



Electricity Market Priorities and Infrastructure Requirements

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Electricity market landscape

- EU legislation & regulation:
 - MiFiD (Markets in Financial Instruments)
 - EMIR (European Market Infrastructure Regulation)
 - REMIT (Regulation on Wholesale Energy Markets Integrity and Transparency)
 - EU Third package for Electricity & Gas markets
 - 2030 framework for climate and energy policies
 - EU ETS carbon market stability reserve



Electricity market landscape

- Macroeconomic environment:
 - Ukrainian crisis (security of energy supplies),
 - Fukushima nuclear accident (announced closure of nuclear plants in Germany)
 - Shale gas
- Banks quitted some commodities markets
- Changes in market Regulations & Codes
- Incomplete clearing procedure
- Privatisation programs



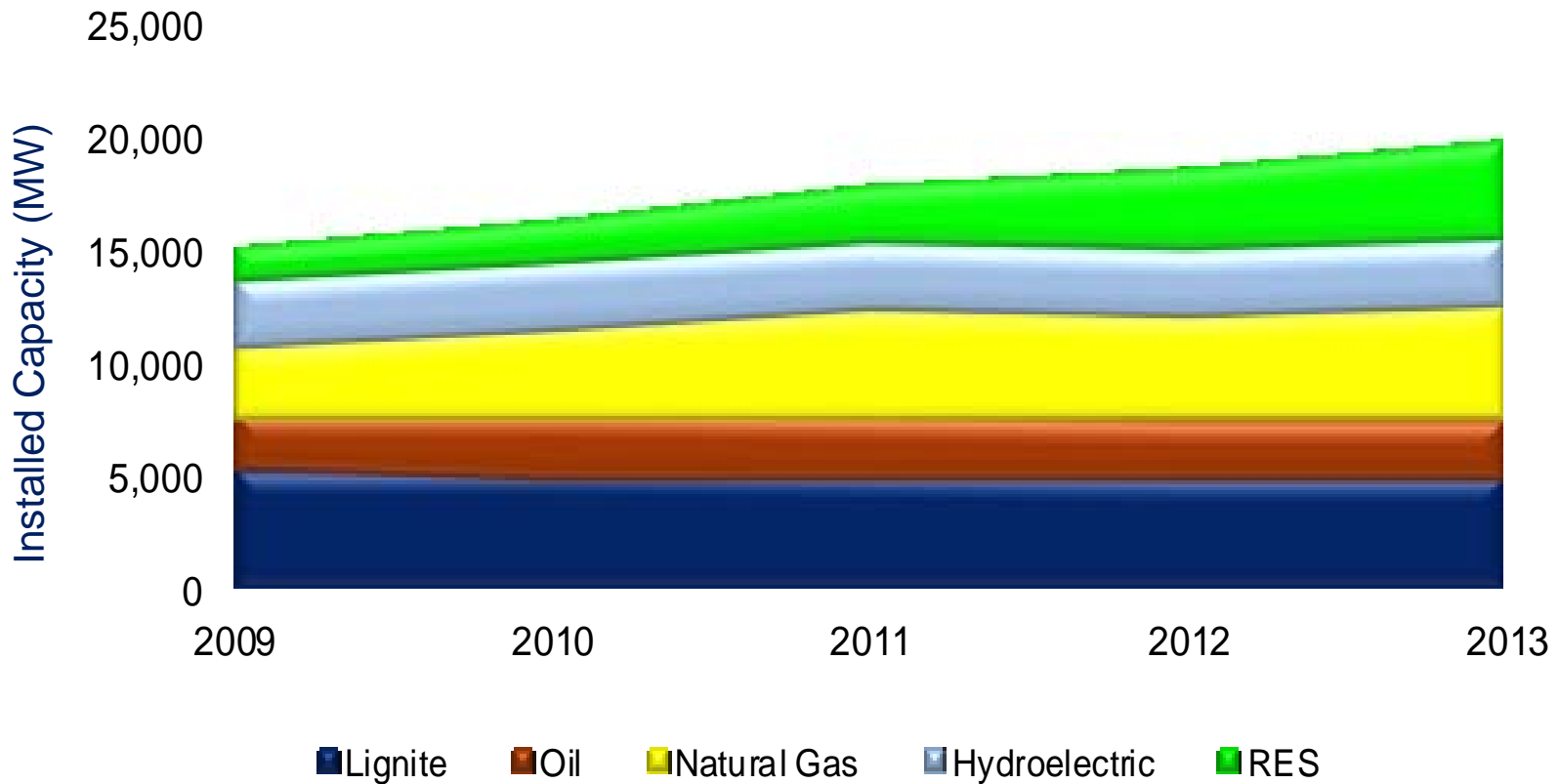
Electricity market landscape

- Demand decrease
 - lower utilization of existing power plants
 - freeze of new investments
 - investment financing difficulties
- Electricity prices
 - rising prices for both household and industry (partly due to higher taxes)
 - deteriorated competitiveness
 - increase of unpaid bills
 - need for lower retail prices



Installed capacity - Greek Power Market example

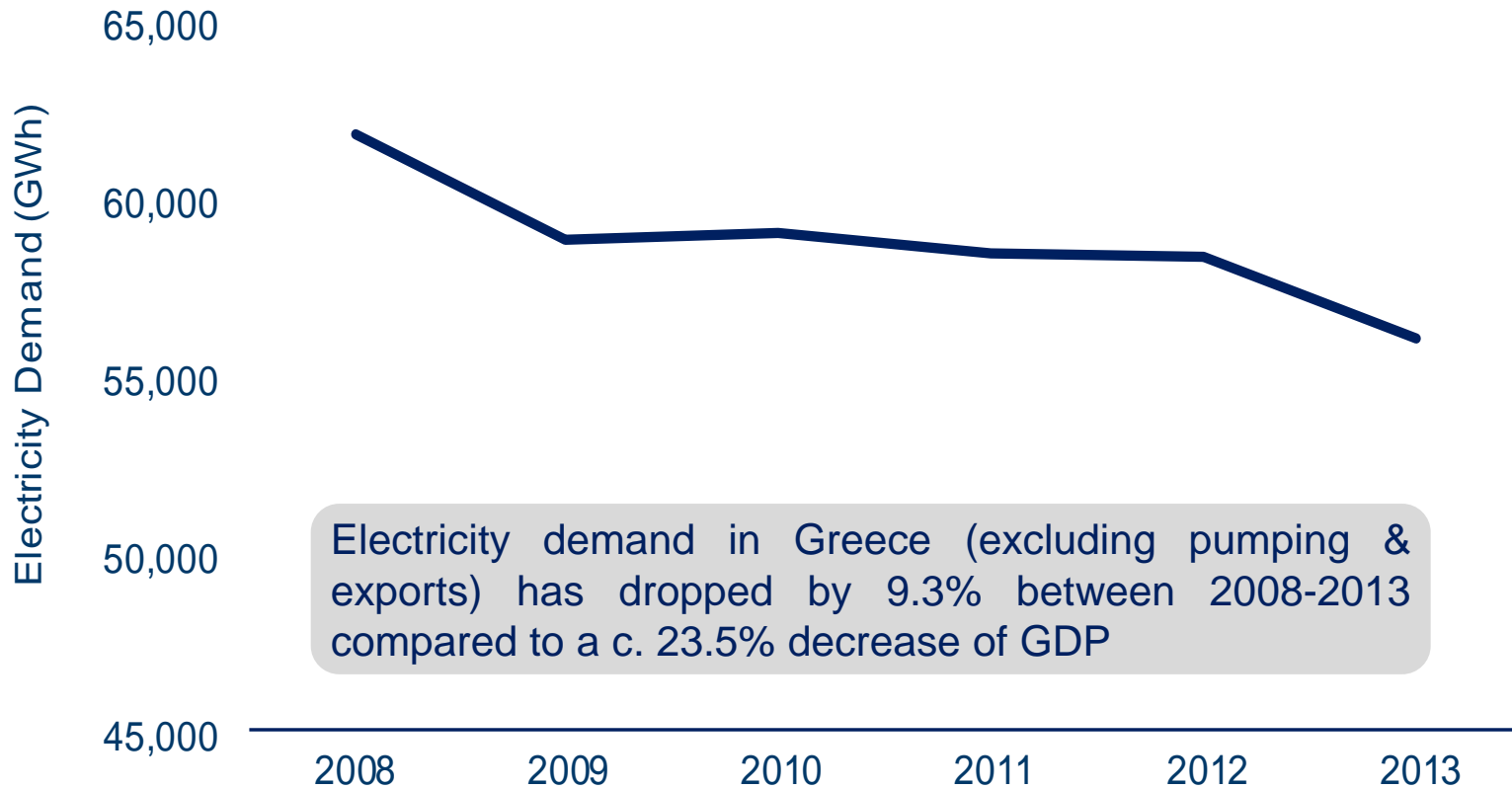
Installed Capacity





Demand decrease - Greek Power Market example

Electricity Demand Excluding Pumping & Exports





Electricity market landscape

- RES Expansion
 - influence on the average cost of electricity
 - lack of integration of RES into the market
 - higher volatility in estimations for generation quantities (resulting in increased importance of balancing markets)
 - need for increased reserves
 - extraordinary load curve shifts for conventional power plants
 - more frequent start up and shut down of thermal plants resulting higher operational and maintenance costs
 - closure or lower utilisation of fossil-fuel plants in many European countries



Electricity market landscape

- Compensation to energy intensive industries
- Other market developments:
 - demand response systems
 - storage systems to achieve renewable energy integration (pumping power stations)
 - electric cars
 - energy efficiency
 - distributed generation (efficient local systems)→ complex grid, advanced metering



What is needed

- Development of a strong regional electricity market
 - market integration and regulatory harmonization (non-discriminatory grid access, objective regulation and good transparency)
 - common cross-border transmission capacity allocation auction rules & platform (like CASC)
 - higher liquidity of energy trading
- Well-organised spot and forward market under international standards
 - solid clearing mechanism
 - transparent rules
 - independent market supervision



What is needed

- Assessment of the impact of new regulation (for example capacity remuneration scheme)
- RES market
 - not feasible to solely rely on feed-in tariffs
 - improved locational and operational signals → fuel mix optimisation
- Reassessment of power investments, rerun of energy optimization



What is needed

- Stable carbon regulatory framework → long-term price visibility, able to make investment decisions
- New electricity products (ex. supply for electric vehicles) which will increase the overall electricity demand
- Solid internal and external procedures for regulation compliance and performing well in the new complex and demanding environment
- High qualified personnel
- New IT systems to tackle new complex environment



What is needed

- Network investments
 - interconnection cables
 - transmission lines
 - distribution lines
 - smart meters



PPC Key Strategic Objectives

- Maintaining our Leading Market Position
- Improving the efficiency of our Power Plants and Environmental Performance
- Improving Profitability and Cash Flow Generation
- Diversifying our Business into Other Markets and Activities



PPC suggestions & contribution for the future

- Hedging
 - the inexistence of forward power market in Greece and neighboring markets does not allow proper hedging
- Transformation of the Greek and neighboring electricity markets from a day ahead pool market to an intraday/day ahead/balancing/forward market through the creation of power exchanges
- PPC is a full member of EEX & ICE, active in spot and forward markets internationally, long lasting experience on international power / fuel / carbon contracts → can contribute to a viable electricity market to SE Europe
- PPC could offer market making services if needed
- Establishment of foreign trading subsidiaries
 - in Turkey (PPC Elektrik Tedarik ve Ticaret A.S.)
 - in Bulgaria (PPC Bulgaria JSCo)