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PLUG INTO RENEWABLES

Policies for renewables in the Netherlands and in Europe

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Outline and main messages

- The global energy challenges will result in a paradigm shift to a low carbon energy mix
- The Dutch RES targets are very ambitious
- The EU market for renewable Electricity is very fragmented
- Intensification of market support mechanisms is needed to arrive at 20 % RES in Europe
- The role of solar PV will be substantial after 2020

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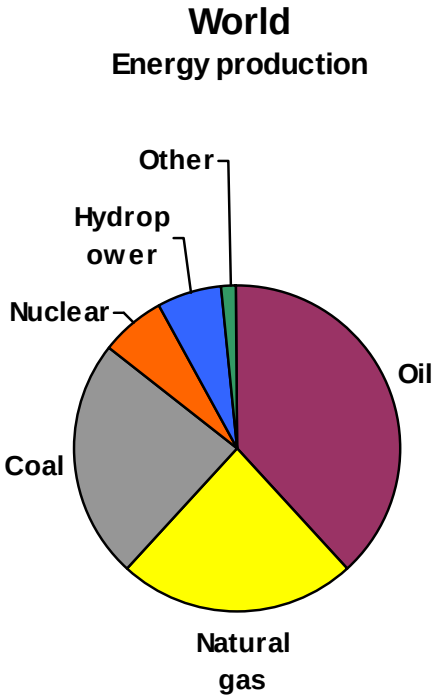
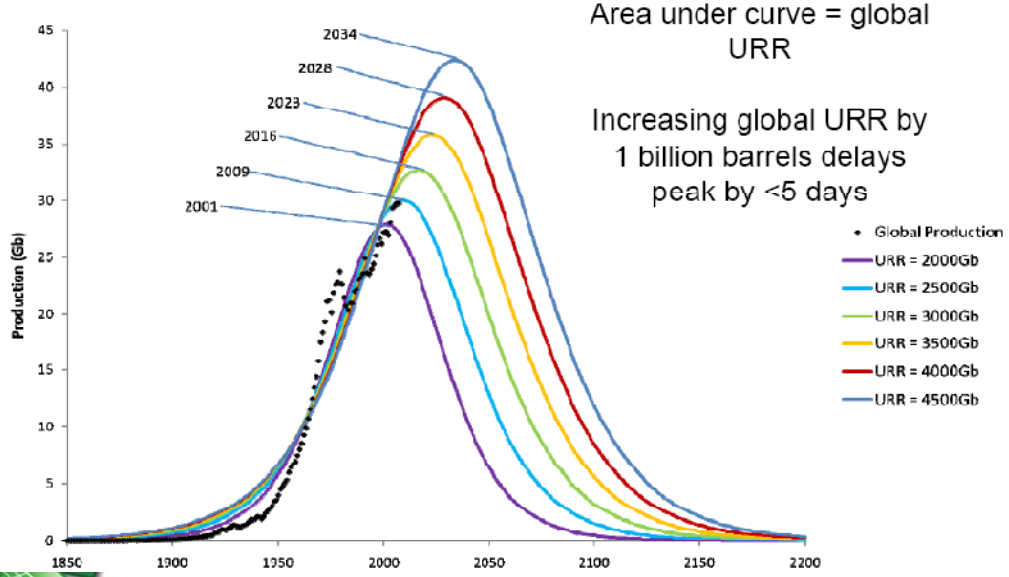
The global energy challenges

- Energy (474 EJ in 2008) demand is satisfied by 78 % through oil, gas & coal
- The peaking of oil between 2020 and 2030 is a distinct possibility



Source : BP



Sorrell et al UK Energy Research Centre (2009)

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The global energy challenge

- Provide acces to modern energy for the poor
- Reduce dependence on imported oil and gas
- Mitigate climate change
- Stimulate sustainable economic growth through innovation
- Design a stable and long-term policy framework for exploitation and innovation
- Make use of specific regional advantages

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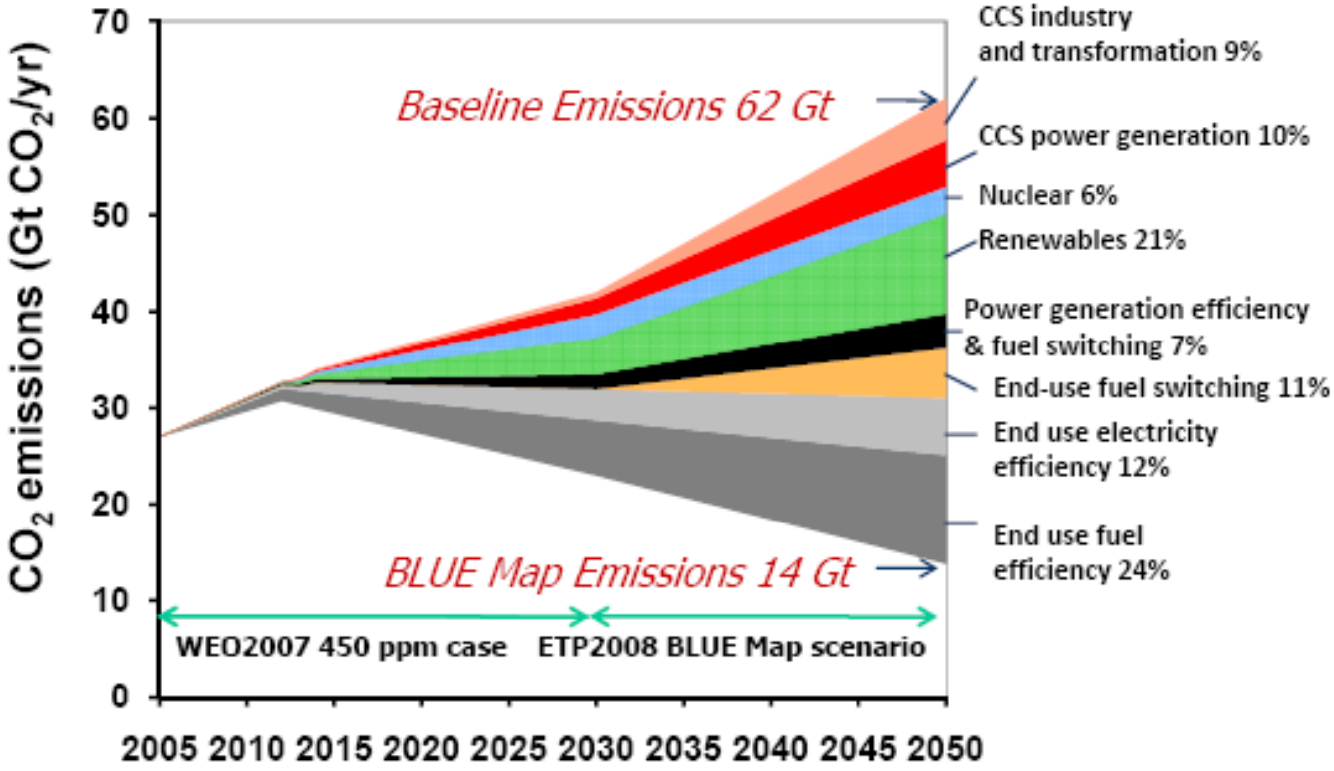
Devise scenario models to support policy measures



Energy Technology Perspectives 2008, Blue Map Scenario

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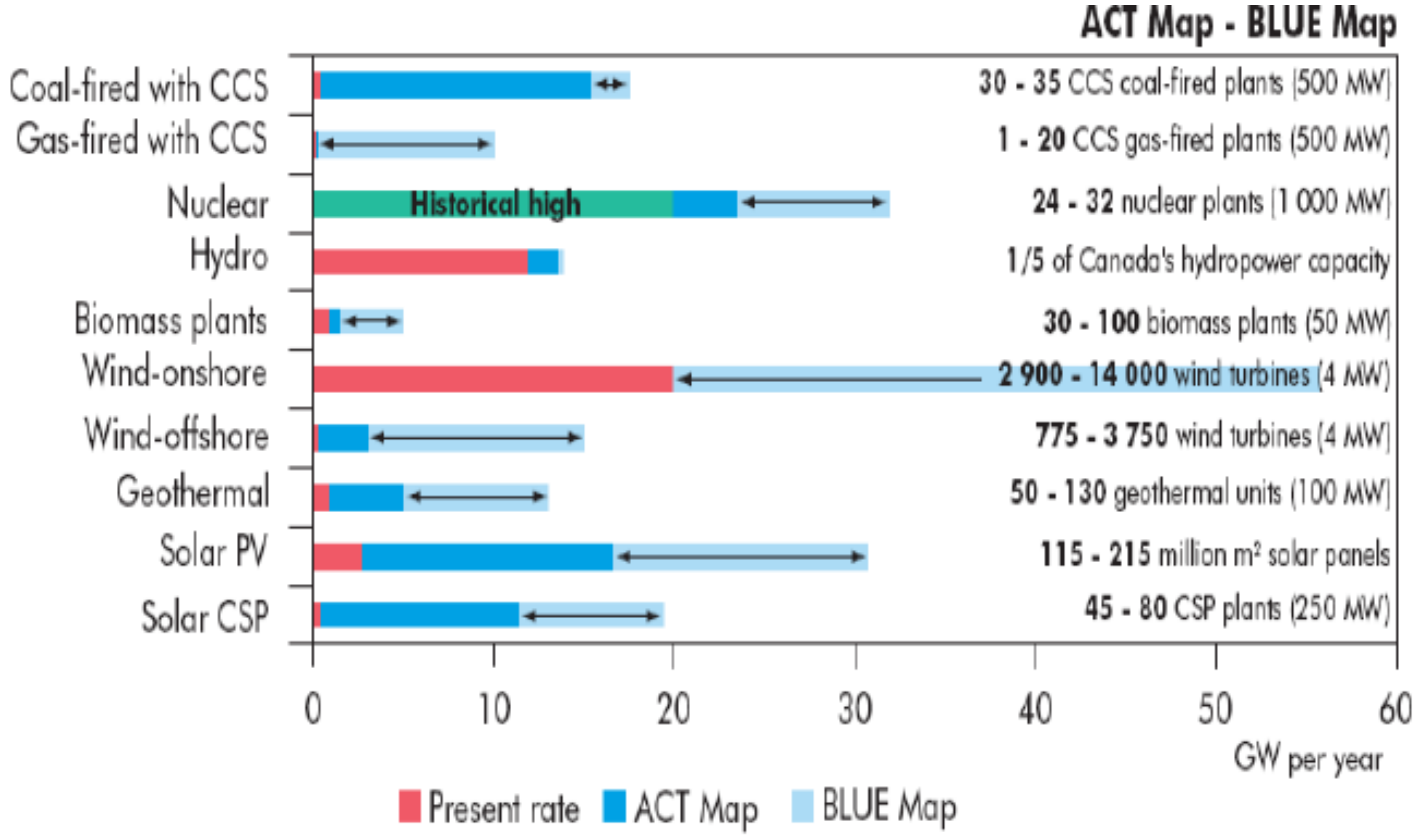
Impact on renewable technology implementation



Source : Energy Technology Perspectives 2008

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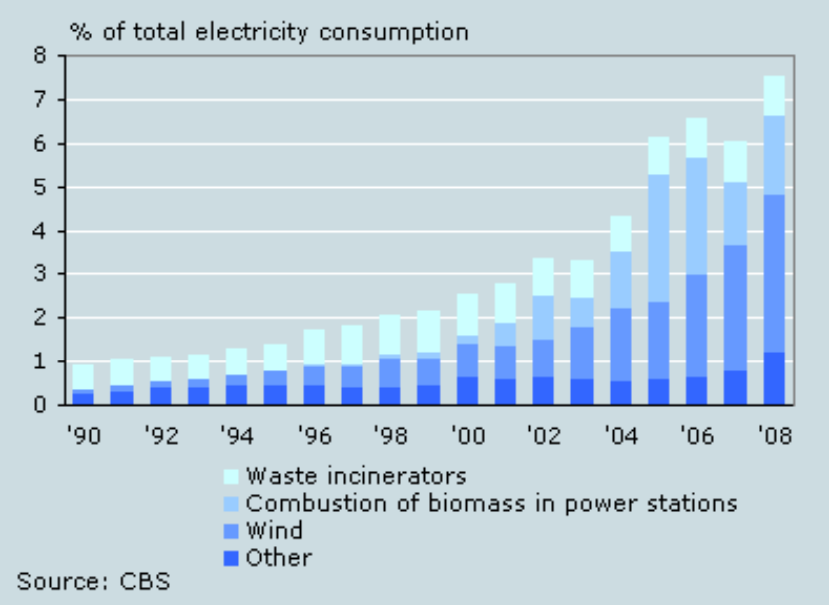
Renewable energy in the Netherlands

- The Netherlands realized a share of 3.4 % RES in 2008
- Wind and Biomass (co-firing and municipal waste) are the largest contributors in the RES share
- Renewable electricity is close to the 9 % target for 2009



Renewable electricity as share of total electricity consumption

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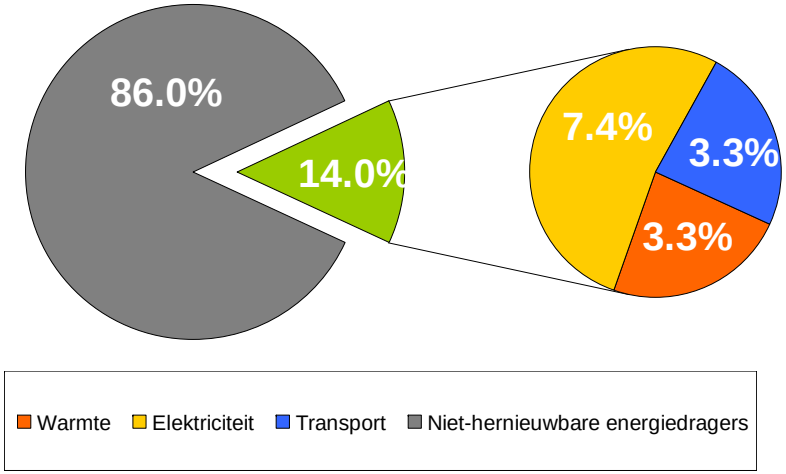
Renewables are communicating vessels between electricity, heat and transport

Example: Renewable heat NL :

	1995	2006	2008
Solar thermal	0,1	0,6	0,6
Heat pumps	0,1	2,2	4,1
Heat storage	-	0,5	0,7
Waste incineration	1,2	3,5	3,6
Wood stoves	6,5	7,1	7,3
Other combustion	0,3	3,6	4,0
Digestion	2,8	2,4	2,2
Total	**11,2 PJ**	**19,9 PJ**	**22,7 PJ**
Share of total RE	**1,0%**	**1,8%**	**2,1%**



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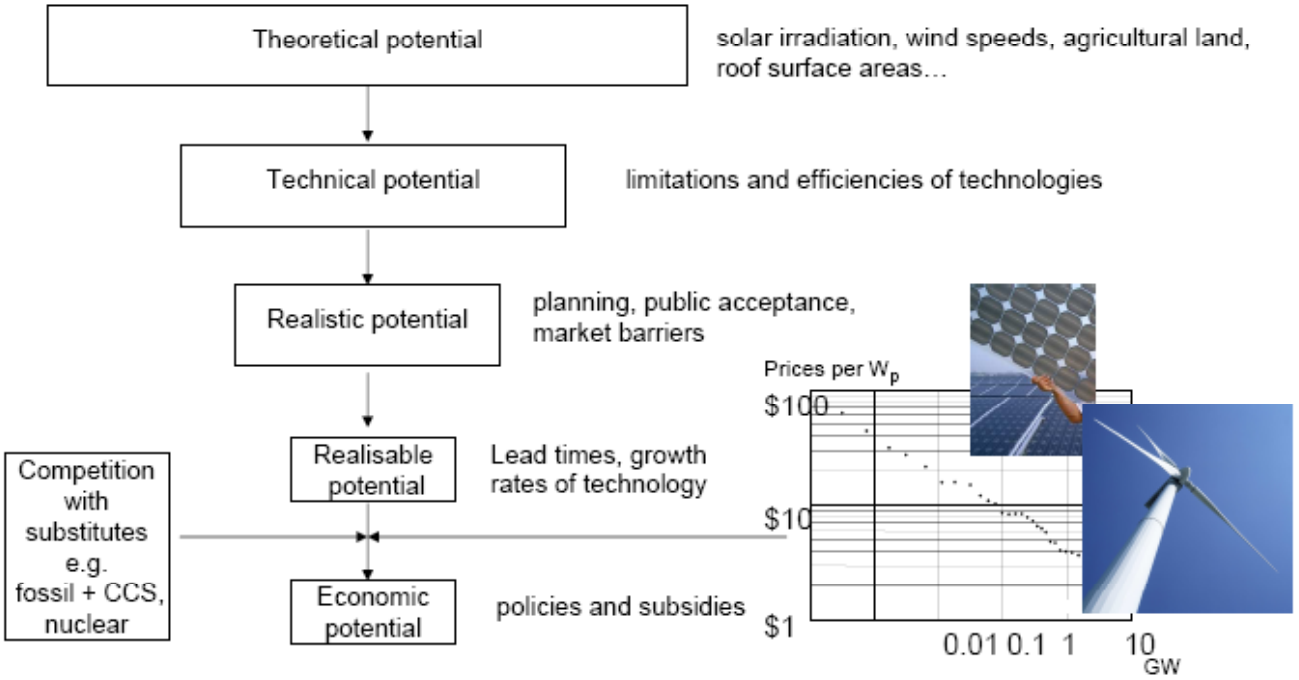
Policy framework for renewable energy

- technical, theoretical and economic constraints:



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Policy instruments in Europe

	Price	Quantity
Supply	**Feed-in tariff/premium** Germany, Austria, Spain, Portugal, Greece, Finland, France, Netherlands Denmark, Estonia, Iceland, Latvia, Lithuania, Hungary, Slovakia, Slovenia, Czech Rep, Netherlands	**Tender** France (wind) **Obligation for producers** Italy
Demand	**Price support for demand**	**Obligation for consumers or suppliers** UK, Sweden, Poland Belgium

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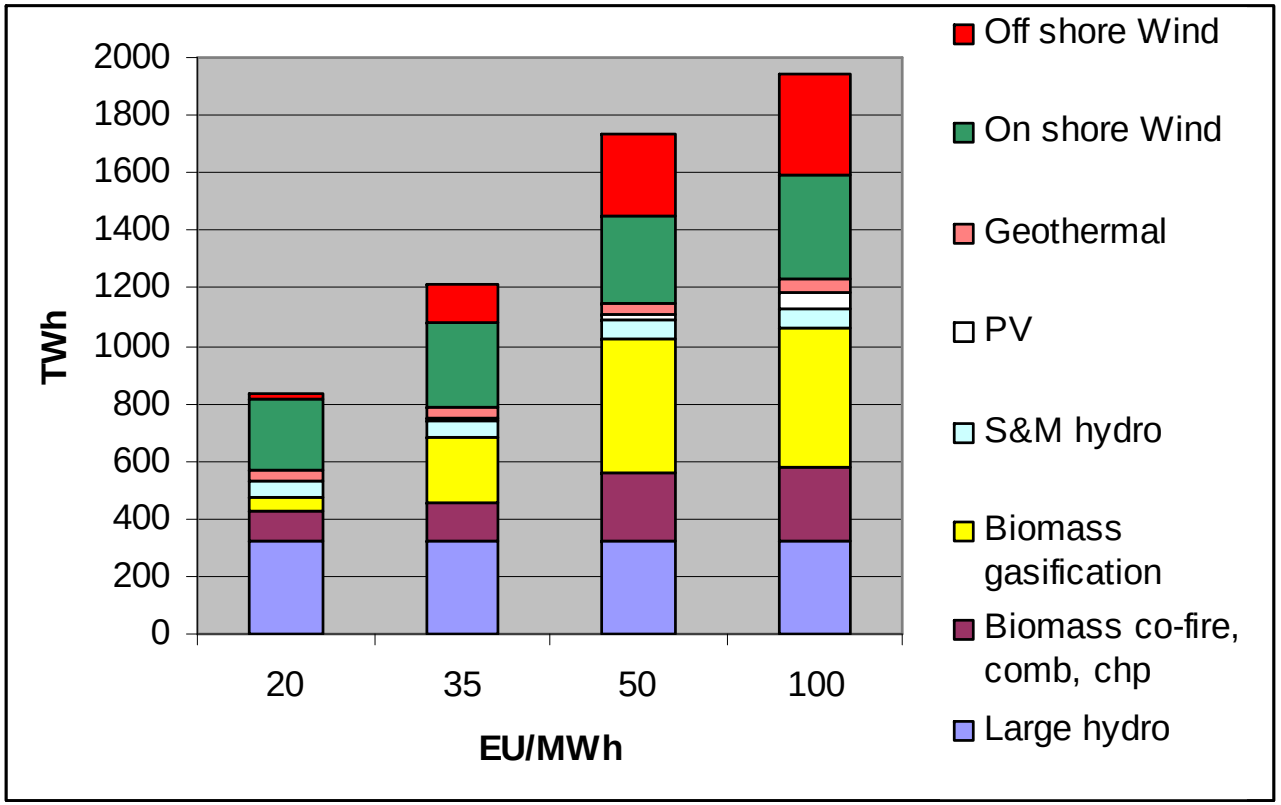
RES implementation is a function of support level



RES-E scenario's for 2030 at various subsidy ceilings. Source: ECN's techno-economic RES-E market model ADMIRE-REBUS

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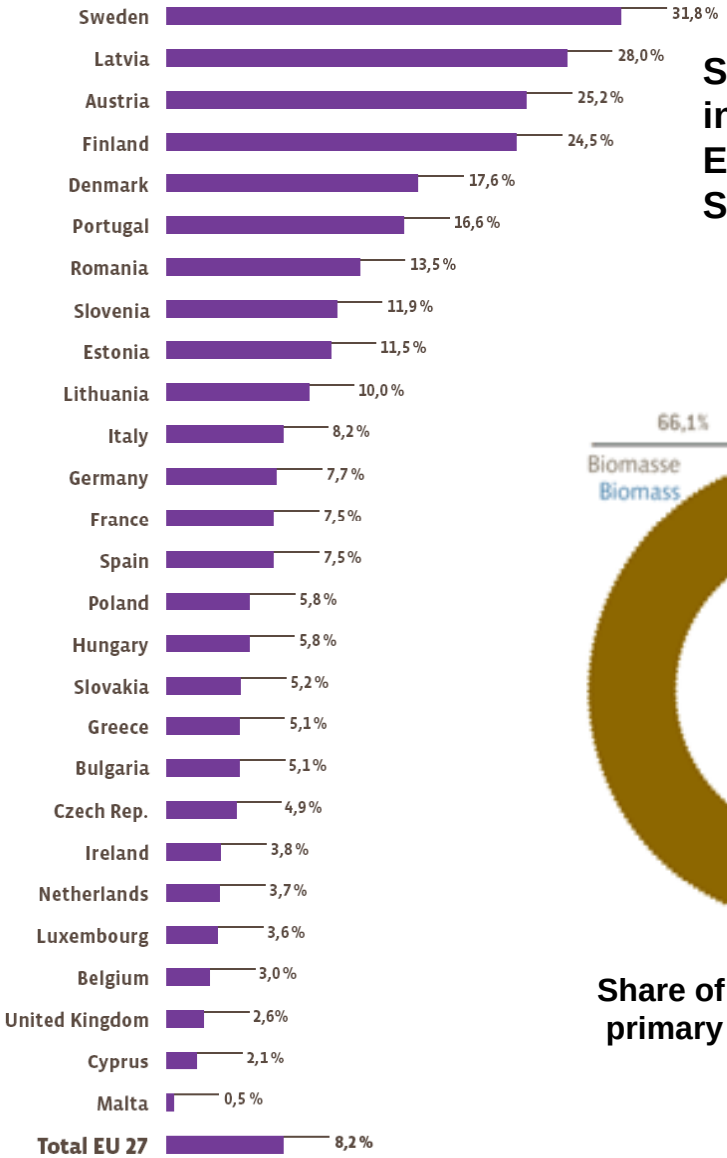
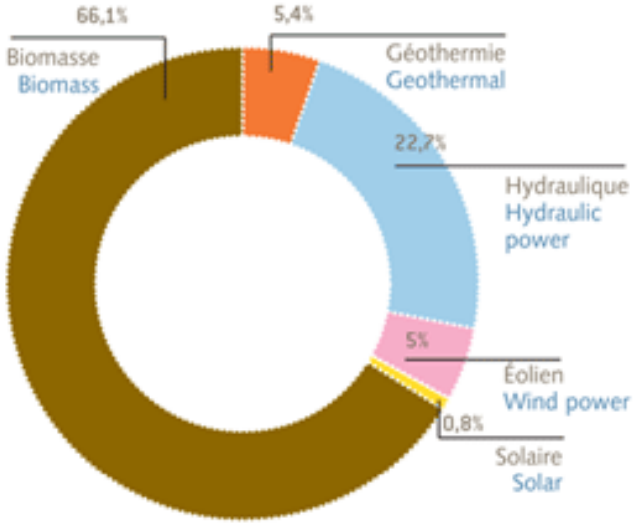
Are the RES targets achievable?



Share of renewable energies in primary energy consumption of EU countries in 2008 (in %). Source: Eurobserver (2009)



Share of each resource in the renewable primary energy production in EU in 2006

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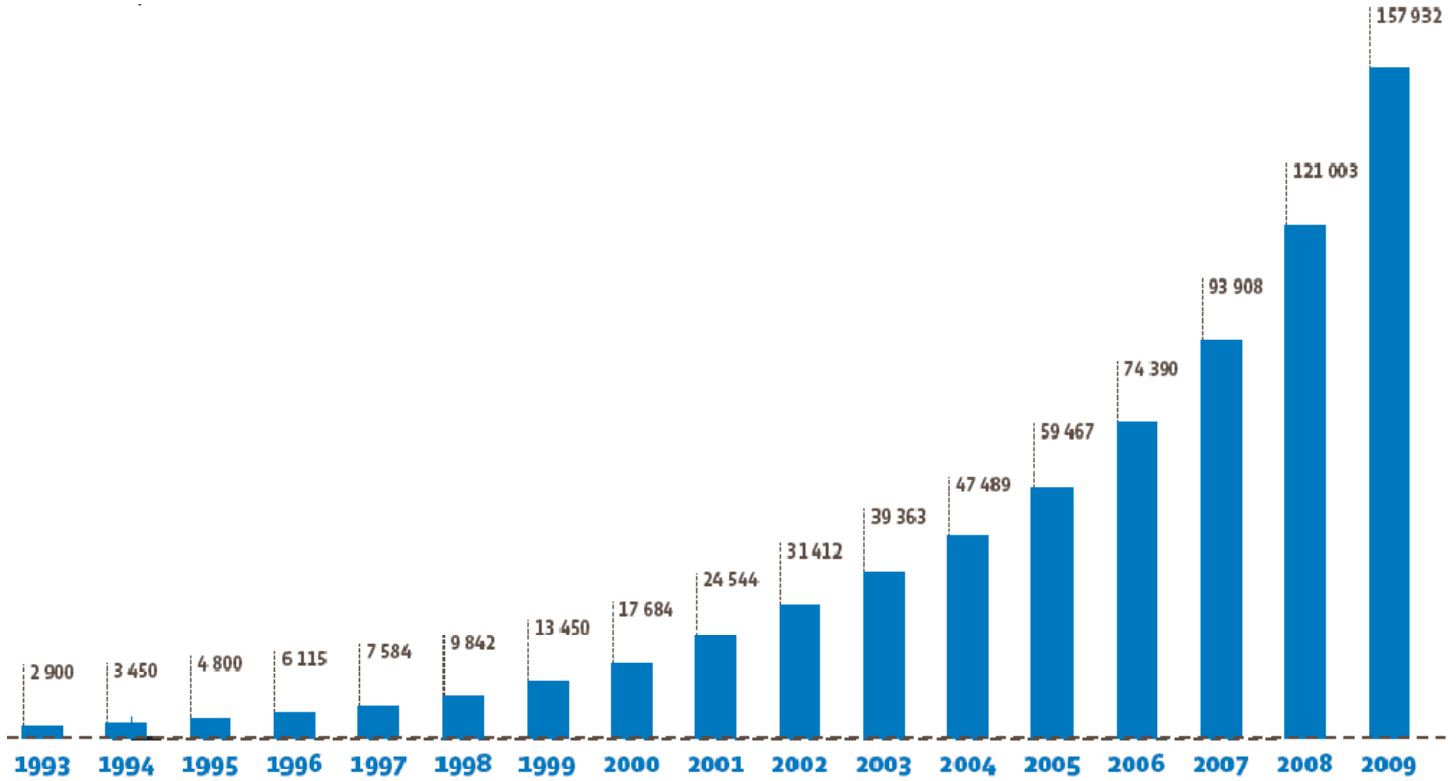
Most RES technologies show a double digit growth on installed capacity basis:



Worlwide installed capacity of wind power, MW.
Source: Eurobserver (2009)

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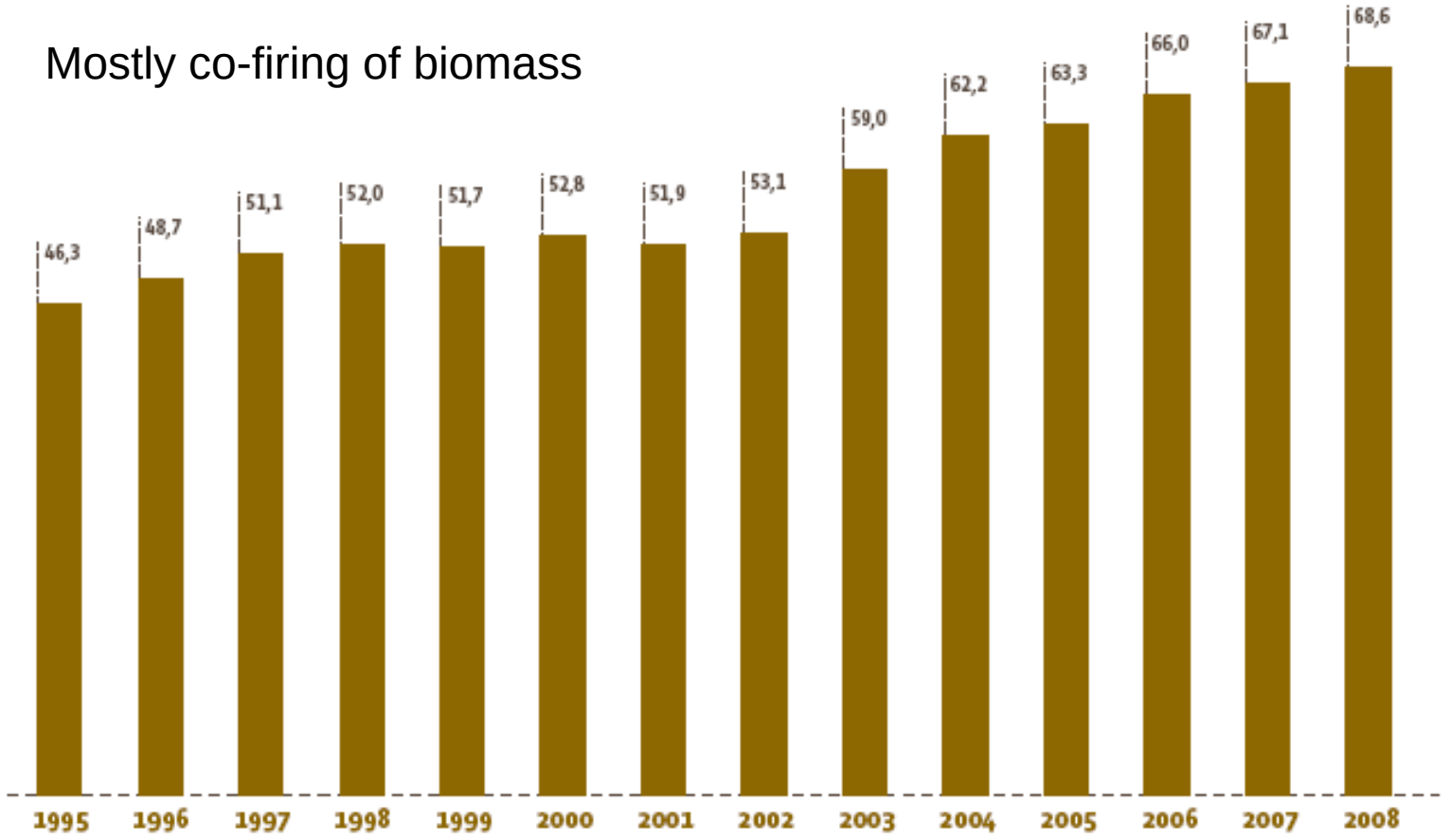
Evolution of primary energy production from solid biomass for the 27-state EU since 1995 (in Mtoe)*

Mostly co-firing of biomass



Growth of solid biomass use for energy production.
Source: Eurobserver (2009)

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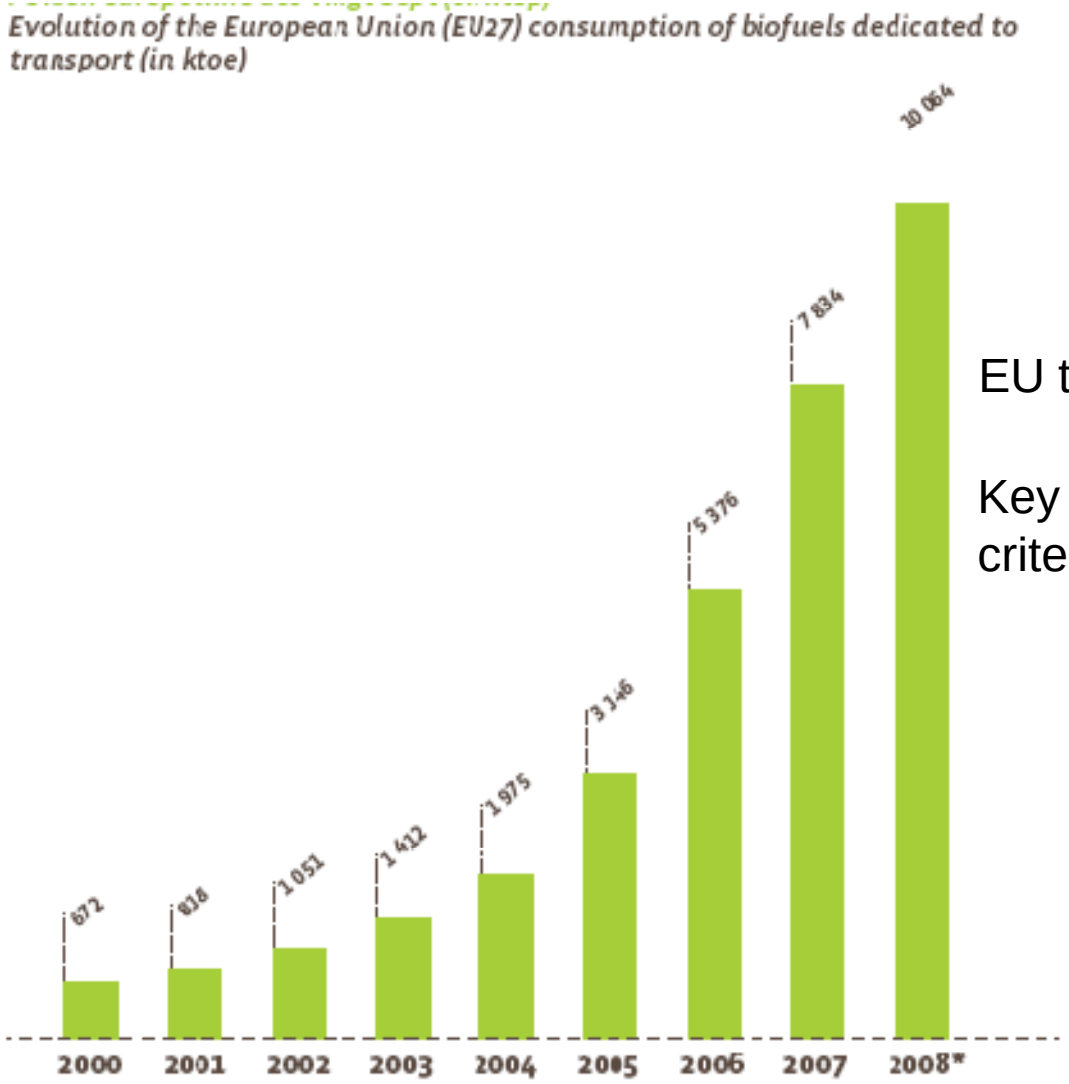

EU target 2020 : 10 % biofuels

Key issue : sustainability criteria (economic, social, GHG)

Growth of biofuels in EE-27.
Source; Eurobserver (2009)

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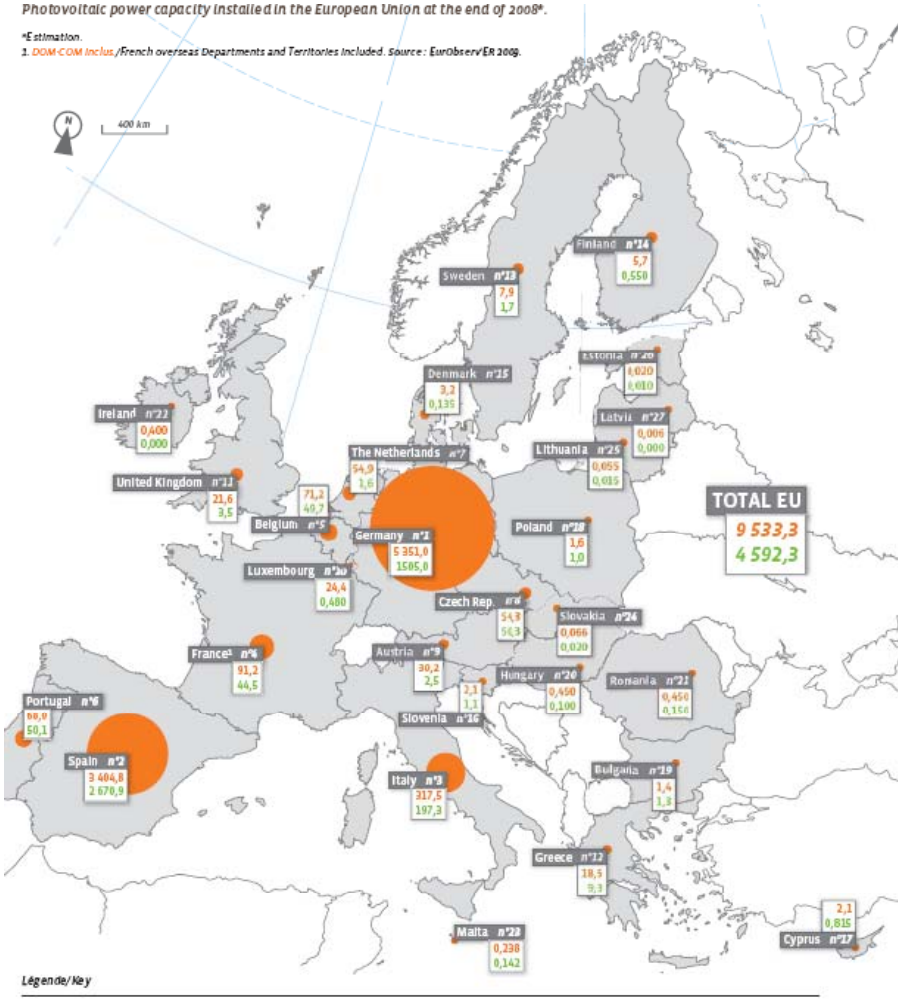
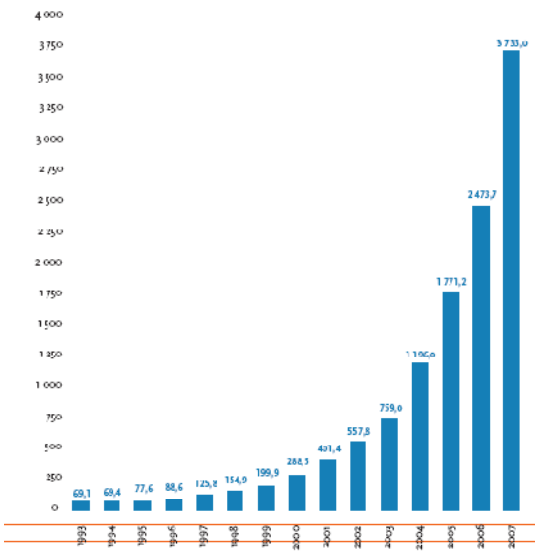
Solar PV is the sleeping giant



PV shows double digit growth in 2007 and 2008 in installed d capacity, but this is dampened in 2009 & 2010 by the financial crisis.

PV market has globalised, China is building up PV capacity rapidly

Grid parity expected in Europe in 2015-2020 timeframe



Evolution of worldwide photovoltaic production (in MWp)

Source: Eurobserver (2009)

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Costs of RES

- Cost reduction are a result of learning effects

	2008 [€/MWh]	2020 [€/MWh]
Onshore wind		
Germany	105	65 – 75
Netherlands	95	65 – 75
Poland	100	75 – 85
Spain	90	70 – 80
Sweden	105	70 – 80
Offshore wind		
Germany	175	120 – 135
Netherlands	175	120 – 135
Poland	190	130 – 145
Spain	215	150 – 165
Sweden	190	130 – 145
Solar PV		
Germany	450	180 – 200
Netherlands	465	190 – 210
Poland	465	190 – 210
Spain	300	110 – 120
Sweden	490	200 – 220

Projected generation cost of renewable electricity technologies in 2008/2020 (Source : ECN, Lensink, 2010)

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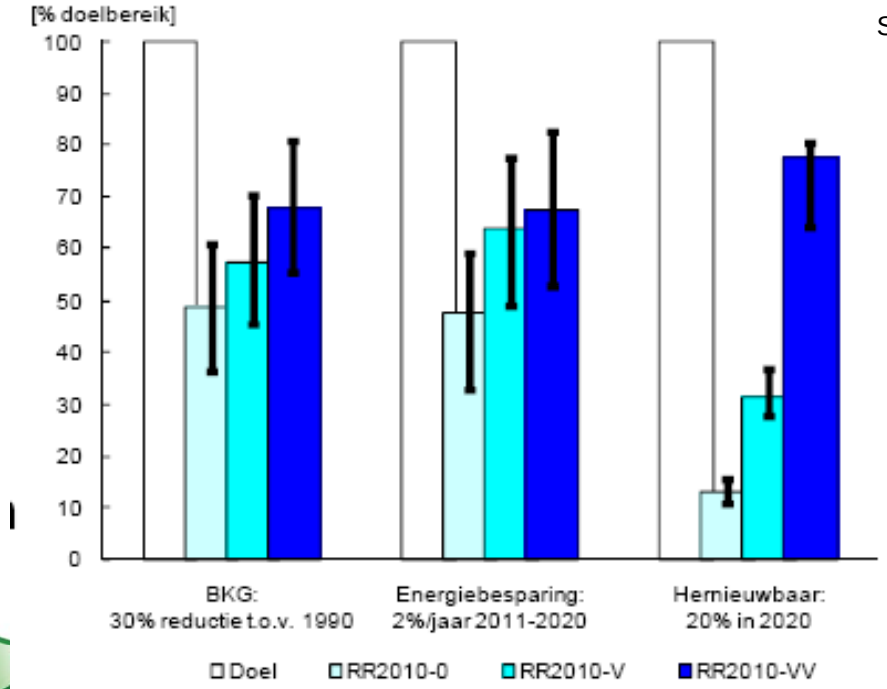
For the Netherlands:

- For NL, the EU RES target of 14 % in 2020 can only be reached with intensified policy framework, the 20 % national target is unlikely to be reached in 2020



Source : ECN, reference calculations energy and emissions 2010

http://www.ecn.nl/docs/library/report/2010/e10004.pdf

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Policy options in the European context

- Use of flexible mechanisms should be utilized to support RES exploitation
- Some EU members can realize their RES target in another member state
- Making use of specific regional advantages
- Using mechanisms as statistical transfer, joint projects or joint implementation schemes

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Outlook beyond 2020

- Main contributions to the 20% EU target are expected from Biomass and offshore wind energy
- Costs of RES technology will drop as a result of learning by doing
- Solar PV will reach grid parity in 2015-2020 and grow to a substantial share of RES-E
- Hydropower reached it classical limit and will only grow modestly

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Conclusions on RES targets

Reaching of the 20 % RES target is ambitious

- Along with RES-E, energy demand reductions, biofuels, and the potential in the building sector should be pursued simultaneously
- Longer term: clear target setting remains essential
- Intensification of current market support policies is needed, hybrid system of Feed-in tariff/premium with obligation may be the preferred policy option
- Complete elimination of all subsidies is not possible in the mid-term future as promising technologies such as PV are needed to extend the Renewables potential
- Role of PV is expected to be substantial after 2020
- Stability, consistency of policy measures are the key requirements for market parties

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Conclusions on policy measures

- Stability, consistency of policy measures are the key requirements for market parties
- Policies should include the 2050 time horizon and perform back casting (ECF, Eurelectric)
- Use of flexible mechanisms in EU will support RES implementation

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Conclusions on renewable electricity

Reaching the 21 % Renewable electricity target requires:

- An effective biomass action plan (as biomass is lagging behind)
- Steps towards a pan-European RES-E market, but with due consideration for technology specific cost attributes
- A harmonized support scheme for renewable heat
- Network improvements and extensions in combination with harmonization of grid access codes and standards
- Regulations enabling a cost-efficient integration of notably intermittent renewable electricity production

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