

# *Renewable energy sources in Croatia - a quantitative assessment and policy conclusion towards, and beyond, 2020*

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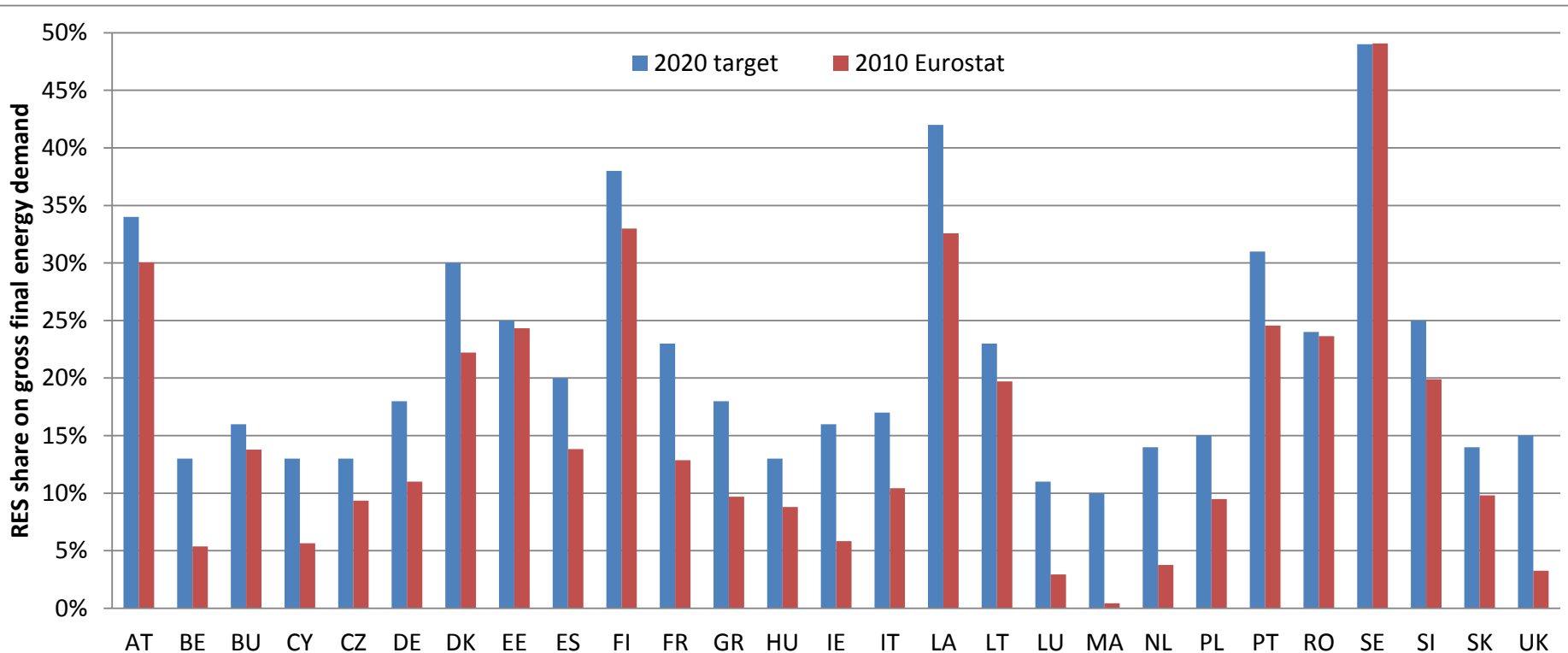
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## Outline of the presentation

1. Renewable targets for 2020
2. National NREAP's trajectories
3. Is Europe / Croatia on track - first quantitative assessments
4. Will the implemented supports schemes be sufficient for the envisaged 2020 goals?
5. Conclusions

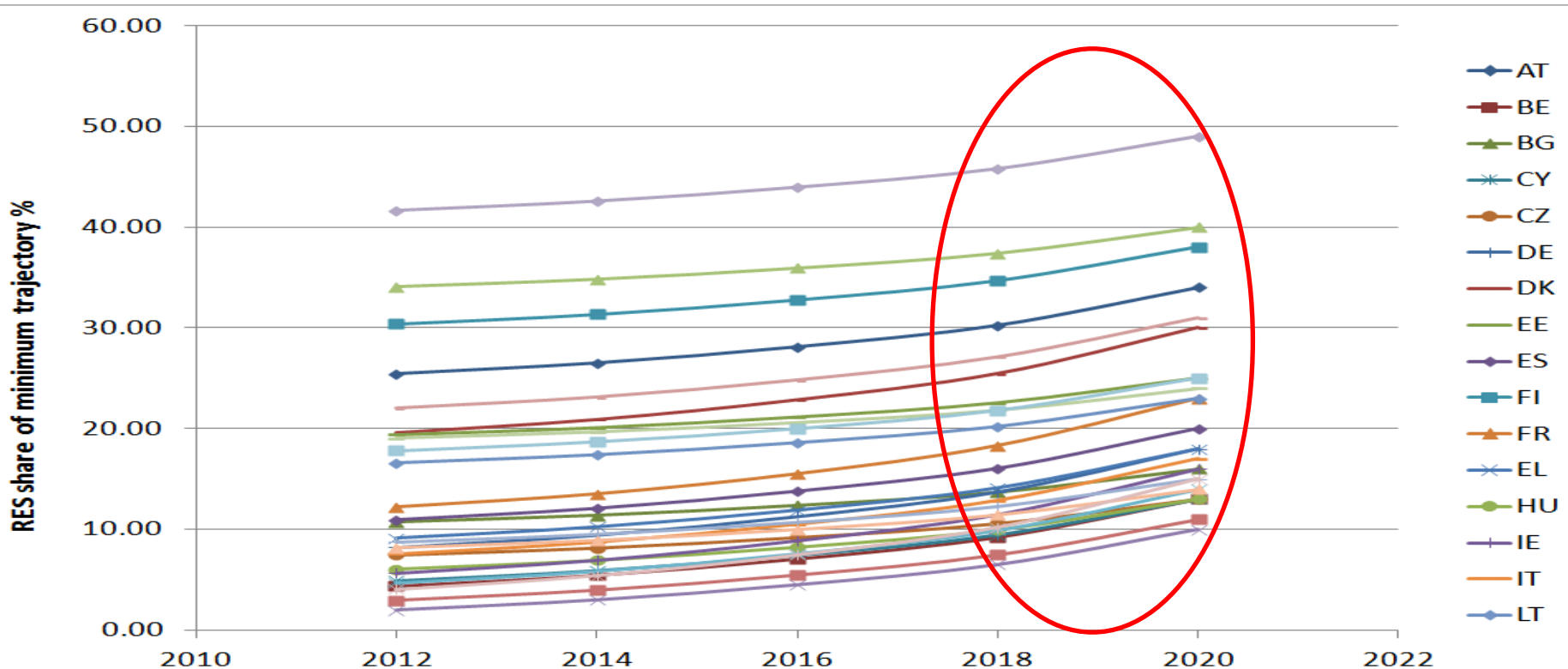
# Goal: 20% of gross final energy demand is contributed by renewables in 2020



How the European Commission set the targets ... „FLAT RATE“ & „GDP-Variation“  

$$\text{RES-target}_{2020} = \text{RES}_{2005\%} + 50\% * \text{RES}_{\text{NEW}\%} + 50\% * \text{RES}_{\text{NEW}\%} \text{ GDP-weighting} - \text{“first mover bonus”}$$

## Pathway: How Member States expect to meet the target in 2020? - the NREAP's



Rather modest increase in minimum trajectories across all Member States in the early stage but significant increase is expected towards the end of the time period.

## Deviation: First quantitative assessments based on 2011 figures

- Strong differences in the deviation of actual (Eurostat) to planned (NREAP) RES share across Member States - -76% (MT) to +42% (BE) BUT +9.5% on EU27 level
- The actual RES generation exceeds the minimum trajectory in NREAP's in almost all Member States, with only 4 slight exceptions (LV, NL, UK, MT).
- Several MS fail to meet the indicative NREAP targets in 2010 in the electricity sector
  - Most significantly due to less wind and biogas contribution
- Notable stronger contribution in RES-Heat sector (+13%) as indicated in the NREAP's
  - One third more generation from solid biomass and biogas
- Only 11 MS meet their indicative target on RES in the transport sector in 2010
  - Overestimation of renewable electricity in the transport sector (-11% in EU27)

## HR: First quantitative assessments based on 2011 figures

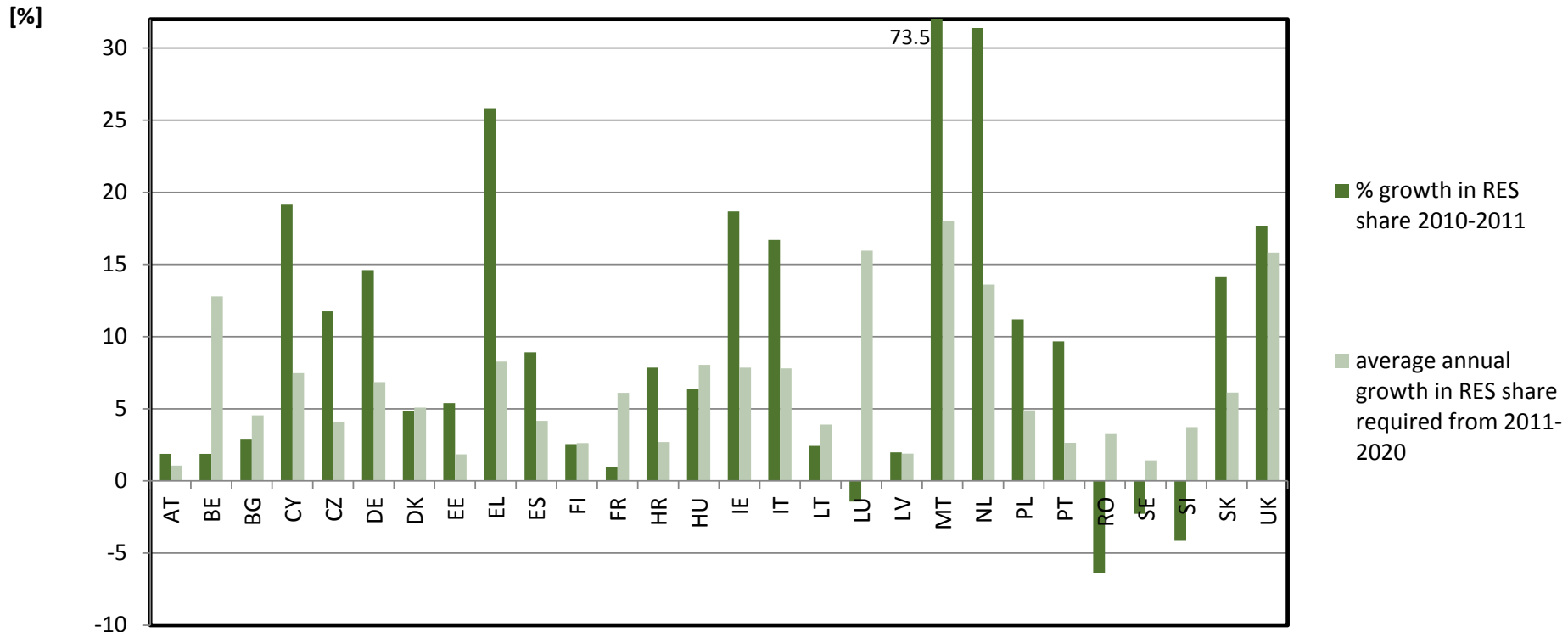
- Croatia had a share of 15.74 % renewables on gross final energy consumption
- The RES-electricity generation amounted to 35.45% in 2011 (dominated by hydro power - 96.2%, wind onshore - 2.9% and the rest biomass energy)
- The RES-heating and cooling contributed by 15.6% in 2011, whereby the major share is observed in the household sector (90%) and only a little in the industry sector (hardly any contribution comes from CHP plants)
- RES in transport contributes only to 0.23% in 2011 - no bioethanol or biodiesel has been observed but only very limited amount of renewable electricity in non-road transport sector (train)

## Expectation for EU: Modeling results in the 2020 horizon

- Reduced overachievement in year 2012 compared to 2010
- Current policies appear insufficient to trigger enough RES development to meet the target in 2020 - only few countries will meet the target (AT, EE, SK); total RES share about 15.6%
- New planned policies are expected to increase the RES share to about 16.7% only - target achieved by BG, SE in addition to before mentioned MS
- Missing contribution in all sectors - major difference in the transport sector (-30%)
  - Electricity and heat sector show an about 15% reduced contribution
- Technology specific CSP, tide and wave as well as on- and offshore wind are expected to contribute less RES-E, like heat pumps and geothermal heat do for RES-H in 2020

# Expectation: Modeling results in the 2020 horizon - RES

RES Growth Rate 2010-2011 versus Average Annual Growth Rates Required

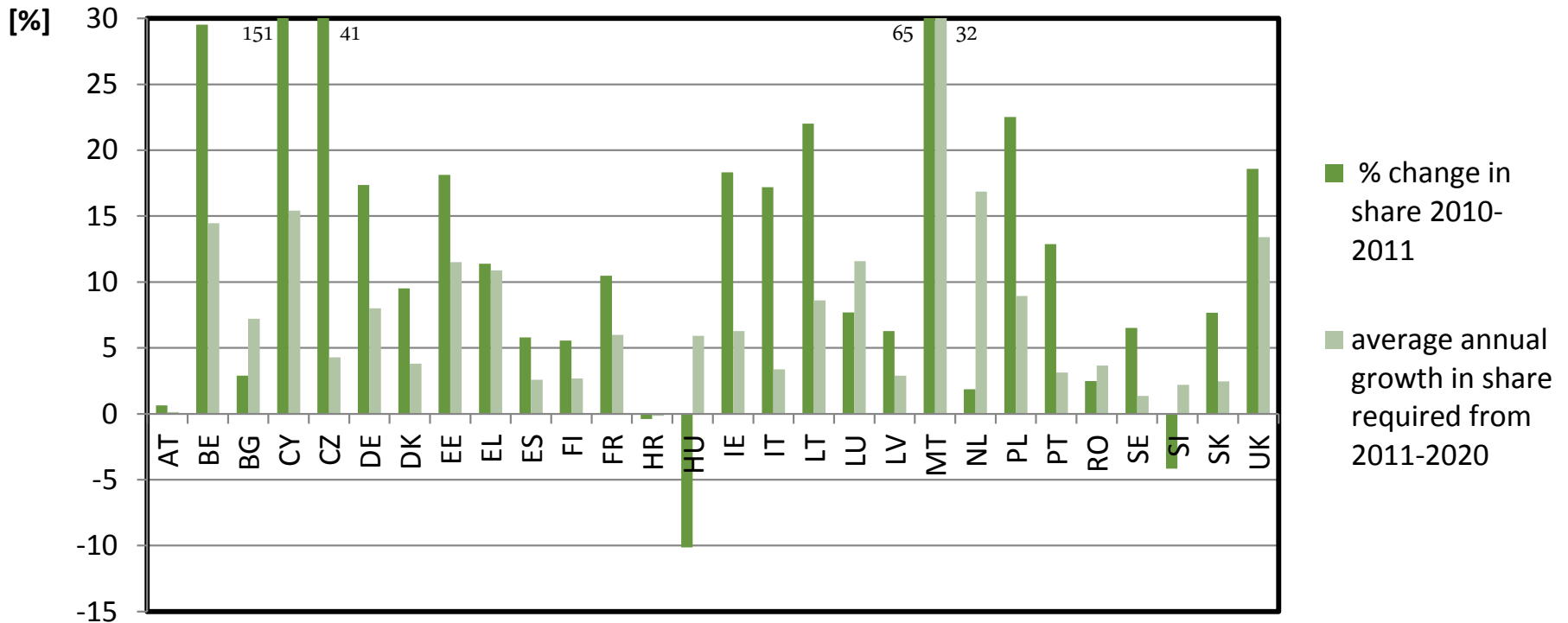


• Historic growth rate in Croatia was driven by wind onshore and biomass electricity generation - 46% respective 65% (reduced hydro power production)



## Expectation: Modeling results in the 2020 horizon - RES-E

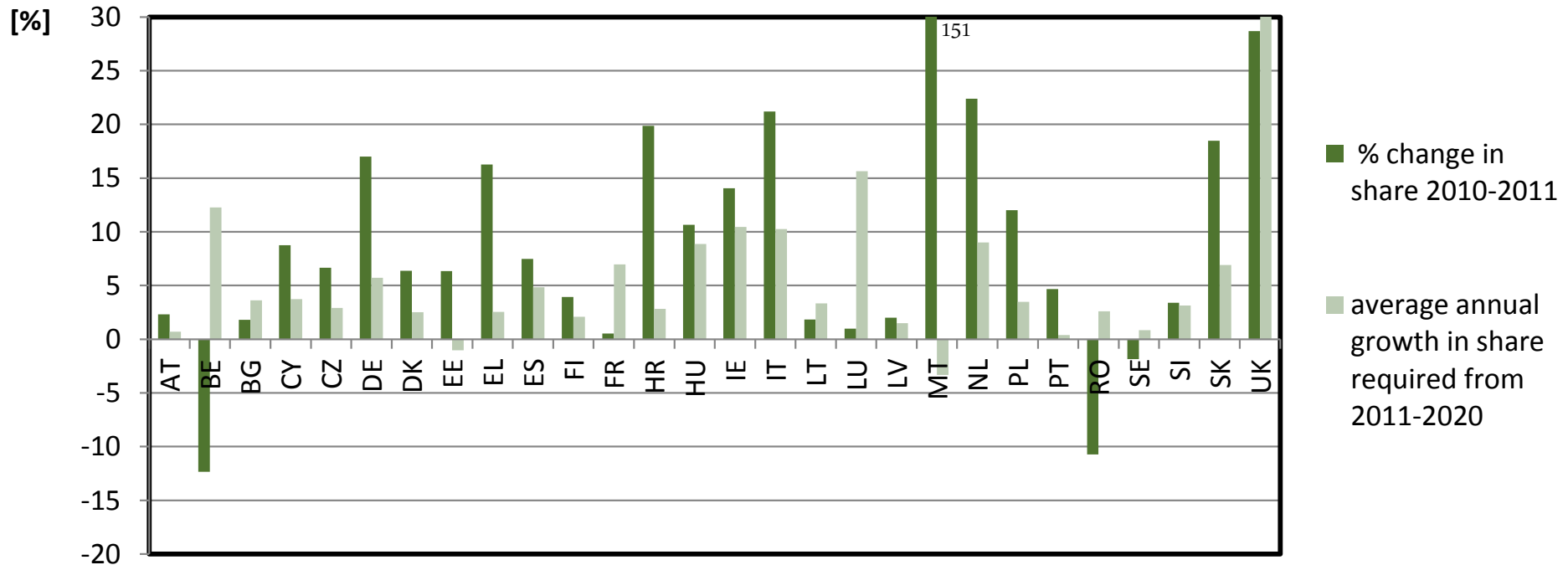
RES-E Growth Rate 2010-2011 versus Average Annual Growth Rates Required



- White Paper Energy Strategy of the Republic of Croatia: RES-E 2020 target met in 2011
- On EU scale still missing contributions - potential for cooperation mechanisms!

## Expectation: Modeling results in the 2020 horizon - RES-H&C

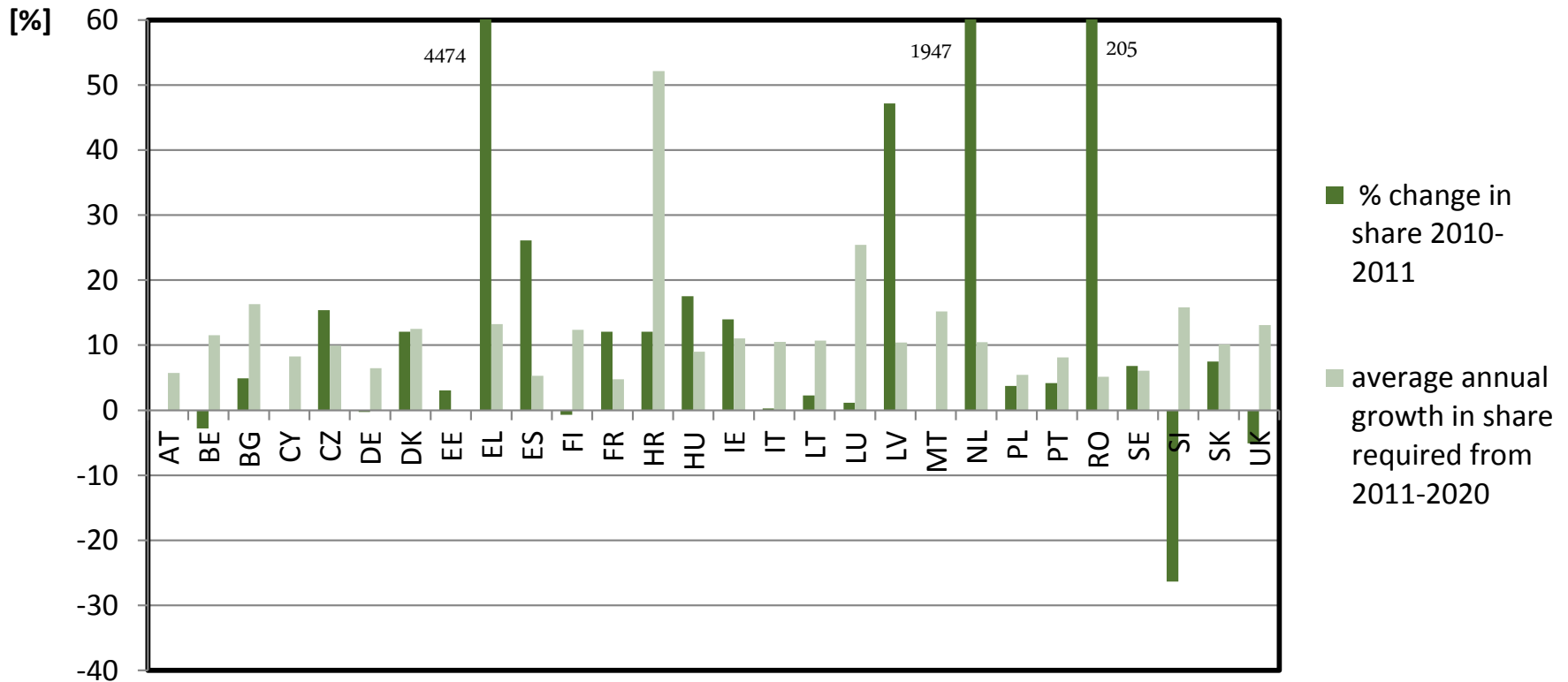
RES-H Growth Rates 2010-2011 versus Average Annual Growth Rates Required



- White Paper Energy Strategy of the Republic of Croatia:  
if demand stabilizes, current growth rates exceed RES-H 2020 target in HR

# Expectation: Modeling results in the 2020 horizon - RES-T

RES-T Growth Rate 2010-2011 versus Average Annual Growth Rates Required



- In Croatia almost all additional RES is required in the transport sector if demand stabilize
- Potential re-consideration of RES-T 10% target might ease the 2020 target fulfillment

# Opportunities: Recommendations and conclusions to meet the 2020 target

- **Financial support deficit**
  - Stable framework conditions - reduce the risk
  - Improve efficiency - adjust support options according to market development
  - Limit support period - consider lifetime and residual value of technology
  - Encourage cooperation and coordination schemes
- **Mitigation of non-economic barriers**
  - Simplify planning and authorization procedure - one stop shop
  - Spatial planning mechanisms for accelerate approvals
  - Harmonize grid connection approaches
- **Market integration**
  - Integration to balancing markets - gate closure closer to real time
  - Efficient congestion management
  - Efficient cross-border Intra-day markets
- **Improving energy efficiency - reducing the overall energy demand**

*Thank you for your attention!*

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