

Strategic energy technology planning and delivery

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Karsten Neuhoff

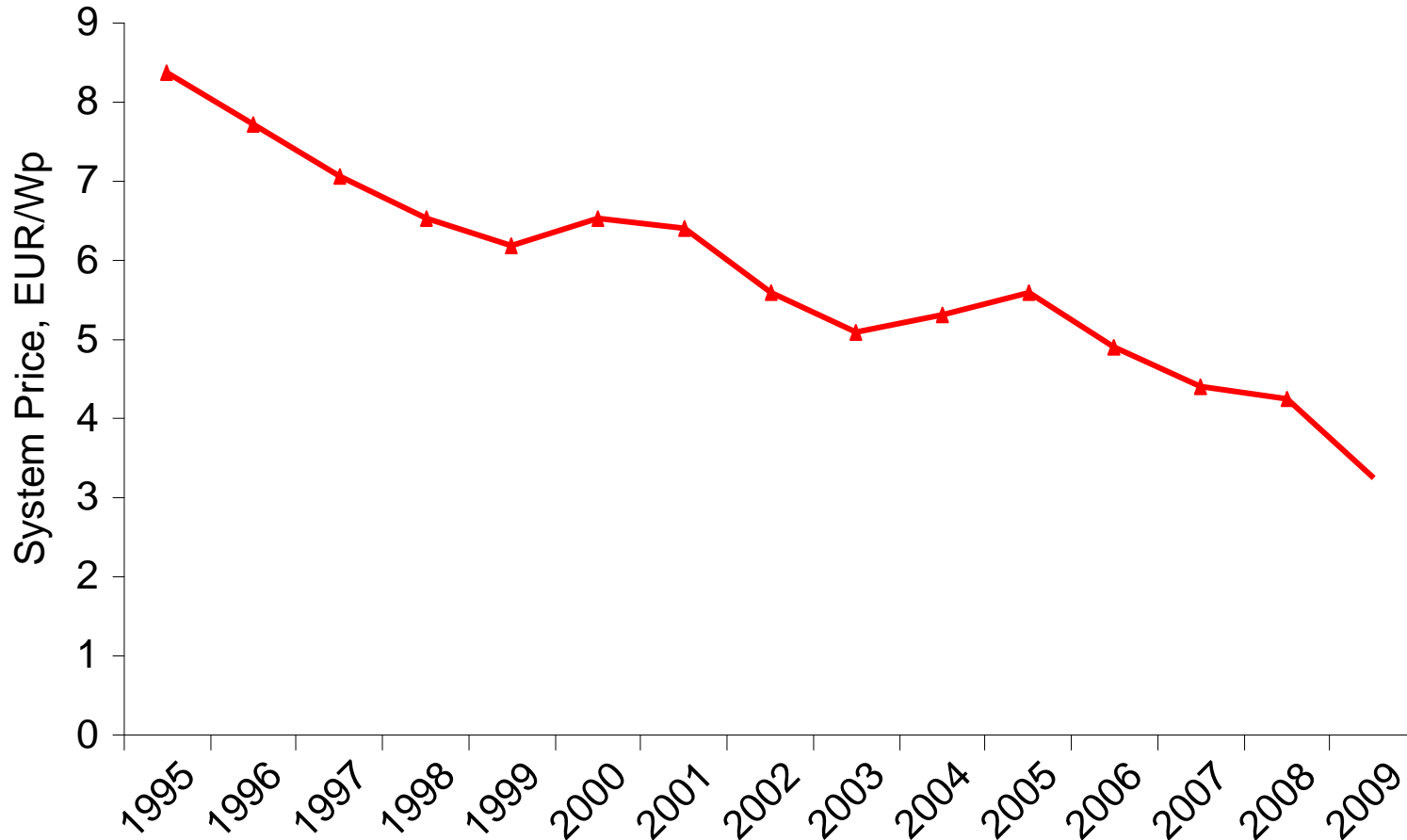
Based on research with

Thilo Grau, Molin Huo, Anne Schopp, Alex Vasa

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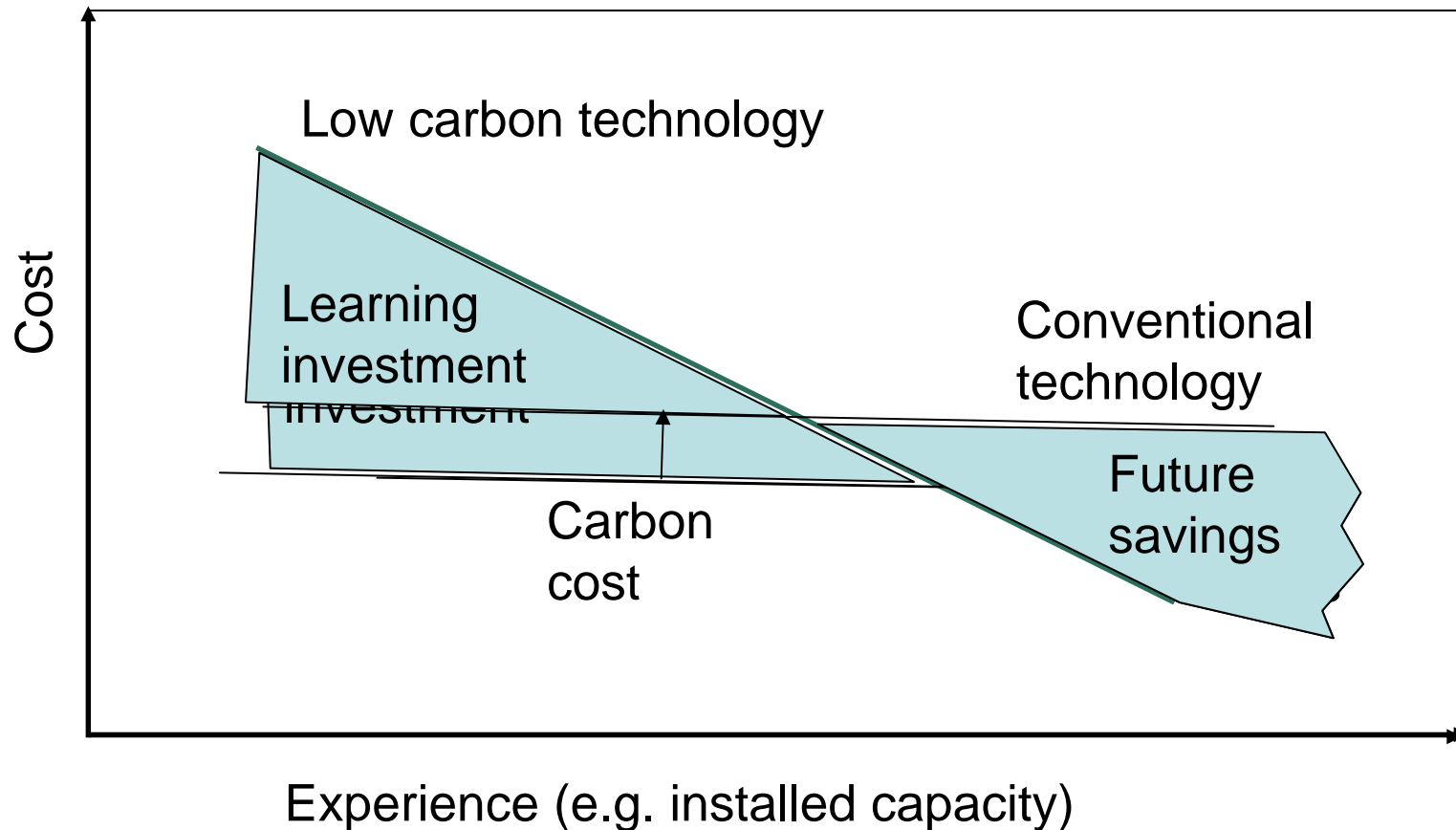
- Example Photo Voltaic
- R&D Support
- Strategic deployment programs
- Investment support
- Long-term framework
- Conclusion

Example Photovoltaic – learning by doing

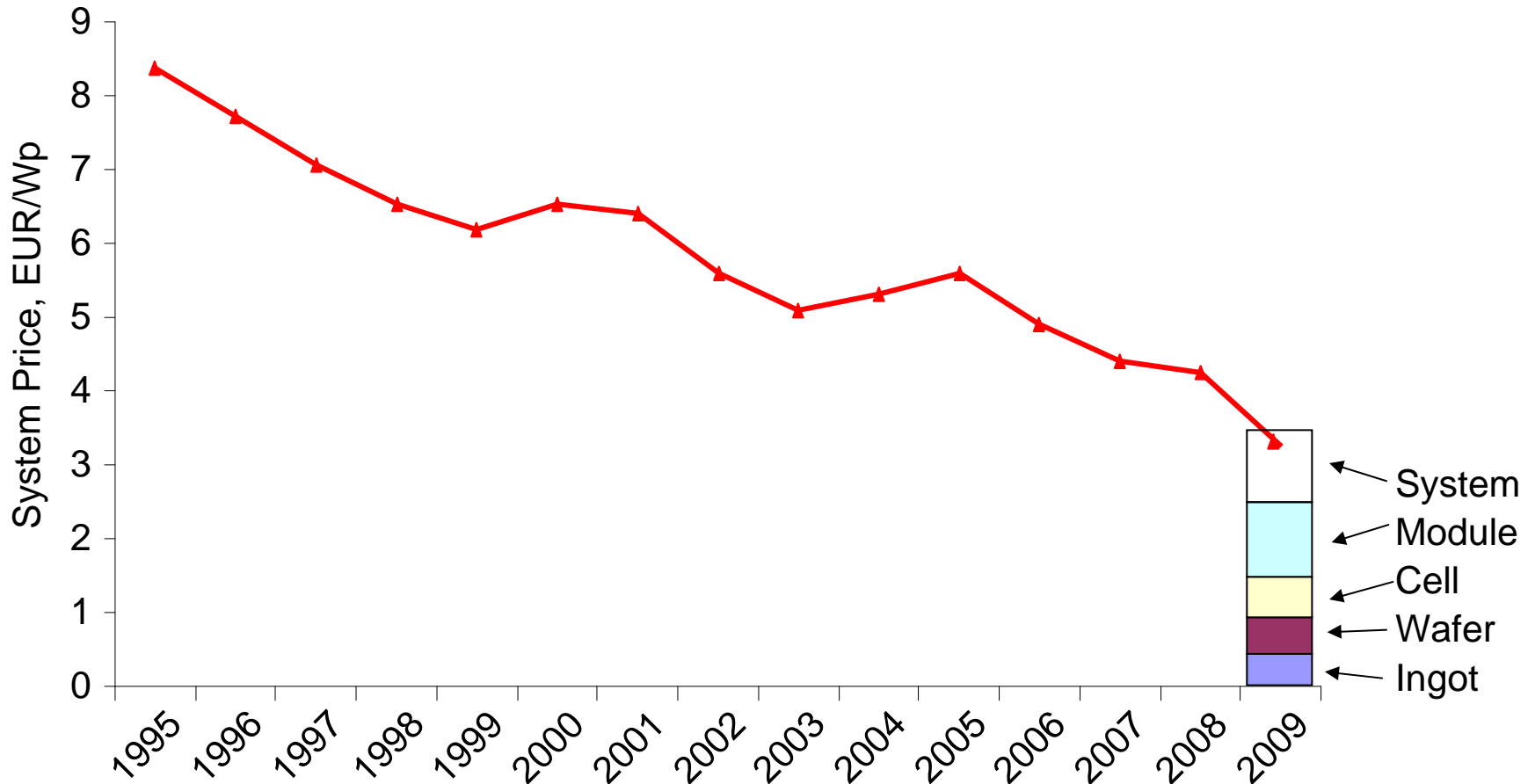


Sources: National Survey Report of PV Power Applications in Germany 2008, Version 2, Lothar Wissing, Forschungszentrum Jülich, May 2009 (IEA, Co-operative programme on PV power systems); Statistische Zahlen der deutschen Solarstrombranche (Photovoltaik), Bundesverband Solarwirtschaft, Nov 2009
Sources: Statistische Zahlen der deutschen Solarstrombranche (Photovoltaik), Bundesverband Solarwirtschaft, Nov 2009; Data from pvXchange GmbH [2008-2010]; Deutsche Bank, Solar Photovoltaic Industry - Looking through the storm, 2009;

Technology policy complements carbon pricing



Improvement potential – across many components

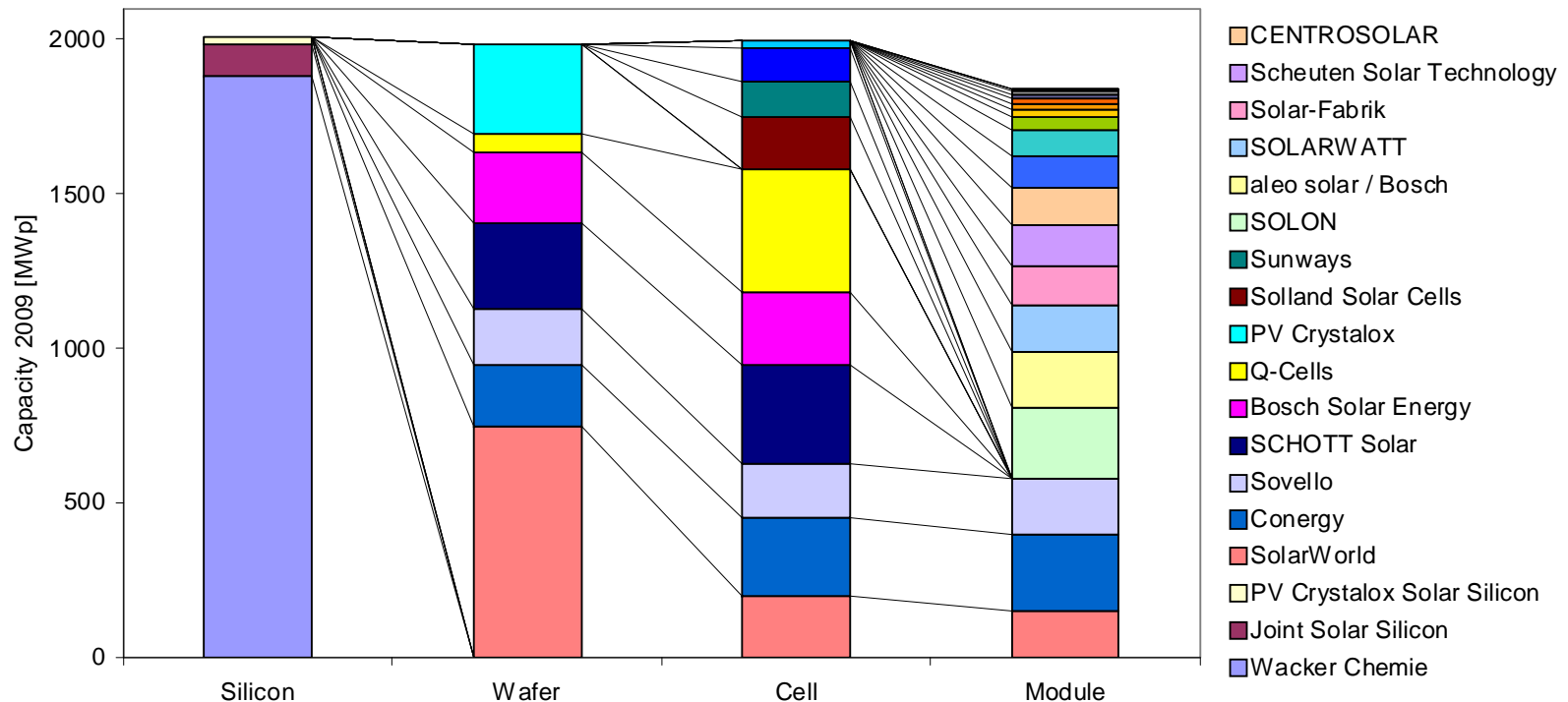


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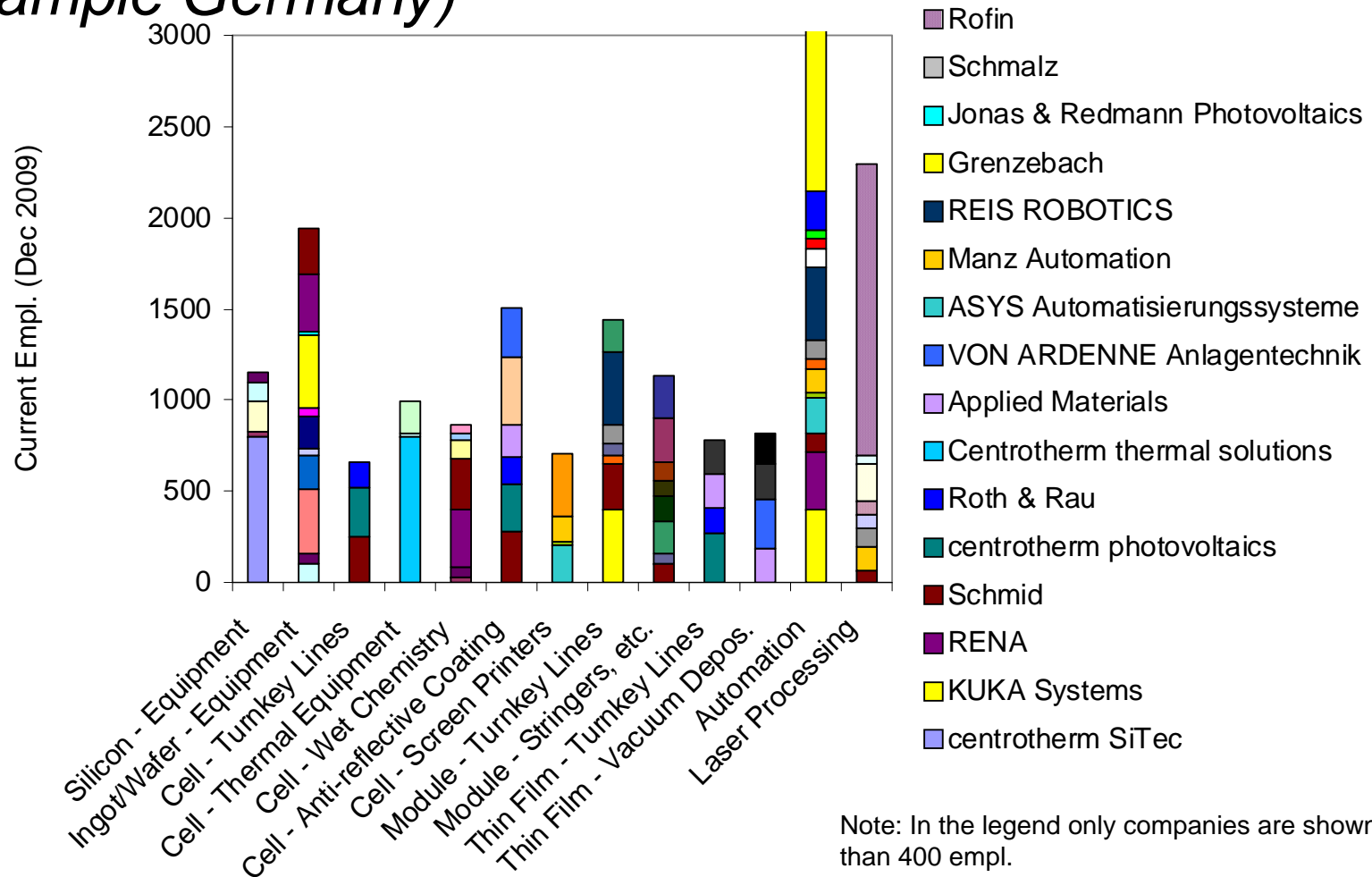
[2008-2010]; Deutsche Bank, Solar Photovoltaic Industry - Looking through the storm, 2009;

The main actors, PV manufacturers (example Germany)



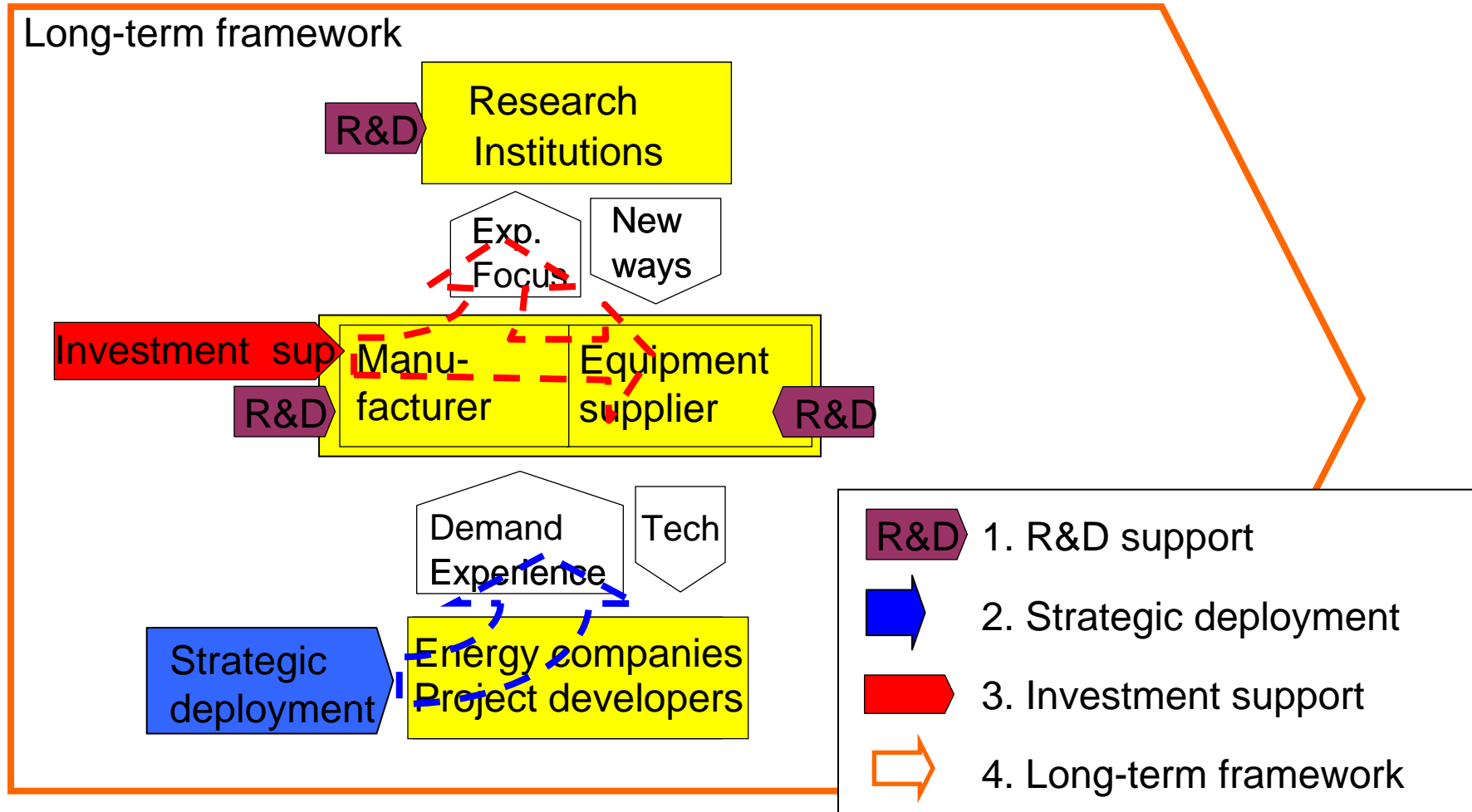
Note: Excluding companies active in thin film technologies

The main actors, PV equipment suppliers (example Germany)



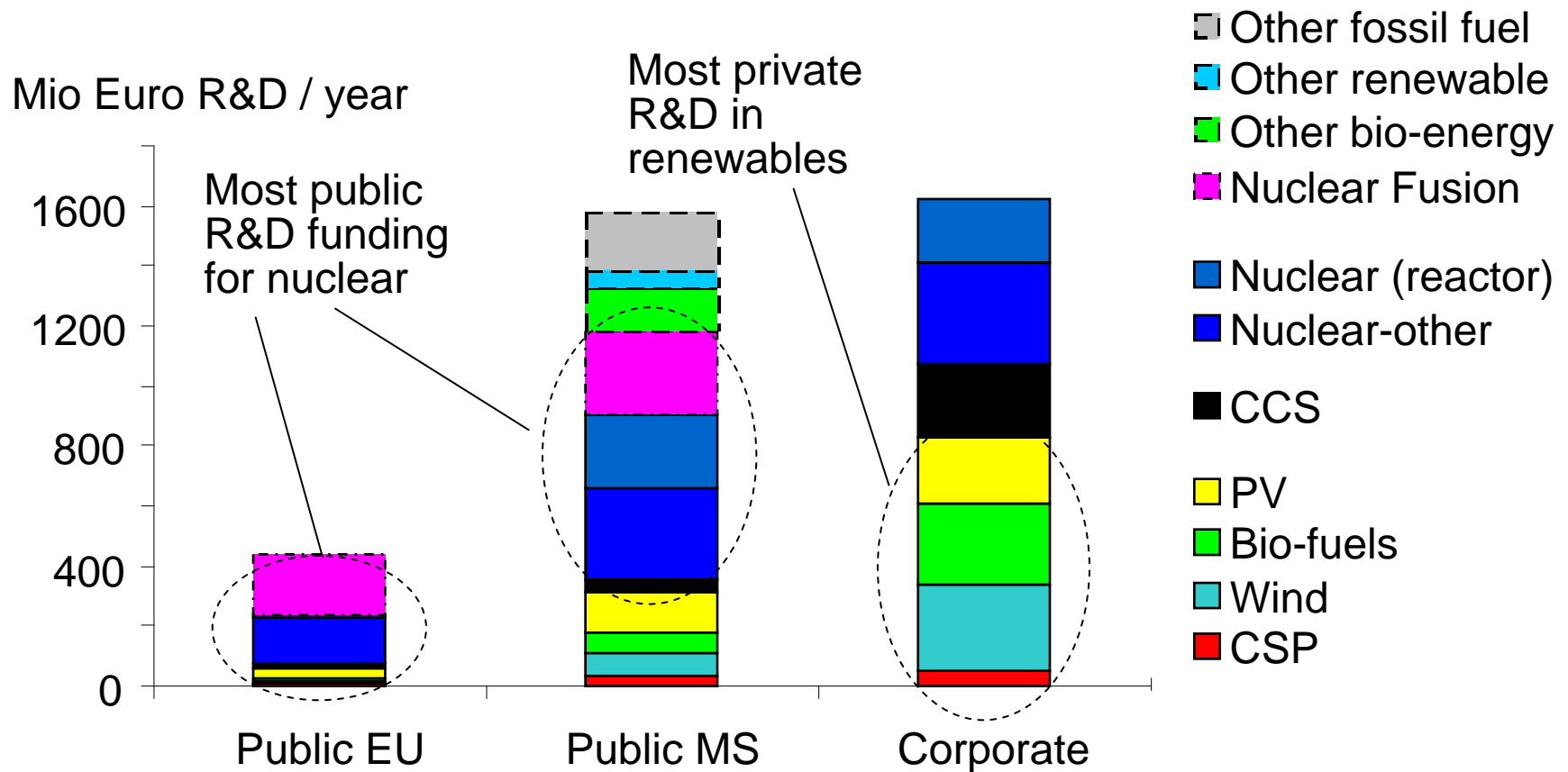
Note: In the legend only companies are shown with more than 400 empl.

How to target public support to an industry?



1. R&D Investment in priority technologies of SET

- Power&Fuel in 2007



Source: IEA energy statistics, Euratom, R&D investment in the priority technologies of the European Strategic Energy Technology Plan, Staff Working Document, COM(2009) 519 final

SET Plan – industrial sector objectives

	2020 Objective	2007 Total R&D (mio Euro)	Estimated cost (mio Euro/year)
Wind energy	20% power	384	600
Solar Energy	PV: 12% power CSS: 3% power	384	1600
Bio-energy	14% of energy 60% GHG savings	Biofuels: 347	900
CCS	Commercialization	296	1050-1650
Nuclear	2040: Gen IV Commercialization	1260	500-1000
Grid	2020: 35% intermit 2050: full decarbon.	273	200
Smart cities	5% pick up EE Spread best practice		1000-1200

Source: A technology road map, Staff Working Document, COM(2009) 519 final

Summary R&D support for SET

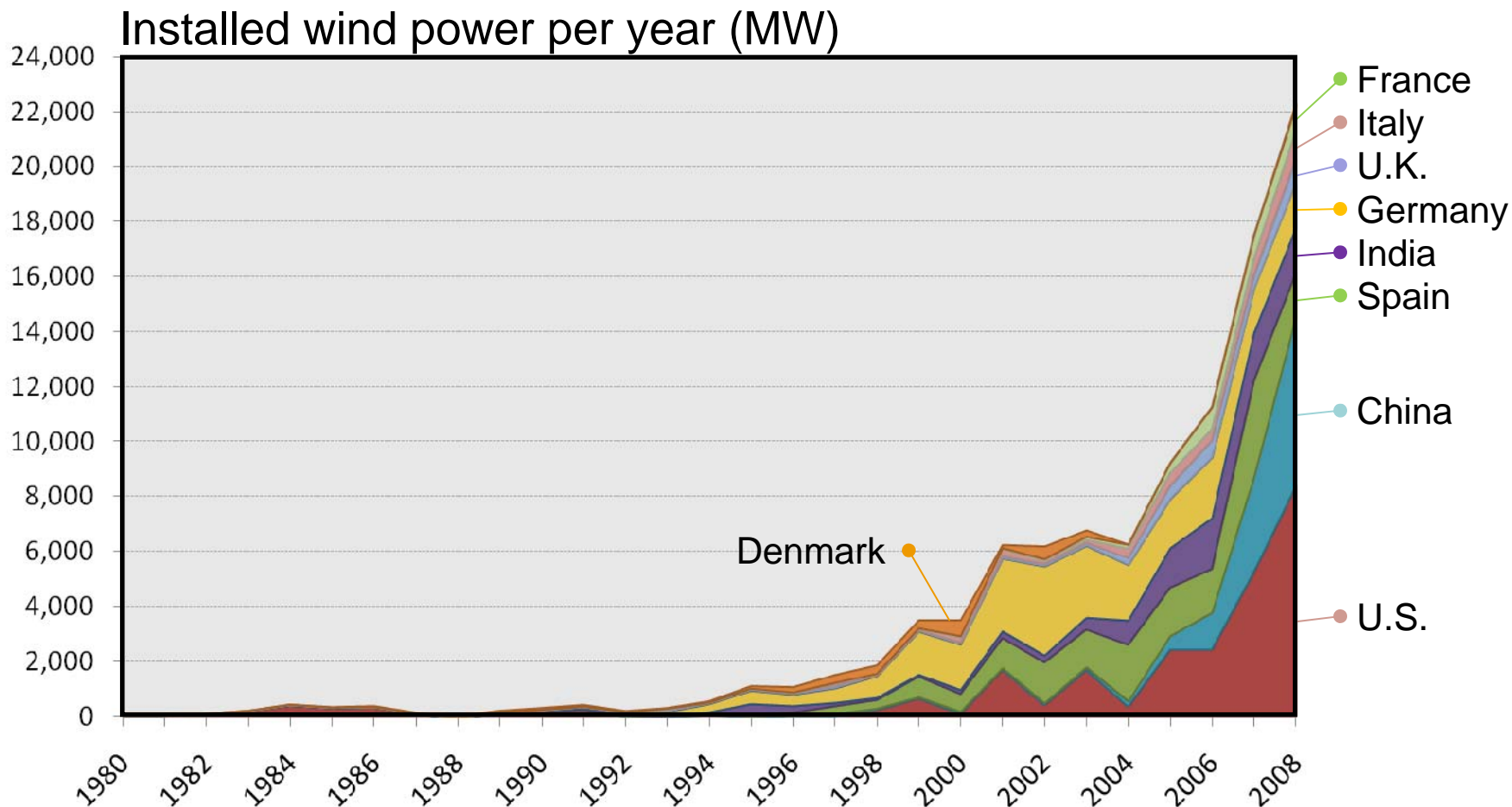
Focus

- Energy efficiency only as part of smart cities
- Energy storage is missing in SET. Public funding in 2007 focused on hydrogen, not battery and other technologies
- Disproportionate spending on nuclear

Approach

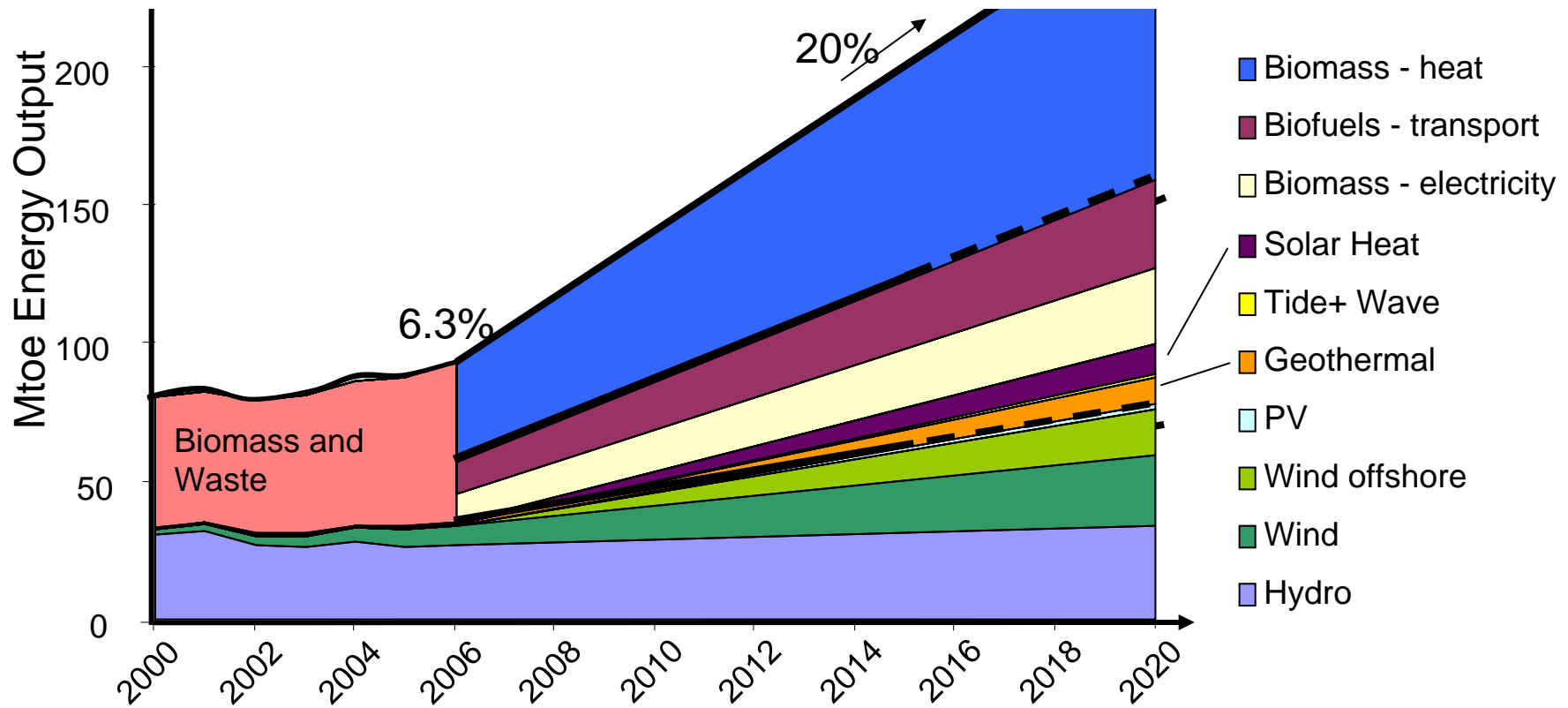
- How to increase available public energy R&D budget?
- How to enhance private sector activity beyond 2-3% of turnover?

2. SET plan and strategic deployment policies



Source: IEA, GWEC, Worldwatch Institute

The opportunities with EU Renewables Directive



Based on Green-X projections

Policy targets frame public & private investment

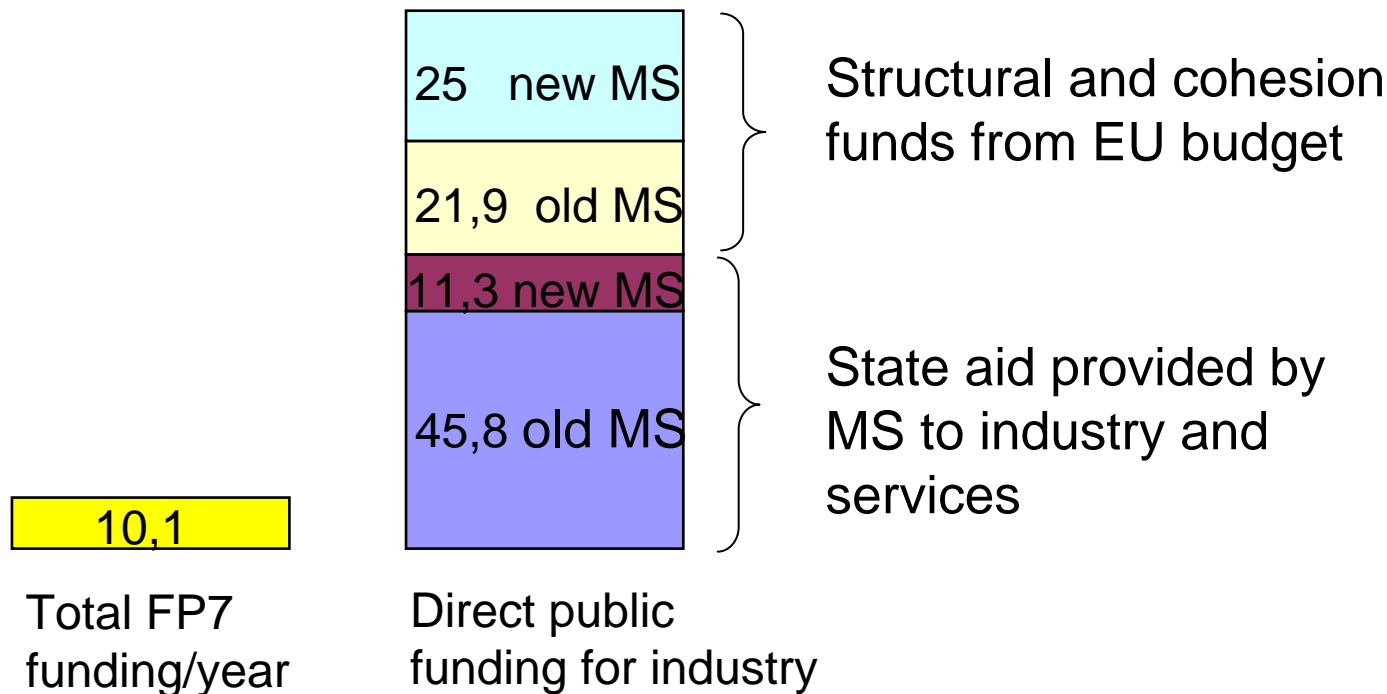
Guidance from
•Consistent objectives
•Strategic choices

2. SET plan and strategic deployment policies

- 1) Expectations matter to attract private sector investment
 - 1) Unexpected growth creates scarcity, expected growth innovation
 - 2) Derive credibility from consistency of overall framework
- 2) Use EU – MS interaction as commitment/monitoring device
 - 1) National Renewable Actions Plans define trajectories
 - 2) Ensure portfolio of technologies consistent with 80%+ target
- 3) Support national policy frameworks for effective deployment
 - 1) Harmonise power market design to accommodate intermittency
 - 2) Remove regulatory risks to facilitate financing (retain feed-in)

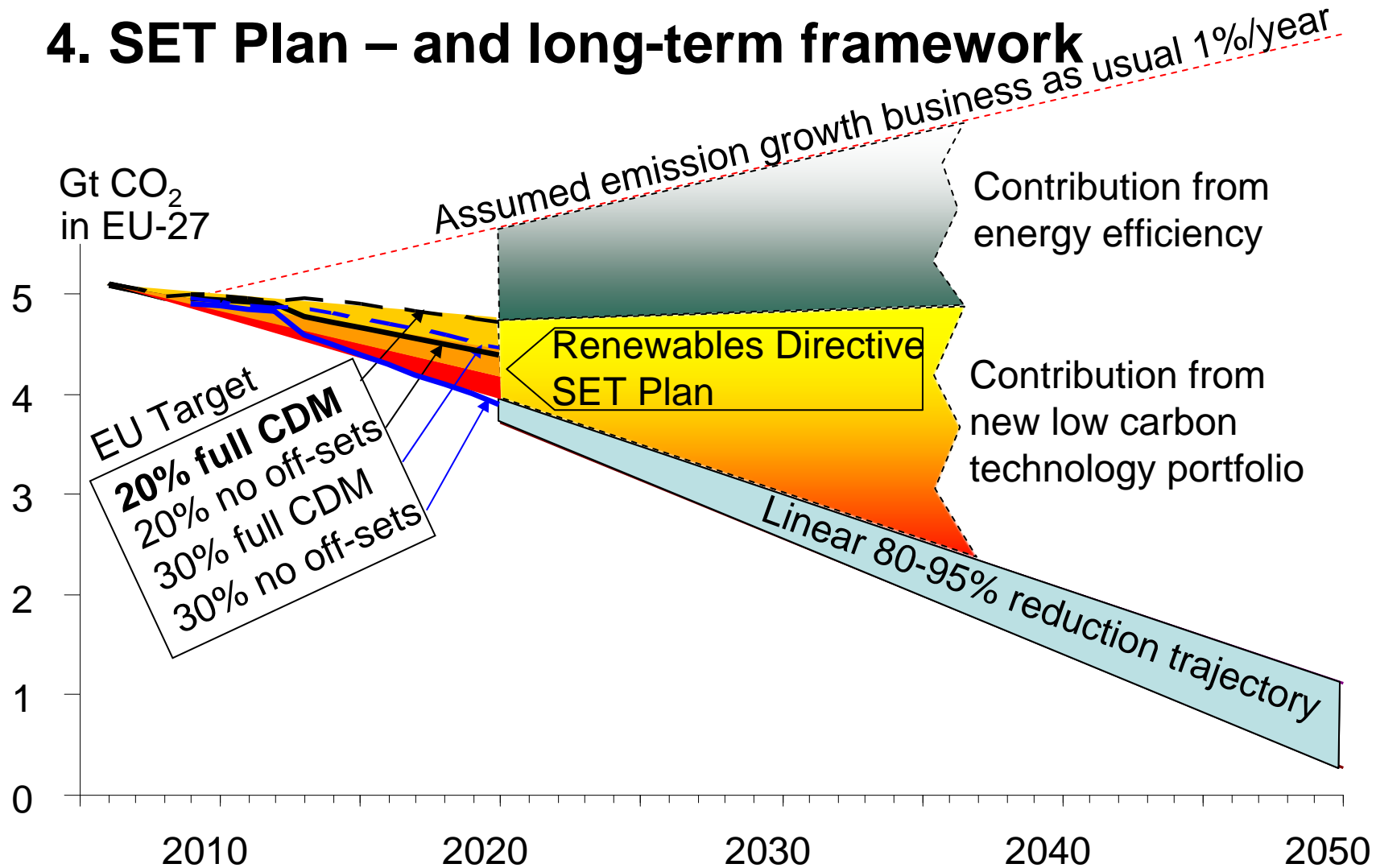
3. SET plans and investment support

Billion Euro 2008



How to shape State aid rules and EU budget to ensure direct public support creates incentives and support for innovation?

4. SET Plan – and long-term framework



ETS numbers based on "The role of CDM post 2012" Climate Policy Initiative working paper

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Conclusion

1 R&D support

- Accessible for multiple actors (including equipment suppliers)
- Enhance scale of private innovation investment with public support
- Include more energy efficiency and storage options

2. Strategic deployment

- Ensure NRAP create space for portfolio of renewables
- Enhance transparency of reporting to increase credibility of targets

3. Investment support

- Link EU funding and MS State aid to innovative activities

4. Long-term framework

- Strengthen 2020 emission targets & constrain off-sets
- Create trajectory for technology transition