

A GENERAL OVERVIEW OF THE RES INVESTMENT SECTOR IN GREECE

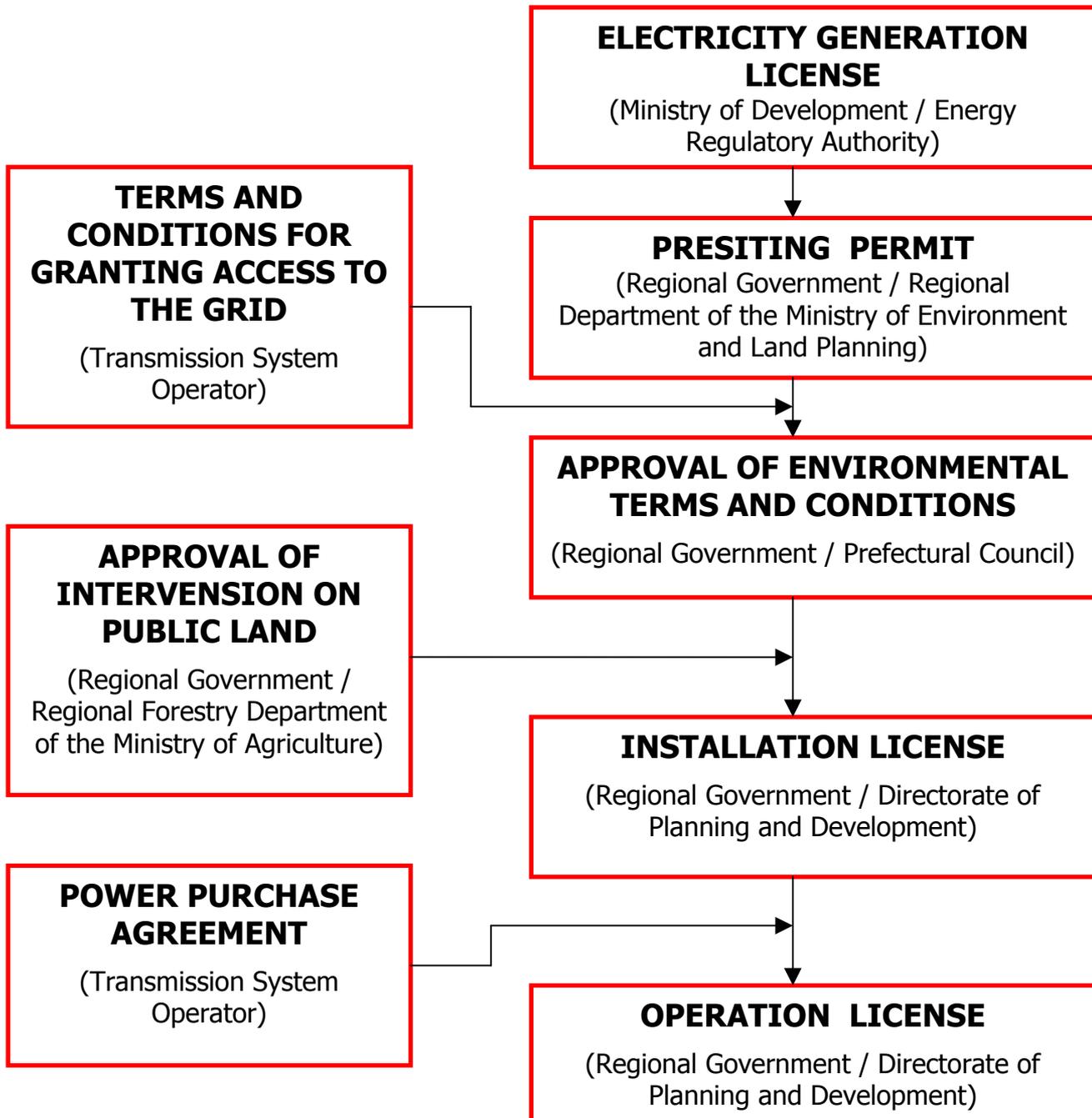
- Current situation
- Administrative and legislative framework
- Financial support instruments
- Quantitative targets for 2010
- Planned investments
- Obstacles to further development

RES-ELECTRICITY CAPACITY IN GREECE (2002)

	In operation	Under construction	Total
• Wind parks	273 MW <i>(PPC:37 MW)</i>	240 MW	513 MW
• Small hydro plants (< 10 MW)	33 MW <i>(PPC:22 MW)</i>	70 MW	103 MW
• Biomass units	14 MW	12 MW	26 MW
• Photovoltaic units	0.3 MW <i>(PPC)</i>	1.7 MW	2 MW
Total :	320 MW	324 MW	644 MW

ADMINISTRATIVE AND LEGISLATORY FRAMEWORK

- **RES licensing procedures and jurisdictions**



- **Law 2773/99 on the liberalisation of the domestic electricity market**

- i)** The Transmission System Operator (TSO) is obligated to grant priority access (priority in load dispatching) to RES electricity-producing installations up to 50 MW_e in power capacity (up to 10 MW_e in the case of small hydroelectric units).
- ii)** The TSO is obligated to enter into a 10-year contract (PPA) with the RES-electricity producer, for the purchase of his electricity. The contract always includes a renewal option.
- iii)** The RES-electricity production of an independent power producer, or the surplus electricity production of a RES autoproducer, is sold to the TSO at a predetermined buy-back rate (price cap), which is a fixed percentage of the corresponding consumer electricity rate.
- iv)** The Ministry of Development «may» ask the RES producers, during the processing of their applications for electricity-generation licences for new RES installations, to offer «discounts» on the above buy-back rates (*sic*).

- **Buy-back rates for RES electricity**

- i) Interconnected system (mainland)**

- Energy (Euro / kWh) : - 90% of the kWh price of the mid-voltage, general - use consumer tariff (for independent producers)
 - 70% of the kWh price at the actual voltage (for autoproducers)
- Capacity credit (Euro / kW/ /month) : - 50% of the capacity charge of the mid-voltage, general - use consumer tariff (for independent producers)
 - No capacity credit for autoproducers

- ii) Non - interconnected islands**

- Energy (Euro / kWh) : - 90% of the kWh price of the low-voltage, general - use consumer tariff (for independent producers)
 - 70% of the above kWh price (for autoproducers)
- No capacity credit

iii) At today's electricity prices in Greece, an independent RES producer is paid as follows :

- Interconnected system : **a)** Energy - 0.061 Euro/kWh
b) Capacity credit - 0.78 Euro / kW / month
(for wind and solar)
- 1.09 Euro / kW / month
(for small hydro)
- 1.40 Euro / kW / month
(for biomass and geothermal)

- Non-interconnected islands : **a)** Energy - 0.075 Euro/kWh
b) Capacity credit - None

FINANCIAL SUPPORT INSTRUMENTS FOR RES INVESTMENTS

i) National Development Law 2601/98 for the support of private investments

- 40% public subsidy (grant) on the total eligible RES investment cost + 40% subsidy on the interest of loans obtained for the purpose of financing the RES investment
- Alternatively, 40% subsidy on the loan interest + 100% tax deduction on the RES investment cost
- Level of subsidy (40%) is independent of RES category and of geographical region of the country
- Required own capital : 40% (min) of the total investment cost
- Minimum investment cost required : 176,000 Euro
- Maximum subsidy granted : 14.7 million Euro
- Maximum investment cost subsidised : 36.7 million

ii) Operational Programme for Competitiveness (OPC) / Community Support Framework III (2000-2006)

- Total Programme budget (2000-2006) : 6.4 billion Euro (of which, 50.4% or 3.2 billion Euro is public subsidy)
- Measure 2.1 of OPC is specifically targeted to RES/RUE/CHP private investments
- Total budget of Measure 2.1 (2000-2006) : 1.07 billion Euro (of which, 35.6% or 382 million Euro is public subsidy)
- Minimum investment cost required : 44,000 Euro

- Maximum investment cost subsidised :
44 million Euro

Measure 2.1 of OPC for private RES/RUE/CHP investments (cont.)

- Public subsidy (grant) on total eligible RES investment cost :
 - Wind parks, conventional solar thermal units : 30%
 - Small hydro, biomass, geothermal, high-tech solar thermal units, passive solar : 40%
 - Photovoltaics : 50%
- Level of subsidy (%) is independent of geographical region of the country
- Required own capital : 30% (min) of the total investment cost
- Three (3) rounds of public calls for RES investment proposals have been planned : October 2001 (in progress), September 2002 and March 2003 (deadlines)

- Total public subsidy available for private RES investments (2000-2006) : 270 million Euro (~ 700-800 MW_e)

NATIONAL RES TARGETS (2000-2010)

- **EU DIRECTIVE ON THE PROMOTION OF RES ELECTRICITY**

i) Indicative target for Greece, for the year 2010 :

- 20.1% of total electricity demand, or 14.5 TWh/year, to be covered by RES (including large hydro)
- 14.5% of total electricity demand, or 10.5 TWh/year, to be covered by RES (excluding large hydro)

- **REQUIRED RES-ELECTRICITY CAPACITY BY 2010**

i) Total RES-electricity capacity required :
~ 3500 MW_e

(based on a RES-averaged capacity utilisation factor of 35%, or about 3000 hr/year)

ii) Indicative capacity breakdown by RES form :

- 2800 MW_e of wind parks
- 400 MW_e of small hydro plants
- 200 MW_e of biomass plants
- 100 MW_e of other RES units

Total : 3500 MW_e

PLANNED RES INVESTMENTS

New RES capacity, with electricity – generation license already approved (after technical / economic evaluation) by the Greek Energy Regulatory Authority (as of March 15, 2002)

RES Technology	Total Power Capacity (MW_e)
1. Wind	1398
• Interconnected grid system	1028
• Non-interconnected islands (except Crete)	97
• Crete	56
• Special project in Thrace	217
2. Small hydro	208
3. Biomass	95
TOTAL :	1701 MW_e

OBSTACLES TO FURTHER RES DEVELOPMENT

- **RES licensing procedures**

- Complex and lengthy (1 ½ - 2 years)
- Require the (positive) opinion of 37 public entities, at the central, regional, prefectural and local level, as well as the conformity with 4 National Laws and 7 Ministerial Decrees
- The transfer of most RES-licensing jurisdictions and competences, from the central to the regional and prefectural authorities (in late 1998), only compounded the problem

- **Saturation of the capacity of the transmission grid**

- New RES capacity can no longer be connected to the grid (due to saturation), in the regions of high wind potential (Thrace, Euboea / Cyclades Islands, southeastern Peloponese)
- Upgrading of the grid's capacity (re-enforcement & extension of power lines) is scheduled to materialise in 2005 – 2006

- **Public reaction to large-scale wind park development in Euboea and southeastern Peloponese (Lakonia)**

- A full-scale publicity and information campaign by the Greek Association of RES Investors is currently in progress in Euboea