

# A South East Europe Electricity Roadmap for Decarbonisation by 2050

28 June, 2018  
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PRESENTATION

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- Decarbonisation scenarios
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## Decarbonisation Scenarios

### No Target

- Completion of the existing policy objectives
- Construction of the planned new generation capacities
- No goal for the reduction of carbon emissions by 2050

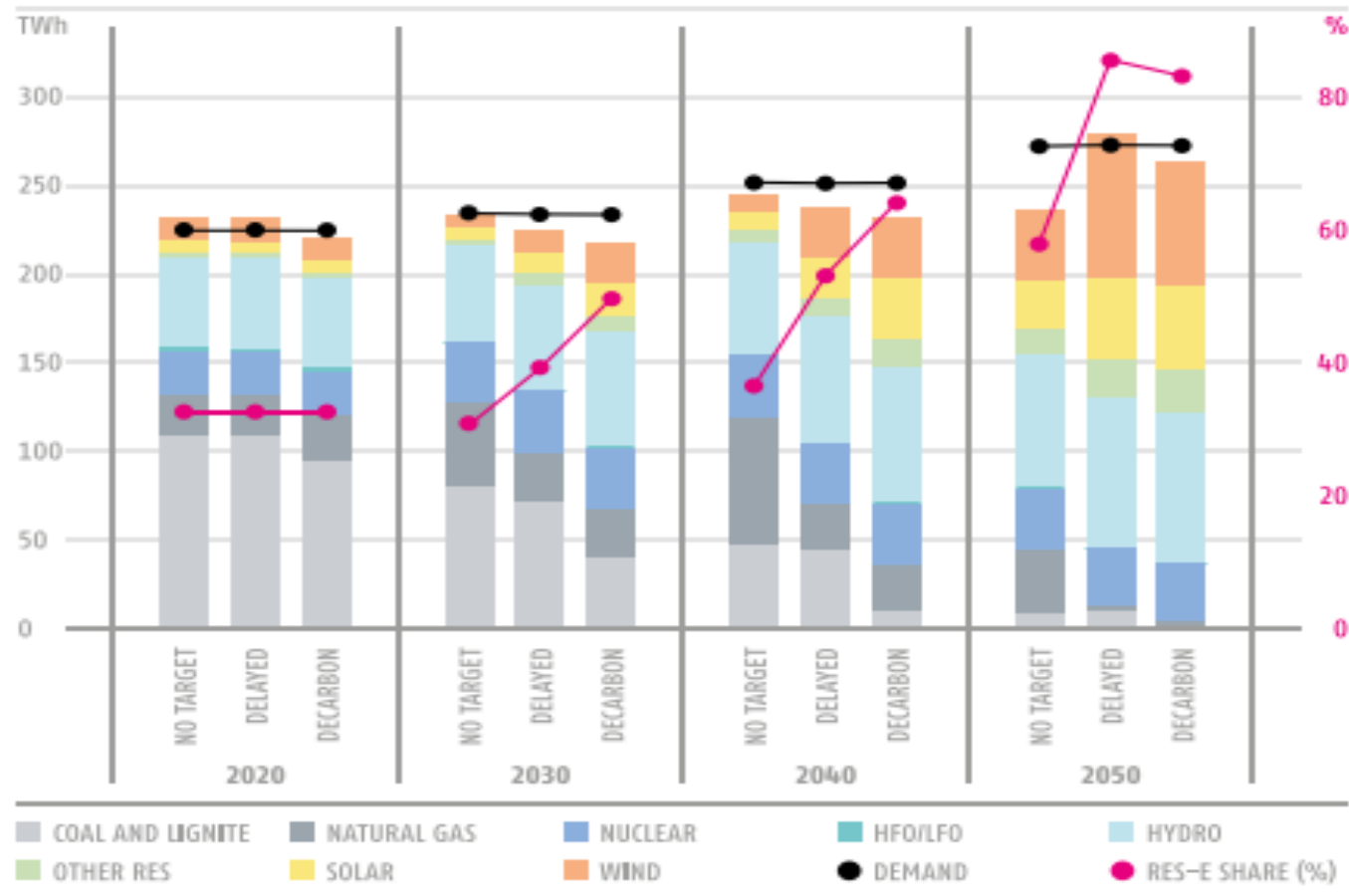
### Decarbo nisation

- Long-term strategy for the reduction of CO2 emissions by more than 94% by 2050
- Strong state support for renewable energy sources
- High prices for carbon emissions

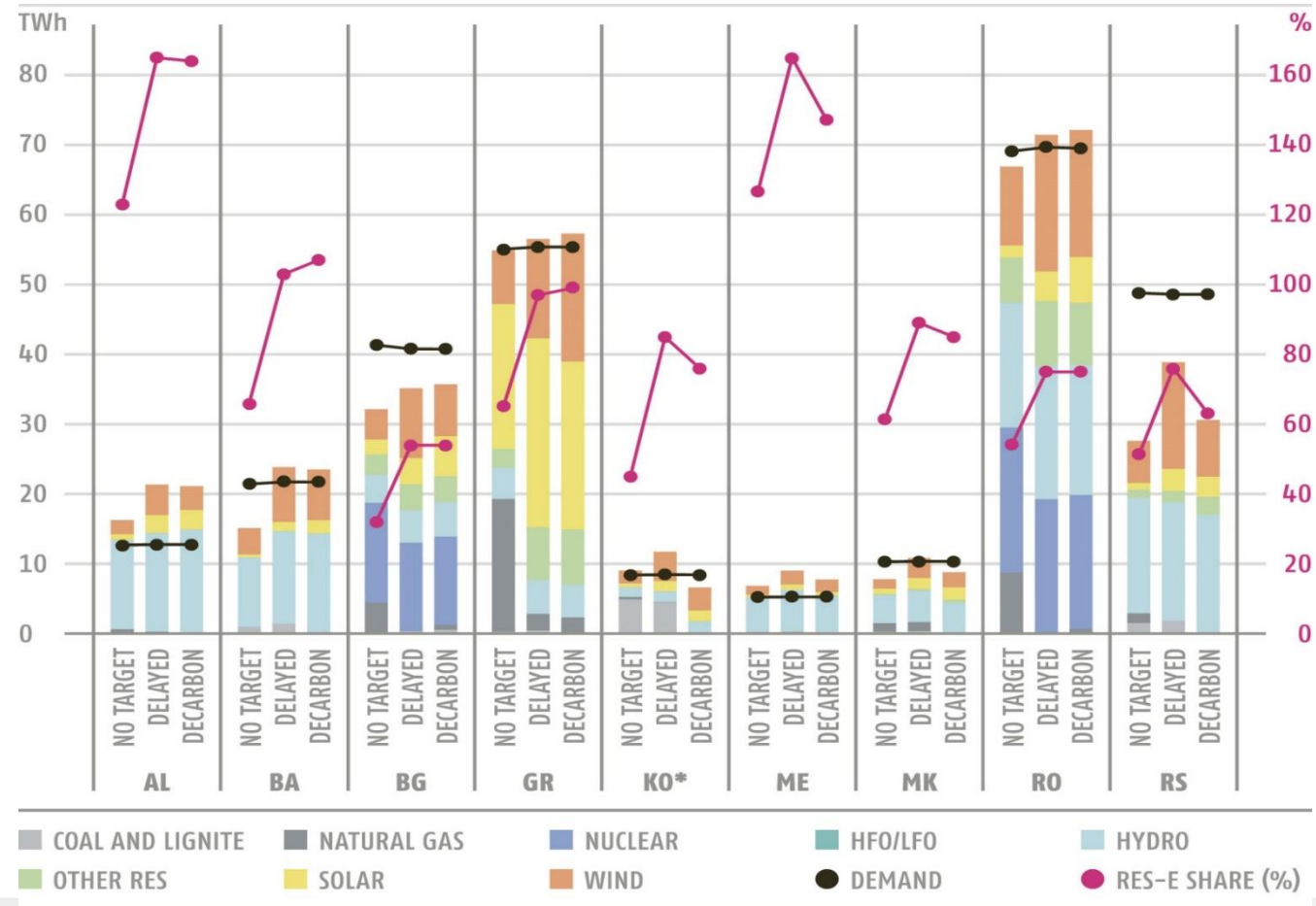
### Delayed Decarbo nisation

- Completion of the current investment plans without a change in the policy framework
- Shift in the policy direction towards decarbonisation after 2035
- The achievement of the same 94% ambitious target by 2050

## Gross Electricity Mix

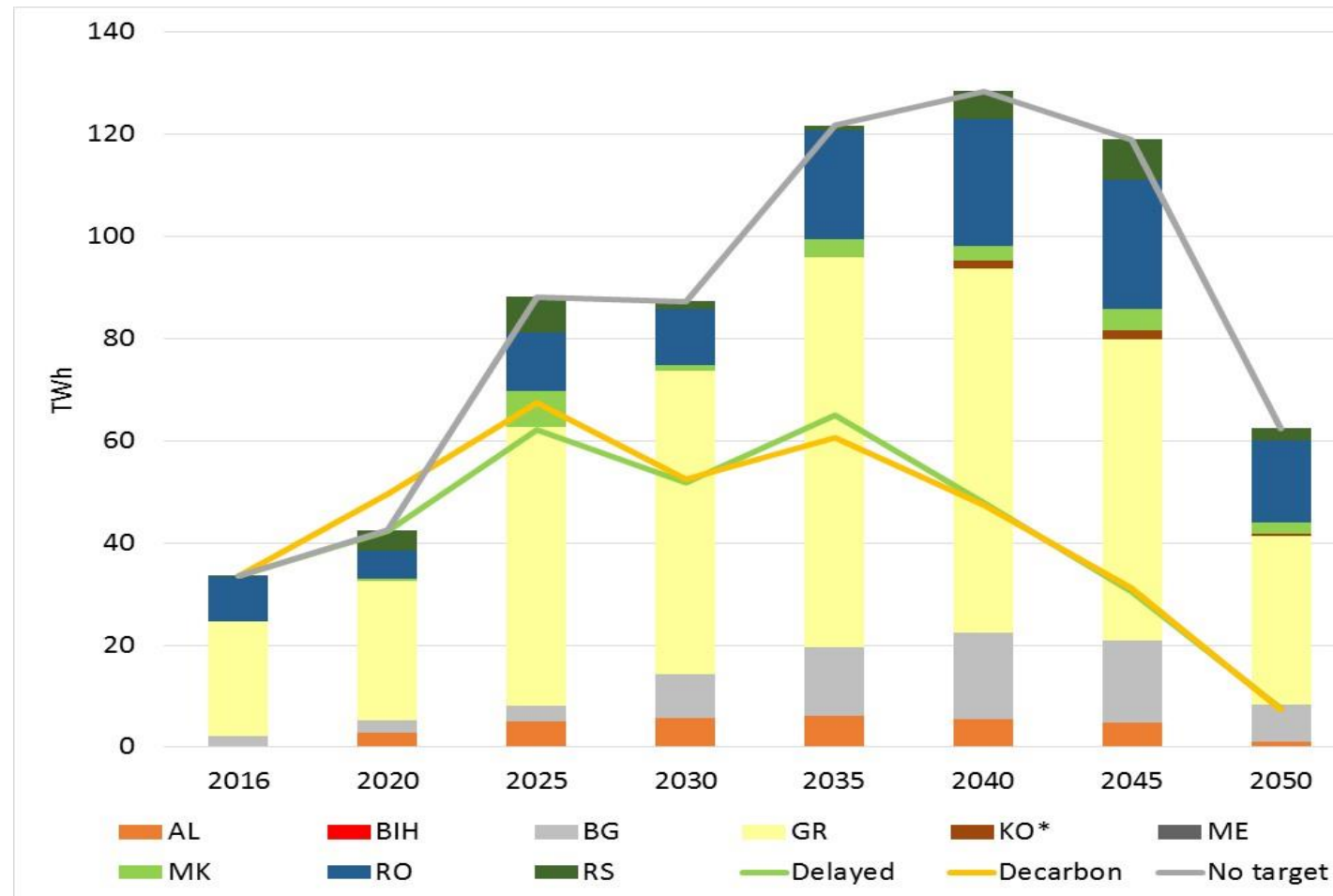


# Gross Electricity Mix by Country



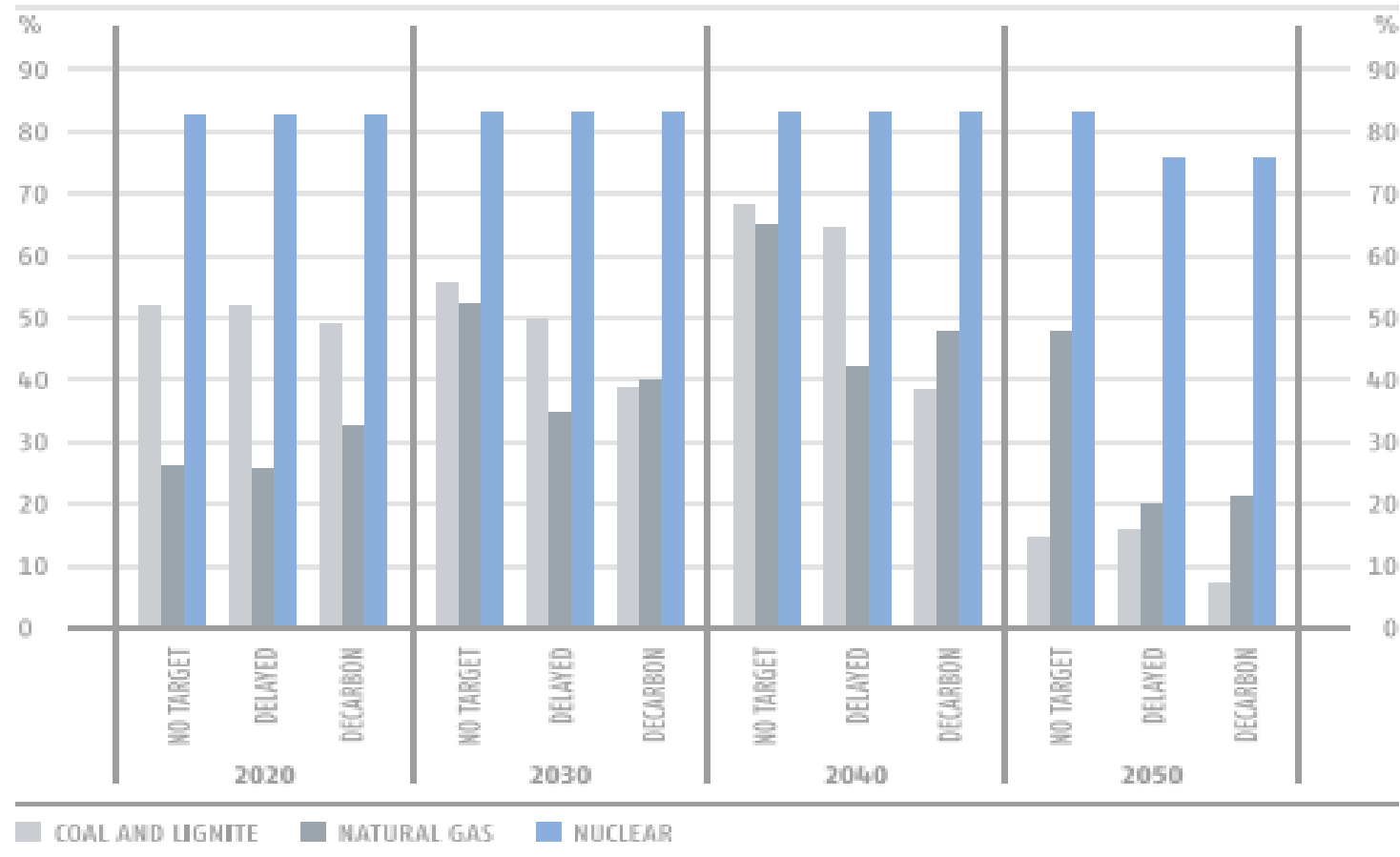


## The role of Natural Gas

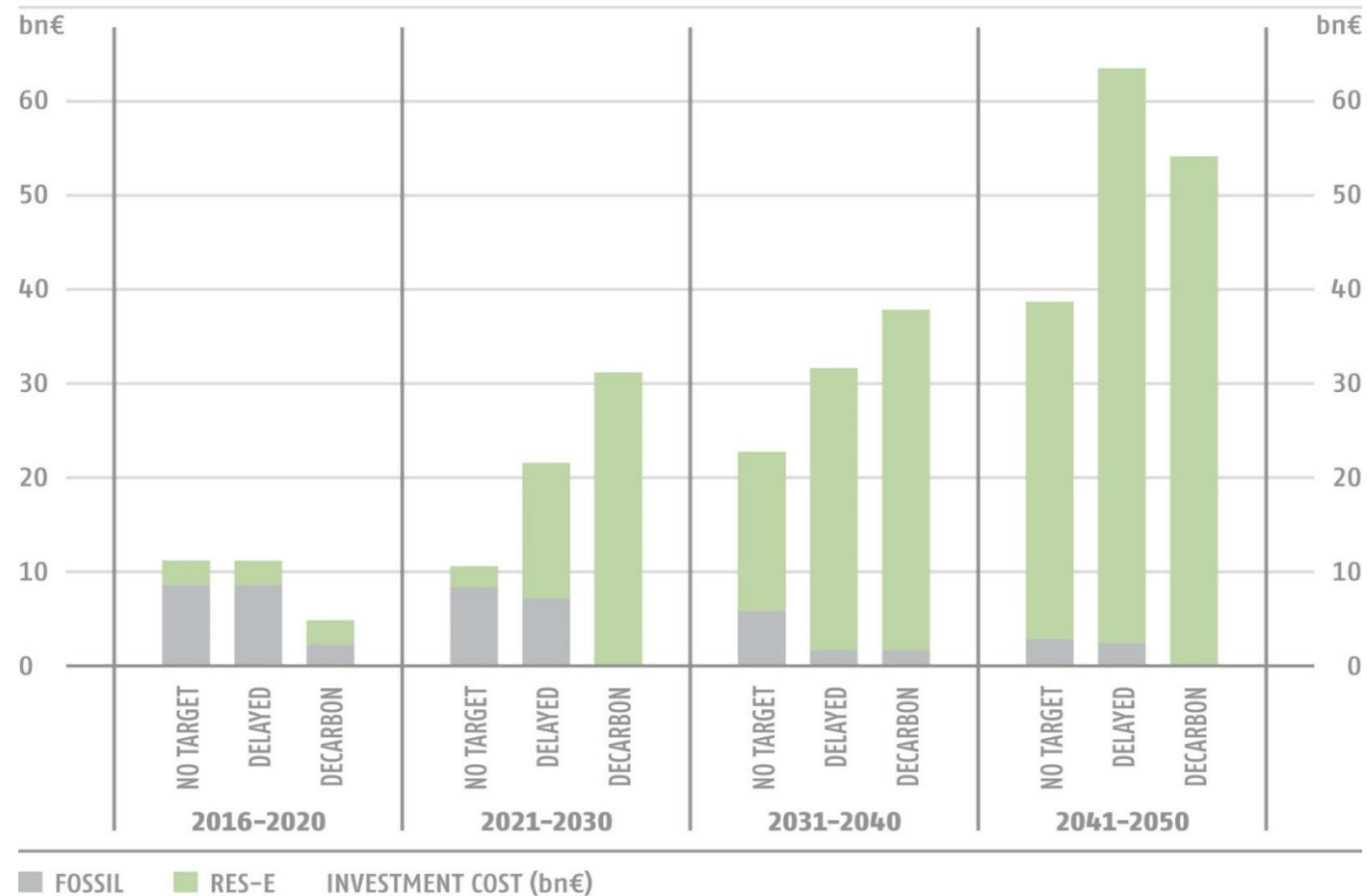




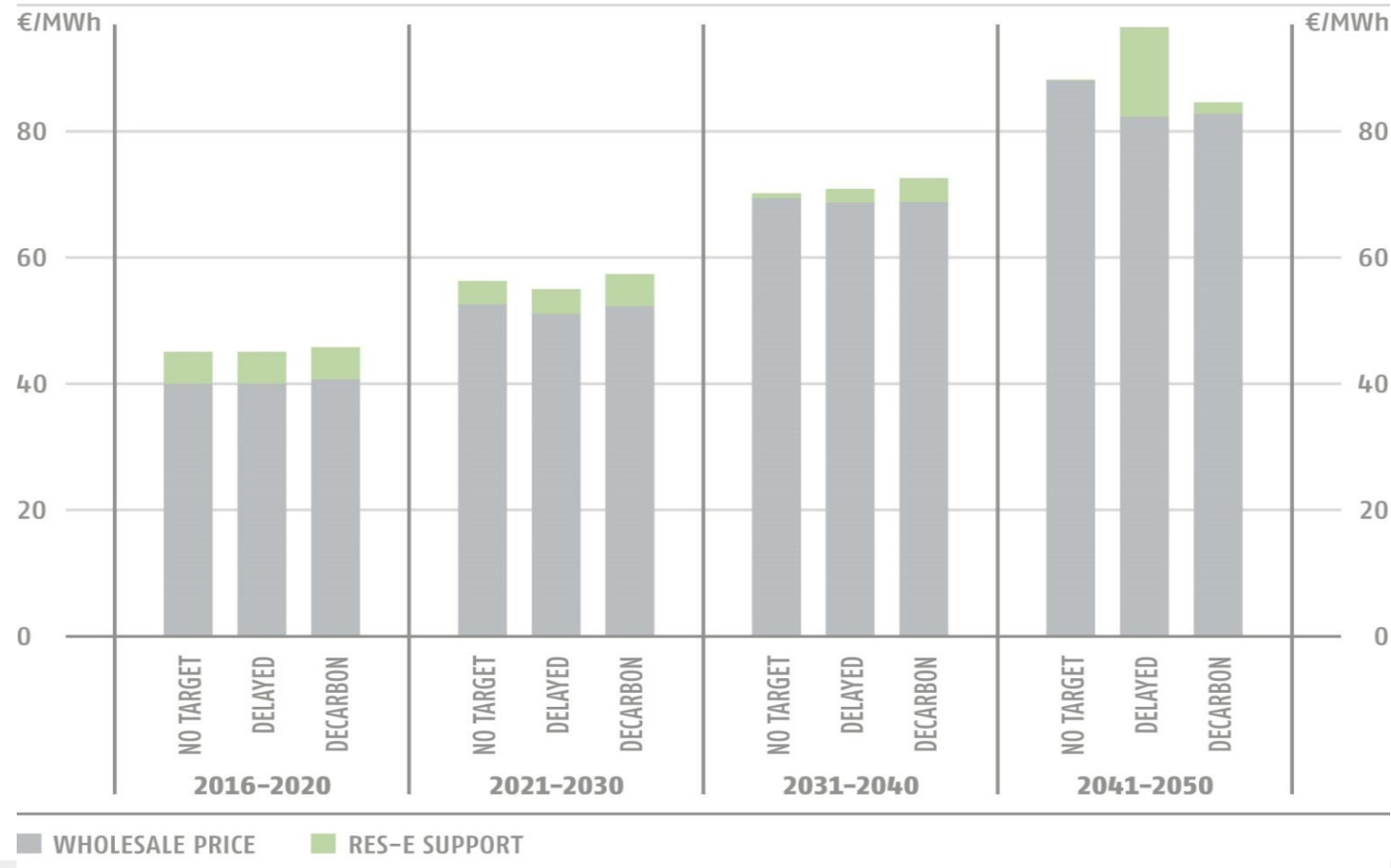
## Utilisation Rate of Conventional Plants



## Fossil versus RES Investment Costs



# Wholesale Price and RES Investment



## Policy Implications

### Market integration

- Introduction of competitive market is a key driver for the SEE electricity sector: support RES deployment, price equalisation.
- No need for massive cross border capacity increase, rather functioning market institutions.
- The need for derisking private RES investments

### Natural gas

- Role of gas is transitional in electricity generation:
- In the 'no target' scenario it peaks at 2040
- In the 'delayed' and 'decarbonisation' scenarios it is fully replaced by RES by 2050

### Coal

- Gradual elimination of coal capacity and production in all scenarios
- Very low utilization from 2040 onwards (below 20% - closure)
- Stranded cost in these assets ranges between 2-8 €/MWh

## Policy Implications (2)

### Security of supply

- The ,new' domestic resource: RES replaces coal/lignite based generation
- The substitution however results in significant electricity import in many WB6 countries (MK and RS) but dynamic RES deployment supports self-sufficiency
- System adequacy remains high in all scenarios, although generation adequacy deteriorates

### RES deployment

- RES deployment increases in all scenarios, even without support significant growth after 2040
- RES support level reduction helped by increased wholesale prices and reducing technology costs

## Policy Implications for New Nuclear Power Plant in Bulgaria

### Price

- New nuclear power plant in Bulgaria would have an LCOE of at least EUR 80/MWh
- Even by 2050 and with a steeply rising carbon prices – electricity price would not exceed EUR 74/MWh
- Loss-making power plant in the first three decades of its existence

### Security of Supply

- Kozloduy NPP would provide enough baseload generation until 2049
- Intermittency of RES generation not an issue if market coupling in the region
- Gradual closing of the coal power plants would not affect system adequacy

## Policy Recommendation to Overcoming RES Barriers

- Reducing the investment risks for new RES facilities
- Full power market liberalisation
- Financial derisking of the RES investment
- Regional cooperation to link up power markets
- Removing administrative and tax burden for new RES investments
- Improving energy sector governance and regulatory consistency