

World Gas Conference Amsterdam Strategic Panel on Natural Gas Vehicles *The Road Ahead?*



6th June 2006

WORLD OVERVIEW

NGVs IN THEIR GLOBAL CONTEXT



NGVs IN THE WORLD



2006



World Total



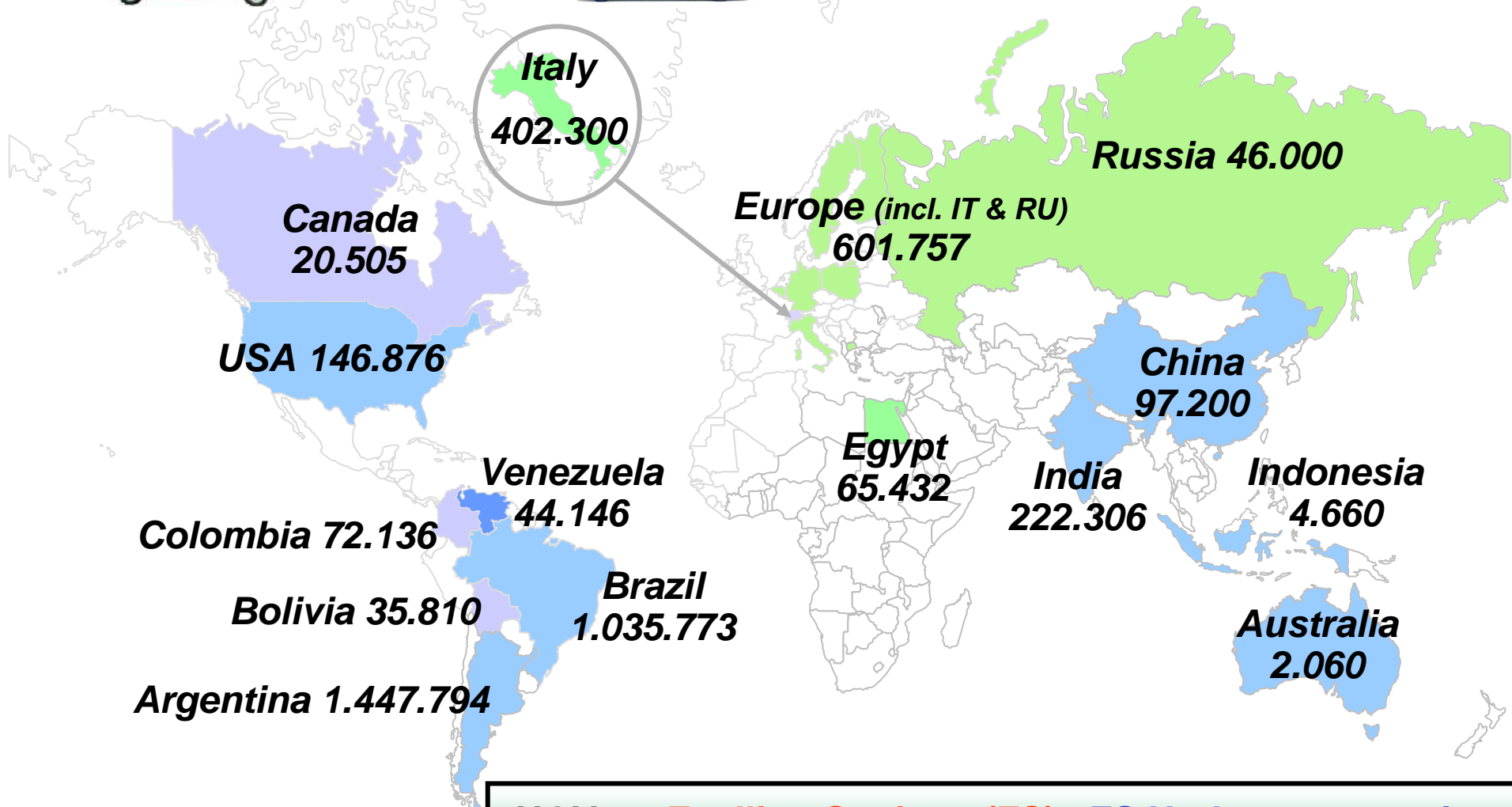
~ 4.76 M



9.515













874



Data source: The GVR, May 2006

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

THE TOP TEN COUNTRIES WORLDWIDE

Country	NGVs*	Fuel Stations*	% Price Nat.Gas of Petrol
 Argentina	1.45 mil	1.494	40,1%
 Brazil	1.03 mil	1.182	42,5%
 Pakistan	700.000	766	34,0%
 Italy	402.300	543	37,1%
 India	222.306	192	31,2%
 USA	146.876	1.600	68,1%
 China	97.200	355	44,8%
 Iran	91.314	120	23,4%
 Colombia	72.136	168	49,3%
 Ukraine	67.000	147	33,6%



•Rounded up figures

Source: The GVR,
May 2006

NGVs IN EUROPE



EUROPE'S 1.000+ CLUB

Country	NGVs*	Fuel Stations**	% Nat.Gas Price of Petrol
Italy	402,300	543	37,1%
Ukraine	67.000	147	33,6%
Russia	46.000	214	32,3%
Germany	34.000	640	44,3%
France	8.400	125	57,2%
Sweden	7.880	85	69,0%
Bulgaria	7.305	11	31,9%
Belarus	5.500	24	43,9%
Moldavia	4.500	8	32,3%
Switzerland	1.965	64	62,4%



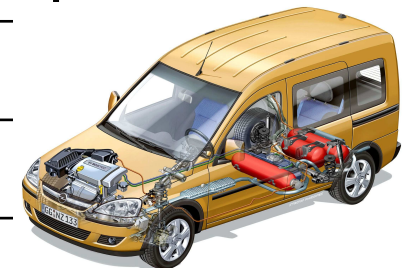
* Rounded up figures

** Total Stations

Data source:
The GVR, March 2006

EUROPE'S <1.000 CLUB

Country	NGVs*	Fuel Stations**	% NG Price of Petrol
Spain	944	30	47,8%
Poland	771	28	28,5%
Austria	584	71	62,7%
Netherlands	540	11	27,5%
Turkey	520	6	35,4%
United Kingdom	503	29	41,8%
Czech Republic	390	16	47,6%
Latvia	310	4	29,4%
Belgium	300	9	34,5%
Slovakia	286	7	40,1%



* Rounded up figures
 ** Total Stations

Data source:
 The GVR, March 2006

EUROPE'S <1.000 CLUB

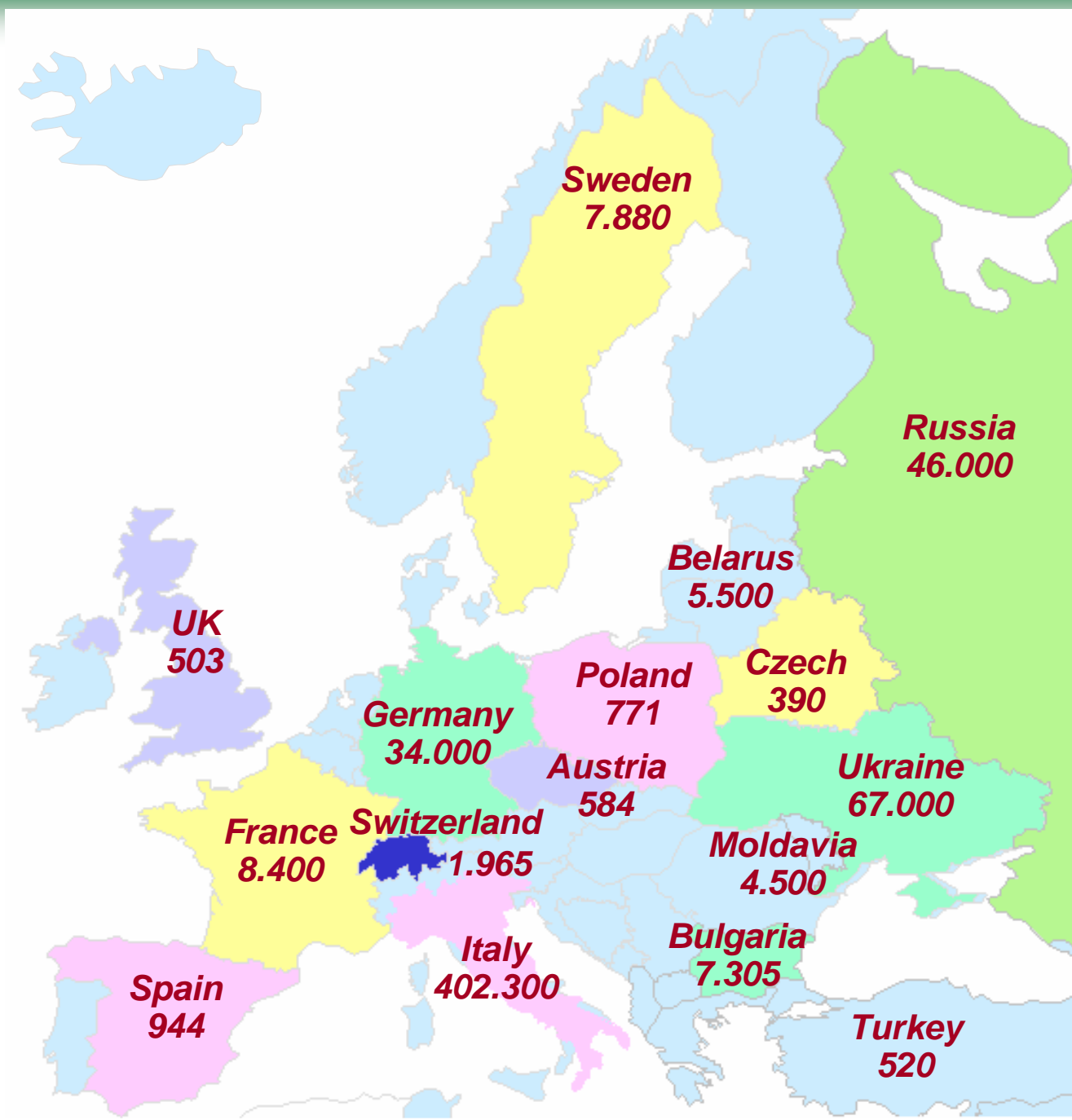
Country	NGVs*	Fuel Stations	% NG Price of Petrol
Portugal	242	5	46,0%
Norway	147	4	34,3%
Croatia	100	1	26,2%
Serbia & Monte.	95	2	21,9%
Finland	86	3	49,3%
Ireland	81	2	-
Luxembourg	51	4	48,6%
Iceland	50	1	71,1%
Macedonia	32	1	-
Liechtenstein	26	1	77,1%
Bosnia & Herz.	1	0 (1VRA)	35,0%



*
Rounded
up
figures

Data
source:
The GVR,
March
2006

Europe Total
~ 590.909
NGVs
Refuelling
Stations
~ 2096
Stations
Under
Construction
128



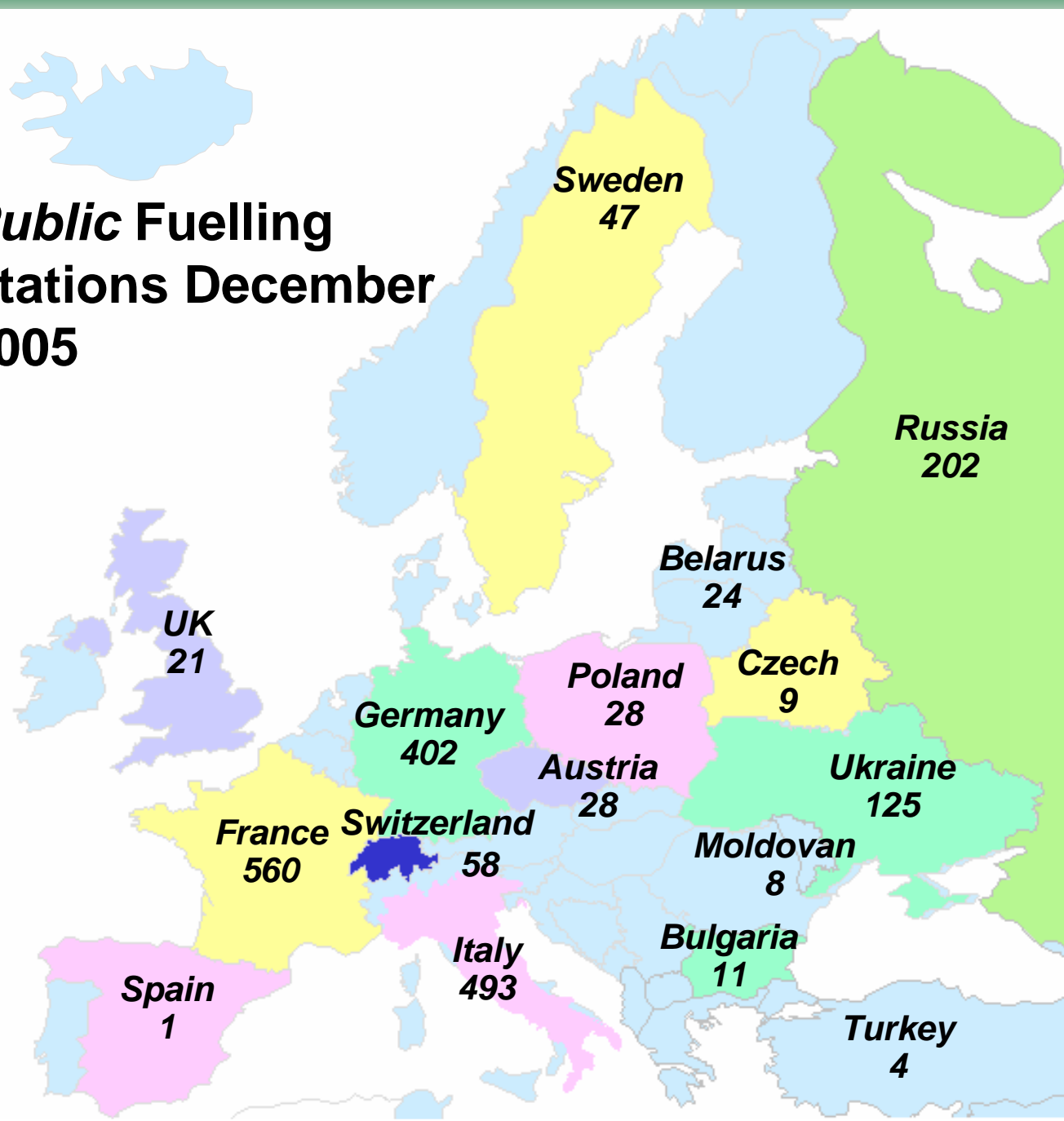
* Rounded up figures

Data source:
The GVR,
March 2006

Europe Total
~ 590.909
NGVs
Refuelling
Stations
~ 2096
Stations
Under
Construction
128



Public Fuelling Stations December 2005



* Rounded up figures

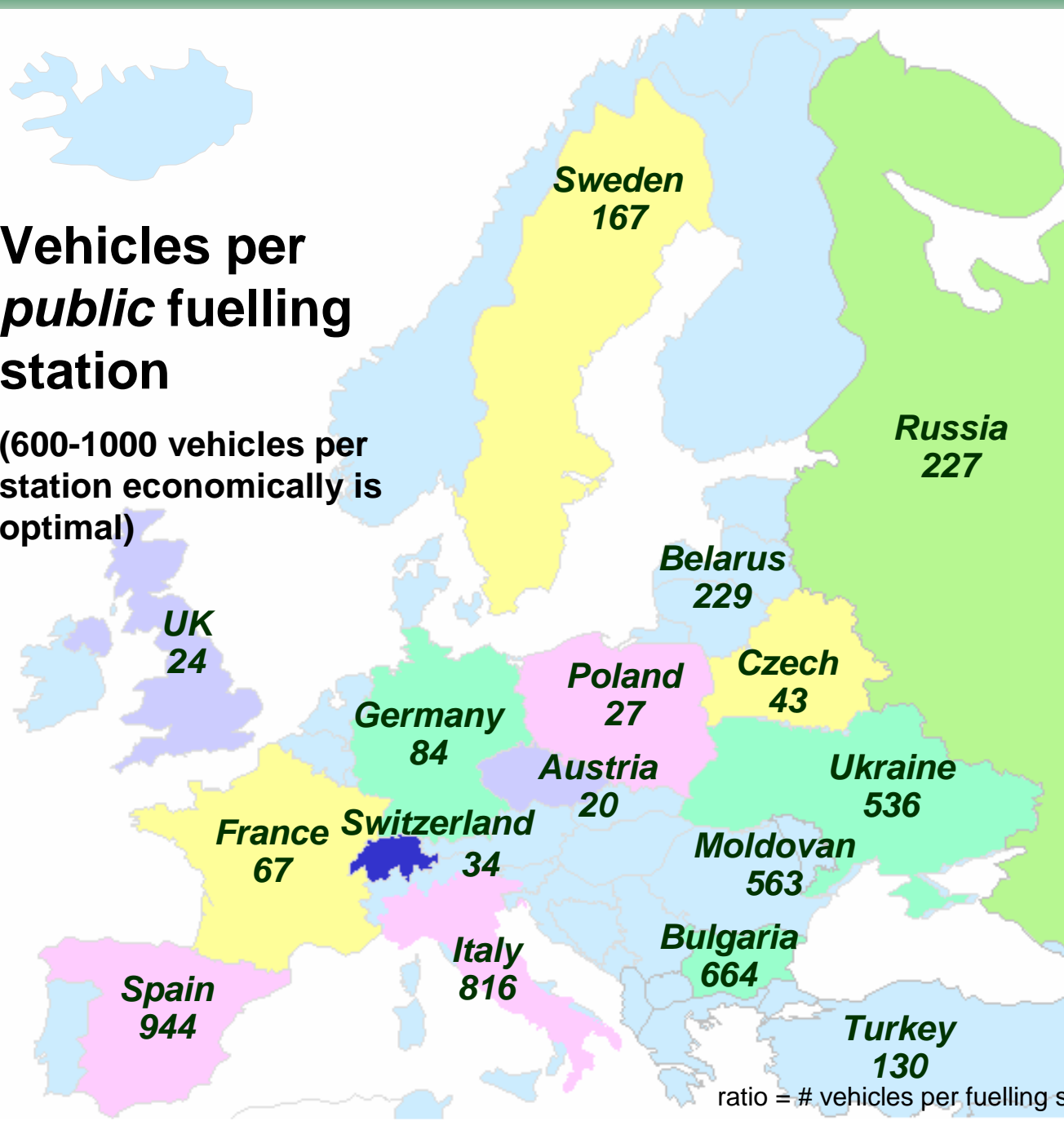
Data source:
The GVR,
December 2005

Europe Total
~ 590.909
NGVs
Refuelling
Stations
~ 2096
Stations
Under
Construction
128



Vehicles per *public* fuelling station

(600-1000 vehicles per station economically is optimal)



* Rounded up figures

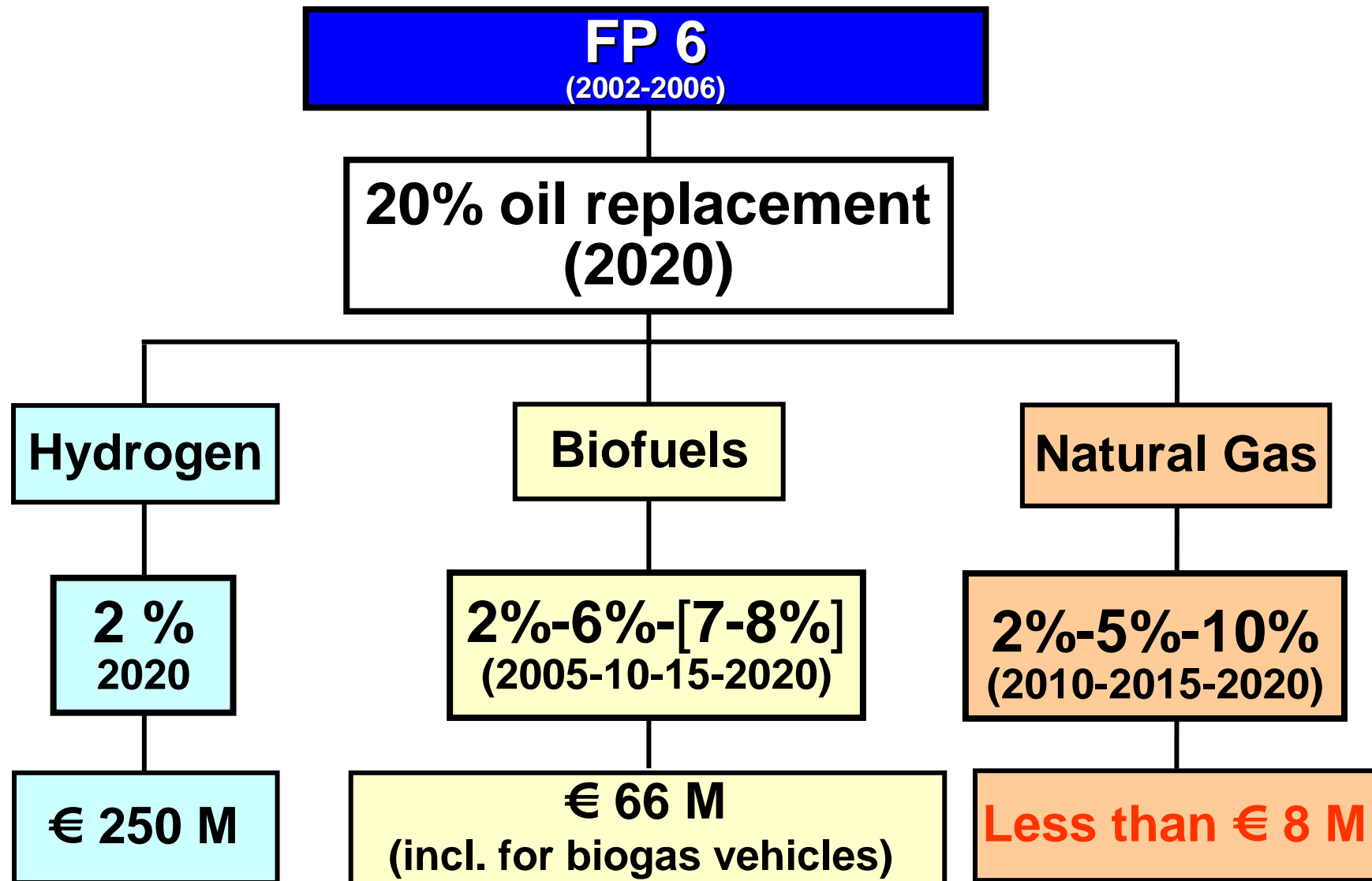
Data source:
The GVR,
March 2006

ratio = # vehicles per fuelling station 03.2006

EC FUNDING - Alternative Motor Fuels



Sources: European Commission: *Energy Research* ; The International Energy Agency





**ULTIMATE SUCCESS OF THE
TARGET 2020 POLICY DEPENDS
UPON A
*COMMON EUROPEAN
APPROACH***

What does that mean.....?

A COMMON (HARMONIZED) EUROPEAN FUELLING STRATEGY IS NEEDED

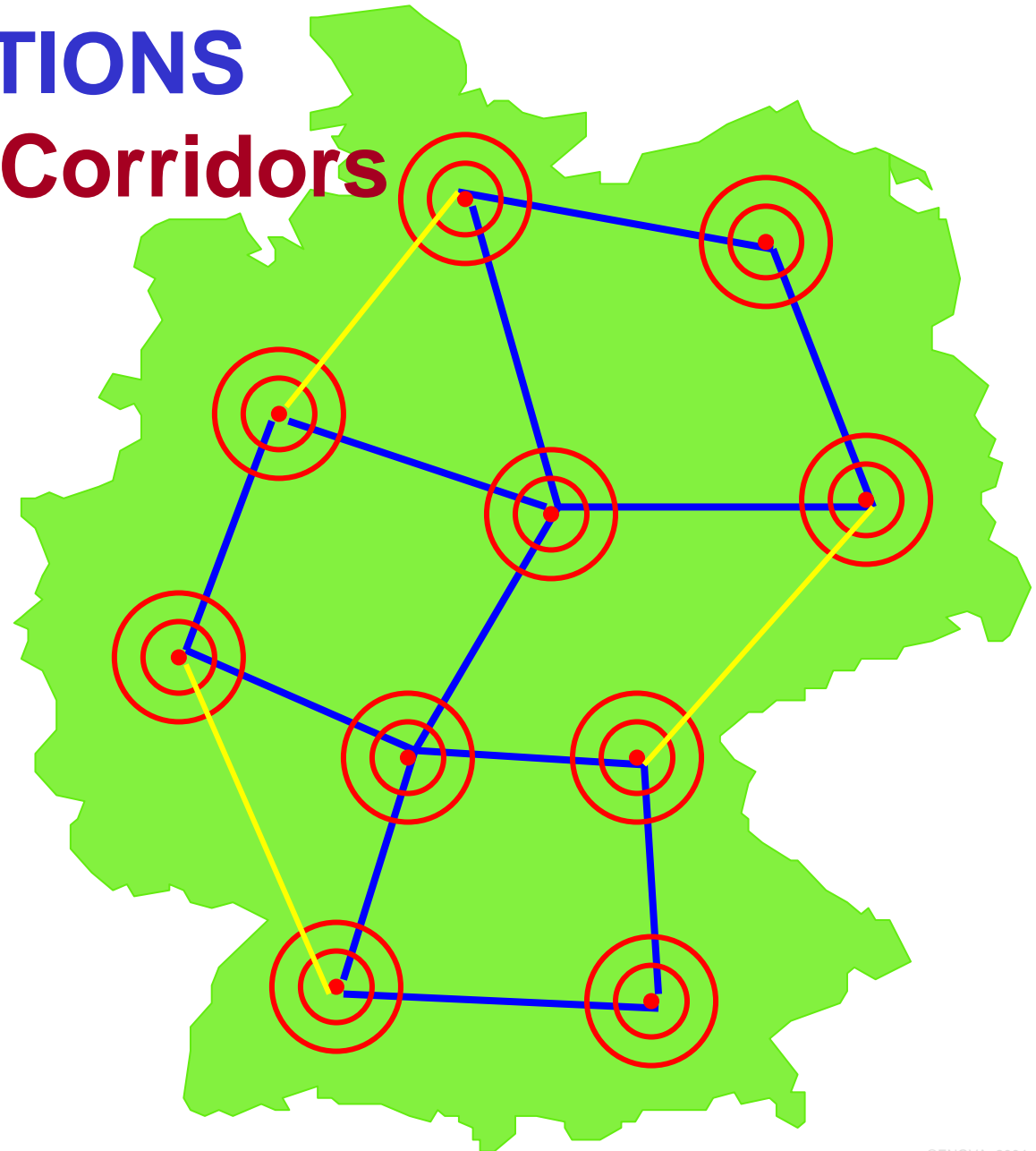
- Takes into consideration each country approach (fleets, commuter vehicles, home fuelling, etc.)
- Involvement of stakeholders
 - Gas & oil industries
 - Vehicle manufacturers
 - Governments
 - Customers
- Adopt and combine concepts: **cores, rings & corridors**

FUELLING STATIONS

Cores, Rings & Corridors

Legend:

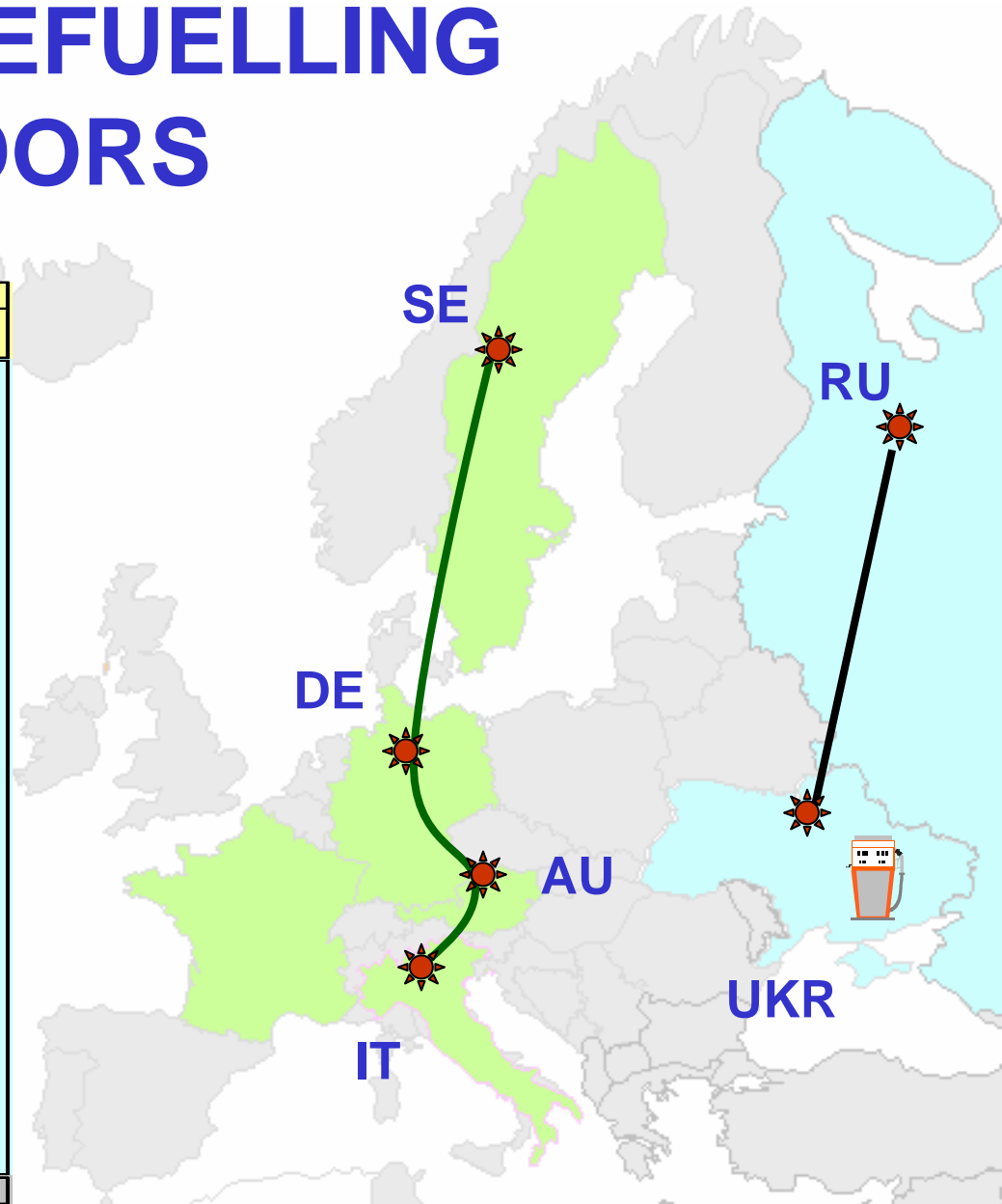
- Cores
- Rings
- Corridors



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

NATURAL GAS REFUELLING STATION CORRIDORS

Country	NGVs	Fuel Stations	
	Total	Total	Public Use
Italy	382,000	509	484
Ukraine	67,000	147	125
Russia	41,780	213	205
Germany	27,200	558	402
France	7,400	105	8
Belarus	5,500	24	
Sweden	5,298	65	47
Bulgaria	4,177	9	8
Switzerland	1,346	55	52
Moldavia	800	87	
Spain	797	28	
Poland	771	28	
UK	543	31	21
Austria	500	68	27
Turkey	400	5	3
Czech Repub	390	16	9
Netherlands	340	8	3
Latvia	310	4	
Belgium	300	5	
Slovakia	250	7	7
Portugal	242	5	
Norway	147	4	
Croatia	100	1	1
Serbia & Mor	92	2	
Finland	86	3	1
Ireland	81	2	
Iceland	45	1	1
Luxembourg	32	3	
Macedonia	32	1	
Liechtensteir	26	1	
Bosnia & Her	1		
Total	547,986	1,995	1,405

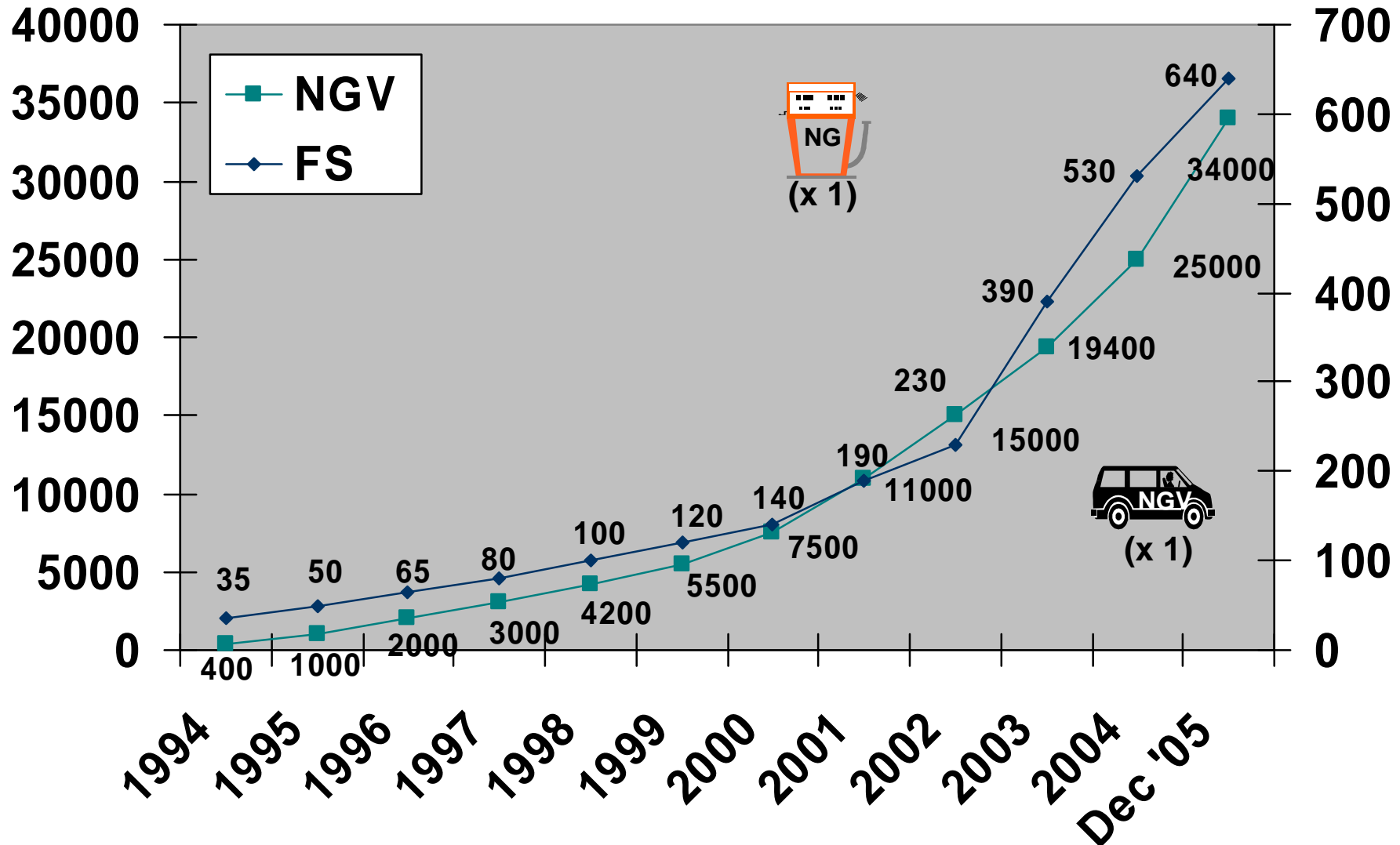


NGVs in Europe

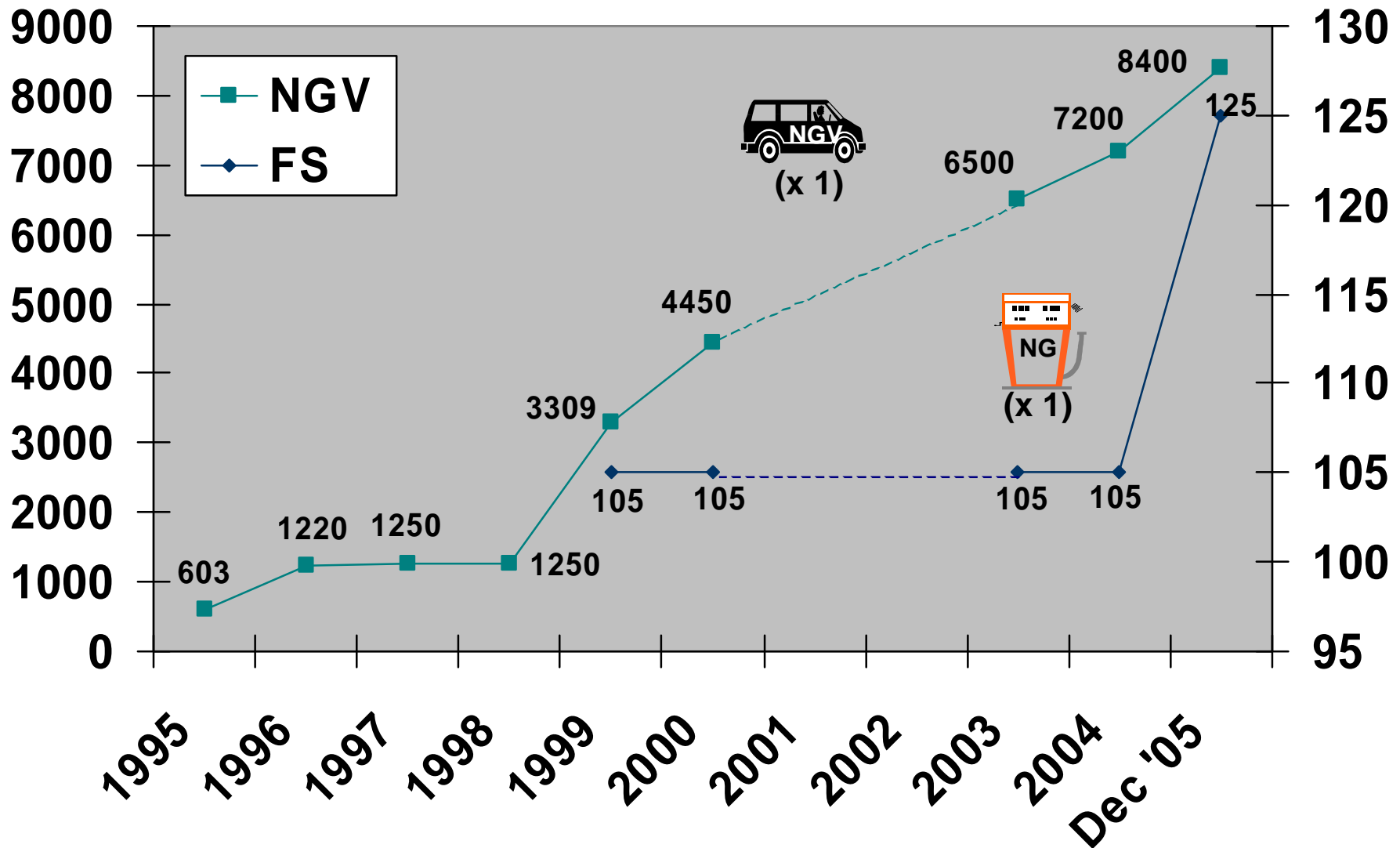
A Brief Country View



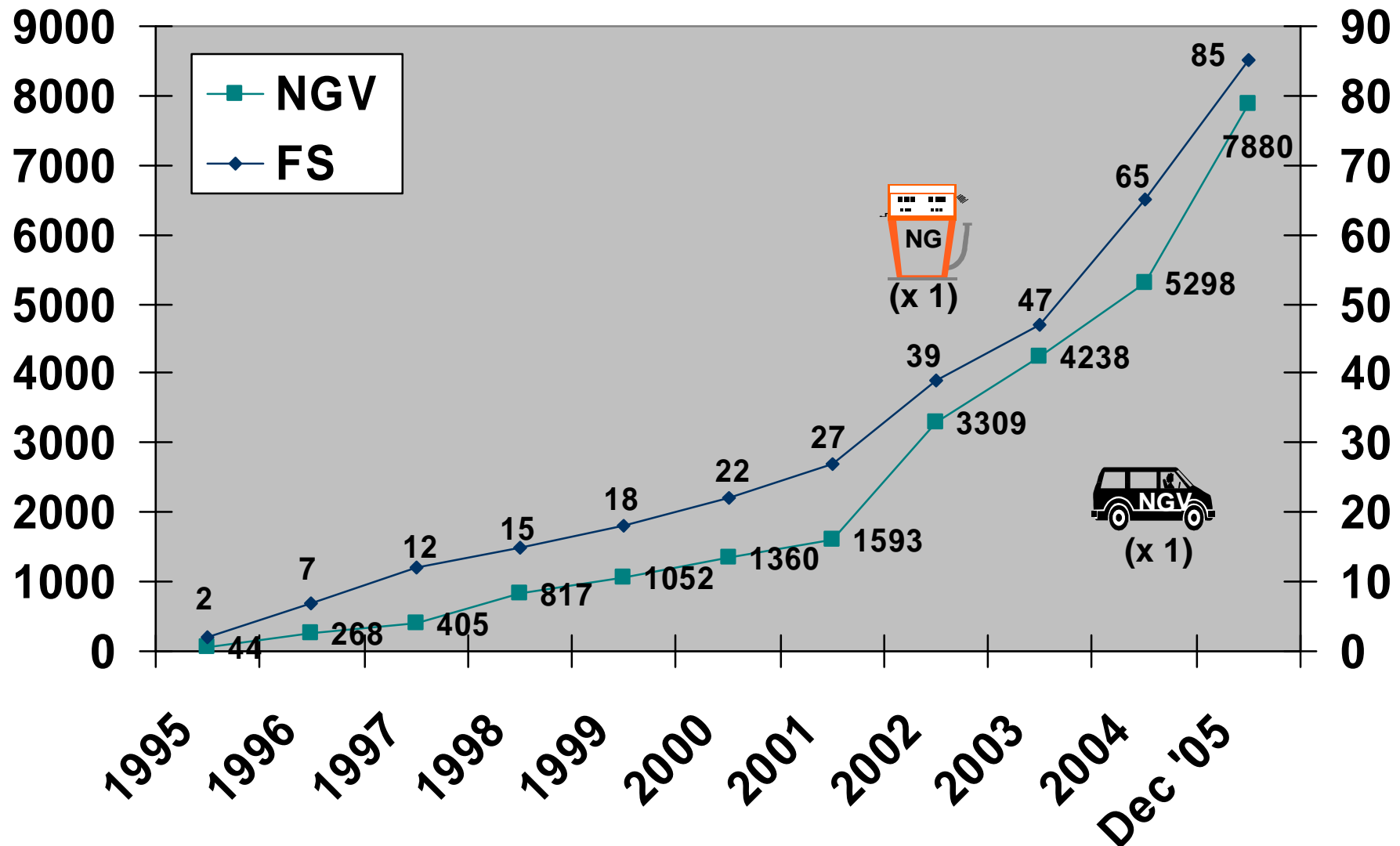
GERMAN NGV GROWTH



FRANCE NGV GROWTH



SWEDISH NGV GROWTH





SOUTH AMERICA

**THE WORLD'S FASTEST
NGV GROWTH MARKET**

NGVs IN SOUTH AMERICA 2006



**Total South America
Vehicles: 2.641.159
Fuel Stations: 3.069**

ARGENTINA HAS BEEN THE LEADER



Today



Argentina has
~ 1.45 M NGVs,
1.494 stations
selling 3.292
million/M³ of gas in
a year

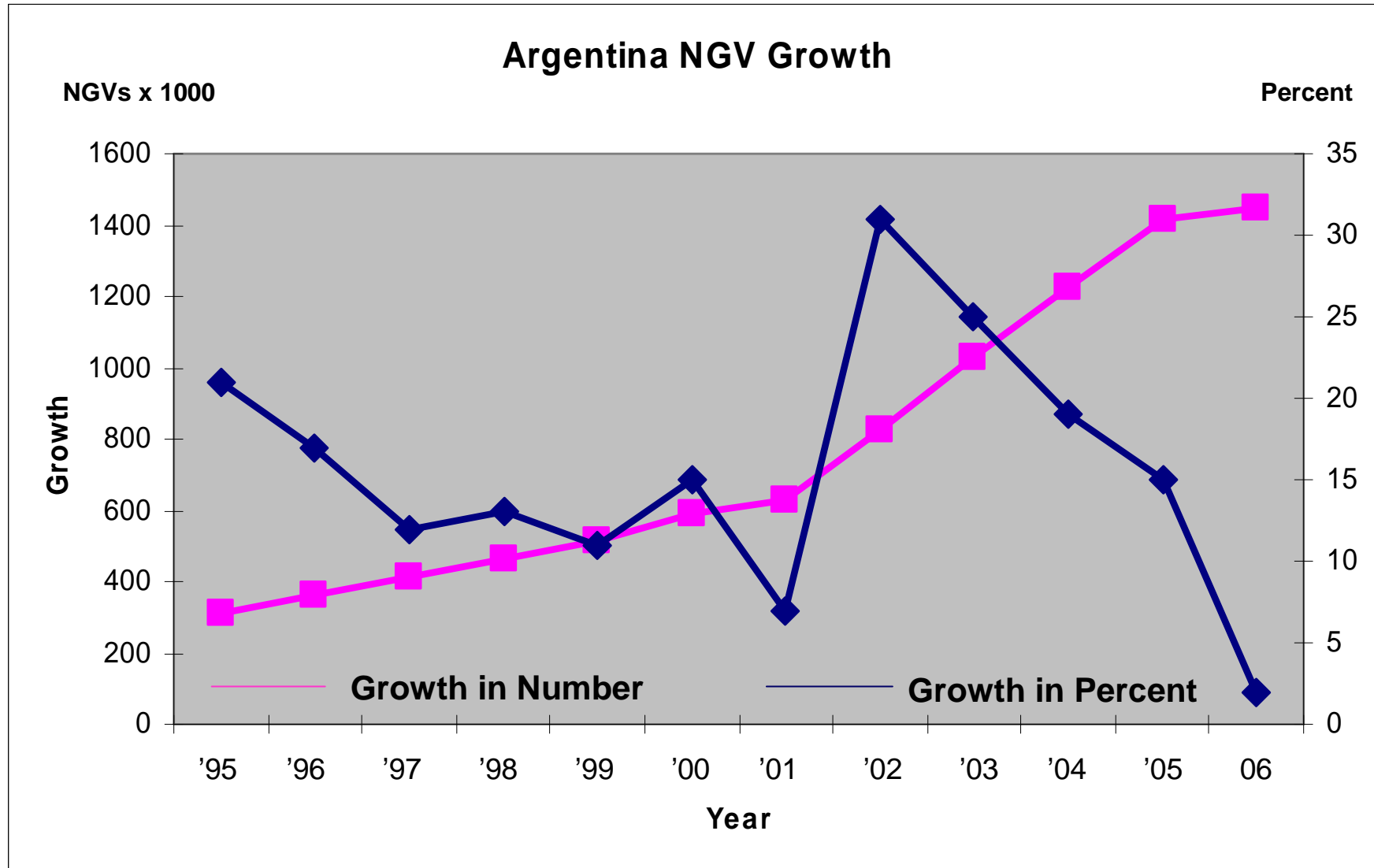
New manufacturing
and sales
methodologies meet
market needs

Conversions
have risen up to
20.000/mo
average

Fuel Prices:

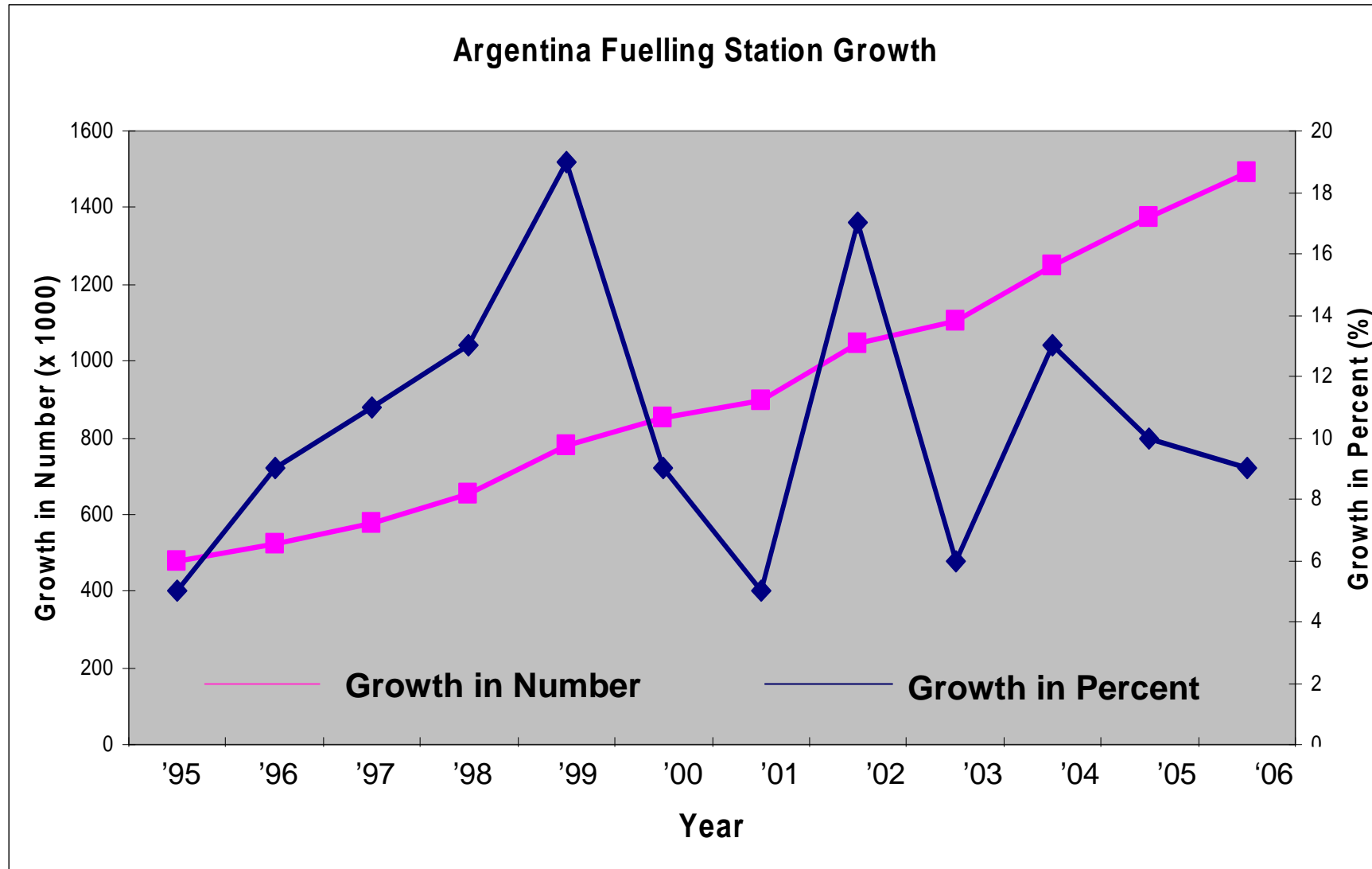
Gasoline (per litre):	€ 0.46
Diesel: (per litre):	€ 0.39
CNG Equivalent	
Per litre Gasoline:	€ 0.16
CNG Equivalent	
Per litre Diesel:	€ 0.16

NGV GROWTH



Source: The GVR

FUELLING STATION GROWTH



Source: The GVR



THE MARK OF NGV SUCCESS

**PEOPLE ARE STEALING THE NGV
EQUIPMENT FROM CARS.....!**

Today



More than
1.180 fuelling
stations



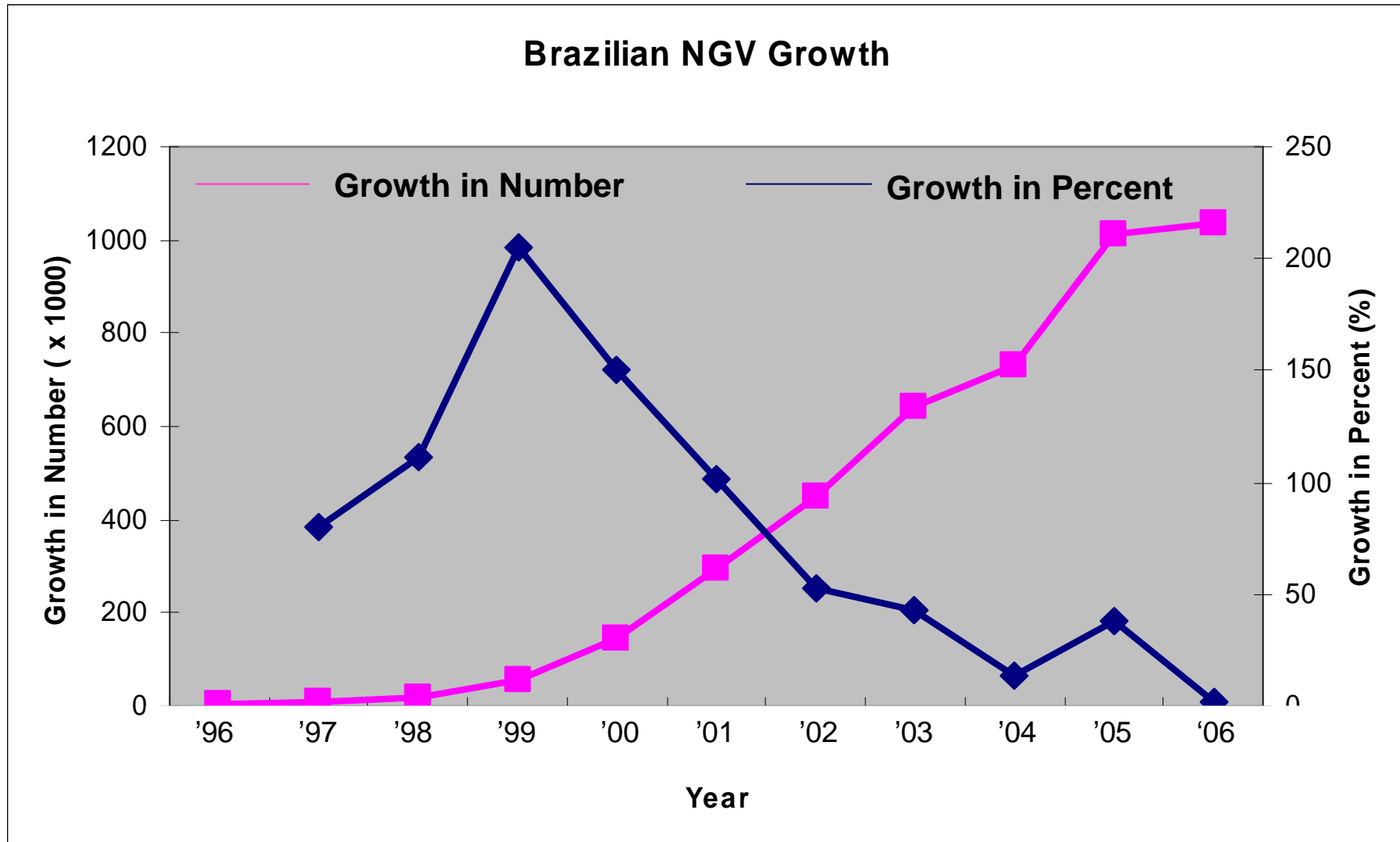
Brazil has
1.035.773 NGVs

The conversion
rate is above
13.000 units per
month

Market forecast
indicated that
Brazil will have
more than
800.000 NGVs
by 2005 – Brazil
has **surpassed**
this forecast by
over 20%!

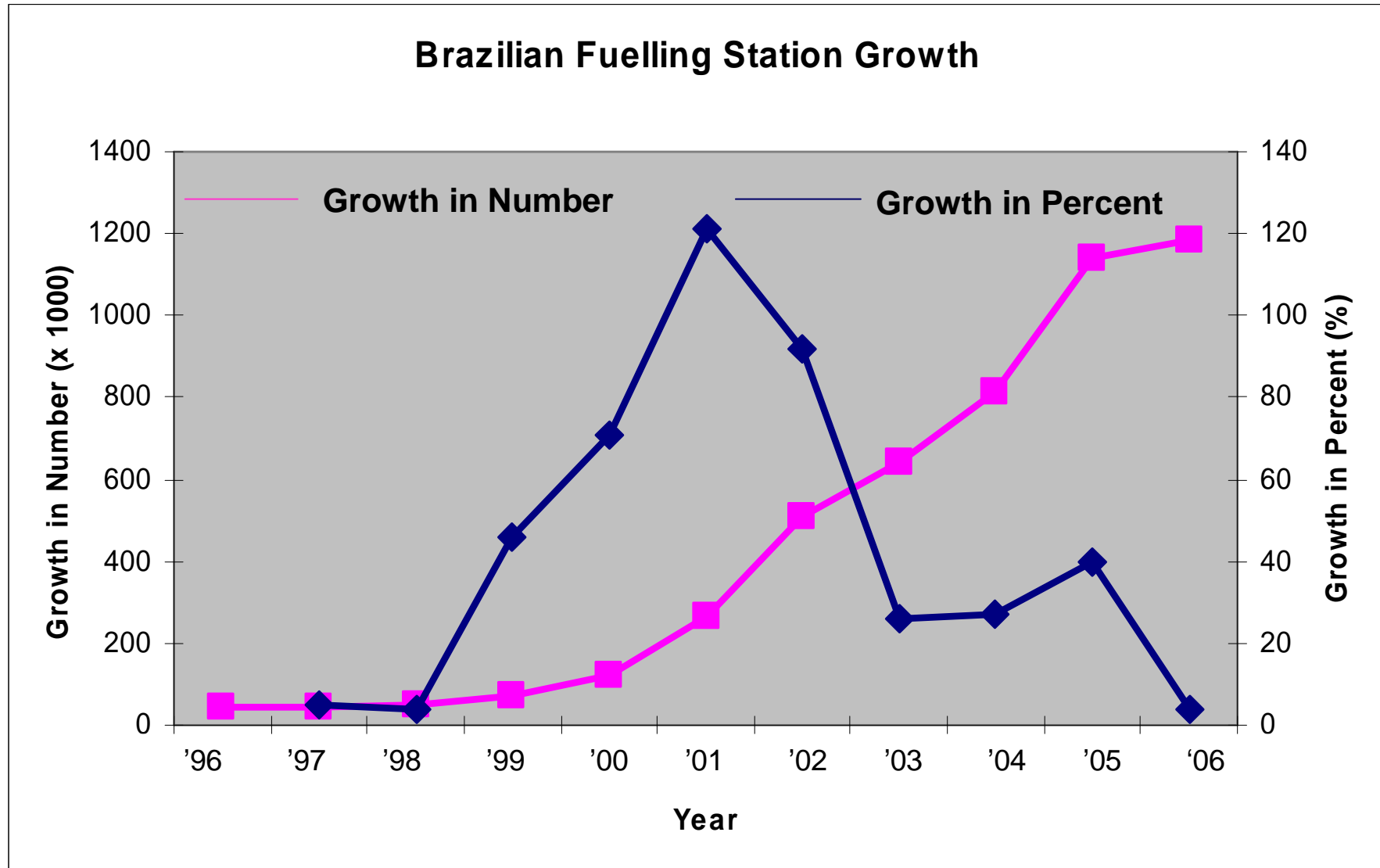
Brazil is a
founder member
of the ALGNV

NGV GROWTH



Source: The GVR

FUELLING STATION GROWTH



Source: The GVR

Blue Corridors



NGVs in the United States



VEHICLES & FUELLING STATIONS

- **~150,000 NGVs: cars, trucks and buses**
- **~1,600 fuelling stations (private fleets & public)**
- **Biggest markets are in California, East Coast, Texas, Colorado**
- **CNG, LNG and now biogas is being promoted...**
- **Light Duty (Big Three) OEMs have discontinued NGV offerings; HDVs continue**

Alternative Fuel Policy Supported by U.S. NGV Industry

- **There is no single answer to petroleum displacement**
- **All alternatives must play a role:**
 - CNG, LNG, LPG, ethanol, methanol, biodiesel, electric
 - Different fuels in different regions of the country in different applications
- **Strategy:**
 - Focus on moving away from petroleum
 - Try to increase the alt fuel pie
 - Then try to get a bigger slice for yourself

Alternative Fuel Policy Supported by the Bush Administration

- **Finally, publicly recognized “America is addicted to oil.”**
- **Focus primarily on longer term:**
 - Emphasis on R&D
- **Fuel preference:**
 - Hydrogen and cellulosic (wood & straw) ethanol
- **Focus on light-duty applications**
- **Nearer term support:**
 - Farm fuels (corn ethanol and biodiesel)
 - Gasoline hybrids

Congressional Policy Giving NGVs a Competitive Economic Advantage

- **A tax credit for natural gas used as a vehicle fuel**
- **A tax credit for new dedicated NGVs purchased**
- **A tax credit for new NGV fueling infrastructure**
- **New requirements for diesel fuel and diesel engines**

Natural Gas Prices To Remain Cheaper

- **U.S. Energy Information Agency forecasts that, through 2010 and beyond, CNG will remain:**
 - **60 percent less expensive than gasoline**
 - **40 percent less expensive than diesel fuel**

What Will Happen Next ?

- **Americans now understand that high (and higher) oil prices are here to stay**
- **Federal regulation and incentives are giving the NGV industry a powerful marketing tool**
- **The alternative fuel pie is getting (and will continue to get) larger**
- **The NGV industry must now fight (i.e., market) for a bigger slice of that growing pie**
- **Problem: The OEMs are getting out of the NGV business and moving toward the 'easier' hybrid path (still on gasoline!!)**



CONCLUSIONS

THE INVOLVEMENT OF GOVERNMENT IS *ESSENTIAL**

(Strategies Supported by Specific Actions!)

- **Create Incentives (financial & others)**
- **Enforce Mandates (but *with* incentives)**
- **Develop Standards**
- **Fund Research & Development**
- **Leadership by Example**
- **PR & Communications**

* What's good for one alternative fuel is good for them all!

AN ENERGY & TRANSPORTATION PATHWAY TO THE FUTURE

- Natural gas should not be side-lined as an alternative fuel. It should be a *fuel alternative*.
- Anywhere there is natural gas.....and there are vehicles.....there should be natural gas vehicles.
- Where biomethane for vehicles is an option from biogas, then it should be used if it is feasible.
- LNG and Liquid-to-Compressed NG (LCNG) stations have a strong potential role

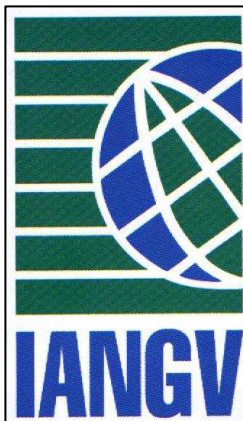
**NGVs are ready today.
NGVs make sense.
More people need to know this.
Government leadership is
required.**



VISIT THE ASSOCIATION WEBSITES!!!



- www.engva.org



- www.iangv.org