

Maximisation of R.E.S. penetration in Greek insular isolated power systems with the introduction of pumped storage systems

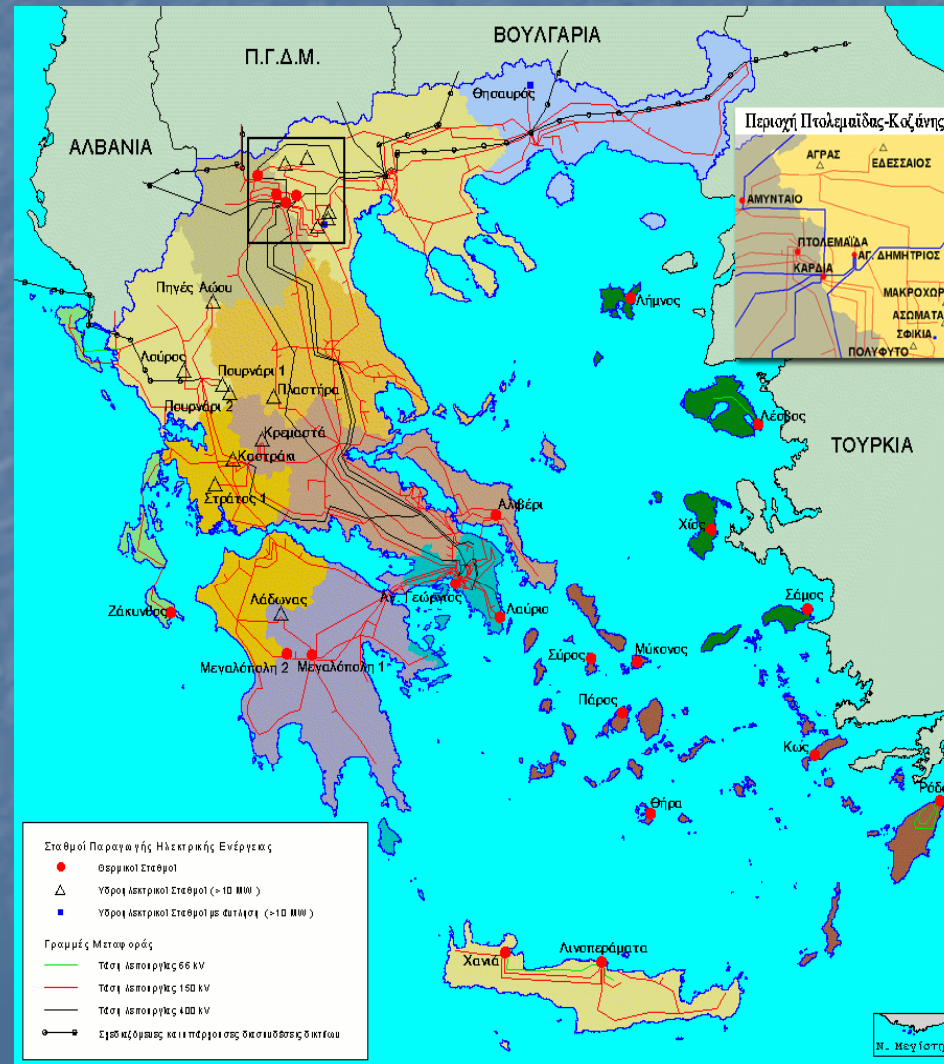
Dimitris Al. Katsaprakakis, Dimitris G. Christakis

Wind Energy & Power Plants Synthesis Laboratory
Technological Educational Institute of Crete

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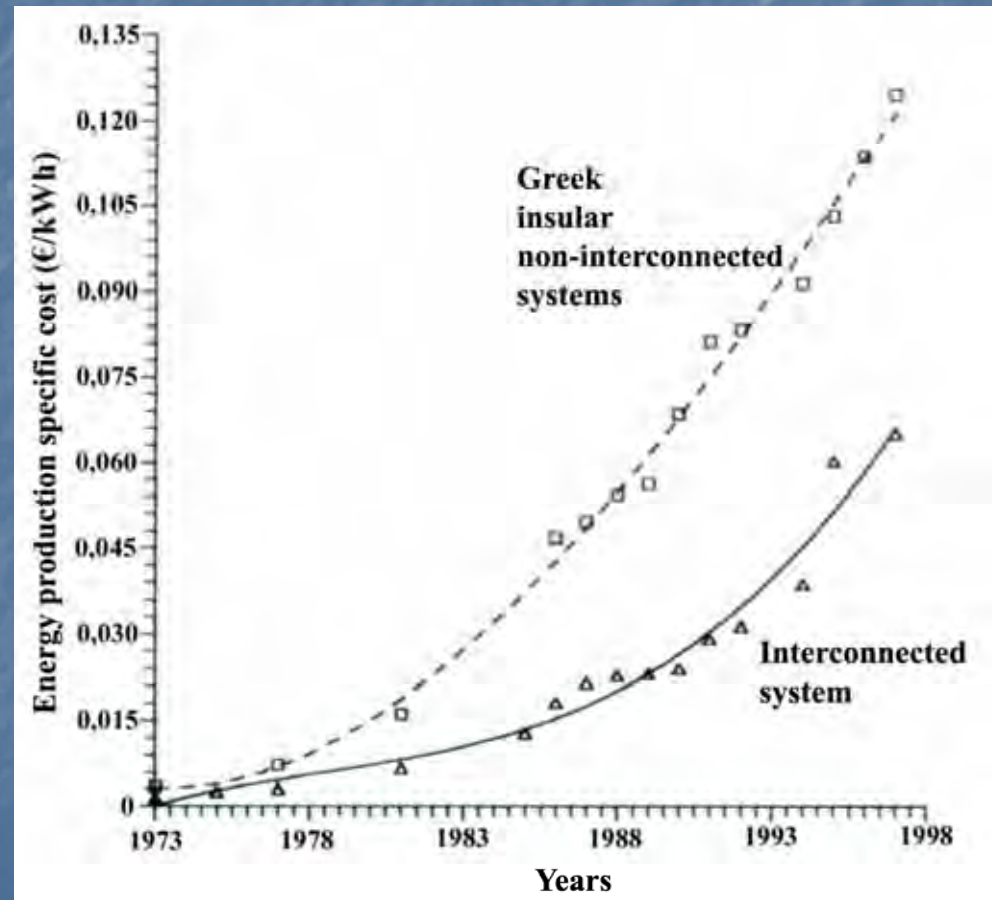
The Greek insular isolated power systems



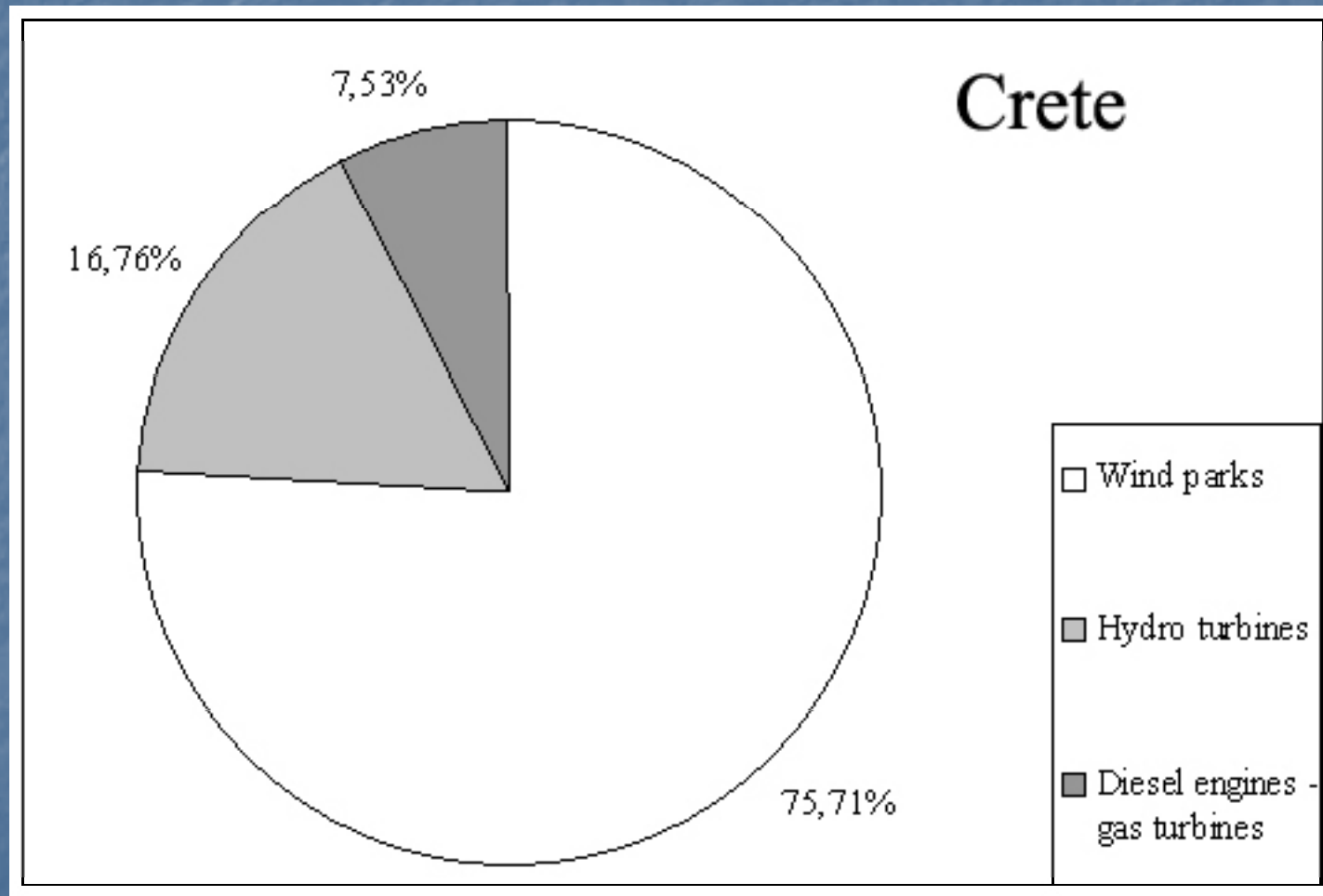
Current status in Greek insular isolated power systems

- Power production based on autonomous conventional thermal generators
- Imported fossil fuels is the fundamental energy source
- High energy production specific cost
- Remarkable R.E.S. potential met in the majority of the Greek islands

Energy production specific cost

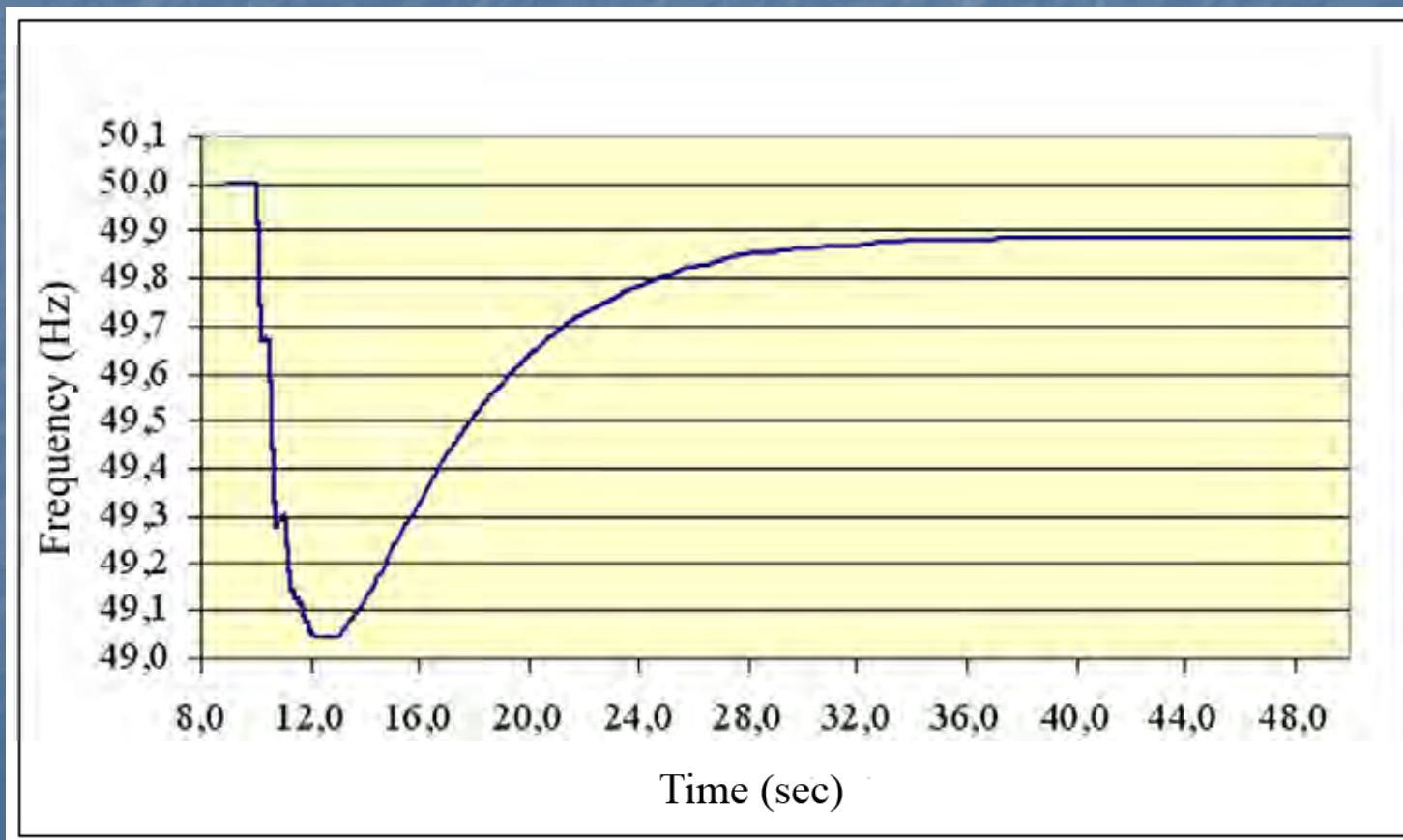


Energy productions



Dynamic security evaluation

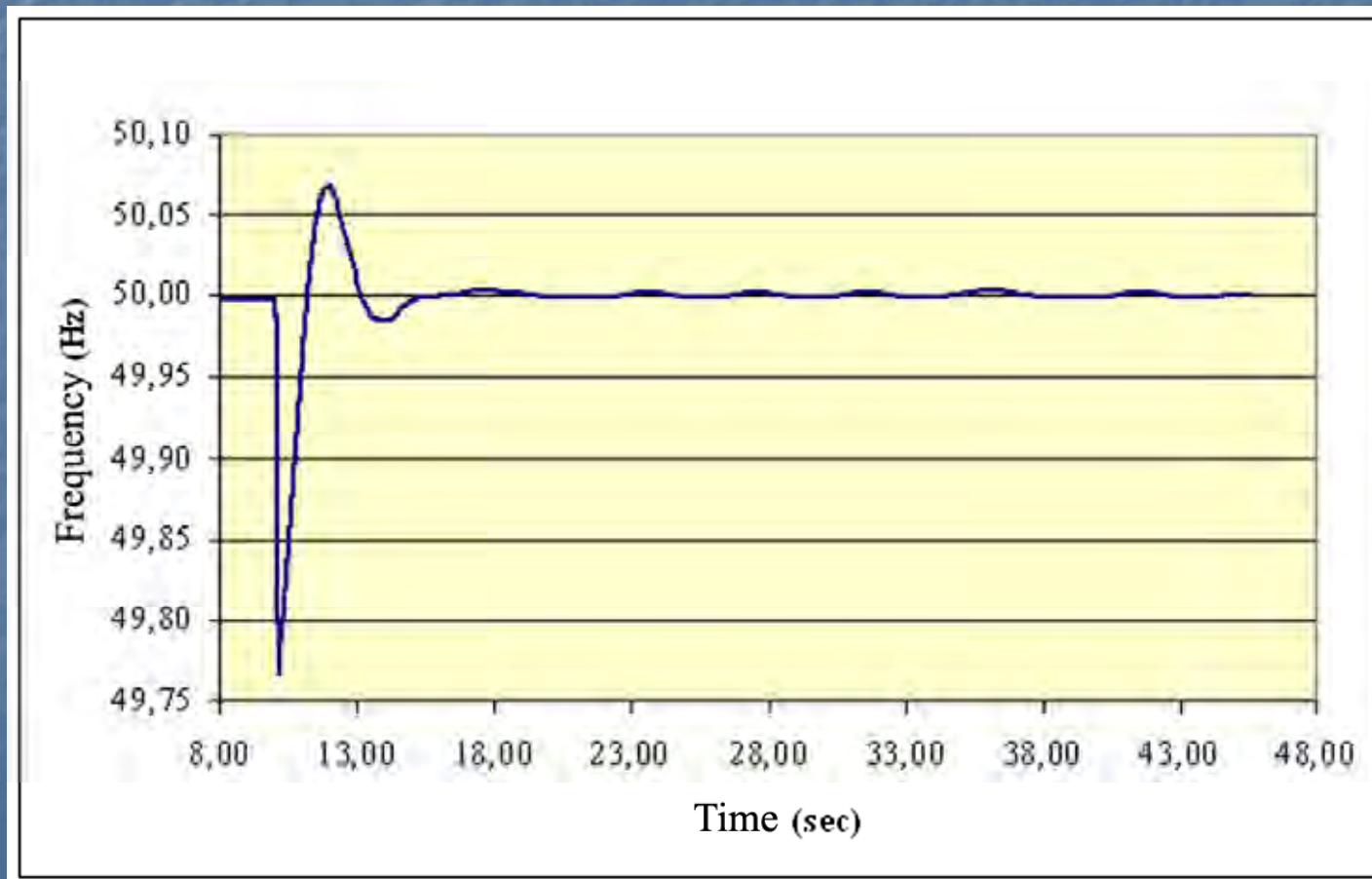
Hydro turbines operation –
Loss of 80 MW of wind parks



Dynamic security evaluation

Pumps operation

Loss of 40 MW of wind parks



Conclusions

- The R.E.S. in Greek isolated insular systems may reach the 90% of the annual electricity production, with a corresponding thermal power production limitation.
- R.E.S. penetration in insular systems may be based on the available remarkable wind, geothermal and biomass potential.
- The proposed power production systems may appear attractive economic features under certain prerequisites:
 - the provision of a subsidy on the investments' initial costs
 - the configuration of the produced energy vending price according to the existing electricity production specific cost.
- The existence of hydro turbines in the system may guarantee the dynamic security of the system.