

# Main conclusions and policy recommendations - Renewables -

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*Security of European Energy Supplies:  
Discussing the main Policy Recommendations  
of the SECURE Project*

*Brussels, September 29<sup>th</sup>, 2010*

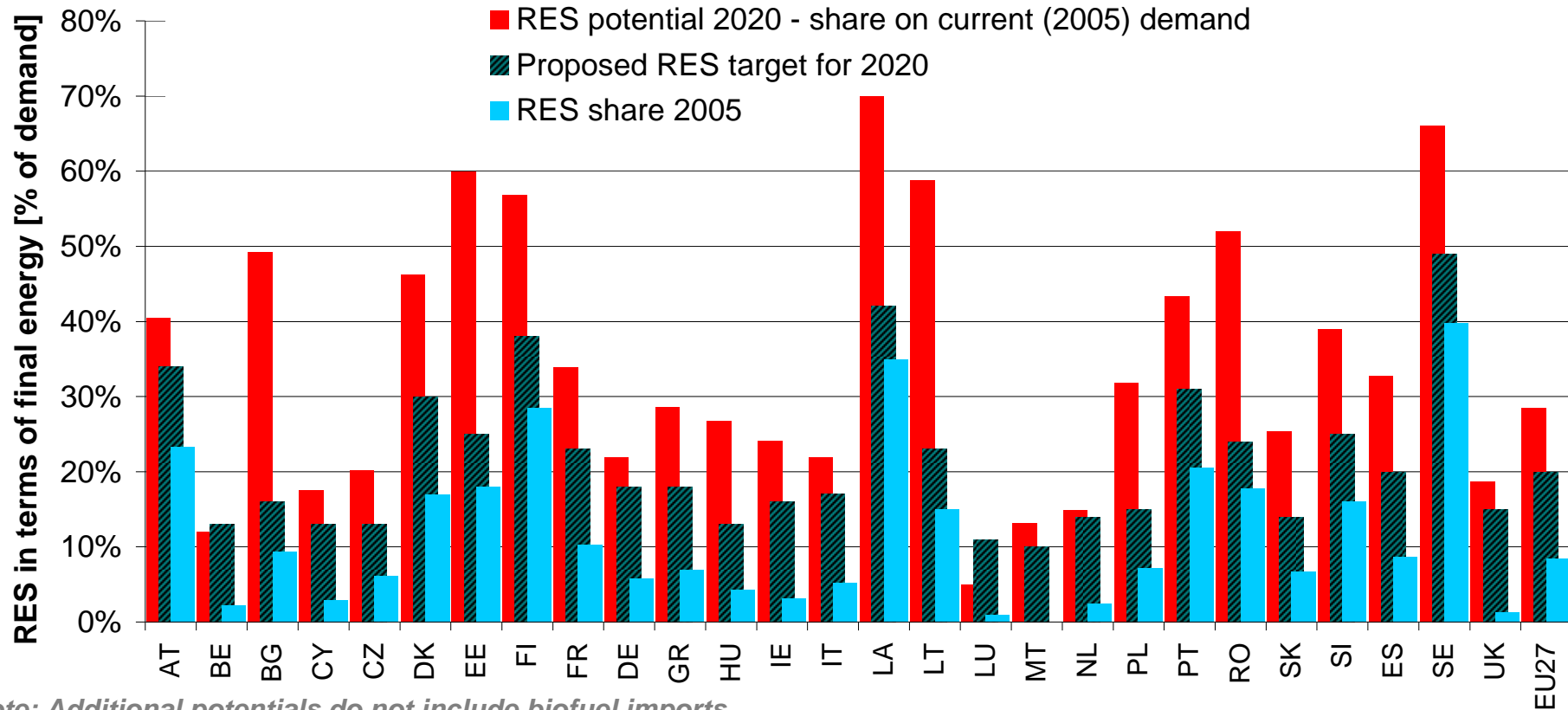
# Identification of threats

Long-term impacts		Operational impacts	Others
<b>Economic</b> <ul style="list-style-type: none"><li>• Development of cost reduction</li><li>• Raw material prices (e.g. steel, silicon)</li><li>• Electricity generation costs</li></ul>	<b>Climate change impacts</b> <ul style="list-style-type: none"><li>• Hydro: Changing utilisation</li><li>• Wind: Impact of storms</li><li>• Biomass: Change in BM-Potential</li></ul>	<b>Variability of RES-output</b> <ul style="list-style-type: none"><li>• Wind in particular on short-term (Remedies: Back-up capacity; Grid reinforcement; DSM)</li><li>• Solar (comparatively good correlation of peak load and demand)</li><li>• Hydro (Inter-annual variability)</li></ul>	<b>Technological risks</b> <ul style="list-style-type: none"><li>• Geothermal (Hot-Dry-Rock and Earthquakes → Basel)</li></ul>
<b>Import dependency</b> <ul style="list-style-type: none"><li>• CSP from North Africa</li><li>• Biomass imports (transport distance, state of aggregation)</li></ul>	<b>Feedstock competition</b> <ul style="list-style-type: none"><li>• Biomass availability and prices</li><li>• Harvesting season</li></ul>		<b>Political risks</b> <ul style="list-style-type: none"><li>• Political factors hampering RES-development (Non-economic barriers, policy uncertainty)</li></ul>

## Risk assessment depends on type and penetration of RES and system characteristics:

- The higher the penetration of weather-dependent RES, the higher the risk of volatile power outputs.
- The more diverse the portfolio of RET, the smaller is the impact of price volatilities
- The more stable the political framework conditions, the lower is the risk for potential investors
- The higher the share of domestic energy production, the higher the security of supply (Exploitation of a broad basket of technologies)

# National RES targets for 2020 – the proposed definition



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

... i.e.:  $RES\text{-target}_{2020} = RES_{2005\%} + 50\% * RES_{NEW\%} + 50\% * (RES_{NEW\%} \text{ GDP-weighting} - \text{“first mover bonus”})$

# RES contribution to Security of Supply



## Muddling Through

- Global baseline development of RES
- Increased use of domestic RES (Share of **RES** in final consumption of **15 % by 2030**)
- 267 Mtoe of fossil fuel consumption per year avoided by 2030

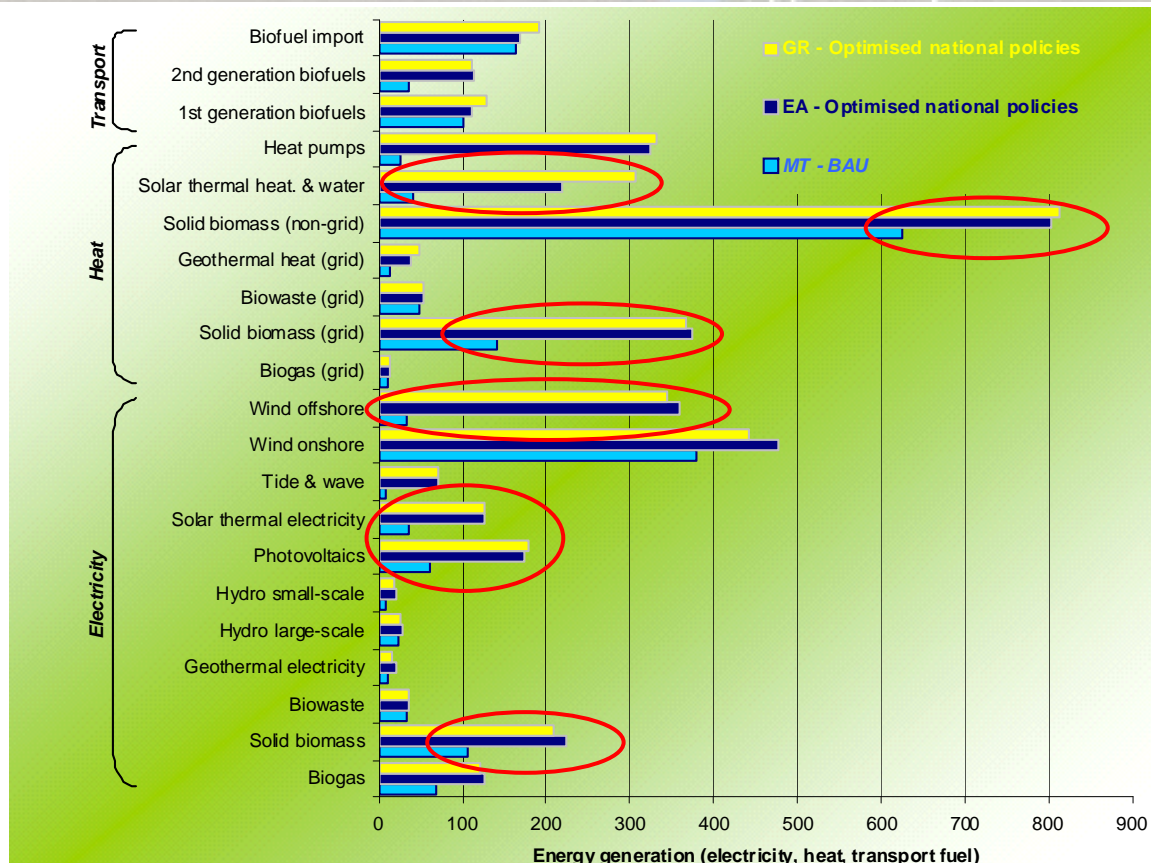
## Europe Alone

- Alternative RES development within Europe and baseline RES development in RoW
- Share of **RES** in final energy consumption of **30 % by 2030**
- Reduction in fossil fuel demand of annually 540 Mtoe by 2030

## Global Regime

- Alternative RES development on global scale
- **29%** of the final energy consumption is provided based on **RES by 2030**
- 539 Mtoe of fossil fuel consumption per year may be avoided by 2030
- Reduction of oil imports by 18%, gas imports by 51% and coal imports even by 68%

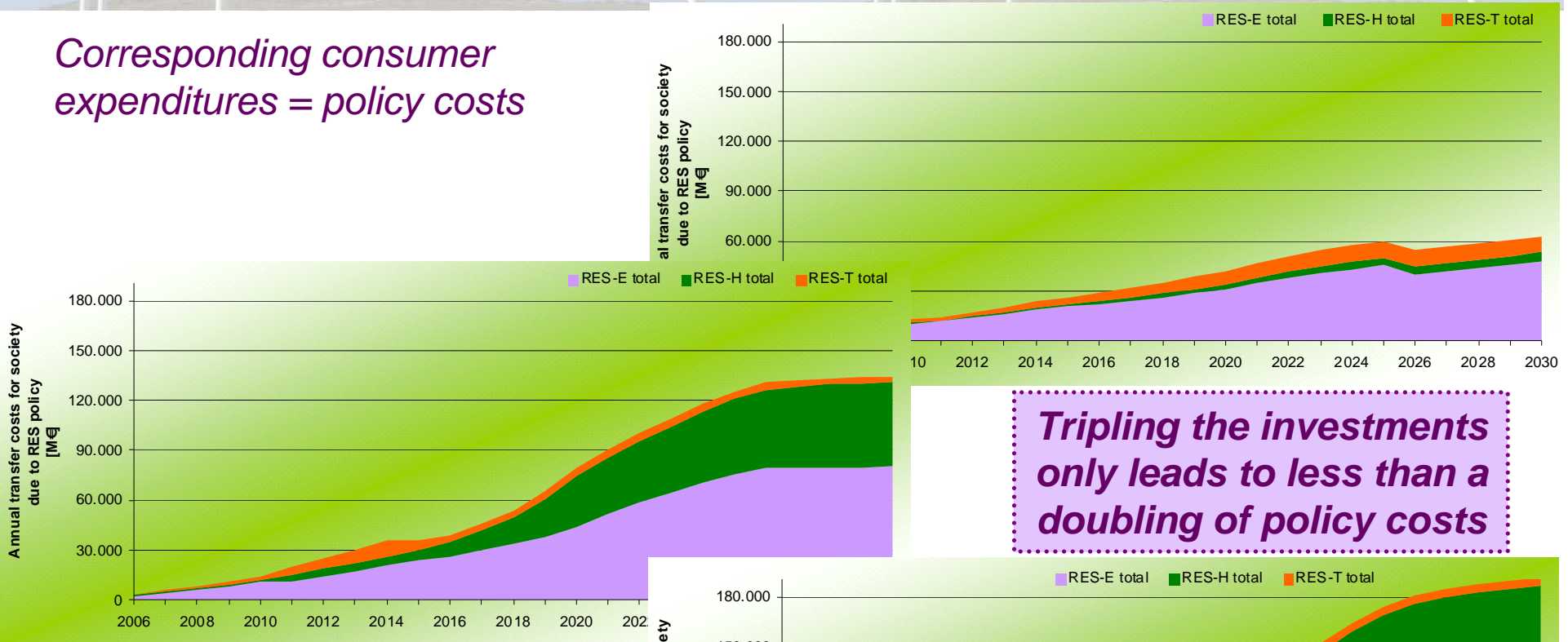
# Development of different policy storylines



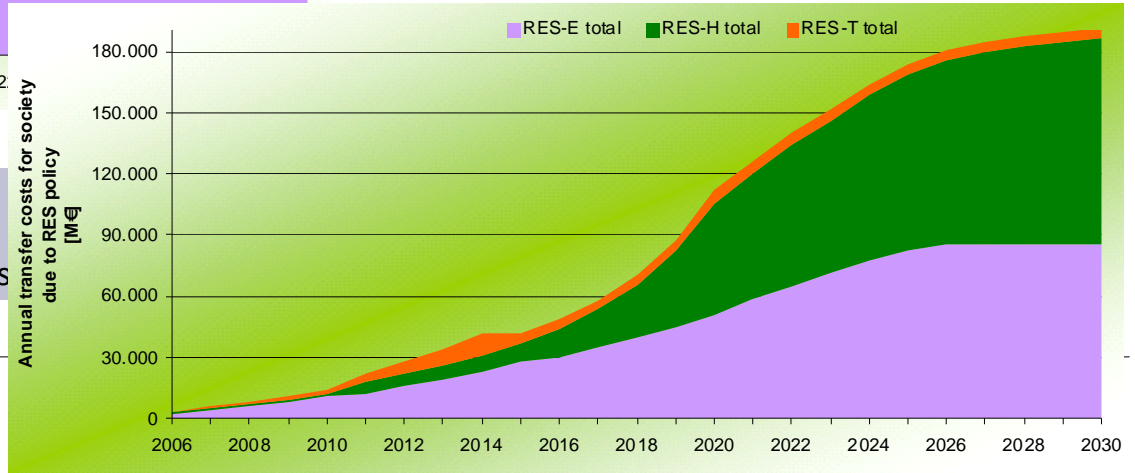
Due to **higher CO2 constraints** for Europe, **electricity wholesale prices** in the Europe Alone scenario are **higher** and hence a **stronger RES-E contribution** is expected than at global, common CO2 constraints

# Costs of enhanced RES deployment

*Corresponding consumer expenditures = policy costs*



*Higher policy costs in the Global Regime than in the Europe Alone scenario, due to less CO2 constraints in the EU and consequently lower energy wholesale prices*



## Policy recommendations



### ***Policy support to increase the share of renewables is needed in all three sectors including the heating and cooling sector***

Stronger focus on RES-heat policies. Support investment incentives and obligations with information campaigns. The policy measures should be based on a financial support level which is designed such that renewables projects become profitable without overcompensating investors.

### ***Apply technology-specific support instruments***

Support a wide range of technologies to trigger learning effects and cost reductions. Associated costs vary largely between technologies and over time.

### ***Efforts are needed in all MS***

Uneven distribution of RES potentials and costs emphasises the need for flexibility mechanisms → national RES target achievement supported in an efficient and effective manner.

### ***Demand side management***

Helps to integrate high shares of fluctuating electricity generation – enabling demand incentives at supply peak. But potentials for this option appear restricted

## Policy recommendations



### ***Correct forecast errors on the intraday market***

Adapt organisation of electricity market. Trading at the intraday market platform would imply a correction of all the imbalances whereas the imbalance payments only apply for the net system imbalances

### ***Use of storage power plants (hydropower and other storage systems)***

Storage systems such as pumped-storage hydropower plants, hydro reservoirs, compressed air storage, flywheels or batteries

But: some of the technological options not yet be economically competitive

### ***Support open and efficient markets for international electricity trading***

Countries disposing of less flexible power plants may profit from other countries with more power plants that can be operated on demand, such as hydropower plants with pump storage. In addition, electricity trading enhances the exploitation of low cost renewable potentials

### ***Support investments in grid extension and reinforcement***

The reinforcement and, if necessary, the extension of the electricity grid represents one main option of how large amounts of fluctuating electricity can be integrated into the electricity system. Installing additional district heat infrastructure.





## Contact

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**Thank you for your attention!**