Development of RES in Greece and Lessons Learned

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Outline of the presentation

- Introduction-The EU background
- Existing Situation in Greece
- Towards a 18% Share of RES by 2020
- Lessons learned
- Conclusions and Recommendations

Share of RES in primary energy consumption of EU-25 in 2005

White Paper for a Community Strategy (1997) from 6% to 12% in 2010



Share of RES in gross electrical consumption EU-25 in

2005 EU-25: 21% in 2010 - Directive 2001/77/EC (Bu 11% from 6% in 2001 and Ro 33,6% from 28% in 2001)



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The EC Directives to promote RES

- Directive 2001/77/EC, Promotion of RES-electricity in the EU, target of 21% (EU-27) by 2010, Greece 20,1%,
- Directive 2003/30/EC, Penetration of biofuels in the transport, at least 5.75 % biofuels by 2010 in each MS,
- Directive 2002/91/EC, Energy efficiency in the buildings sector, integration of RES in the new buildings,
- Proposal for a Directive (Jan.2008), EU-27 target for RES 20% of overall final consumption by 2020, Greece 18%,
- Proposal for a Directive, 10% biofuels in transport by 2020

EU Targets for share of RES in each MS by 2020 (Proposal for a Directive, January 2008)



Existing Situation in Greece

Feed-In Tariff for RES and CHP electricity

No	Renewable Energy Forms	Tariff €/MWh		
		Interconnected System	Islands' Systems	
1	Wind energy	80,14	91,74	
2	Wind energy offshore	97,14		
3	Small Hydro (up to 15MW)	80,14	91,74	
4	Solar PV up to 100kWp	457,14	507,14	
	Solar PV above 100kWp	407,14	457,14	
5	Solar energy other than PV, <5MWe	257,14	277,14	
	Solar energy other than PV, >5MWe	237,14	257,14	
6	Geothermal energy and Biomass	80,14	91,74	
7	Other RES	80,14	91,74	
8	CHP	80,14	91,74	

Existing Situation in Greece

The ambitious scenario: 20,1% RES-e by 2010 (14.45TWh/y)

No	Renewable Energy Forms And Large Hydro	Installed capacity (MW) End 2008	Needed capacity (MW) By 2010	Additional capacity by 2010 (MW)
1	Large Hydro	3.020	3.362	342
2	Small Hydro	150 (estim.)	267	117
3	Wind,	985	3.193	2.208
4	PV	8	200	192
5	Biomass	39	73	34
6	Geothermal	-	38	38

Study and Proposal by IENE for a new framework for solar energy applications, 2004 Integrated Study and Proposal for the Development of RES with specific targets for 2010 and supporting measures by IENE, 2007 7

Towards 18% Share of RES by 2020 (binding target) Almost three-times the today figure of RES

- Heating/cooling applications with solar energy, biomass and geothermal energy, specific targets and some supporting measures,
- Biofuels, penetration of 10% in the transport sector (binding target),
- Power generation, penetration close to 30% by 2020,
- National Action Plan with specific targets and supporting measures, feed-in tariff and simplification of the procedures for authorisation,
- Indicative figures for RES penetration into the power systems could be as follow: Wind 14%, Hydro and Small Hydro 10%, Photovoltaic 5%, Geothermal and biomass 2%, in total 31% RES-e by 2020
- Guaranteed access to the grid, transparent rules on costs for the access and connection to the grid

Lessons learned (I/II)

- The EU strategy for energy and the environment, the Directives must be integrated in the national policy. The development of RES and the energy efficiency are the cornerstone of the EU policy,
- National plan based on the estimation of RES potential in the country, measurements of wind and solar characteristics for energy purposes, measurements for hydro potential, exploration for geothermal fields, investigation for exploitation of the biomass,
- Legal framework for the development of RES potential in heating/ cooling and power generation, using the best practice in the EU,
- Design of supporting mechanisms to promote the deployment of RES, well-designed FIT remains the most appropriate tool,
- Design-development of hydro potential for large or small hydro as multi-purpose projects with multi-benefits, pump storage.

Lessons learned (II/II)

- RES-e have easy access to the network with reasonable connection cost, technical guidelines for connection to the grid,
- Priority dispatching and mandatory purchase by the DNO or TSO,
- PV in the building sector and for the islands, buildings codes for BIPV and roof installations, energy efficiency in the buildings,
- Biofuels in the transport in conjunction with agricultural activities,
- Level of risks for investors, currency risk, political risk, planning and licensing process, revenue security, supply of actual generation,
- Education in various levels,
- RTD actions for RES development, international cooperation, cooperation in projects within the EC programs.

Conclusions and Recommendations

- RES contribute to security of energy supply, reduction of CO₂ and the competitiveness, a new sector of the national economy,
- The policy in Greece is in line with the EU strategy for energy and the environment,
- National action plan for RES by 2020, specific targets for each energy form and for heating/cooling and power generation,
- High RES penetration in electricity close to 30%, the best mixing of the energy forms should be considered,
- Strong simplification of the licensing procedures, removal of technical and non technical barriers,
- Design of supporting tools based on the feed-in tariff system,
- Sustainable RES market without stop and go problems to support construction and manufacturing activities maximizing the benefits,
- Bilateral /International cooperation in RES building a more sustainable future

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THANK YOU FOR YOUR ATTENTION

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