

# Optimal introduction of RES in Europe – The toolbox *GREEN-X-TEND*

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**1. Motivation**

**2. Objectives**

**3. Planned extensions in**

**GREEN-X-TEND**

**4. Method of approach**

**5. Consortium**

**6. Expected results**

## **CORE MOTIVATION (1):**

**Policy objectives  
/targets for an  
INCREASE of RES!**

**(e.g. RES-e directive of the EC to  
increase the share of RES-E from 12%  
to 22% until 2010)**

## MAJOR PROBLEM:

**Correct design of  
policy**

**with respect to:**

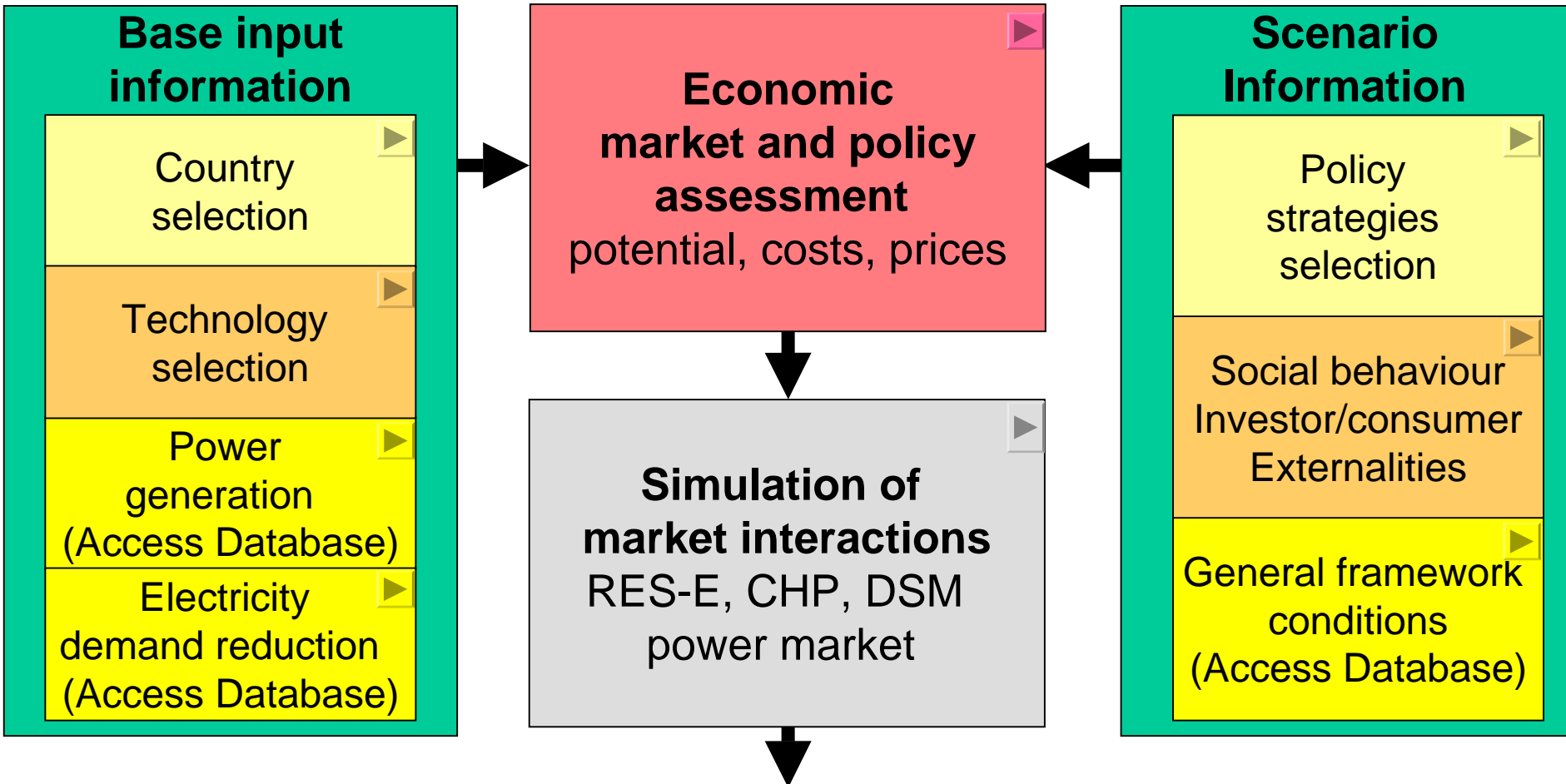
- **renewable targets**
- **Financial incentives**
- **Credibility for investors**
  - **Effectiveness!**

- Currently a lot of money is spent for the promotion of single technologies and end uses without a consistent policy strategy.
- Different EU-directives (RES-e, buildings, biofuels, CHP)
- A synergetic view of heat, electricity, biofuels (and hydrogen) policies would help to minimize overall transfer costs for society.

- ... to increase the deployment of RES in all end uses of energy (electricity, heat, transport) with minimal transfer costs for European citizens.
- ... to identify corresponding effective, sustainable and policy compatible strategies for RES electricity, RES heat (incl. CHP), biofuels and RES-H<sub>2</sub>-production
- This is done by extending the already existing computer tool Green-X

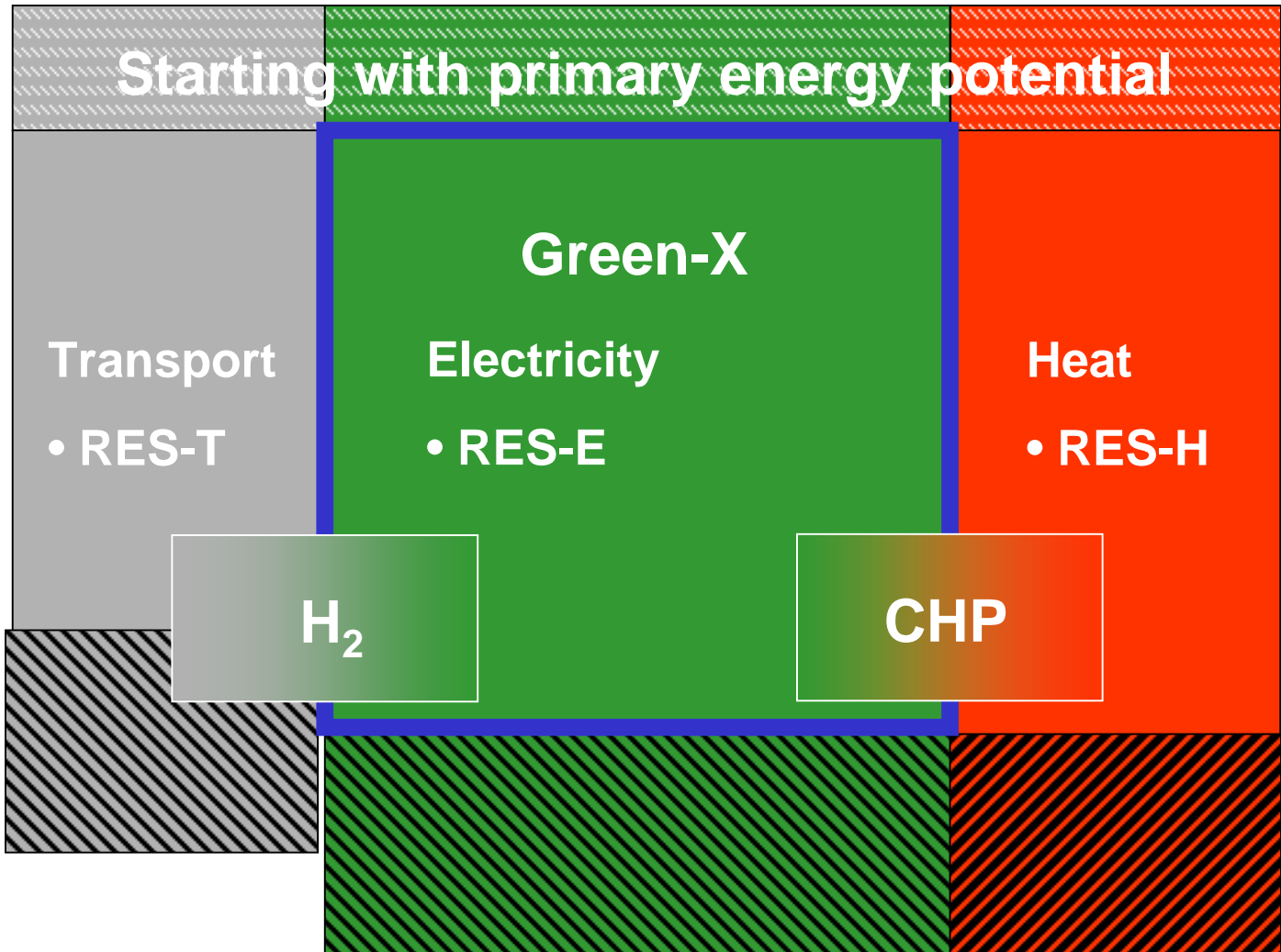
Green-X is a dynamic simulation tool for the power market allowing a comparative and quantitative analysis of the interactions between RES-E, CHP, DSM and GHG-emission reduction within the liberalised electricity sector for the EU-15 countries up to 2020.

**-> Funded by DG RESEARCH under FP5**



**Results Costs and Benefits on a yearly basis (2000-2020)**

In this project it is intended to extend **GREEN-X** in the following ways:



**EU 15**

- **EU 10+**
- BG, RO, NO, CH, TR

# PRIMARY RES

Important specific issue:

analyse how **different dedications of RES** (e.g. biomass) to different secondary and end uses (heating, electricity, biofuel, H<sub>2</sub>) **influence the total share of RES and the reduction of GHG-emissions and the costs** in a dynamic framework.

# 4 METHOD OF APPROACH

- All RES technologies are described by dynamic cost-resource curves for all countries considered.
- All important energy policy instruments will be simulated and their effects analysed in a dynamic framework:
  - RES-E (e.g. feed-in tariff, quota system, tendering systems)
  - Conventional technologies (e.g. nuclear phase-out)
  - Combined heat and power production (e.g. quota system)
  - Biofuel (e.g. investment subsidies,... )
  - GHG-emission strategies (certificate trade, taxes)

## CONSORTIUM

- **Universities: AT (coordinator), SE, PL, GR**
- **Research institutes: DE, LI, (FR), PO**
- **Consulting companies: CZ, UK, IT**
- **Utilities: DE, AT, SE, ES, CH, (IT)**
- **Energy agencies: (FR, AT, BG, PO, DK, SQ, DK, AT, NL, SE, CZ )**
- **Regulators: (LI, SQ, AT, UK)**

# 6 EXPECTED RESULTS /DELIVERABLES

- A TOOL TO ASSIST POLICY MAKERS ON EU-LEVEL, NATIONAL AND LOCAL LEVEL TO ASSESS THE RENEWABLE DEPLOYMENT EFFECTS AND CORRESPONDING COSTS DUE TO DIFFERENT POLICY STRATEGIES

# FOR FURTHER INFORMATION:

- **Download reports from: :**  
**www . tuwien . ac . at / eeg**  
**www . green-x . at**
- **E-Mail to:**  
**Reinhard.Haas @ tuwien . ac . at**