

Comments to the EU 2020 strategy's potential to
**Speed up green growth and create
sustainable energy transition possibilities**

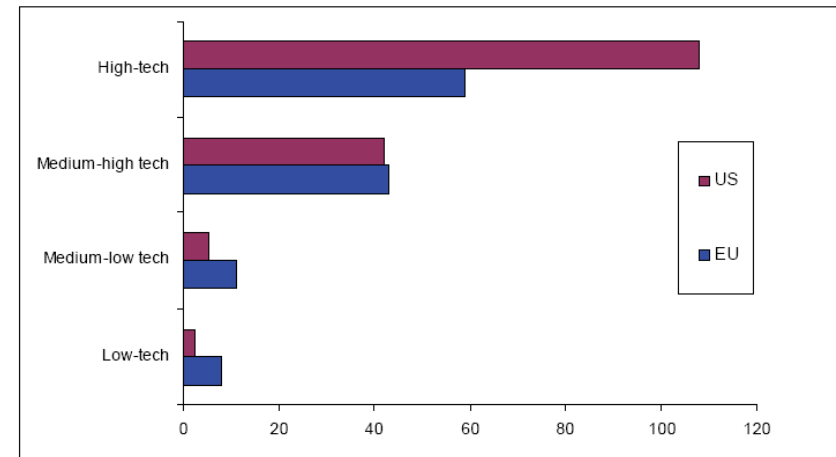
Professor Peter Lund
Aalto University
School of Science and Technology
peter.lund@tkk.fi

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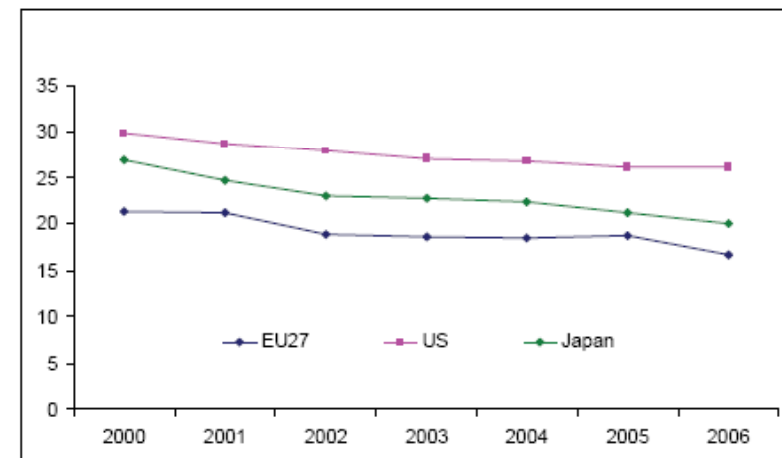
EU 2020 strategy in short

- Vision: a social, smarter, greener economy
- Means: innovation, knowledge society, better resources use
- Focus: growth and jobs, full recovery from the economic crisis
- Opportunities: many
- Challenges: many

R&D spending (€ bn) and industrial structure (2008)



Share of high-tech exports (% of total exports)



6. Green growth: a competitive and sustainable economy

- Decarbonising our electricity supply
- Decarbonising our transports
- Resource-efficiency matters
- Europe's lead in green sectors
- Green growth creates new jobs
- Tackling our missing energy links
- The internal market helps us grow
- Still a large potential in services
- Using e-commerce
- Helping our SMEs to grow in new markets
- The case of automotive production

Climate change, energy, industry key drivers for the EU Green Growth

Green growth: a sustainable and competitive economy

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COMBATING CLIMATE CHANGE	ENERGY	COMPETITIVENESS
<u>Key facts</u> <ul style="list-style-type: none">• Achieving our goals means reducing emissions by twice as quickly in the next decade than in the last decade• Jobs in the eco-industry have increased by 7% every year since 2000; meeting our renewable target would mean 2.8 million jobs in the sector	<u>Key facts</u> <ul style="list-style-type: none">• Meeting our goals will result in € 60 billion less in oil and gas imports by 2020• Further progress with the internal market for energy can add 0.6% to 0.8% GDP	<u>Key facts</u> <ul style="list-style-type: none">• The market for green technologies is forecast to triple by 2030 / Improving resource efficiency by 20% would increase EU growth by around 1 per cent• Using the single market to the full / improved market access and regulatory convergence can boost growth and jobs
Possible EU flagship: Low-Carbon Strategy	Possible EU flagship: Energy Action Plan	Possible EU flagship: Industrial Policy for the Globalisation Era

Three priorities for sustainable growth and jobs

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- **Growth based on knowledge and innovation**
 - Innovation
 - Education
 - Digital society
- **An inclusive high-employment society**
 - Employment
 - Skills
 - Fighting poverty
- **Green growth: a competitive and sustainable economy**
 - Combating climate change
 - Clean and efficient energy
 - Competitiveness



- “By moving towards a more sustainable economy, we will unleash a surge of **innovation** and investment in clean technologies and products. New sectors will provide 'green collar' jobs and become sources of sustainable growth for the future,” said Barroso.
- Doubling the use of renewable energy to 20 % by 2020 could generate €90bn of additional investment, and 700,000 new jobs.
- European Strategic Energy Technology Plan (SET-Plan) will be the technology pillar of the EU's energy and climate policy. 50 billion € in energy technology RTD over the next 10 years.

"The nation that leads the world in creating new sources of clean energy will be the nation that leads the 21st century global economy"

US president Barack Obama
on Earth Day April 22, 2009 in Iowa

"Investing in clean energy jobs and businesses is still the right thing to do for our economy" (Feb 9, 2010)"

ARRA Programme includes \$80 billion for clean energy, total financing close to \$200 billion



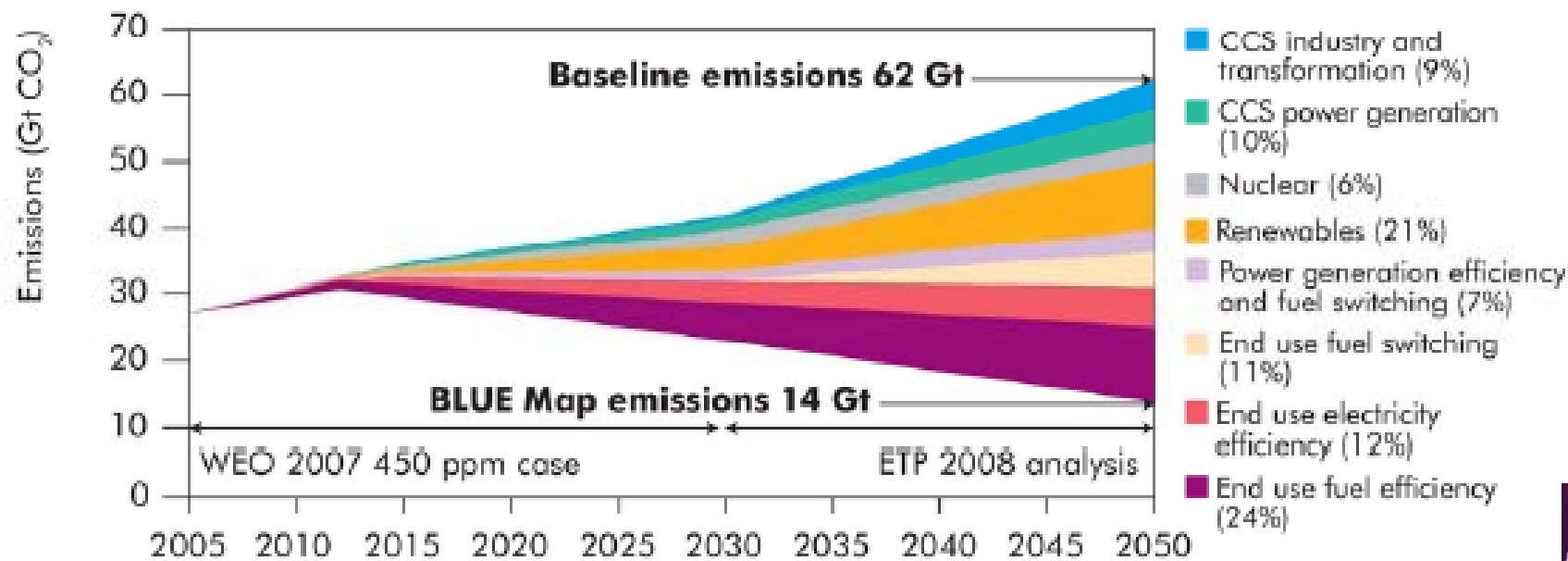


- Wen Jiabao: 60% of the energy demand increase to be cut by 2020
- 200 billion \$ on energy efficiency (e.g. in industries)
- Renewables to be doubled
- China is Nr 1 in several fields of new energy technologies

Climate change mitigation requires an energy revolution

- Max. emissions 1 tCO₂/capita in 2050 to limit global temperature rise emissions need to be reduced globally by 60%, in EU by 80-90%
- Cumulative investments needed ca 30.000 billion €
- Energy efficiency and renewables are around 70-80% of the global solutions to reduce carbon emissions by 2050

**Contribution of emission reduction options,
2005-2050**



Basics of growth: Creative destruction through innovations

“ The opening up of new markets, foreign or domestic, and the organizational development from the craft shop and factory to such concerns as U.S. Steel illustrate the same process of industrial mutation– if I may use that biological term–that incessantly revolutionizes the economic structure *from within*, incessantly **destroying the old one**, incessantly **creating a new one**. This process of Creative Destruction is the essential fact about capitalism. It is what capitalism consists in and what every capitalist concern has got to live in. . — Joseph Schumpeter , *The Process of Creative Destruction*, 1942



Technological unemployment

The Churn: Recycling America's Labor

* Fewer than 5,000.

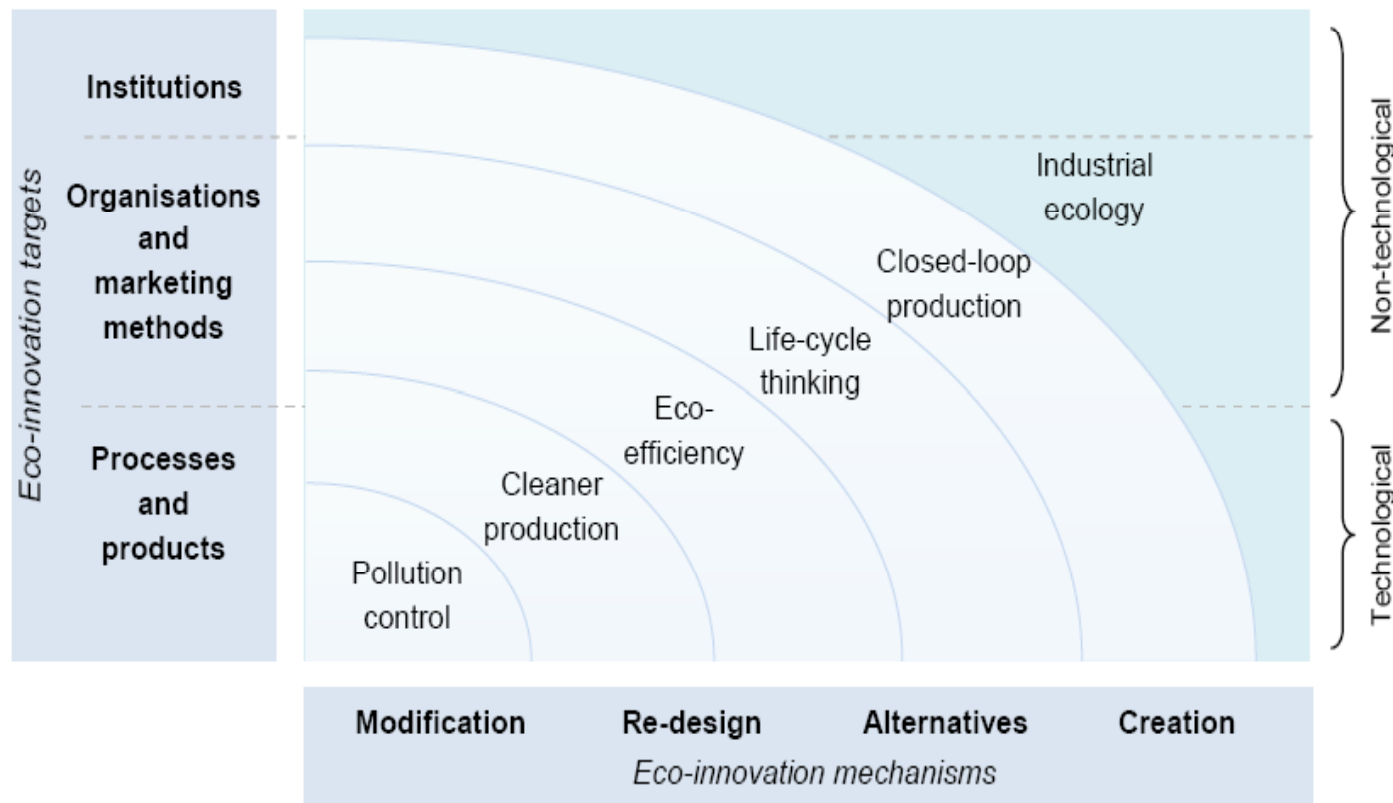
Job Destruction	Now (2002)	Then	Year
Railroad employees	111,000	2,076,000	1920
Carriage and harness makers	*	109,000	1900
Telegraph operators	*	75,000	1920
Boilermakers	*	74,000	1920
Milliners	*	100,000	1910
Cobblers	*	102,000	1900
Blacksmiths	*	238,000	1910
Watchmakers	*	101,000	1920
Switchboard (telephone) operators	119,000	421,000	1970
Farm workers	716,000	11,533,000	1910
Secretaries	2,302,000	3,871,000	1980
Metal & plastic working machine operators	286,000	715,000	1980
Optometrists	33,000	43,000	1998
Airplane pilots and mechanics	255,000	0	1900
Auto mechanics	867,000	0	1900
Engineers	2,028,000	38,000	1900
Medical technicians	1,879,000	0	1910
Truck, bus, and taxi drivers	4,171,000	0	1900
Electricians	882,000	*	1900
Professional athletes	95,000	*	1920

- “Attempts to save jobs almost always backfire. Instead of going out of business, inefficient producers hang on, at a high cost to consumers or taxpayers.” - Cox

Typology of eco-innovations

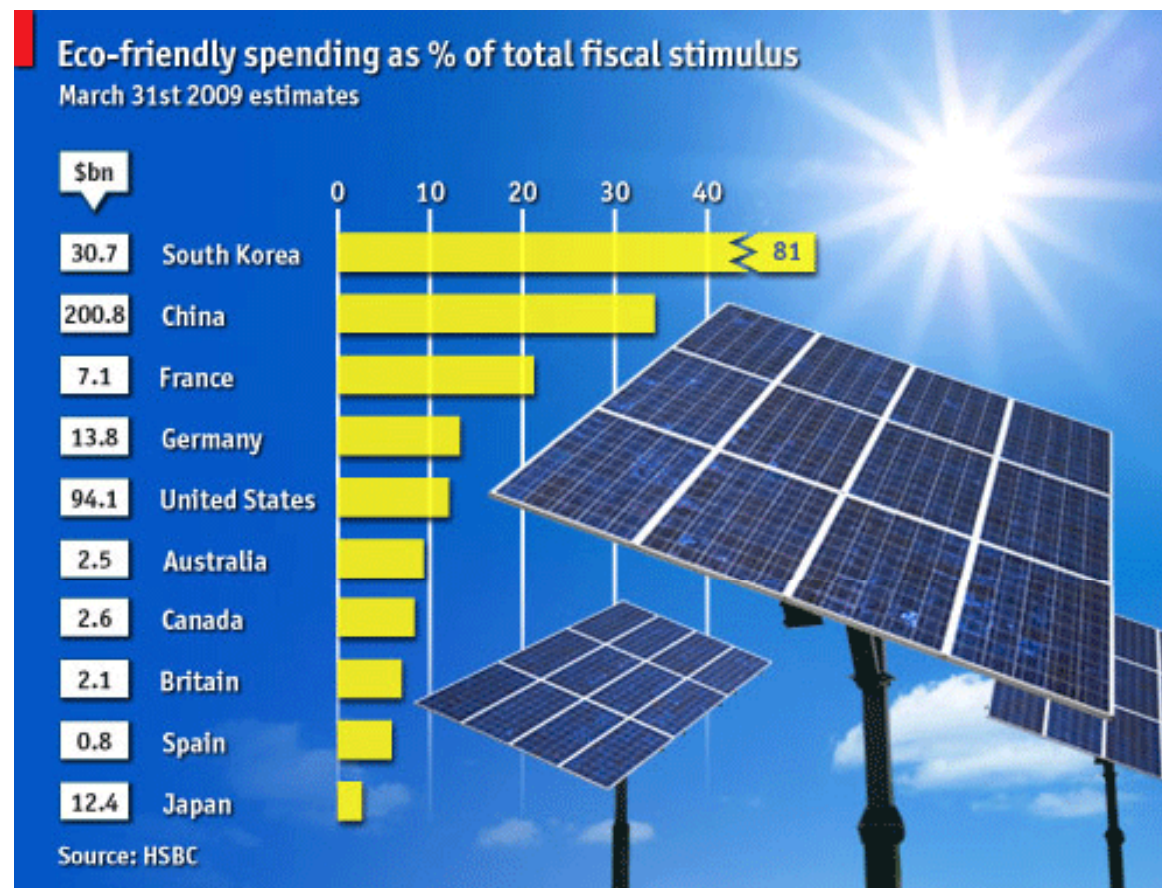
- Not just technological but social, user-driven, institutional, etc innovations required; from incremental to radical innovations

Figure 5. Conceptual relationships between sustainable manufacturing and eco-innovation



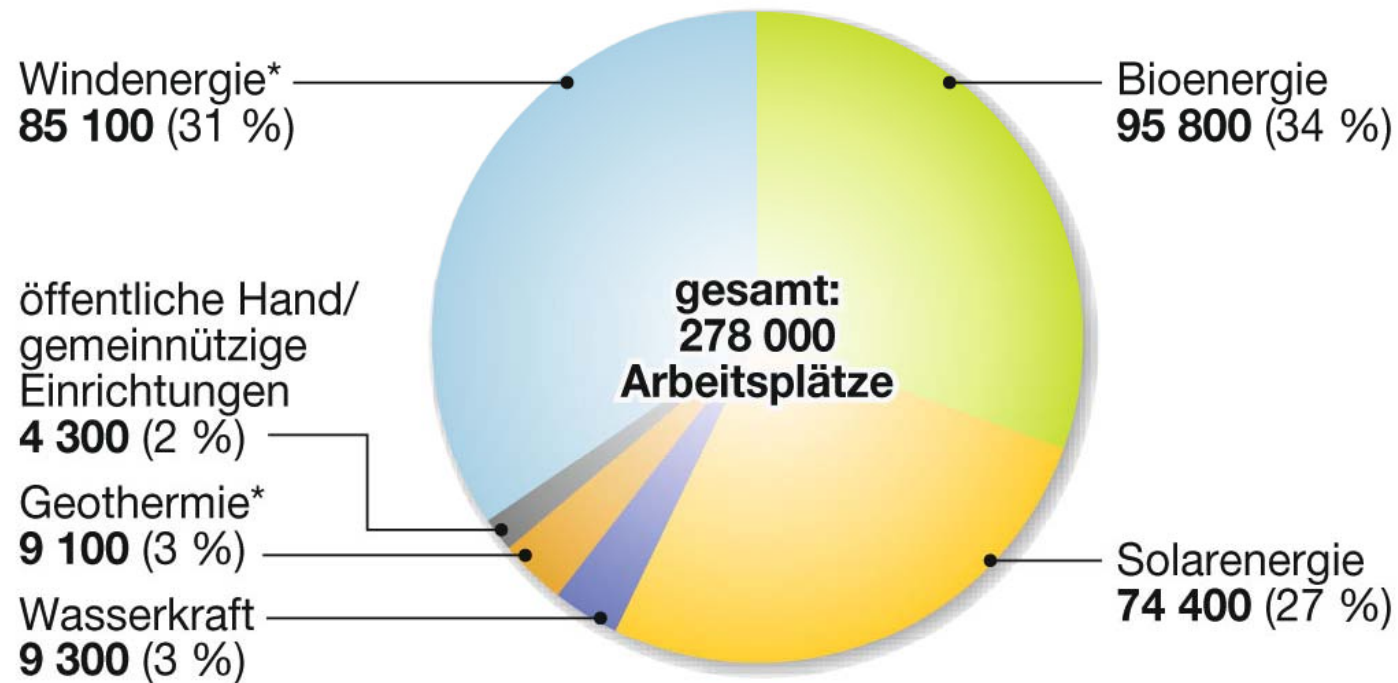
Green energy & increased efficiency = new jobs

- 20 milj. by 2030 (UN/ILO); EU renewables directive creates 410.000 jobs; 250.000 jobs in Germany; 2 million jobs in USA possible
- In Finland, 30.000-40.000 new jobs possible if energy decisions fully rely on domestic technologies and know-how



Erneuerbare Energien: rund 280 000 Arbeitsplätze im Jahr 2008

Zahl der Arbeitsplätze nach Branchen



* abweichende Branchenangaben:
Windenergie ca. 100 000, Geothermie ca. 12 000
Quellen: DLR/ZSW/DIW/GWS, BMU, UBA; Stand: 3/2009

Market and business signals

- Global investments in new energy were 85 bill € (42% wind, 32% solar, 19% bioenergy)
- Business value 170 bill € (2008)
- Wind power growth in 2009 was 31%

New power capacity installed in 2008

Source: EWEA and Platts Power Vision

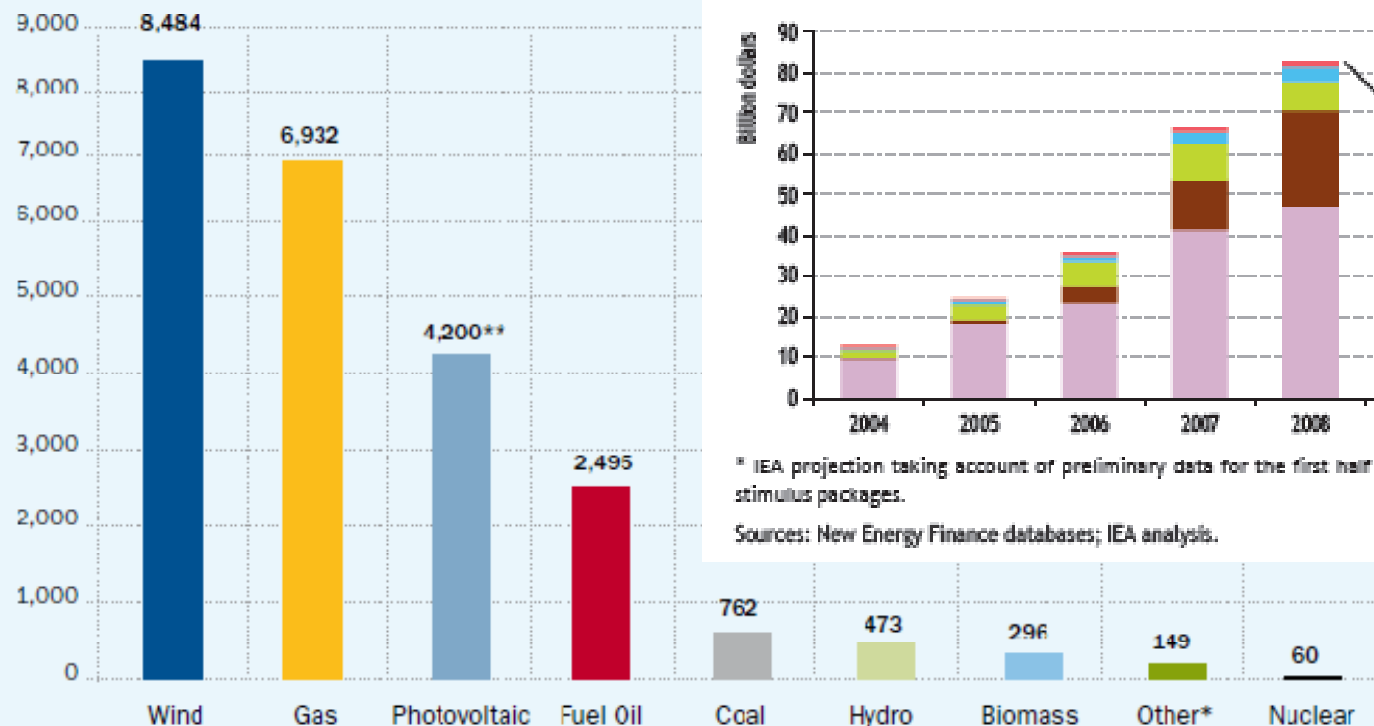
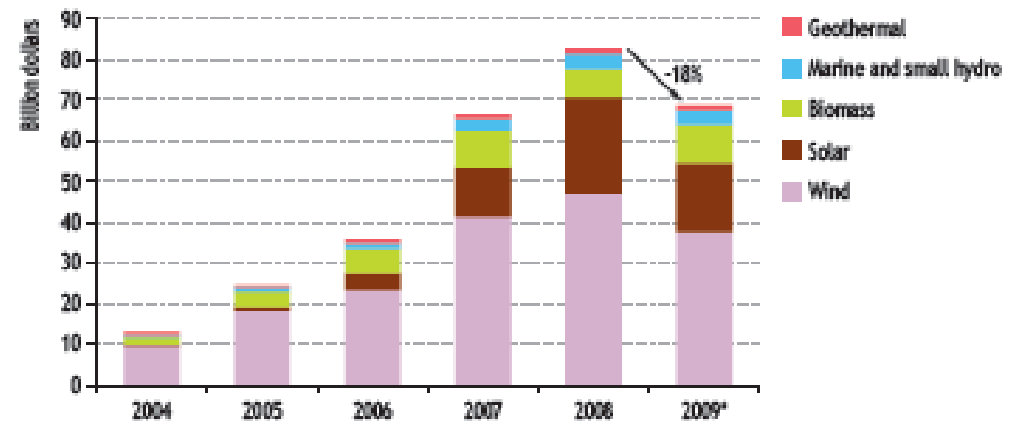


Figure 3.7 • Global Investment In new renewables-based power-generation assets



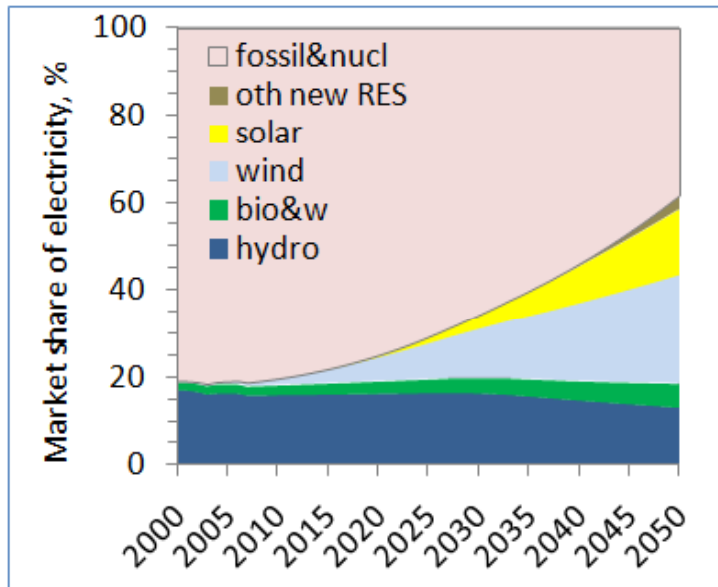
* IEA projection taking account of preliminary data for the first half of the year and the impact of fiscal stimulus packages.

Sources: New Energy Finance databases; IEA analysis.

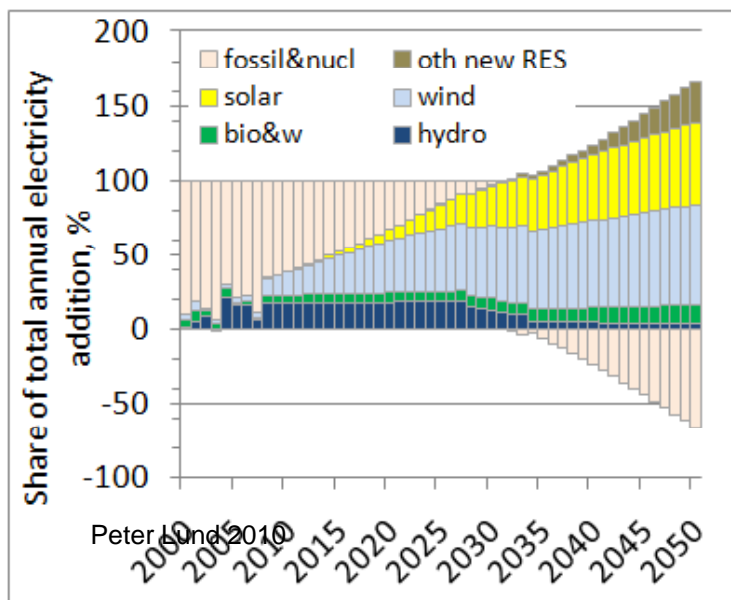
* Geothermal, peat and waste

** This is a preliminary figure for solar photovoltaic installations (source: European Photovoltaic Industry Association (EPIA)).

How far could "green" energy technologies bring us?



- **All renewables >60% of electricity in 2050 (now 19%)**
 - Wind 25%, solar 15% of all electricity
- **Preferential position, adequate political and financial support, allowing full lock-in**
 - Wind 50% and solar 30% of all new electricity investments ~ 2030
- **Cost Parity (≥ 2025)**
 - Wind (40€/MWh, support 330 bill€)



Peter Lund 2010

P.D. Lund: Exploring past energy changes and their implications for the pace of penetration of new energy technologies. Energy 35 (2010) 647-656

Fundamental issues that need to be addressed in the EU2020 strategy (Green Growth)

1. **From vision to concrete measures**
2. **From input to impacts**
3. **Financing**
4. **Coordination, Integration**
5. **Cooperation**
6. **Commercialization, managing innovation chains**
7. **Pace of development**
8. **Hunger for growth !?**