GENEVA

EMERGING MODELS of NGV MARKET DEVELOPMENT

United Nations
Working Party on Gas
20 January 2005

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European Natural Gas Vehicle Association

GLOBAL NGV MARKET

THE TOP TEN COUNTRIES WORLDWIDE

Country	NGVs*	Fuel Stations*	% Price Nat.Gas *of* Petrol
Argentina	1.3 mil	1.270	25.9%
Brazil	803.600	910	39.4%
Pakistan	475.000	500	51.0%
Italy	381.250	490	41.5%
India	222.300	190	33.3%
USA	130,000	1.300	72.7%
China	82.200	310	42.9%
Egypt	55.800	90	31.6%
Ukraine	55.000	140	26.7%
Colombia	47.900	90	41.5%

*** Rounded up figures**

Source: The GVR, January 2005

EUROPE’S 1000+ CLUB

Country	NGVs*	Fuel Stations*	% Nat.Gas Price *of* Petrol
Italy	381.250	490	41.5%
Egypt	55.800	90	31.6%
Ukraine	55.000	140	26.7%
Russia	41.000	210	30.6%
Germany	25.000	530	39.5%
France	7.200	105	63.9%
Belarus	5.500	25	*Unknown*
Sweden	4.200	50	75.7%
Bulgaria	2.100	10	31.1%
Switzerland	1.250	55	75.3%

*** Rounded up figures**

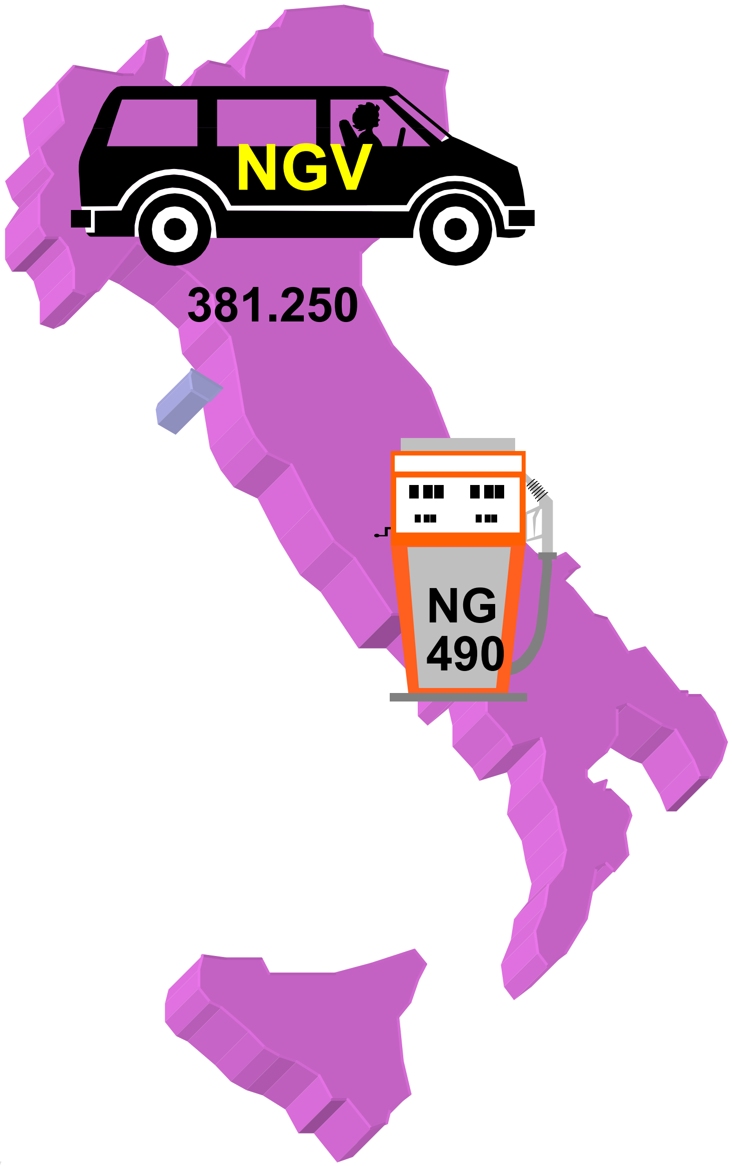
Source: The GVR, January 2005

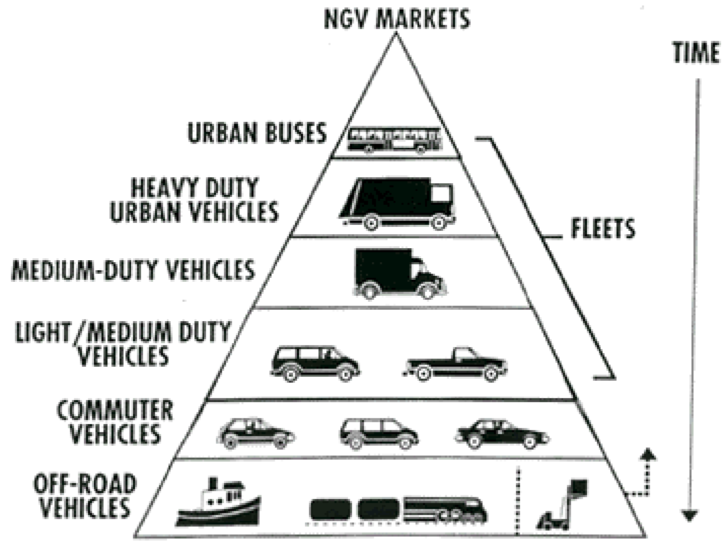
EUROPEAN COUNTRY MODELS

GOVERNMENT- STAKEHOLDER PARTNERSHIPS & POLICIES

- **Some national governments support NGVs using ‘compacts’ with stakeholders**
  - **France**
  - **Germany**
  - **Italy**
  - **UK**
- **Other models & policies of government support are emerging**
  - **Sweden**
  - **Switzerland, etc**

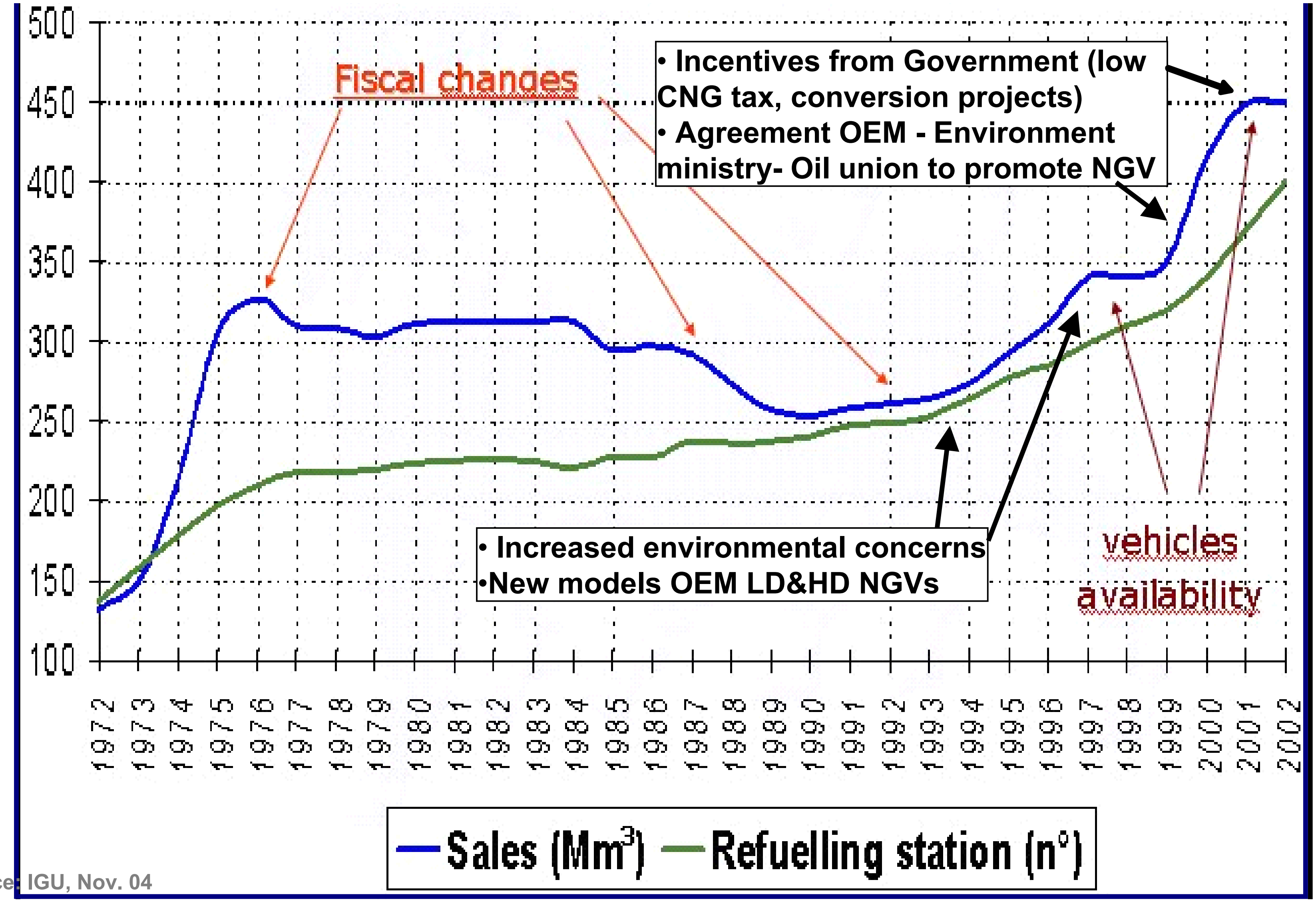
STRATEGY ITALY





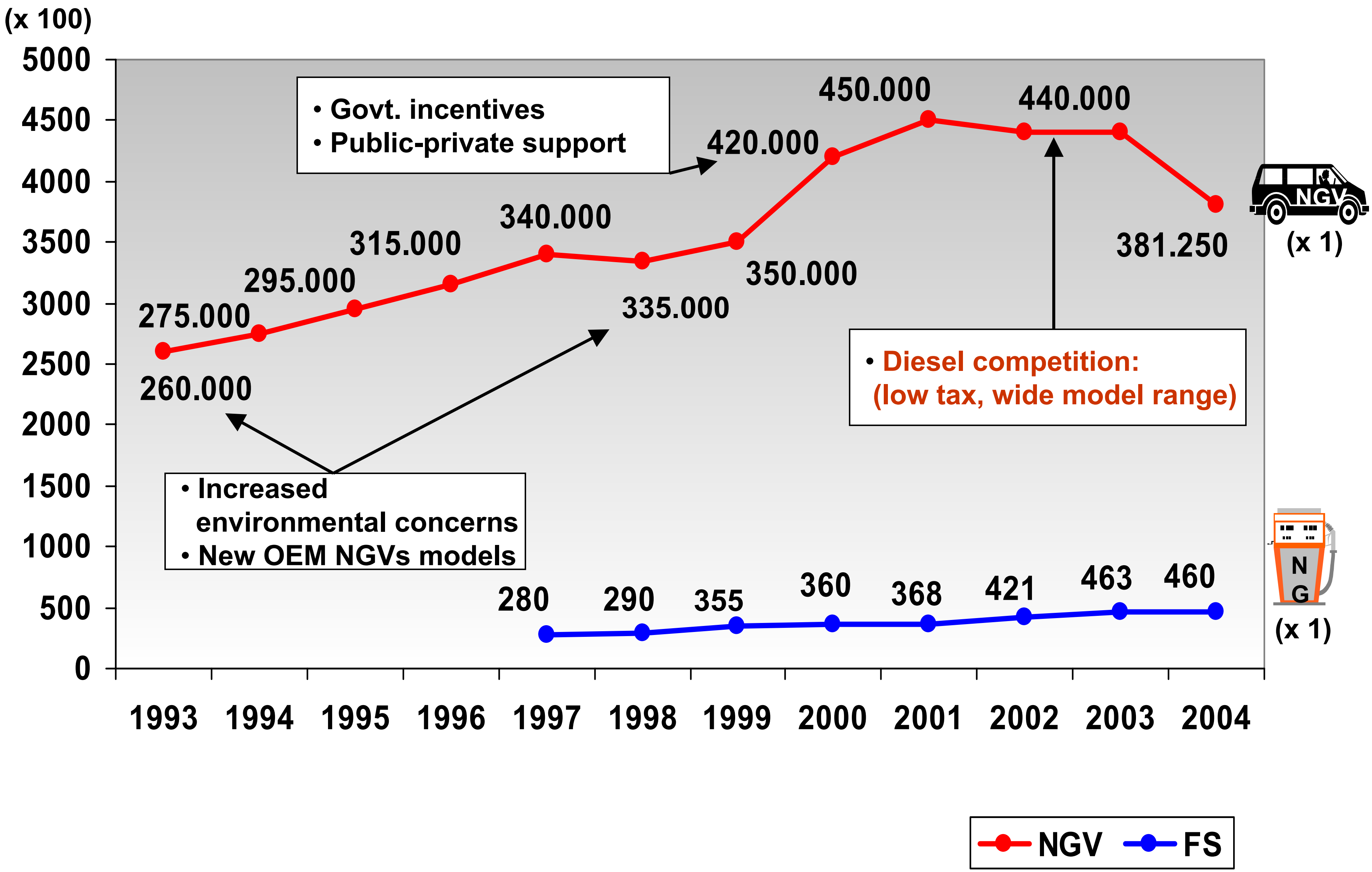
- **Italy focused first on commuters**
- **Now NGVs serve all markets & customers**
- **CNG sales > 450 Million m3/annually**
- **Plans for 44 new fuelling stations**

ITALY (The Last 30 Years Lessons)



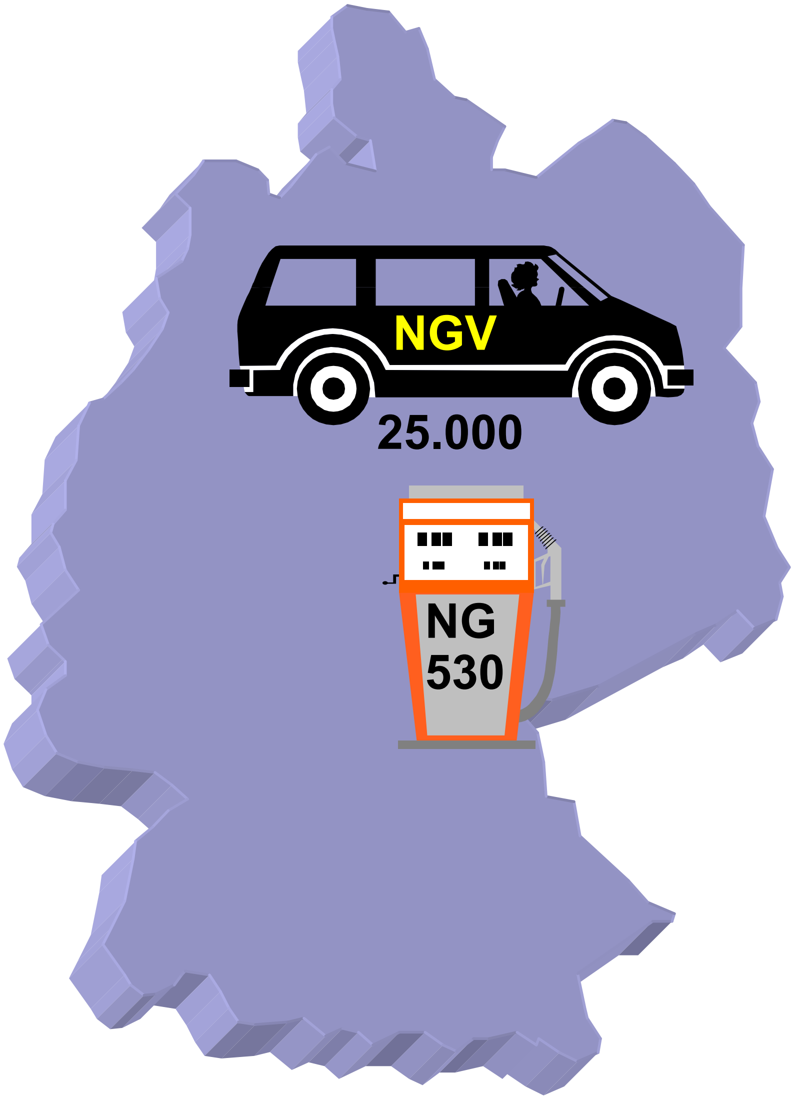
Source: IGU, Nov. 04

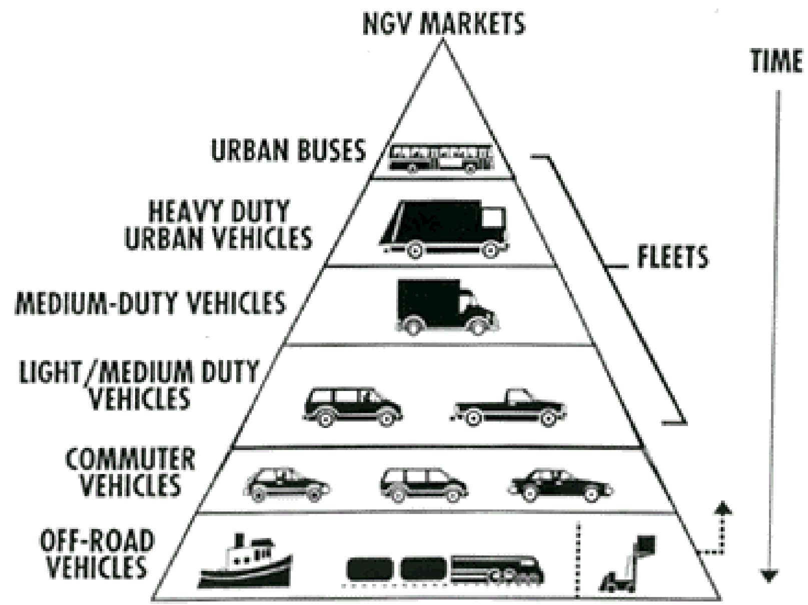
ITALIAN NGV GROWTH



Source: The GVR, IGU (Nov. 04), SNAM

STRATEGY GERMANY



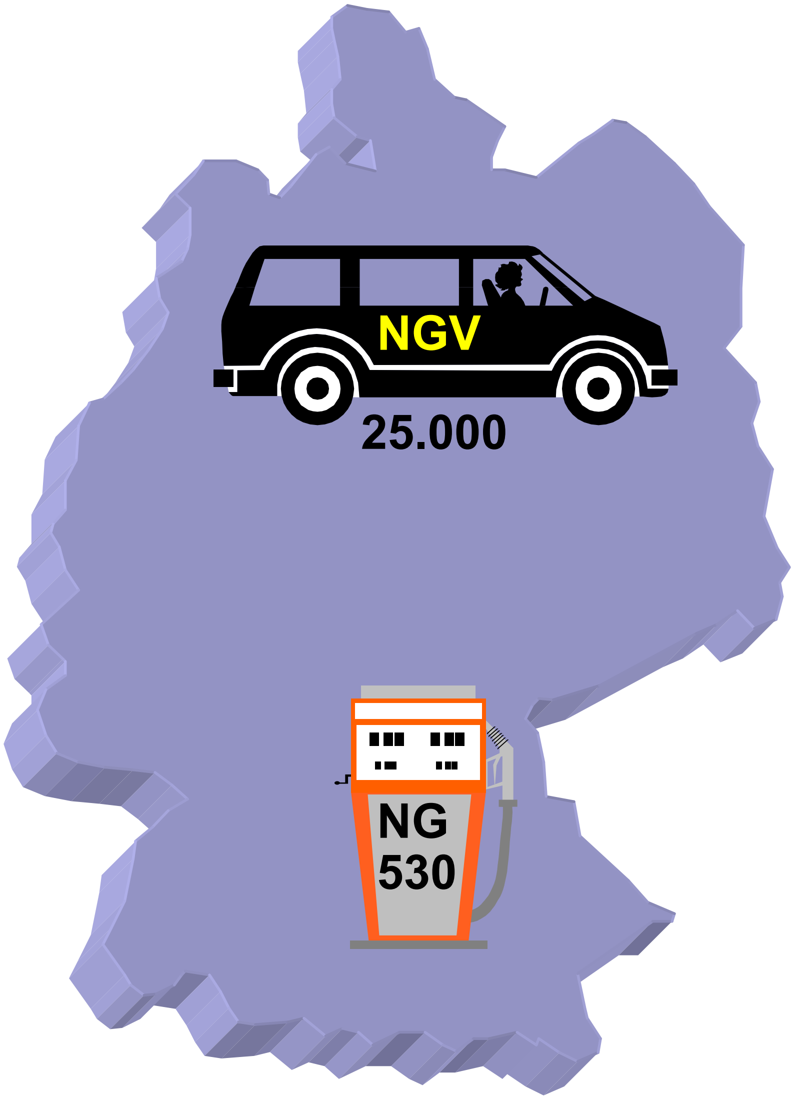


- First target market are commuters
- Volume needed to support building of fuel infrastructure

GERMANY

- ***Natural Gas "Image Campaign"* by the gas industry and the OEMs. Also addressing consumer concerns**
- **Tax reduction for NGVs extended to 2020 (from 2009)**
- **Government funding (€20-25 million)**
- **Strategic fuel planning by industry & government**

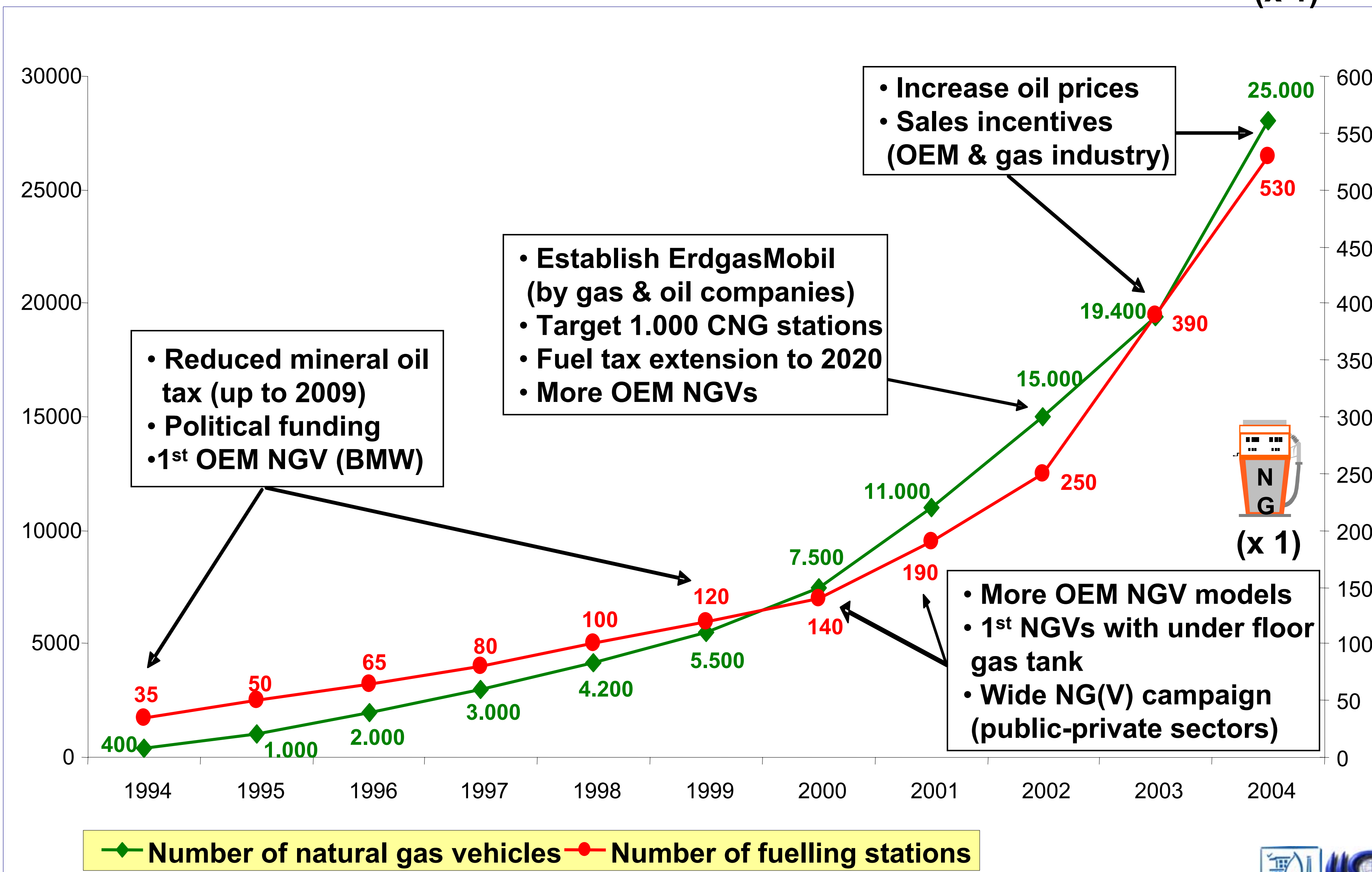
GERMANY



German gas industry viewing NGV as new business and is creating the market by:

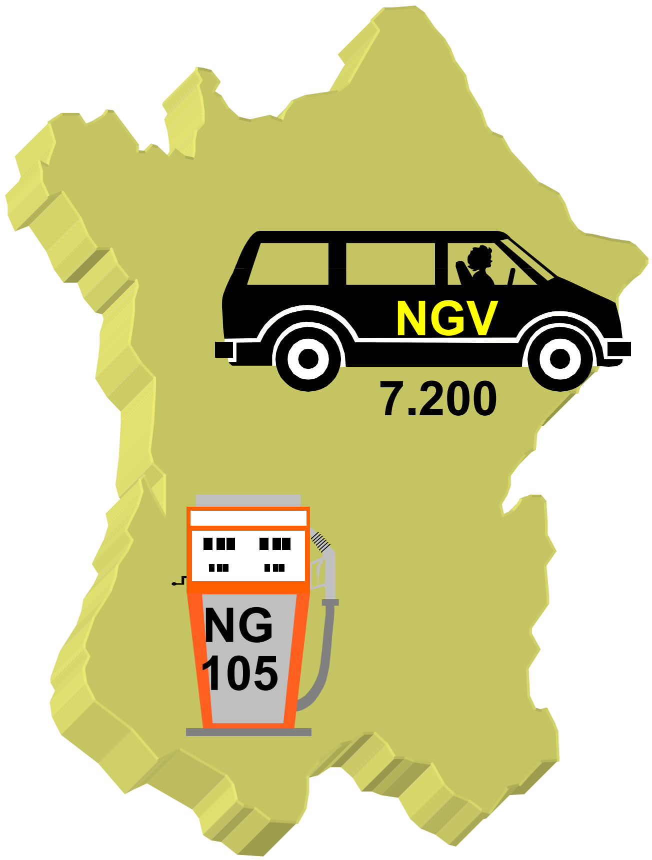
- ***Demonstration projects***
- ***PR & communications***
- ***Training courses***
- ***Marketing handbook***
- ***ErdgasMobil***

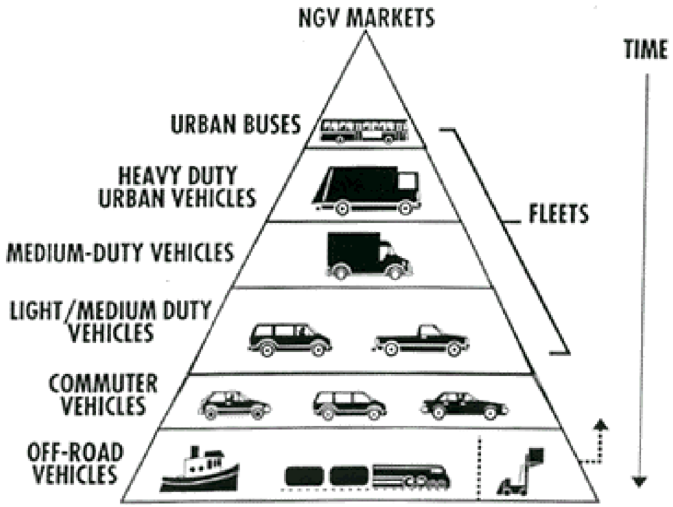
GERMANY NGV GROWTH



Source: IGU, Nov. 04

STRATEGY FRANCE





- **Focus first on buses and garbage trucks (1.100 buses, 200 garbage trucks, 5.000 LDVs)**
- **Home refueling appliance can help achieve critical mass to support public fuelling**
- **Private fuelling stations will be opened to public**

FRANCE GROWTH MARKET

New!
Fuelmaker:
"Phill"

20 municipalities have NGV
bus fleets

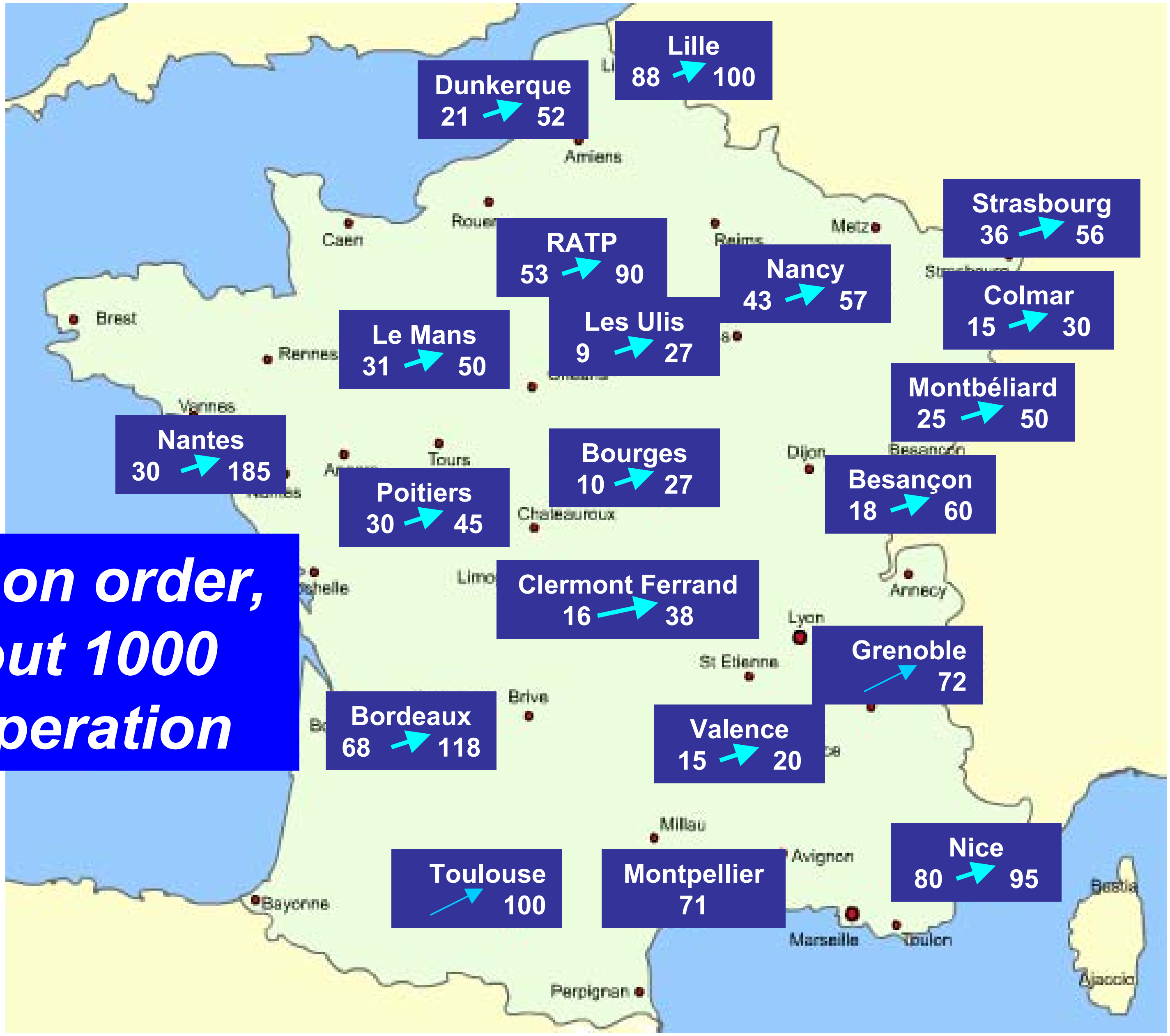
Gaz de France fleet
3,500 NGVs & growing.
Largest gas company fleet in Europe

FRANCE: FOCUS ON KEY CUSTOMERS

30% of new buses are NGVs

- Municipal vehicles
- Large companies: La Poste, France Telecom etc.
- Service companies (i.e. courier services; residential service providers, etc.)
- Private commuters

NATURAL GAS BUSES IN FRANCE



1500 on order, about 1000 In operation

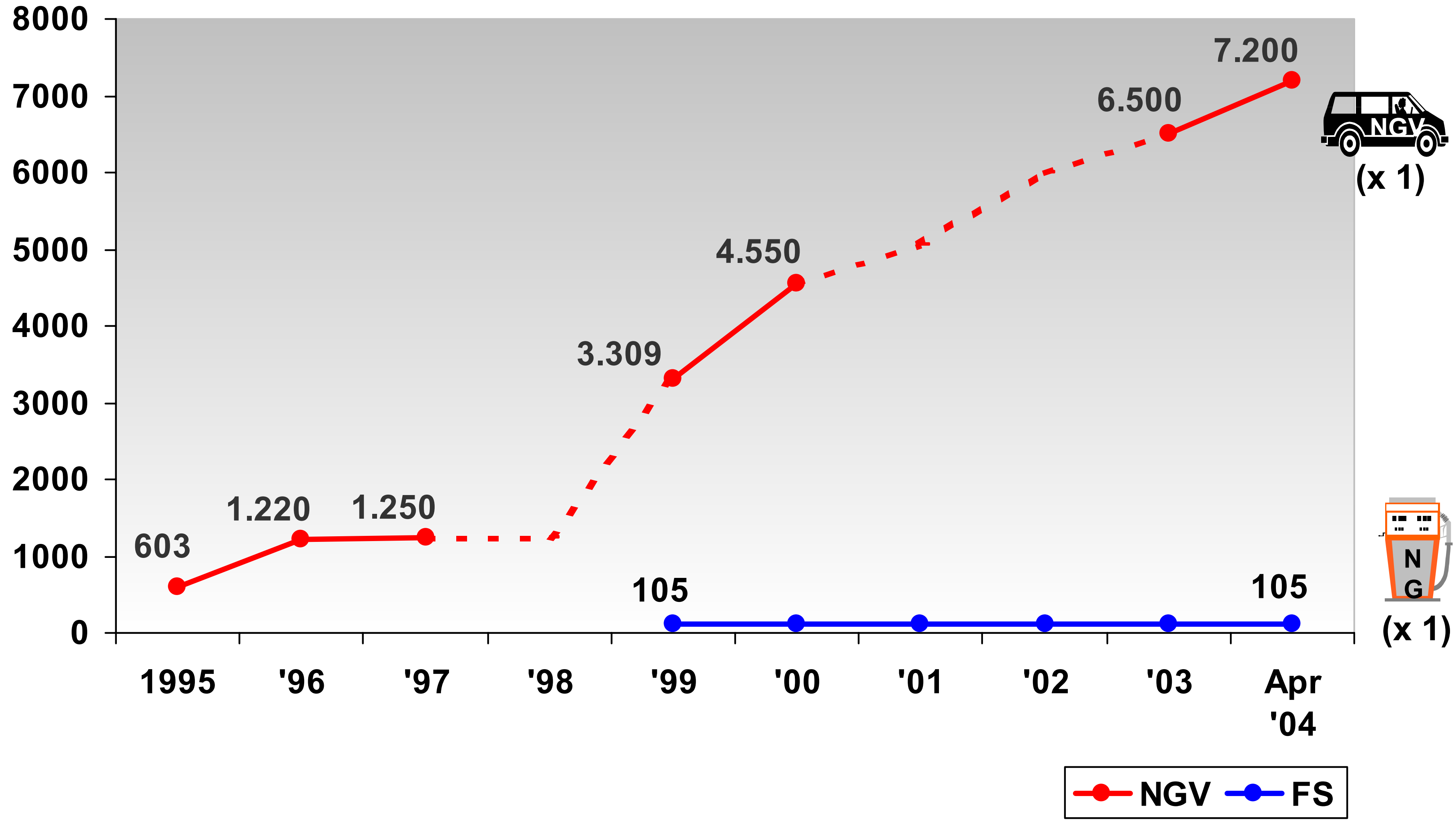
GNV
Association Française du Gaz Naturel pour Véhicules

MARKET CONDITIONS

- Governmental Support
- Strong Gas industry support
- OEMs producing NGVs
- CNG price = -34% of petrol price

  = -16% of diesel price → Challenge

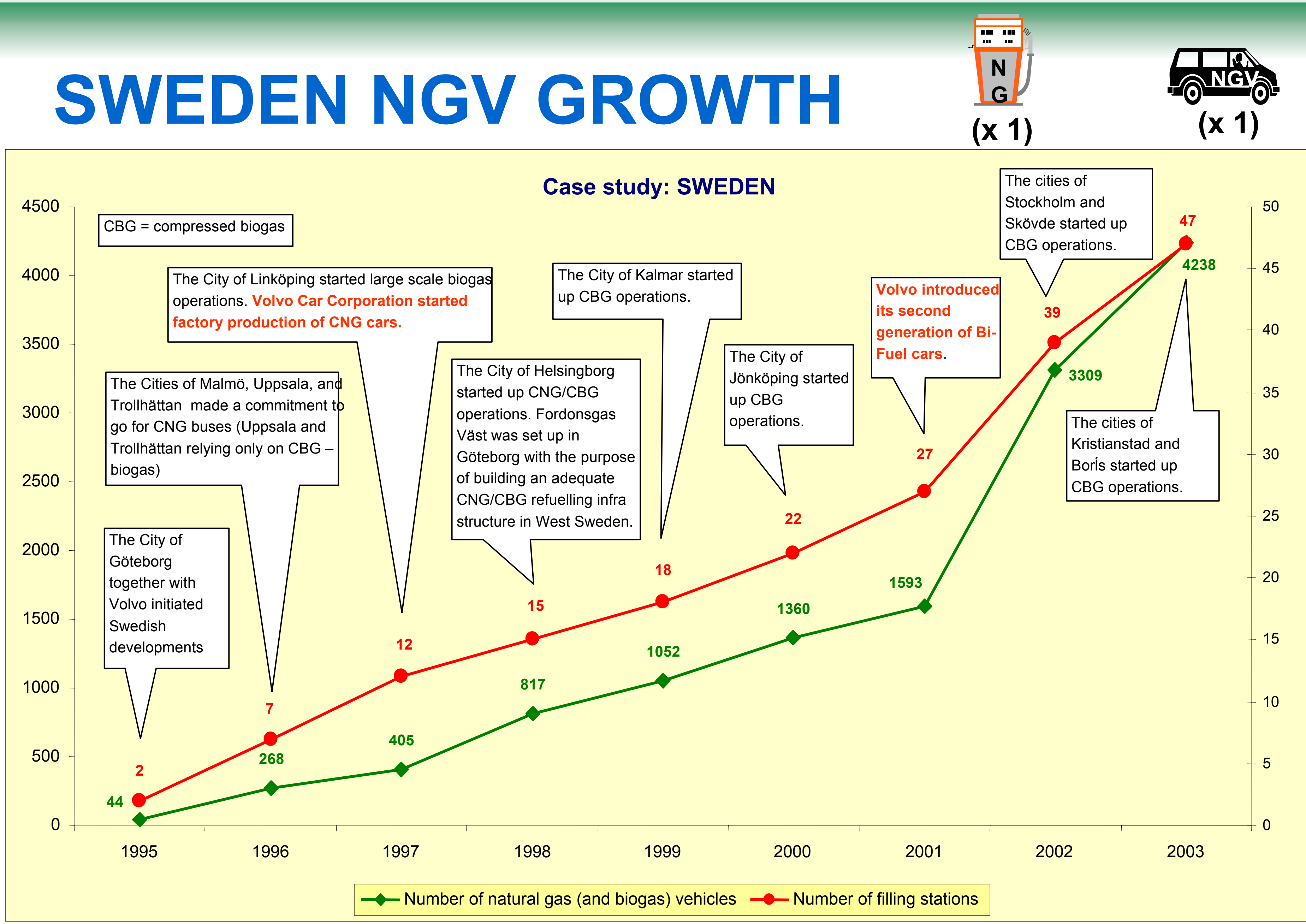
FRENCH NGV GROWTH



Source: ENGVA & The GVR

07. 2004

SWEDEN NGV GROWTH

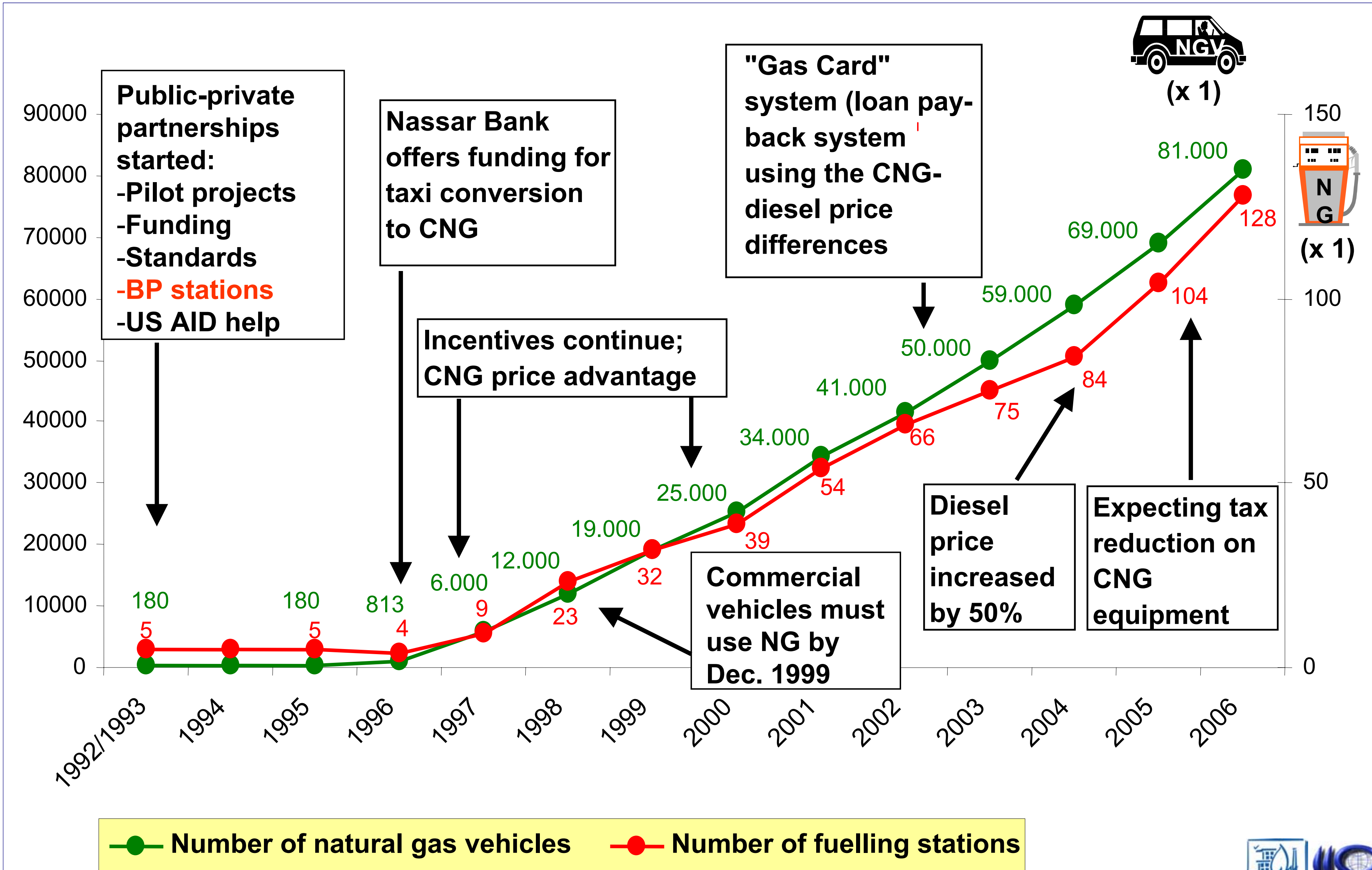


Source: IGU, Nov. 04

SELECTED COUNTRY MODELS

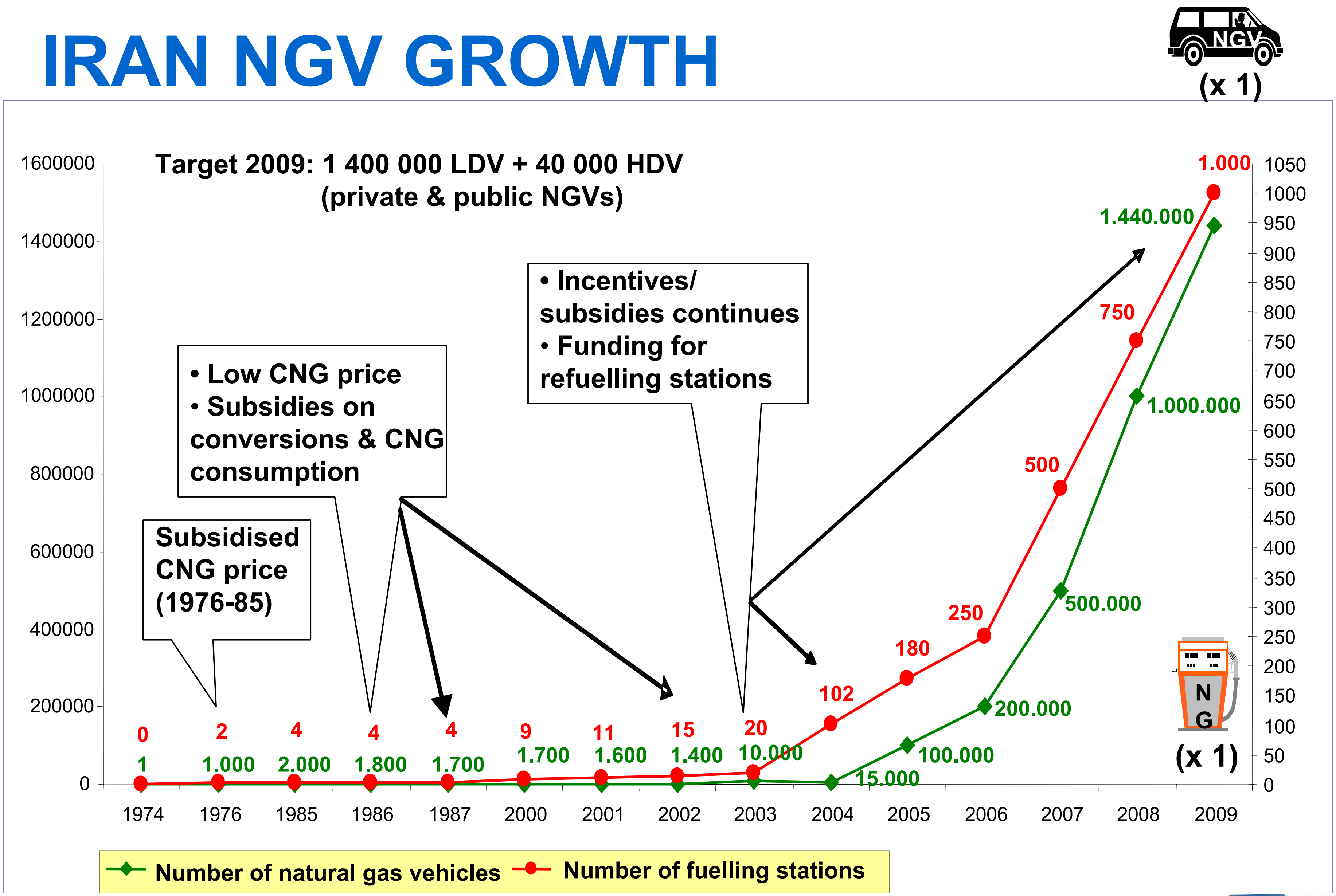
MIDDLE EAST
&
JAPAN

EGYPT



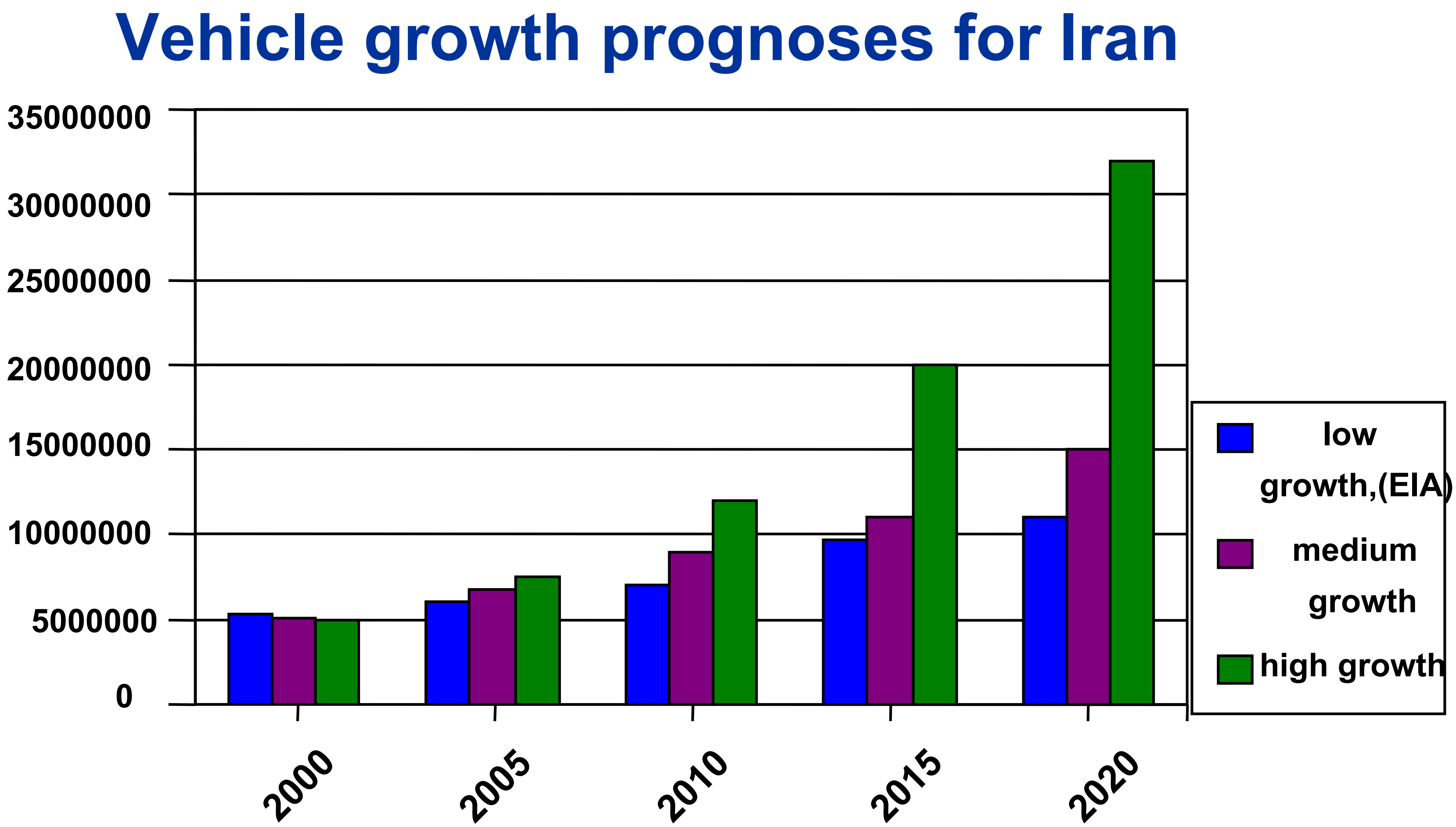
Source: IGU, Nov. 04

IRAN NGV GROWTH



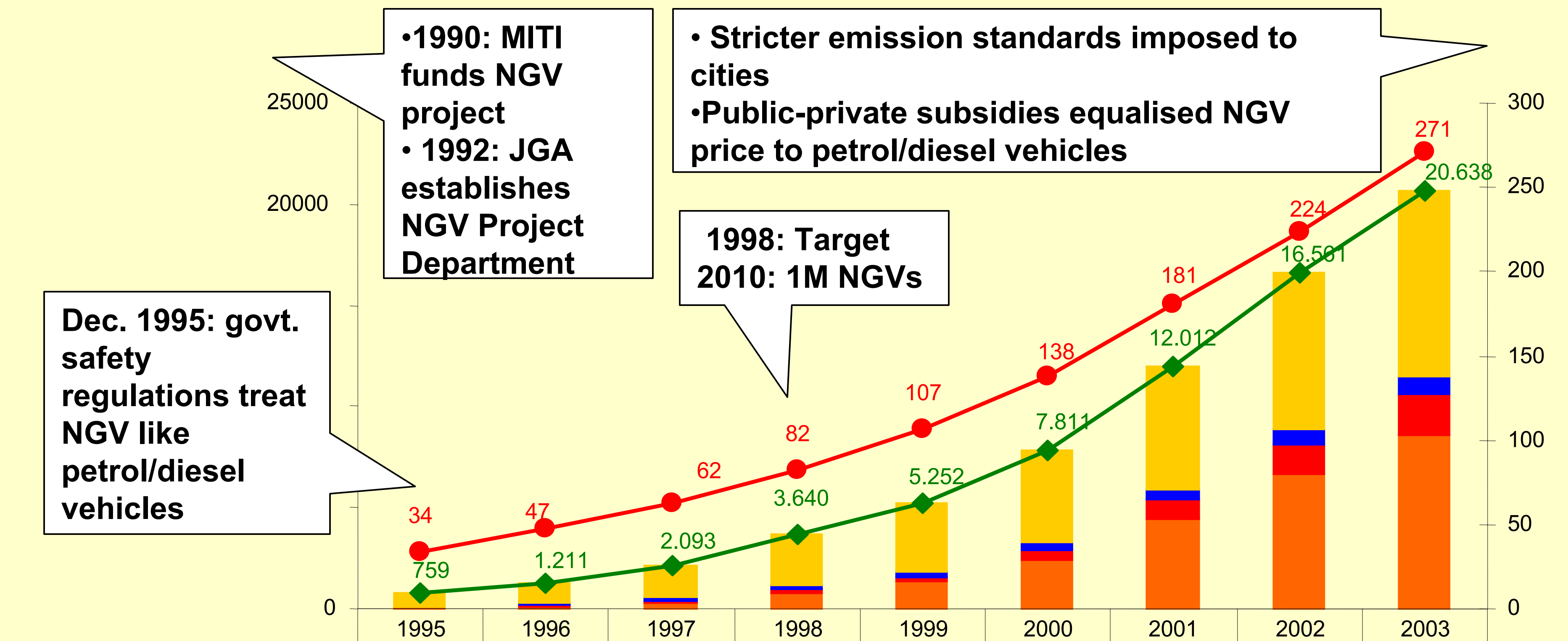
Source: IGU, Nov. 04

Vehicle growth scenario.2000-2020



JAPAN NGV GROWTH

(x 1)



	1995	1996	1997	1998	1999	2000	2001	2002	2003
Small cars	618	956	1554	2462	3375	4539	6123	7661	9123
Buses	39	86	153	239	332	410	529	770	937
Garbage trucks	21	46	83	151	237	456	872	1433	1951
Trucks	81	123	303	788	1308	2406	4488	6697	8627
Number of vehicles - total	759	1211	2093	3640	5252	7811	12012	16561	20638
Refuelling stations	34	47	62	82	107	138	181	224	271

(x 1)

Number of natural gas vehicles — Number of fuelling stations

Source: IGU, Nov. 04

MARKET APPROACH (Customer Profile)

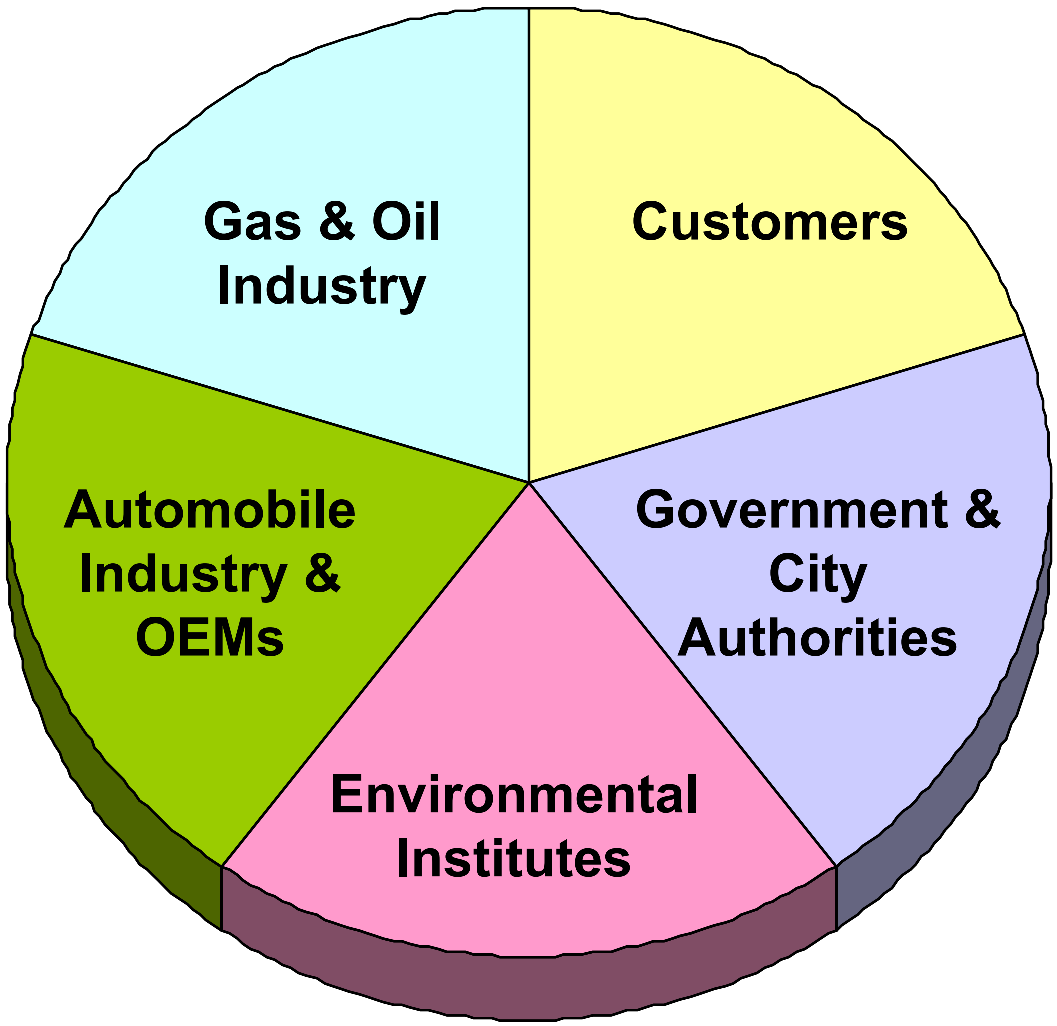
Country	Public Fleet [1]	Commercial Fleet	Commuter Vehicles
Argentina	● [3]		
Asia (rest of)	● [2]		
India	●		
Iran	● [2]		
Japan	●	●	●
Egypt	●	○	
France	● [2]	⊖	⊖
Germany	● [2]	○	●
Italy	○	○	●
Sweden	● [2]		
Switzerland	●	●	●

Europe

Legend:
Priority market ●
2nd-ary market ○

1 In many markets, taxis are considered mass transit. Public fleets include a based range of vehicles.
2 Predominant focus is mass transit
3 Initially limited to taxis

THE CRITICAL "NGV" STAKEHOLDERS (EACH ONE HAS A ROLE TO PLAY)



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!**

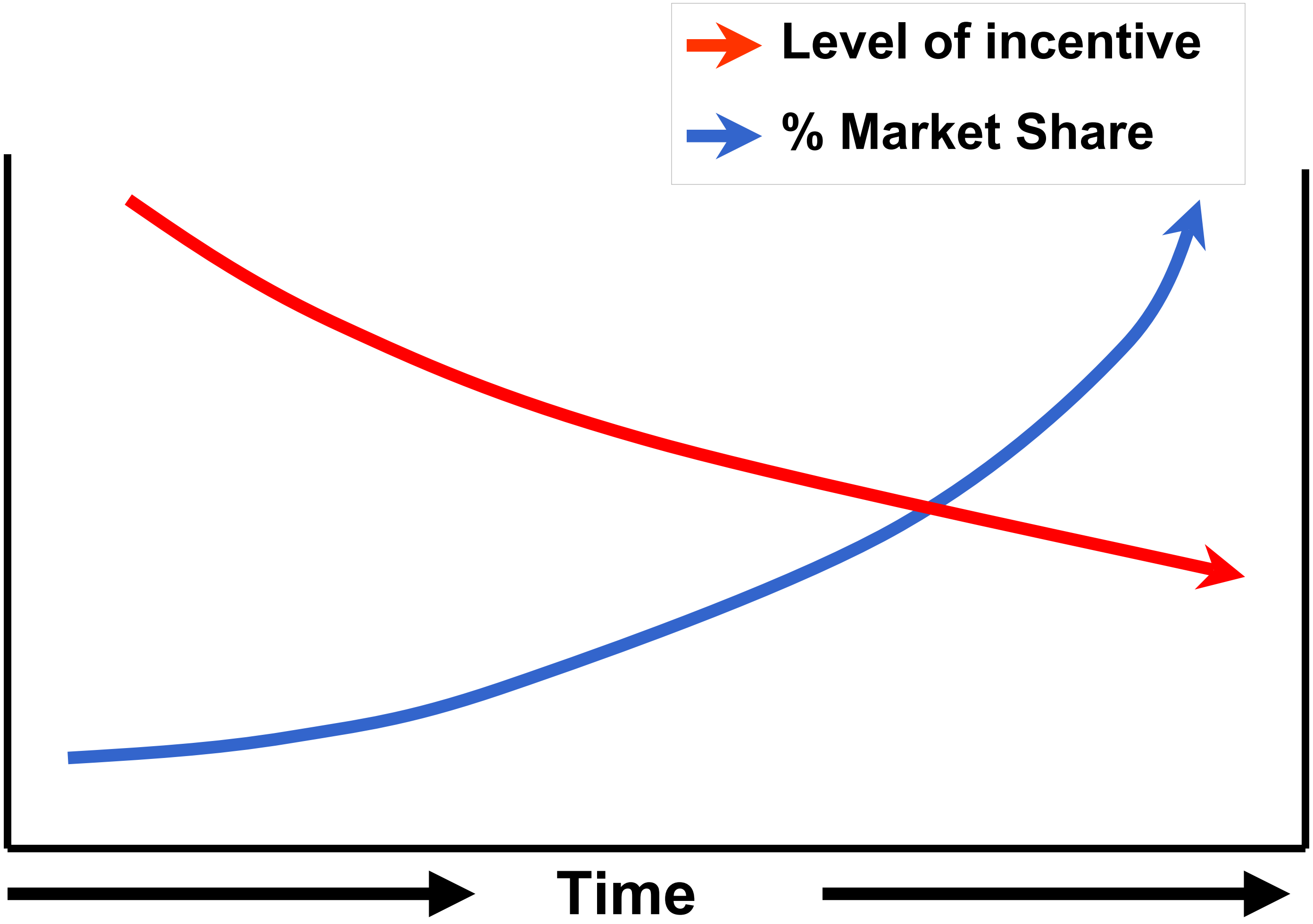
WHAT WE CAN LEARN FROM COUNTRY EXPERIENCES

- **Policies *MUST* be balanced between carrots & sticks (incentives & mandates)**
- **Policies *MUST* be *consistent* over time (vision, strategy & focus)**
- **Incremental, transitional actions are required; not "knee jerk", reactive policies**
- **Pro-active is better than re-active**

THE SENSIBLE POLICY APPROACH TO NGV INCENTIVES

- **Incentives should be based upon the environmental quality of the fuels AND the technologies**
- **Incentives should be based upon market share achieved over time**
- **Alternatively, incentives should be lowered slowly over time, and not based upon a single end-date**

INCENTIVE FOR CLEAN FUELS & ENVIRONMENTAL TECHNOLOGIES BASED ON MARKET SHARE



IN CONCLUSION

- There are no fuel panaceas.
- NGVs, even with issues of fuel storage and infrastructure development remain a fuel of choice (environment & energy security).
- More people have to be informed of its potential, the benefits, and of the contribution to improved air quality and energy security.
- Not easy market…but valuable in pursuing! It takes a long time…to be sustainable.
- Hydrogen link to the future is important!

UNITED NATIONS INITIATIVES 2005

- **World harmonisation of gaseous fuel & vehicle standards (with ISO & UN)**
- **Road signage for cng fuelling stations (WP1 Traffic Safety)**
- **On-going amendments and harmonisation of standards(WP.29 & GRPE)**

POTENTIAL NGV ROUTES BLUE 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/ng/

Blue Corridors

Juan Carlos Fracchia, May 2003

VISIT THE ASSOCIATION WEBSITES!!!

- www.iangv.org.nz
- www.engva.org
- www.ngvc.org

A PROFITABLE €NVIRONMENT FOR NGVs

- **In conjunction with the World Fair of Natural Gas & Hydrogen Vehicles (with The GVR magazine)**
- **June 8-10 Conference**
- **June 9-12 Vehicle Fair**
- **Bolzano (Bozen), Italy**

ENGVA 11th Annual Conference
June 2005

23rd WORLD GAS CONFERENCE

2006

International Gas Union
23rd World Gas Conference
5 - 9 June 2006, Amsterdam - NL

Gas: Powers the people
Preserves the world
Promoted by IGU

Anyone interested in participating in this Study Group 5.3. Natural Gas for Vehicles: Global Opportunities for Natural Gas as a Transportation Fuel for Today and Tomorrow, please contact info@engva.nl or dmatic@eihp.hr

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