

Growth in Chinese PVC – Is it sustainable?

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Who are we?

- **Harriman Chemsult** was established in 1985 and is widely recognised as the world's leading authority on chlor-vinyl markets. In 2006 it became part of the Access Intelligence group.
- We publish weekly and monthly newsletters, periodic multi-client reports, and also undertakes single-client consultancy work.
- We have recently published reports on 'PVC in China', 'Chlor-Alkali in China' and 'HCl in Europe' – global reports on soda ash and PVC will follow.
- Our price series are highly respected and widely used as market indexes in sales contracts for a proportion of the world's chlor-vinyl products.

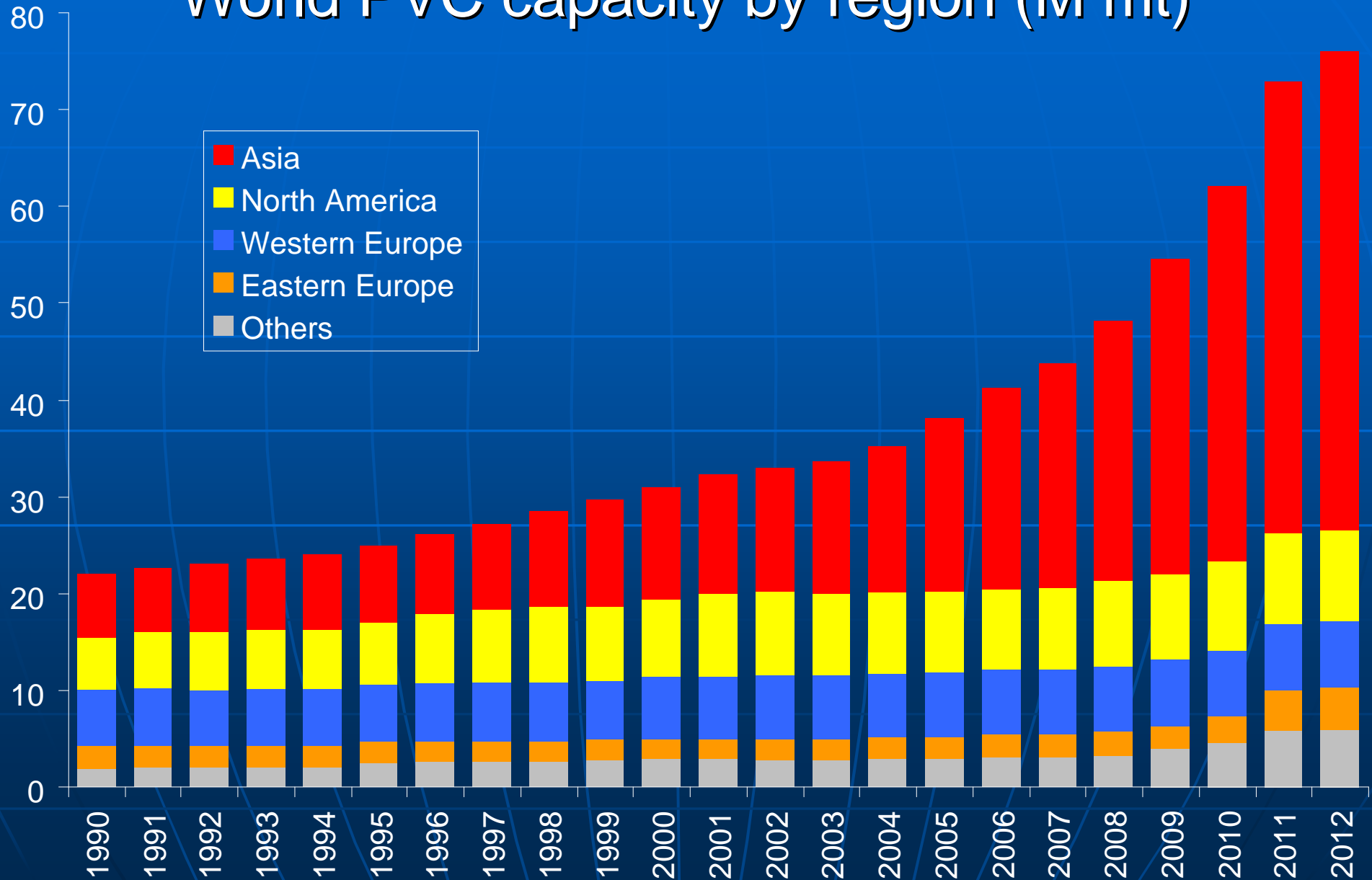


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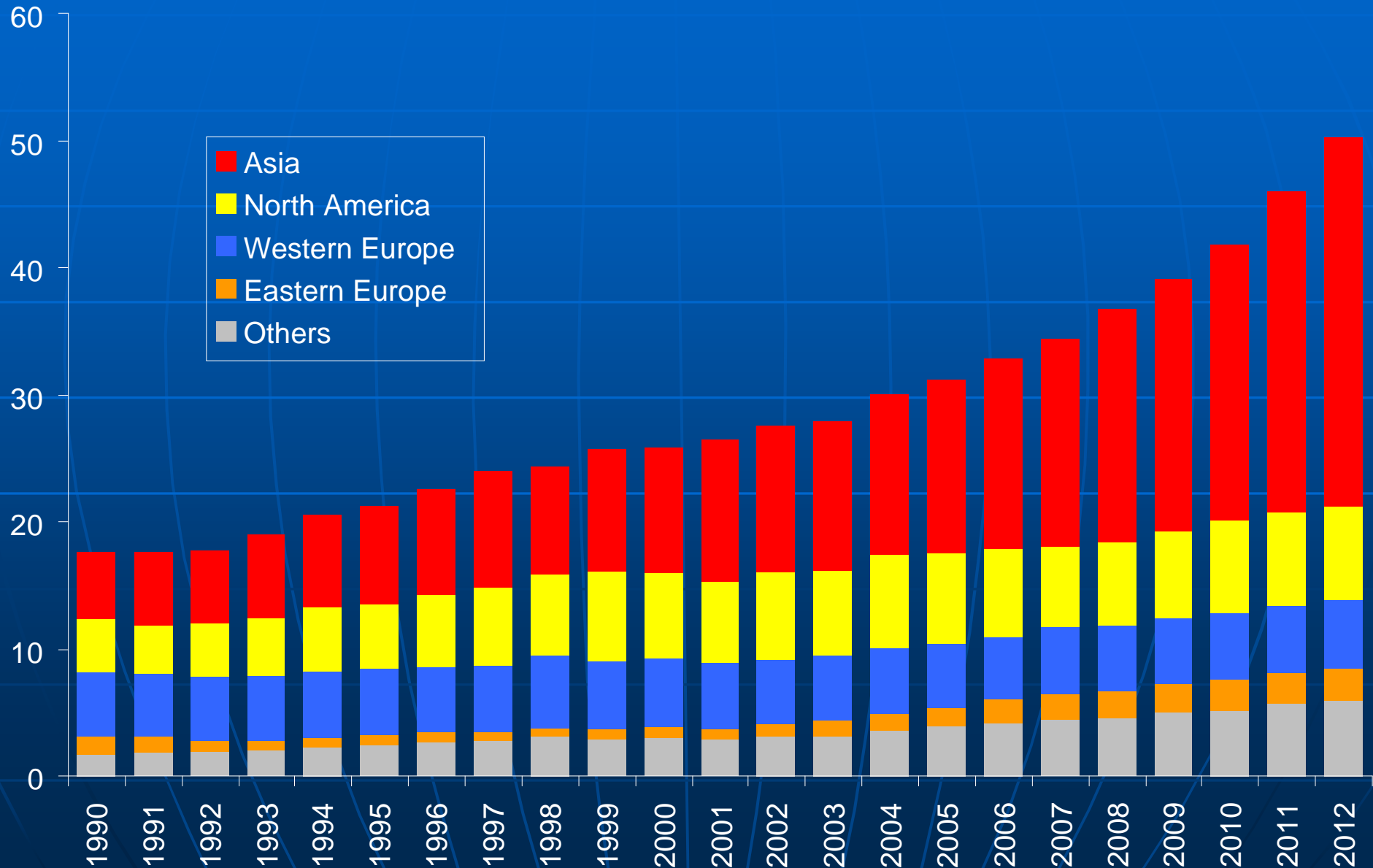


World PVC capacity by region (M mt)



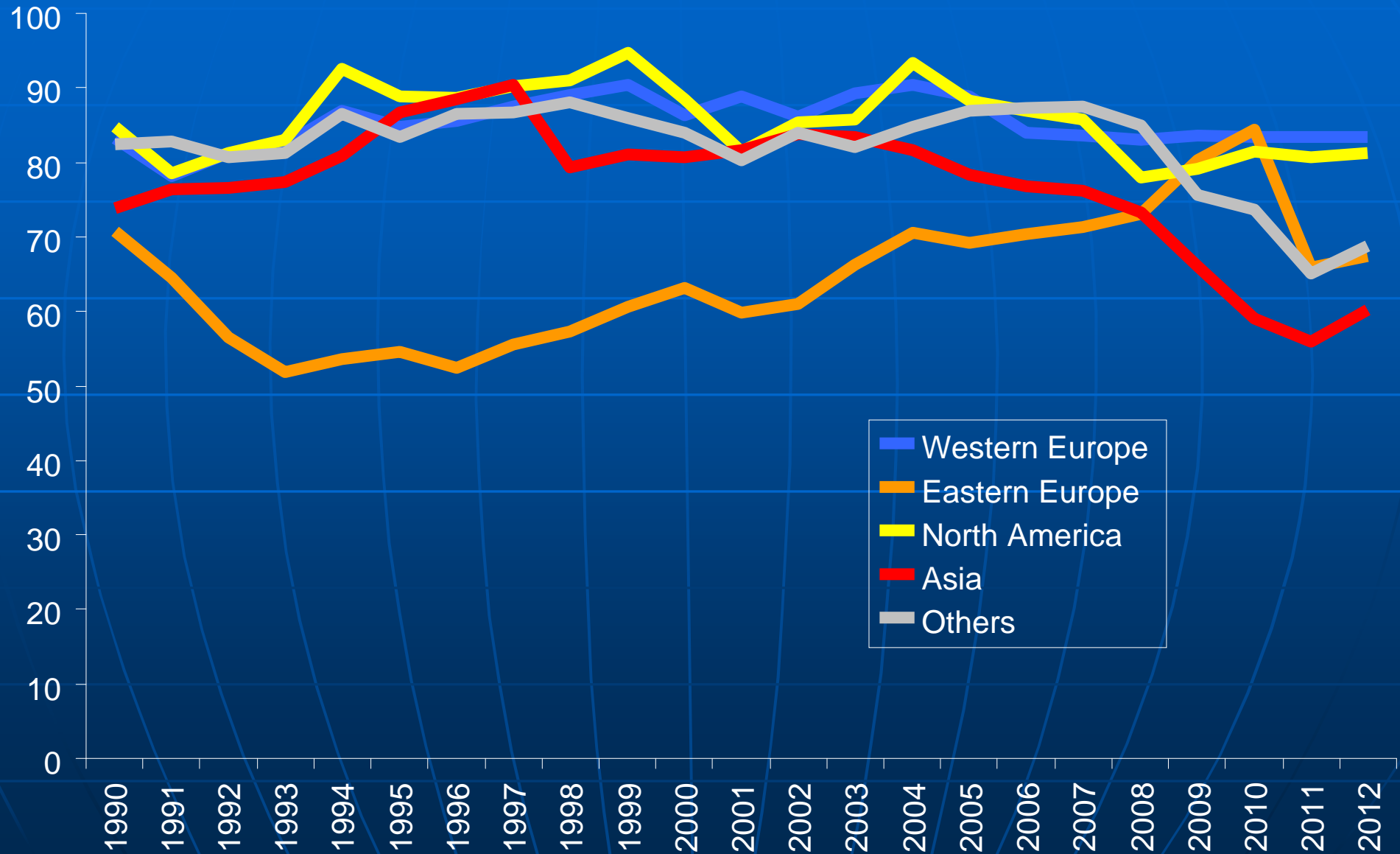


World PVC demand by region (M mt)





World capacity utilisation (%)



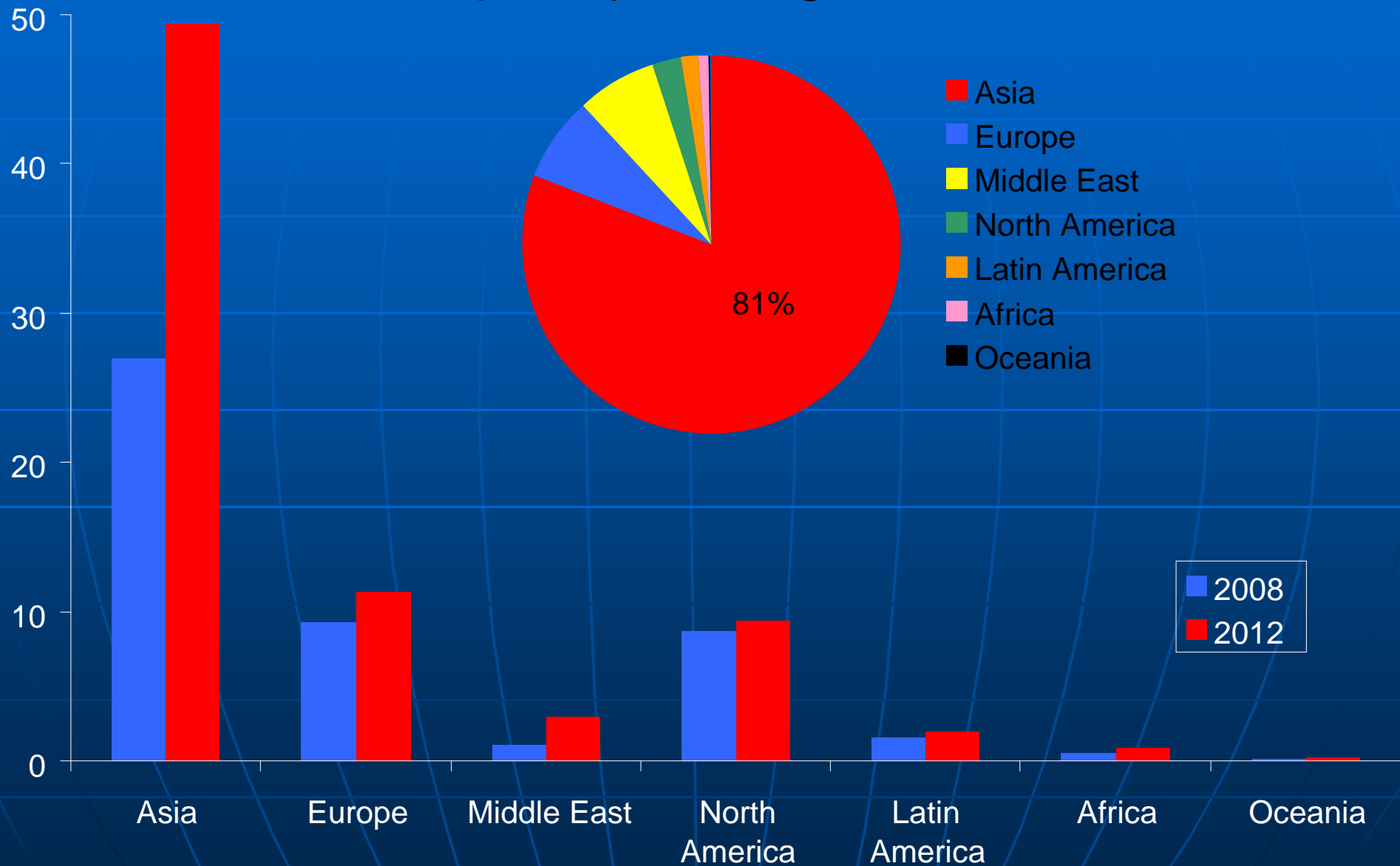


PVC annual growth rate

	2000-2005	2005-2010
Western Europe	-1.3	0.3
Eastern Europe	10.8	5.0
China	13.4	7.5
Asia Pacific (excluding China)	-0.1	2.0
North America	1.4	0.0
Latin America	1.0	1.5
Middle East	9.5	4.0
Total	3.7	3.25

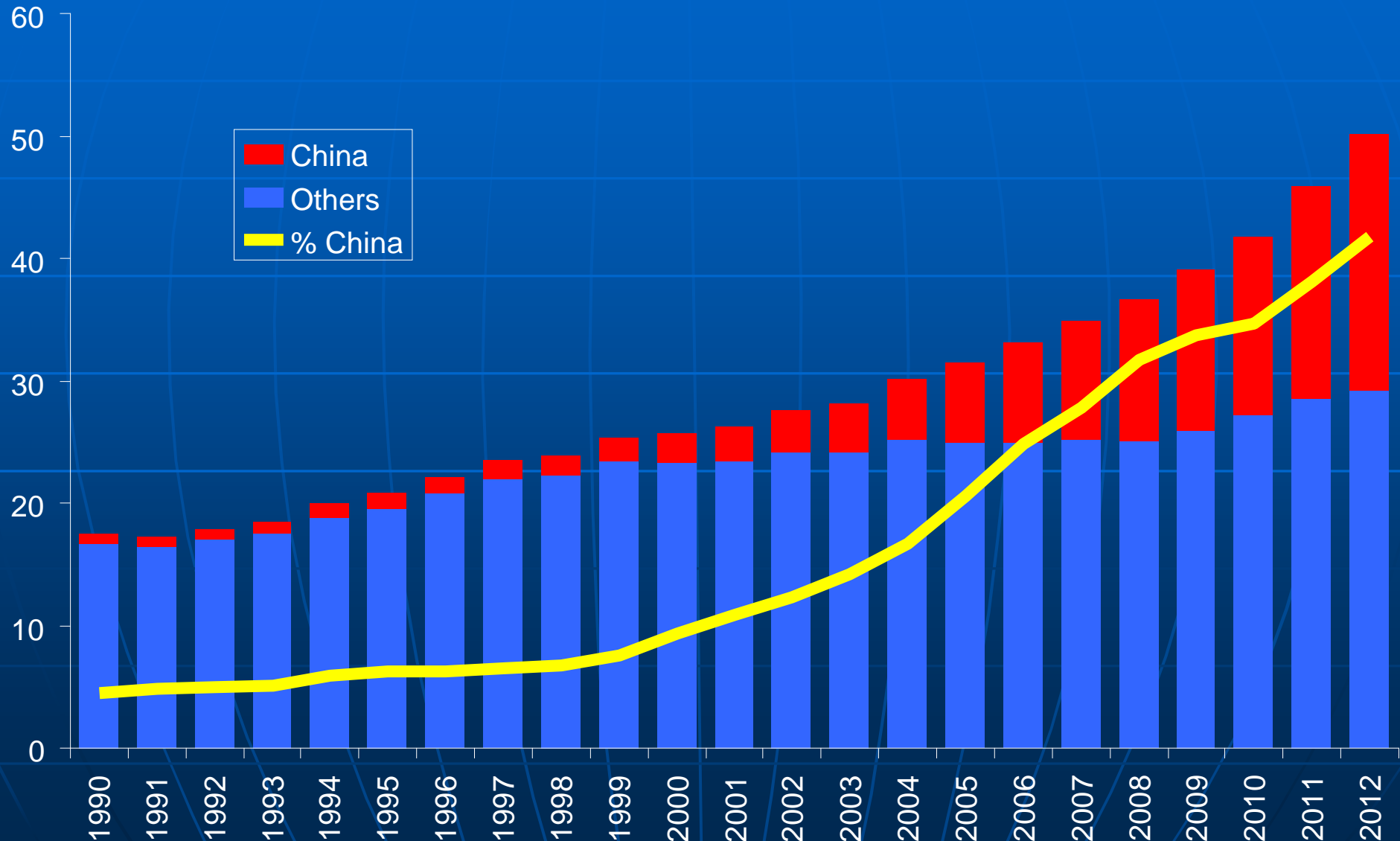


Net PVC capacity change, 2008 to 2012



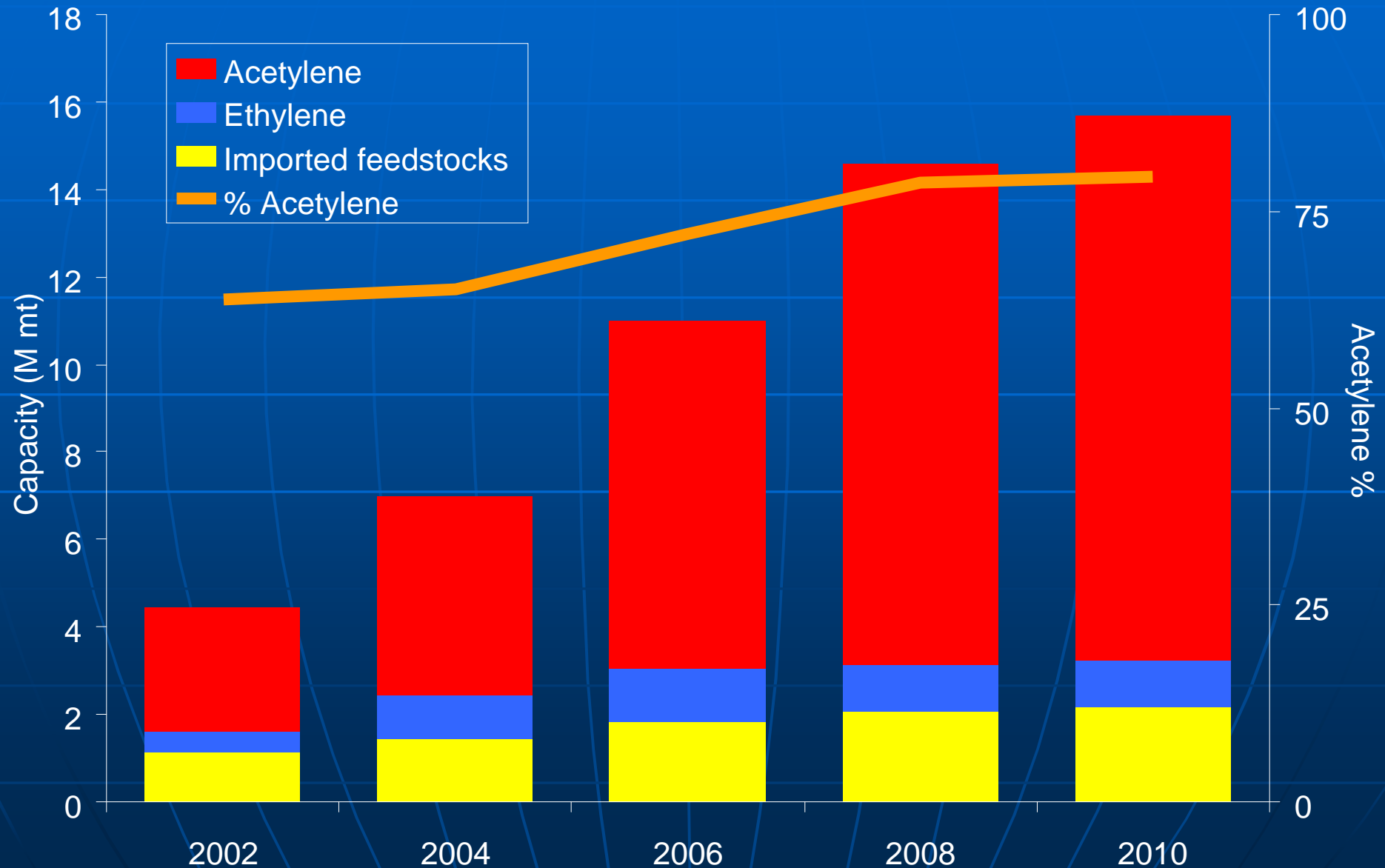


Chinese PVC output in a global context (M mt)



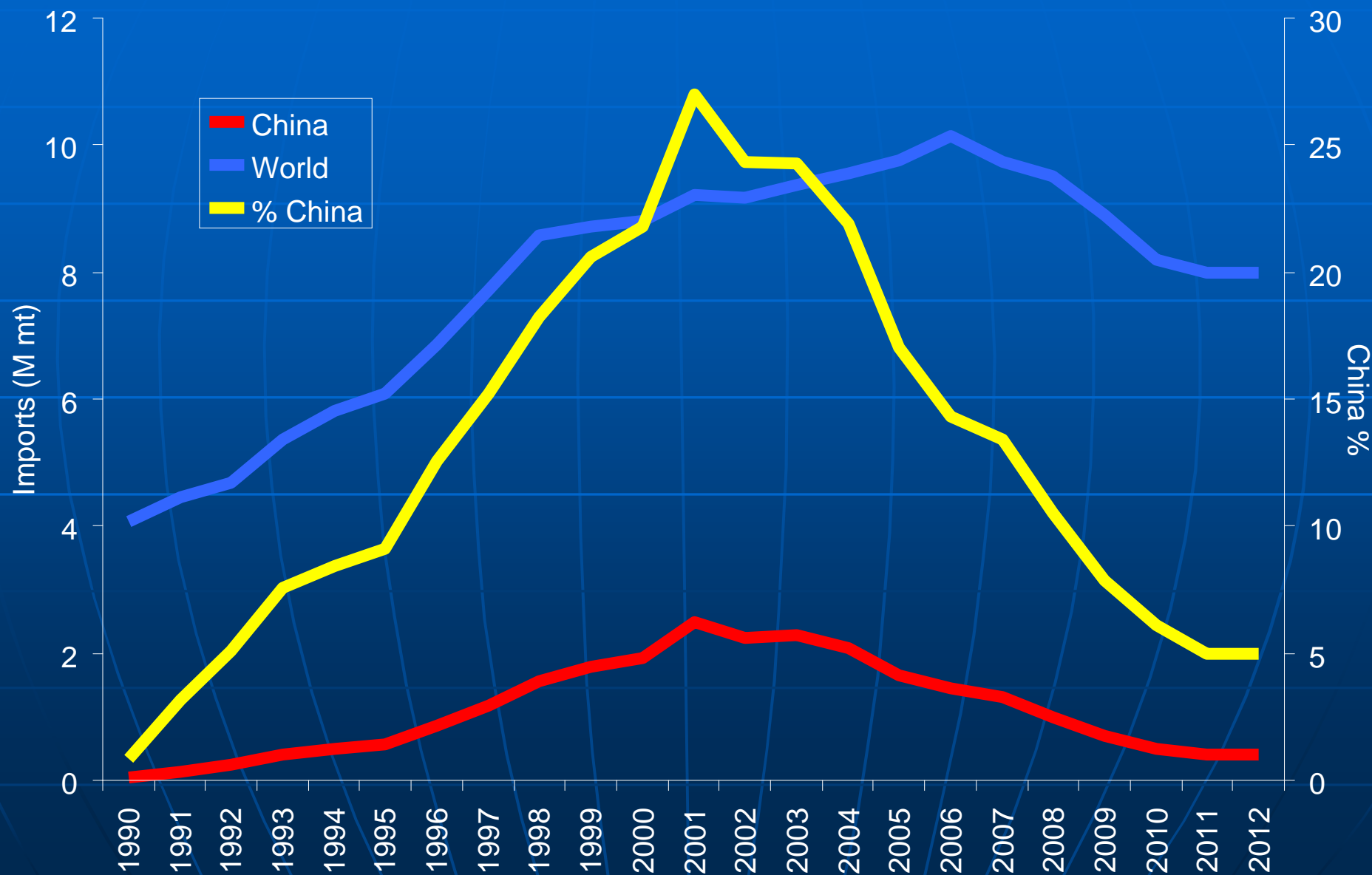


Chinese PVC capacity by type (M mt)



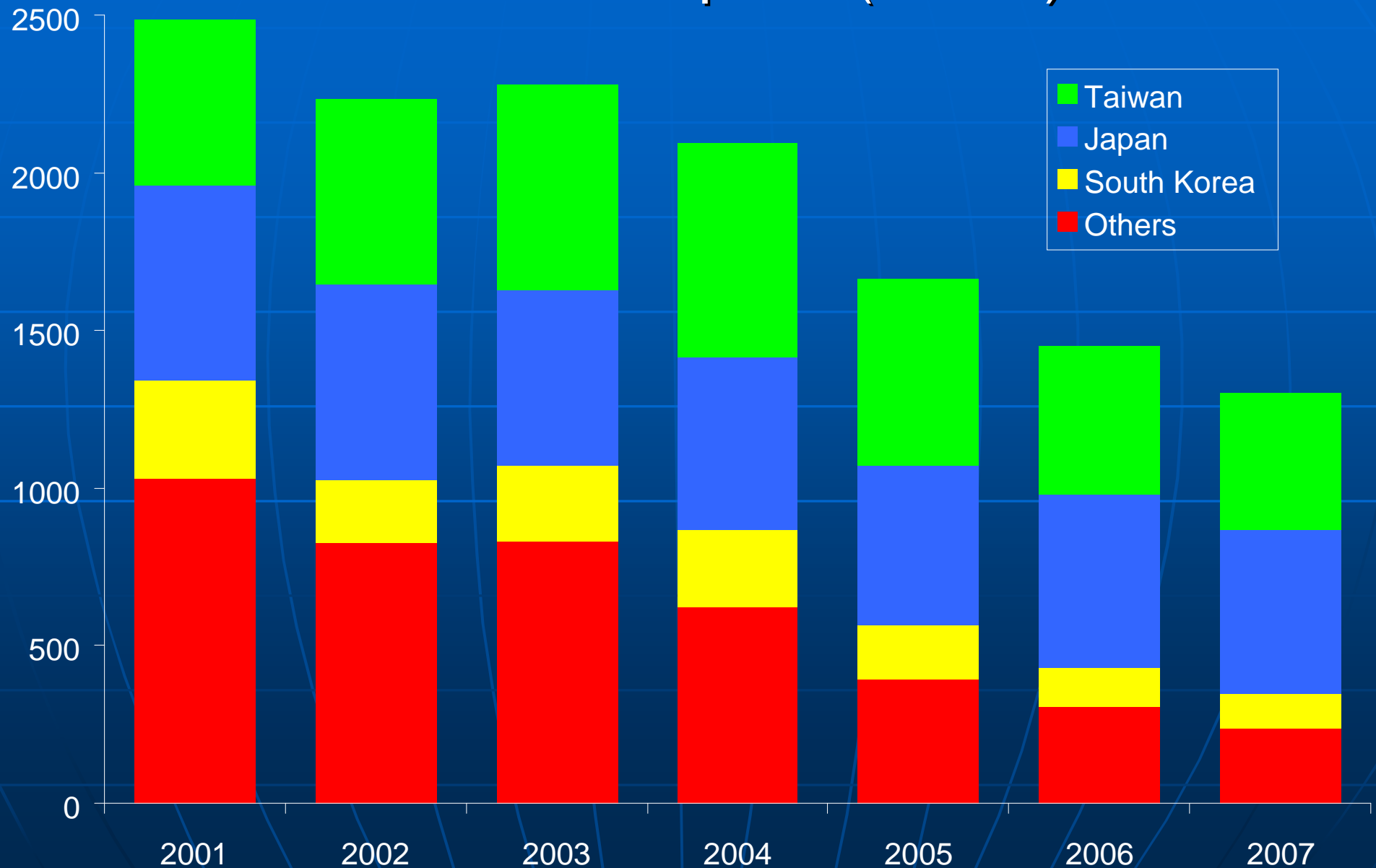


Importance of China to global PVC trade



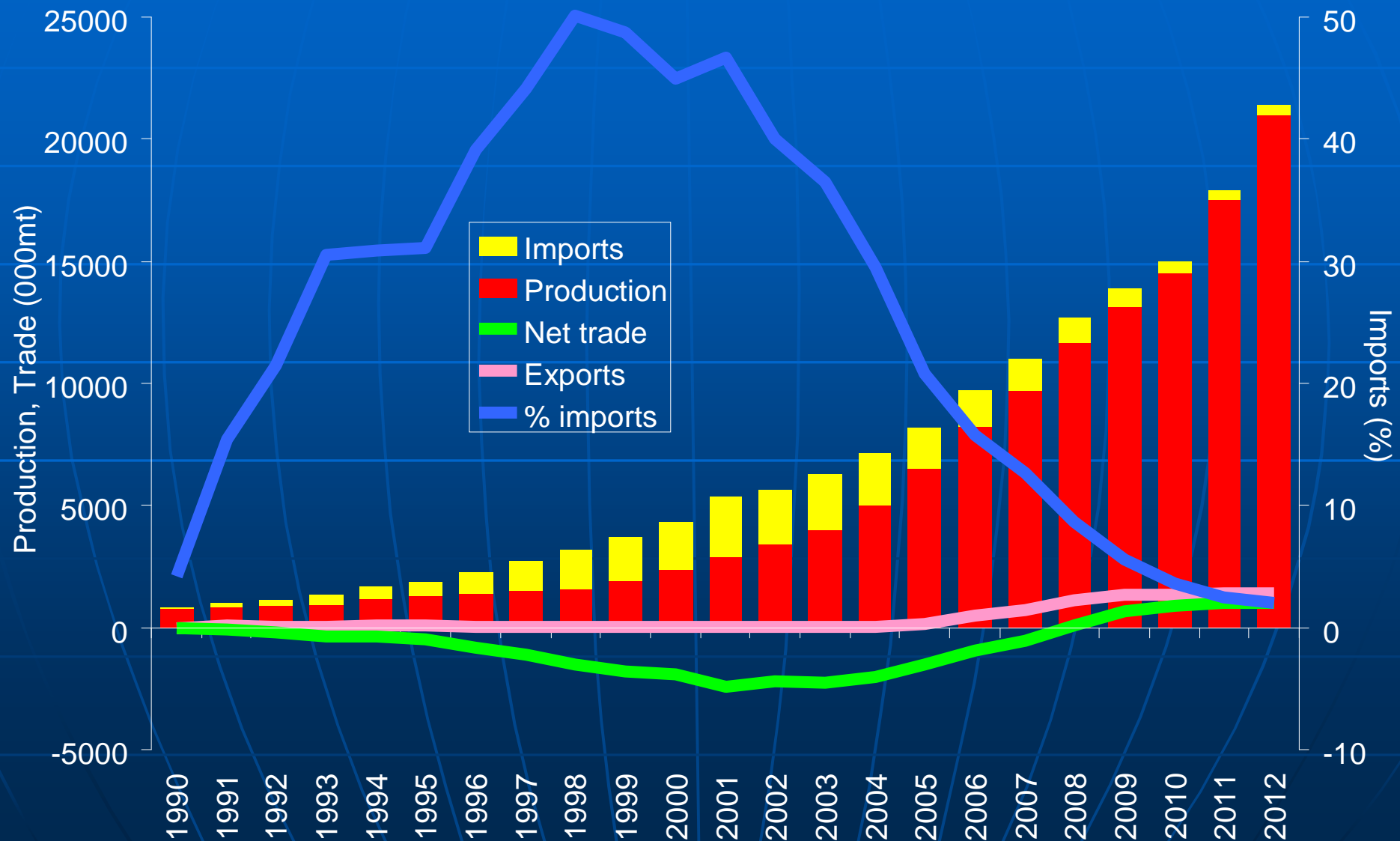


China PVC imports (000mt)





China – Approaching self-sufficiency (000mt)



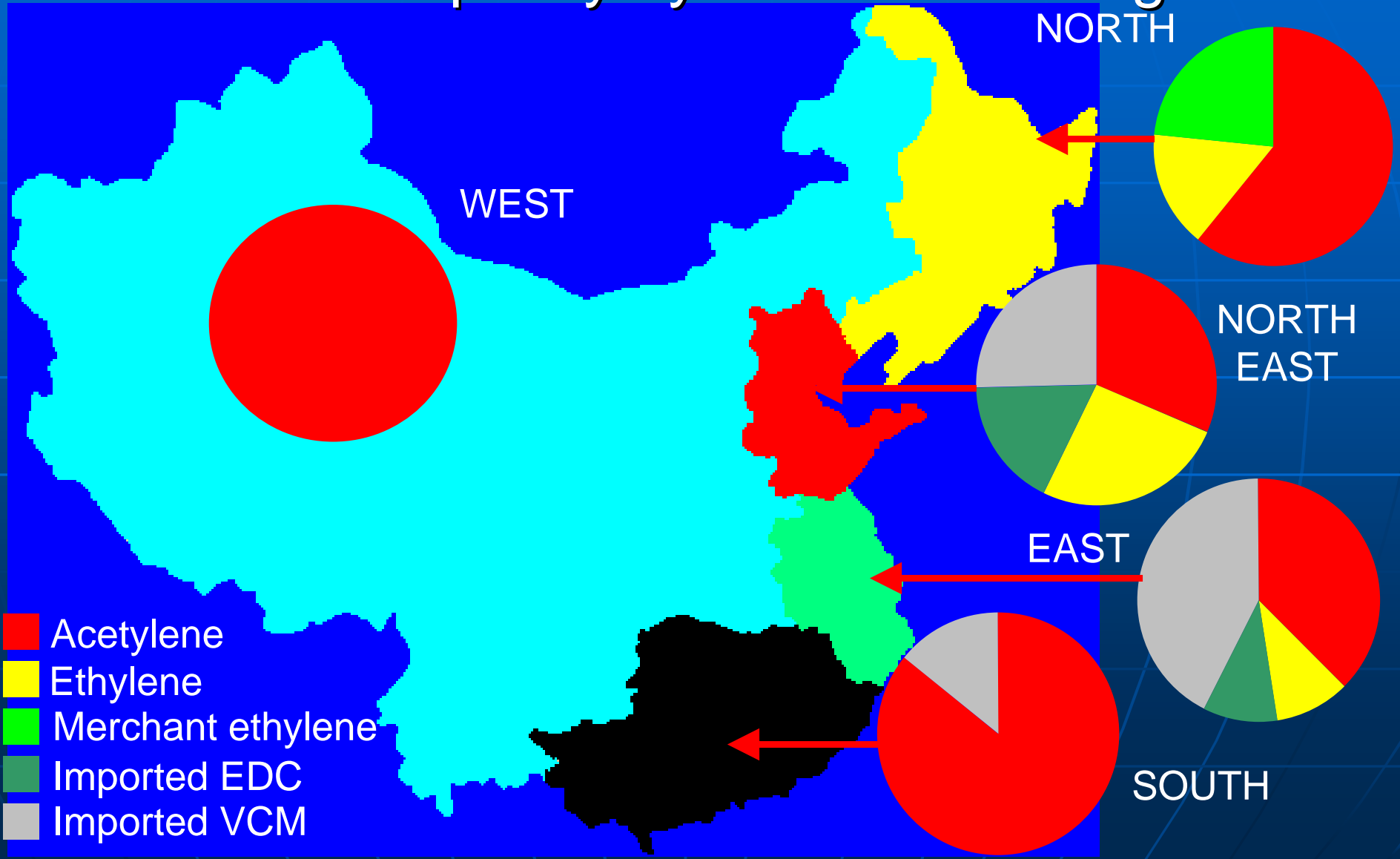


Chinese legislation

- June 06: further control on energy-consuming industries.
- September 06: a new price system of power tariffs to take effect for aluminium, cement, steel, calcium carbide, chlor-alkali, phosphorous and zinc.
- April 07: the VAT rebate of steel is cancelled, and all those beneficial policies by local government are under threat
- May 07: investigation in energy-consuming and environmentally unfriendly industries undertaken;
import and export of 142 products adjusted;
investigation in coal and mining – several coke producers close.
- Jiangsu province - mandated that all chemical plants should be moved to a relevant industry zone by the end of 2008.
- June 07: the Chinese government starts to charge an extra export duty on those energy-consuming and environmentally unfriendly industries
- July 07: reduction in VAT export subsidy for PVC from 11% to 5%
- October 08: anti-dumping duties to remain, after review.
- October 08: tax rebates for finished goods exports raised from 4% to 9%.

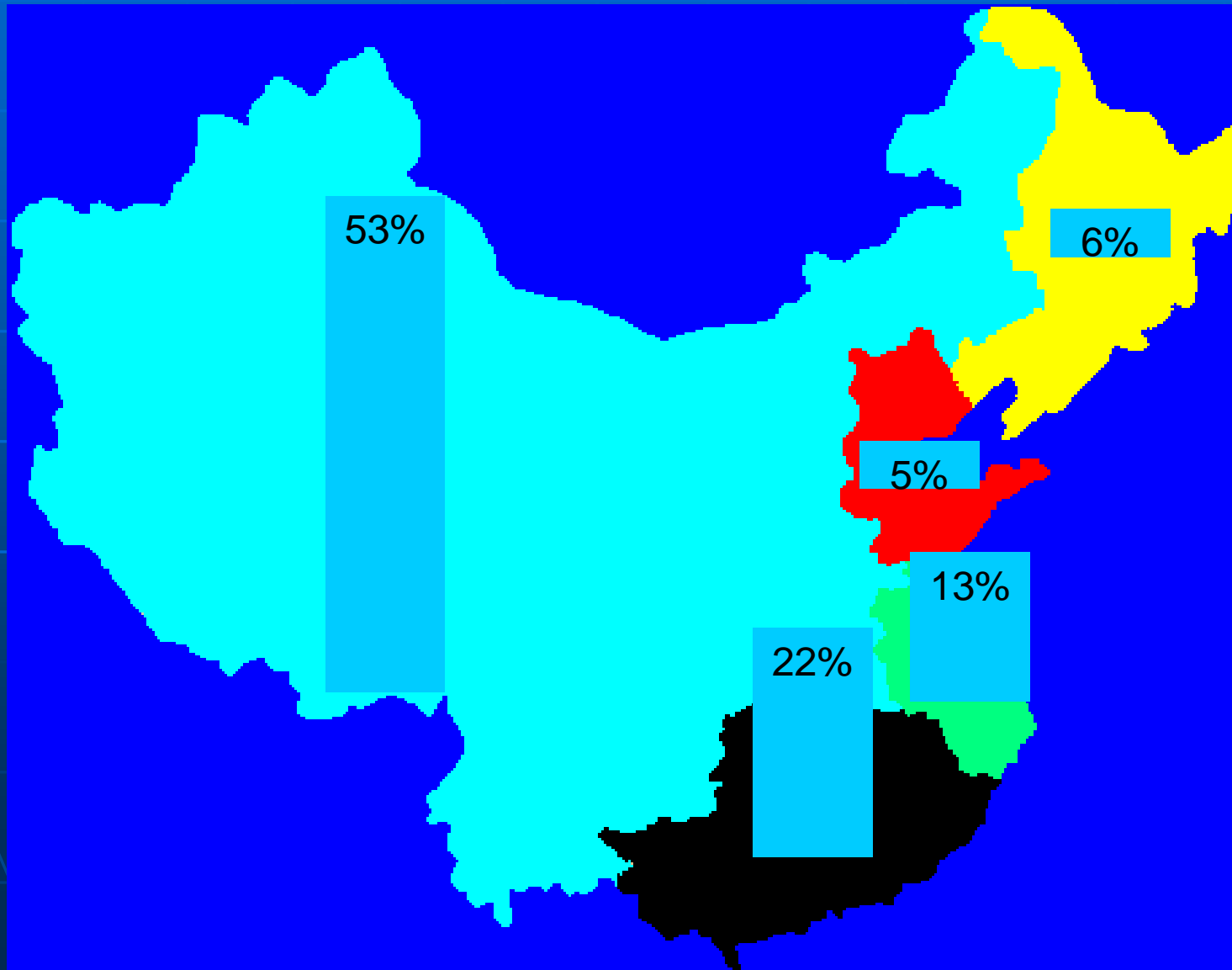


Chinese capacity by location and region



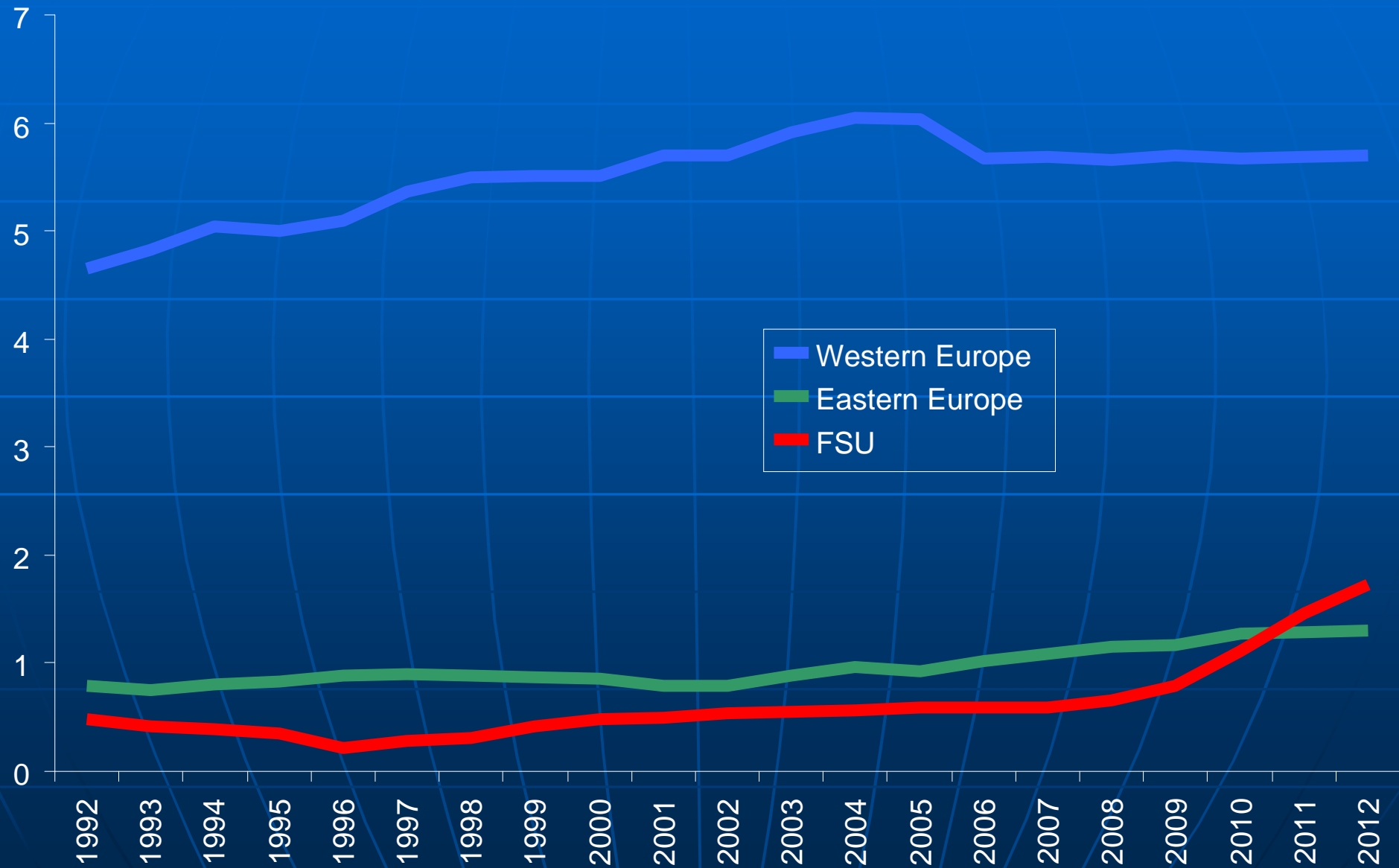


PVC expansions to 2010



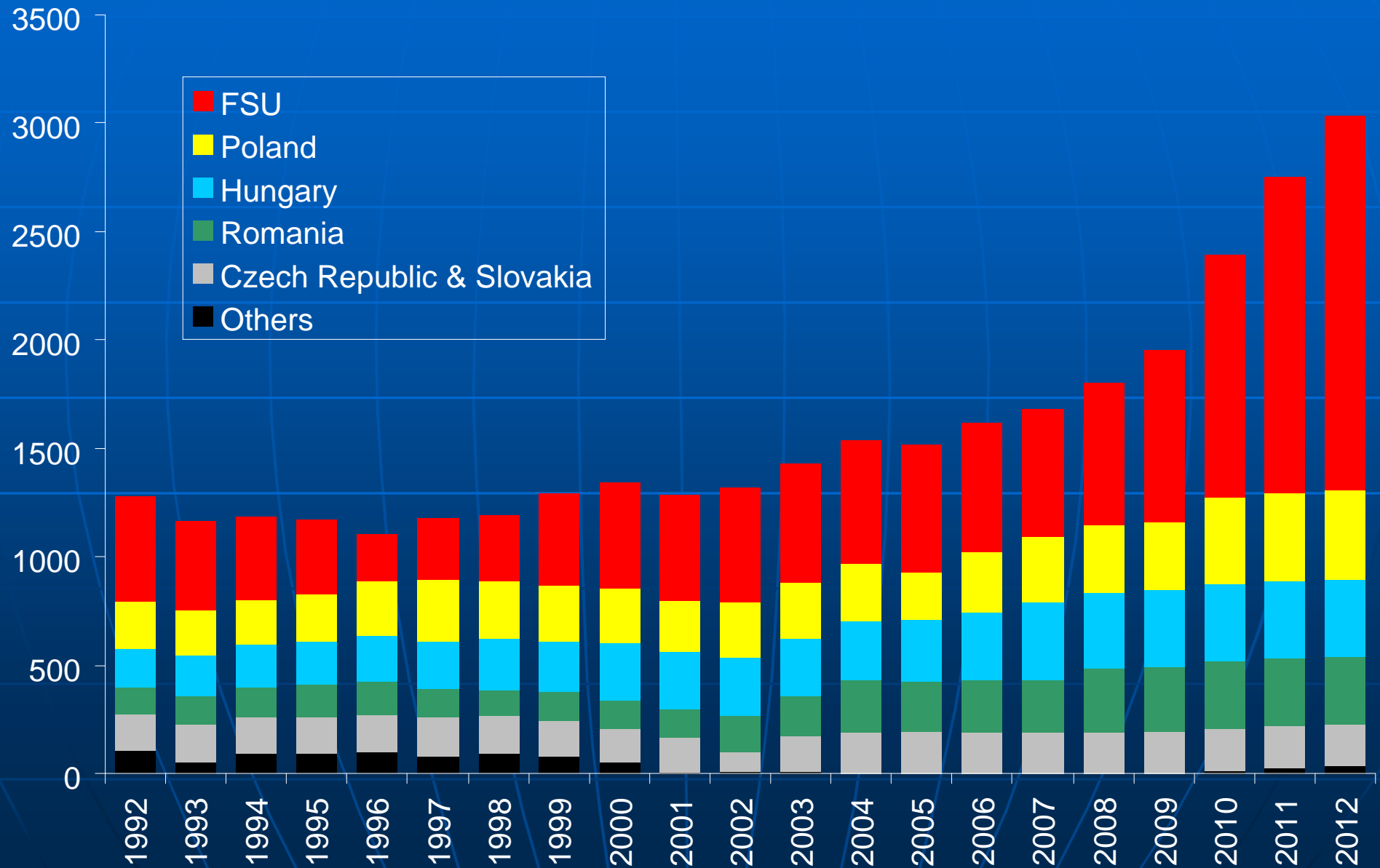


European PVC production by region (M mt)



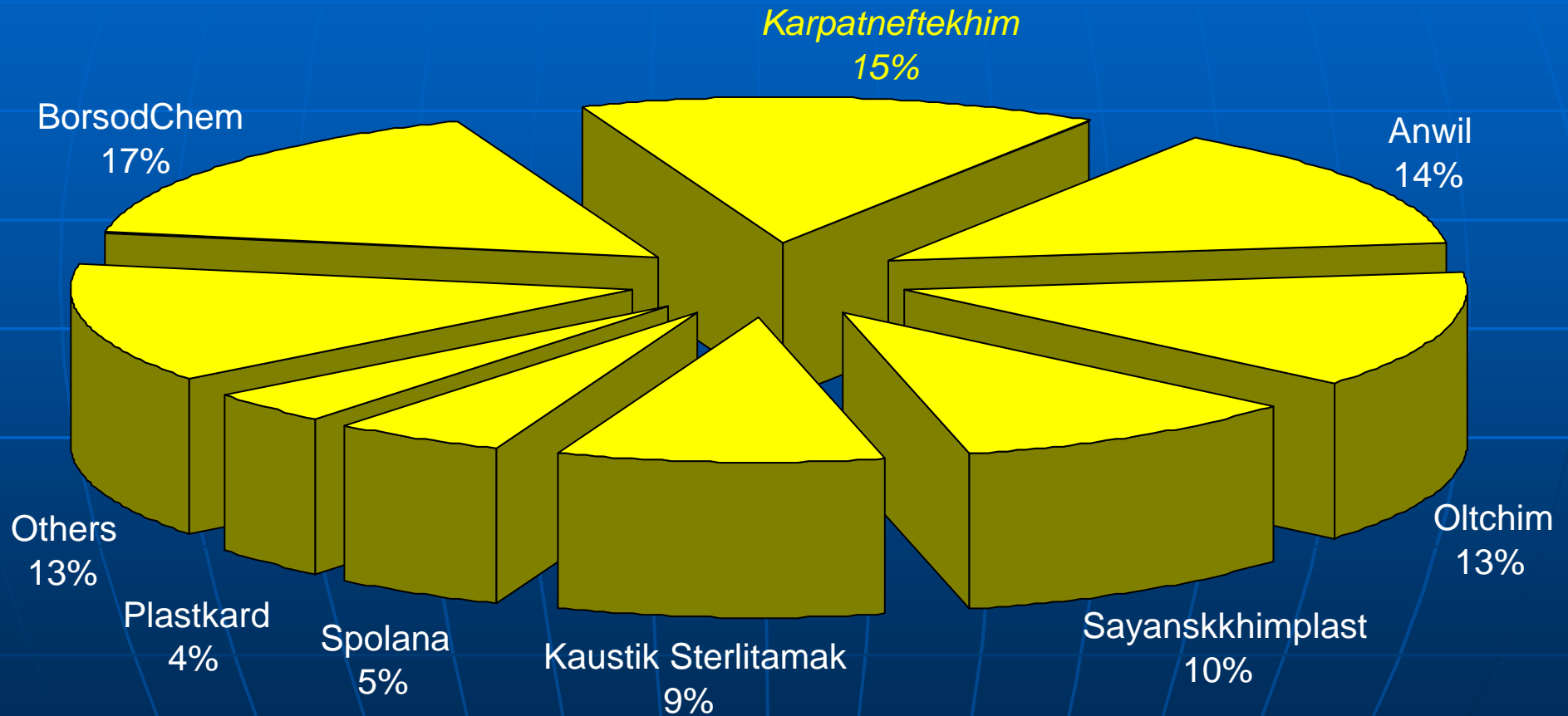


Central/East European production (000mt)

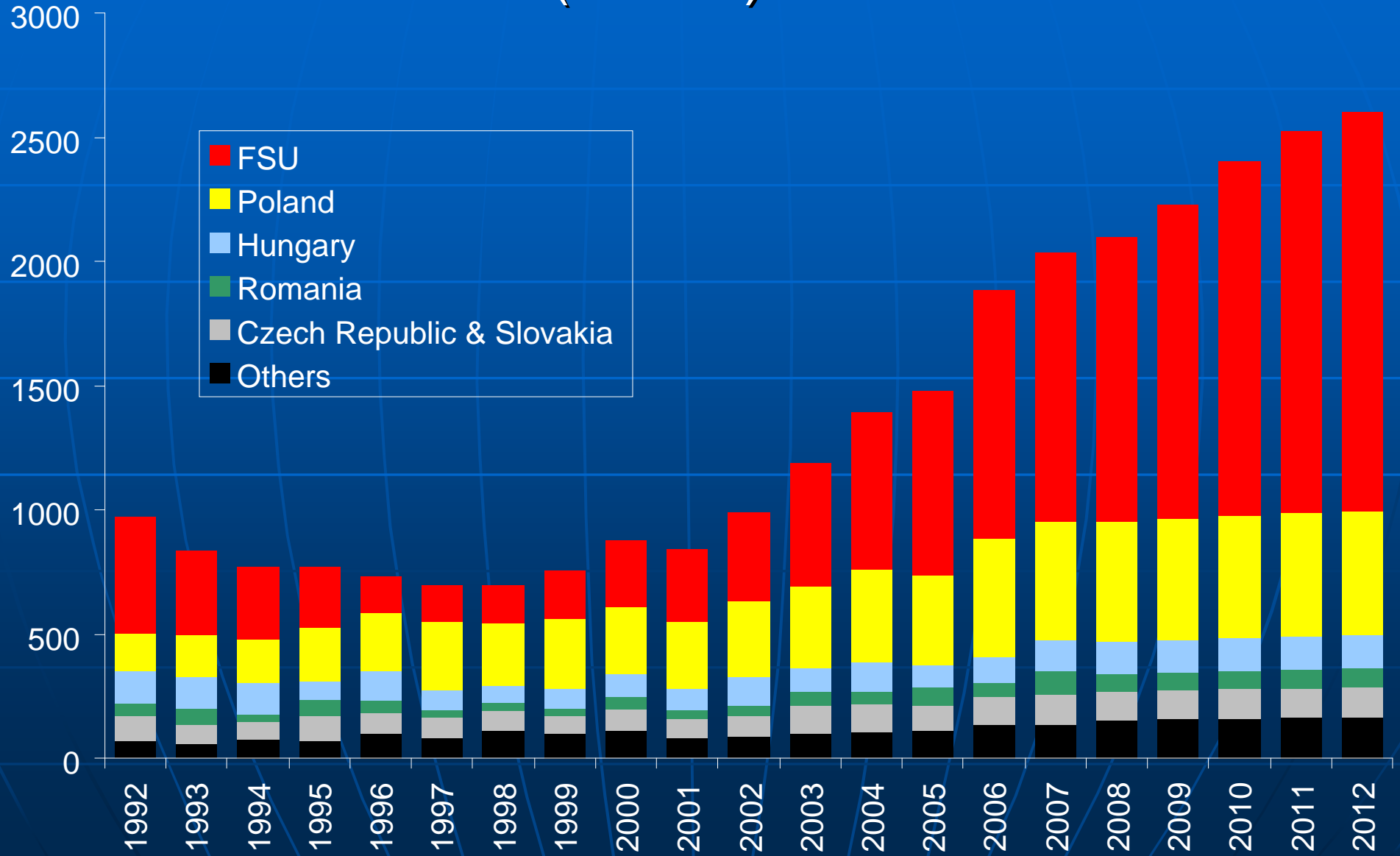




Central/East European capacity by company

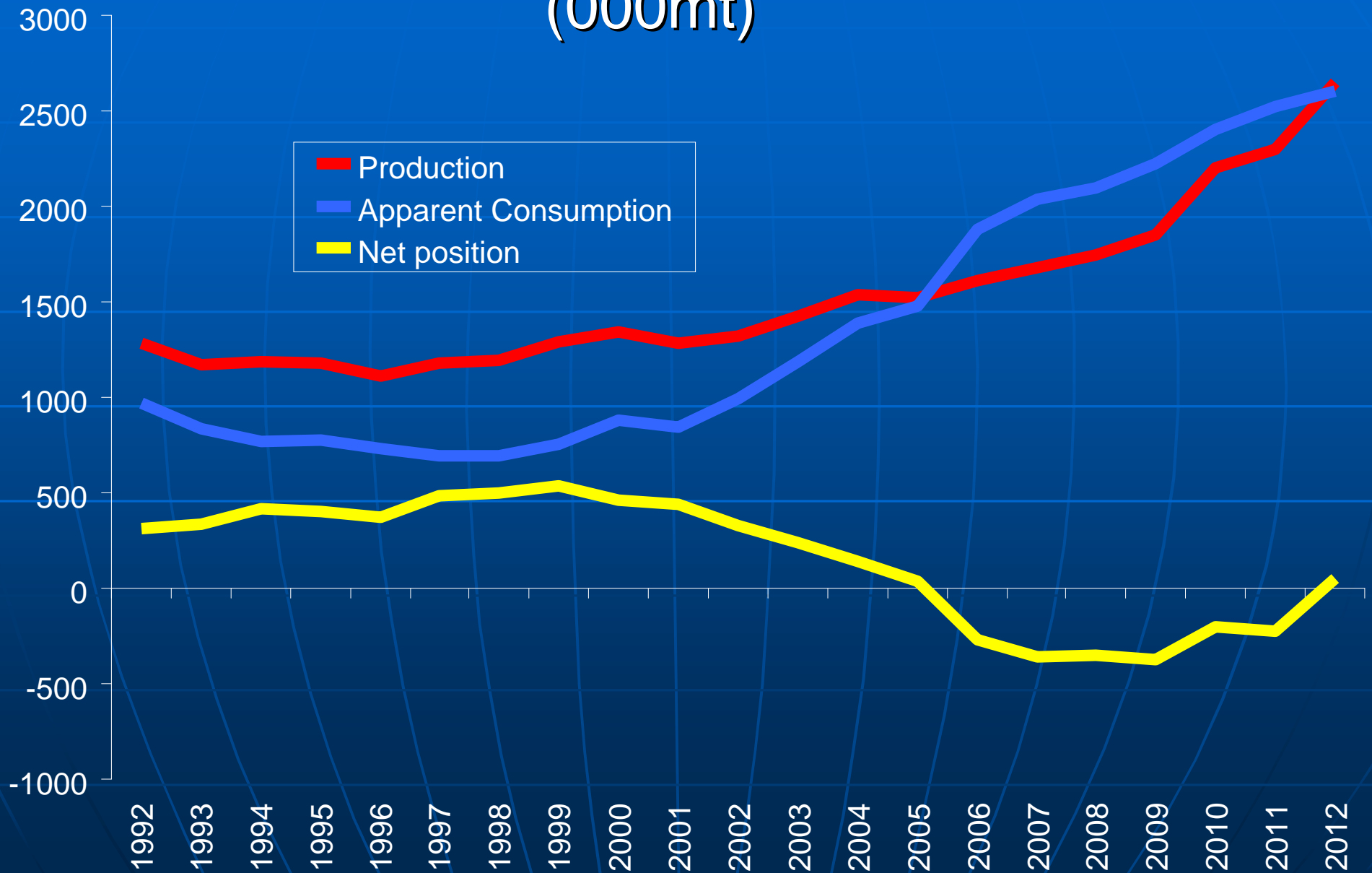


Central/East European demand by country (000mt)

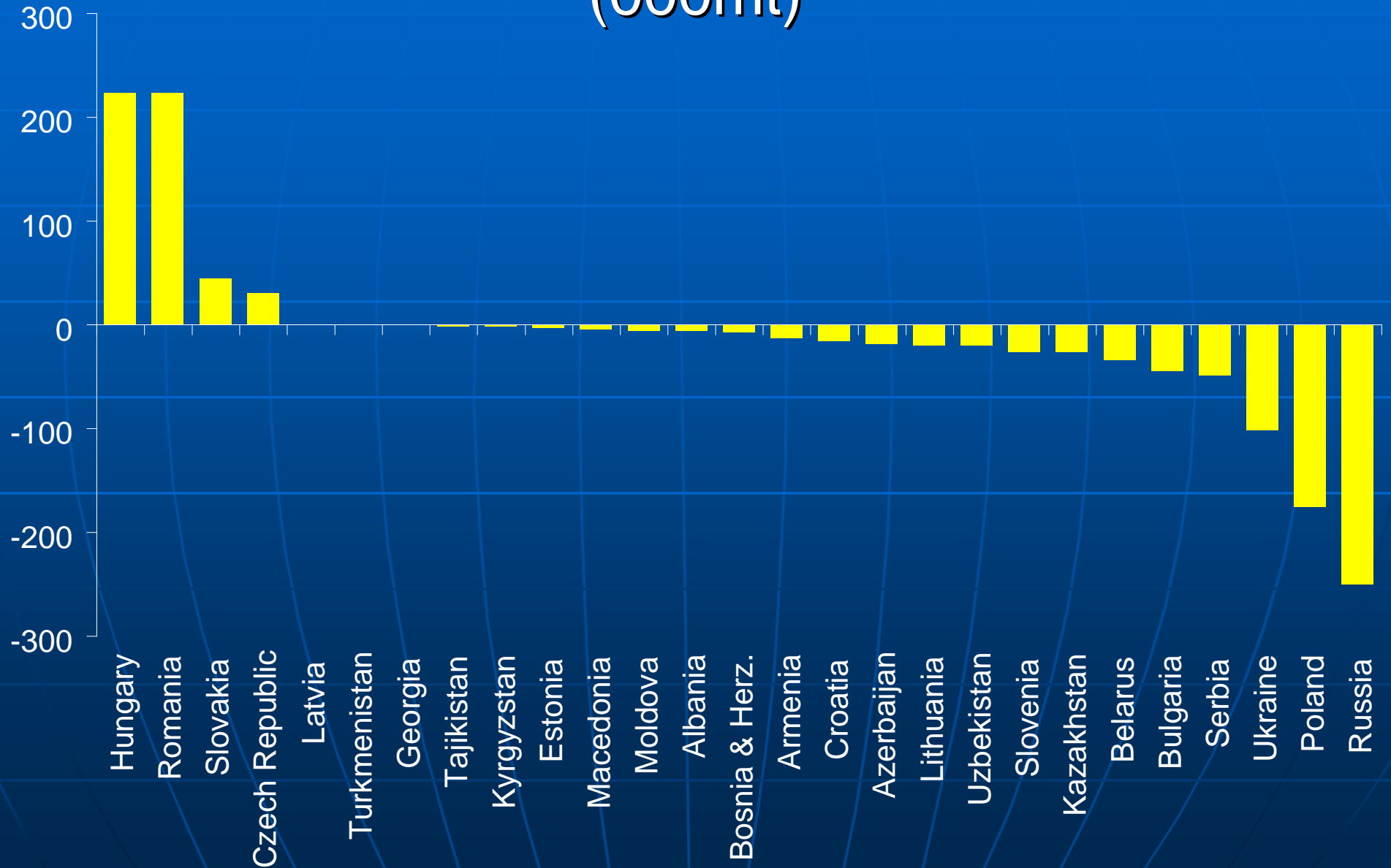




Central/East European net PVC balance (000mt)



Central/East European net trade 2008 (000mt)





New Central/East European capacity

- RusVinyl – Kstovo – 330kt in 2010 – now delayed until 2012
- Karpatneftekhim – Kalush – 300kt – delayed, should start before 2010
- Kaustik -Sterlitamak – 200kt – 2010, to 400kt by 2013
- Anwil – Wloclawek – 110kt in 2010
- Navoiplast – Navoi – 50kt – delayed and cutback – due by 2012
- Oltchim – Rimnicu Vilcea – 25kt – 2009
- Plastkard – Volgograd – 10kt - 2009



The financial turmoil and economic downturn

The symptoms:

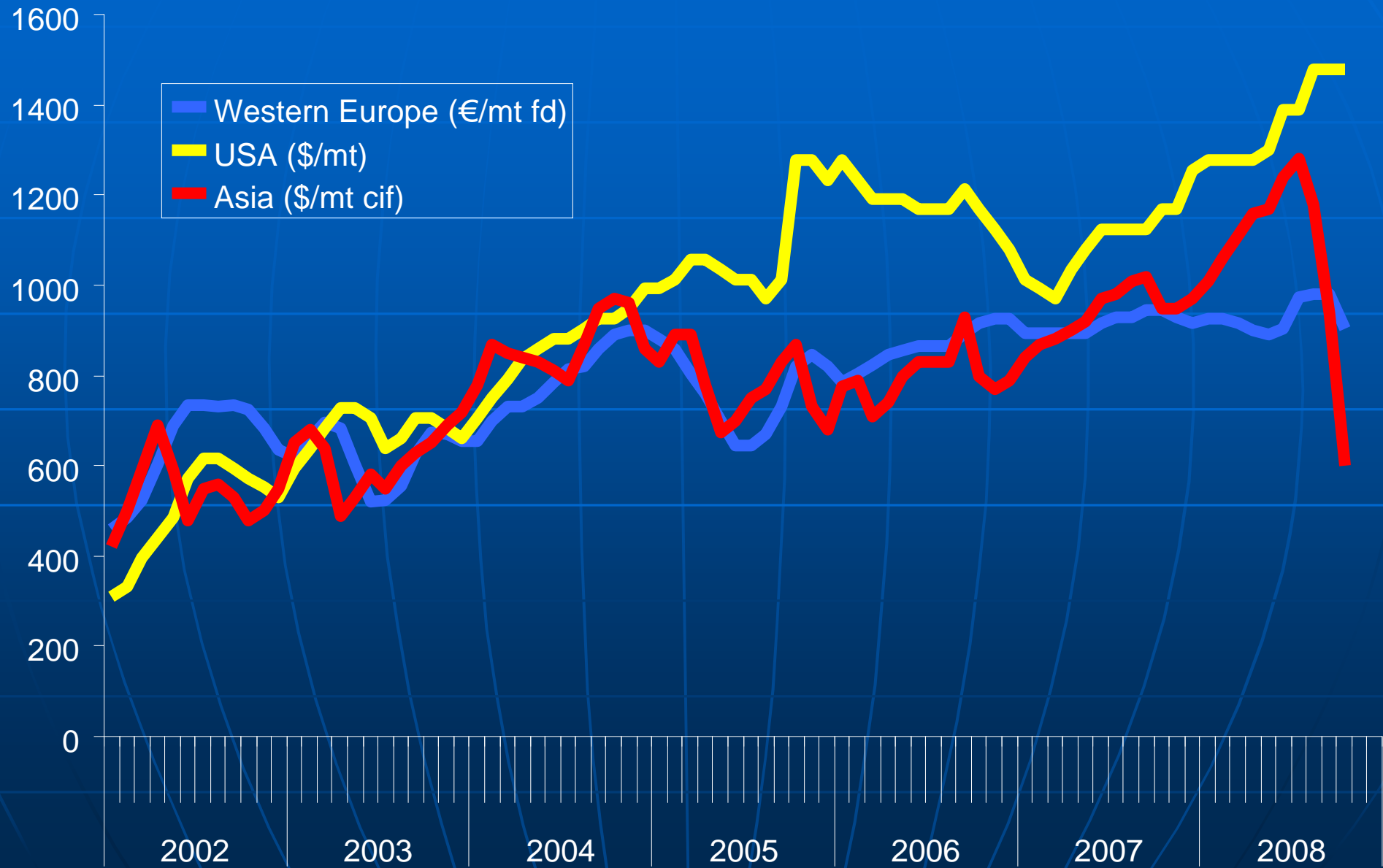
- Reduced GDP growth developing economies, negative in developed economies
- Severely reduced liquidity

The repercussions:

- Weak demand
- Margin pressure
- Export pressure
- Reduced production
- Rationalisation/mergers
- Plant closures & bankruptcies
- A shift in the acetylene vs ethylene-based debate
- Delayed, scaled back or cancelled investment projects



Price evolution





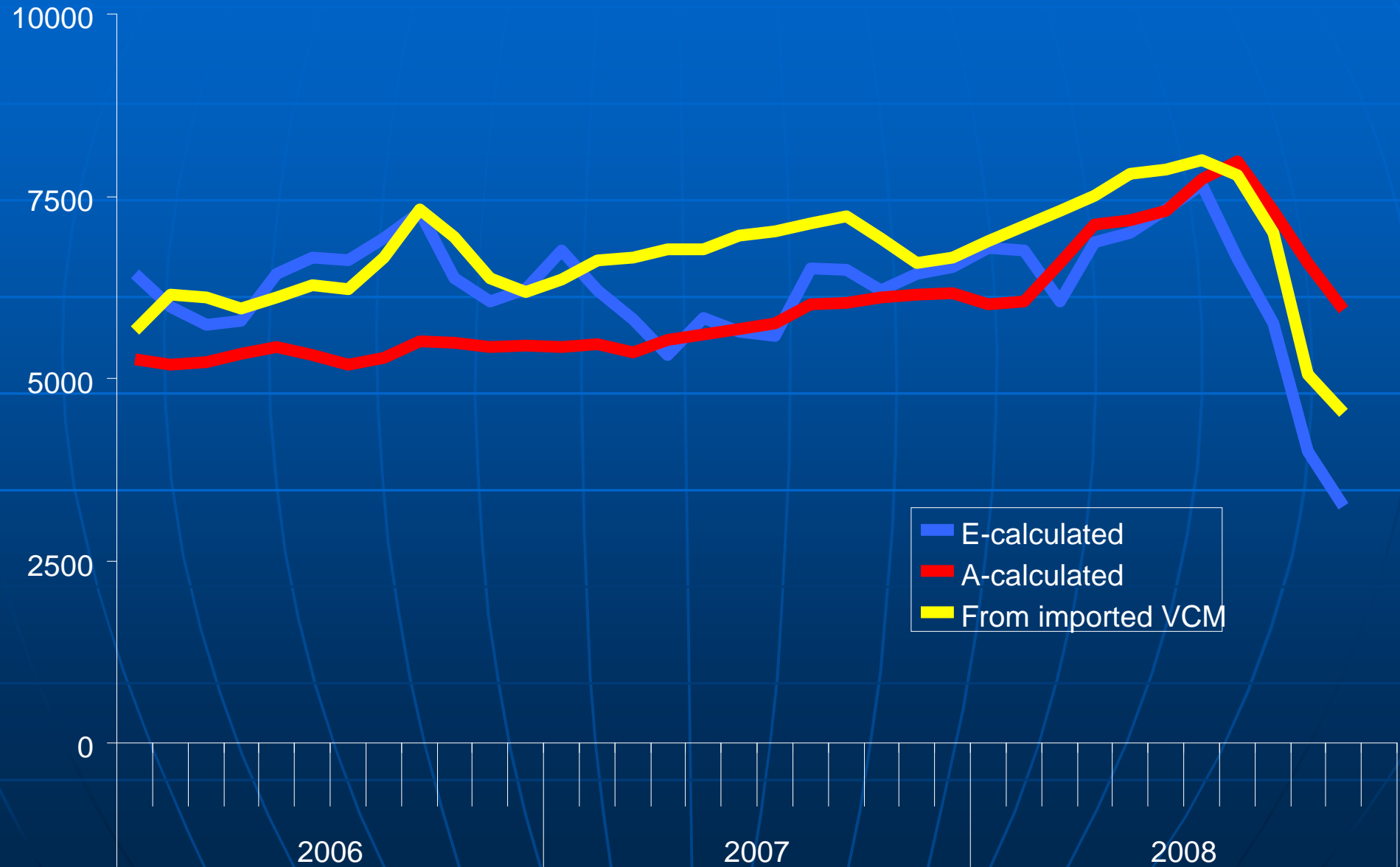
Acetylene-based PVC economics, Nov 08

Acetylene cost:	Calcium carbide price	RMB 3150/mt
	Acetylene raw materials	RMB 7985/mt
	Conversion cost	RMB 150/mt
	Total cost of acetylene	RMB 8355/mt
VCM cost:	Acetylene cost	RMB 4041/mt
	Hydrogen chloride cost	RMB 317/mt
	Conversion cost	RMB 125/mt
	Total cost of VCM	RMB 4684/mt
PVC cost:	VCM cost	RMB 4829/mt
	Conversion cost	RMB 200/mt
	Total cost of PVC	RMB 5279/mt
Cost of PVC from carbide:	Full cash cost ex-works	RMB 6176/mt (US\$902/mt)

Harriman Chemsult estimates



Acetylene vs ethylene-based PVC costs





Recent production developments in China

	Shutdown	<40%	<60%	<80%
No. of plants	27	7	9	2
Total plant capacity (000mt)	3077	1670	2190	130
% of lost capacity	21	5	9	1



PVC market drivers

- Macroeconomic
- Construction
- Environmental
- Government
- Chlor-alkali
- Feedstocks
- Profitability
- Investments
- Financing



Summary: what does this mean for Eastern Europe?

- In the immediate future, fear can have 'real' self-fulfilling properties
- Less competitive acetylene-based PVC from Asia
- Opportunities for Asian ethylene-based suppliers, possibly also for European exporters
- End of the 'gold rush' mentality – there will be casualties

.....but looking further ahead

- the Darwinian doctrine of 'survival of the fittest' should ensure that a leaner and more efficient industry will emerge!!



Any questions?