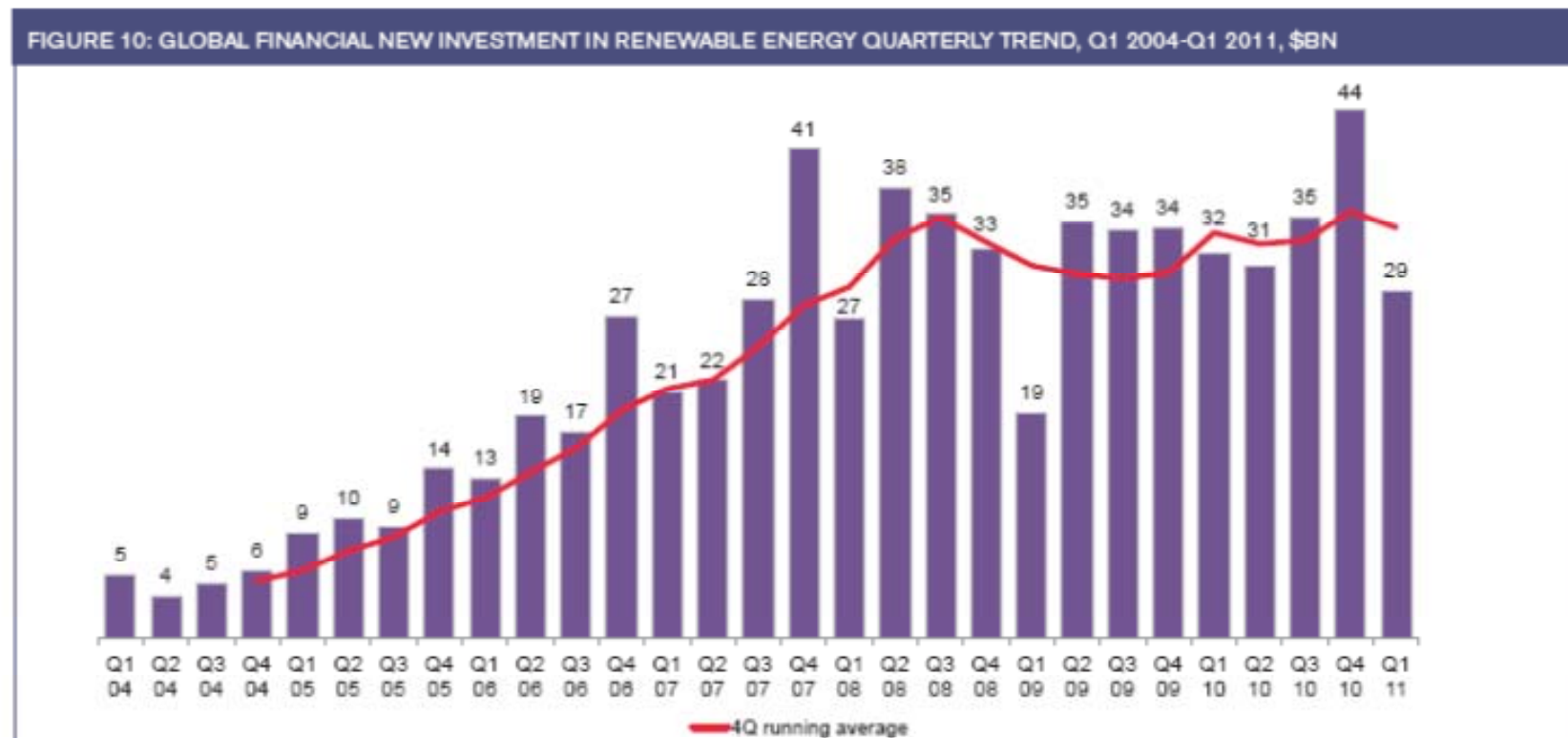


A world map with a light green background. Several regions are highlighted in different colors: North America (USA and Canada) in red, Australia in red, and several countries in Asia and Africa in yellow. The text is overlaid on the map.

# **Technological competitiveness of renewables in the new multipolar global economy**

*Daniela Palma  
(with Gaetano Coletta)  
ENE A – Technology Transfer Unit  
Third Workshop LCS-RNet  
Paris, 13 october 2011*

## Unep 2011: Global investment in renewable power and fuels set a new record in 2010 and...

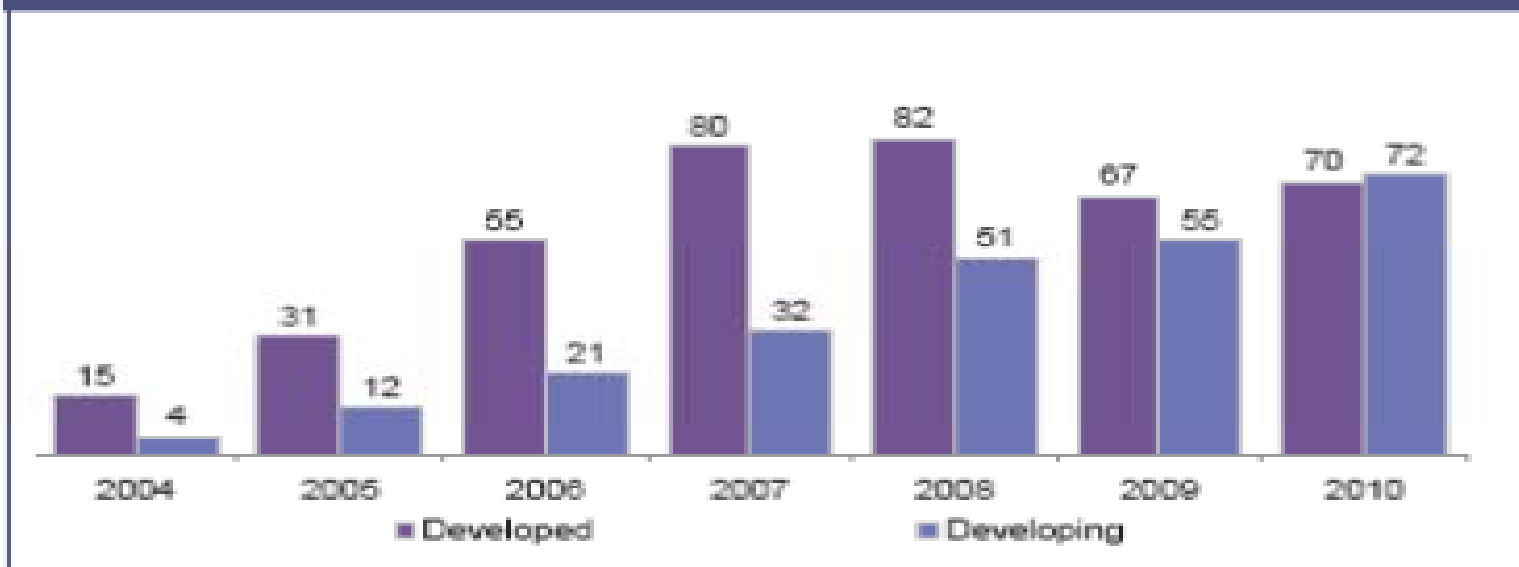


New investment volume adjusts for re-invested equity. Total values include estimates for undisclosed deals

Source: Bloomberg New Energy Finance, UNEP

...this is the first time that the developing world has overtaken the richer countries

**FIGURE 5: FINANCIAL NEW INVESTMENT IN RENEWABLE ENERGY: DEVELOPED V DEVELOPING COUNTRIES, 2004-2010**



New investment volume adjusts for re-invested equity. Total values include estimates for undisclosed deals

Source: Bloomberg New Energy Finance, UNEP

The impact of the crisis on global value chains has proved to be neither straightforward nor clear

**BUT**

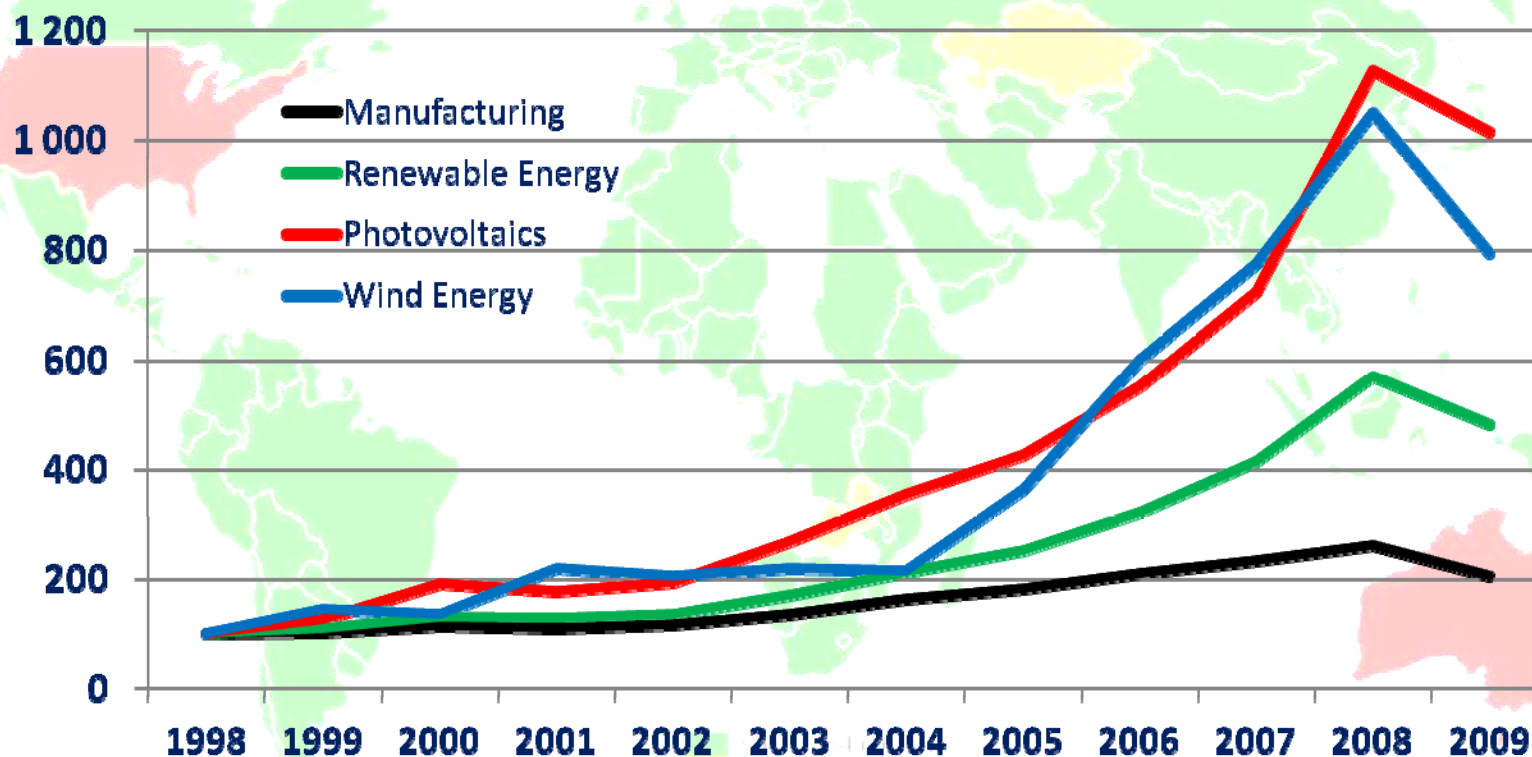
In the case of renewables there are **technology breakthroughs** that got deeper over time and that have to be investigated

**AND**

There is a lot of concern with world trends of **technological competitiveness** and the role played by **developing countries**

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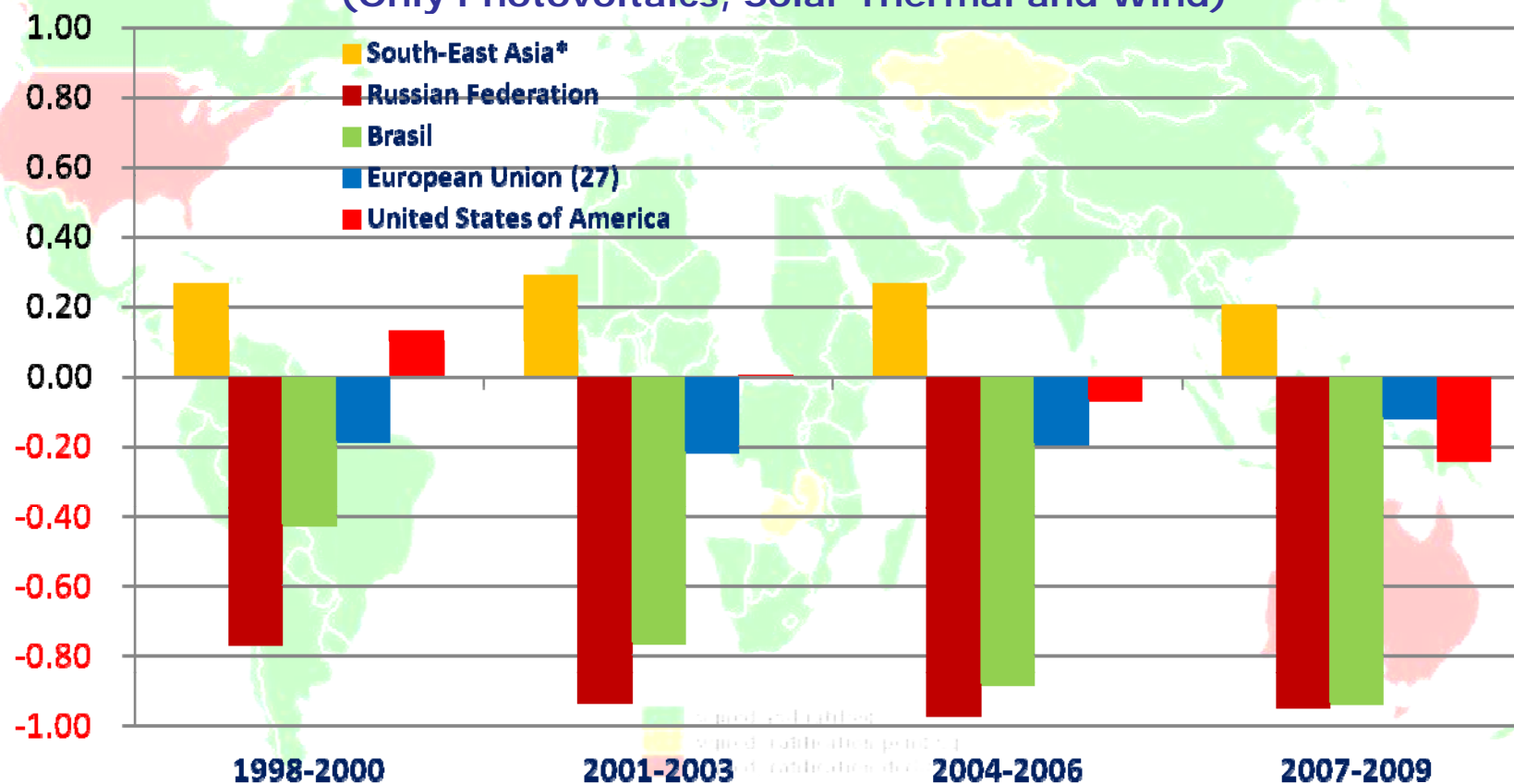
# World trade: Renewables vs Manufacturing



Source: elaboration from Oecd-I tcs database

## Regional trade: Trade Specialization in Renewable Energy Technologies

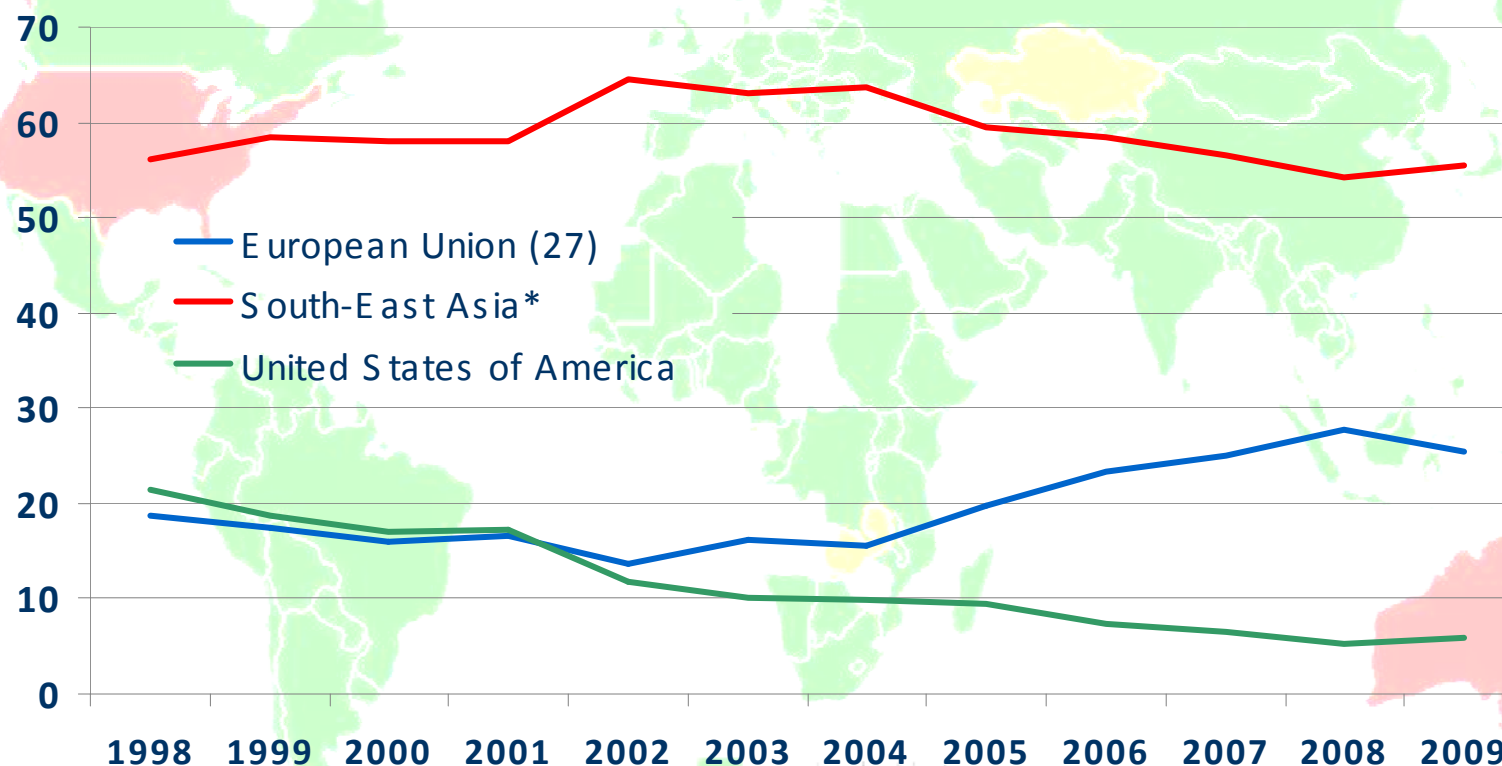
(Only Photovoltaics, Solar Thermal and Wind)



\* Japan, China, India, NICs (Rep. of Korea, Chinese Taipei, Hong-Kong, Singapore) and NECs (Indonesia, Malaysia, Philippines, Thailand)

Source: elaboration from Oecd-Itcs database

# Regional trade in pv technologies

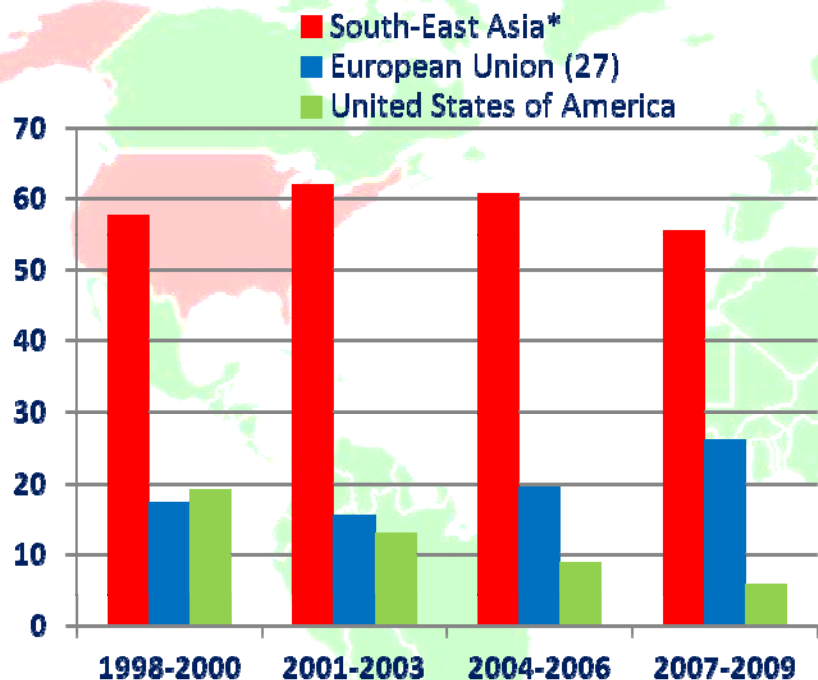


\* Japan, China, India, NICs (Rep. of Korea, Chinese Taipei, Hong-Kong, Singapore) and NECs (Indonesia, Malaysia, Philippines, Thailand)

Source: elaboration from Oecd-I tcs database

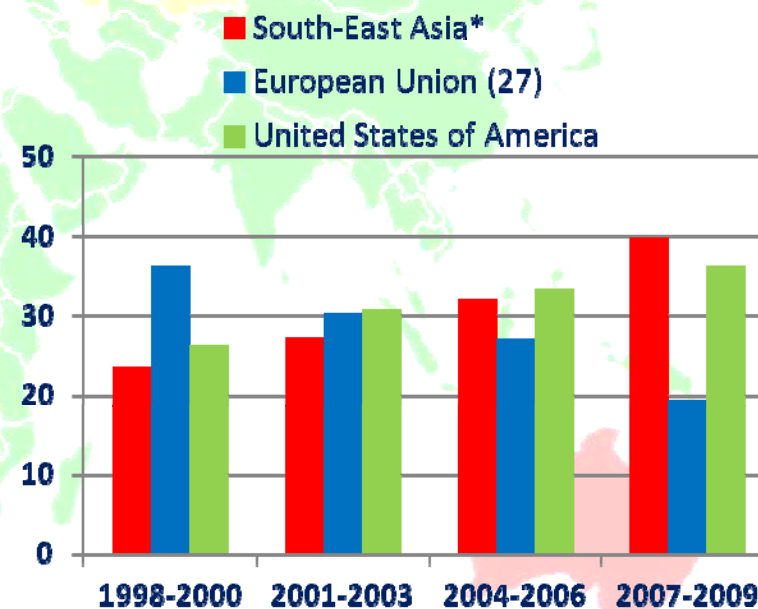
## Photovoltaic technology

### Export shares in world trade



Source: elaboration from Oecd-I tcs database

### Shares in world patents



Source: elaboration from Orbit database

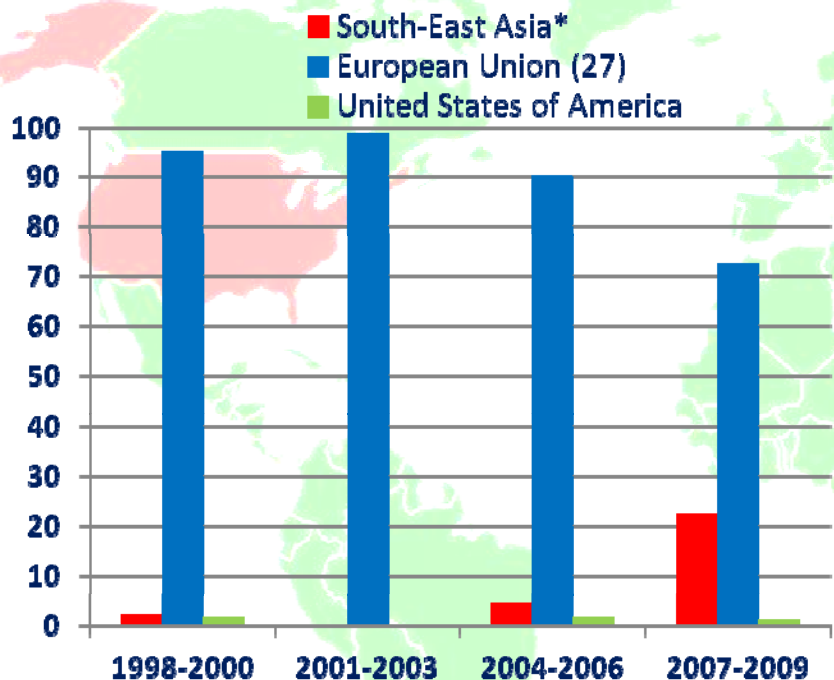


\* Japan, China, India, NICs (Rep. of Korea, Chinese Taipei, Hong-Kong, Singapore) and NECs (Indonesia, Malaysia, Philippines, Thailand)



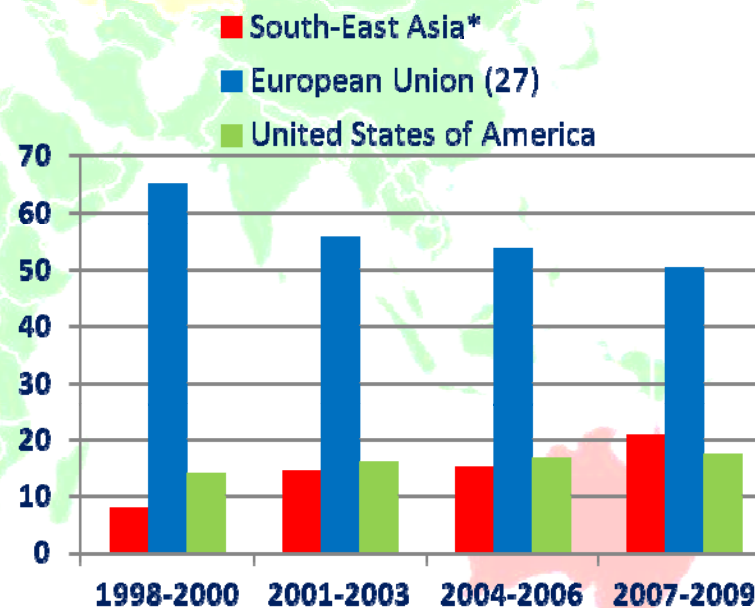
## Wind power technology

### Export shares in world trade



Source: elaboration from Oecd-I tcs database

### Shares in world patents

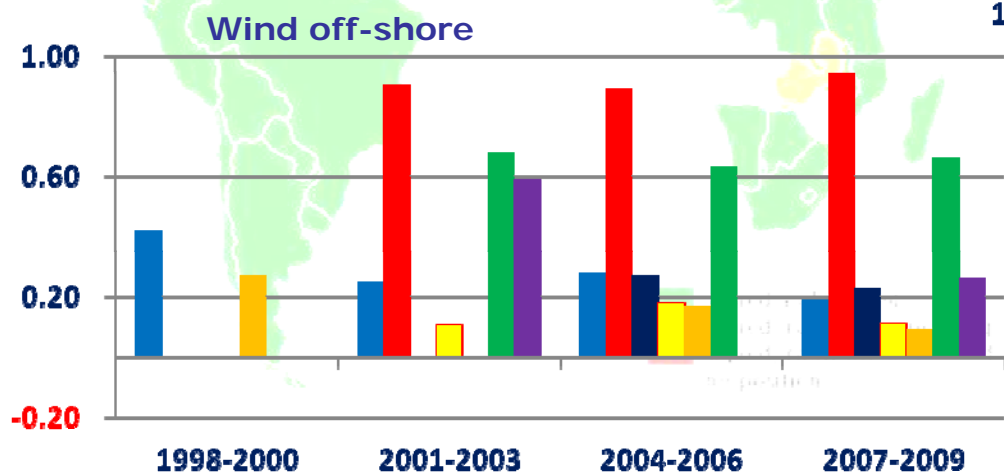
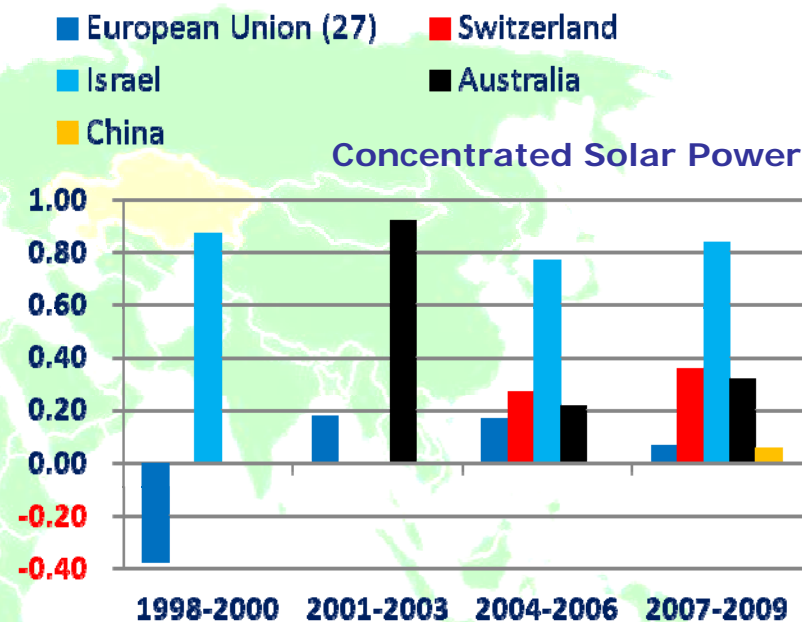
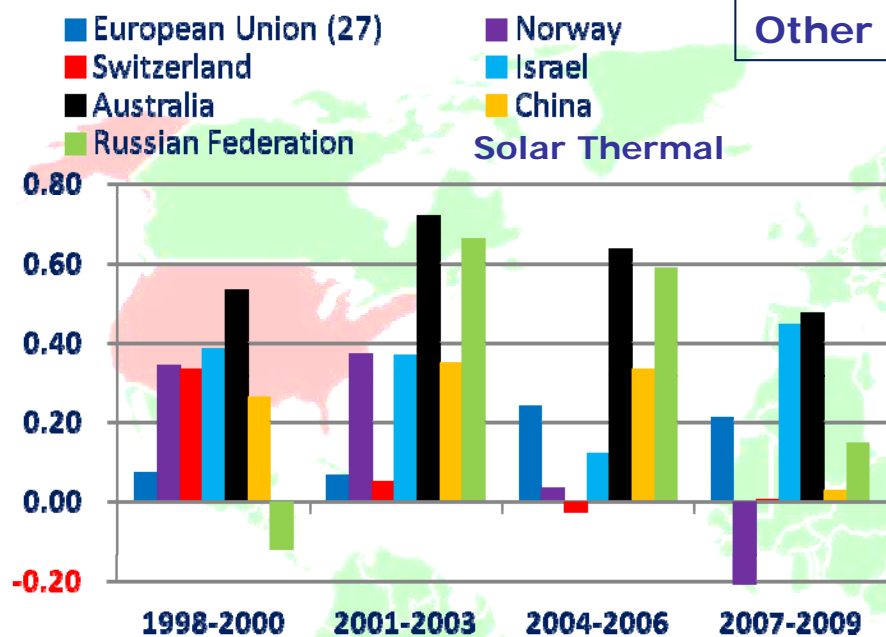


Source: elaboration from Orbit database



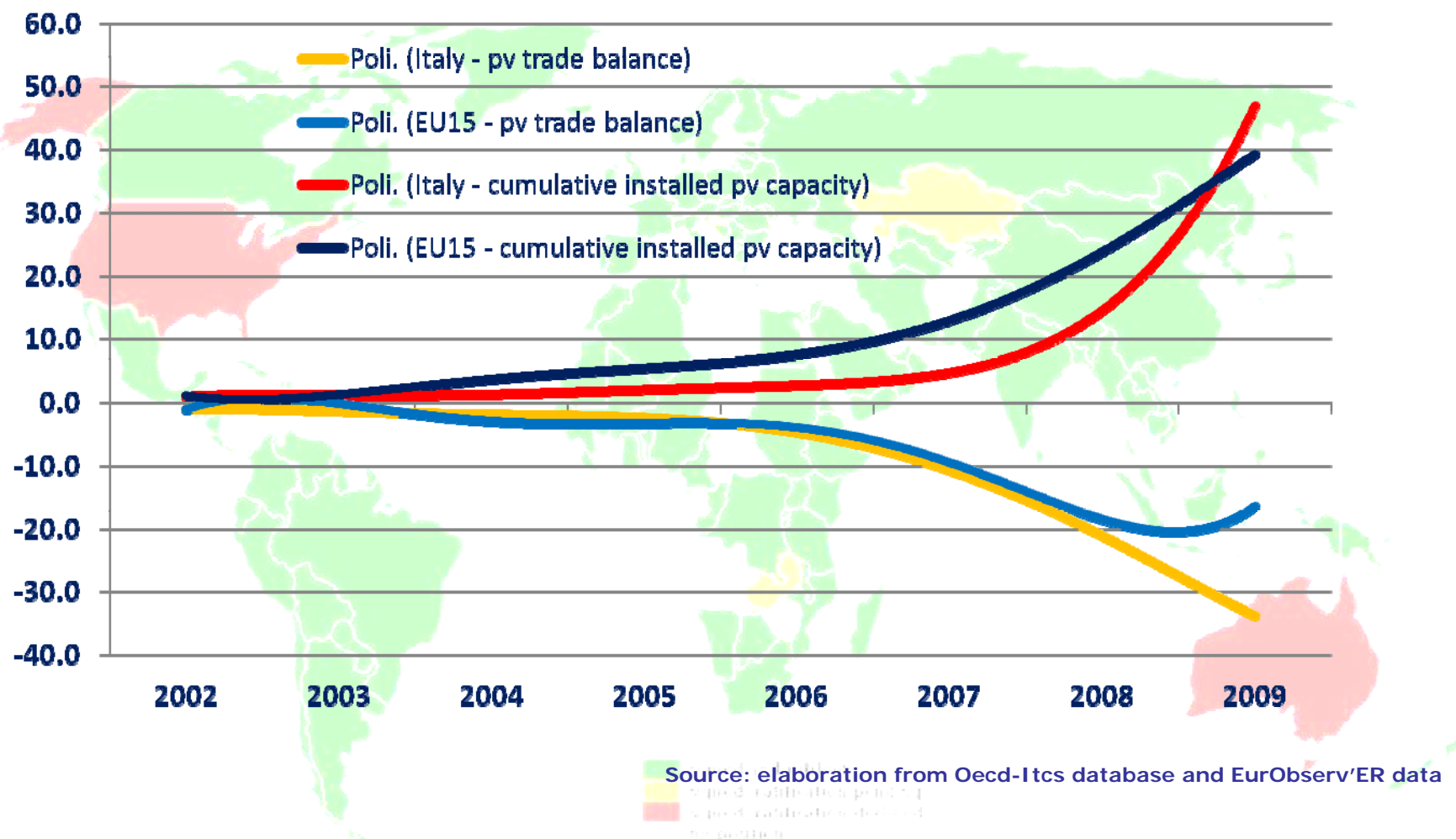
\* Japan, China, India, NICs (Rep. of Korea, Chinese Taipei, Hong-Kong, Singapore) and NECs (Indonesia, Malaysia, Philippines, Thailand)

Other technologies: patent specialization index



Source: elaboration from Orbit database

## Italy and the pv balance-of-payment-constraint growth



## Concluding remarks

- Energy technology breakthroughs in renewables are determinant for structural change
- The transformation of the composition of demand in the course of growth impacts the rate of growth itself (balance-of-payments-constraint-growth)
- Renewable technologies are at the crossroads of a new world labour division (and competitive advantages)
- Policy concerns: Energy and industrial policy for technology advance must go hand in hand in order to support thoroughly sustainable development strategies

