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A SUSTAINABLE WORLD ENERGY OUTLOOK

Energy[r]evolution
a sustainable World Energy Outlook

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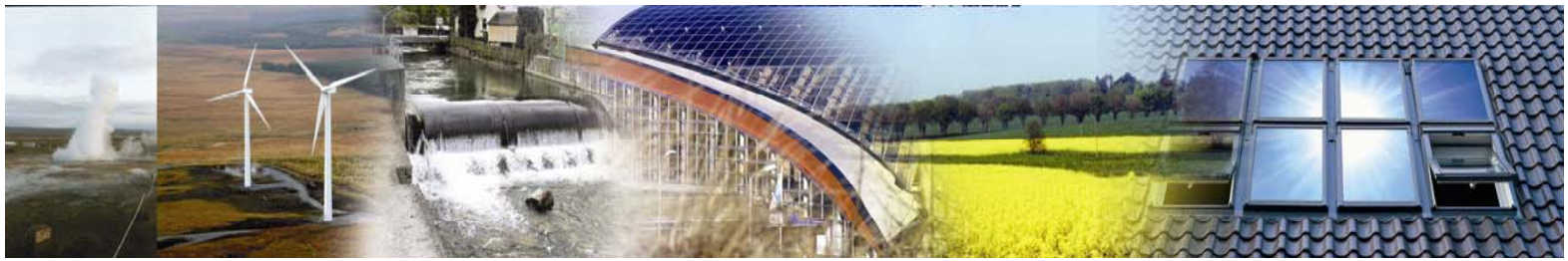
REN21/IRENA side event @ COP15
Copenhagen, 15th December 2009

EREC

GREENPEACE



EREC – European Renewable Energy Council

- **Umbrella organisation of the European renewable energy industry**
- **450.000 jobs in EU renewable energy industry**
- **Annual turnover 2008: 45 billion €**

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Why Scenarios?

- images of alternative futures
- neither predictions nor forecasts
- image of how the future could unfold
- useful tools for investigating alternative future developments and their implications

Scenarios can create a vision for the future and guide decision makers.

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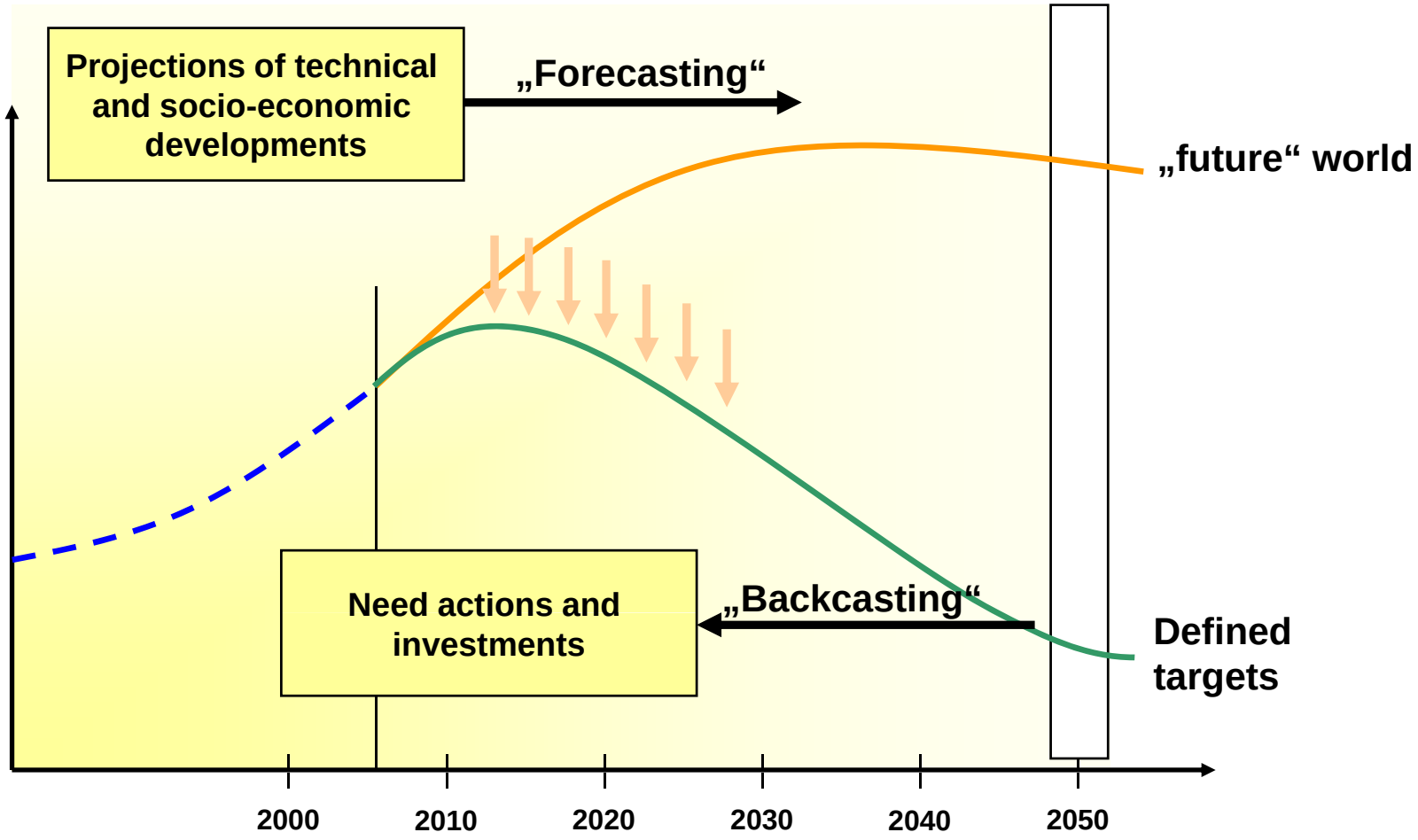
Development of different scenarios



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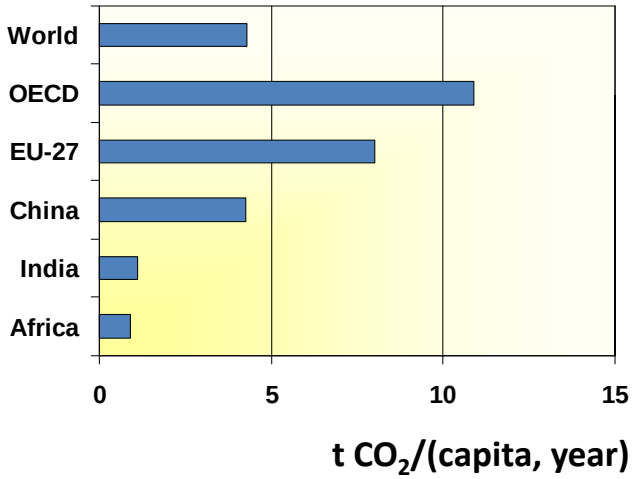
Climate & Energy Policy targets:

- Stabilize global CO_2-concentration under 400 ppm
- Global CO_2 emissions peak by 2015
- Per capita emissions by 2050: ~ 1 tCO_2/a
- Rapid fossil fuel phase-out
- Only proven technology will be used
- Equity and fairness, sustainable economic growth



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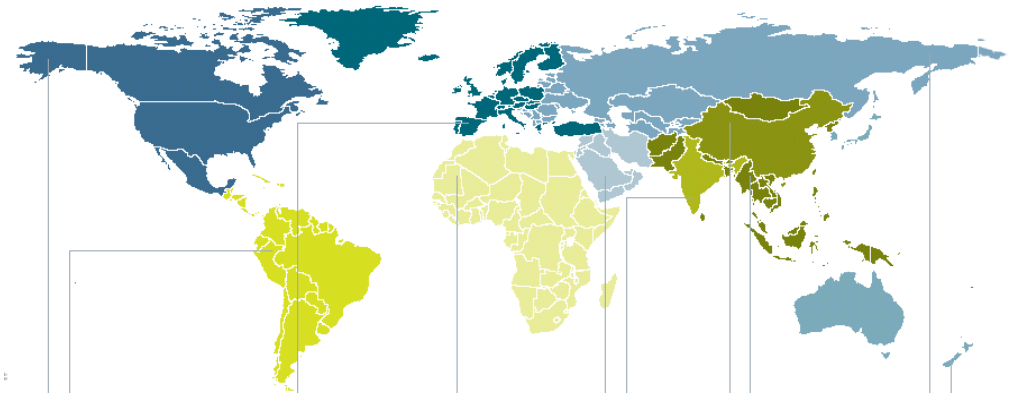
Approach

- Development of a 10-region model (based on IEA regions)
- Economic development and population development according to IEA World Energy Outlook 2006 (extrapolated to 2050)
- Reference Scenario: based on IEA World Energy Outlook 2006 (extrapolated to 2050)
- Alternative Scenarios:
  - demand scenarios: Ecofys
  - supply scenarios: DLR
- Review process:
  - regional counterparts (academia, NGO)
  - EREC / Greenpeace



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The logic of the Energy [r]evolution scenario

From principles to practice - Use the current "time window" for

Step 1: Energy Efficiency

Step 2: Structural Changes

- Decentralised energy and large scale renewables
- Cogeneration

Step 3: Energy Efficient Transport

- Efficient Public Transport Systems , efficient cars, trucks etc.
- Sustainable biofuels

Scenario principles in a nutshell

- Smart consumption, generation and distribution
- Energy production moves closer to the consumer
- Maximum use of locally available, environmentally friendly fuels

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The renewable energy industry – Status Quo

SELECTED INDICATORS AND TOP FIVE COUNTRIES

SELECTED INDICATORS	2006	2007	2008
Investment in new renewable capacity (annual)[1]	63	104	120 billion USD
Renewables power capacity (existing, excl. large hydro)	207	240	280 GW
Renewables power capacity (existing, incl. large hydro)	1,020	1,070	1,140 GW
Wind power capacity (existing)	74	94	121 GW
Grid-connected solar PV capacity (existing)	5.1	7.5	13 GW
Solar PV production (annual)	2.5	3.7	6.9 GW
Solar hot water capacity (existing)	105	126	145 GWth
Ethanol production (annual)	39	50	67 billion liters
Biodiesel production (annual)	6	9	12 billion liters
Countries with policy targets		66	73
States/provinces/countries with feed-in policies[2]		49	63
States/provinces/countries with RPS policies		44	49
States/provinces/countries with biofuels mandates		53	55

Source: REN21

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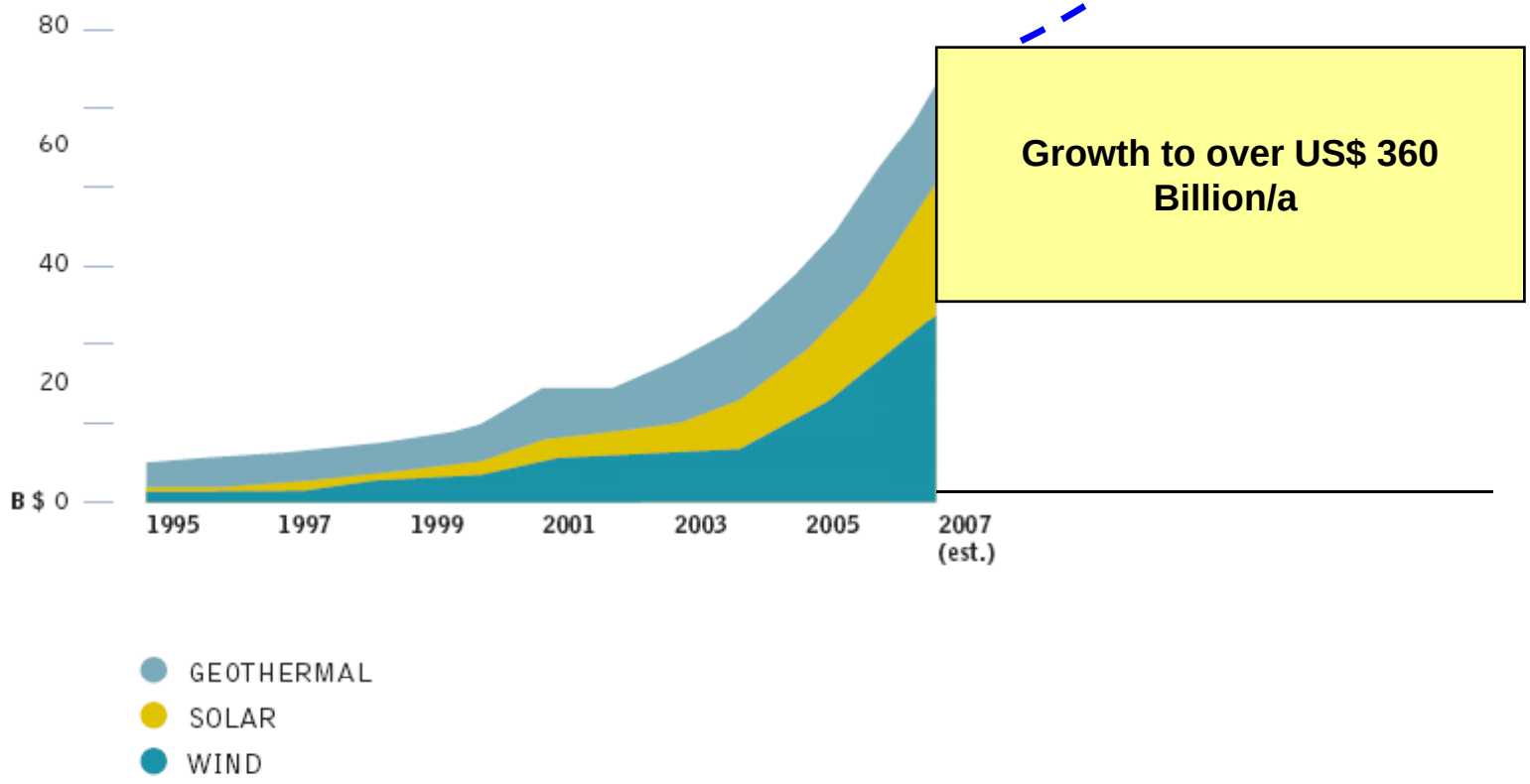
The renewable energy industry – Future outlook

figure 7.1: annual investment in renewable energy capacity, 1995-2007 EXCLUDES LARGE HYDROPOWER



Growth to over US$ 360 Billion/a

source REN21

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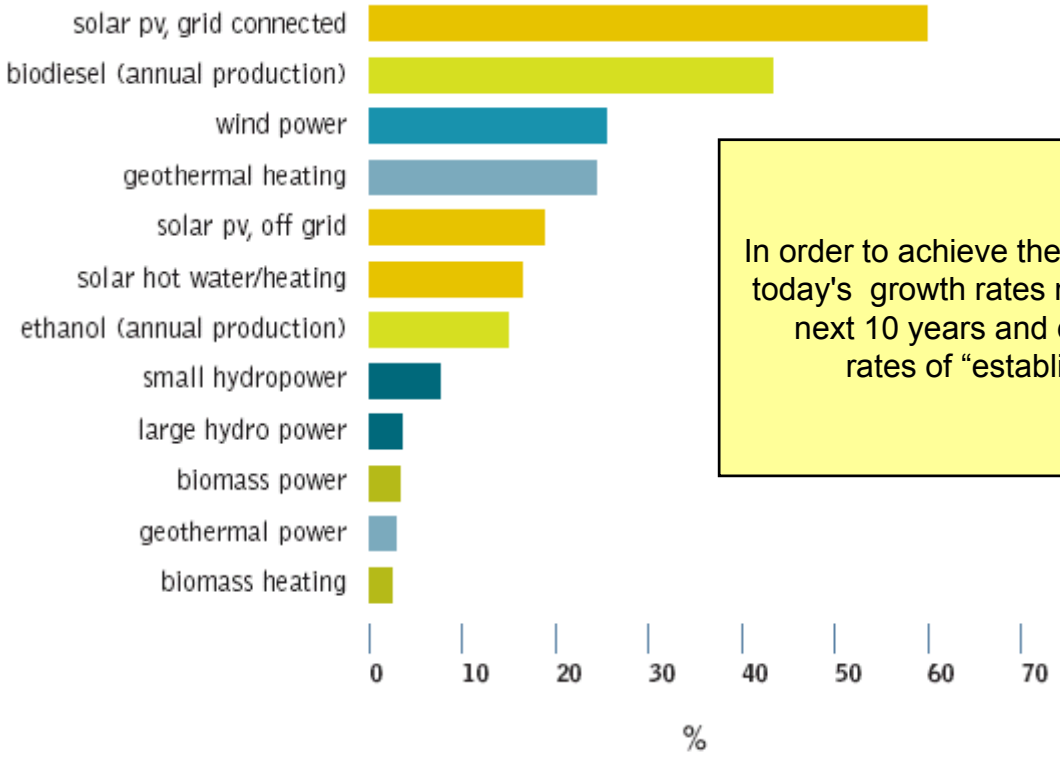
figure 7.2: average annual growth rates of renewable energy capacity, 2002-2006



In order to achieve the Energy [R]evolution scenario today's growth rates need to be maintained for the next 10 years and drop afterwards to growth rates of "established" industry sectors

source REN21

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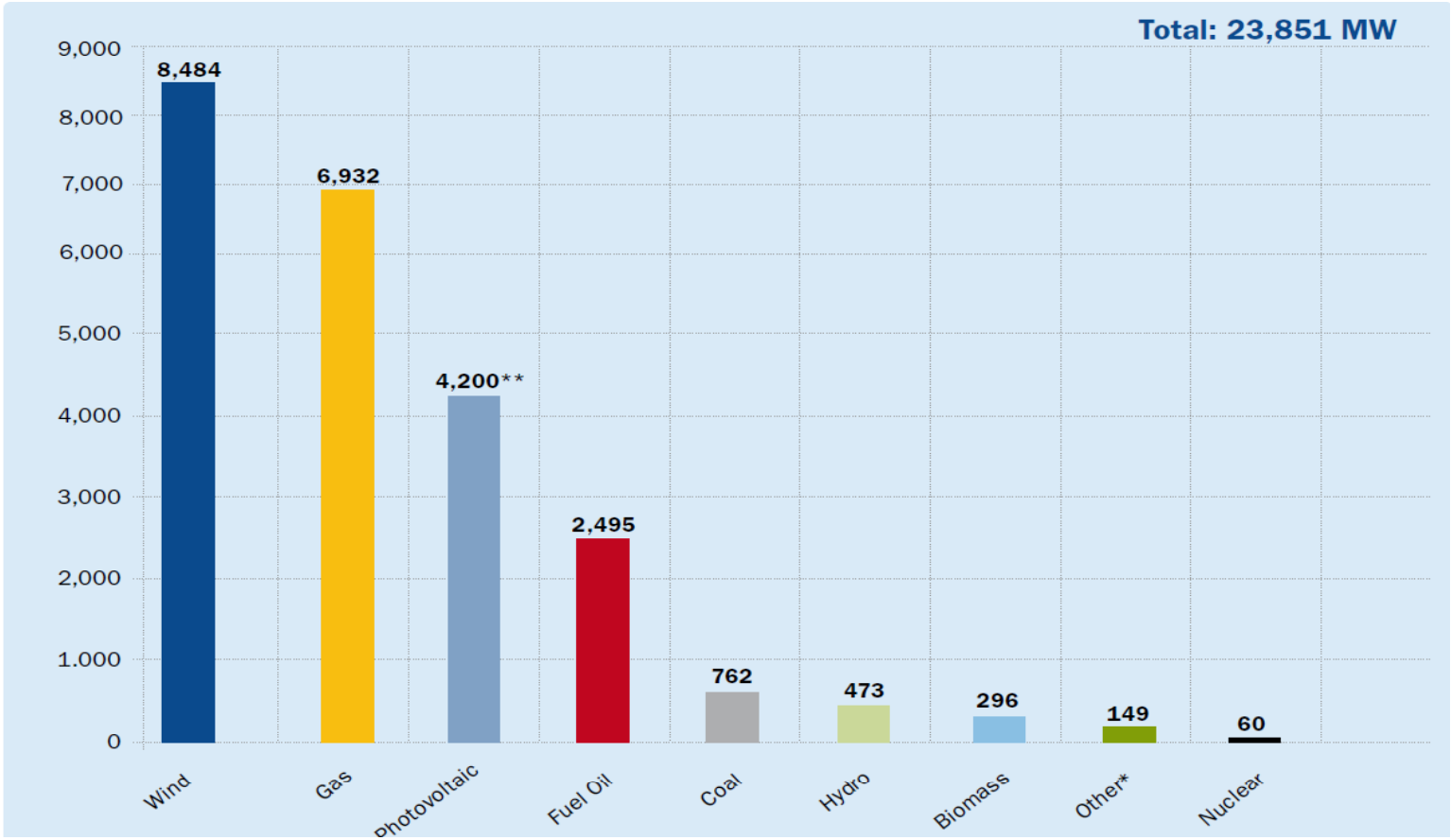
New Power Capacity installed in 2008 in EU

(MW)



** Source: Estimation EPIA

Source: EWEA and Platts Power Vision

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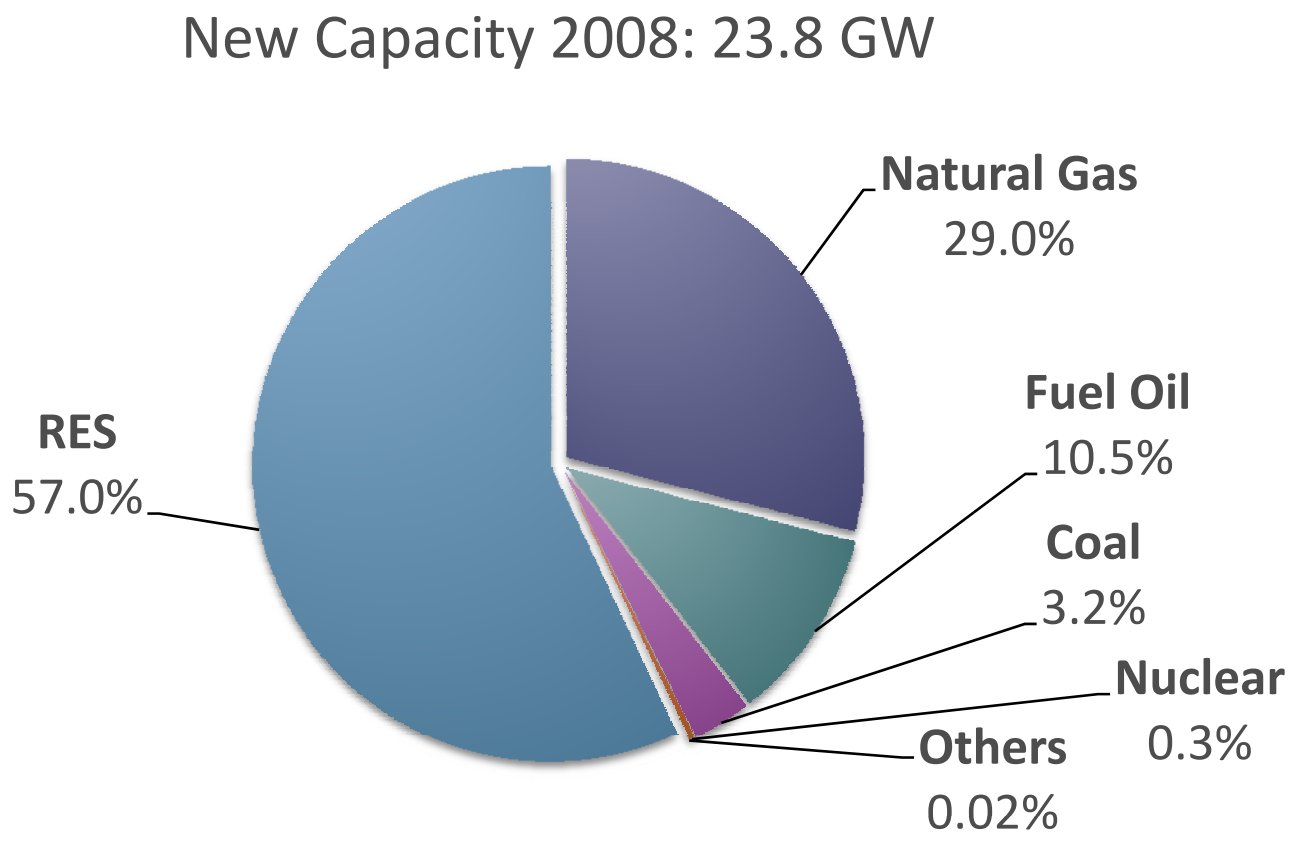
New Capacity installed by Fuel in EU in 2008

(%)



Source: Platts, EWEA, EPIA

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Jack,
age 6,
UK.

Alexandros,
age 7,
Cyprus.

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