

Innovation as a key strategic advantage: CEOs perspective

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Executing innovation

market share

- right product → **focus**
- right timing → **3 months?**
- proper market access → **early product credibility**

margins

- cash for NPI → **BoD, R&D salary vs capex**
- competitive edge → **performance plan, surprise**

Comments from industry peers

Public funding

- loss of NPI focus
- dedicated team to harvest public €€
- pays for R&D team, innovation is elsewhere
- good for major initiatives
- complexity similar to universities'

EU funding

- great to establish international relationships
- alternative to further venture-capital rounds
- takes time, not a driver for strategic R&D

Clean tech

Sustained double digit growth

Significant innovation in components & mfg costs

- **Renewable energy**
- **Biofuels**
- **Energy saving**

- **Suppliers of components (PV panels, WTGs, e-meters, domotics)**
- **System integrators**
- **Investors (utilities, specialized owners, homeowners)**
- **Project developers**

Europe the leading clean tech investor

Clean energy during 2009

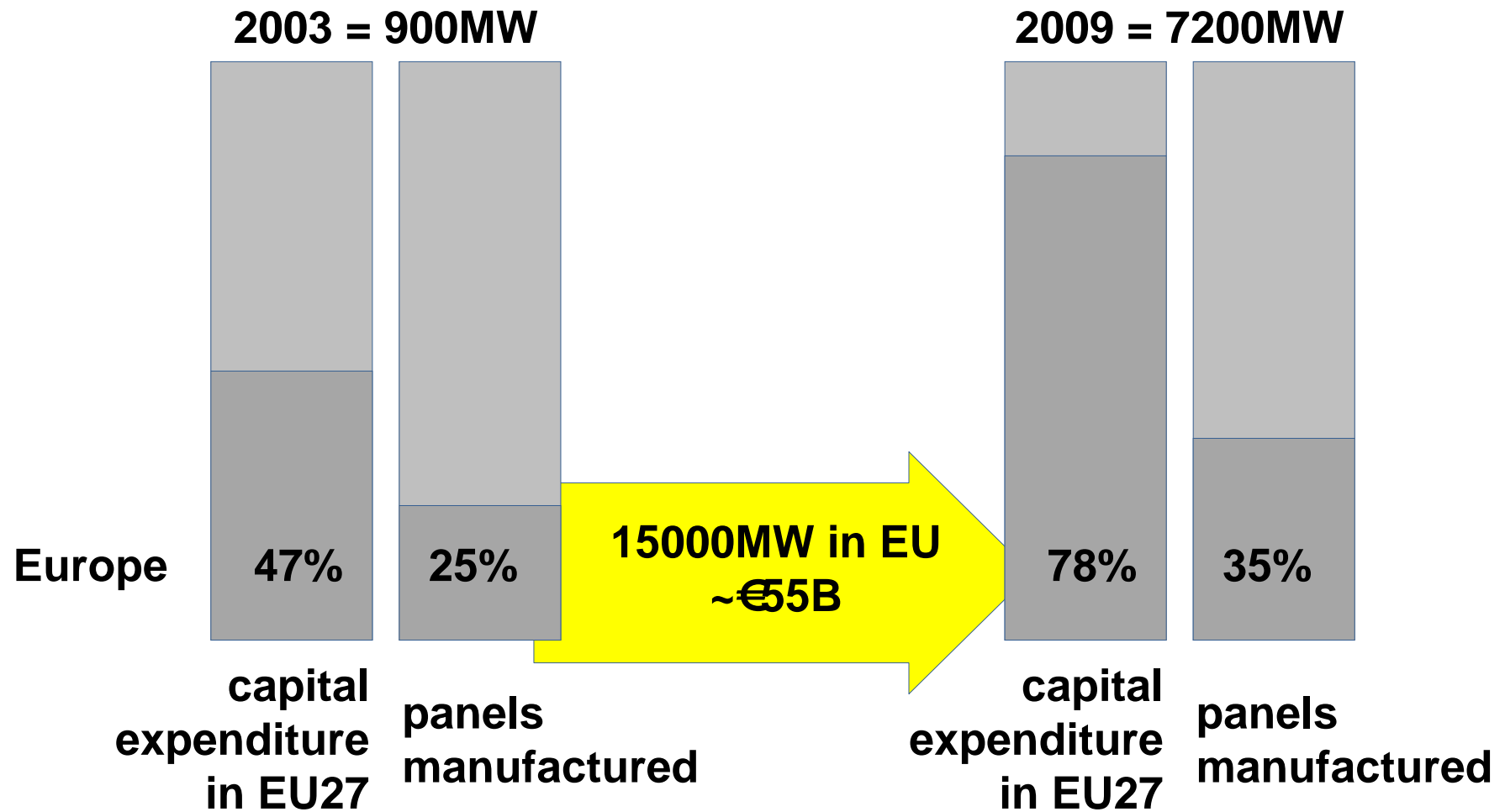
- \$95B world wide investments in assets (Reuters)
- 40% in EU27 → €27B

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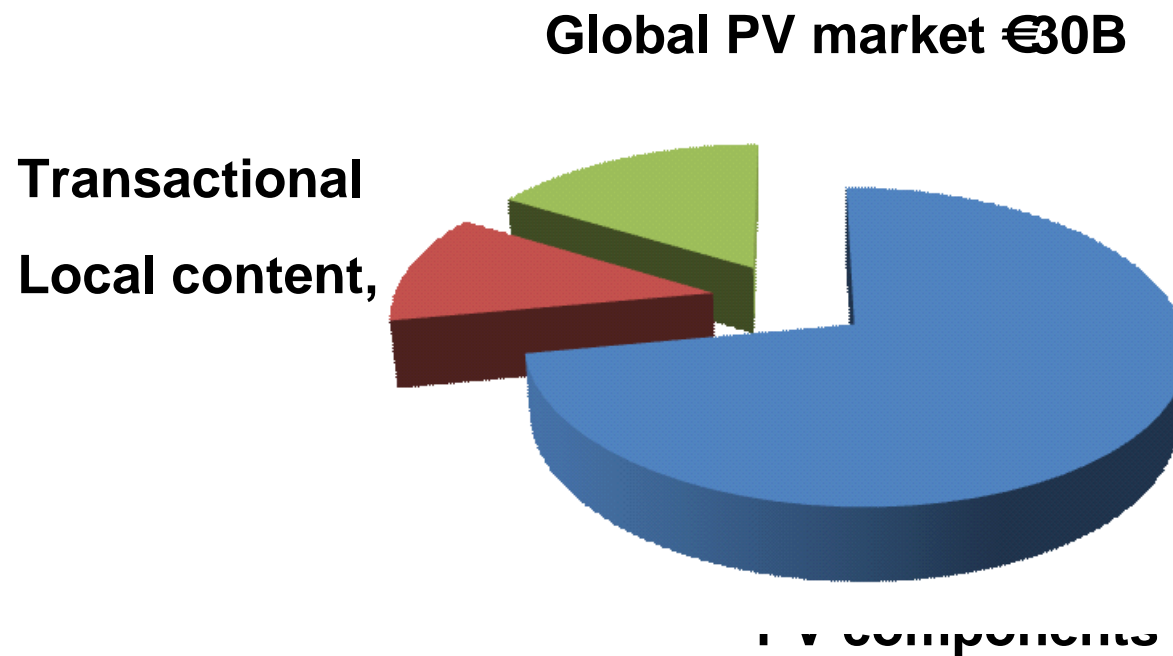
Photovoltaic installed during 2009

- 7200MW installed (EPIA)
- 42B\$ invested worldwide
- 78% in EU27 → €24B

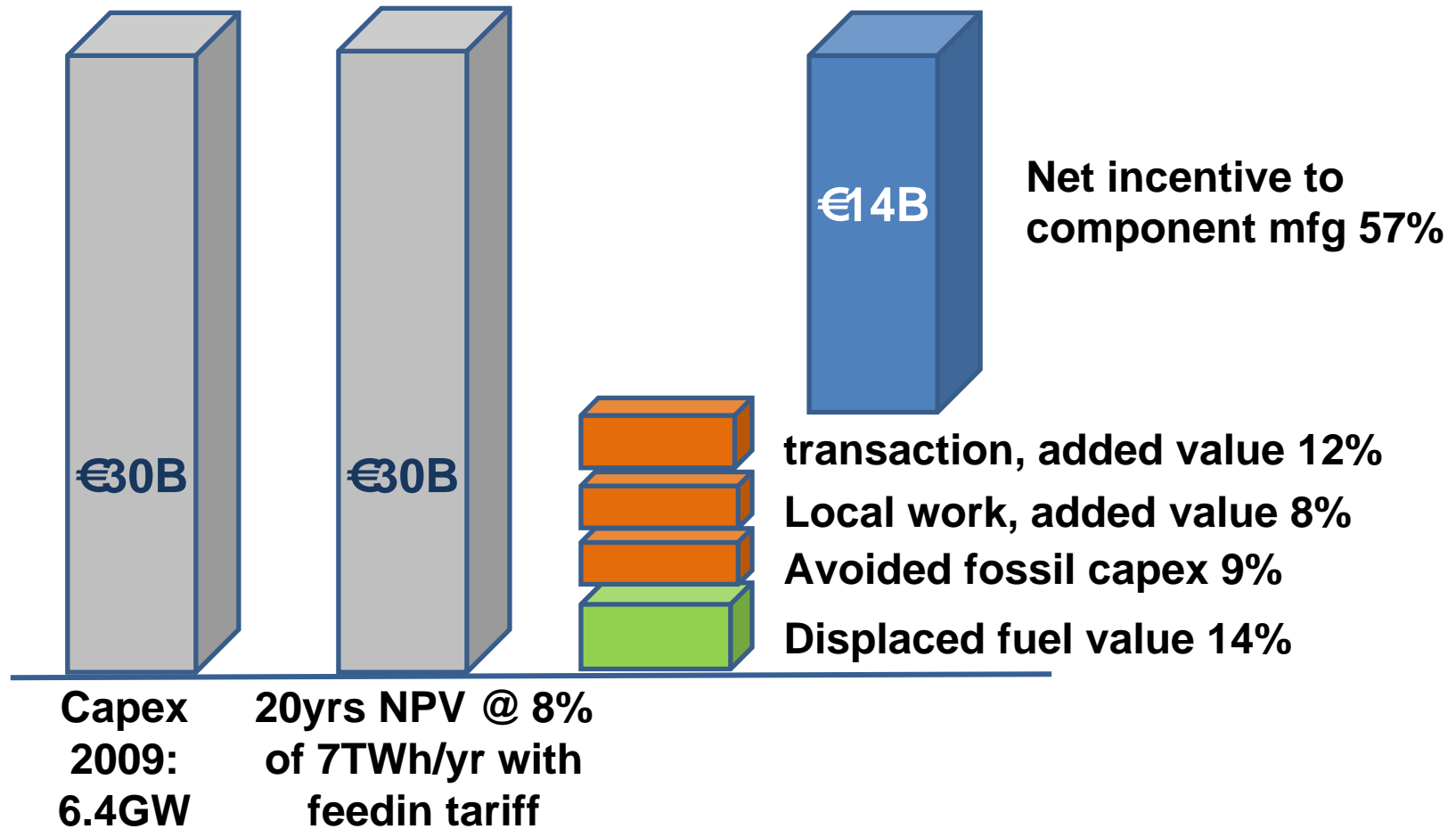
EU led capex, failed to turn into manufacturing



Components still key value in PV capex



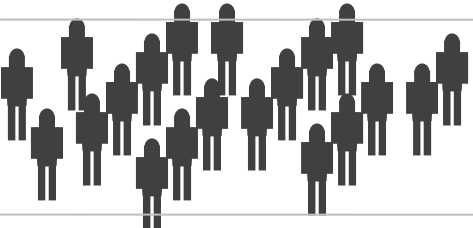
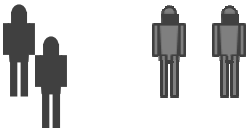
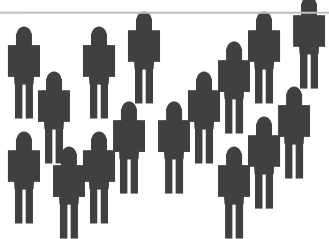


Incentives drive component innovation



PV added value: where?

man-year per 1MW

<p>Silicium, wafer, cells manufacturing</p>	 <p>2</p>
<p>Pannel manufacturing</p>	 <p>2</p>
<p>Field erection: civil, electrical, mechanical</p>	 <p>20</p>
<p>Design, engineering, project management</p>	 <p>4</p>
<p>Minor components, maintenance, upgrading operation</p>	 <p>15</p>

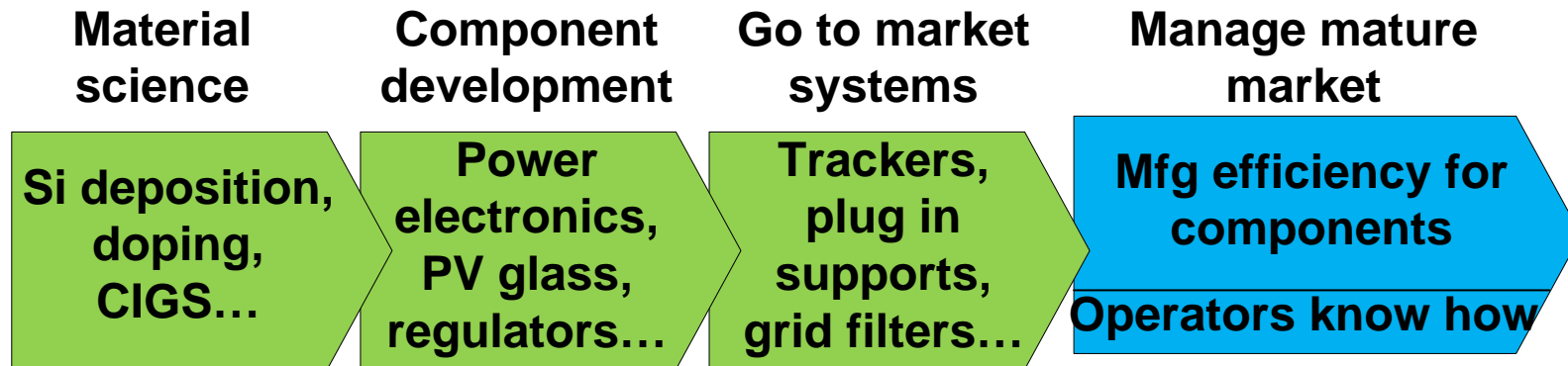
Best initiative in PV

solar decathlon Europe



- universities
- final users
- equipment suppliers
- regulators
- future users
- ...
- real idea developers

Innovate: where in the value chain?



- verticalization of key players
- 4-5 leaders with >\$2B/yr, one from EU
- little employment impact in panel mfg
- residential & small commercial segment

European innovation must focus on

Niches
O&M, recycle
Design, architecture, urban planning

Go to market: Italy not an example

Photovoltaics

- 1990s Eni develops early PV cell technology
- 1994 only world's multi MW grid connected plant: Enel
- 2010 largest multi MW market in the world: domestic PV mfg less than 10% mkt share

out of PV business

Wind

- 1996 Ansaldo puts in operation first 1.5MW WTG at Enel (prevailing large commercial size in world 325kW WTGs)
- 2003 prevailing large WGT market, >1MW
- 2010 italian WTG mfg < 1% mkt share

out of wind business in 2000