1200
186/195 g/km	€ 375	246/255 g/km	€ 1500
196/205 g/km	€ 500	>256 g/km	€ 1500

Source: http://www.minfin.fgov.be/portail2/fr/themes/transport/vehicles-registration.htm

Ecology premium in Flanders

- Financial incentive for companies that achieve environmental investments in Flanders
- Since 2006 the Flemish Government provides a budget to ecology premiums for the installation of particulate filters for trucks with Euro I, II or III engine
- In 2010 the ecology premium system was extended for new technologies
- In the mobility sector premiums are given i.e. to fuel cell system to power transport, EEV engines for heavy vehicles, charging system for electric or hybrid vehicles, refuelling infrastructure for CNG or refuelling infrastructure for ethanol

Ecology subsidies in Flanders being reduced in 2011

- Starting from February 2011 there is a new Ecology Premium Plus
- Was 40% for small business but only on certain key elements of the investment (i.e. compressor, fuel storage and dispenser)
- 2011 subsidy reduced to 10% of the investment
- Budgetary concerns are motivating the reduction

GAS INDUSTRY SUPPORT

Natural Gas Stakeholders

Transport

FLUXYS

Supply & Distribution

essent

AIR LIQUIDE

Electrabel GDF SUEZ

WINGAS

luminus

NUON

GDF SUEZ

DISTRIGAS

Fluxys group is actively upgrading its system to expand the physical transmission capacity

- It has a10-year program for 2007/2016 valued at 1,7 billion € which is regularly updated taking into account new market signals. The program includes infrastructure projects in domestic transport (60% of total budget), transit (25%), storage (10%) and the LNG terminal (5%)
- Fluxys also is building a second pipeline along the existing Zeebrugge-Zelzate/Eynatten transmission axis. It is planned to be commissioned in phases from the end of 2010

Electrabel has been developing a marketing approach for NGVs

- To date the marketing staff has addressed some commercial customers on a 'low profile basis'. They have contacted some of their existing customers to try NGVs
- Contacts have been made with industrial clients but there have been and are no major campaigns advocating or promoting NGVs

Electrabel NGV Fleet

- Energy company support historically depended on one or two internal champions in the company. When they retired (early 2000s) the company abandoned its NGV fleet of over 300
- Recently Electrabel introduced about 17 light duty NGVs in the company fleet .
- Volkswagen Passats are a current preference
- NGVs fuel at the energy company's three public-access stations in Mechelen, Brugges and Antwerp. None of these stations have road-side signage to make them more apparent to NGV customers who can access these stations

NATIONAL LAWS & REGULATIONS

Overall business environment is positive but suffers from structural and administrative burdens

- Generally friendly to free-market competition, Belgium's economy has long benefited from its openness to global trade and investment. However, lingering structural weaknesses hinder reforms to enhance economic freedom and international competitiveness. The tax system is burdensome, and the extensive welfare state is supported by high government spending, with the government's debt burden soaring over 100 percent of GDP. Despite some progress, labor market rigidities remain a considerable barrier to productivity and job growth

Source: The Heritage Foundation, 2011 Index of economic freedom

Overall business environment is positive for investors and new companies

- The overall freedom to establish and run a business is well protected. An innovative form of limited enterprise was introduced in 2010; “starter” firms with no minimum capital may retain part of their profits to improve their financial viability but are expected to develop into full limited-liability companies within five years
- Foreign investors may enter into joint ventures and partnerships on the same basis as domestic parties, except for such professions as doctors, lawyers, accountants, and architects. There are no restrictions on the purchase of real estate, resident and non-resident foreign exchange accounts, repatriation of profit, or transfer of capital

Source: The Heritage Foundation, 2011 Index of economic freedom

COMMENTS BY STAKEHOLDERS

COMMENTS BY STAKEHOLDERS

- "The gas distribution network is wide-spread and CNG stations can be anywhere. But if large volumes of gas are needed then the cost of the connection to the grid is increasing. Specific metering for large volumes can add up to €10,000 to the cost of the station" (Vehicle converter working with compressor installers.)
- "The lack of knowledge by building inspectors and fire marshals adds time and money to the construction of a CNG station"
- "Investment in gasoline stations can pay back in several years. We may never recuperate the investment in the CNG stations" (Large installer of CNG stations)

COMMENTS BY STAKEHOLDERS

- "Most of the NGVs in Belgium are OEMs so there is not so much opportunity for CNG retrofit systems" (Vehicle retrofitter)
- "LPG is much more widespread. CNG is a niche of a niche but there are some opportunities" (Vehicle retrofitter)
- "Without clear regulations there is no certainty about building and opening a station. CNG station constructors are at the mercy of the local code officials until a formal regulation in established, which should occur in Flanders (but not Brussels or Wallonia) in 2011/2012" (Vehicle system installer working with compressor station installers)

CONCLUSIONS

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- Energy environment
- Gas industry support
- Government support
- NGV market development
- Legal and regulatory framework for CNG station development
- Investment environment

Energy Environment

- Belgium is completely dependent on energy from non-domestic sources (although they will have to develop renewable resources in accordance with European law)
- Natural gas is an important element of the Belgian energy mix; also available as LNG
- Natural gas markets are well developed and the pipeline network is extensive, which facilitates a CNG network uptake

Gas Industry Support

- Energy company (Electrabel) support is demonstrated in their three company stations (publically accessible) and a small but growing fleet of NGVs
- The energy company historically and currently takes a low profile regarding NGV marketing
- The development of the CNG fuel infrastructure seems to be more in the hands of private entrepreneurs
- More enthusiastic advocacy and stronger marketing efforts are needed by the energy company if the Belgian NGV program is to be successful

Government Support

- Governments (federal/regional/local) have shown little or no specific support for NGVs, although alternative fuels are advocated in a broad manner
- Individual regional governments (i.e. Flanders) have some financial incentives for environmental technologies but in the current economic environment, these are shrinking
- Existing environmental and low CO2 incentives are ‘fuel neutral’ and do not distinguish between petroleum and non-petroleum or renewable vs. fossil
- Even if there were a formal central government in place (which currently there is not) there are no indications that NGVs would be embraced
- National standards and/or regulations for fuelling stations would provide much-needed guidance for the station developers of CNG and LNG

NGV Market Development

- There is a core of NGV private sector and some public sector stakeholders in Belgium dedicated to NGV market expansion
- A lack of NGVs will severely hamper the long term efforts to install a widespread NGV fuelling station network
- A major marketing push to bring in new NGV customers is essential; but a lack of leadership from government and the energy company as well as a lack of marketing funding makes this unlikely in the near future

Legal and regulatory framework for CNG station development

- The lack of national standards or regulations for CNG stations will lengthen the time required to receive approval for station development
- Maybe national authorities can be convinced to adopt the standards being prepared for Flanders

Investment Environment

- There is a reasonable investment environment in Belgium to support outside interests in developing the NGV infrastructure
- A high degree of bureaucratization and stringent tax requirements presents impediments but there are no clear show-stoppers for investors

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