

How can Greece move towards a low-carbon future? Prospects and Challenges

Presenter: Assistant Professor Haris Doukas

National Technical University of Athens
School of Electrical & Computer Engineering
Decision Support Systems Laboratory



1. Research Questions

Framing the future



- How can Greece move towards a more efficient use of energy resources to support sustainable growth?
 - What can be done to reduce primary energy demand (across all sectors)?
 - Which areas should we primarily focus on?
- What is the role of renewables towards decarbonisation?
 - What is the minimum penetration of renewables in the energy mix and power generation mix, in order to achieve the desired transition to a low carbon economy, also considering the national potential in solar (and wind) power?
 - What is the cost of renewables and who absorbs it?
 - What is the cost of GHG emissions savings associated with solar power compared to other alternatives?

- How can further development of the Greek solar market be achieved?
 - What is the institutional failure of the past that, combined with the adverse fiscal environment, contributed to the suspension of the remarkable boom of the Greek solar market (2011-2013)?
 - In this context and considering the current shutdown of new investments, how can further development of the domestic solar market be incentivised?
- Which technologies can drive a transition pathway for the power system that is based on the notion of consumers generating, storing and consuming clean energy locally?
- With regard to energy efficiency, which policy instruments can promote the desired transition pathway(s) in the building sector?

Consequences of transition



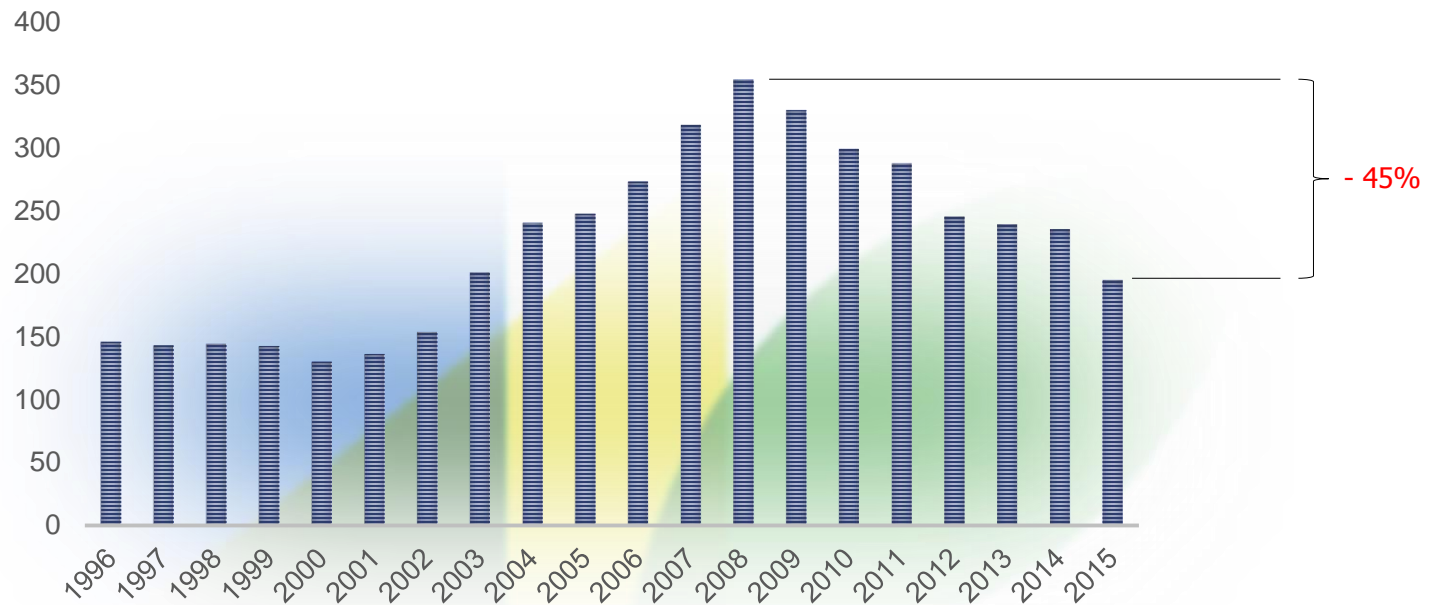
- What would be the socio-economic consequences of switching from coal sources (and mainly lignite-fired power plants), which currently account for about half of the power generation mix, to renewable energy sources (with emphasis on solar power)?
 - What are the risks and uncertainties associated with the corresponding policy options?
 - On promoting micro-generation and storage at the residential sector, how could potential costs and benefits be distributed to both the consumers and the power market actors?

2. Key contextual factors

Ongoing recession (1/2)



GDP (USD₂₀₁₆ BILLION)



Source: The World Bank, 2016

Ongoing recession (2/2)

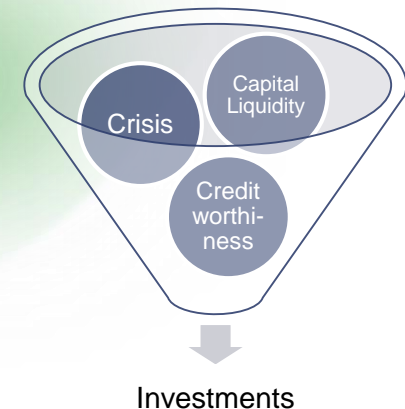


- Difficult to assess the Greek case study in climate-economy models



- Significant drop in energy use (imports and generation)

- Reduced clean energy investments

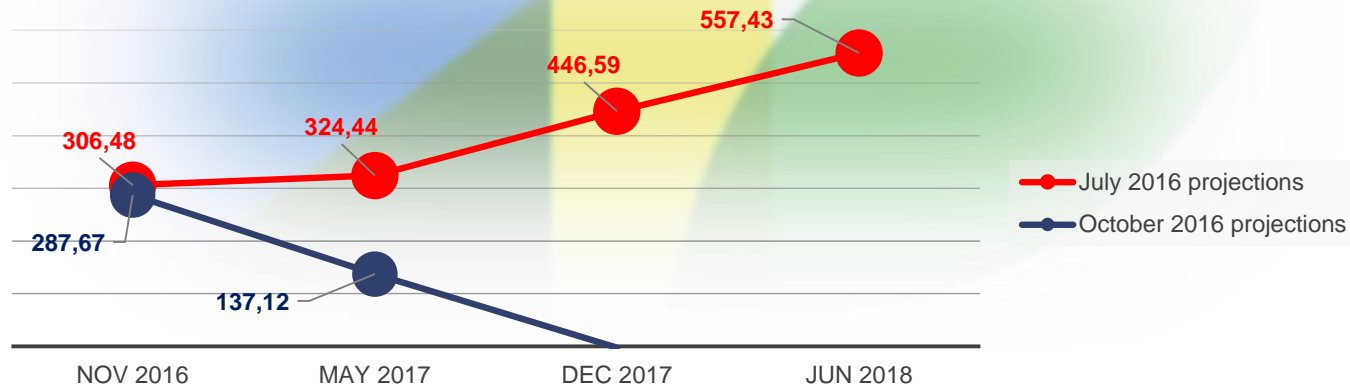


Incentive framework



- Implementation of an irrational solar energy policy, which remunerated PV systems with sky-high FITs along with other subsidies that led to projects with internal rates of return (IRRs) higher than 40%.
- This was happening amid the severe economic crisis.
- Deficit in the fund that remunerates renewable energy generators (LAGIE / Operator of Electricity Market)

LAGIE's remuneration fund deficit (million €)

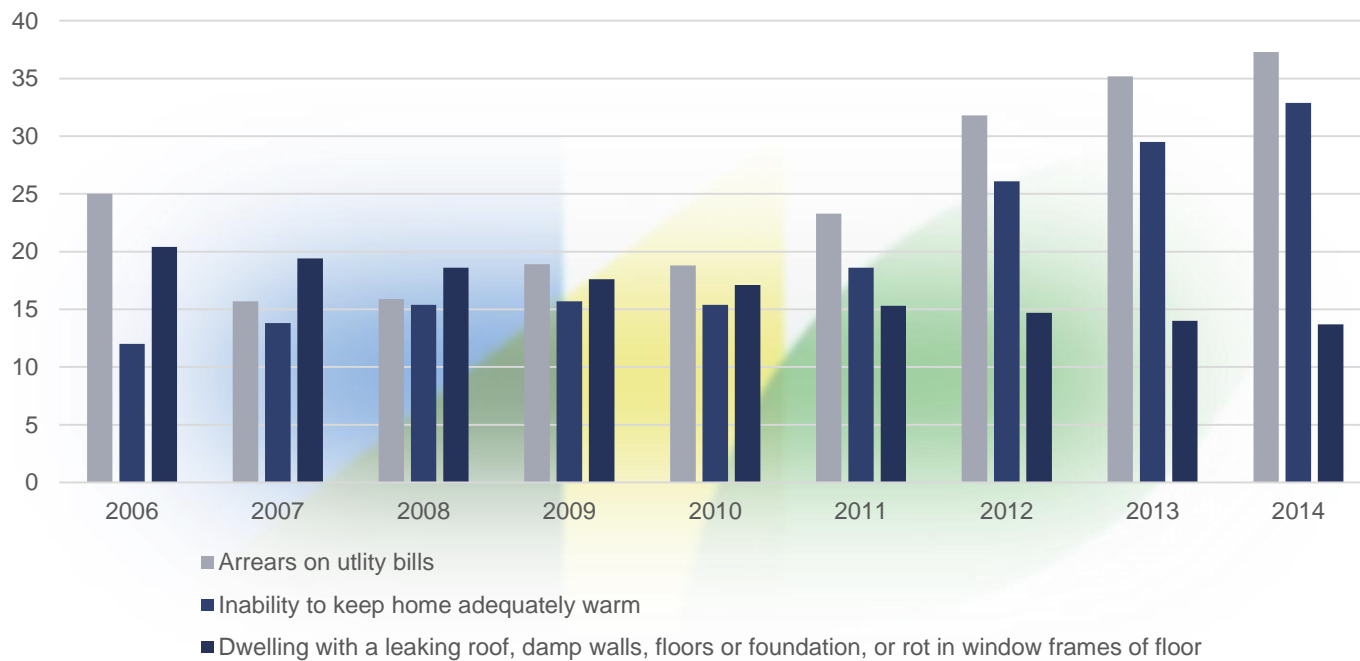


Source: LAGIE, 2016

Energy poverty



Energy Poverty (% of population)



Source: Eurostat, 2016



Other factors



Refugee crisis

Political prioritization

Fund allocation

Impact on energy poverty

Outside the radar

Political uncertainty

Impact on the regulatory framework

Consistency of political strategies

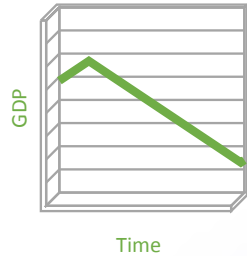
Technological lock-ins

Insistence on lignite

Deceleration of switching from coal to RES

3. Main challenges to be addressed

Yet another modelling exercise?



Predefined socio-economic scenarios



Standard policy measures



Highly ambitious, generic goals



of arguable value to policy making

An innovative approach



- How to best create a socio-economic pathway for Greece, in order to accurately inform quantitative models?
- For a completely inactive building sector, how can the transition of the building sector be achieved?
- Given the past legislative failure of the incentive mechanism, which led to a complete shutdown of the solar market, how can further development be incentivized?
 - Who absorbs the costs?
 - Amid severe crisis, how can the State support a costly transition of the energy system?
- What is the role of societal acceptance, how can it be achieved in order to reduce “not-in-my-backyard” opposition and invest in the notion of “prosumers”?
- What about hard-to-model risks and uncertainties?



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Thank
You!

Dr. Haris Doukas

Email: h_doukas@epu.ntua.gr

Tel: (+30) 210 7724729

