

GENEVA

Global NGV Market & Political Update: & Progress on Blue Corridors

*United Nations
Working Party on Gas
24 January 2007*

Dr. Jeffrey M. Seisler
Executive Director





GLOBAL NGV MARKET

WORLD OVERVIEW

NGVs IN THEIR GLOBAL CONTEXT



NGVs IN THE WORLD



2007



World Total



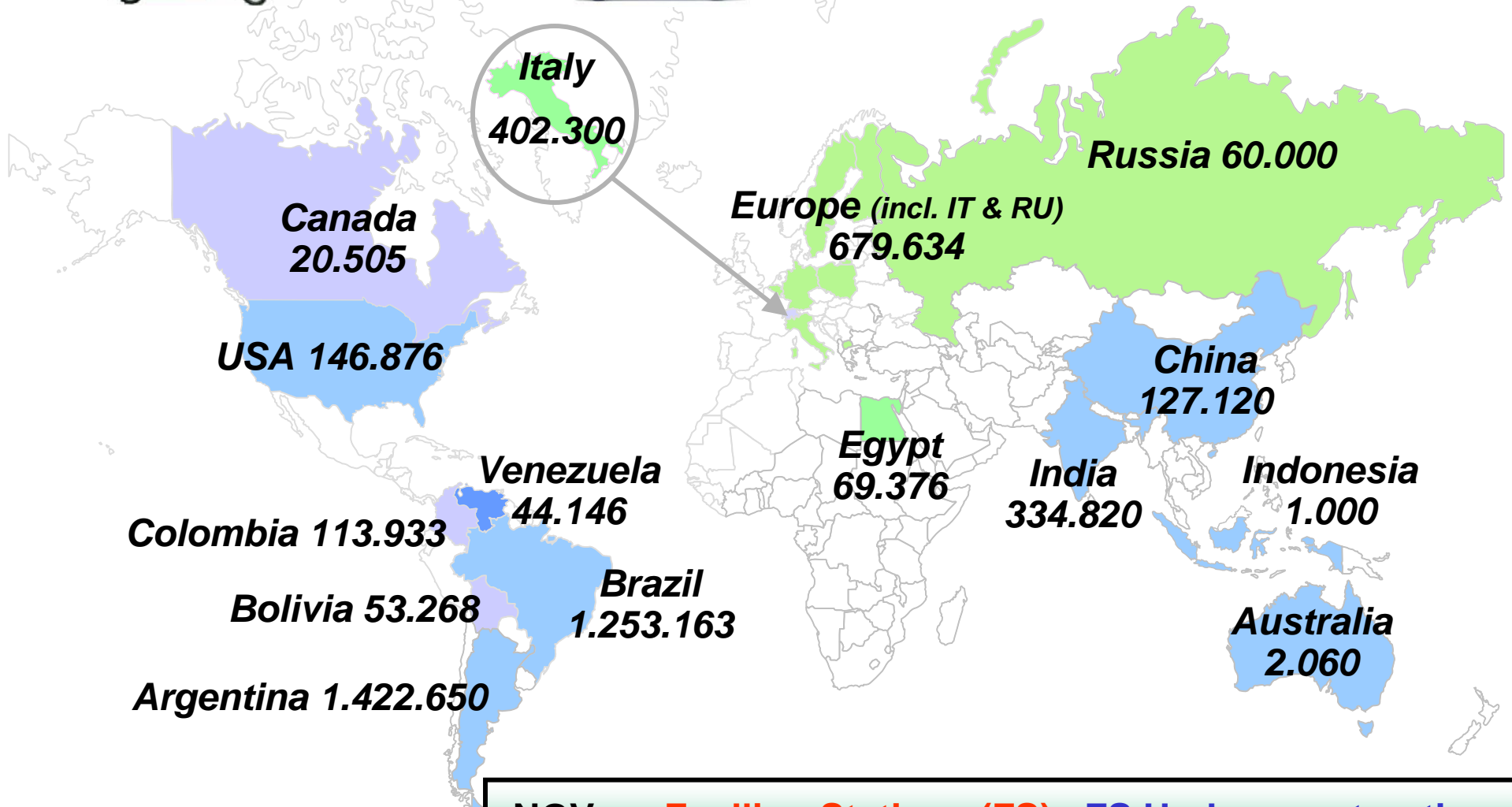
~ 5.48 M



10.398













930



Data source: The GVR, January 2006

NGVs **Fuelling Stations (FS)** FS Under construction

THE TOP TEN COUNTRIES WORLDWIDE











	Country	NGVs*	Fuel Stations*	% Price Nat.Gas of Petrol
	Argentina	1.42 mil	1.579	42,4%
	Brazil	1.25 mil	1.317	38,7%
	Pakistan	1 mil	930	34,0%
	Italy	402.300	543	44,2%
	India	334.820	325	37,2%
	Iran	148.392	326	22,4%
	U.S.A	146.876	1.600	68,1%
	China	127.120	415	54,2%
	Colombia	138.000	173	47,0%
	Egypt	69.376	103	41,3%



•Rounded up figures

Data source:
The GVR,
January 2007

THE TOP TEN COUNTRIES WORLDWIDE: NGV % of Total Vehicles

Country	NGVs*	Total Vehicle Population (Millions)	% NGVs
 Argentina	1.42 mil	6.980	20.34%
 Brazil	1.25 mil	19.845	0.06%
 Pakistan	1 mil	0.766	1.31%
 Italy	402,300	36.99	0.01%
 India	334,820	8.413	0.04%
 Iran	148,392	2.937	0.05%
 U.S.A	146,876	216.683	0.0006%
 China	127,120	14.537	0.009%
 Colombia	138,000	1.309	0.11%
 Egypt	69,376	2.727	0.025%



•Rounded up figures

Data source:
The GVR,
January 2007

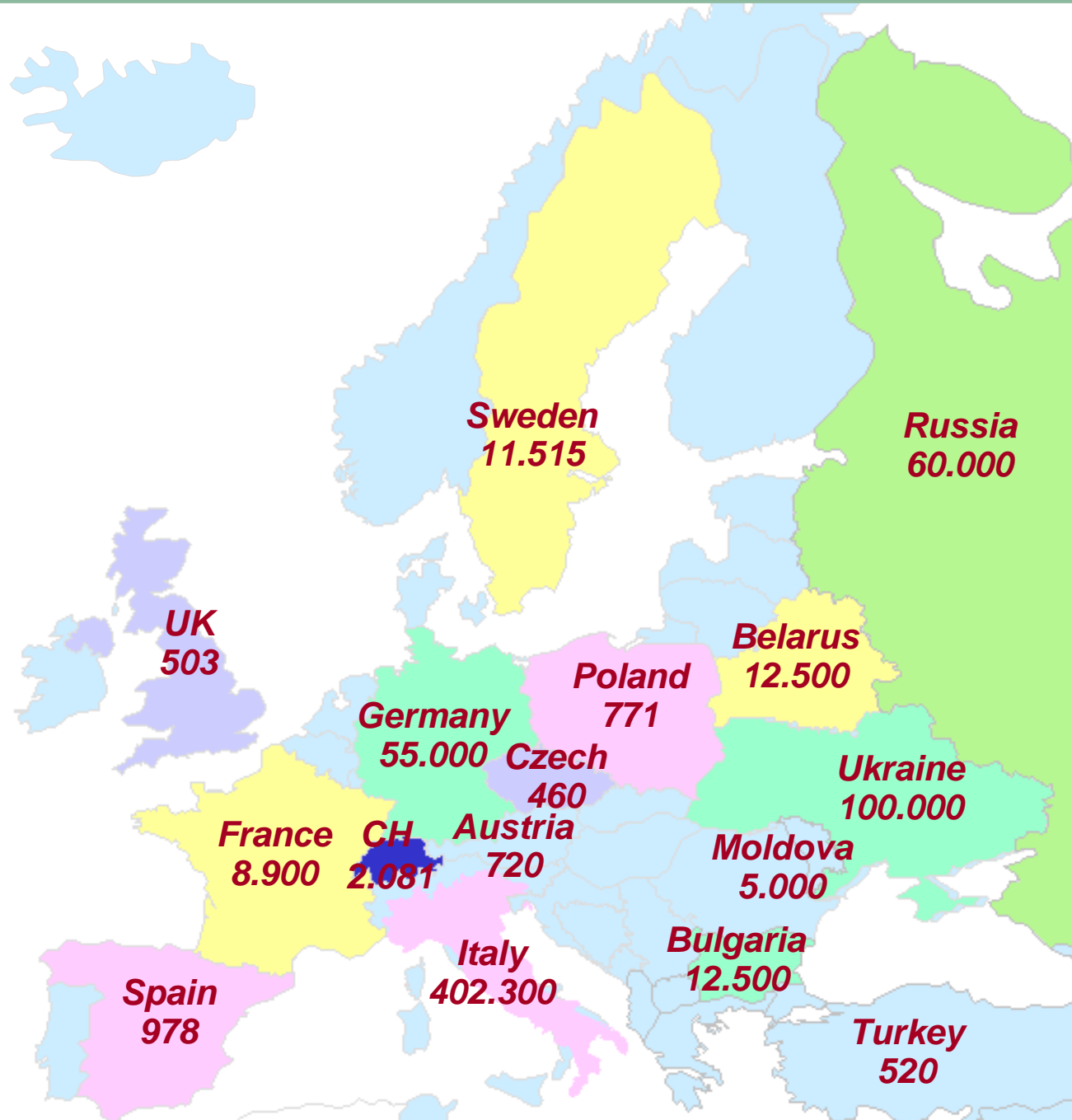
GROWTH RATES 2006-2007

	2006	2007	PERCENTAGE
WORLD	4.6 Million	5.48 Million	14%
EUROPE	556,000	679,000	22%
BRAZIL	1 Million	1.25 Million	25%
CHINA	97,200	127,120	31%
ITALY	382,000	402,300	5%

NGVs IN EUROPE



Europe Total
~ 679.634
NGVs
Refuelling
Stations
~2.330
Stations
Under
Construction
186



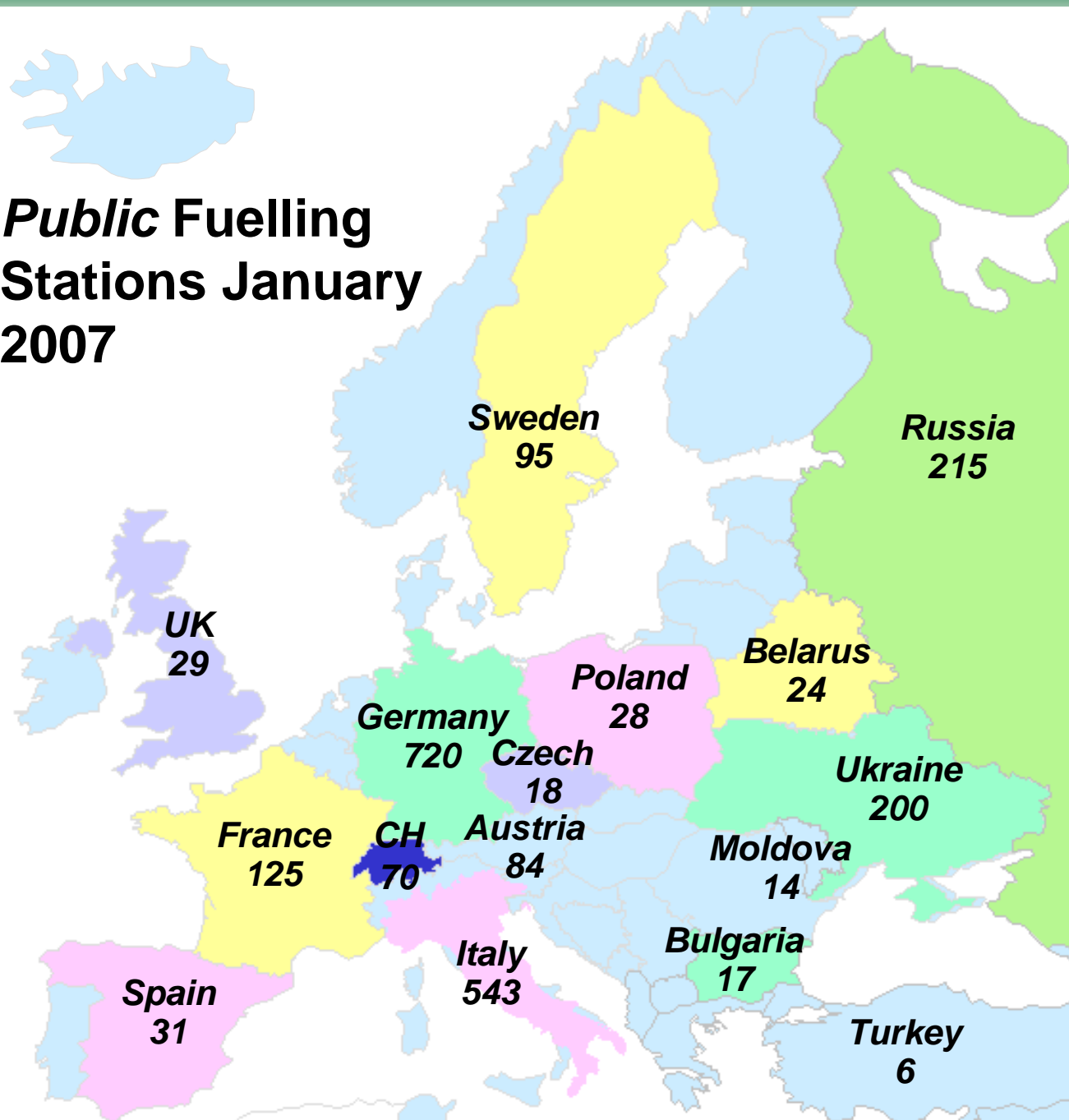
* Rounded up figures

Data source:
The GVR,
January 2007

Europe Total
~ 679.634
NGVs
Refuelling
Stations
~2.330
Stations
Under
Construction
186



Public Fuelling Stations January 2007



* Rounded up figures

Data source:
The GVR,
January 2007

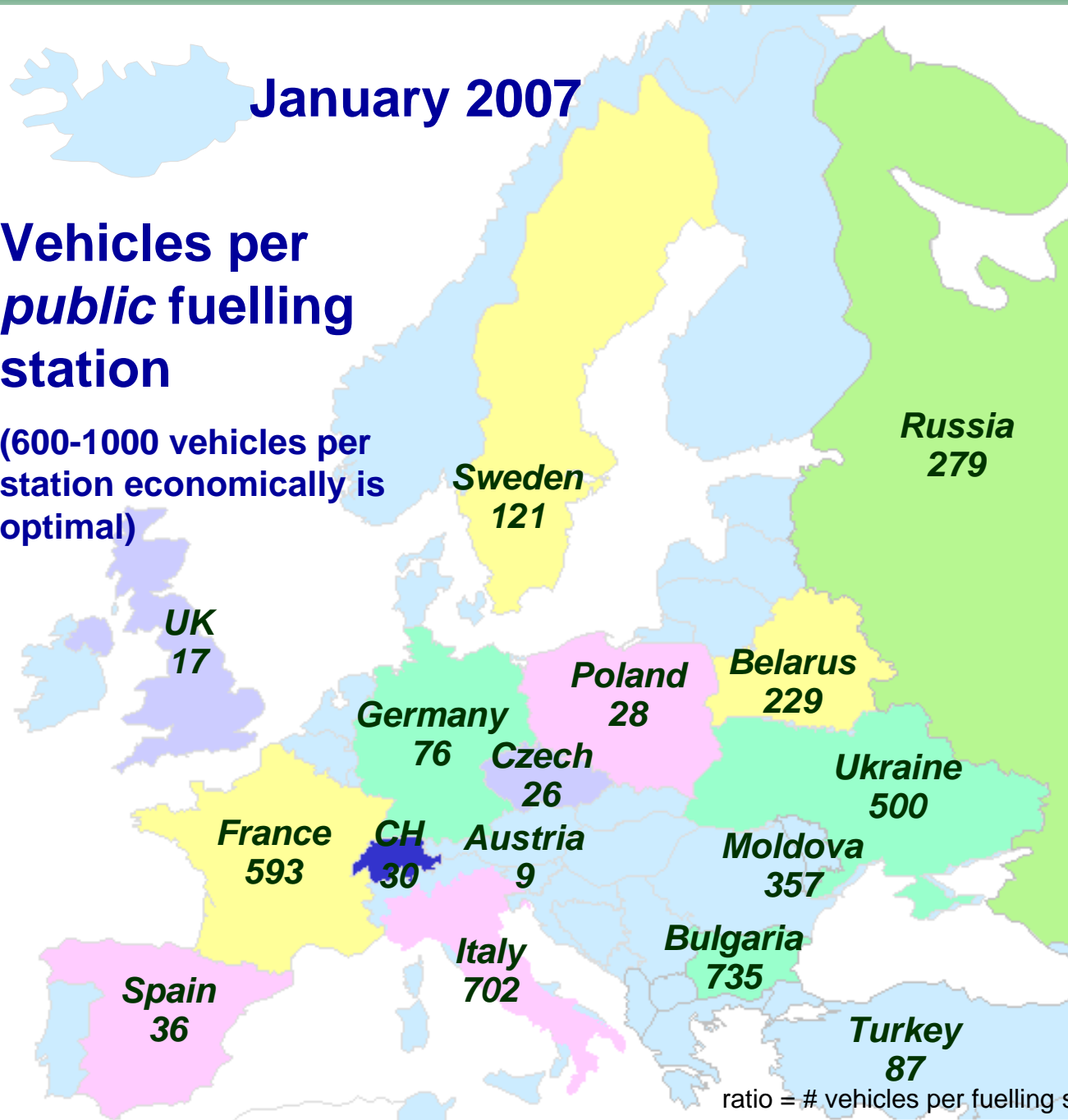
Europe Total
~ 679.634
NGVs
Refuelling
Stations
~2.330
Stations
Under
Construction
186



January 2007

Vehicles per
public fuelling
station

(600-1000 vehicles per station economically is optimal)



* Rounded up figures

Data source:
The GVR,
January 2007

ratio = # vehicles per fuelling station 01.2007

EUROPE'S 1.000+ CLUB

Country	NGVs*	Fuel Stations**	% Nat.Gas Price of Petrol
Italy	402,300	543	37,1%
Ukraine	100.000	200	33,6%
Russia	60.000	215	32,3%
Germany	50.000	700	44,3%
Bulgaria	12.500	17	36,5%
France	8.900	125	69,0%
Sweden	11,515	95	69,0%
Belarus	5.500	24	43,9%
Moldavia	5.000	14	32,3%
Switzerland	2.081	70	62,3%



* Rounded up figures

** Total Stations

Data source:
The GVR, January 2007

EUROPE'S <1.000 CLUB

Country	NGVs*	Fuel Stations**	% NG Price of Petrol
Poland	771	28	28,5%
Austria	720	84	47,9%
Netherlands	550	11	27,5%
Turkey	520	6	40,9%
U.K.	503	29	41,8%
Czech Republic	460	18	63,0%
Latvia	310	4	29,4%
Belgium	300	9	34,5%
Slovakia	286	7	36,7%
Portugal	242	5	46,0%



* Rounded up figures

** Total Stations

Data source:
The GVR, January 2007

EUROPE'S <1.000 CLUB

Country	NGVs*	Fuel Stations	% NG Price of Petrol
Norway	147	4	34,3%
Hungary	110	3	-
Croatia	110	1	26,2%
Serbia & Monte.	95	2	18,2%
Finland	86	3	49,3%
Ireland	81	2	-
Iceland	56	1	61,8%
Luxembourg	51	4	48,6%
Macedonia	32	1	-
Liechtenstein	26	1	77,1%
Bosnia & Herz.	1	0 (1VRA)	35,0%



*
Rounded
up
figures

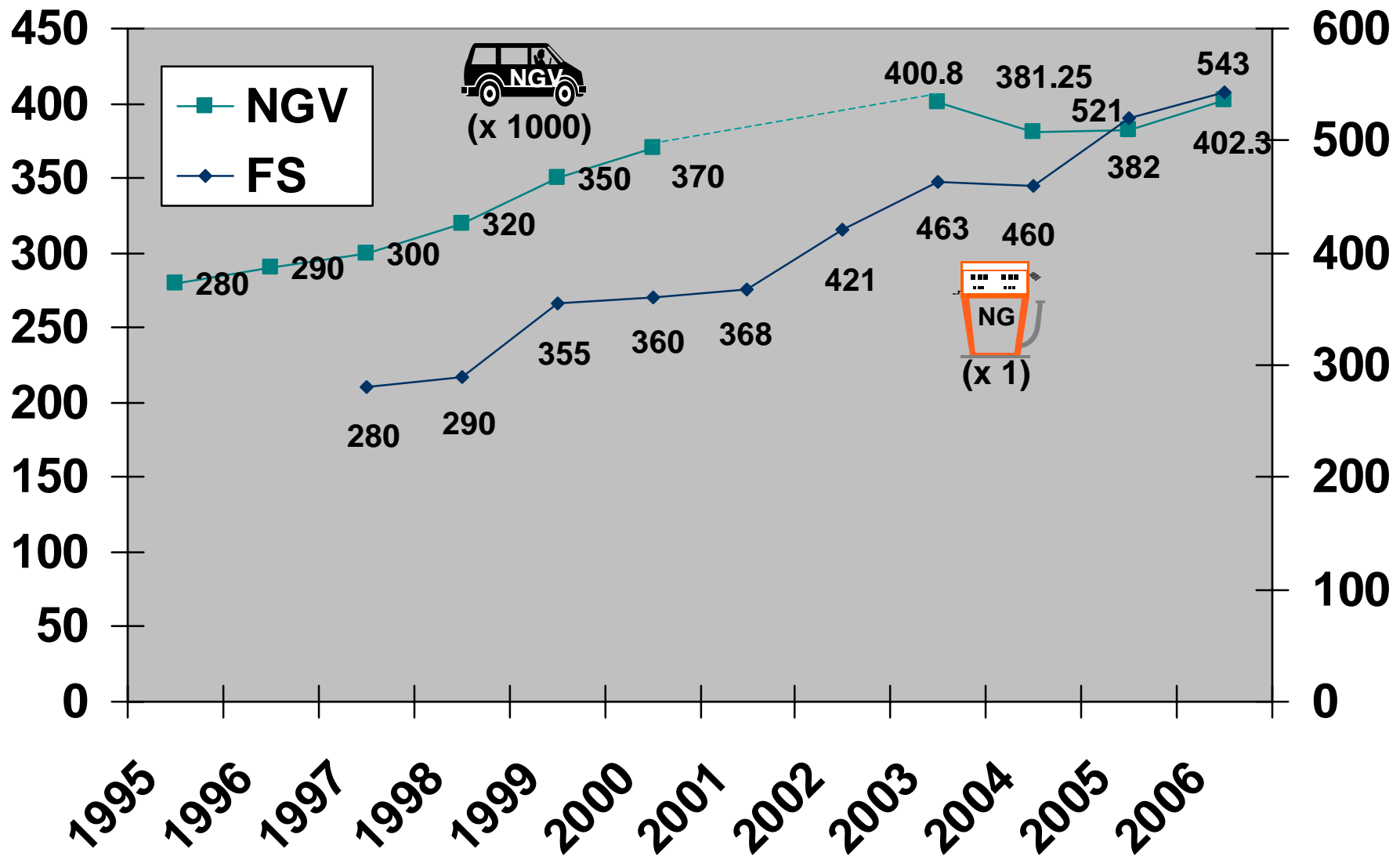
Data
source:
The GVR,
January
2007

NGVs in Europe

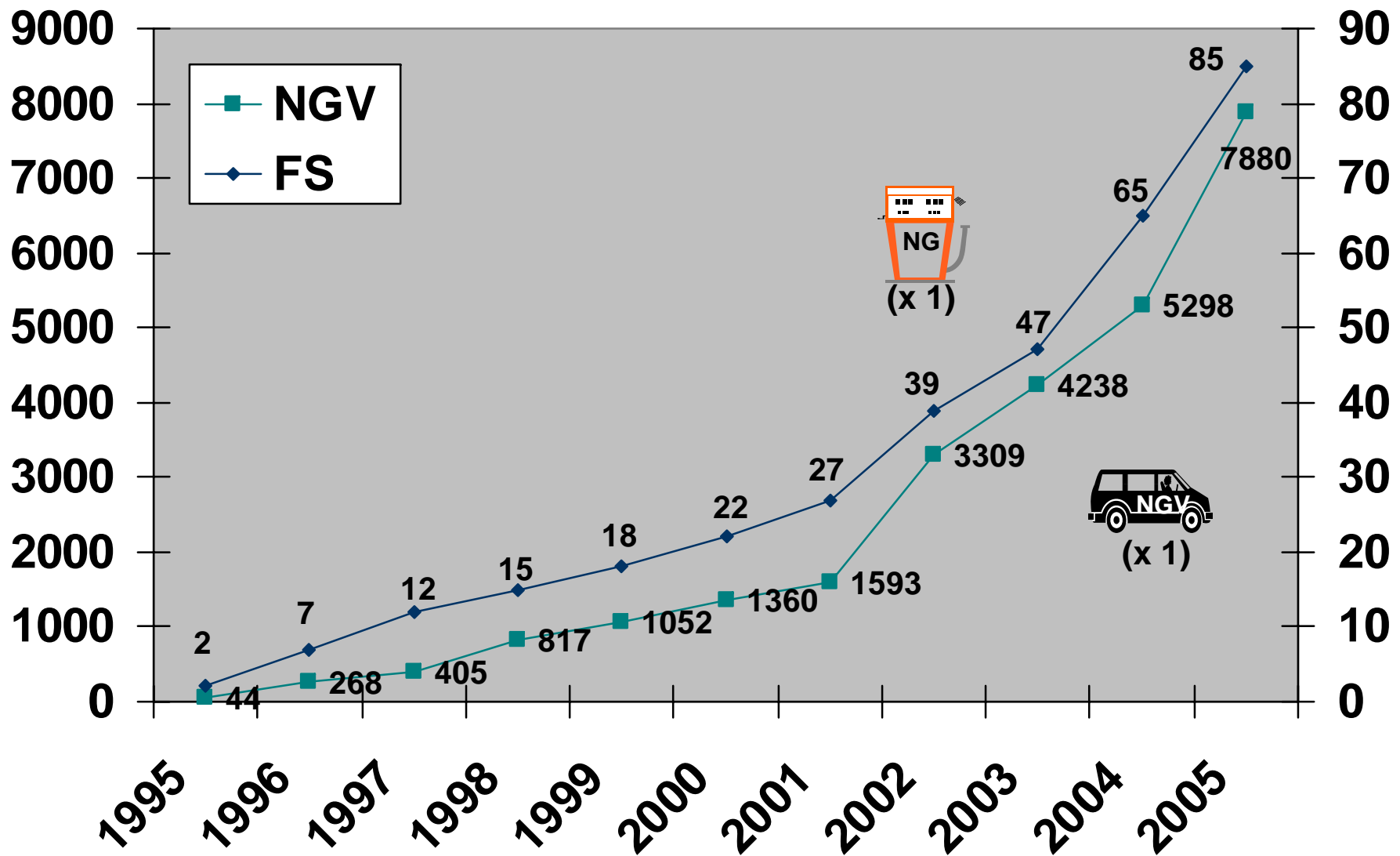
A Brief Country View



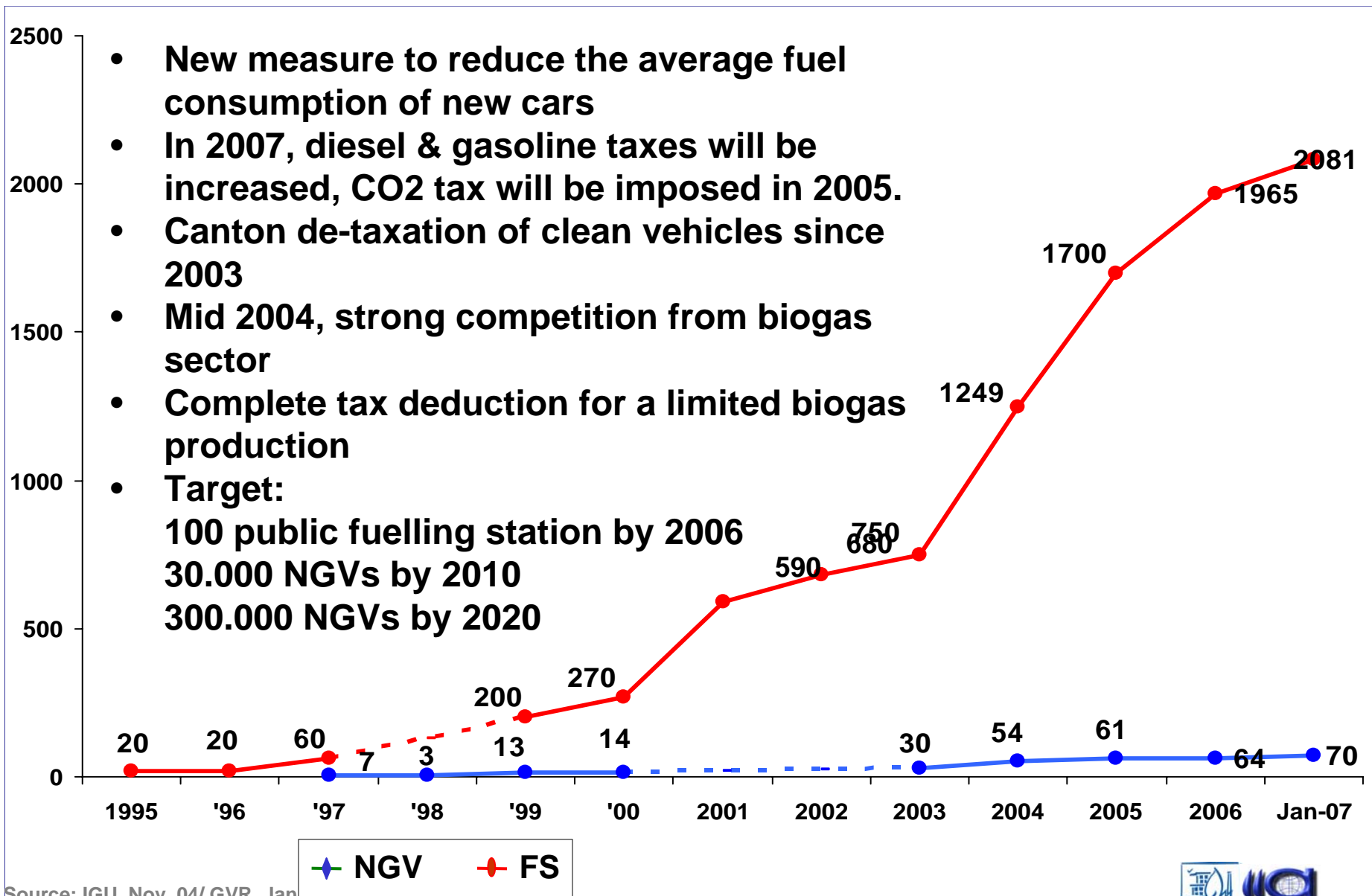
ITALIAN NGV GROWTH



SWEDISH NGV GROWTH



SWITZERLAND NGV GROWTH



- New measure to reduce the average fuel consumption of new cars
- In 2007, diesel & gasoline taxes will be increased, CO2 tax will be imposed in 2005.
- Canton de-taxation of clean vehicles since 2003
- Mid 2004, strong competition from biogas sector
- Complete tax deduction for a limited biogas production
- Target:
 - 100 public fuelling station by 2006
 - 30.000 NGVs by 2010
 - 300.000 NGVs by 2020

Source: IGU, Nov. 04/ GVR, Jan 06



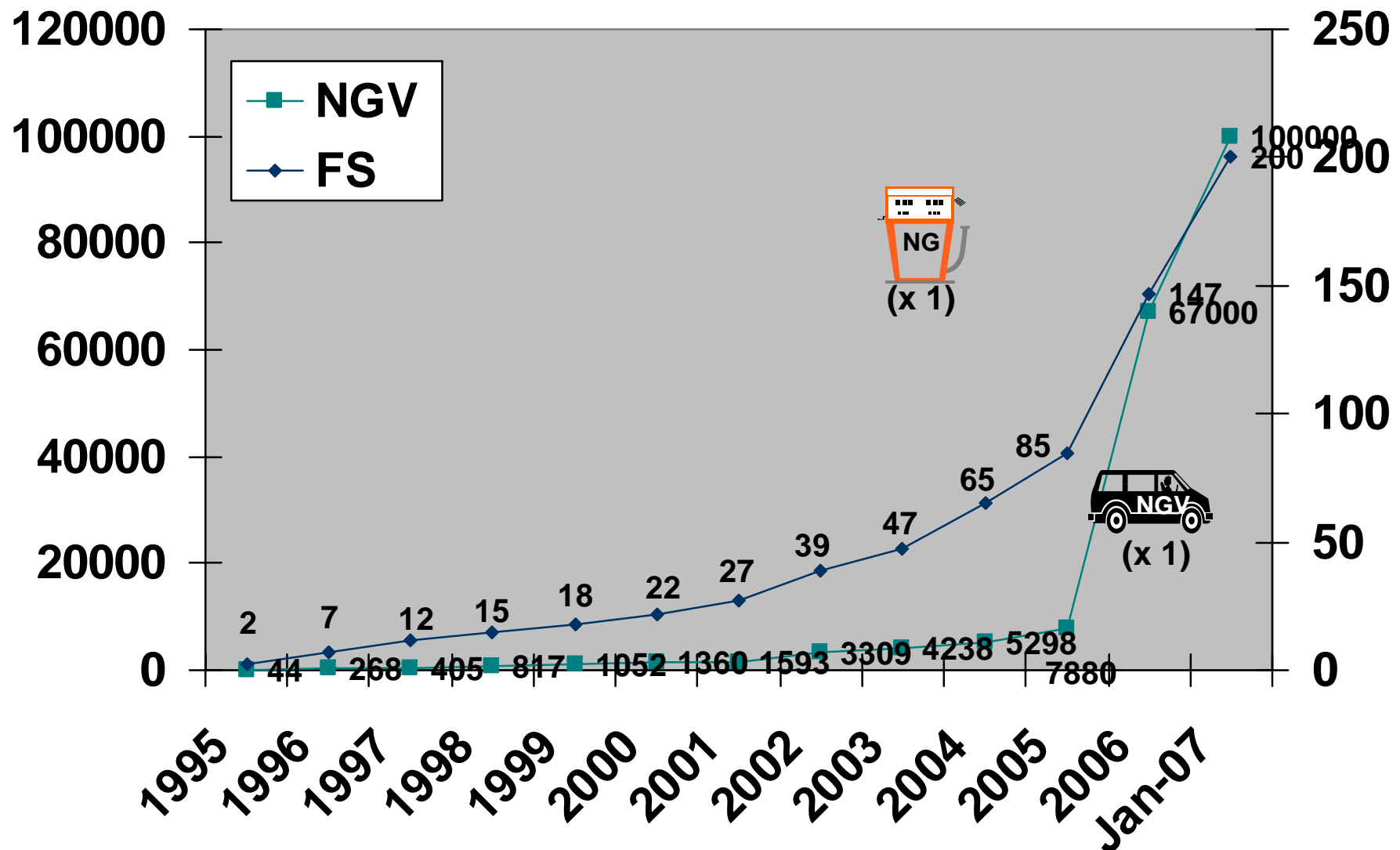
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RENEWABLE BIOMETHANE

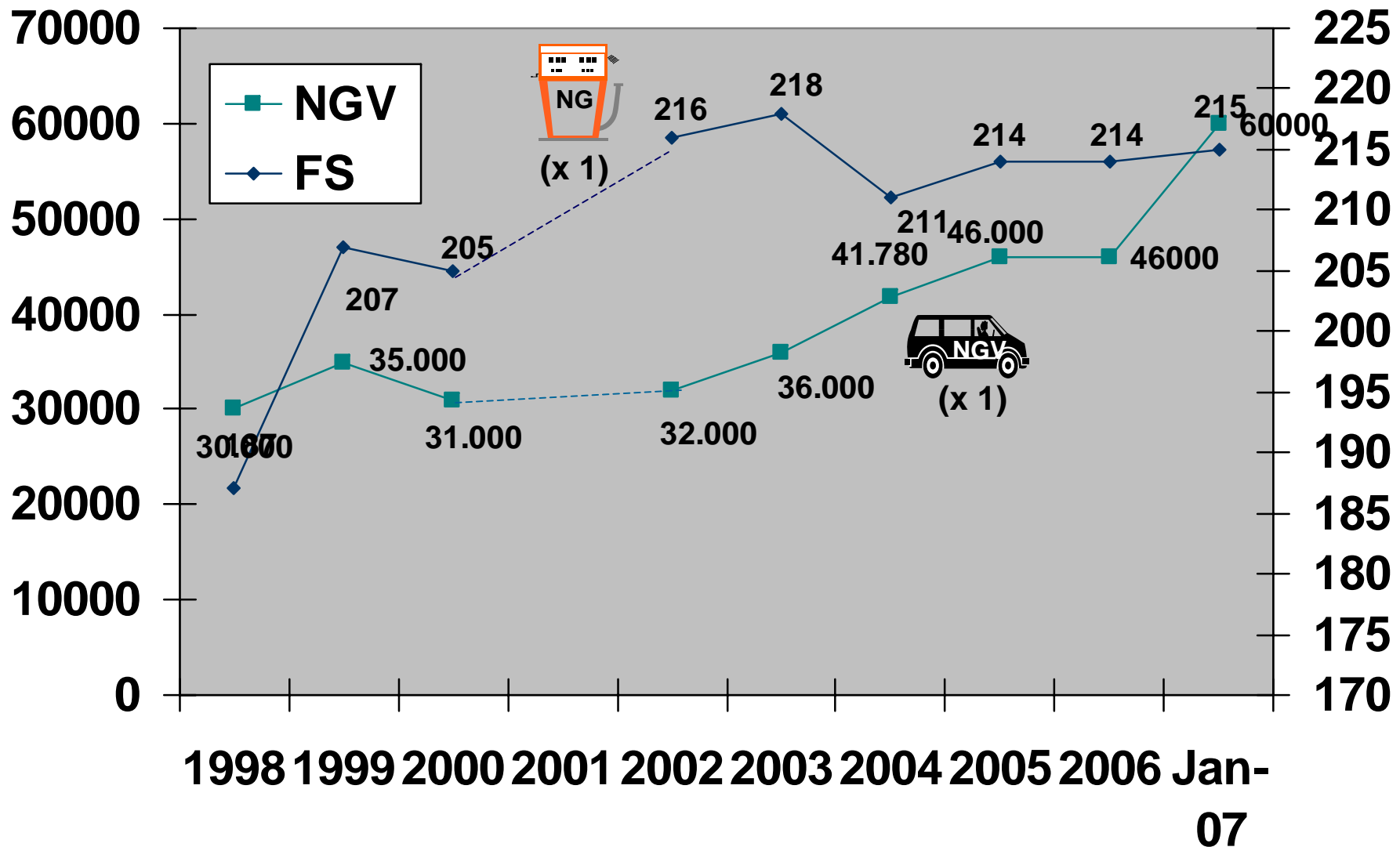
Multifaceted Solution to Multifaceted Problems

- **Feedstock from various waste products**
 - Agricultural (animal, plant & wood)
 - Sewage from water purification
 - Urban waste
- **Conversion efficiencies 40-70%**
- **Injected into natural gas grid or supplied locally**
- **Can reduce 100% CO₂ emissions compared to gasoline car**
- **Potential to replace 20% of petroleum in European transport sector by 2030**
- **Production infrastructure required**

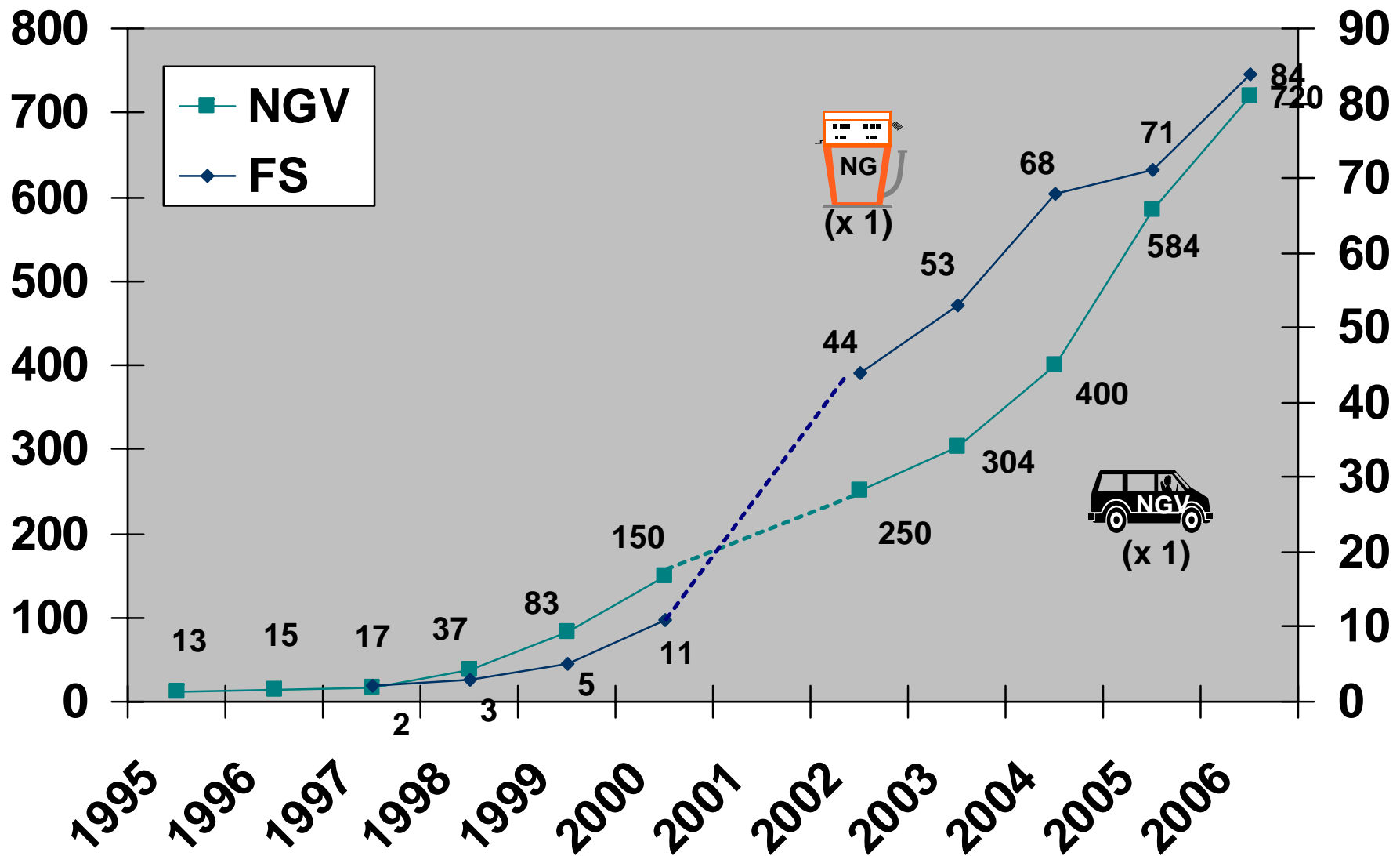
UKRAINIAN NGV GROWTH



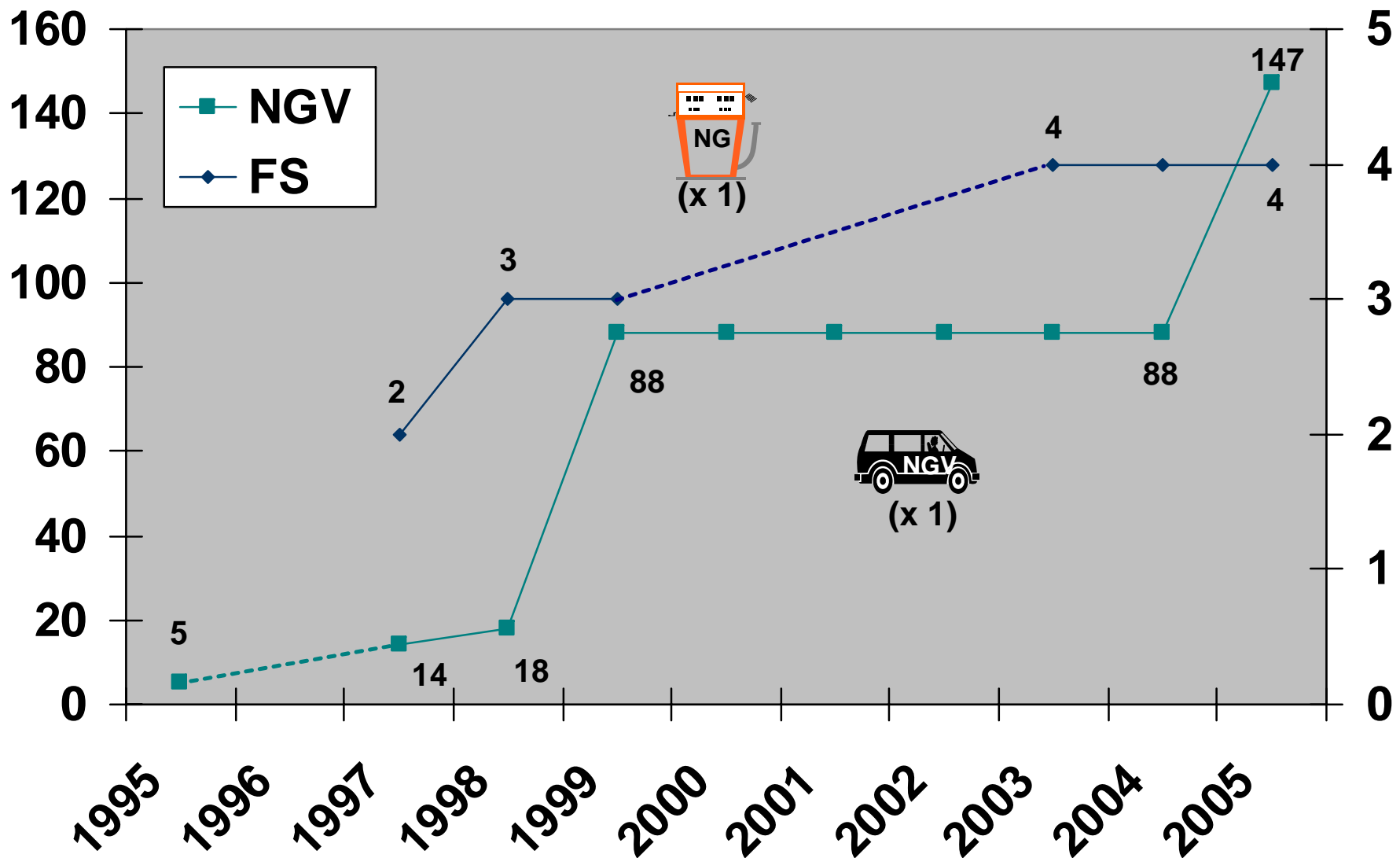
RUSSIAN NGV GROWTH



AUSTRIAN NGV GROWTH



NORWEGIAN NGV GROWTH

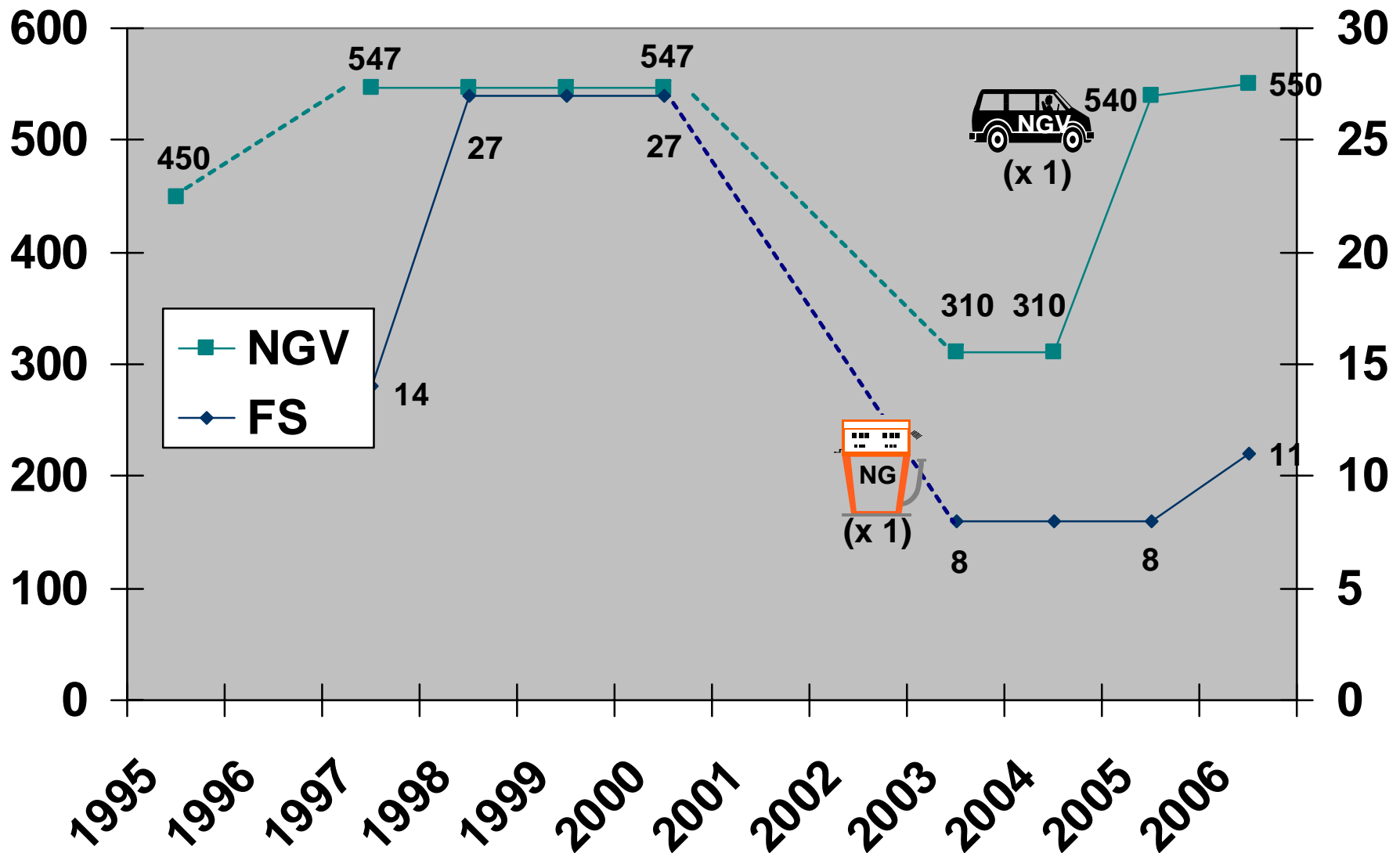


Norway

- **Largest current market for LNG**
- **Bus fleets in western coastal cities with gas supplies**



DUTCH NGV GROWTH





PRINCIPLE NGV DRIVER POLITICS & POLI-TECHS

- United Nations**
- European Commission**
- European Parliament**

GOVERNMENT RELATIONS

UNITED NATIONS ACTIVITIES



ISO ROUND TABLE ON HARMONISATION OF GASEOUS FUEL & VEHICLE STANDARDS & REGULATIONS

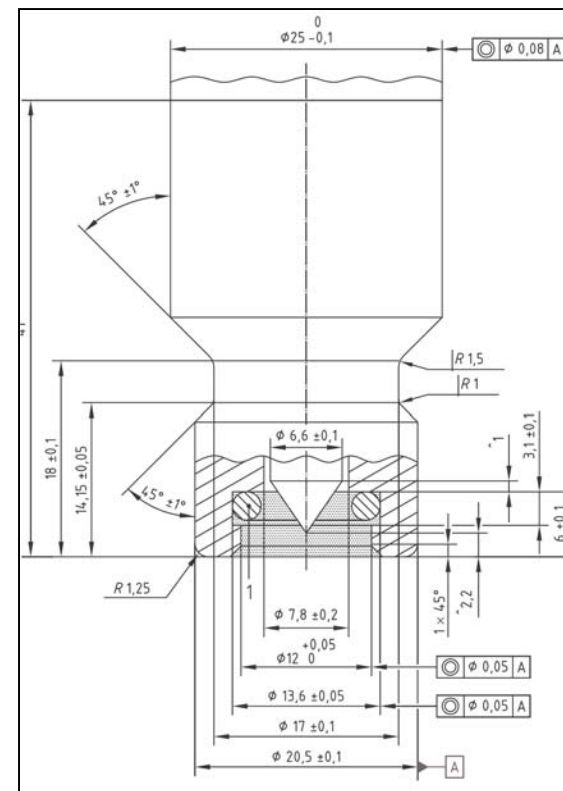
- **Concept introduced by ENGVA/IANGV 2005**
- **10 JANUARY 2007 Round table had nearly 100 participants between NGV and H2V**
- **Sessions identified gaps in NGV standards and challenges facing H2Vs**
- **Synergies between NGVs & H2Vs identified**
- **Moving forward to create new opportunities for harmonisation of standard & regulations**

Harmonisation of CNG Fuel Receptacles

NGV-1 Amendment submitted in Reg. 110 (Introduced January 2006; Adopted at GRPE January 2007)



**NGV-1 (light duty vehicles) &
NGV-2 (heavy duty vehicles & buses)**



ENERGY & NGV POLITICS: EUROPE



European Commission View on Natural Gas for Vehicles

- Transport policy to 2020 very favourable but not supported by actions (i.e. no NGV Directive)
- Commission view of biofuels is biased toward *liquids*; Biogas advocated for electric generation almost exclusively
- Biogas upgraded to bio-methane for vehicles is more-or-less dismissed, yet its potential to replace petrol is better than liquid biofuels (20% or more of transport sector fuel)
- Links between NGVs and H2Vs not realised

NGV POLITICS at the COMMISSION & PARLIAMENT

- **European Strategy for Sustainable, Competitive and Secure Energy (European Energy Strategy)**
- **Euro 5 (Light Duty Vehicles) (ECE 72/306) & later, Euro 6 (Heavy Duty Vehicles)**
- **Biofuels Directive II (Revision of 2003 Biofuels Directive)**
- **Directive on Energy Efficiency**
- **Directive on Clean & Efficient Vehicles**
- **CO2 regulation of auto manufacturers fleet**

SUMMARY OF ENGVA POLITICAL ACTIONS & ACCOMPLISHMENTS 2006

- **Euro 5 Light Duty Emissions Legislation**
 - **NMHC *finally* created. Will show CO2 advantage of NGVs of petrol vehicles.**
 - **Biomethane to be treated the same as natural gas**
 - **On Board Diagnostics issue resolved (master/slave) and literally ‘saved’ retrofit market from extinction in Europe**

EUROPEAN ENERGY STRATEGY

ENGVA Lobbying Success December 2006

- **Sustainable, Competitive & Secure Energy for Europe: (Green Paper Policy)**
 - **European Parliament amendment to create a Natural Gas Directive to match the biofuels and hydrogen directive (Target 2020)**
 - **Parliament amendment instructing Commission to distinguish in laws & policies that biogas for vehicle applications is part of the biofuels policy (now oriented to liquids), and not merely for electric generation**

SUMMARY OF ENGVA POLITICAL ACTIONS & ACCOMPLISHMENTS 2006

- **ENGVA Political Round Table & Vehicle Exhibition, Brussels April 2006**
- **High level attendance of European Commission & NGV Stakeholders**
- **OEM visibility with vehicle display (24 LDV & HDVs)**
- **Public Relations and Press**
 - Over 60 articles published in European and Brussels media
 - Television coverage of Round Table event in Brussels
- **Preparation for Political Round Table & Conference *in* Parliament, Strasbourg, 19-21st June 2007**

A COMMON (HARMONIZED) EUROPEAN FUELLING STRATEGY IS NEEDED

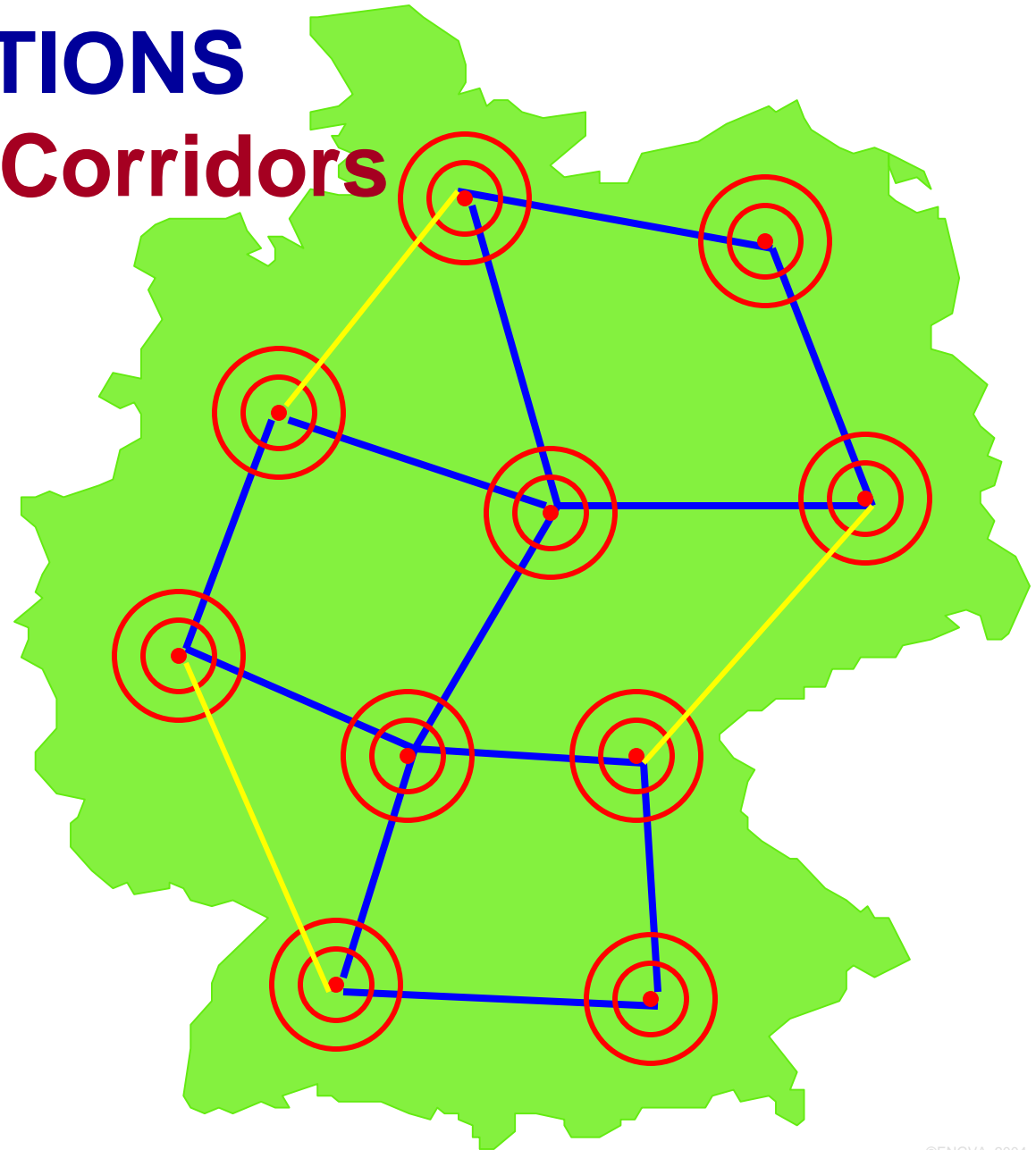
- Takes into consideration each country approach (fleets, commuter vehicles, home fuelling, etc.)
- Adopt and combine concepts: **cores, rings & corridors**
- Involvement of stakeholders
 - Gas & oil industries
 - Vehicle manufacturers
 - Governments
 - Customers

FUELLING STATIONS

Cores, Rings & Corridors

Legend:

- Cores
- Rings
- Corridors

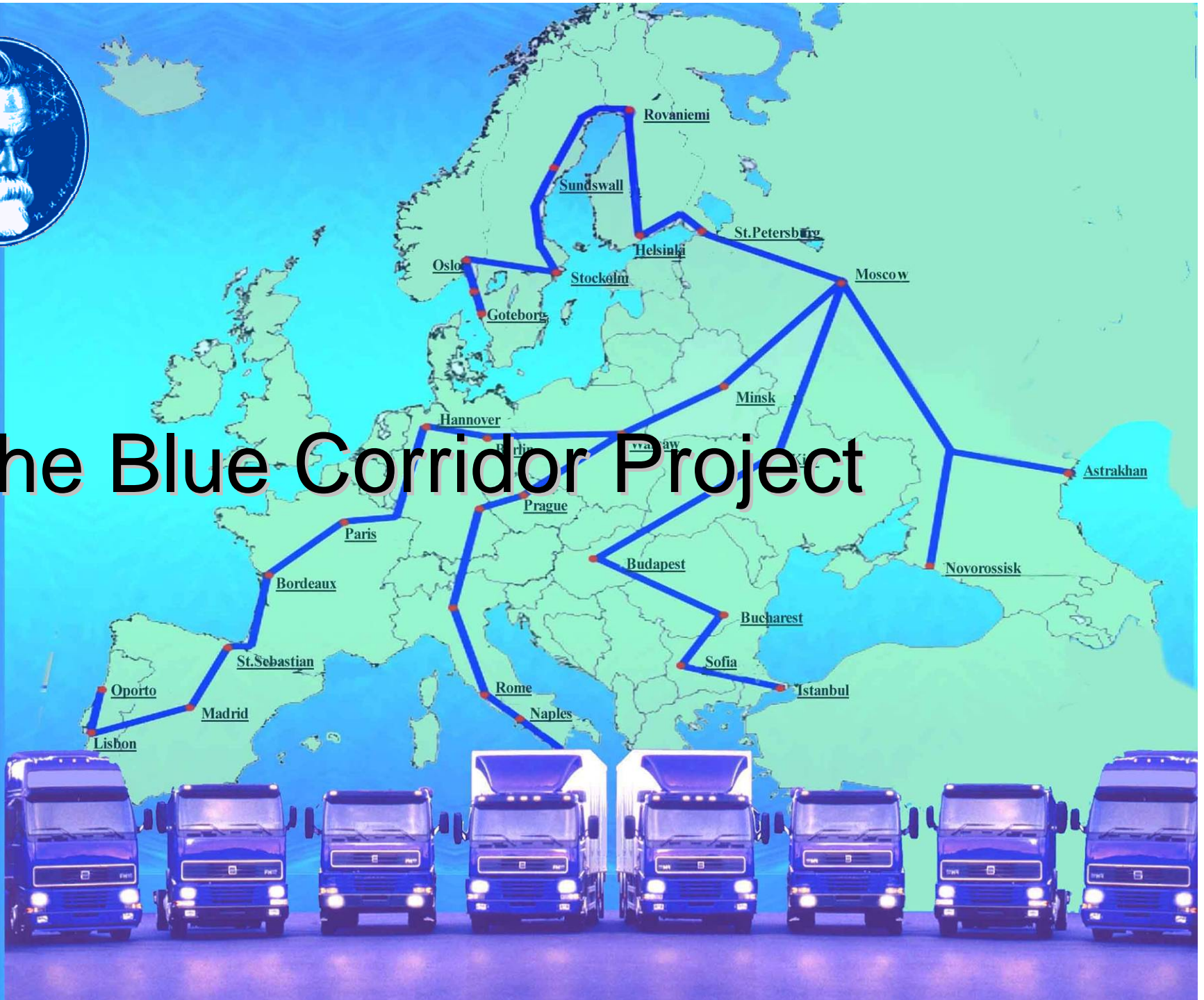


**Growth strategy for
natural gas refuelling
station networks**



Vernadsky
Foundation

The Blue Corridor Project





FROM HELSINKI TO ROME



Potential NGVs Corridors

Prerequisites

Legal principles

Environment

Resources procurement

Corridors in Russia

Crete Corridors

"Blue Corridors"

NGVs

Characteristics

Efficiency

Development

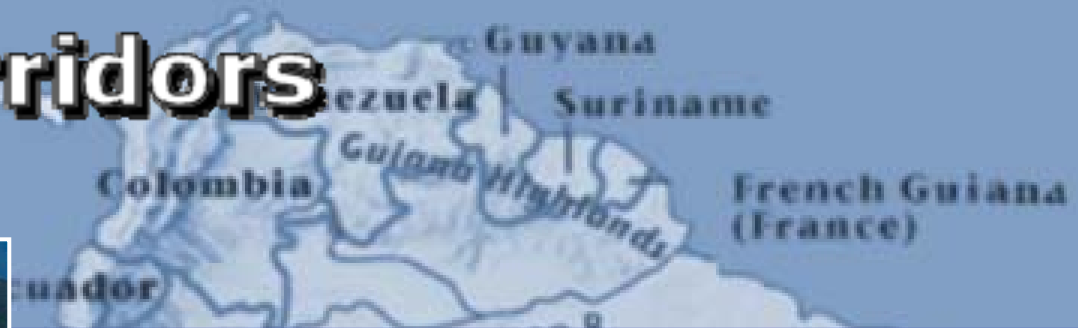
Participants



Vernadsky Foundation

[Http://www.vernadsky.ru/](http://www.vernadsky.ru/)
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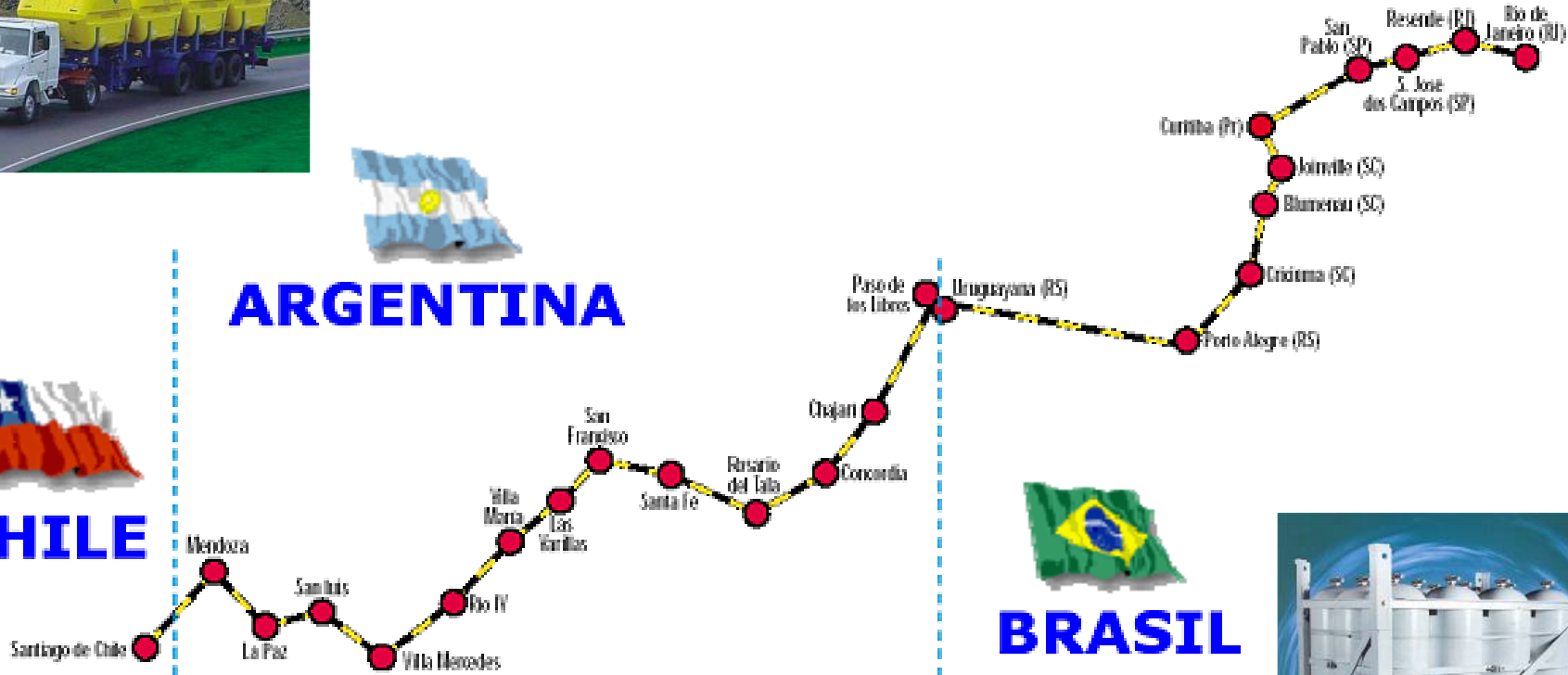
Blue Corridors



ARGENTINA



CHILE



BRASIL



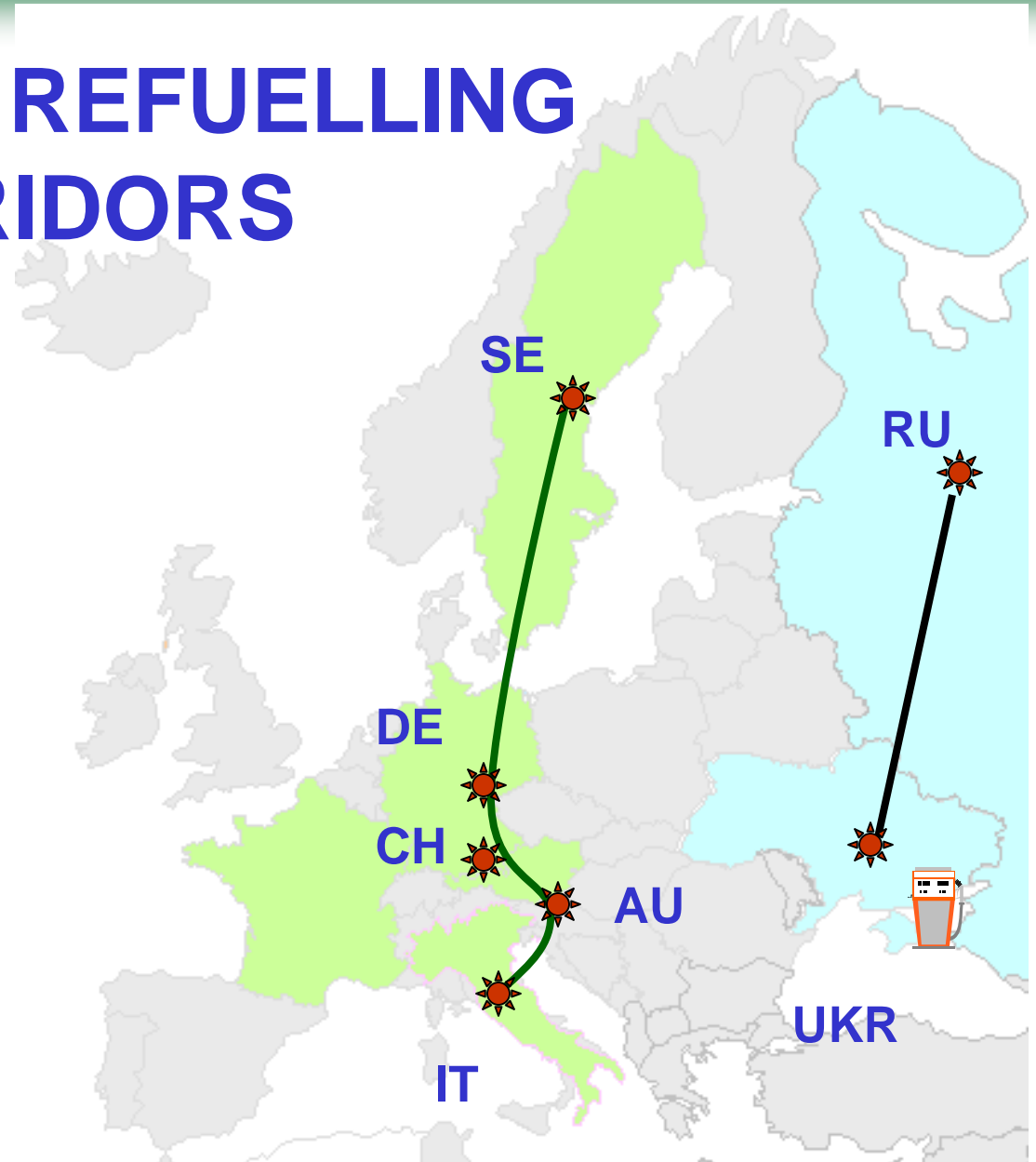
GAS SALES PER MONTH (Nm³)

- **Chile** **800,000**
- **Argentina** **273,712,834**
- **Brazil** **196,470,000**

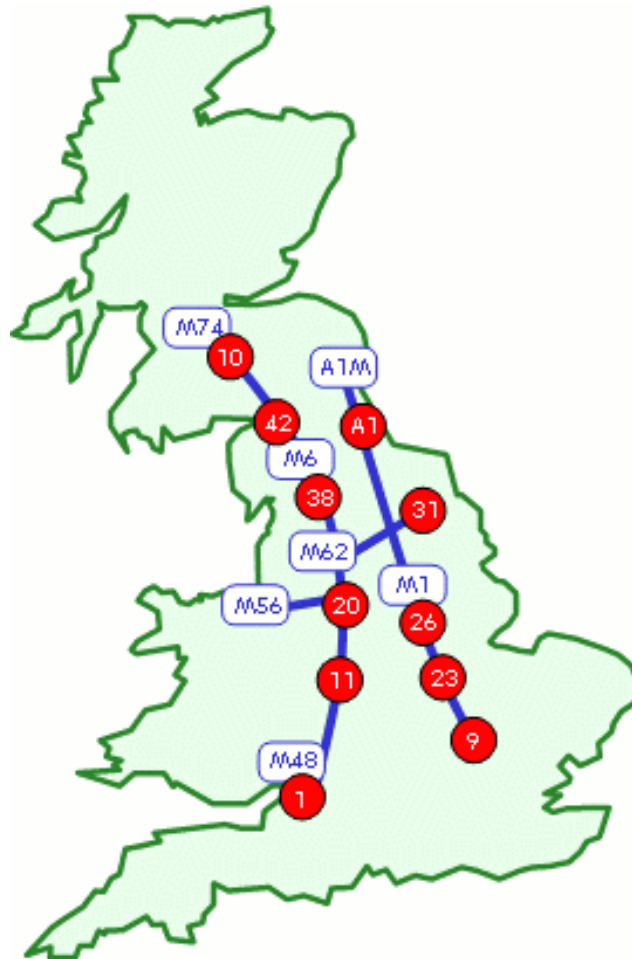
NATURAL GAS REFUELLING STATION CORRIDORS

Nm3 sales p/month

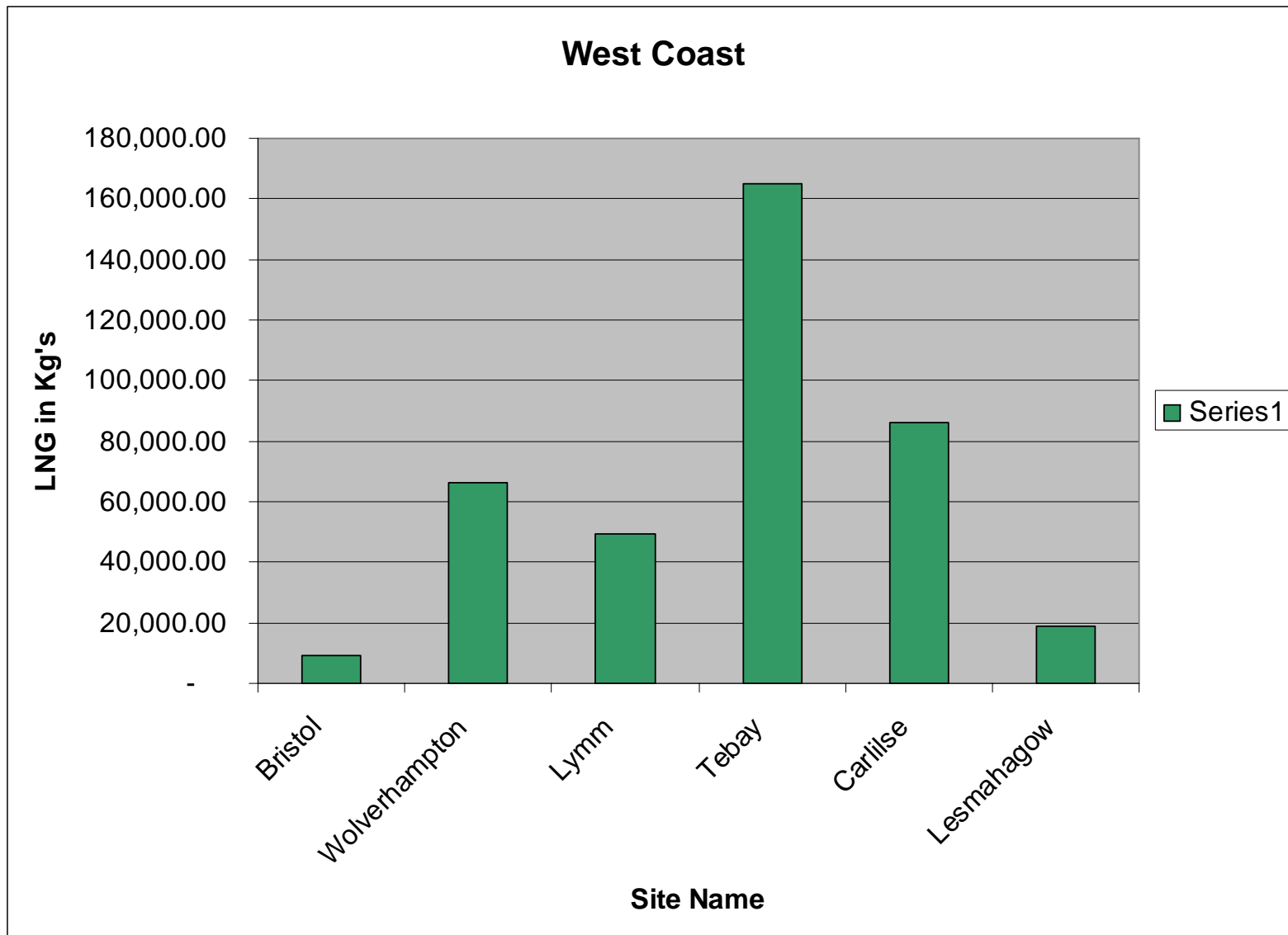
- CH = 298,400
- IT = 40,000,000
- AU = 110,000
- RU = 27,000,000
- UK = 54,840,000
- Numbers not available for SE & DE



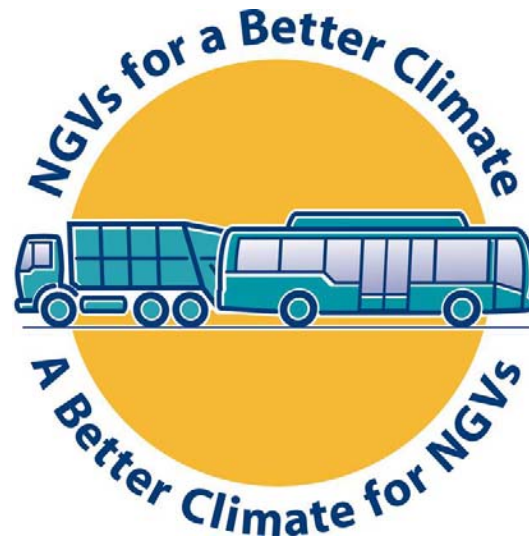
THE UK HEAVY GOODS VEHICLE LNG CORRIDORS



UK FUEL CONSUMPTION ALONG THE CORRIDORS



ENGVA Annual European NGV Conference



STRASBOURG, FRANCE
19th-21th June 2007

OPPORTUNITIES

- **HIGH visibility with Political Round Table & Press Conference in Parliament**
- **Cocktail Reception in heart of Parliament (with small vehicle exhibition)**
- **Vehicle visibility at front door of Parliament to 732 MEPs all week (esp. Tuesday-Thursday)**
- **Additional European Commission leadership**
- **Table top exhibition at Hilton**
- **Partner program**
 - Canal tour and walking tour of medieval city
 - Free tour of Parliament (Thursday)

CONFERENCE & POLITICAL ROUND TABLE

- **19th June: ENGVA BOD meeting & General Meeting of the Members**
- **20th June**
 - Opening Session at Hilton Hotel
 - Table Top Exhibition & Lunch
 - 14.30-16.45 Political Round Table & Press Conference
 - 17.00-19.00 Cocktail Reception
 - 20.30 Gala Dinner
- **21st June**
 - Heavy Duty Vehicles
 - Light Duty Vehicles
 - NGV Innovations
 - Renewable Biomethane



Round Table Conference room

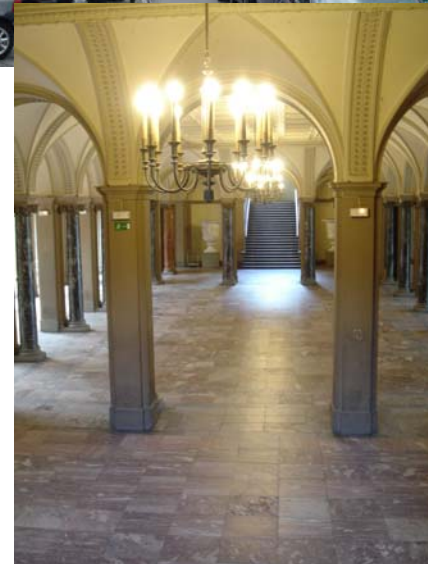
MEDIEVAL STRASBOURG



BAR CYGNE COCKTAIL RECEPTION EUROPEAN PARLIAMENT, STRASBOURG



GALA DINNER UNIVERSITY OF STRASBOURG



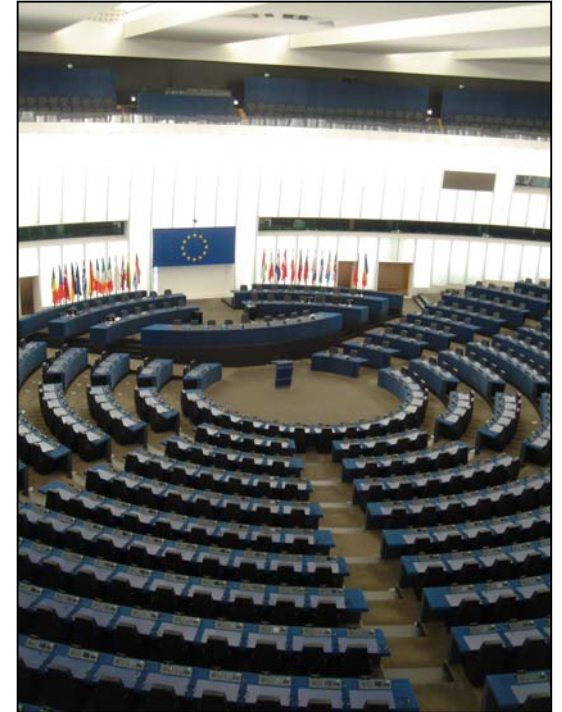
**POLITICAL ROUND TABLE
PLUS
PRESS CONFERENCE
PLUS
COCKTAIL RECEPTION**



Entrance to the Chamber



Interior meeting spaces



Parliament Chamber

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