

# COMPARING SECURITY OF ENERGY SUPPLY AND GAS DIVERSIFICATION IN HUNGARY AND POLAND

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# Outline

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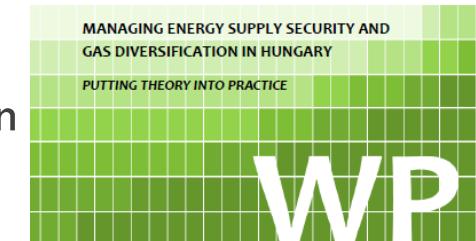
## Focus on Poland, with some comparisons with Hungary

Working paper

238.

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- Electricity mix and approaches towards supply security
- The security of the stationary fuel supply and gas diversification
- Summary and conclusions

Table 1. Different definitions of security of supply

### 1. Traditionalists' survival-based definitions

– Buzan et al. (1998)

### 2. Dimensional classifications

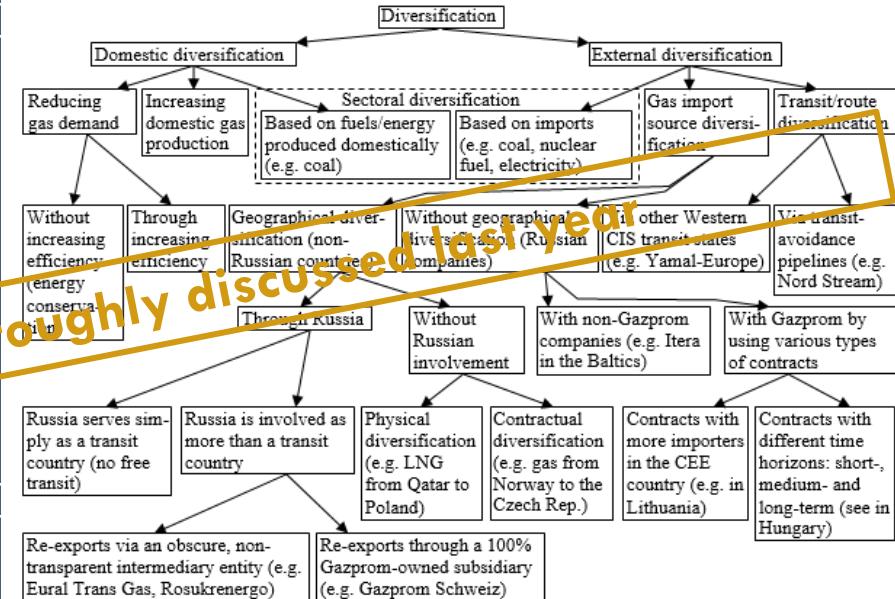
- two-dimensional definitions: availability and price (cost)
  - Manners (1964), IEA (1985), UNDP (2000), Yergin (2006, 2011)
- three- and multidimensional definitions
  - Elkind (2010): availability, reliability, affordability and environmental sustainability
  - APERC (2007): four 'A's: availability, accessibility, affordability and acceptability
  - Sovacool and Mukherjee (2011): availability, affordability, technology development, sustainability and regulation
  - Alhajii (2007): economic, environmental, social, foreign policy, technical and security dimensions
  - Wicks (2009): physical, price and geopolitical security
  - Hippel et al. (2011): environment, technology, democratic, management, social-cultural factors and international relations or military risks

### 3. Other definitions

- Cherp and Lowell (2011): three perspectives: sovereignty, robustness and resilience
- Stirling (2007): system properties consisting of stability, durability, resilience and robustness

The theoretical part was thoroughly discussed last year

Figure 1. A CEE diversification scheme for gas



Source: Weiner (2017).

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# Energy/electricity mix

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## Poland

- ❑ Still a coal-addicted economy
- ❑ Installed electricity generation capacity in 2016:
  - coal: 46%
  - lignite: 23%
- ❑ Electricity generation in 2016:
  - coal: 50%
  - lignite: 32%
- ❑ Up to 2050, almost a half of installed capacity must be replaced
- ❑ Shortages of power to appear inevitably
  - first serious shortage in August 2015

## Hungary

- ❑ Electricity generation by the nuclear power plant and a lignite-fired power plant in 2015: 50% + 20%
- ❑ Net electricity imports as a threat
- ❑ Electricity supply should not be dependent on imports
- ❑ To achieve electricity self-sufficiency

# Supply security

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## Poland

- The energy policy agenda is securitized
- Political aspects
  - another distinct dimension?
  - under the dimension of availability?
  - not to mix security of supply with geopolitical arguments?
- Two main factors
  - the need to reduce external dependence
    - Russia: gas and oil imports
    - Germany: dependence on renewables technology
  - to preserve the role of coal
    - self-sufficiency and independence from foreign influence
- The most sensitive issues: gas and coal

## Hungary

- Conventional three-dimensional approach
- Russian energy relations: not as a threat
- A huge nuclear deal with Russia
- The most sensitive issues: gas and nuclear

# Coal

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## Poland

- Hard coal
  - Restructuring started in 1990, but not yet completed
  - Domestic economic, social and political aspects
    - ~90 thousand jobs
    - high state ownership
    - strong unions
  - Problems
    - high costs of mining
    - geological factors
    - high social costs
    - quality questions compared to imported hard coal
    - low labour productivity
  - Low international coal prices = financial problems
  - Heavy reliance on subsidies
  - Law and Justice: to save and defend the coal industry
    - to modernise existing power plants
    - to build new plants
  - Change in rhetoric?
- Lignite
  - The 4th producer worldwide, the 2nd in the EU
  - More private ownership
  - Lignite is cheaper, lower cost of producing energy
  - Higher CO<sub>2</sub> emissions

## Hungary

- Only three power stations that (can) (also) burn coal
- A lignite-fired power plant is of great importance: under the control of an oligarch
- Current licenses expire in 2025
- Two reasons why maintaining coal-based energy production
  - in case of an energy crisis, coal is the only internal reserve which could be rapidly mobilized
  - to prevent losing the professional culture

# Renewables

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## Poland

- **Poland**
  - ▣ Sustainability is clearly neglected
  - ▣ Hard-line climate policy opponent because of
    - energy independency targets
    - the aim of preserving coal-based electricity
  - ▣ A fundamental restructuring of the role of renewables in the 2010s
    - before 2007: hydropower ranked 1st
    - 2007–2014: solid biofuels played the most significant role
      - co-firing of biomass: had long been profitable
  - ▣ Wind power: the most spectacular rise
    - 2011: 2nd, 2015: 1st
    - 7th largest wind power capacity in the EU
    - a new Wind Farm Act restricting wind power dev.
  - ▣ Solar energy
    - negligible, but 2015, 2016: has grown considerably

## Hungary

- Political environment: a big challenge
- Does not believe that renewables will have a powerful role
- Target share of renewables in gross final energy consumption has been achieved because of a change in statistical methodology
- Wood biomass: the largest renewable source
- Wind energy: small and a de facto ban
- Hydro and solar: a marginal role

# Nuclear

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## Poland

- No nuclear capacity
- An abandoned nuclear power plant
- In energy policy
  - ▣ 2005 energy strategy
  - ▣ 2009 energy strategy
  - ▣ Polish Nuclear Energy Program
    - two nuclear power plants: approximately 3 GW each
  - ▣ new draft Polish energy policy
- Lithuania
- 2017: 1.2-GW nuclear power station by around 2030
- No decision has been taken on the method of funding

## Hungary

- A notorious nuclear supporter
- A priority to the availability, the only real solution is Paks-2
- Debates on the affordability dimension

# Gas security 1

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## Poland

- Gas security
  - “dependence on Russian imports = gas security” formula
- Gas consumption
  - seventh biggest gas consumer in the EU
  - small share of gas in Poland’s electricity and energy mix
  - the share of gas will increase
  - there is a room for reducing gas demand through increasing efficiency
- Gas production
  - not negligible
  - shale
    - hype of the early 2010s, but all efforts have failed
      - foreign companies have faced difficult geological and regulatory terrain
      - lower oil prices have discoursed investment
    - Poland aimed at eliminating dependence on Gazprom
    - Climate incentives were not considered

# Gas security 2

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## Poland

- Imports in 2016
  - ▣ By pipeline
    - Russia: 74.3%
    - Germany: 18.2%
    - Czech Republic: 0.04%
  - ▣ LNG
    - Qatar: 6.9%
    - Norway: 0.6%
- Not to extend the Russian supply contract when it expires in 2022
  - ▣ replace it with that of Norwegian via a yet-to-be built pipeline and with LNG
- Infrastructure
  - ▣ in the 2010s, notable steps have been made
  - ▣ Further pipeline plans or projects
- Contracts
  - ▣ The 1990's: a stream of diversification announcements, but only a small contract with Norway
  - ▣ Before 2009: from Ukraine and from Central Asia through intermediary companies
  - ▣ LNG
    - one long-term and one mid-term LNG supply contract + the spot market
    - questions about the price or affordability dimension

# Gas security 3

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## Hungary

- Hungary's dependence on Russian gas has decreased, gas security has increased
  - ▣ availability of large-scale cheaper gas imports from Western Europe
  - ▣ constructions of new gas interconnections
  - ▣ sharply decreasing domestic gas consumption
- But
  - ▣ electricity imports, and the role of nuclear power and coal has increased
  - ▣ domestic gas production has declined
  - ▣ large pipeline projects have failed
- There has been a shift in domestic energy security policy towards the affordability dimension
- Unlike Poland, the Hungarian government intends to sign a new long-term gas supply contract with Gazprom

# Summary and conclusions

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- Hungary: the three-dimensional approach is appropriate, Poland: some correction is required
- Great uncertainty about Poland and Hungary's energy policy and supply security
- What future role for the particular fuels in the energy mixes?
- Coal
  - The industry captures Poland's energy policy? The geopol. dimension also cements reliance. But low energy import dependence
  - In Hungary: no decision to introduce a new lignite power plant
- Renewables
  - Both Poland and Hungary are sceptical
  - Renewables do not affect the role of conventional power industry
- Nuclear
  - Poland: no decision to take off the project
  - Paks-2: a domestic diversification, an unexpected turn regarding Hungary's energy dependence
- Gas
  - Since 2009, both countries have taken action to diversify
  - Hungary: to sign an advantageous long-term gas supply contract
  - Poland: goodbye to Russian gas?