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# Politik der erneuerbaren Energien im europäischen Vergleich

YES 2004, Bonn, 29.05. 2004

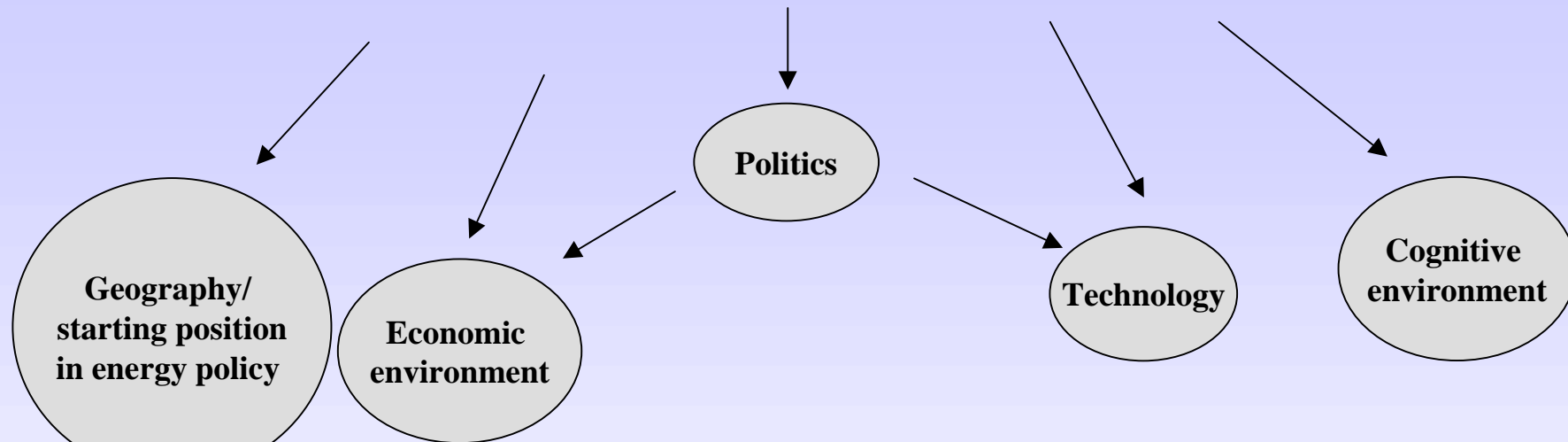


**Table 1: Production of electricity from renewable sources in 2000.  
Share in gross production of electricity**

Country	Hydro*	Wind	Biomass	Geothermal	Total
Austria	67.3	0.1	2.6	0.0	<b>70.0</b>
Belgium	0.5	0.0	1.1	0.0	<b>1.6</b>
Denmark	0.1	12.3	4.8	0.0	<b>17.2</b>
Finland	20.9	0.1	12.2	0.0	<b>33.3</b>
France	12.5	0.0	0.6	0.0	<b>13.1</b>
Germany	4.1	1.6	1.1	0.0	<b>6.8</b>
Greece	6.9	0.8	0.0	0.0	<b>7.7</b>
Ireland	3.5	1.0	0.4	0.0	<b>4.9</b>
Italy	16.0	0.2	0.7	1.7	<b>18.6</b>
Luxembourg	10.2	2.3	4.8	0.0	<b>17.3</b>
Netherlands	0.2	0.9	3.6	0.0	<b>4.7</b>
Portugal	25.9	0.4	3.5	0.2	<b>30.0</b>
Spain	13.1	2.1	1.0	0.0	<b>16.2</b>
Sweden	54.1	0.3	2.7	0.0	<b>57.1</b>
United Kingdom	1.4	0.3	1.2	0.0	<b>2.8</b>
<b>EU</b>	<b>Ø 12.4</b>	<b>Ø 0.9</b>	<b>Ø 1.5</b>	<b>Ø 0.2</b>	<b>Ø 14.9</b>

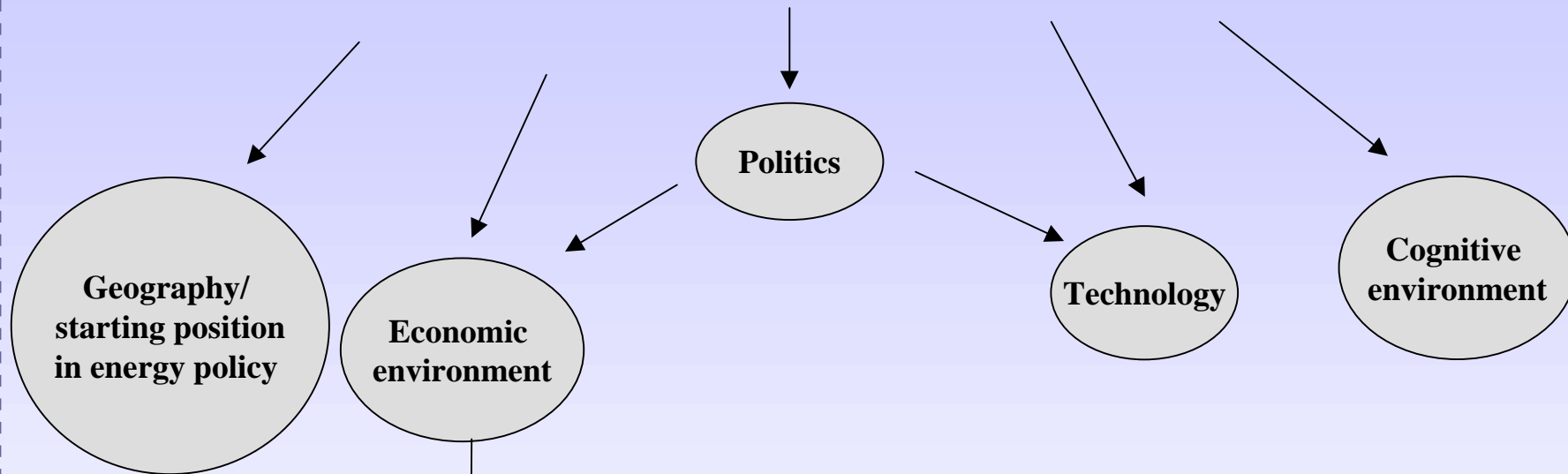
\* Does not include pumped storage.

## Factors which influence renewable energy development



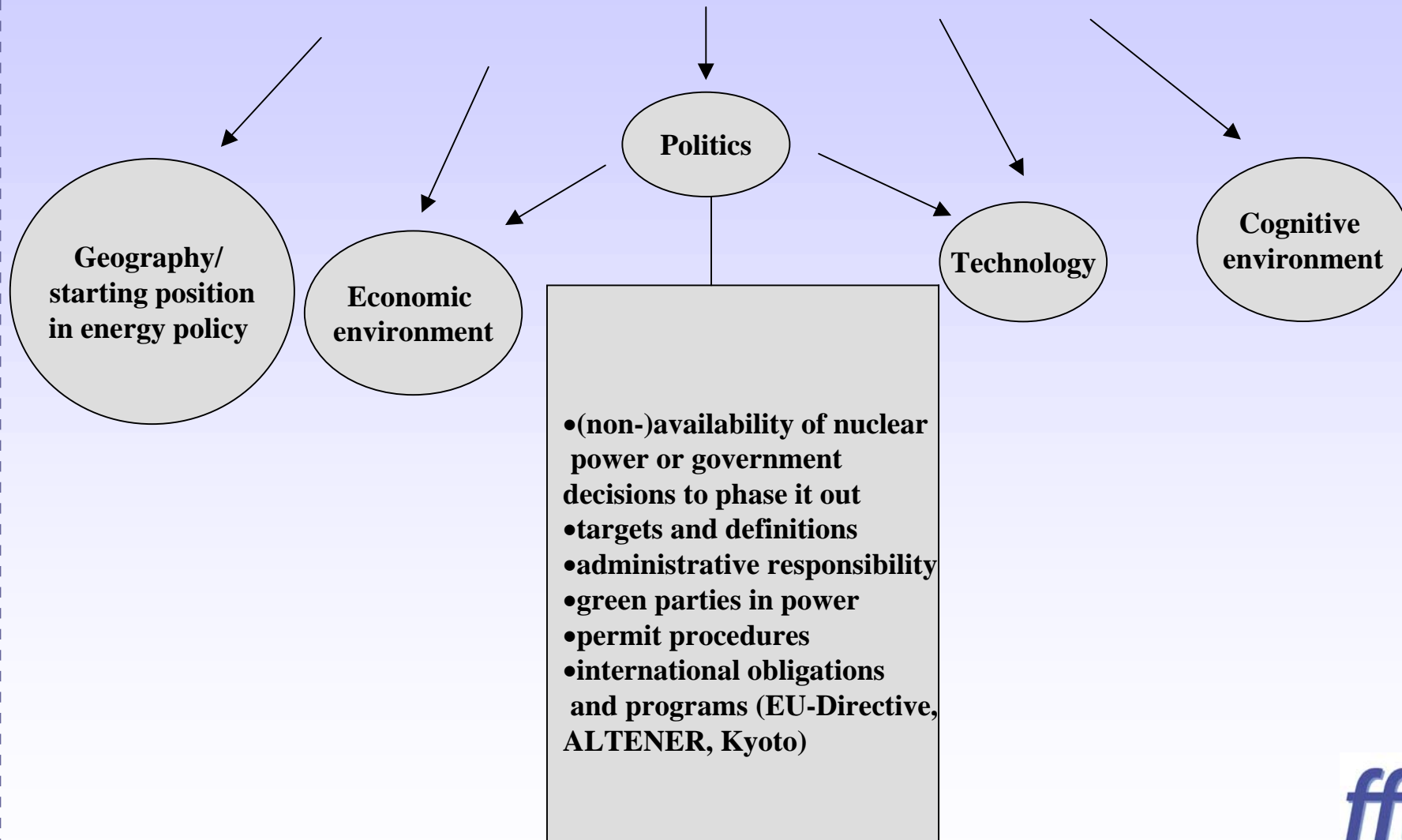
- amount of rainfall
- sunshine intensity
- wind speed
- (non-)availability of fossil resources

## Factors which influence renewable energy development



- level of oil and gas prices
- subsidies for fossil and uranium based energies
- internalisation of external costs

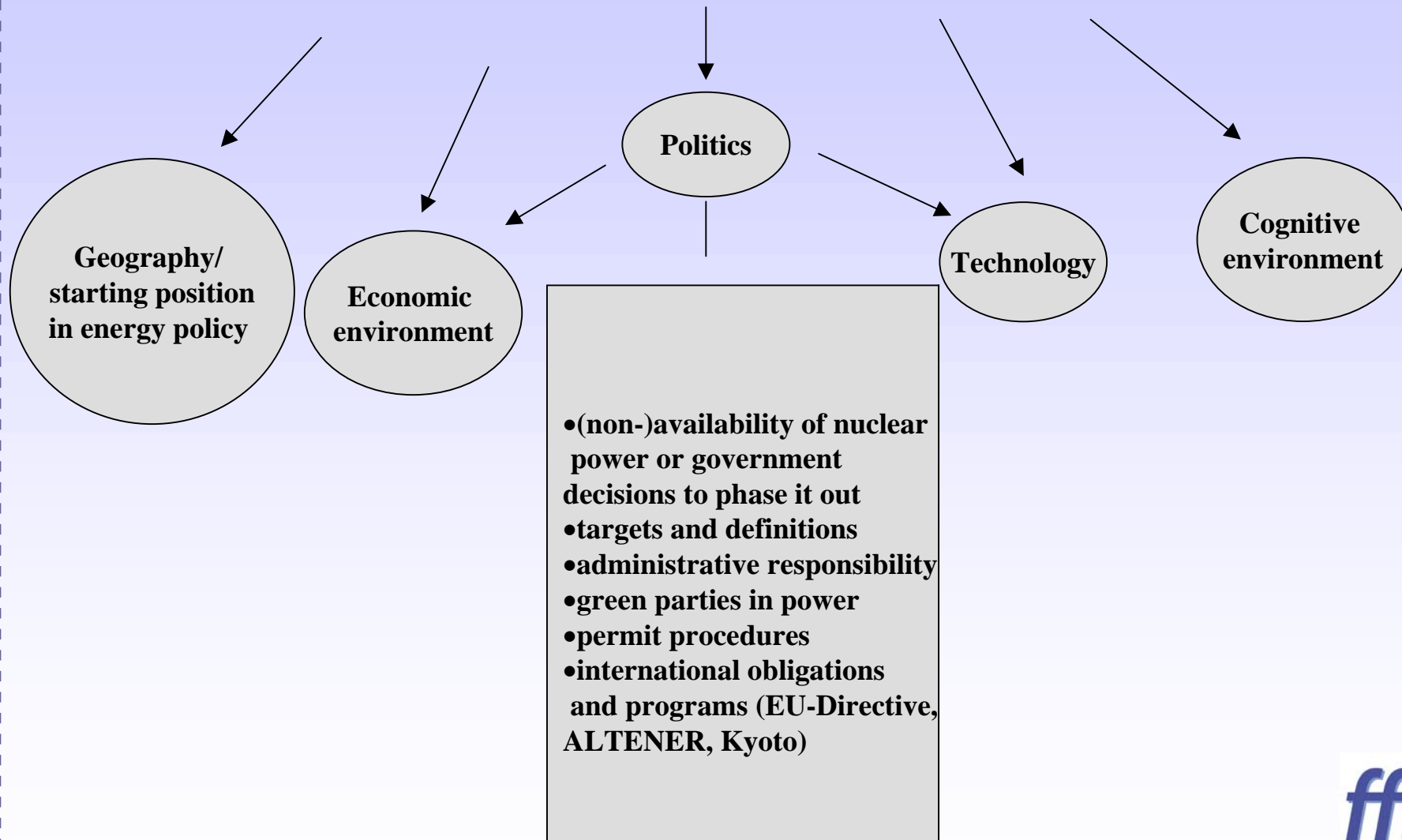
## Factors which influence renewable energy development



**Table 3: Number of nuclear units and contribution of nuclear power to electricity generation in 2000**

Country	Number of nuclear units connected to the grid	Nuclear share of total electricity supply in per cent
Austria	0	0
Belgium	7	56.8
Denmark	0	0
Finland	4	31.7
France	59	76.4
Germany	19	30.1
Greece	0	0
Ireland	0	0
Italy	0	0
Luxembourg	0	0
Netherlands	1	4.0
Portugal	0	0
Spain	9	28.5
Sweden	11	38.8
United Kingdom	33	22.0
<b>EU Total</b>	<b>145</b>	<b>Ø 19.22</b>

## Factors which influence renewable energy development

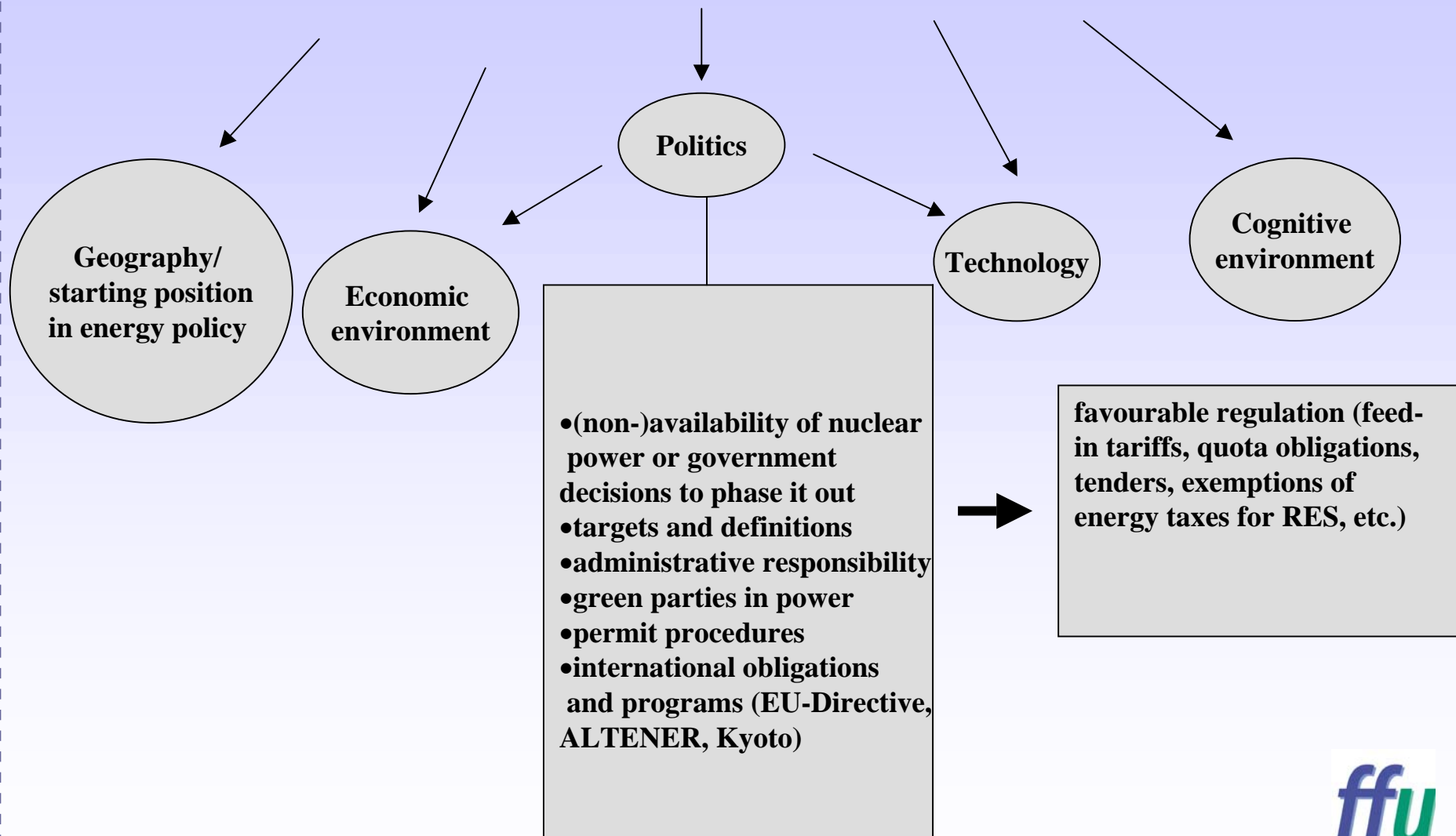


## Table 4: International obligations

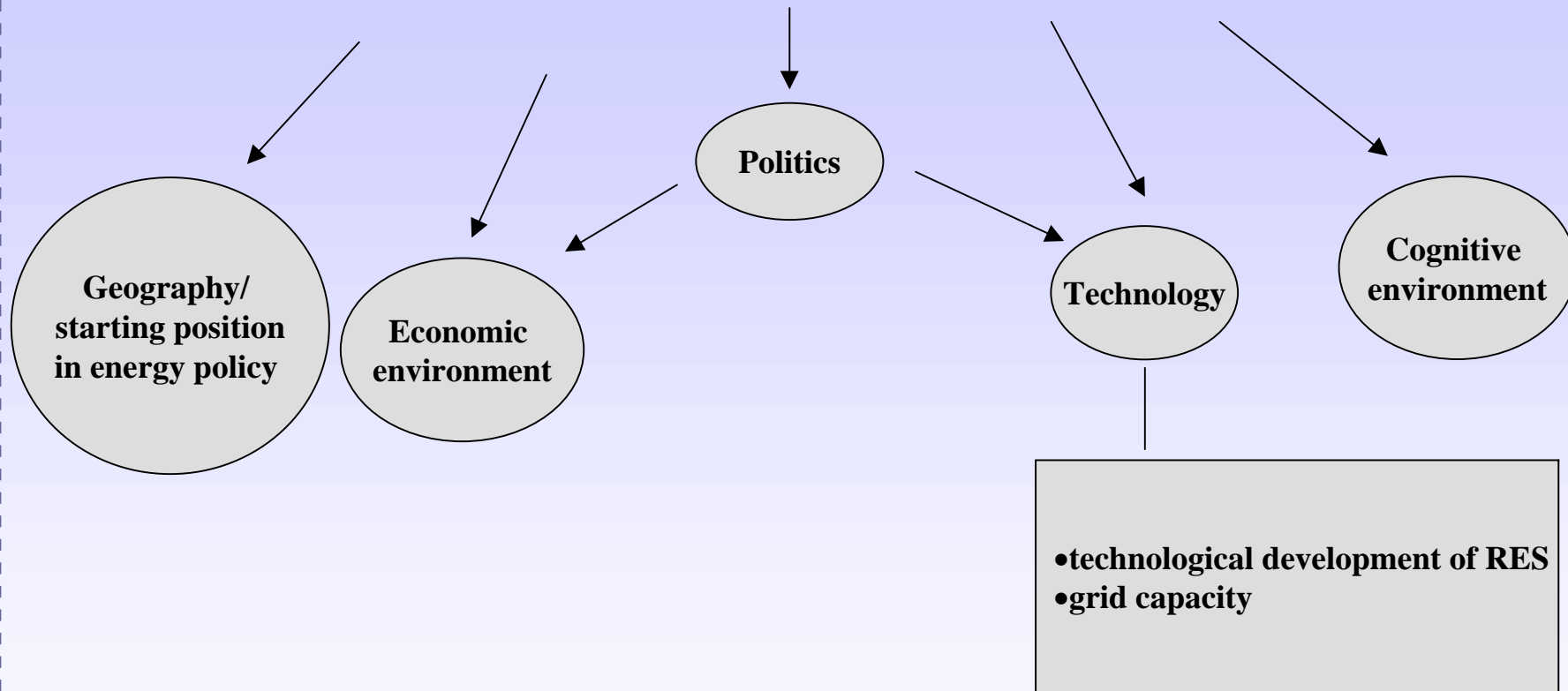
Country	EU directive*	Kyoto target**
Austria	+ 8.1 %	- 13.0 %
Belgium	+ 4.9 %	- 7.5 %
Denmark	+ 20.3 %	- 21.0 %
Finland	+ 6.8 %	0.0 %
France	+ 6.0 %	0.0 %
Germany	+ 8.0 %	- 21.0 %
Greece	+ 11.5 %	+ 25.0 %
Ireland	+ 9.6 %	+ 13.0 %
Italy	+ 9.0 %	- 6.5 %
Luxembourg	+ 3.6 %	- 28.0 %
Netherlands	+ 5.5 %	- 6.0 %
Portugal	+ 0.5 %	+ 27.0 %
Spain	+ 9.5 %	+ 15.0 %
Sweden	+ 10.9 %	+ 4.0 %
United Kingdom	+ 8.3 %	- 12.5 %
<b>EU Total</b>	<b>+ 8.1 %</b>	<b>- 8.0 %</b>
*	Increase in the share of renewable energy sources in the electricity market from 1997 to 2010.	
**	Reduction of greenhouse gas emissions from 1990 levels by the 2008-2012 compliance period.	



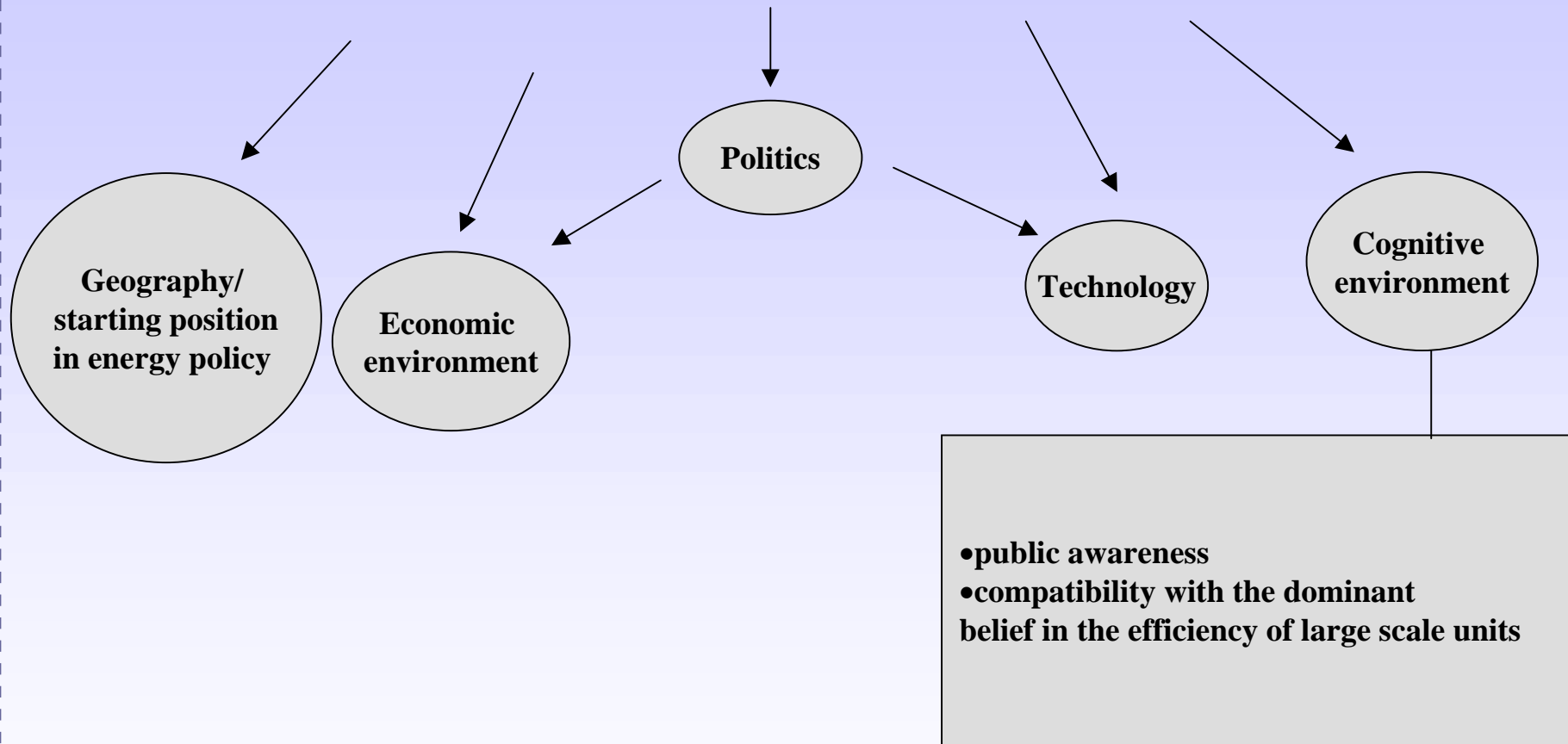
# Factors which influence renewable energy development



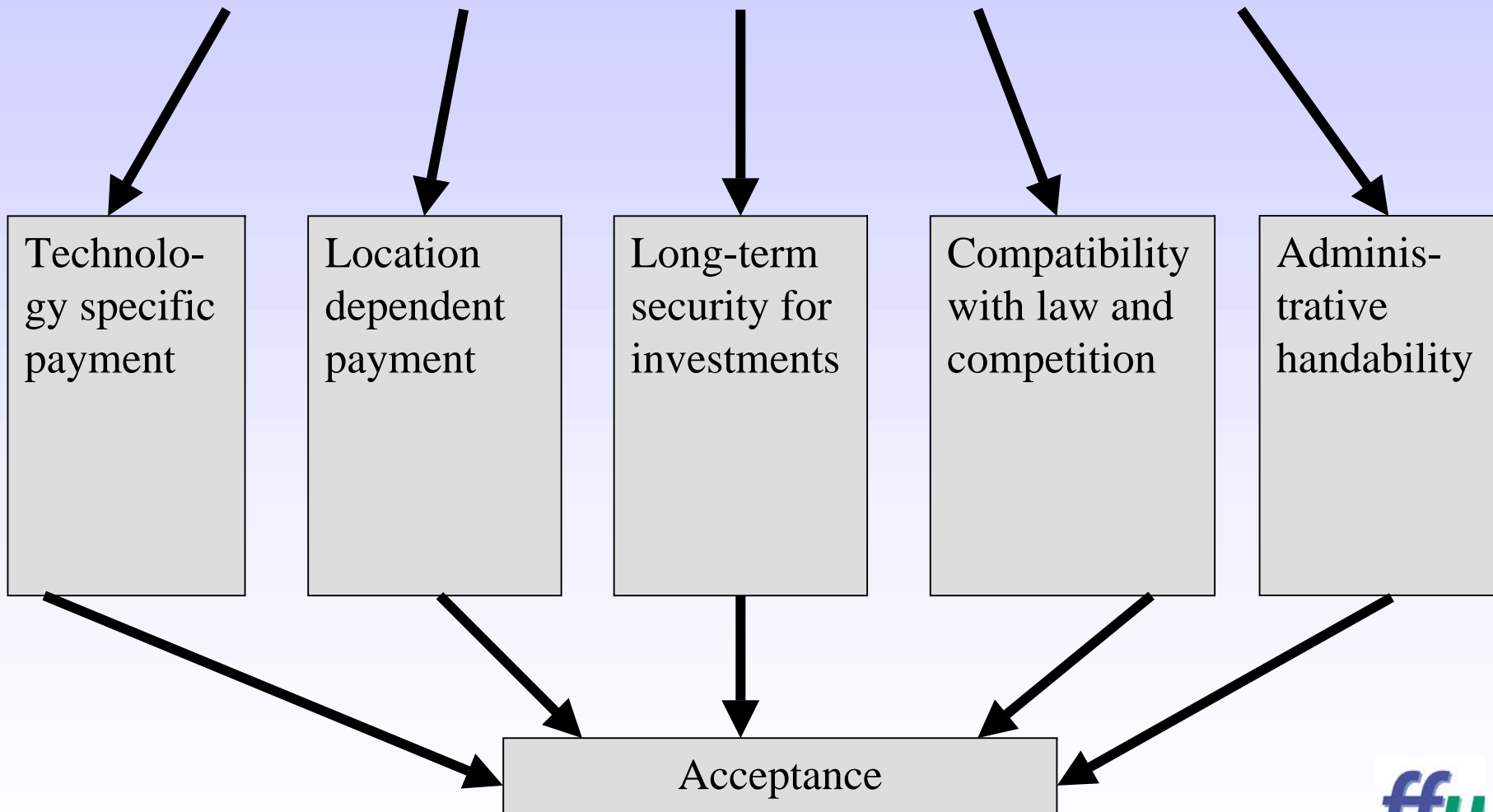
## Factors which influence renewable energy development



## Factors which influence renewable energy development



# Success Conditions for Instruments Promoting Renewable Energies

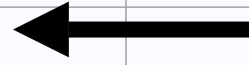
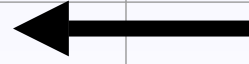
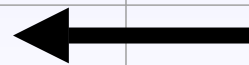
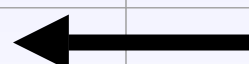
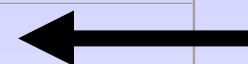


## Résumé

- Differences in RES-use cannot only be explained with the natural conditions. Natural Conditions are an important, but not sufficient explanation for success or failure in RES policy.
- Single Factors are often overvalued. Success or failure in RES policy can only be explained in combination of all the presented factors.
- Most successful countries in RES use Feed-in Tariffs. But there is no natural superiority of any instrument, success depends on the specific construction of the tool

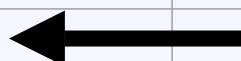
## Share of renewable energies in the Candidate Countries in electricity and primary energy production, 2001

Country	RES electricity production	RES primary energy production
Bulgaria	8	0.4
Cyprus	0	3.7
Czech Republic	3.6	1.7
Estonia	0.1	11
Hungary	0.5	3.6
Latvia	66.3	31.4
Lithuania	0.8	8.2
Malta	0.2	0
Poland	1.9	2.4
Romania	28	8.9
Slovenia	27.9	8.7
Slovakia	18.5	5
Turkey	20.8	12.6



## Coal exploitation in the enlarged European Union, 2001 (in Mio t SKE)

Country	Hard coal	Lignite
Austria	-	0.5
Finland	-	1.9
France	1.8	0.2
Germany	28.5	52.5
Greece	-	12.5
Ireland	-	0.6
Spain	9.4	2.0
United Kingdom	27.2	-
<b>EU-15</b>	<b>66.9</b>	<b>70.2</b>
Bulgaria	-	7.7
Czech Republic	11.0	20.7
Hungary	0.1	4.0
Estonia	-	3.0
Poland	82.0	15.0
Romania	2.5	6.9
Slovakia	0.8	0.9
Slovenia	-	0.8
<b>Candidate Countries</b>	<b>96.4</b>	<b>59.0</b>



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## Import Dependency of the Candidate Countries, 1999

Country	Solid fuels	Oil	Natural Gas	All fuels
Bulgaria	31.3	94.4	102.6	48.5
Cyprus	85.7	102.5	-	100.5
Czech Republic	-28.9	95.1	96.3	25.0
Estonia	10.5	92.9	100.0	38.2
Hungary	25.3	75.1	73.9	54.3
Latvia	67.0	83.5	103.5	57.8
Lithuania	69.9	86.0	100.0	53.5
Malta	-	100.0	-	100.0
Poland	-25.8	95.5	67.2	9.9
Romania	25.5	36.2	18.5	21.9
Slovenia	22.5	100.4	99.4	55.5
Slovakia	77.4	97.3	91.4	68.7
Turkey	33.3	89.0	95.0	61.4
<b>Candidates</b>	<b>-3.7</b>	<b>85.2</b>	<b>72.9</b>	<b>36.9</b>
<b>EU-15</b>	<b>47.0</b>	<b>72.0</b>	<b>44.7</b>	<b>47.6</b>
<b>EU-28</b>	<b>27.6</b>	<b>73.7</b>	<b>49.2</b>	<b>45.7</b>

## Nuclear power in the Accession States

- 6 countries without nuclear power stations
- 26 reactors in 7 countries
- One more reactor is under construction
- Shut down of 8 reactors

## Instruments for promoting renewable energies

Country	Feed-in tariff	Quota obligation	Tenders	CO <sub>2</sub> -tax	Environmental Funds	Tax relief
Bulgaria					•	•
Cyprus						•
Czech Republic	•	←			•	•
Estonia	•	←			•	•
Hungary	•	←			•	•
Latvia	•	←	•		•	•
Lithuania					•	•
Malta						•
Poland		•	←		•	•
Romania						•
Slovenia	•	←		•	←	•
Slovakia					•	•
Turkey						•

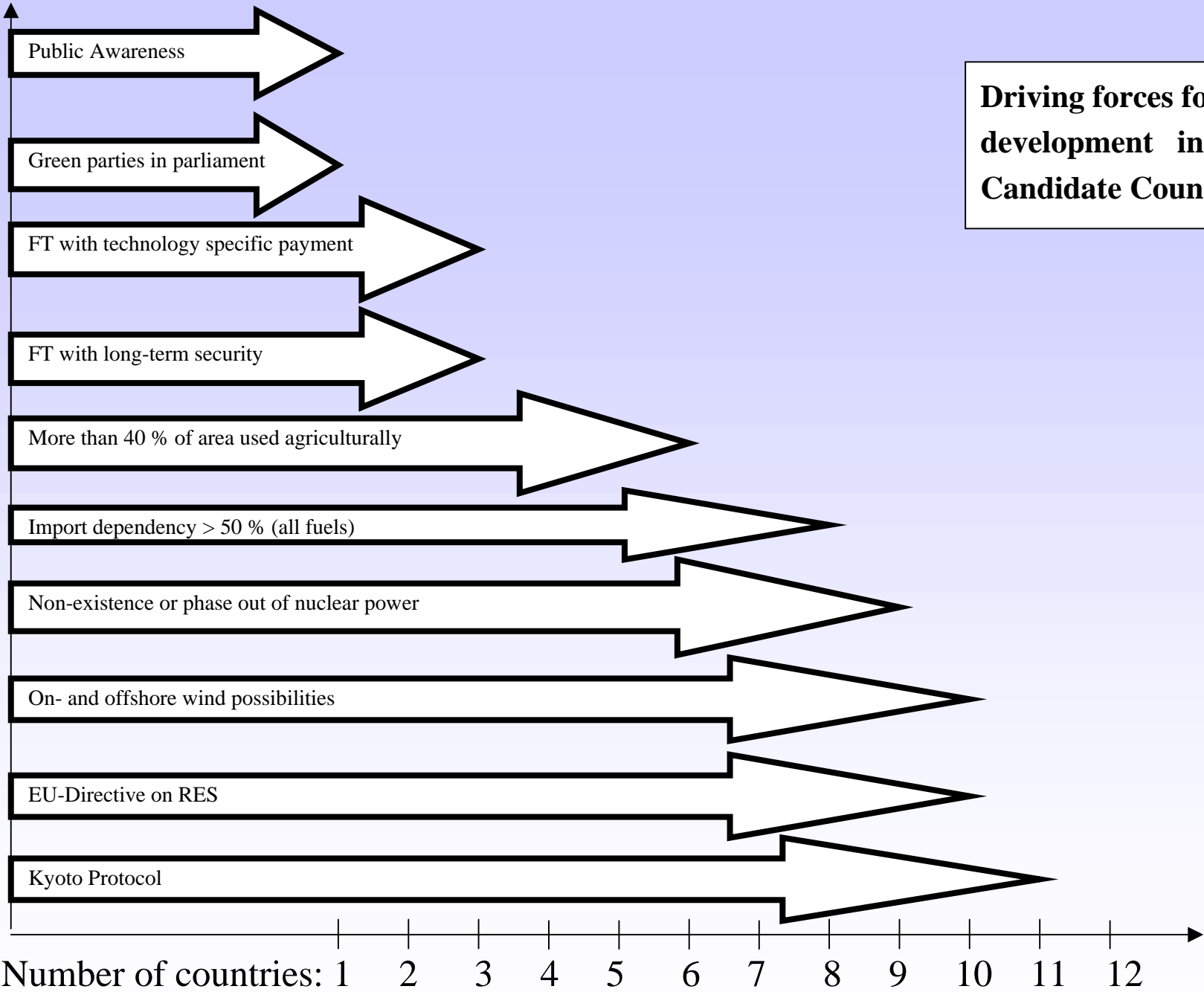
## Possibilities of obtaining external financial support

- Global level
- European Union
- Bilateral Funds

## Reference Values for the contribution of RES to total electricity consumption by 2010

Country	RES-E (%) 1999	RES-E (%) 2010
Cyprus	0.05	6
Czech Republic	3.8	8
Estonia	0.2	5.1
Hungary	0.7	3.6
Latvia	42.4	49.3
Lithuania	3.3	7
Malta	0	5
Poland	1.6	7,5
Slovenia	29.9	33.6
Slovakia	17.9	31
<b>Community</b>	<b>12.9</b>	<b>21</b>

**Driving forces for RES-  
development in the  
Candidate Countries**

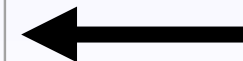


## Differences between Candidate Countries and EU-15

- Public awareness
- Pressure from international obligations
- Favourable regulation
- Industrial structure
- Financial resources/dependence of external financial support

## Energy intensity in EU-15 and the Candidate Countries in comparison, 1999

Year	Energy intensity for the European Union (toe/M€)	Energy intensity for the Candidate Countries (toe/M€)
1992	212.5	1026.9
1993	213.4	997.3
1994	207.7	894.0
1995	207.0	883.8
1996	211.2	890.9
1997	205.1	830.8
1998	203.6	780.2
1999	198.4	744.3
2000	193.8	Data not yet available



## Similarities between Candidate Countries and EU-15

- Permit procedures
- Administrative responsibility
- Phasing out nuclear power
- Tendency to more centralised RES-applications

## Sources

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