PRESENTATION

Decarbonisation on a slow speed: Recommendations on the Bulgarian National Energy and Climate Plan

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Dr. Todor Galev, Senior analyst
Center for the Study of Democracy

Federal Ministry
for the Environment, Nature Conservation
and Nuclear Safety

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A ROADMAP FOR THE DEVELOPMENT OF THE BULGARIAN ELECTRICITY SECTOR WITHIN THE EU UNTIL 2050: FOCUS ON FUNDAMENTALS

Policy Brief No. 70, October 2017

Introduction: Bulgaria's Energy Security Priorities

The Bulgarian energy security position has been steadily improving since the country joined the European Union a decade ago. The country's Energy Security Risk Index declined further in the past two years, placing it at 58th position among the 75 largest energy consumers in the world.[1] The key contributing factors have been the steady reduction of energy intensity and the greening of Bulgaria's energy and economy. Bulgaria was among the first EU members to meet its 2020s energy goal on consumption from renewable sources. It has also started explorations for oil and gas in its Black Sea shelf and has vowed to build gas interconnectors with Turkey and Greece in a bid to wean the country off its dependence on Russian gas.

The Bulgarian government needs to build carefully on this progress focusing on its EU-related priorities and heeding **the country's long-term energy risk factors**, the top four of which remain:

- **Energy poverty**: Bulgarian households and micro and small consumers are the most vulnerable in the EU, which rising energy prices have pushed back to coal and wood consumption or out of business, further worsening air and living quality;
- **Energy intensity**: Despite continuous improvements the Bulgarian economy remains on average more energy intensive than its EU peers, hurting resilience to external shocks and productivity;

KEY POINTS

- Based on data and modelling used by the Commission, three scenarios for the dec tion of the Bulgarian electricity sector u have been developed. These scenarios the model framework for policy decisio for Bulgaria in all energy domains. The re gest the necessity for active policy-mak number of sensitive energy issues, often entrenched special interests.
- The least costly way to decarbonize the e sector in Bulgaria would be by replacing power plants with renewable energy sour
- By 2050, the country's decarbonised elect would include 53-54 % renewable general
- The rising carbon, coal and natural gas pric lead to an increase of Bulgarian wholesale prices from an average of EUR 34/MWh i over EUR 74/MWh in the decarbonisation in 2050.
- At the average expected wholesale powe 2050, new nuclear capacity would not be f viable as its breakeven costs are over EUR
- Due to steeply rising carbon prices, coal a based generation capacities would be pric the market before the end of their lifet scenarios.
- The best-case decarbonisation scenario quire investment of around EUR 16.5 b only around EUR 4 billion in state support next three decades.
- In all scenarios, the households electricit ditures to income would double to arou by 2050.
- Natural gas would play a transition role narios, which requires the speedling up of fully liberalise the natural gas market an source diversification.

This publication was made possible by the support of the Konrad Adenauer Foundation.

[1] CSD, 2016, Energy Security Risks and the Case for Gas Diversification, Policy Brief 62, July 2016, Center for the Study of Democracy, Sofia.

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ENERGY SECURITY IN SOUTHEAST EUROPE: THE GREECE-BULGARIA INTERCONNECTOR

Policy Brief No. 81, November 2018

Southeast Europe remains an energy island on the continent. Most countries' policies are far away from EU Energy Union priorities.[1] Their fragmented small markets rely most times on Russia as an outside source of energy.[2] Hence, despite being the most energy poor countries in Europe, the Balkans have paid among the highest energy bills and born some of the highest energy costs on society and the environment. EU and NATO members Bulgaria and Greece in the south and Croatia in the north of the Balkans, hold the key to Southeast Europe's energy security strategy. Unlike Romania, which has its own energy resources, Bulgaria and Greece share the energy security situation of the rest of the region.[3] Bulgaria has emerged as the most important country for solving the long-term energy security conundrum of the region. Yet, to enable the transformation of the regional energy sector, Bulgaria would need to complete the liberalization, diversification and integration of its electricity and gas markets.

KEY POINTS

- Southeast Europe remains relia energy imports from Russia an withstand another major supply
- Bulgaria has dragged its feet on overdue interconnectors and s that would diversify gas supply, i markets and contribute to the gas trading.
- Without stepping up its diversifi complete the IGB pipeline, Bulga position vis-à-vis Gazprom would at a moment when the con opportunity to significantly impr formula and volume terms of its contract.
- The current level of capacity bo rate of return demanded by the the IGB pipeline make the proje vulnerable and potentially less c Russian gas.
- To improve IGB's sustainabili regional gas trading, a key in be the full enabling of the reve border capacities along the Trans previously reserved for Gazprom
- The government should tap into bal LNG market to attract additio gas shipping companies wishing to sell in the SEE region, including via the LNG regasification terminal at Revithousa in Greece and the planned new floating facility near Alexandroupolis only a short distance from IGB's entry point.

Energy Security Priorities

Bulgaria has improved its energy security position in the past decades. The *International Energy Security*

[1] SELDI.net (2016). *Energy Governance and State Capture Risks in Southeast Europe: Regional Assessment Report.* Sofia: Center for the Study of Democracy.

[2] Shentov, O. et al. (2019). *Russian Economic Grip on Central and Eastern Europe.* New York: Routledge.

[3] CSD (2015). *CSD Policy Brief No. 58: Transparent Governance for Greater Energy Security in CEE.* Sofia: Center for the Study of Democracy.

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DEVELOPMENT OF SMALL-SCALE RENEWABLE ENERGY SOURCES IN BULGARIA

LEGISLATIVE AND ADMINISTRATIVE CHALLENGES

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STIFLED DECARBONISATION

ASSESSING THE BULGARIAN NATIONAL ENERGY AND CLIMATE PLAN

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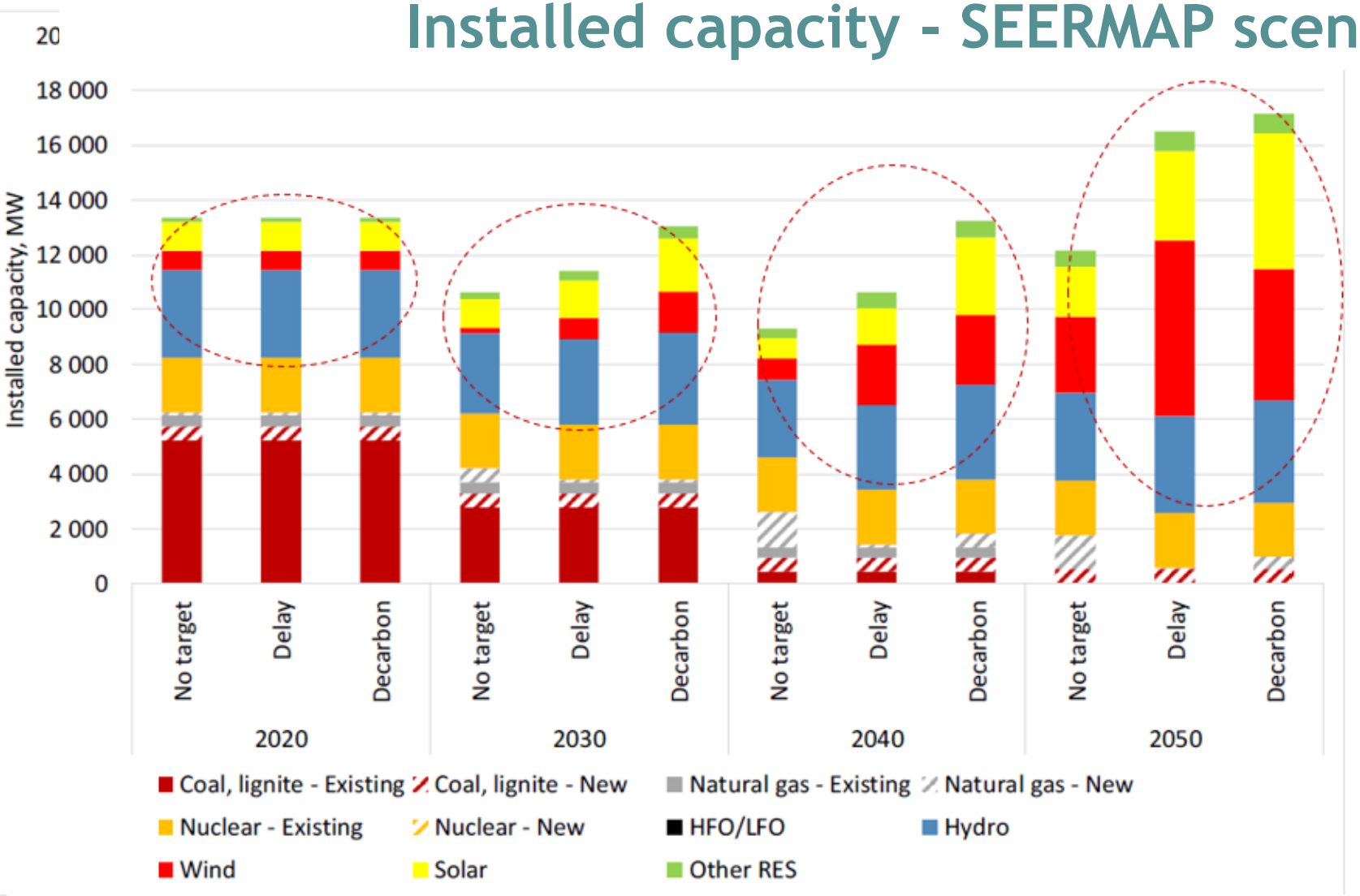
Assessment of the Bulgarian NECP

- ✓ NECP project lacks ambition, a long-term perspective and a clear vision
- ✓ Relies heavily on coal, gas and nuclear by 2030
- ✓ Low RES targets, except for biomass with foreseen increase of 68%
- ✓ Missing detailed energy scenarios' modelling
- ✓ Missing justification of policy measures and targets
- ✓ Rise of prosumers, energy communities (cooperatives) and small-scale producers is underestimated and generally neglected

Space for improvement …

- ✓ Benefit from the existing or new scenarios modelling of the electricity sector development
- ✓ Introduce evidence-based analysis to justify the selected targets and macro-economic assumptions
- ✓ Put “full-scale” decarbonisation scenario at the core of all planned targets and measures
- ✓ Use the recent modelling studies to benefit fully from the existing RES potential of the country
- ✓ Decrease the foreseen growth of biomass, incl. through incentivizing medium-scale biomass facilities on community level
- ✓ Start planning total coal-phase out at latest by 2025/2030

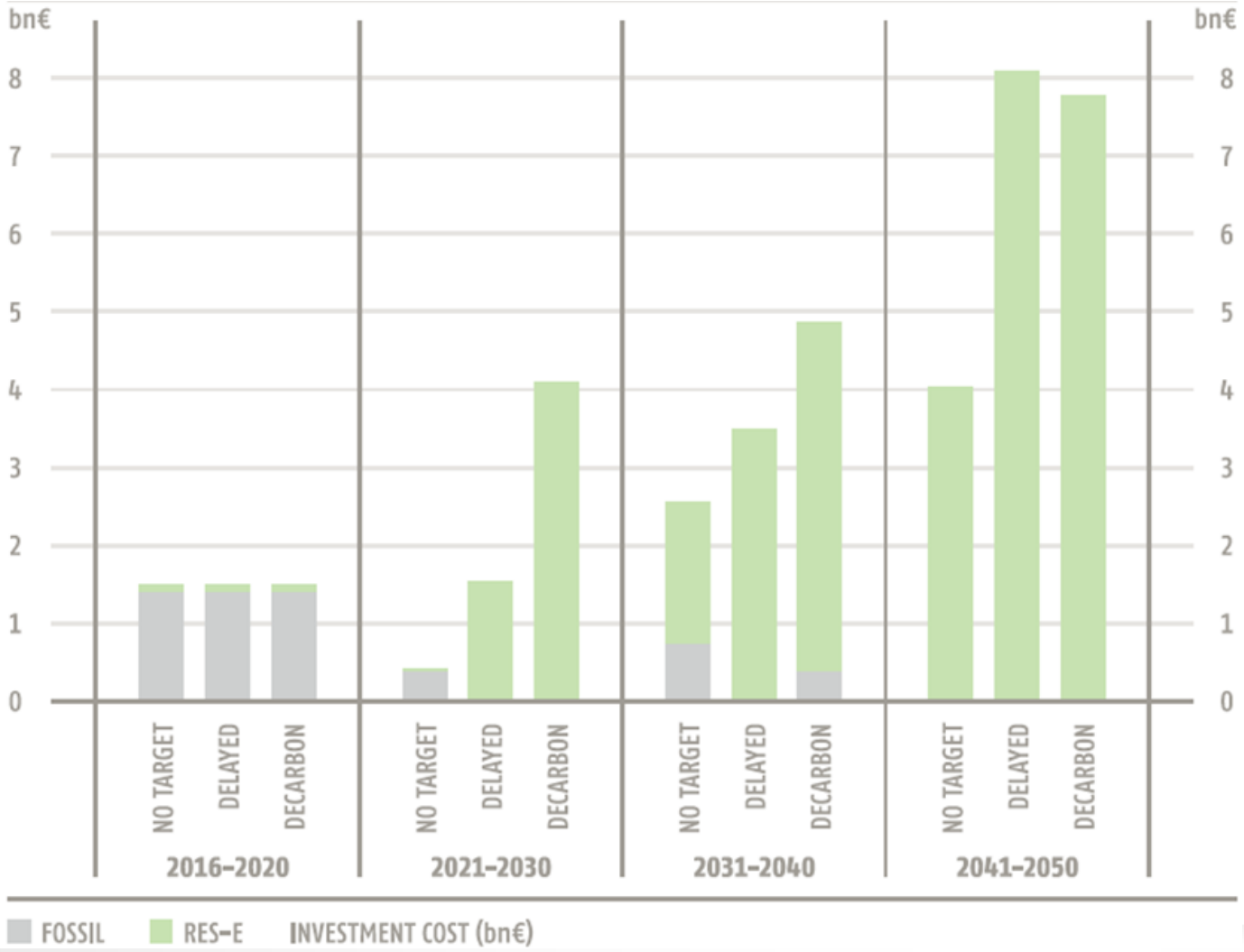
Installed capacity - SEERMAP scenarios



- ✓ 45% of current fossil fuel generation capacity (2600 MW) expected to be decommissioned by 2030; 97% by 2050
- ✓ Shift in generation mix from fossil fuel to renewables, driven primarily by increasing carbon and wholesale electricity prices and decreasing renewable technology costs

Source: South East Europe Electricity Roadmap (SEERMAP) country report for Bulgaria, 2017

Cumulative investment cost 2016-2050



- ✓ Decarbonisation scenario: EUR 16,5 bln investments in RES by 2050; out of them EUR 4,0 bln public expenditures

Source: South East Europe Electricity Roadmap (SEERMAP) country report for Bulgaria, 2017

Policy recommendations (1)

- ✓ A long-term strategy for a coal phase-out and just transition is urgently needed
- ✓ Review the current draft NECP targets to be on track with 2050 energy and climate framework
- ✓ Conducting a detailed ex-ante impact assessment of the NECP's targets and energy system projections
- ✓ Review and utilize the existing modelling studies to justify the NECP policy measures and targets

Long-term RES utilization potential by 2050

Technologies	Electricity generation (GWh)	Capacity equivalent (MW)
Biogas	1 999	
Biomass	3 971	
Biowaste	266	
Geothermal electricity	1 162	180
Hydropower - small-scale up to 10 MW	1 930	506
Hydropower - large-scale above 10 MW	7 488	3 750
Photovoltaics - decentralized systems	5 470	5 629
Photovoltaics - centralzied systems	5 268	4 221
Wind onshore (incl. technical /power system/ constraints and land use constraints)	16 385	10 110
Wind offshore	3 424	1 200
TOTAL RES-E	**47 363**	
For comparisson: gross electricity demand 2017	**35 242**	

Source: South East Europe Electricity Roadmap (SEERMAP) / Green-X modell database, 2017

Policy recommendations (2)

- ✓ Implement more integrated approach to heating & cooling, electricity and transport sectors
- ✓ Develop regulatory framework for and incentivize energy communities
- ✓ Develop subsidized program for residential buildings' small-scale RES, esp. for vulnerable groups
- ✓ Develop a specific financing facility to incentivize the use of medium-scale biomass (community) installations in rural areas and small towns;

Thank you!

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todor.galev@online.bg