

The wheel keeps turning

The Automotive Industry in the World

*Presentation to
FSYS management*

Emilio di Camillo

Cherasco, March 24, 2011



Industry and Society

- **Economy** Car as a mature industry?
- **Mobility** Shares by mode - Too many vehicles on the road or scarce infrastructures? Which alternatives?
- **Environment** How Much Responsible for pollution and Global Warming ?
- **Alternative Fuels** towards renewable sources ?

Industry and Society

➤ Economy Car as a mature industry?

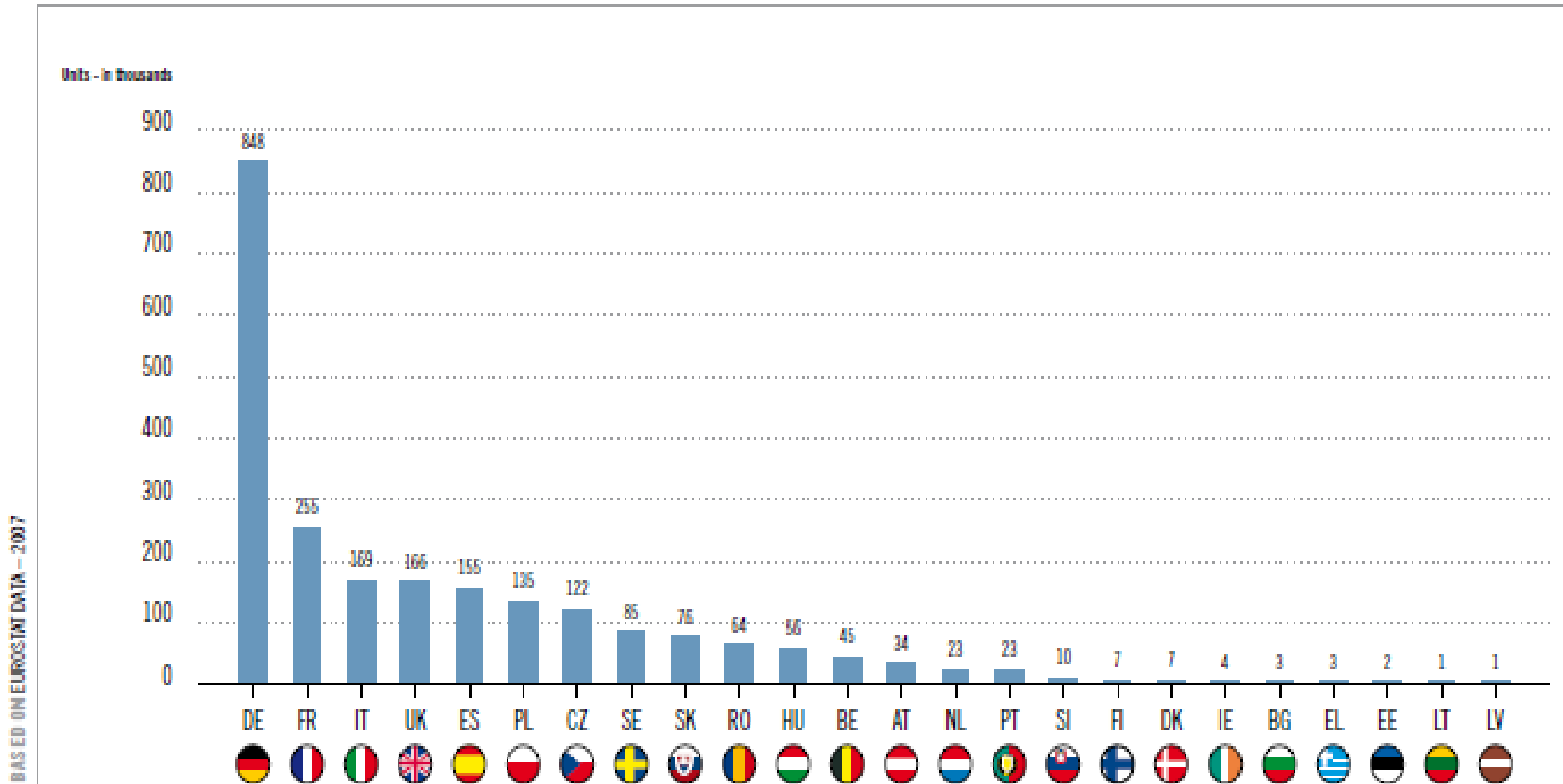


World Automotive Industry Vehicles and Components

Main Economic Indicators

• Turnover	1,9 tril \$
• Investments in R&D & Prod.	85 bil \$
• Employment:	50 mil.
(% on Tot. Employm.	7%
• Fiscality (26 major countries)	930 bil \$
• Multiplying Index	1,89

Direct Automotive Employment by Country | 2007



Each direct job creates at least another 5 related jobs

Always young and lively !



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World Economic Trends

The Economist



The Asahi Shimbun

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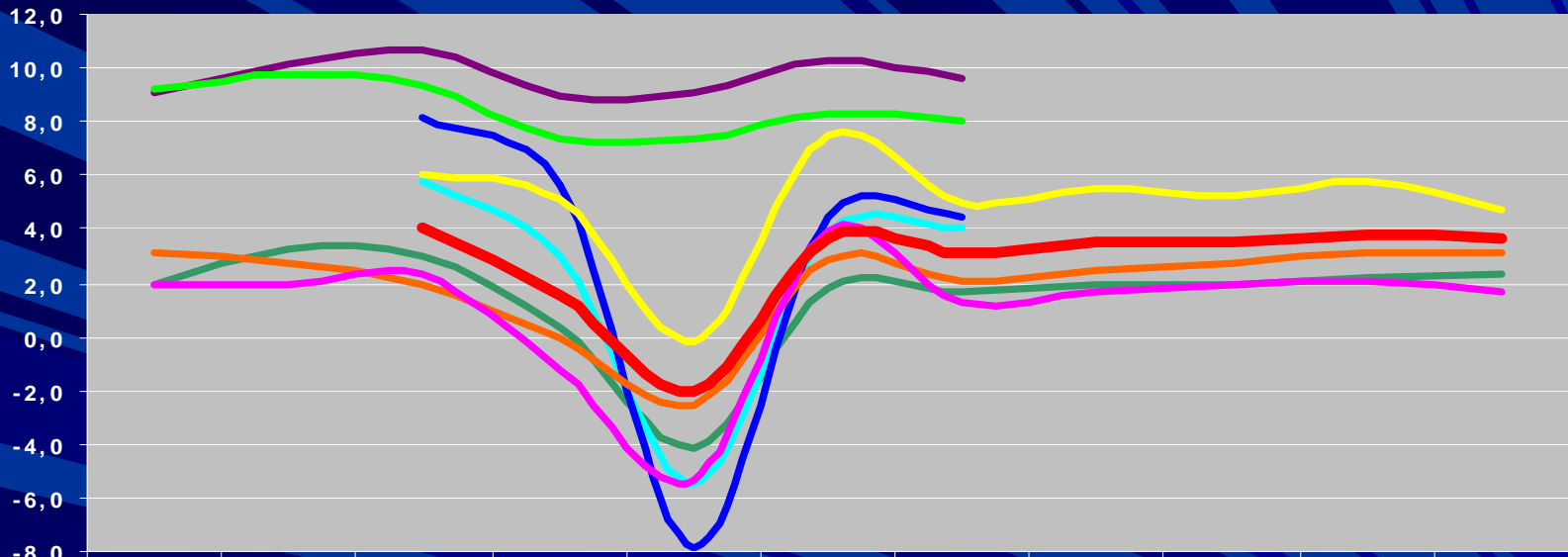
FINANCIAL TIMES



CBW.COM 华商世界
ChineseBusinessWorld.com

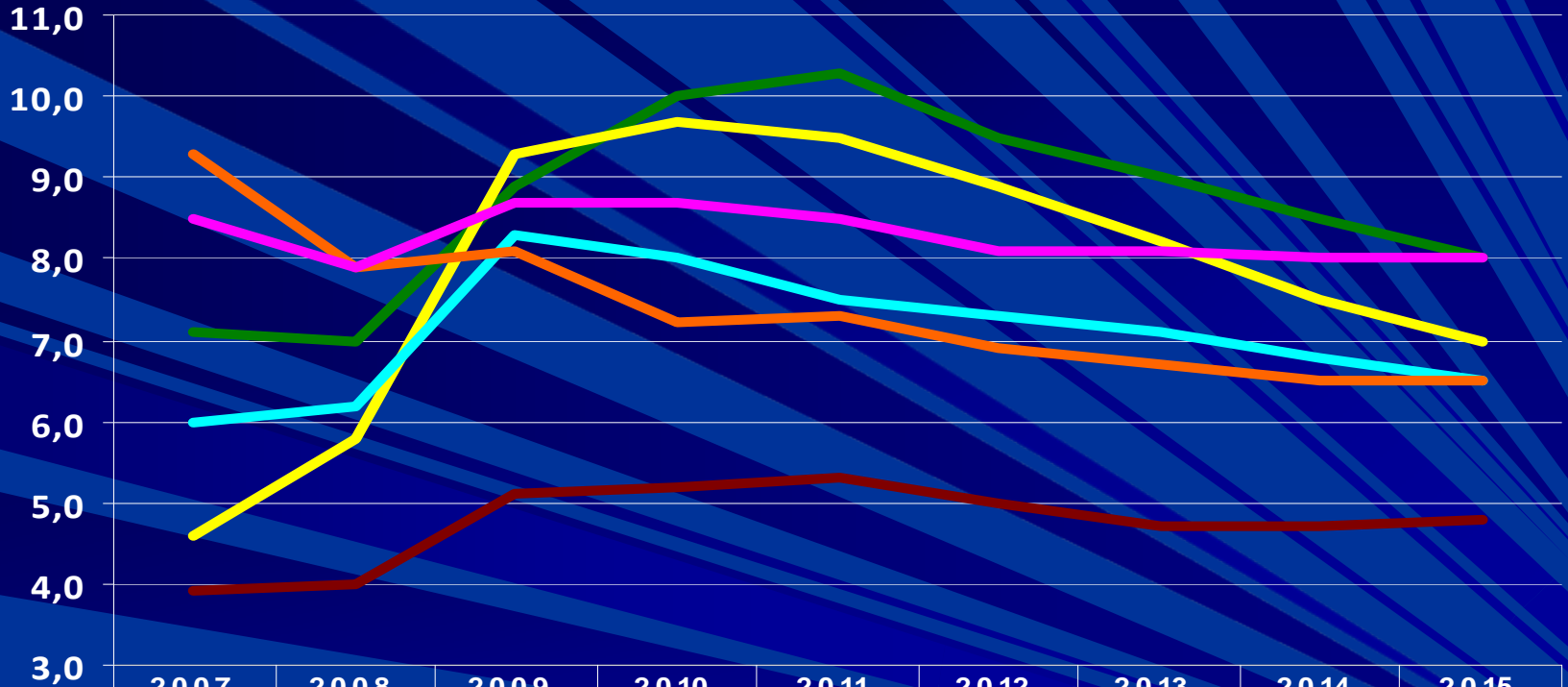
GDP – Growth rates

(Various sources)



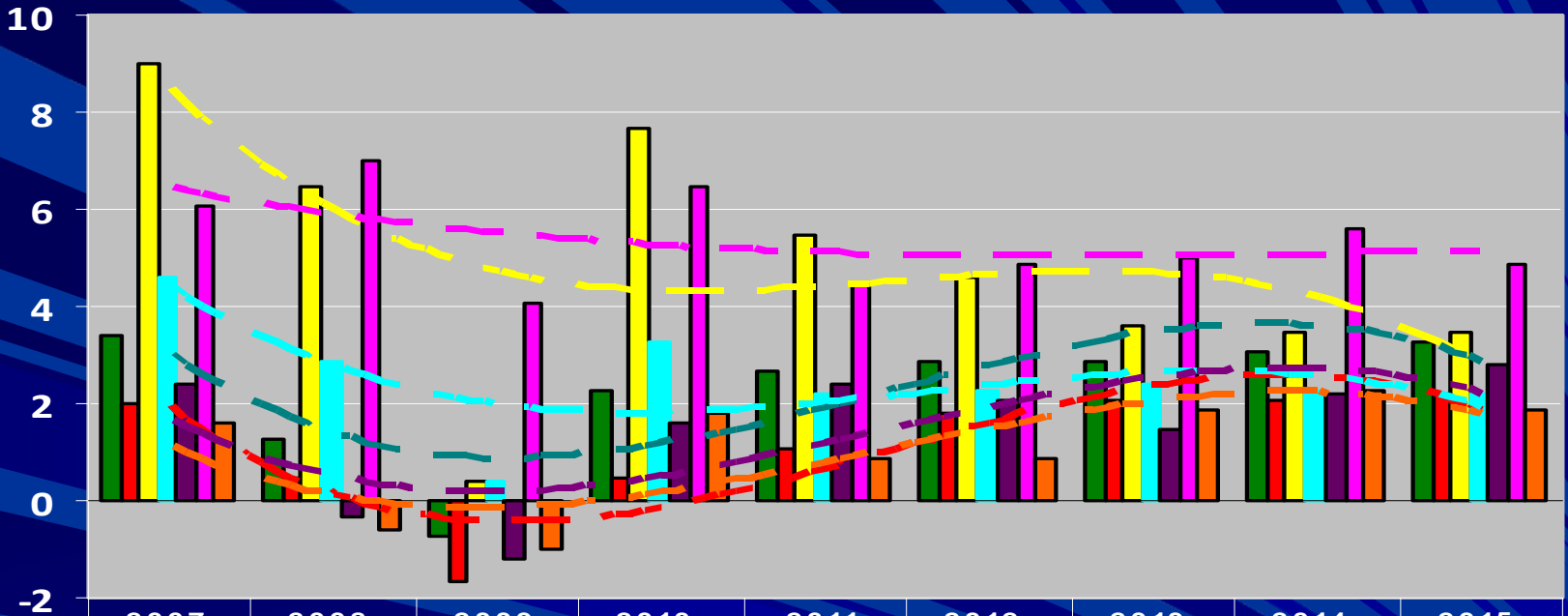
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Europe 27	2,0	3,2	3,0	0,4	-4,2	1,8	1,7	2,0	2,0	2,2	2,3
E. Europe			5,8	3,0	-5,5	3,8	4				
Russia			8,1	5,6	-7,9	4,4	4,5				
United States	3,1	2,7	1,9	0,0	-2,6	2,8	2,1	2,5	2,7	3,1	3,1
Japan	1,9	2,0	2,3	-1,2	-5,3	3,9	1,3	1,7	2,0	2,1	1,7
China	9,1	10,2	10,7	9,0	9,1	10,3	9,6				
India	9,2	9,8	9,4	7,4	7,4	8,3	8,0				
Brasil			6,1	5,1	-0,2	7,5	5,0	5,5	5,2	5,8	4,7
WORLD			4	1,6	-2	3,6	3,1	3,5	3,5	3,8	3,7

Unemployment rates



	2007	2008	2009	2010	2011	2012	2013	2014	2015
Europe	7,1	7,0	8,9	10,0	10,3	9,5	9,0	8,5	8,0
USA	4,6	5,8	9,3	9,7	9,5	8,9	8,2	7,5	7,0
Canada	6,0	6,2	8,3	8,0	7,5	7,3	7,1	6,8	6,5
Brasil	9,3	7,9	8,1	7,2	7,3	6,9	6,7	6,5	6,5
Argentina	8,5	7,9	8,7	8,7	8,5	8,1	8,1	8,0	8,0
Japan	3,9	4,0	5,1	5,2	5,3	5,0	4,7	4,7	4,8

Consumer expenditure

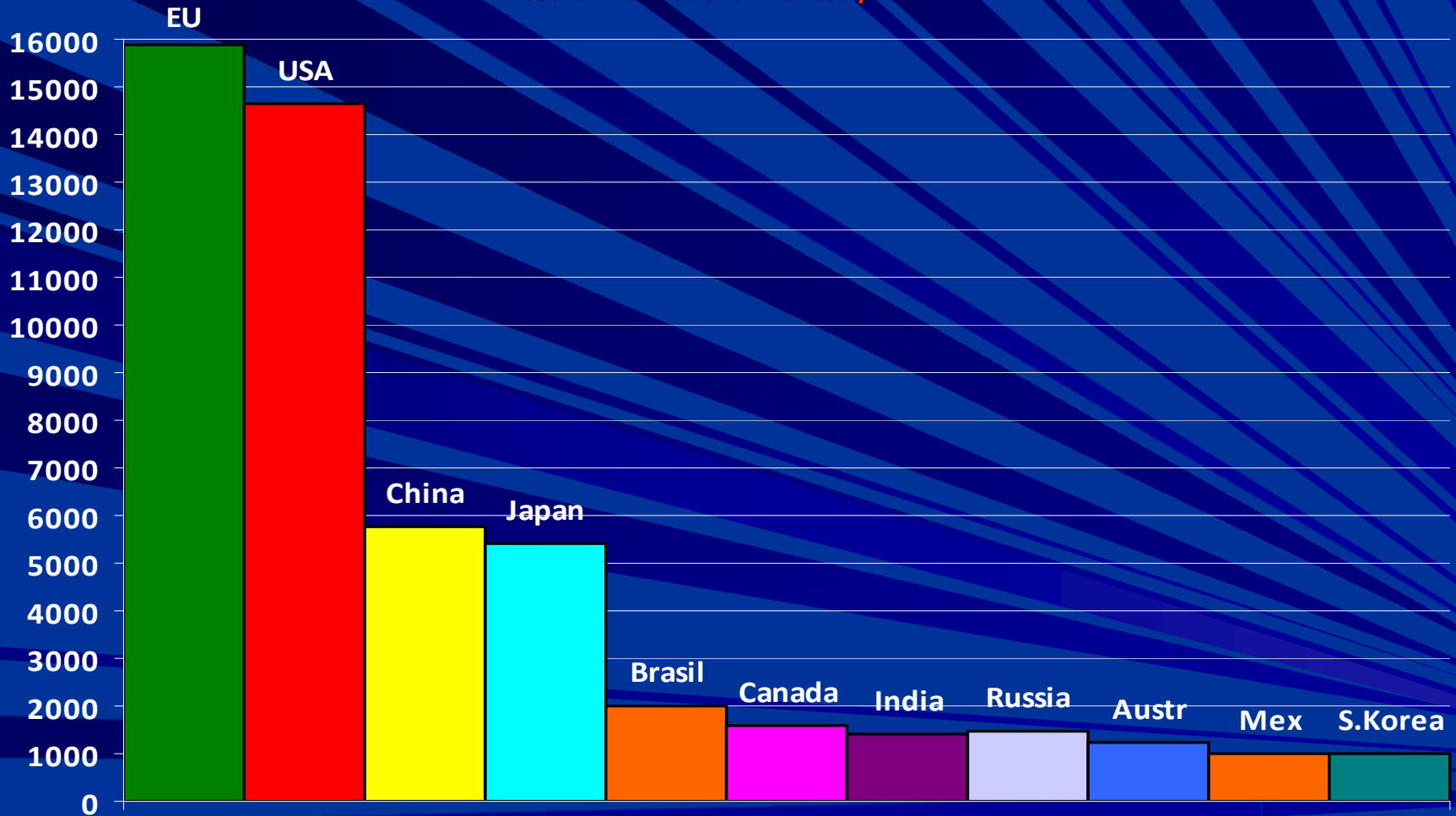


	2007	2008	2009	2010	2011	2012	2013	2014	2015
■ World	3,4	1,3	-0,7	2,3	2,7	2,9	2,9	3,1	3,3
■ Europe	2	0,5	-1,7	0,5	1,1	1,8	2,1	2,1	2,2
■ Argentina	9,0	6,5	0,4	7,7	5,5	4,6	3,6	3,5	3,5
■ Canada	4,6	2,9	0,4	3,3	2,2	2,3	2,4	2,3	2,2
■ Stati Uniti	2,4	-0,3	-1,2	1,6	2,4	2,1	1,5	2,2	2,8
■ Brasile	6,1	7,0	4,1	6,5	4,5	4,9	5,0	5,6	4,9
■ Giappone	1,6	-0,6	-1,0	1,8	0,9	0,9	1,9	2,3	1,9

World GDP 2010

(62,000 Billion US\$ - official exchange rate)

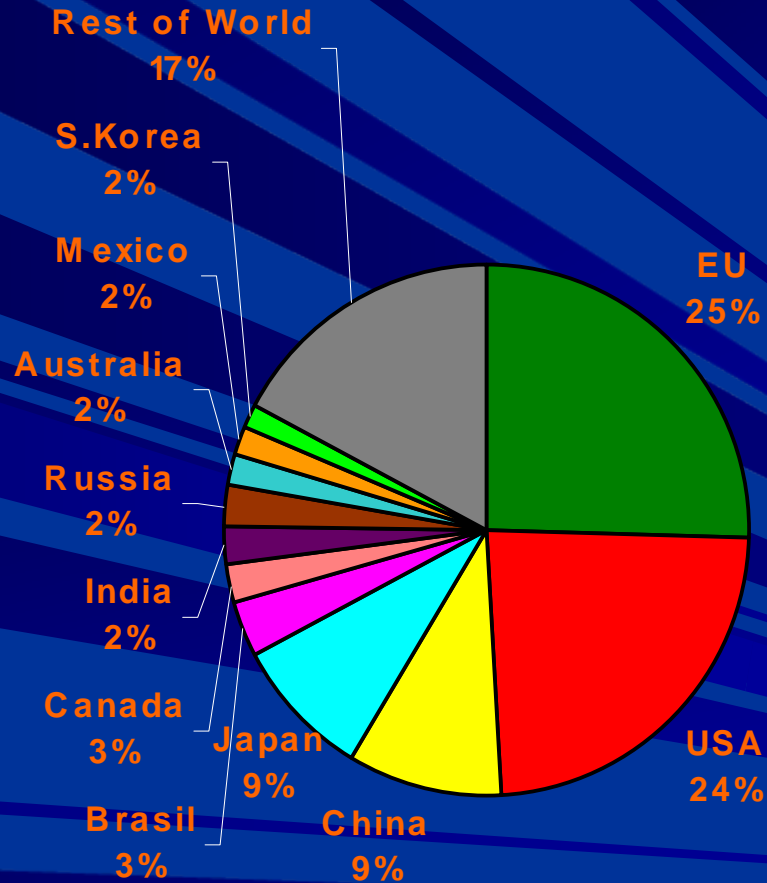
source International Monetary Fund



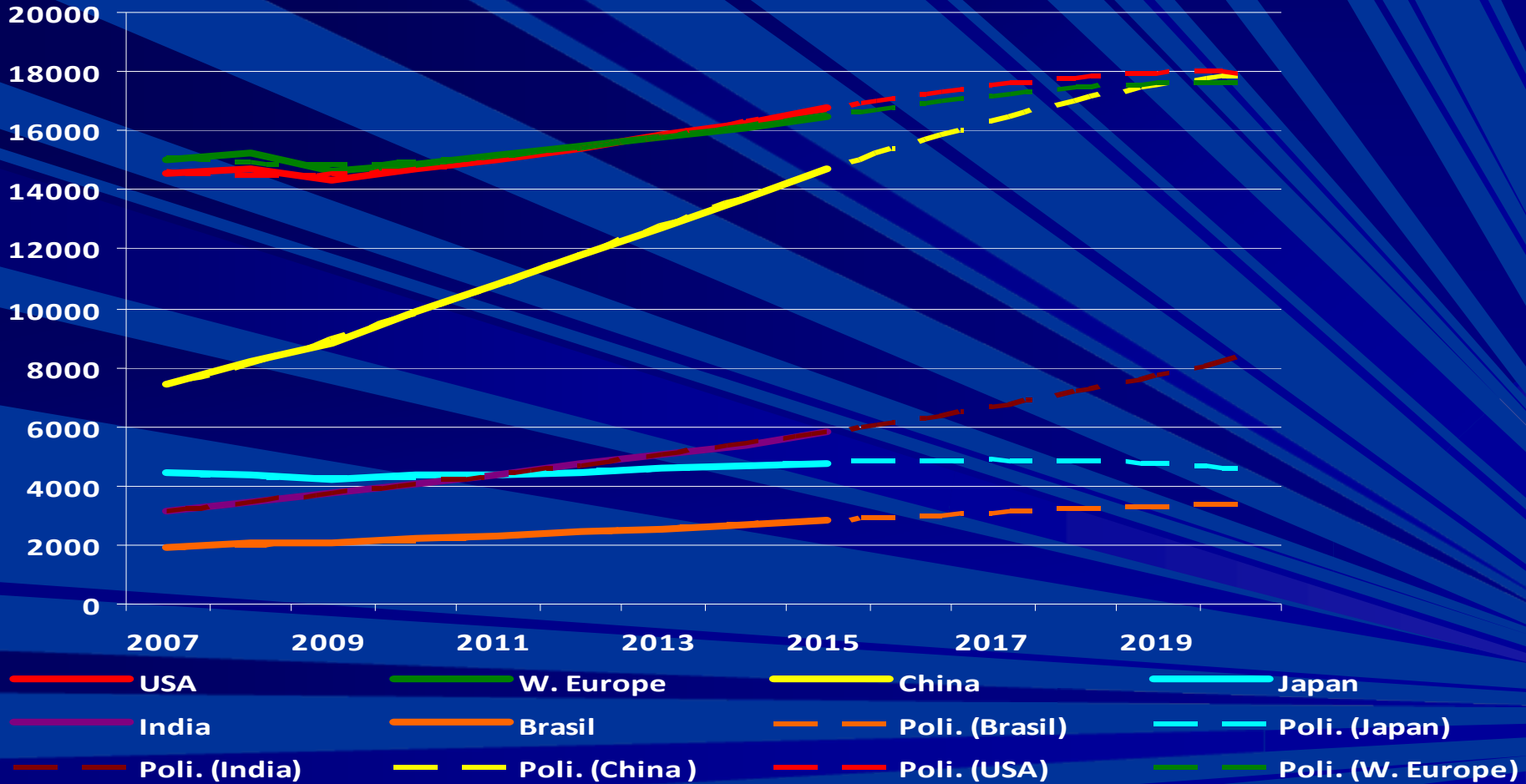
2010

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Shares by country



GDP (PPP) Trend Projections to 2020





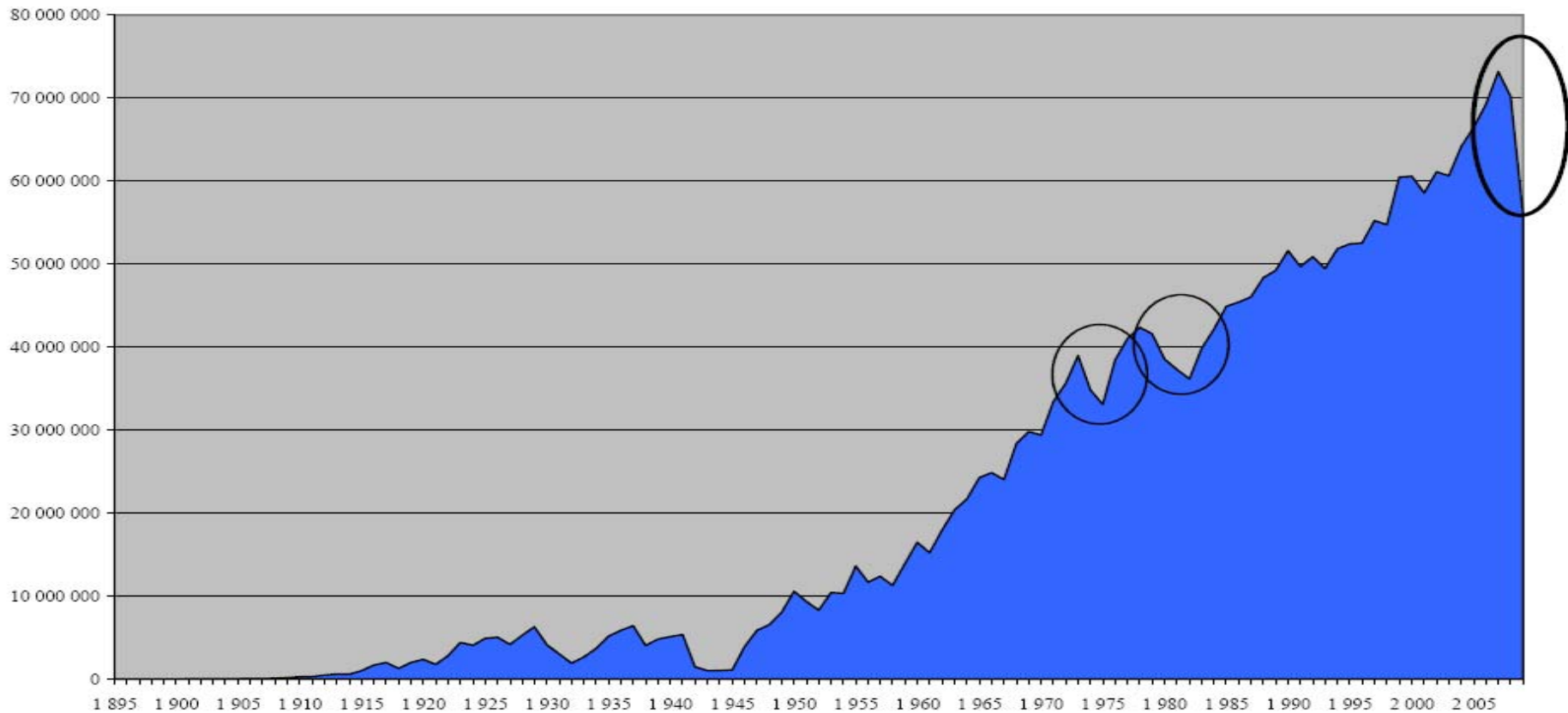
World Statistics

- ❖ **Production**
- ❖ **Registrations**
- ❖ **Circulation**

Total World Car Production Historical Trend



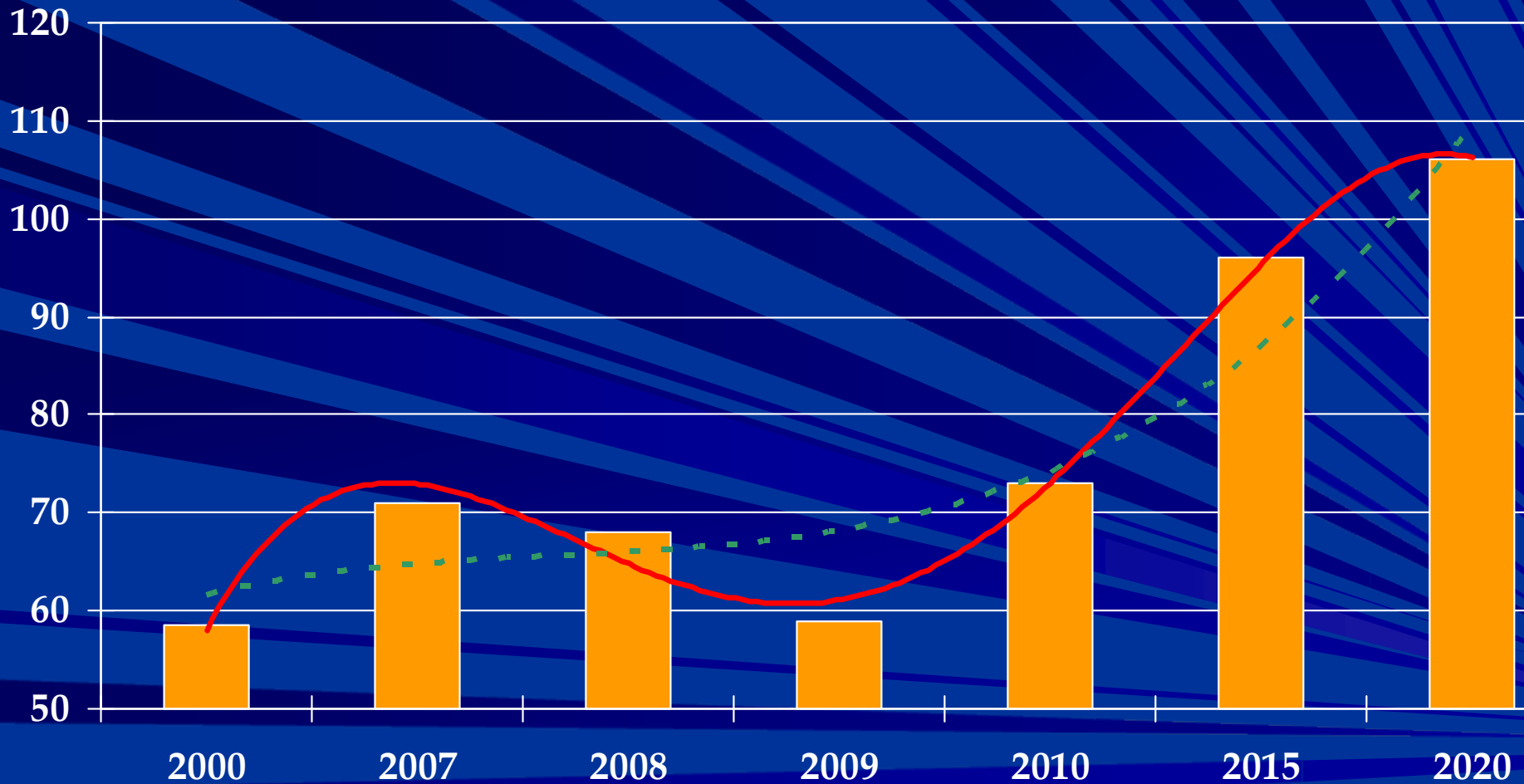
World automobile production, 1898-2008



Sources principales: CCFA, VDA SMMT, JAMA,IRF, . Élaboration Freyssenet M., 2004

World Cars+LC Production

Hystorical data and forecast



World production Light Vehicles by major area 2008-2009 comparison

	2008		2009		diff % 2008/9	
		share		share	Diff. Volumes	
W. Europe	14.623		12.023		-2.600	-17,7
USA/Canada	10.503		7.067		-3.416	-32,5
Japan	11.096		7.692		-3.416	-30,8
3 majors	36.222	53%	26.782	45%	-9.432	-26%
E. Europe	4.907		4.177		-772	-15,7
Russia	1.673		669		-1.008	-60,3
Brazil	2.866		2.931		99	3,5
India	2.065		2.409		1.165	56,4
China	8.582		12.886		3.730	43,6
S. Korea	3.778		3.470		-389	-10,3
Others	8.140		6.426		-2.560	-31,4
Rest of the world	32.011	47%	33.102	55%	265	1%
Total	68.233	100%	59.884	100%	-9.167	-13%

World Light vehicles production

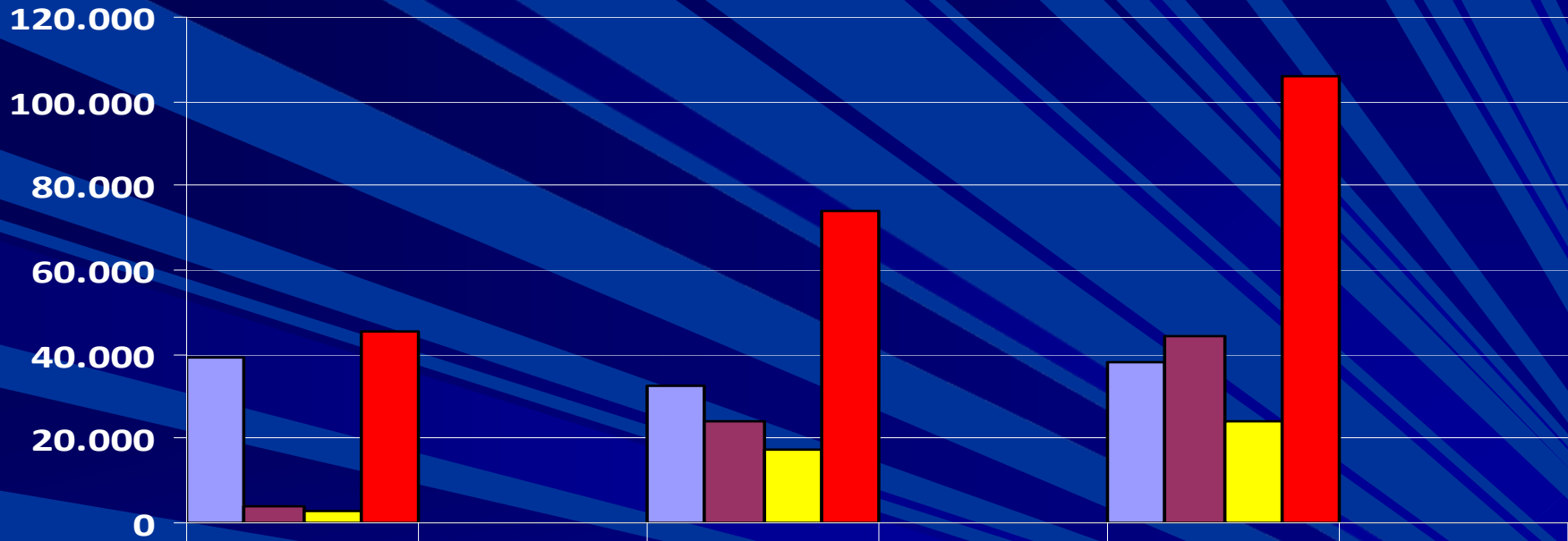
By major areas

(Source Oica, Acea, Global Insight 12/2010)

(Thousand units)

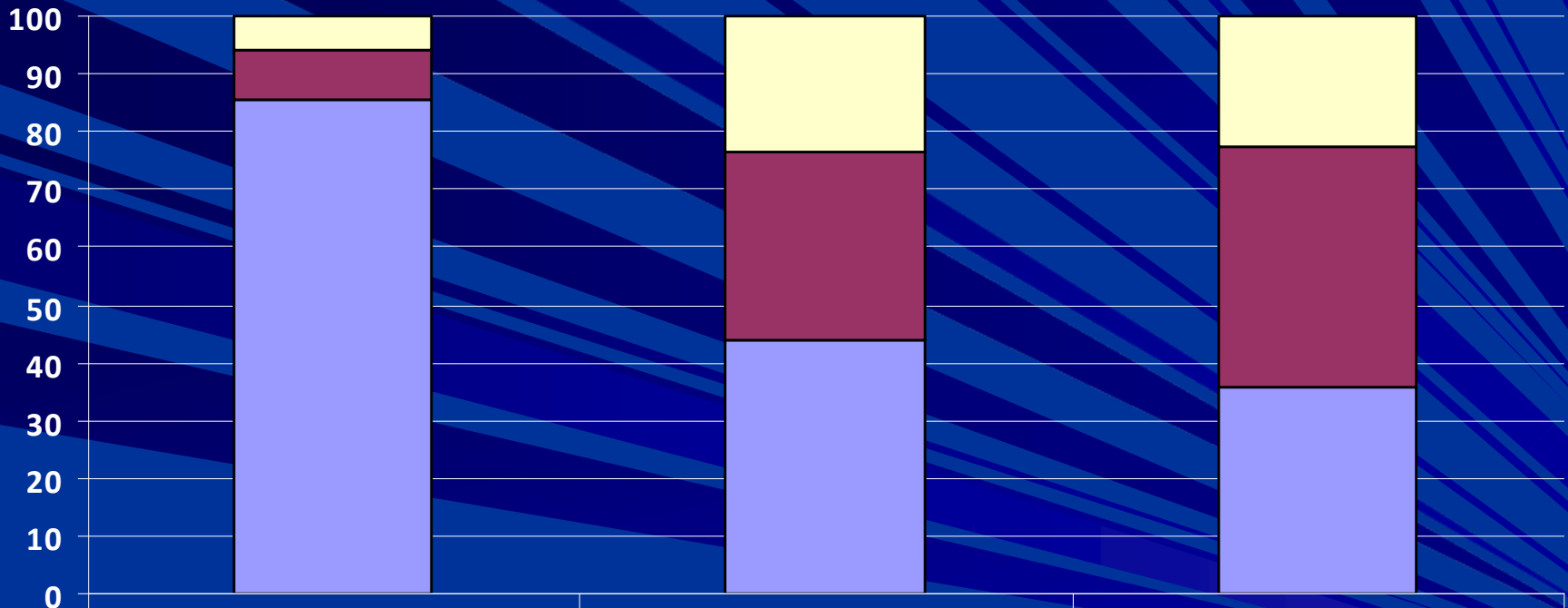
	1986		2010		forecast 2020	
W. Europe	13.600		13.380		16.300	
USA/Canada	13.190		9.640		12.600	
Japan	12.260		9.350		9.200	
3 majors	39.050	86%	32.370	44%	38.100	36%
Europe Est	1.301		4.500		6.100	
Russia	2.125		1.240		2.550	
Brasil	1.056		3.130		5.100	
India	239		3.240		7.200	
China	345		16.490		29.200	
South Korea	601		4.115		4.550	
Others	883		8.665		13.200	
Rest of the world	6.550	14%	41.380	56%	67.900	64%
Total	45.600	100%	73.750	100%	106.000	100%

World light vehicles production by major areas



	1986		2010		2020	
3 majors	39.050	85,6%	32.370	43,9%	38.100	35,9%
Bric	3.765	8,3	24.120	32,7	44.050	41,6
Others	2.785	6,1	17.260	23,4	23.850	22,5
Total	45.600	100%	73.750	100%	106.000	100%

World light vehicles production shares by major areas



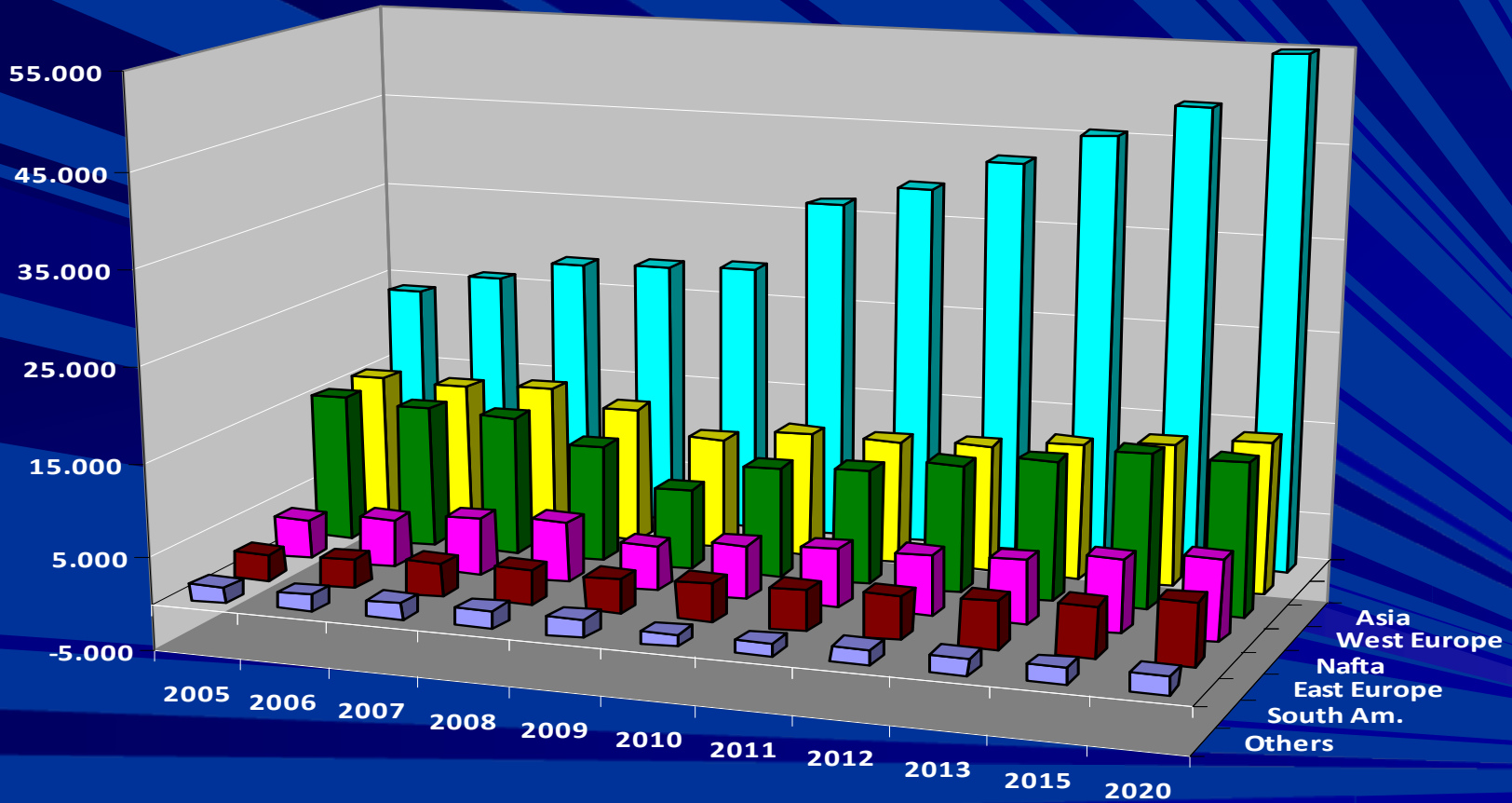
	1986	2010	2020
Others	6,1	23,4	22,5
Bric	8,3	32,7	41,6
3 majors	85,6	43,9	35,9

World Production L.V. by Area

Data and forecast

'000 units

Source: Global Insight

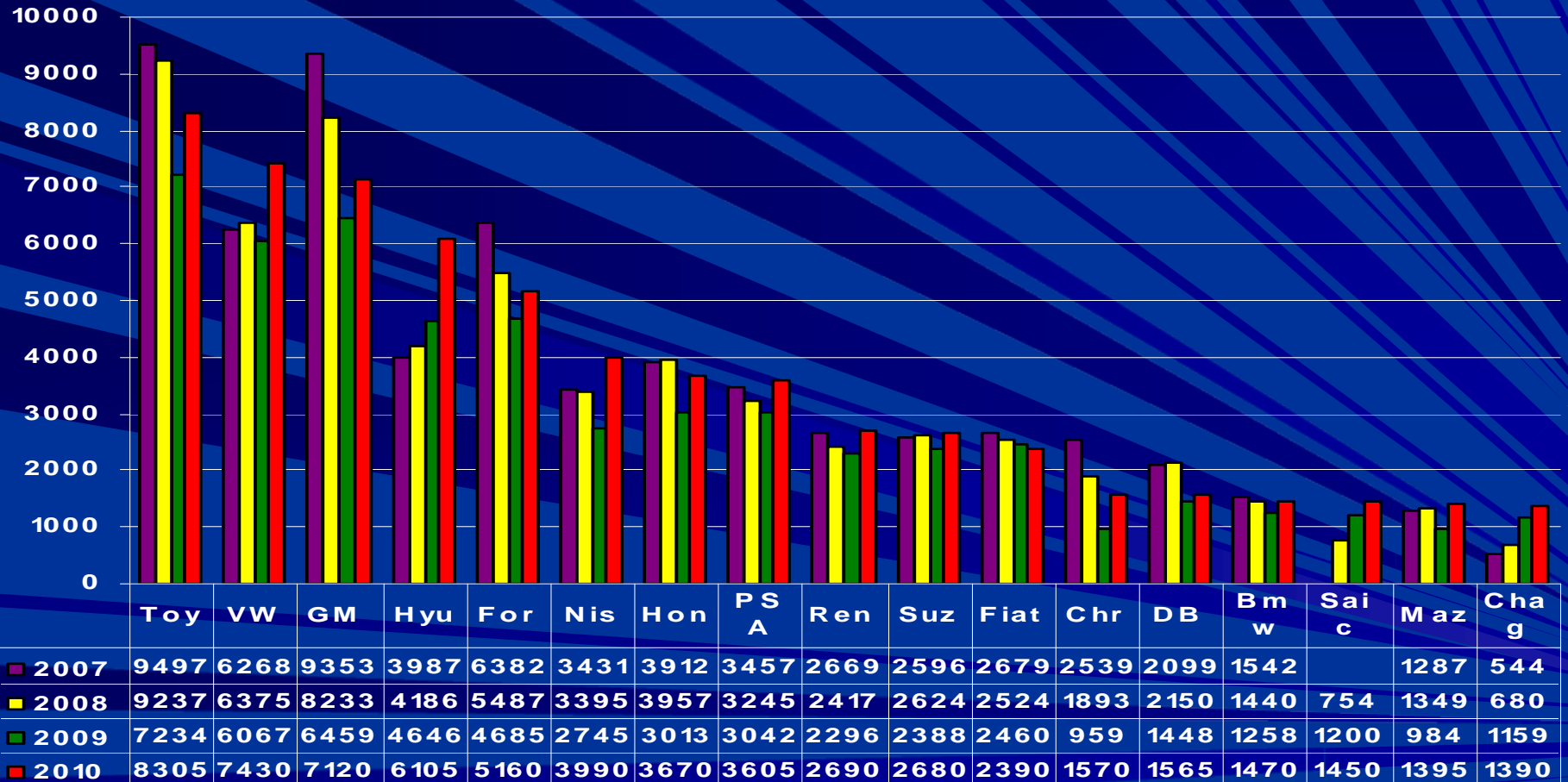


Others South Am. East Europe Nafta West Europe Asia

Vehicle Production (Cars e L.Trucks)

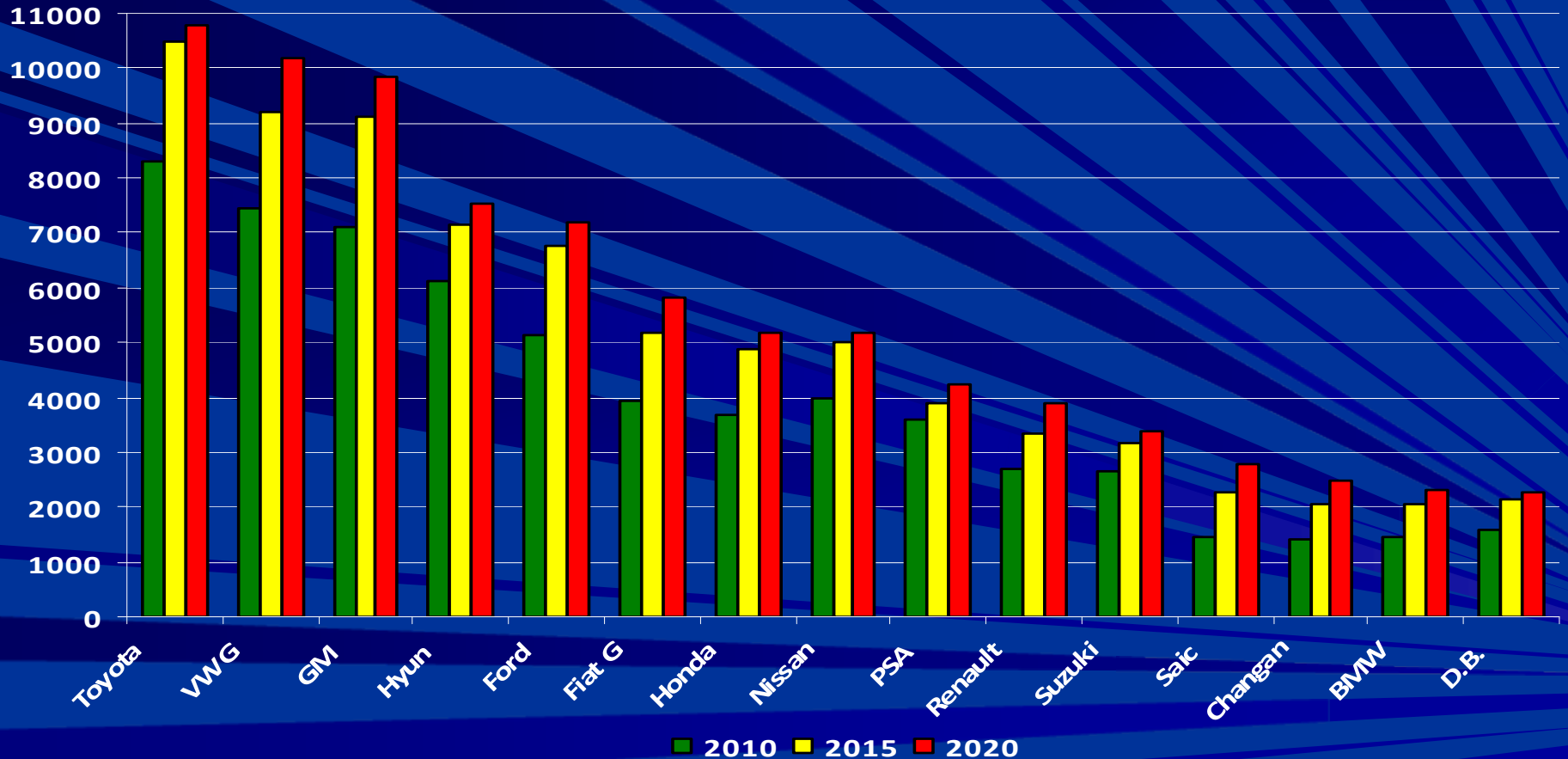
major world groups 2007/2010 (thousand units)

Various sources



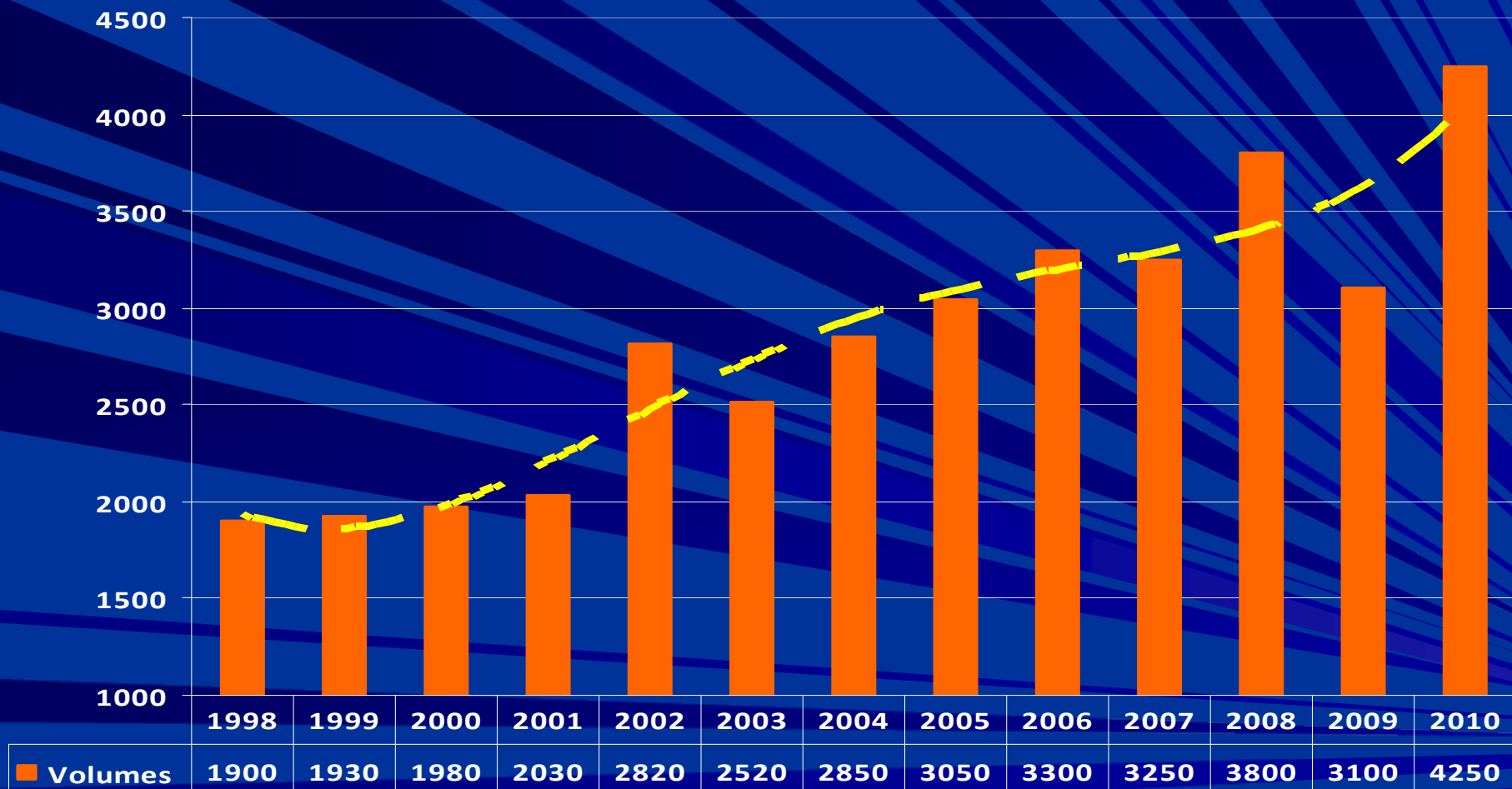
Forecast World production Cars + L.T.

by major OEM Groups 2010-2020 ('000 units) Various sources and Global Insight



World Heavy Trucks Production 1998-2010

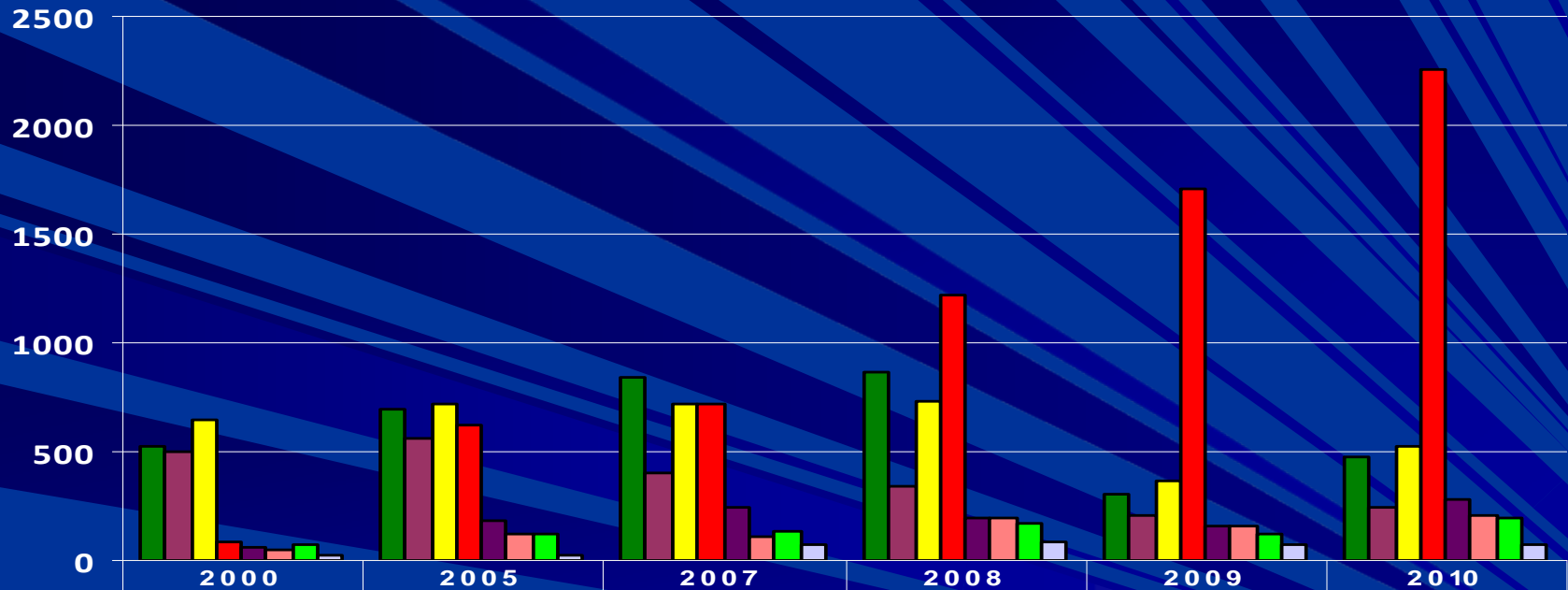
Thousand units Source: Oica 2011



World Heavy Trucks Production by major countries

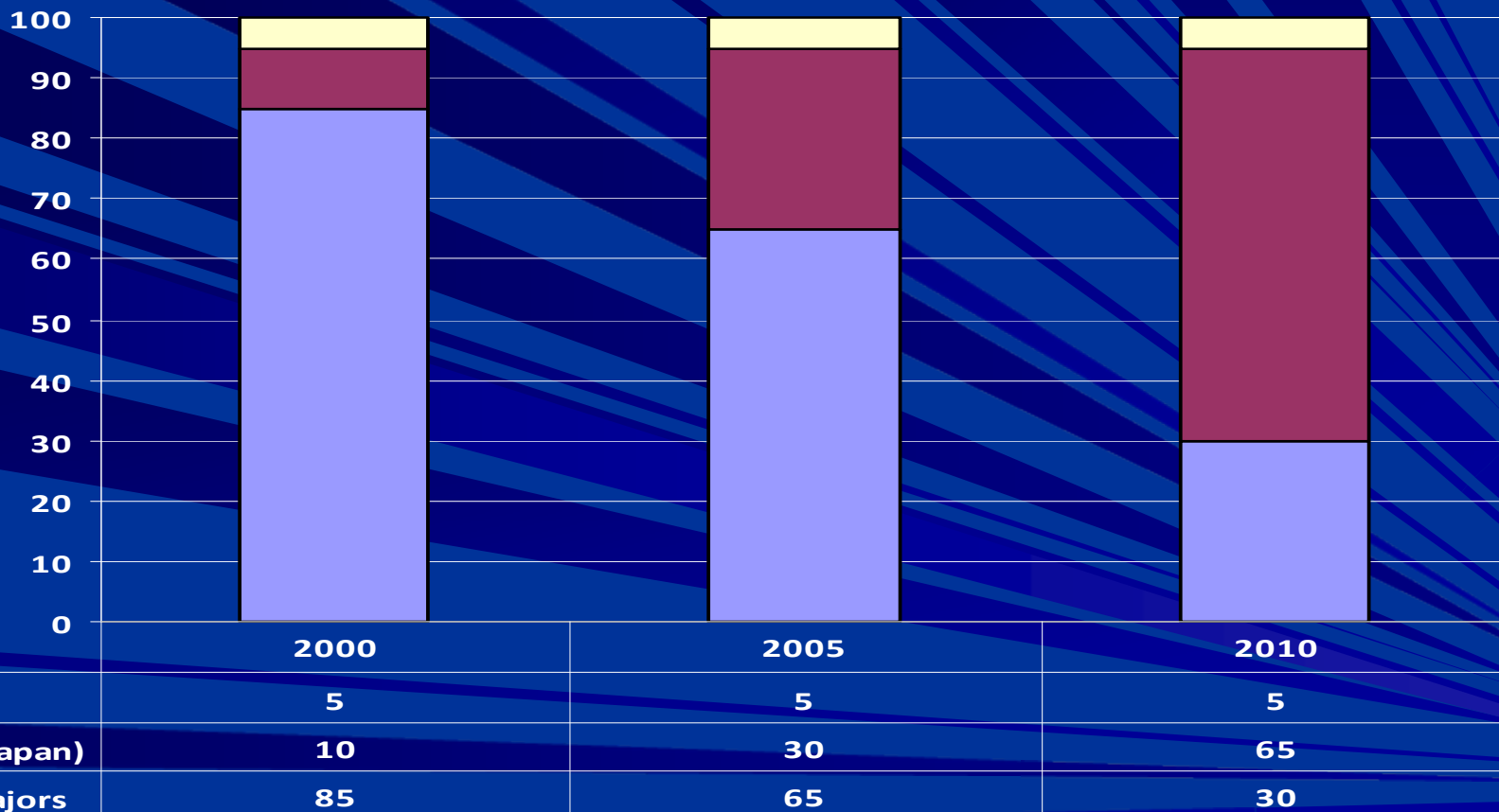
Thousand units

Source: Oica 2011

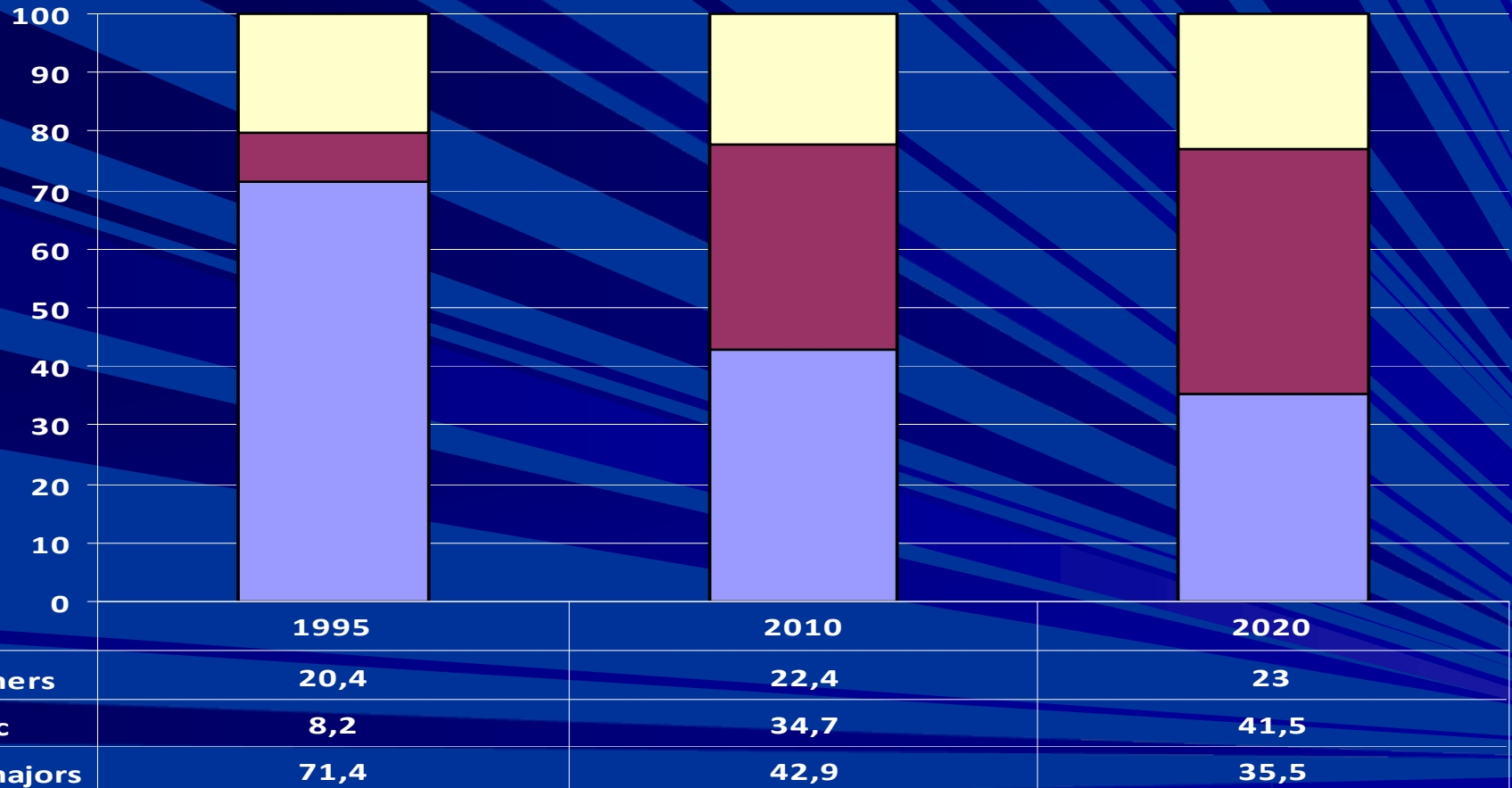


	2000	2005	2007	2008	2009	2010
■ Europe	530	690	840	860	310	480
■ Nafta	505	565	405	340	203	242
■ Japan	650	725	720	735	370	520
■ China	80	620	725	1225	1705	2260
■ India	65	180	250	200	155	275
■ Others Asia	50	125	110	190	155	205
■ Brasil	70	120	140	165	125	190
■ Others	30	25	70	85	77	78

World Trucks production shares by major areas

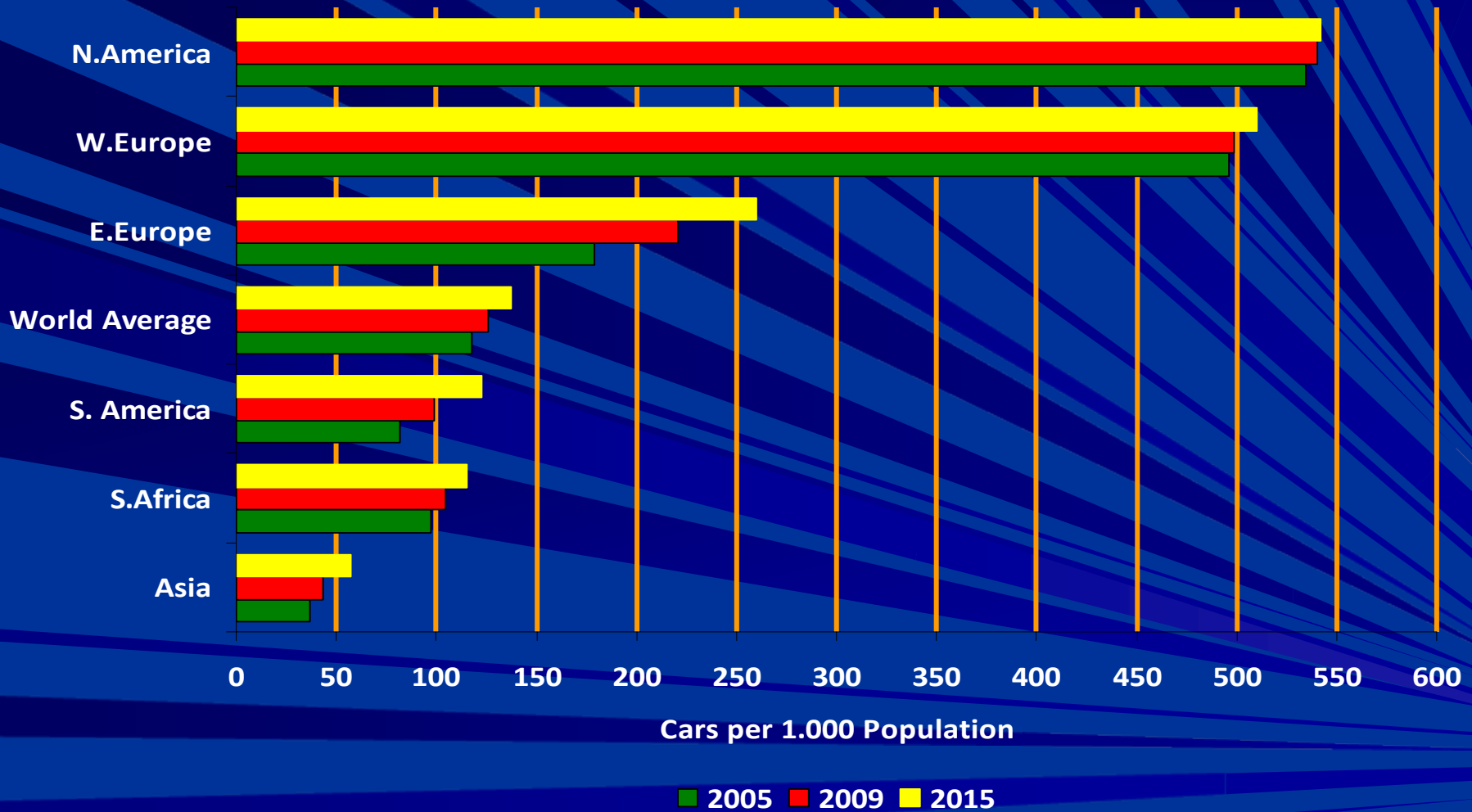


World light vehicles sales by major areas



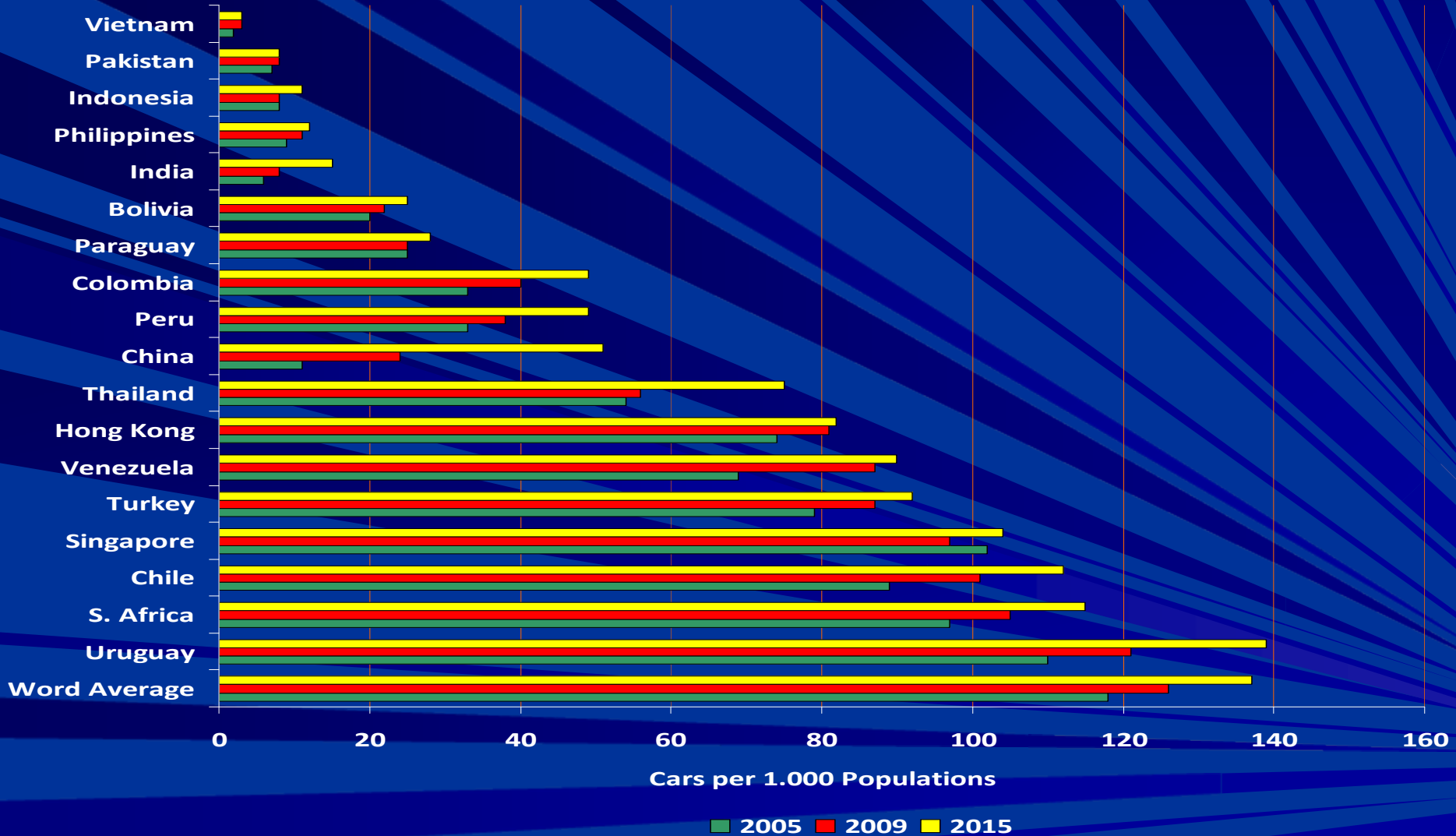


World Car Density





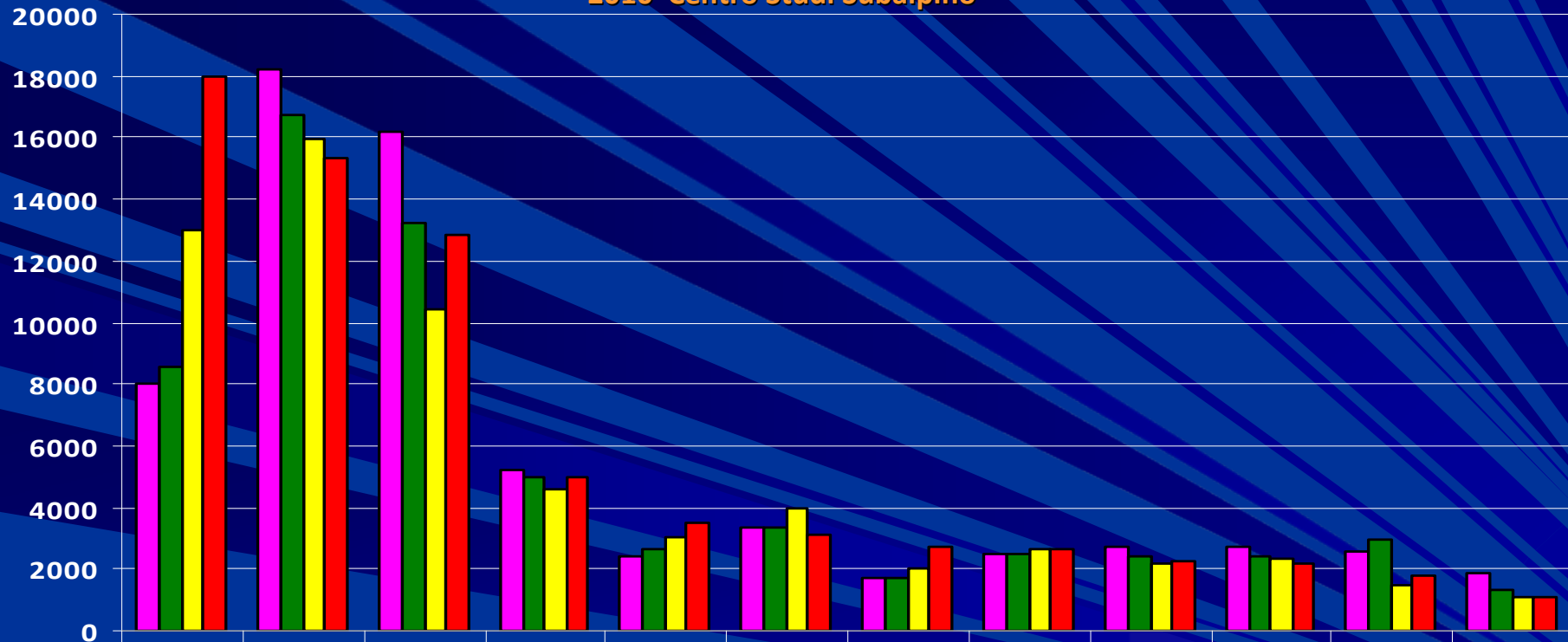
World Car Density



Light Vehicles Sales

Major markets

*2010 Centro Studi Subalpino



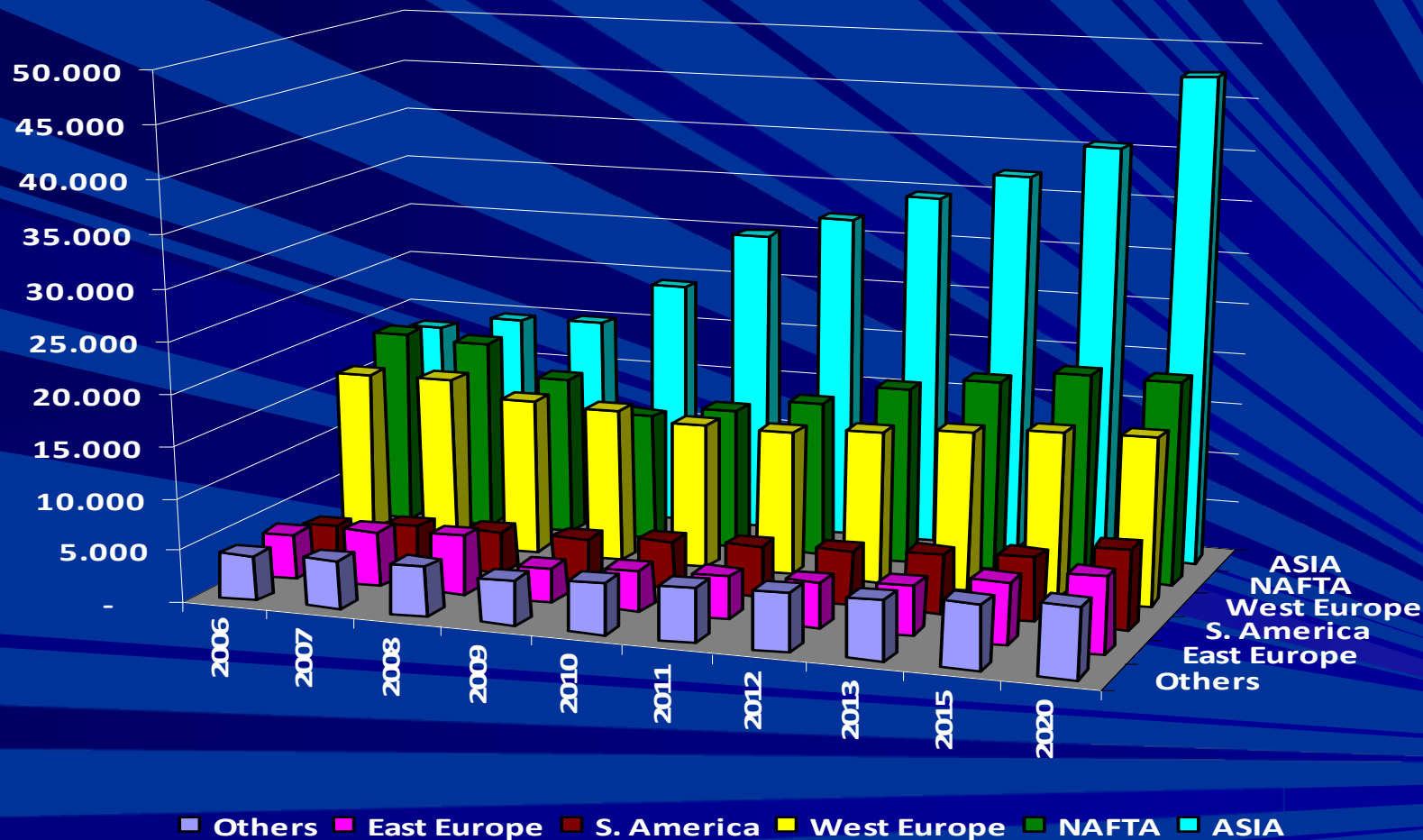
	China	EU	USA	Jap	Bras	Germ	India	Fran	U.K.	Italy	Russia	Spain
2007	7990	18235	16157	5206	2377	3370	1710	2526	2748	2750	2593	1892
2008	8595	16751	13247	4987	2673	3315	1734	2510	2430	2390	2938	1328
2009	12966	15940	10438	4556	3007	3974	2053	2643	2188	2340	1475	1061
2010	18000	15331	12831	4956	3500	3113	2700	2667	2254	2147	1800	1098

L.V. sales by geographic areas

Data and Forecast to 2020

'000 units

Source: Global Insight



Industry and Society

➤ Mobility



Volumes - Shares by mode - Too many vehicles on the road or insufficient infrastructures? Which alternatives?

Europe: Mobility and GDP

YEAR
1995
= 100

PASSENGERS, GOODS, GDP 1995-2008

140
135
130
125
120
115
110
105
100

1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008

PASSENGERS (1) (pkm)

GOODS (2) (tkm)

GDP (at constant 2000 prices)

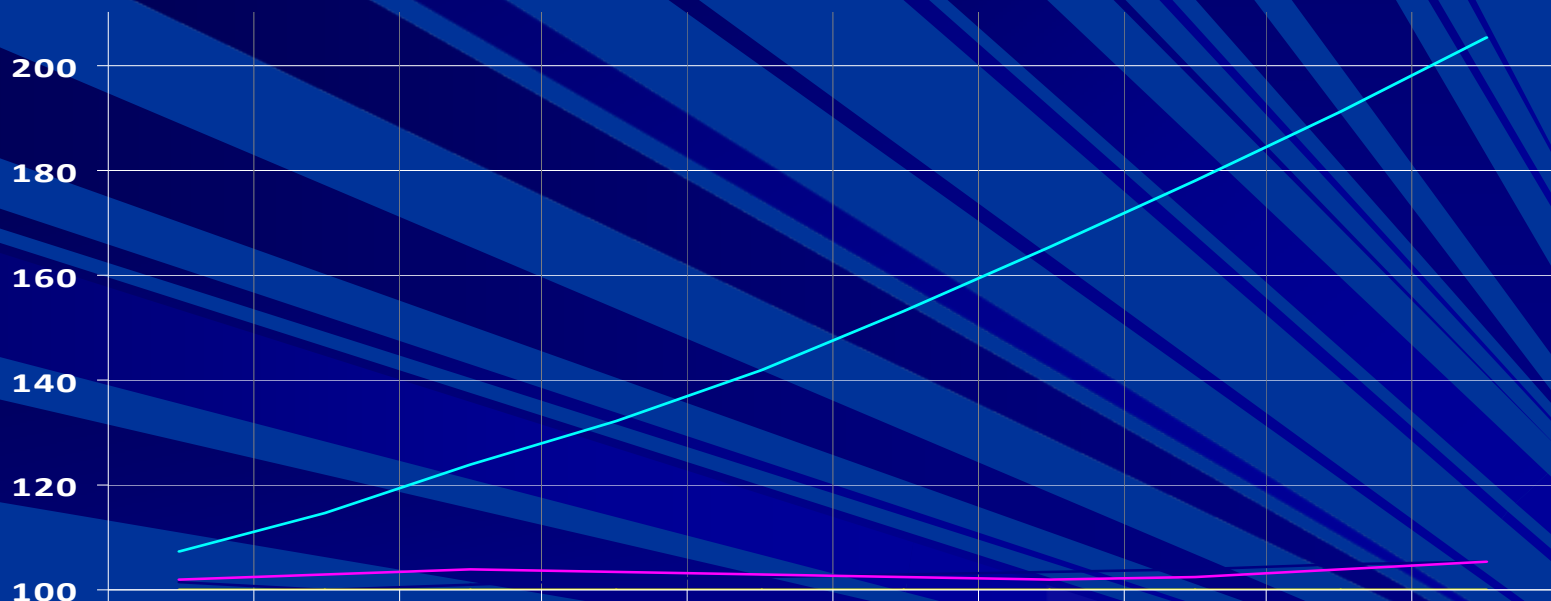
Source: Eurostat 2010

Europe: Car Park and GDP (ppp) Index

2005=100 Source IMF e IHS



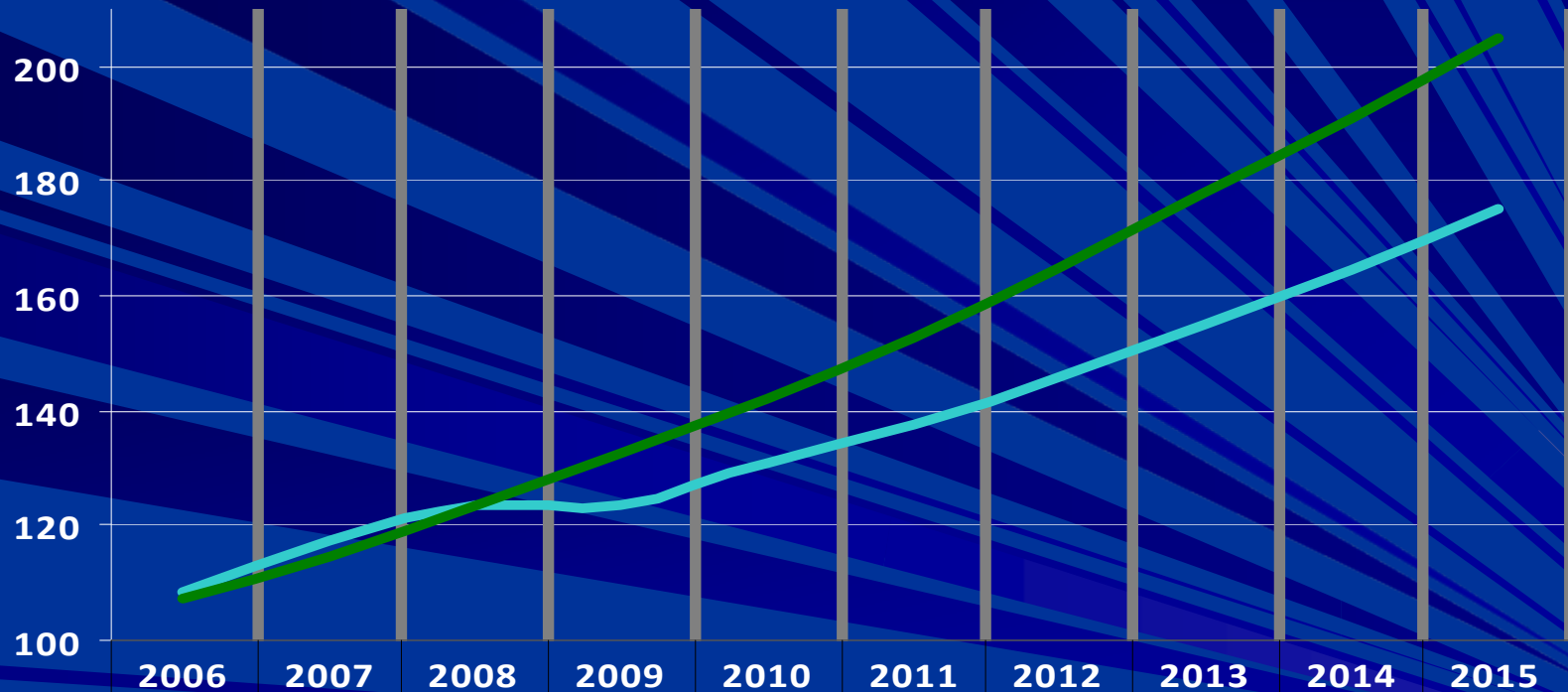
Car Park – EU, Nafta, Japan and Rest of World projections



	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
EU	101,6	100	101,2	101,9	102,4	103	103,5	104,1	104,7	105,3
Nafta	102,1	103	103,7	103,6	102,8	102,3	102	102,6	103,7	105,2
Japan	100	100	100	100	100	100	100	100	100	100
Rest of World	107,3	114,6	123,8	132,3	142,1	153	165,2	178	190,9	205

World Car Park (Excluding W.E., Nafta & Japan) and GDP (ppp)

Index 2005=100 Source IMF e IHS



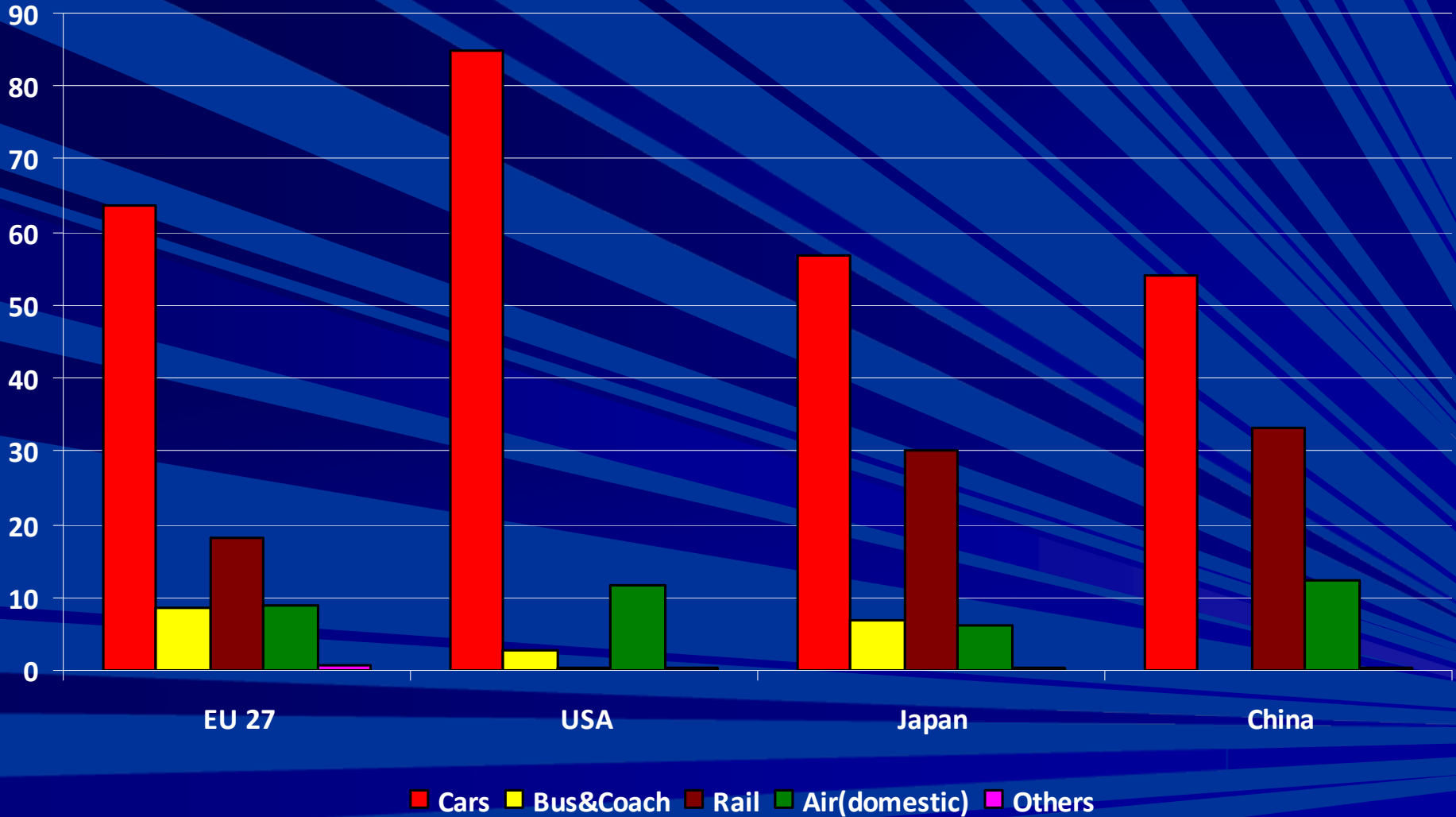
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
W GDP	108,5	117,6	123,4	123,6	130,6	137,8	145,9	154,8	164,7	175,3
RoW Car Park	107,3	114,6	123,8	132,3	142,1	153	165,2	178	190,9	205

Passenger Transport



People Mobility

mode shares





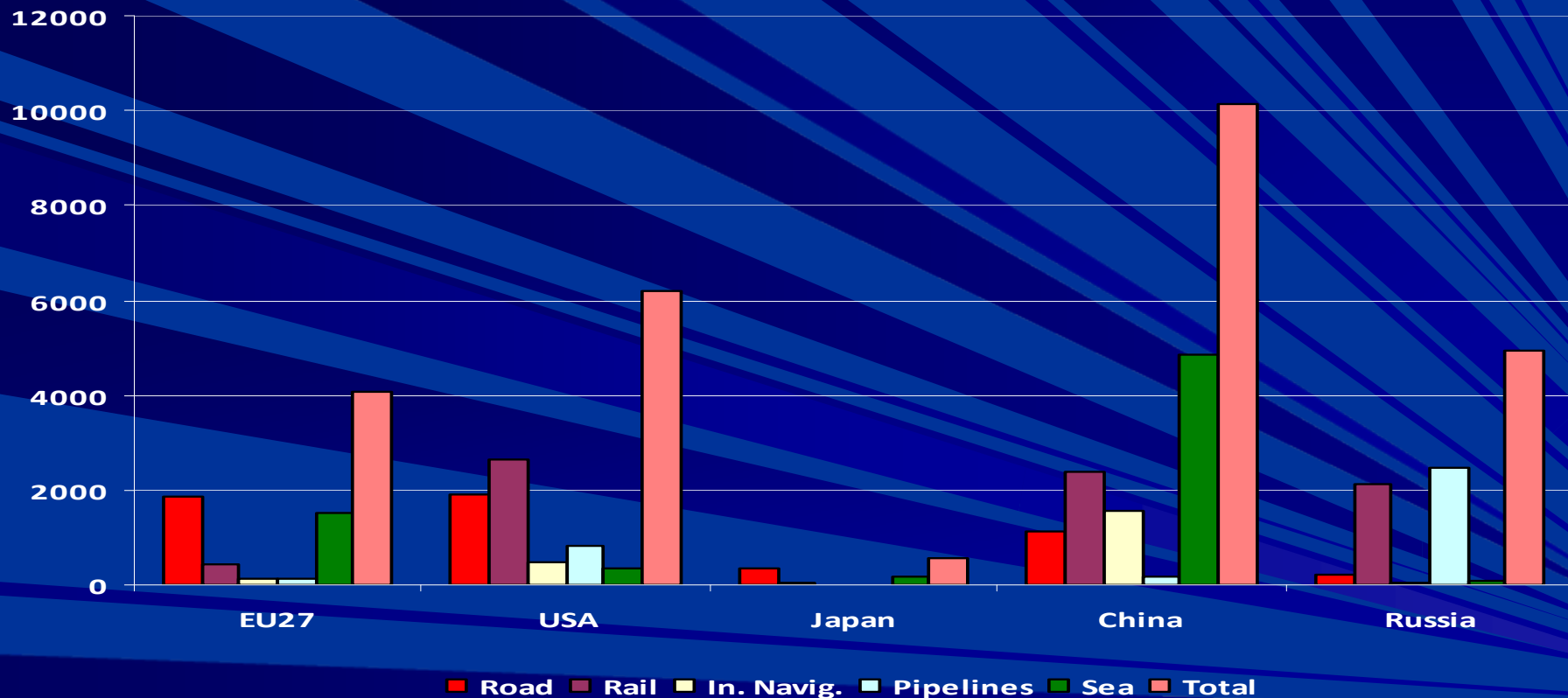
Goods Transport



Goods Transport in the world 2007/8

Major countries

billion t/km

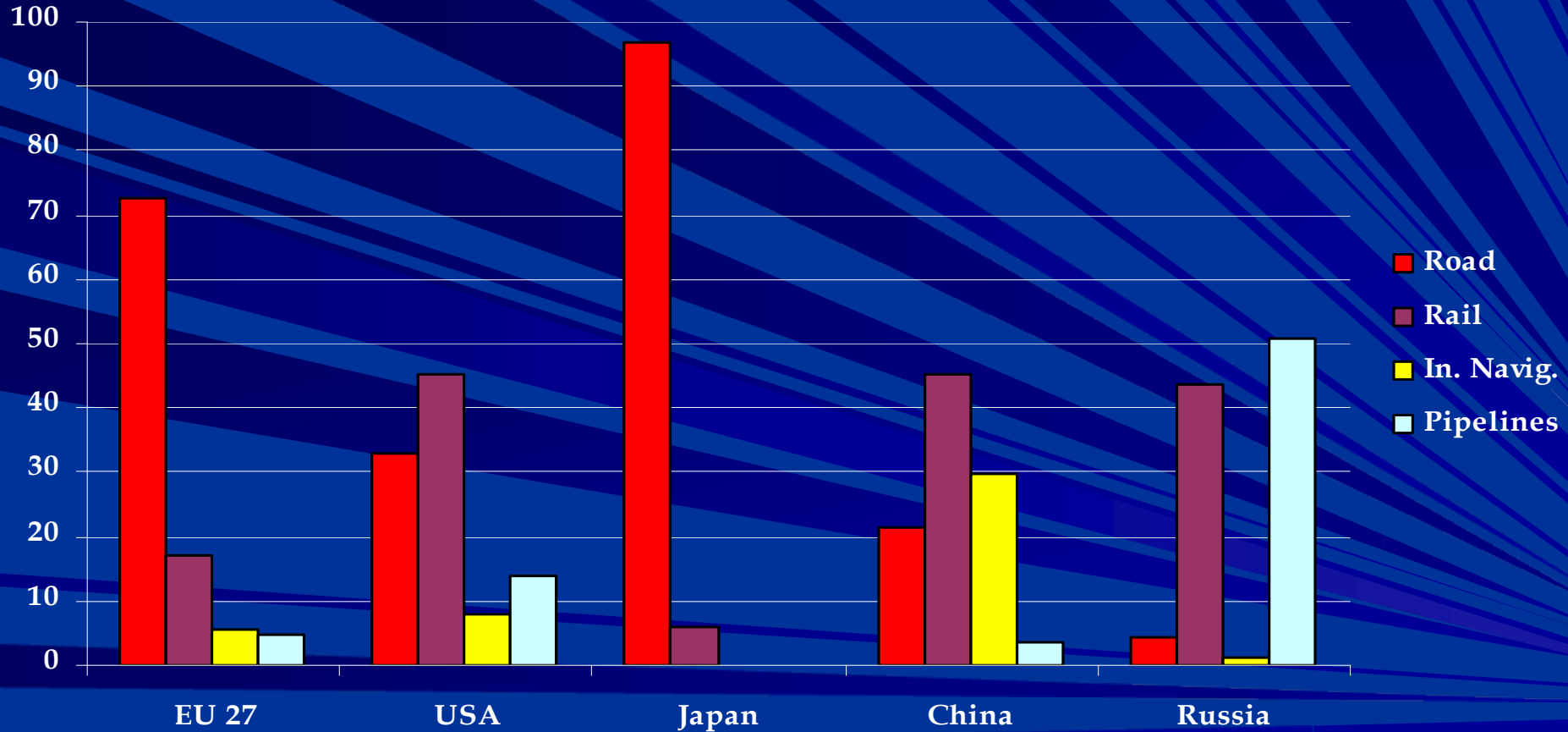


Fonti: Eurostat, Japan Statistics Bureau, US Bureau of Transportation Statistics, Goskom STAT (Russia), National Bureau of Statistics of China, International Transport Forum
 * Mare (domestic /infra EU 27)

Goods Transport in the world

Inland Transport – Major countries

Share by mode (in %)



Mobility & modes: conclusions

- Motor vehicles are by far preferred on all other means for better efficiency, usage flexibility, faster mobility.
- For goods we must add faster and safer delivery, unique role in logistics and just in time, and an almost exclusive role in short distances.
- Rail maintains an important role in USA and in vast countries such as China and Russia
- In Europe fast trains and new Tunnels can help modal switch with trains.
- Increased use of air.



But in the meantime.....

**Congestion grows all over the world,
and especially in emerging countries**

Congestion is a by-product of road usage, normally for lack of sufficient growth in road infrastructures

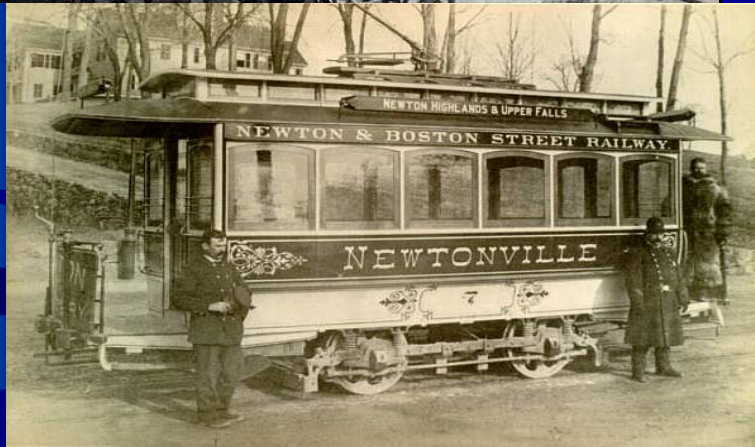


Congestion: difficult to solve

some reasons:

- ❖ Due mostly to insufficient Infrastructure
- ❖ Lack of underground transportation or dedicate lanes in some cities
- ❖ Happens at certain times in the day and in certain periods.
- ❖ But sometimes difficult to forecast.
- ❖ On motorways, but also in urban areas, is in many instances due to public works or accident.
- ❖ Insufficient parking: cars continuing to move to look for parking lots.
- ❖ Poor integrations among modes.
- ❖ Poor solutions for Bottlenecks: bypasses, new bridges, fly-overs
- ❖ Etc....

Congestion & Public Transportation today and...yesterday





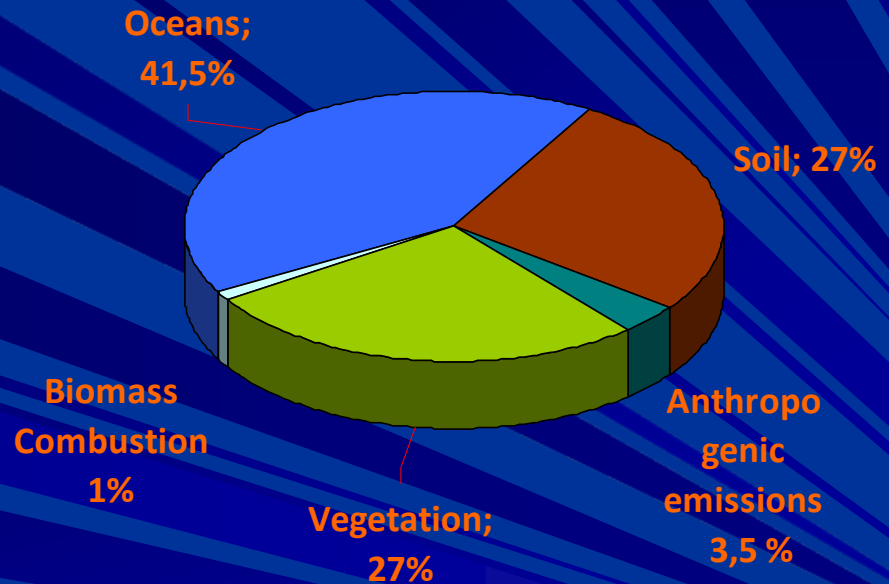
Industry and Society

➤ Environment

Automotive: how much Responsible for pollution and Global Warming ?

CO₂ Sources

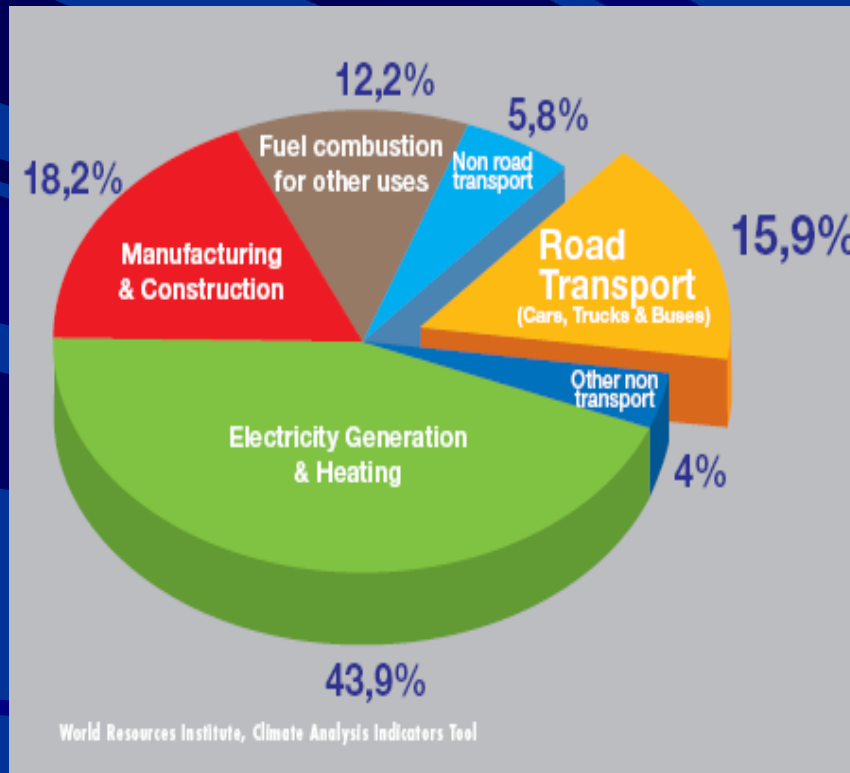
CO₂ World Emissions



- 800 billion Ton. CO₂ produced annually;

- 96 % of natural origin.

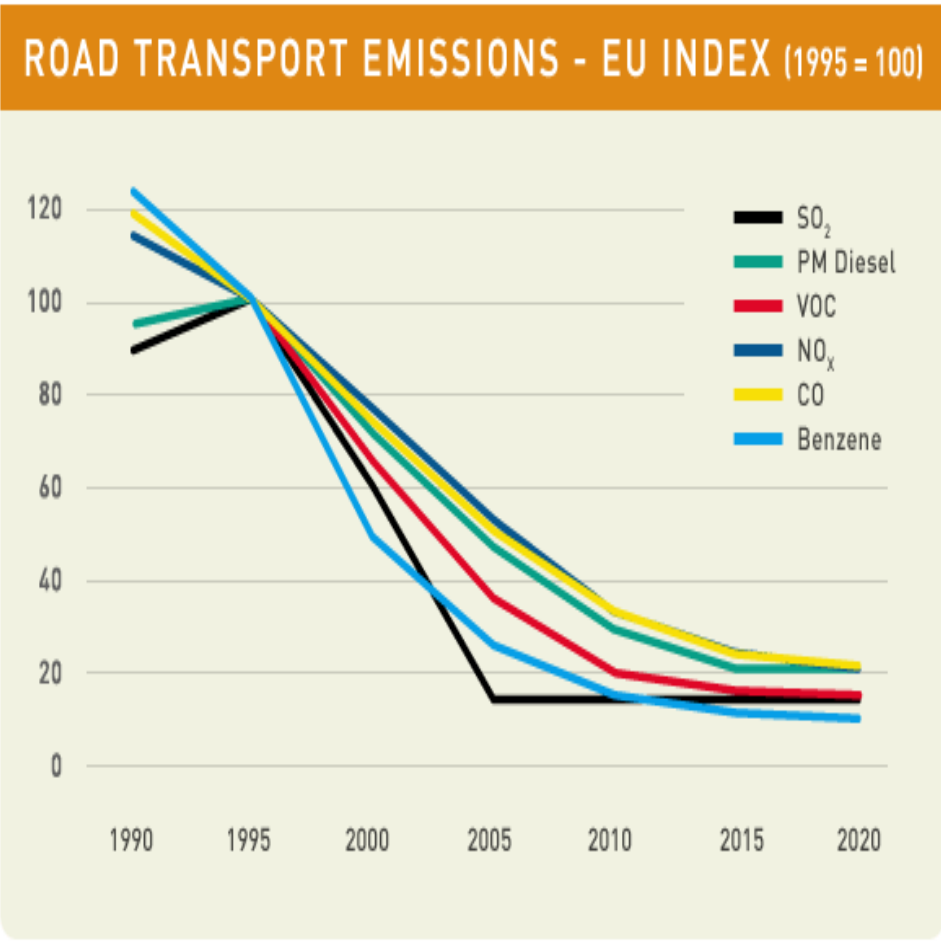
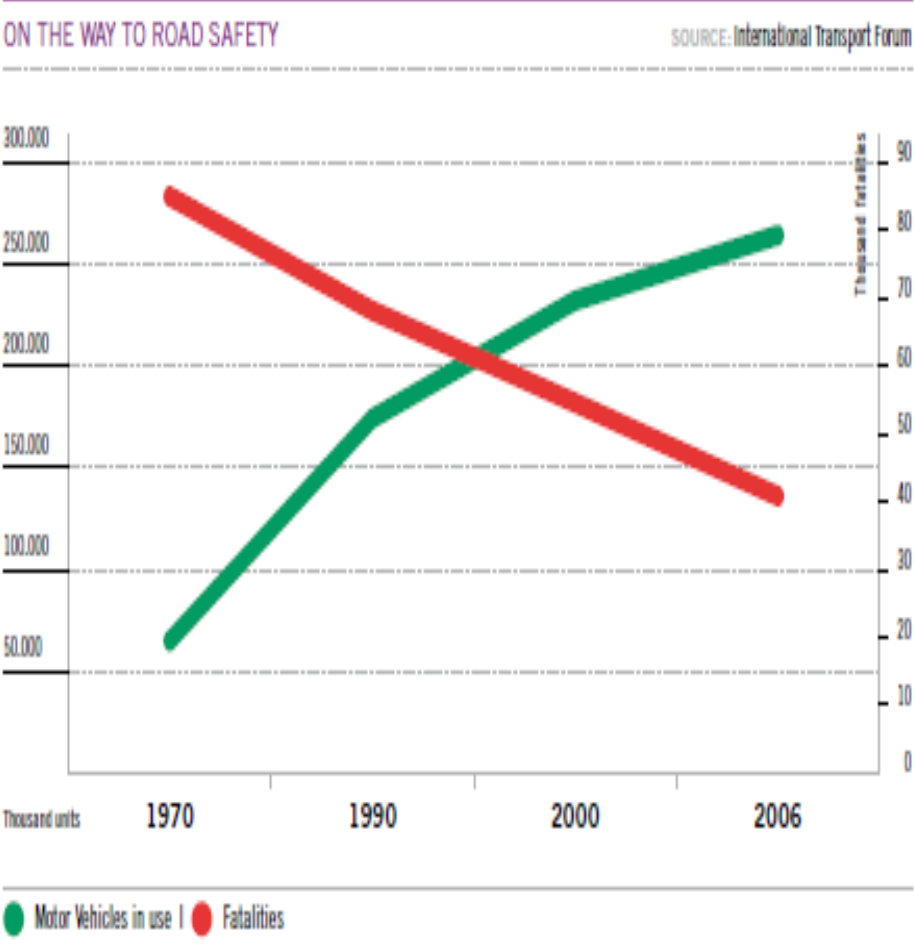
CO₂ emissions and road traffic



- Only 4% of CO₂ produced annually is attributable to human activities.
- Road Transport accounts for less than 16% of CO₂ produced by human activities. (around 13% of GHG)
- Therefore CO₂ attributable to vehicle around 0,6% of total CO₂ produced yearly.
- But even this relatively small increase can shift the Earth's natural balance. That is why OICA believe it is important to continue to reduce CO₂ emissions from all sources

Source: Climate Change and CO₂ - Oica brochure - 2008

Emissions and Road Accidents Trends



Source: OICA & ACEA



Industry and Society

➤ **Alternative Fuels**
towards renewable sources ?

Technology to get Alternative Fuel Vehicles

Traditionally, legislation has increasingly influenced the development of technology and therefore of new products and relative engines following three major requirements:

- Improving the environment - air quality
- Reduction of greenhouse gases (CO₂)
- Diversification of energy sources to reduce dependence on oil.

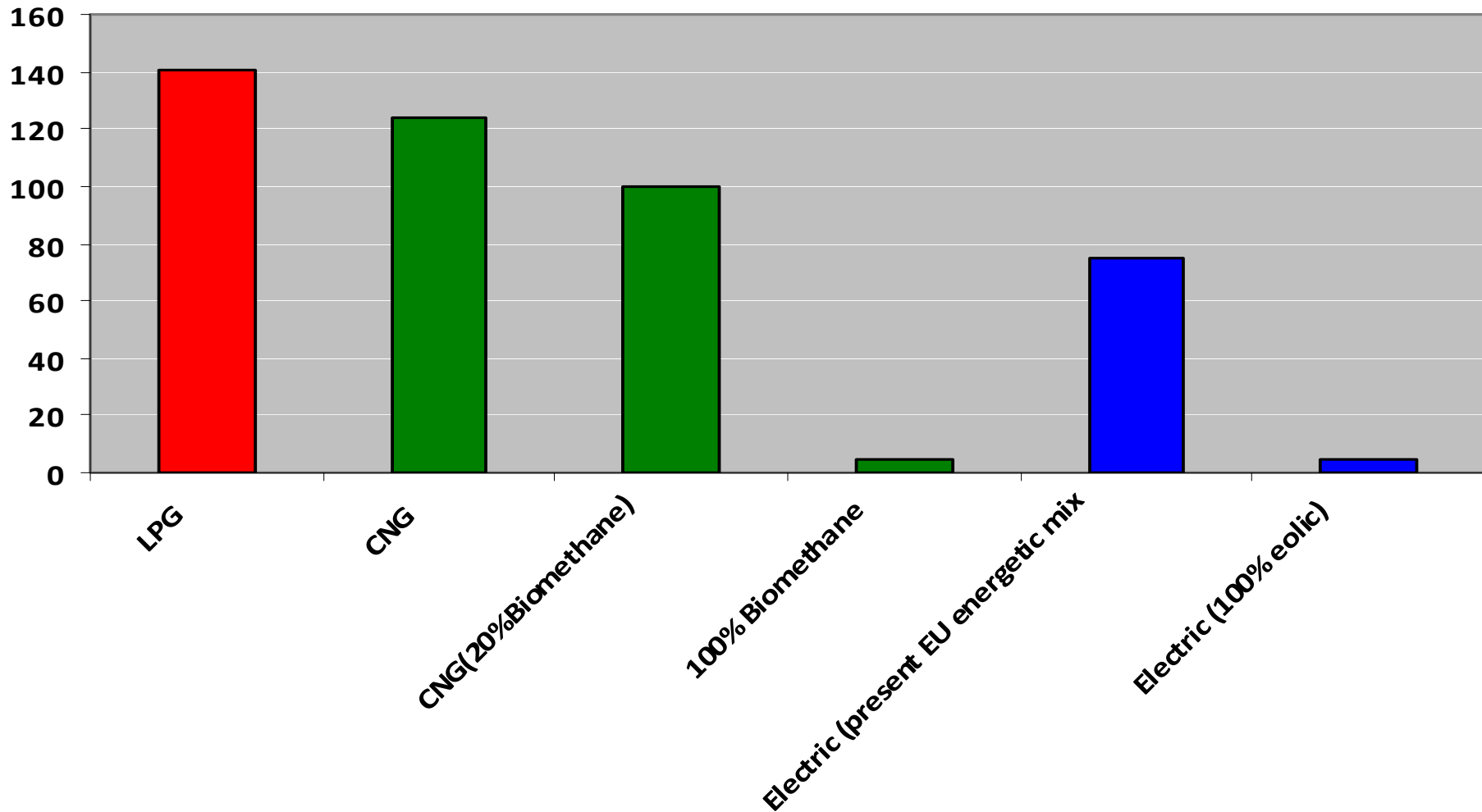
Let's analyze major results.

Electric vehicles

Zero emissions (on the vehicle)
Simpler motor construction
and lower maintenance costs
Advantages from extended
range through Lithium
batteries
Possibility of recharge through
the domestic line

Limited range
Long charging time
Lack of well developed charging
infrastructures
Cost and availability of batteries
Weight and bulkiness of batteries
Recycling problems and costs
Need for incentives
Need for legislation restrictive on the
urban circulation
Pollution due to installations for
electricity production

Emissions Well to Wheel - CO2 g/km Source: Deutsche Energie Agentur - June 2010



Hybrids

Transition to future zero emissions technology

Clean driving

Extended driving range

Availability and fast refueling

Higher consumer acceptance

Plug in as electric engines

Grid connection potential, as home-based battery recharging

Need for incentives

Cost and complexity of two power trains

Component availability

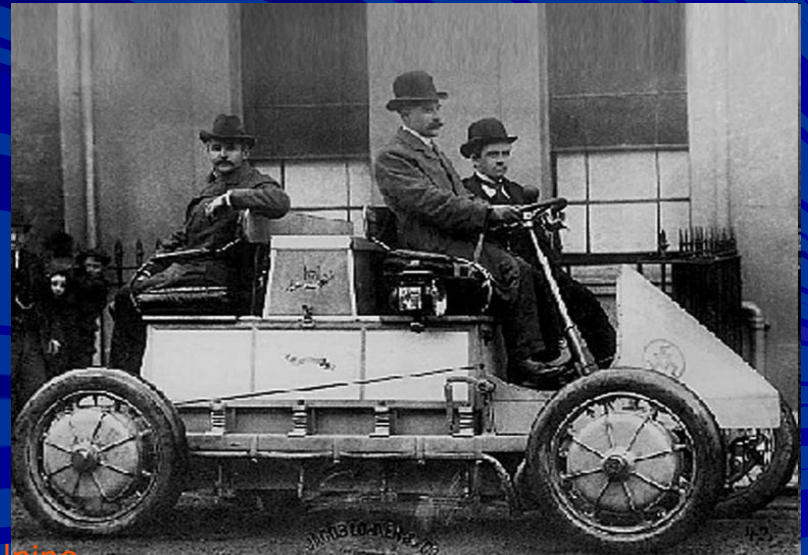
Higher initial cost

Cost of batteries and battery replacement

Added weight

Lack of widespread service infrastructure

The Lohner-Porsche Mixte Hybrid was the first gasoline-electric hybrid automobile



Two recent Electric examples



Nissan Leaf

Chevrolet Volt



The Volt is an electric vehicle that goes further. It is powered primarily by electric charge and switches seamlessly to a gas-powered onboard generator for extended range.

Latest from Geneva Motor Show: pure Electric or Hybrids





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The first and...the group of followers



MODELLO	SEGMENTO	PREZZO	DATA PRESUNTA ENTRATA IN COMMERCIO
TOYOTA	PRIUS PHV	C	2012
	AURIS HYBRID	C	da 21.900 a 23.700
PEUGEOT	ION	D	2010
OPTEL	AMPERA	D	2011
VOLKSWAGEN	JETTA HYBRID	C	2012
	GOLF HYBRID	C	2013
	PASSAT HYBRID	D	2013



MODELLO	SEGMENTO	PREZZO	DATA PRESUNTA ENTRATA IN COMMERCIO
PEUGEOT	ION	499 €/mese*	2010
MITSUBISHI	MIEV	28.990 £**	2010
CITROEN	C-ZERO	35.960 €	2010
MICRO-VETT	E500		2010
RENAULT	KANGOO Z.E.		2011
	FLUENCE Z.E.		2011
	ZOE' Z.E.		2011
NISSAN	LEAF	33.000 €***	2011
VOLVO	C30		2011
SMART	ED	480 €/mese****	2012
TOYOTA	RAV4		2012
CHEVROLET	VOLT	41.000 \$*****	2011
VOLKSWAGEN	Golf blue-e-motion		2013

MODELLO	SEGMENTO	PREZZO €	PREZZO MODELLO A BENZINA
BMW	SERIE 7 ACTIVE HYBRID	F	112.500
	SERIE 7 ACTIVE HYBRID	F	119.300
HONDA	X6 ACTIVE HYBRID	E	107.000
	CIVIC HYBRID 1.4	C	25.300
	CIVIC HYBRID 1.3 DSI-VTEC	C	28.000
	INSIGHT ELEGANCE	C	20.600
	INSIGHT EXECUTIVE	C	21.600
	INSIGHT EXECUTIVE IPILOT	C	24.000
	CR-Z S	C	21.800
	CR-Z SPORT	C	22.800
	CR-Z GT	C	24.300
	CR-Z GT PLUS	C	26.100
CR-Z GT PLUS IPILOT	C	28.100	
LEXUS	GS 450H PLUS	F	67.200
	GS 450H AMBASSADOR	F	74.400
	LS 600H	F	127.100
	LS 600H L	F	137.100
	RX 450H	F	59.500
	RX 450H AMBASSADOR	F	65.300
	RX 450H LUXURY	F	71.500
	RX 450H HI-TECH	F	71.500
	PRIUS 1.8	C	26.500
	PRIUS 1.8 ACTIVE	C	27.700
PRIUS 1.8 EXECUTIVE	C	33.400	

MODELLO	SEGMENTO	PREZZO	DATA PRESUNTA ENTRATA IN COMMERCIO
PEUGEOT	ION	499 €/mese*	2010
MITSUBISHI	MIEV	28.990 £**	2010
CITROEN	C-ZERO	35.960 €	2010
MICRO-VETT	E500		2010
RENAULT	KANGOO Z.E.		2011
	FLUENCE Z.E.		2011
	ZOE' Z.E.		2011
NISSAN	LEAF	33.000 €***	
VOLVO	C30		
SMART	ED	480 €/mese****	
TOYOTA	RAV4		
CHEVROLET	VOLT	41.000 \$*****	
VOLKSWAGEN	Golf blue-e-motion		

*Prezzo di noleggio a lungo termine in Francia.
 **Prezzo di listino in Inghilterra.
 ***Prezzo stimato.
 ****Prezzo di noleggio a lungo termine per le prime cento vetture utilizzate di Roma, Pisa e Milano. I proprietari delle vetture hanno acquistato anche un servizio di ricarica fiat mensile pari a 25 €.
 *****Prezzo di listino in USA.

Fonte: ACI su dati case automobilistiche, 2010

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 *****Prezzo di listino in USA.



Electric or hybrids models

MODELLO	SEGMENTO	PREZZO €	PREZZO MODELLO A BENZINA	
BMW	SERIE 7 ACTIVE HYBRID	F	112.500	99.000 - 113.500
	SERIE 7 ACTIVE HYBRID	F	119.300	105.800 - 120.300
	X6 ACTIVE HYBRID	E	107.000	86.400
HONDA	CIVIC HYBRID 1.4	C	25.300	18.100 - 19.700
	CIVIC HYBRID 1.3 DSI-VTEC	C	28.000	
	INSIGHT ELEGANCE	C	20.600	
	INSIGHT EXECUTIVE	C	21.600	
	INSIGHT EXECUTIVE IPILOT	C	24.000	
	CR-Z S	C	21.800	
	CR-Z SPORT	C	22.800	
	CR-Z GT	C	24.300	
	CR-Z GT PLUS	C	26.100	
	CR-Z GT PLUS IPILOT	C	28.100	
LEXUS	GS 450H PLUS	F	67.200	50.000
	GS 450H AMBASSADOR	F	74.400	62.900
	LS 600H	F	127.100	102.300
	LS 600H L	F	137.100	112.600
	RX 450H	F	59.500	53.100
	RX 450H AMBASSADOR	F	65.300	59.000
	RX 450H LUXURY	F	71.500	65.100
	RX 450H HI-TECH	F	71.500	
TOYOTA	PRIUS 1.8	C	26.500	
	PRIUS 1.8 ACTIVE	C	27.700	
	PRIUS 1.8 EXECUTIVE	C	33.400	

TOYOTA	PRIUS PHV	C		2012
	AURIS HYBRID	C	da 21.900 a 23.700	2010
OPEL	AMPERA	D		2011
VOLKSWAGEN	JETTA HYBRID	C		2012
	GOLF HYBRID	C		2013
	PASSAT HYBRID	D		2013

MODELLO		PREZZO	DATA PRESUNTA ENTRATA IN COMMERCIO
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MITSUBISHI	MIEV	28.990 €**	2010
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*****Prezzo di listino in USA.

Fonte: ACI su dati case automobilistiche, 2010

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Fonte: ACI su dati case automobilistiche, 2010

Biofuels:

Ethanol: Independence from petrol
Mixture at 10% without engine Adjustment and adaptations

Biodiesel: Renewable energy
Mixable with diesel till 20% on the circulating vehicles and 100% on the newest ones.

Biomass: Renewable energies
Use of other transformation and production processes waste
Saving on working, change and production expenses

Cost (except for ethanol derived from sugar cane)

Lack of agricultural areas

Backsliding on agricultural product prices

Limited Distribution (in Europe)

Negative environment effects

Mixture at 100% linked to engine Adjustments and frequent oil changes

Need to document compliance of the emission limits (EU)

Localized production and use

Biofuels

*The Concept that pushed in that direction **USA and Brazil, major users of Ethanol**, is that the use of biofuels would support several major policy objectives:*

- **Energy security.** Biofuels can readily displace petroleum fuels and, in many countries, can provide a domestic rather than imported source of transport fuel, immediately usable on vehicles, without major technical or distribution problems.
- **Agricultural benefits.** Production of biofuels from crops such as corn and wheat (for ethanol) and soy and rape (for biodiesel) provides an additional product market for farmers and brings economic benefits to rural communities.
- **Reductions in greenhouse gas emissions.** Ethanol and biodiesel provide significant reductions in greenhouse gas emissions compared to gasoline and diesel fuel on a “well-to-wheels” basis.

GHG reduction

Biofuels ranking vs. gasoline and diesel



- corn-ethanol and ethanol produced from rye and potatoes appears to provide no greenhouse gas benefits;
- ligno-cellulosic ethanol produced from both grass and wood offers potentially far superior greenhouse gas benefits.
- ethanol produced from whey and biodiesel produced from recycled vegetable oil also show favorable GHG performance .
- fuels providing unambiguous greenhouse gas benefits (over 50% reductions) are ethanol from Brazilian sugar cane, from Canadian sorghum and from sugar beet.
- Good results from Biodiesel from US soy, Malaysian palm-oil and Swiss rapeseed also perform reasonably well with 30-40% reductions of greenhouse gas emissions compared to conventional diesel. Rapeseed biodiesel produced in the European Union performs less well according to the study.

- Green: reduction >50% versus petrol
- Yellow: reduction > 30%
- Orange: reduction < 30%.
- Cross-hatched: production from waste materials or residues

Biofuels in the EU

Point of view of Car Manufacturers

- In favour of biofuels, to achieve levels of CO2 that EU Commission impose, but with an *integrated approach* - also addressing therefore infrastructure flaws, enforcement of traffic law and CO2-related taxation).
- Vehicle technology to achieve CO2 targets costs up to 10 times more than use of biofuels or adoption of adequate driving styles.
- Question is whether is more convenient to increase FFV production (US approach) or blending of all gasoline with 10% ethanol?



- *Technologies and products for the use of biofuels available in all major European Car Manufacturers : newcomer Ferrari...)*

CNG

Alternative to the dependence on the crude oil

Widely available, safer, cleaner and cheaper than petrol

Reduction of 20 / 25% CO2 emissions

Lower fuel consumption (on dedicated engines)

Lower engine noise

Extended lubricant duration

Growth potential for industrial off-highway applications

Not renewable energy source

Limited diffusion of the refueling network

Limited range (commercial vehicles)

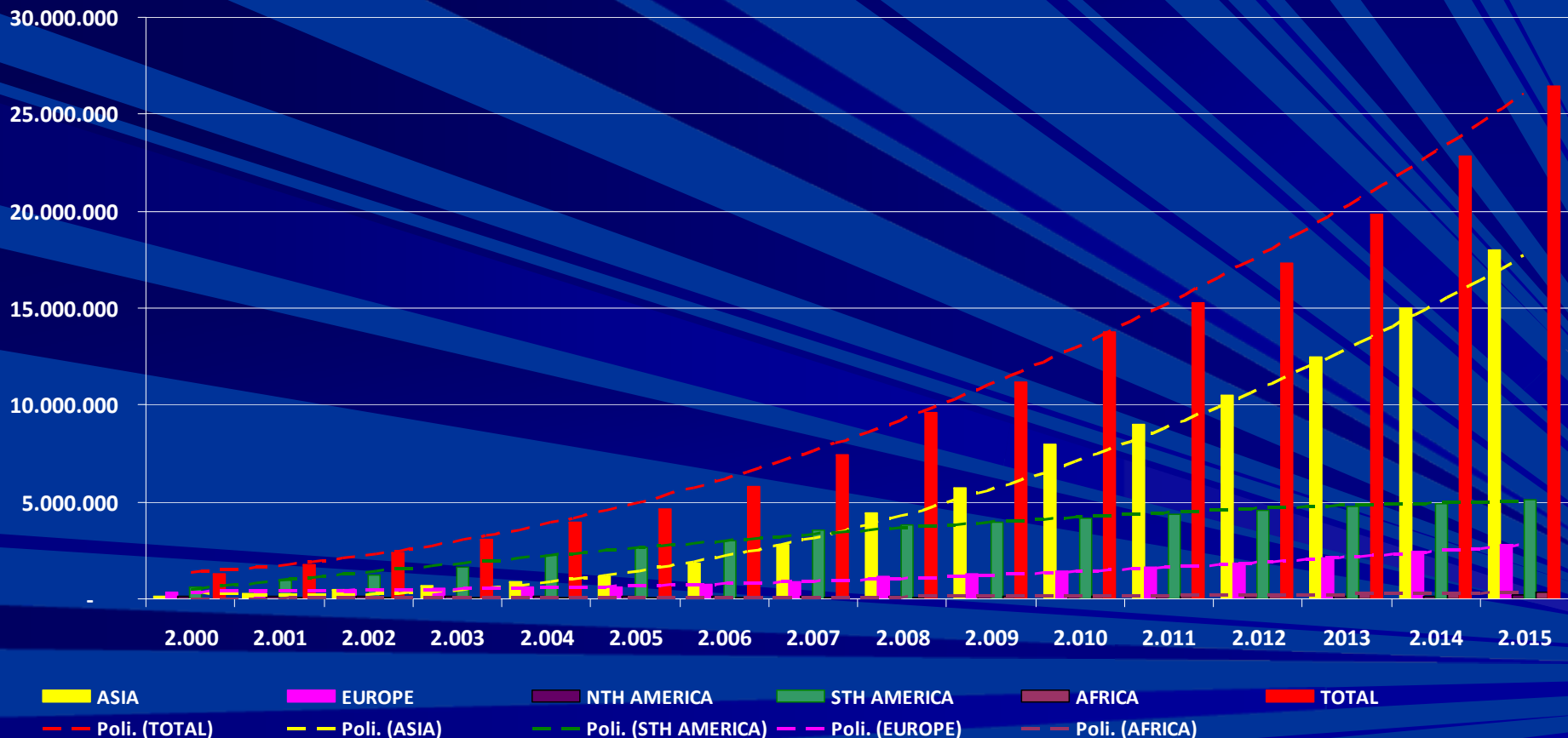
Availability and quality of installation and repair workshops

Negative stereotype on performances

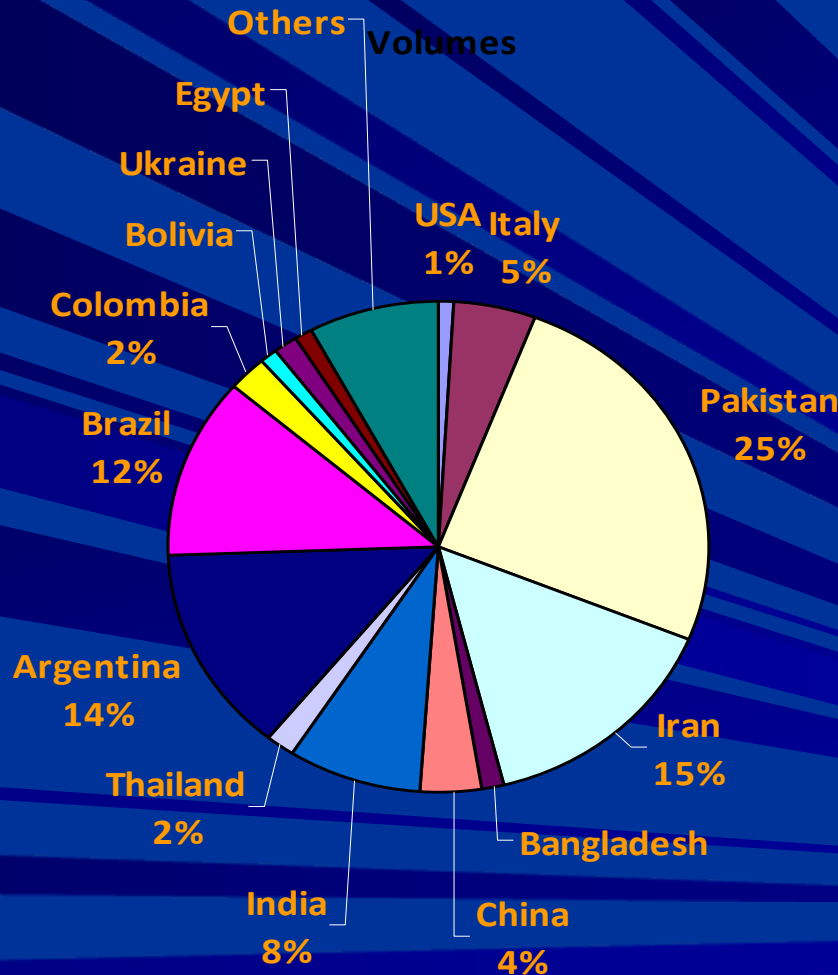
World CNG Running Park

Actual and projected trend to 2015

'000 units Rev GVR February 2011



World CNG Running Park Major Countries dimensions 2010



USA – Gas Fleet

Source: U.S. Department of Energy (published may 2010)



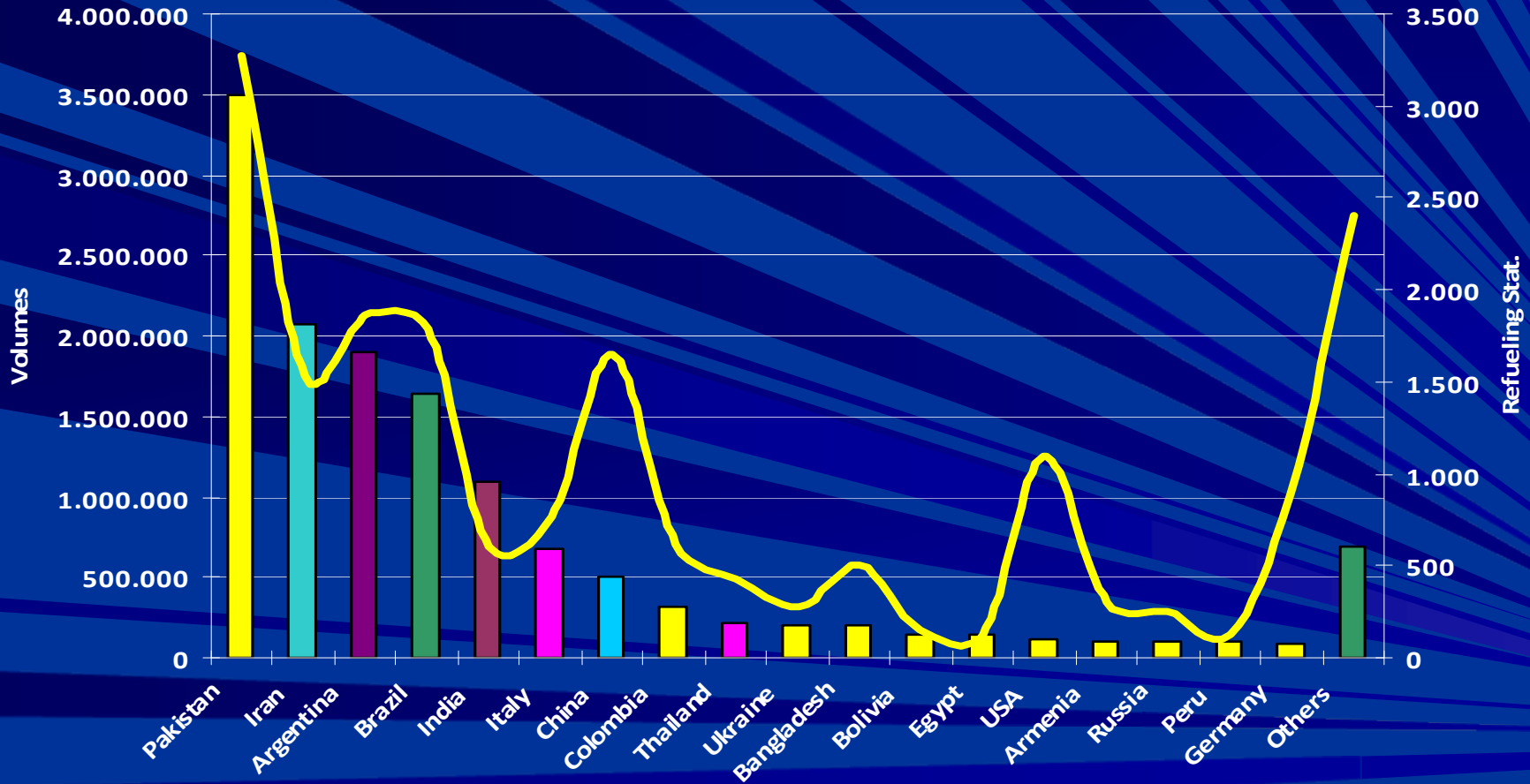
Natural Gas Act should shortly pass in U.S. Senate

- ✓ **The Senate version of the NAT GAS Act will provide incentives for consumers, commercial truckers, and state and local governments to aggressively move from using vehicles burning polluting, imported gasoline and diesel, to vehicles running on clean, domestic natural gas.**
- ✓ **The Natural Gas Act could improve the environment, increase US energy independence, and fuel the US economy by stimulating the use of cleaner alternative fuels such as compressed natural gas (CNG) and liquefied natural gas (LNG). The environmental benefits of converting to natural gas include reducing carbon monoxide and carbon dioxide vehicle emissions by over 90% and 25%, respectively, reducing nitrogen oxide emissions by 35% to 60%, and decreasing the toxic and carcinogenic compounds in tailpipe emissions.**
- ✓ **Natural gas is in abundant supply in the US and Canada.** In the US, natural gas reserves are currently estimated at 200 years. No risks therefore of limits in supply, as could happen for petrol.
- ✓ **First Target should be Heavy Trucks Federal Fleet and Big Companies Fleets .**

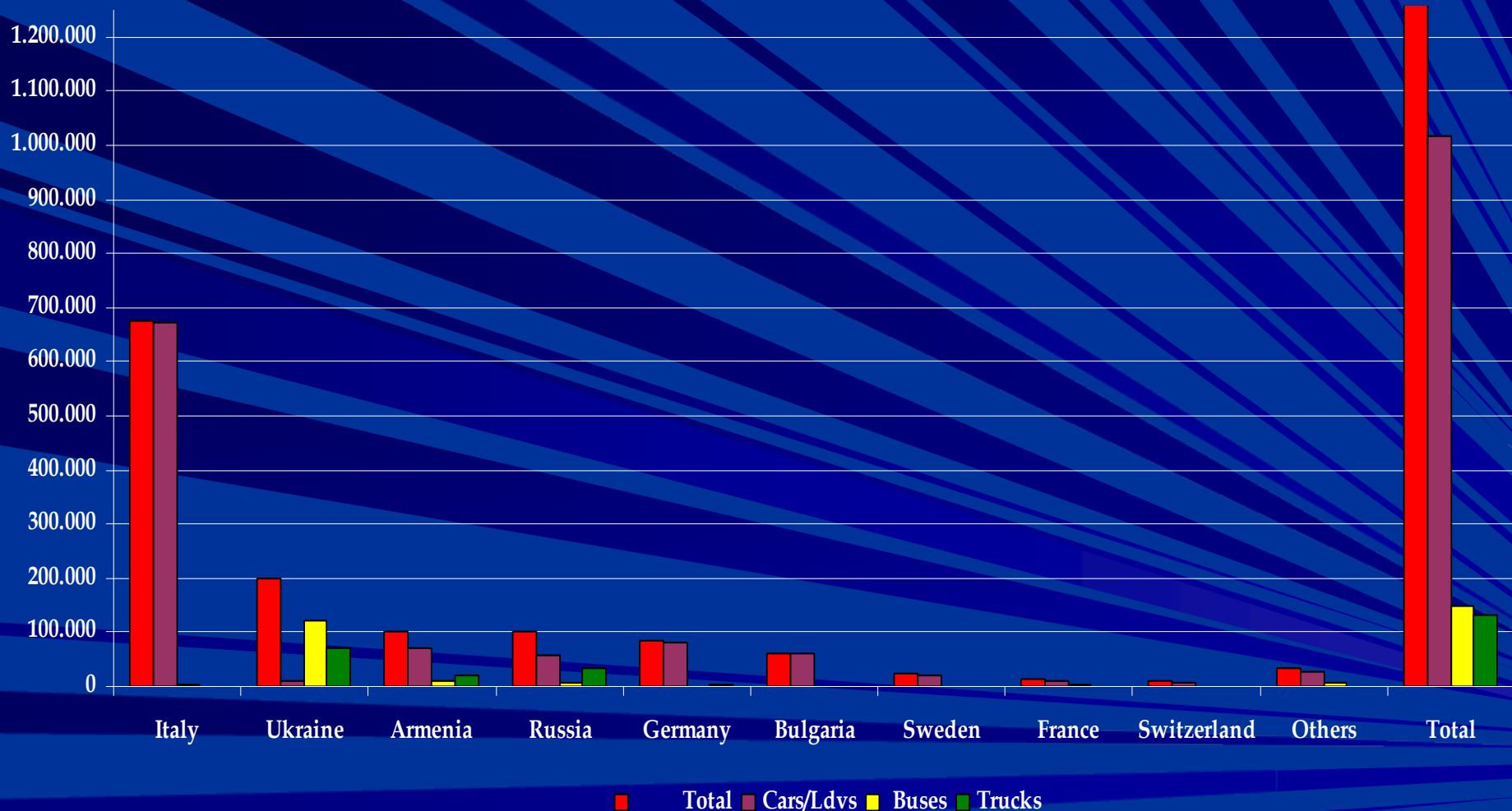
World CNG 2010

Running Park and refueling stations by major countries

source GVR Feb. 2011

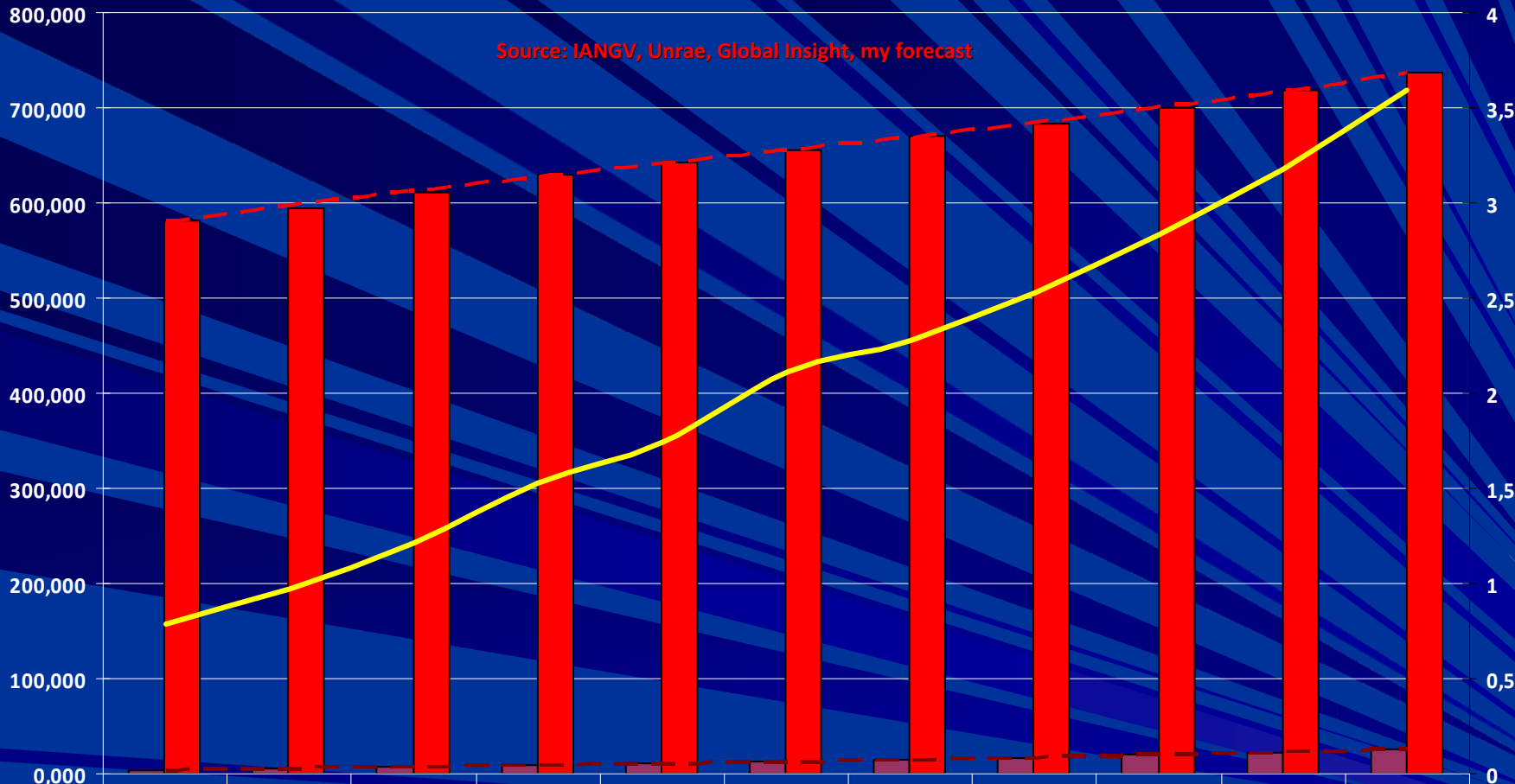


CNG Running park in Europe



CNG Share on World running Park

Source: IANGV, Unrae, Global Insight, my forecast



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
NGV Parc	4,626	5,799	7,412	9,612	11,197	13,800	15,300	17,300	19,800	22,830	26,460
Total Parc	582	595	612	630	642	655	670	684	700	718	737
% share NGV	0,79	0,97	1,21	1,53	1,74	2,11	2,28	2,53	2,83	3,18	3,59

LPG

Lower emission and reduced CO2

Low tax burden on final price (not sure in the next future)

Higher availability of refueling stations compared to CNG and more widely distributed network (in several Countries)

Not renewable energy source

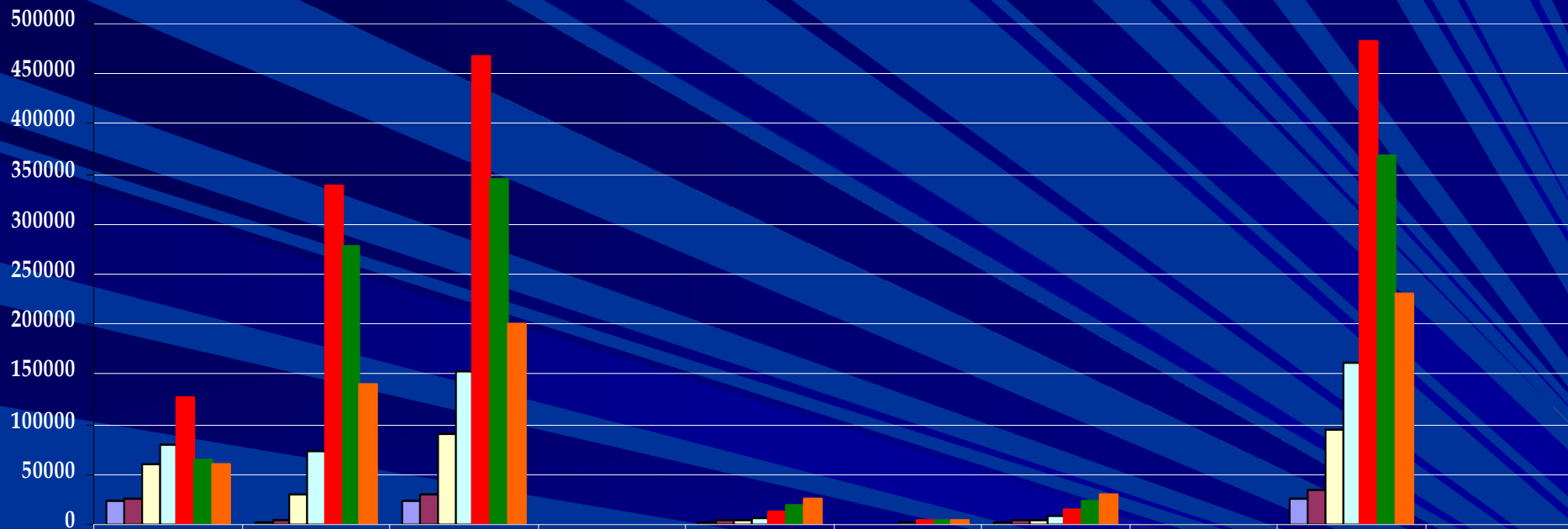
Depends on oil companies policy

Higher consumption (in volume) compared to petrol engines

Italy – Gas Vehicles registrations

2005 – 2010 and projections to 2015

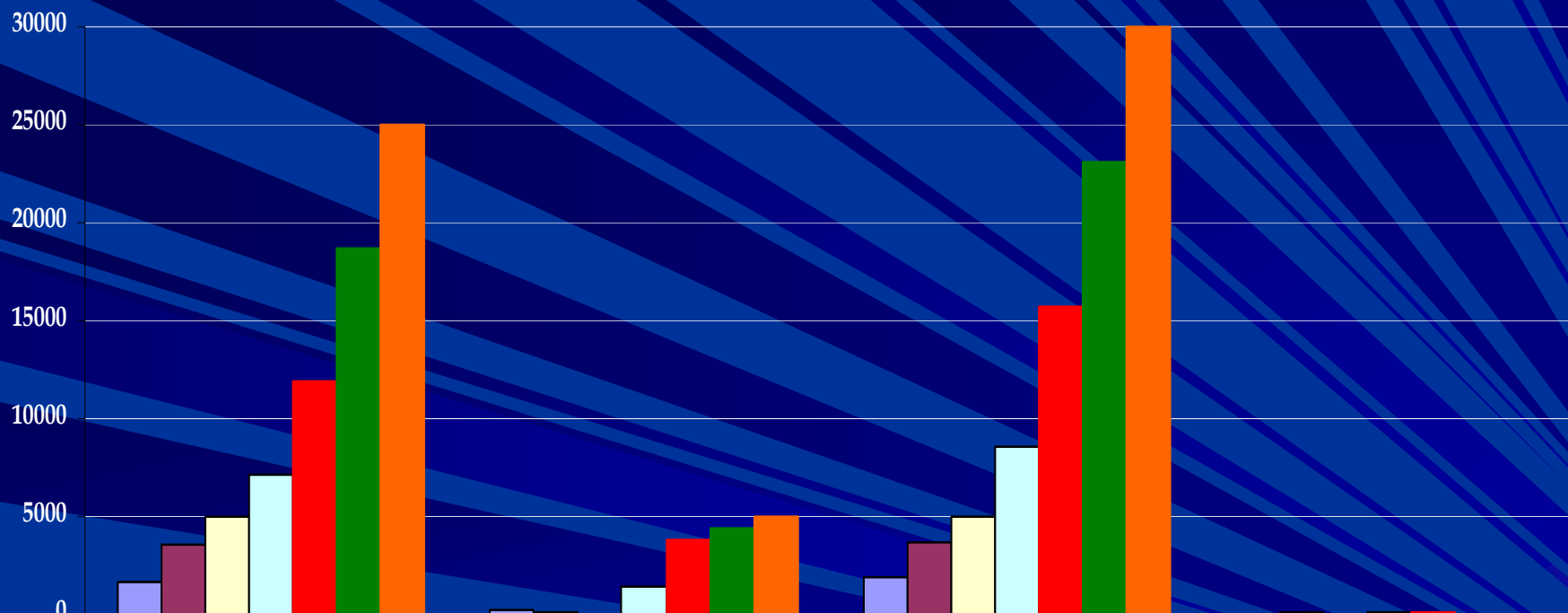
Source: ACI-ANFIA



	CNG	LPG	Total cars	% increase	CNG	LPG	Total C.V.<3,5	% increase	Total GAS	% increase
■ 2005	22679	1825	24504		1688	203	1891		26395	
■ 2006	26619	3479	30098	22,8	3606	117	3723	73,1	33821	28,1
■ 2007	60658	29991	90649	201	4954	3	4957	33,1	95606	182,7
■ 2008	79154	74231	153385	69,2	7172	1405	8577	64,1	160956	68,4
■ 2009	127836	339295	467131	304,5	11940	3779	15719	88,5	482461	299,7
■ 2010	65473	279030	344503	-26,3	18694	4359	23053	46,7	367556	-23,8
■ 2015	60000	140000	200000	-42	25000	5000	30000	30,1	230000	-37,4

Italy - CNG & LPG Light Commercial vehicles

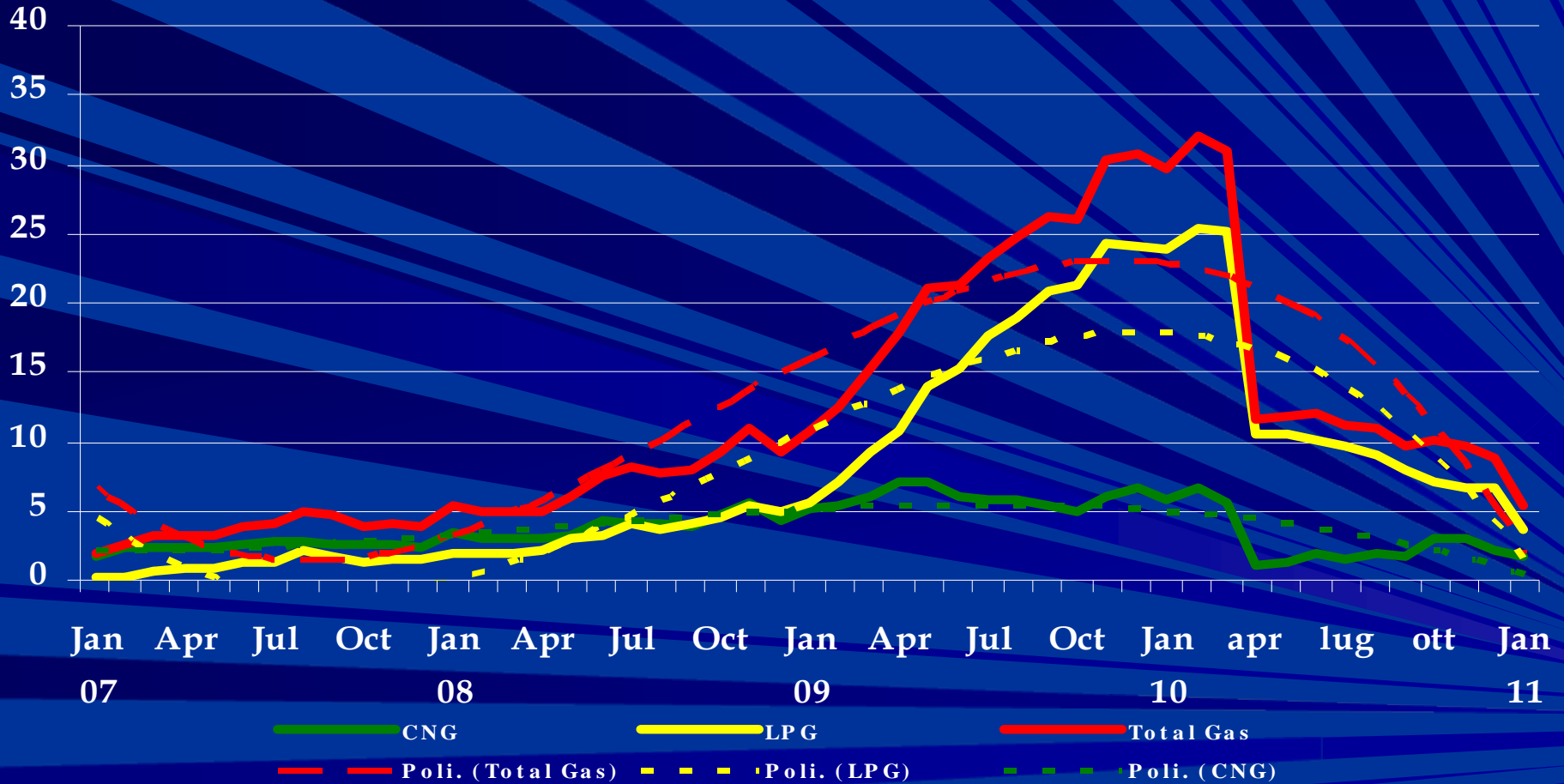
Source Unrae



	CNG	LPG	Total C.V.	% increase
■ 2005	1688	203	1891	
■ 2006	3606	117	3723	73,1
■ 2007	4954	3	4957	33,1
■ 2008	7172	1405	8577	64,1
■ 2009	11940	3779	15719	88,5
■ 2010	18694	4359	23053	46,7
■ 2015	25000	5000	30000	30,1

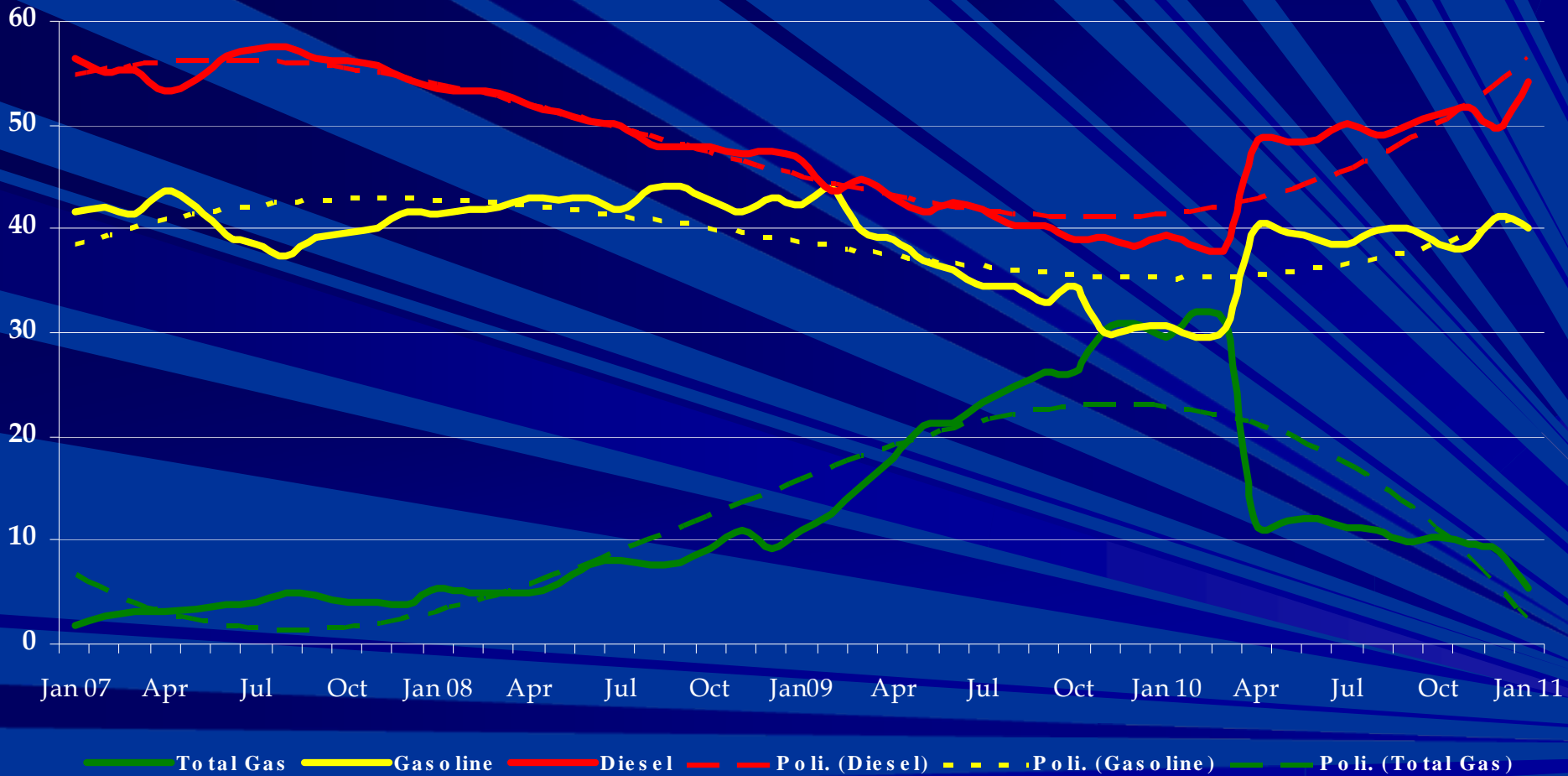
Italy - CNG & LPG Vehicles Market share

Monthly shares since January 2007 source: UNRAE



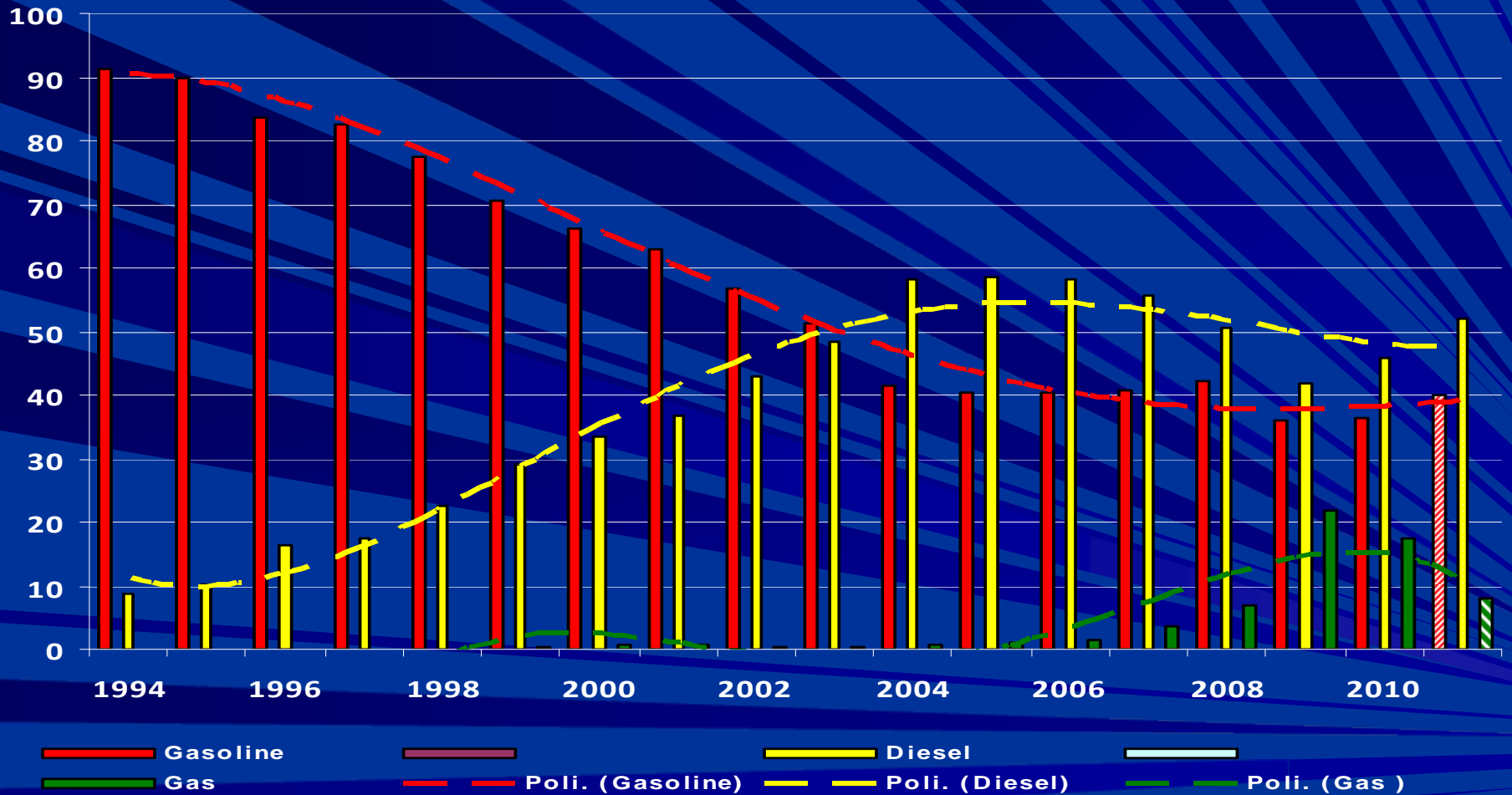
Italy – Registration volumes by type of fuel

monthly data since 2007 Source: Unrae



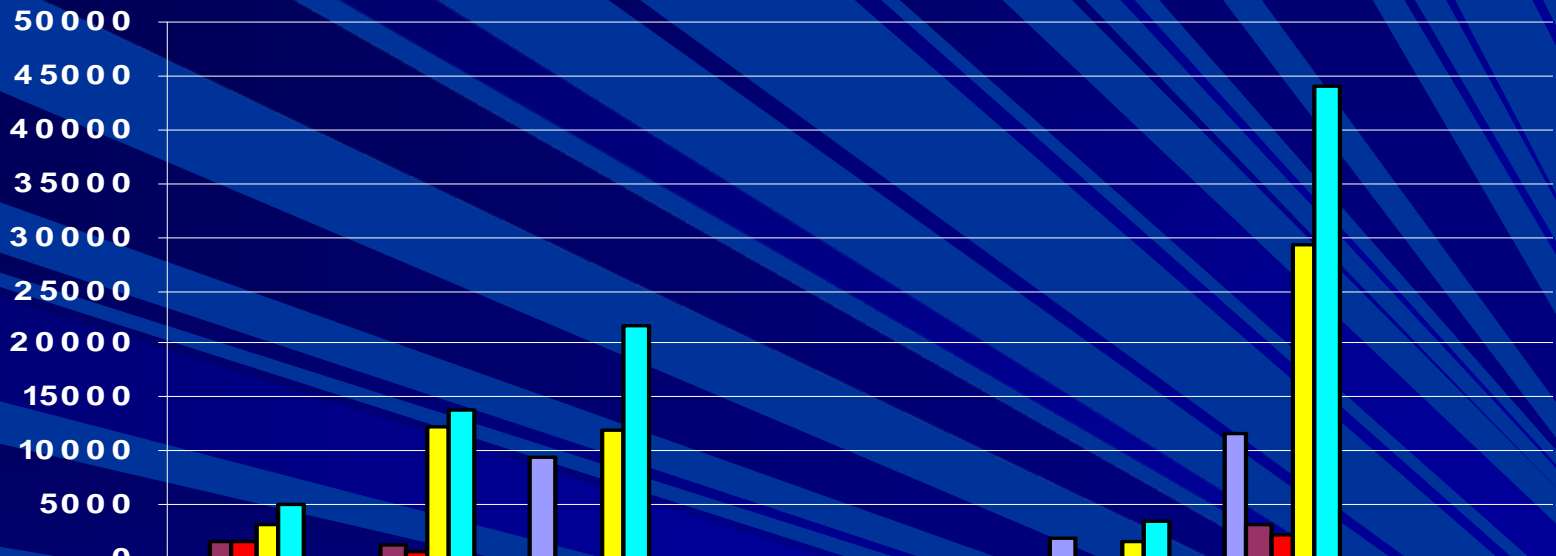
Italy – Registration volumes by type of fuel

1993 – 2010 (2011 forecast)



Alternative Fuel Vehicles (AFV) 2010

(thousand units) CSS Revision March 2011

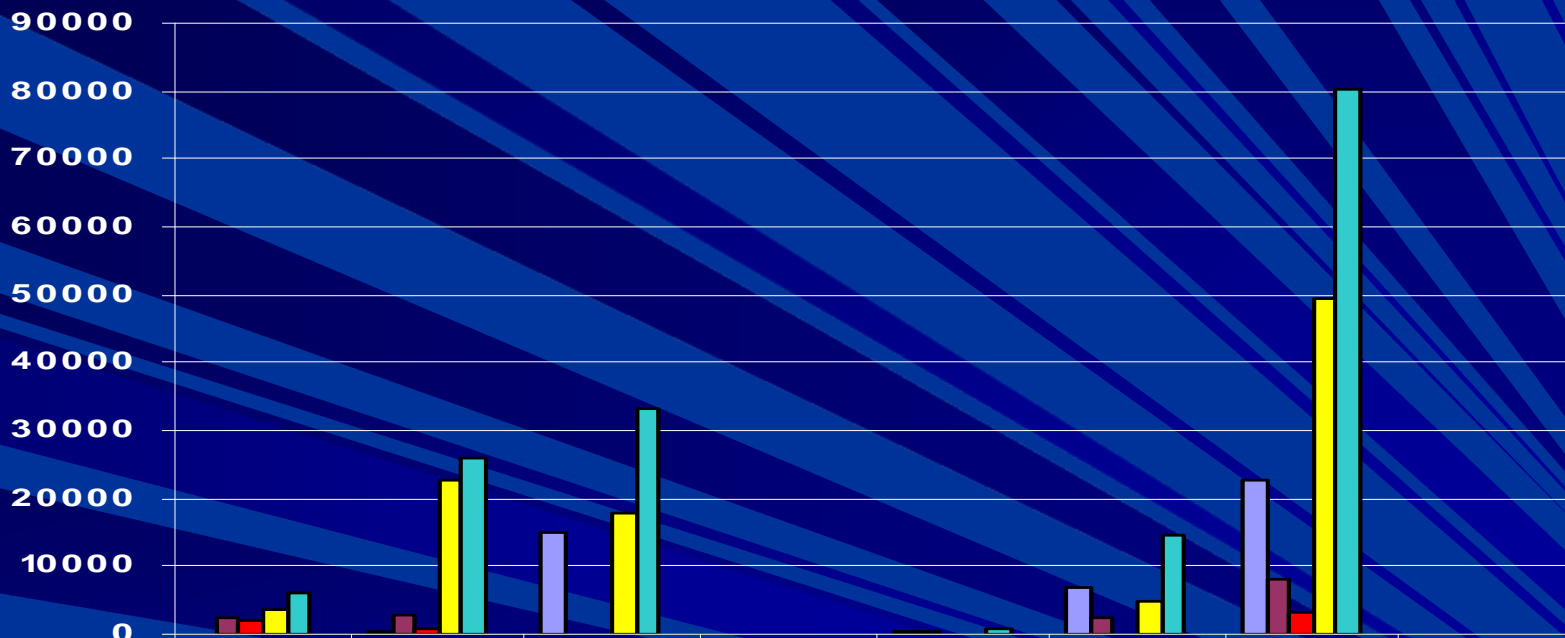


	LPG	CNG	Etan	b.dies	Elet	Hybs	Total	% on R.Park
■ USA	150	110	9 500	5	65	1900	11730	8,4
■ Europe	1600	13 20	100			150	3 170	1,1
■ (Italy)	1500	6 70				25	2 195	6,5
■ Rest of the world	3 250	12 370	12 000			1500	29 120	12,4
■ Total	5000	13 800	21 600	5	65	3 550	44 020	6,7
■ % A. fuels	11,4	31,3	49		0,2	8,1	100	

Alternative Fuel Vehicles (AFV)

2015

(thousand units) CSS revision March 2011

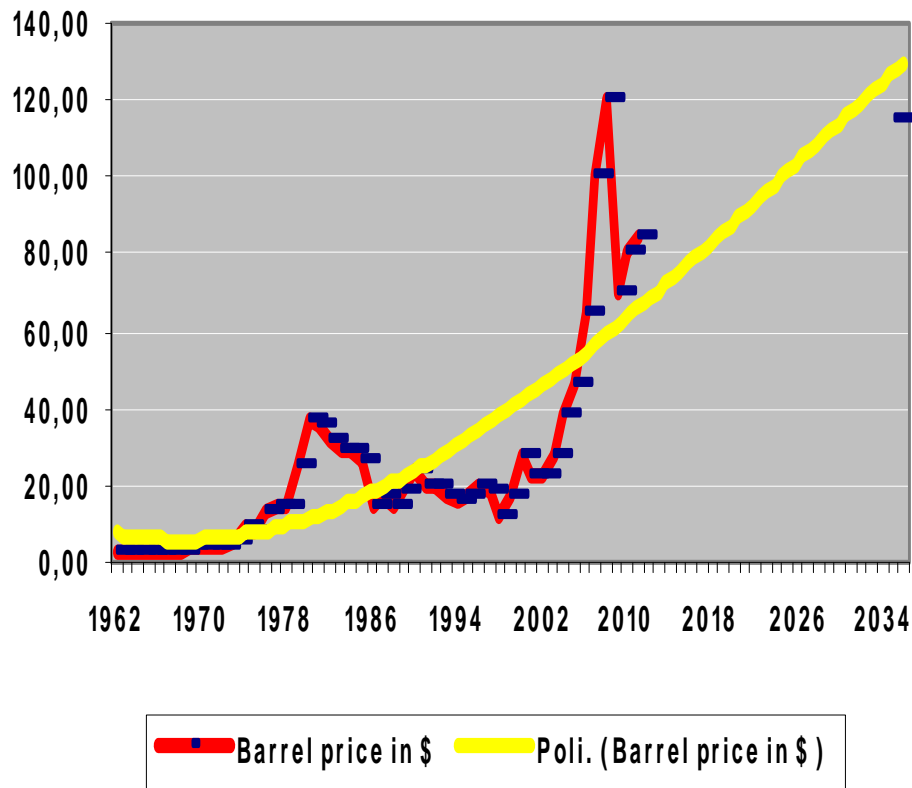


	LPG	CNG	Ethan	B dies	Electr	Hybr	Total	% on Park
■ USA	200	250	15000	5	400	7000	22855	16,3
■ Europe	2300	2800	200	20	300	2500	8120	2,7
■ (Italy)	2030	906		4	5	100	3045	9
■ Rest of world	3500	22750	18000		100	5000	49350	16,1
■ Total	6000	25800	33200	29	805	14500	80334	10,9
■ % on Tot AFV	7,6	32,1	41,3		1	18	100	

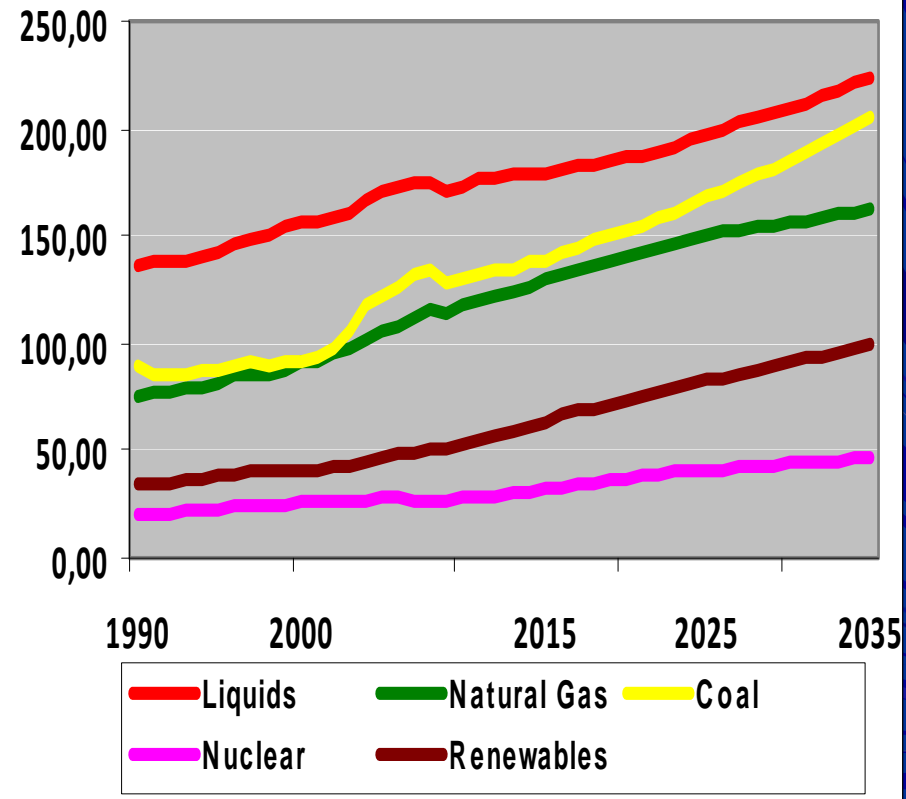
Energy data


Source: IEA 2011

Petrol price Trend in \$



Energy sold in the world by type of fuel - 1990-2035 - quadrillion BTU



An aerial photograph of a winding asphalt road that curves sharply to the left. Two large trucks are driving on the road, one in front of the other. The road is bordered by a dark green forest on the right side. The overall scene is captured from a high angle, showing the curvature of the road and the surrounding landscape.

Thanks!
...and have a nice
journey to success!