

# The New Geopolitical Parameters and Energy Security in the EU and Greece

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# Definitions

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**Security of supply:** to have enough energy available at any point in time to satisfy all final demand



**Sustainable energy:** to deliver all energy demanded, whilst reducing the climate burdening emissions from its production and use



**Affordable energy :** to contain and maintain the price of energy to final users at levels that do not trigger GDP reductions

# Five Theses

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- Current geopolitics do not appear to have increased energy security risks
- Energy security has gone beyond the cut of primary supplies or transportation routes
- The transition to net zero exacerbates security risks
- Energy non affordability adversely affects GDP
- National plans for energy security and the climate are not enough

# Current geopolitics do not appear to have increased energy security risks

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- ❑ The Gaza situation remains localised with no other regional powers being actively involved
- ❑ Energy and capital markets have remained calm with the price of futures in decline (TTF spot 46-3m 47/ HH spot 3.0-3m 3.02/Brent spot 82-3m 81)
- ❑ No new energy flow restrictions have been observed or reasonably anticipated in the near future
- ❑ The effect of the war in the Ukraine has been absorbed
- ❑ The effect of the Gaza situation seems to have been discounted
- ❑ There is still the question of the extent of the impact on future regional energy connectivity projects

# Energy security has gone beyond the cut of primary supplies or transportation routes

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- ❑ Geographical limitations on renewable production (x5-8 by 2050)
- ❑ Land limitations for networks and renewables (x2-4 by 2050)
- ❑ Unstable electricity systems due to topology, excess renewables and cyber attacks
- ❑ Low efficiency in the electrification chain (production <20%, transmission <90%, storage <90%) demand disproportionate capacity
- ❑ Earlier than necessary retirement of fossil and nuclear electricity generation capacity ( eg GR, DE)
- ❑ Lack of energy storage (eg technology, materials)
- ❑ Bottlenecks in the production of energy transformation equipment( eg windmills, batteries, nuclear)
- ❑ Bottlenecks in energy transportation / transmission (eg entry points, connectivity between and within markets)
- ❑ Geographical supply (CH, RU, AF, Au) and demand (EU,US) imbalances for critical minerals and rare earths mainly for electricity production, transmission storage but also for key industrial processes (copper/networks [x2-3], lithium/storage [x25-60], nickel/electrical motors [x2.5-4])

# The transition to net zero exacerbates security risks

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- ❑ Energy consumption will continue to increase (x1.3) but electricity consumption will grow exponentially (x8)
- ❑ Energy supply will have to increase faster than consumption, due to the lower efficiency of renewables (<20%), losses (20%) and storage efficiency (<90%)
- ❑ Transition may not run in pace with the economically remaining fossil deposits
- ❑ Connectivity in transportation of oil and gas and transmission of electricity will have to grow denser, with far more origins and entry points and smarter, to cope with the surge in electricity consumption
- ❑ Handling difficult to electrify sectors (e.g. shipping, aviation, heating, metals) may cause energy supply shortages (eg biofuels, hydrogen)

# Energy non affordability will adversely affect GDP

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- ❑ Global short term energy price elasticity to demand is -0.22 (10% increase in price=2.2% reduction in GDP)
- ❑ Energy and CO2 markets are not efficient and impede fast and appropriate capital allocations thus becoming an obstacle to investment
- ❑ Prices increased recently across all energy forms in parallel significantly
- ❑ Shifts from long term contracts to spot pricing tend to increase prices
- ❑ Price differences between national markets do not reflect well the underlying cost differences
- ❑ Legacy security considerations lead to localisation of supplies, which adds to the costs
- ❑ Slow behavioural adaptation retains energy usage higher than it should have been
- ❑ Real energy cost increases are bound to dampen GDP growth

# National plans for energy security and the climate are not enough

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- ❑ Europe and its countries need to be driven by a single clear integrated yet flexible plan, rather than by national targets
- ❑ The objective is to transit the economies securely to lower emission levels in an affordable manner
- ❑ The plan should cover:
  - Security of energy and of critical minerals and rare earths supplies
  - Supply sources and arrangements
  - Gas/electricity transportation and distribution
  - Storage
  - Correct pricing of energy and climate deterioration (CO<sub>2</sub>)
  - Transition and net zero technologies
  - Prioritisation and sequencing of large investments
  - Public and private funding
- ❑ Without such a plan it will be practically impossible to coordinate efforts effectively and to mobilise ample resources



# The green energy book for Europe

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- ❑ Many, geopolitically uncorrelated, primary energy sources available
- ❑ Dense gas and electricity networks within each country and within Europe as a whole
- ❑ Many entry points (LNG terminals, pipelines, interconnectors)
- ❑ Long term supply agreements with energy exporters
- ❑ Supply agreements with producers of critical metals and rare earths for renewable electricity production and storage
- ❑ Creation of pan European gas and electricity markets with consistent spatial pricing, integrating emissions costs
- ❑ Promote energy production and usage efficiency and the associated behavioural changes
- ❑ Support national net zero targets with a European plan that ensures consistency and effectiveness in pursuing and achieving them