Action for the Energy Efficiency Directive

Member States' modelling approach and how they can support energy efficiency implementation

Janis Rekis janis.rekis@gmail.com

Institute of physical energetics

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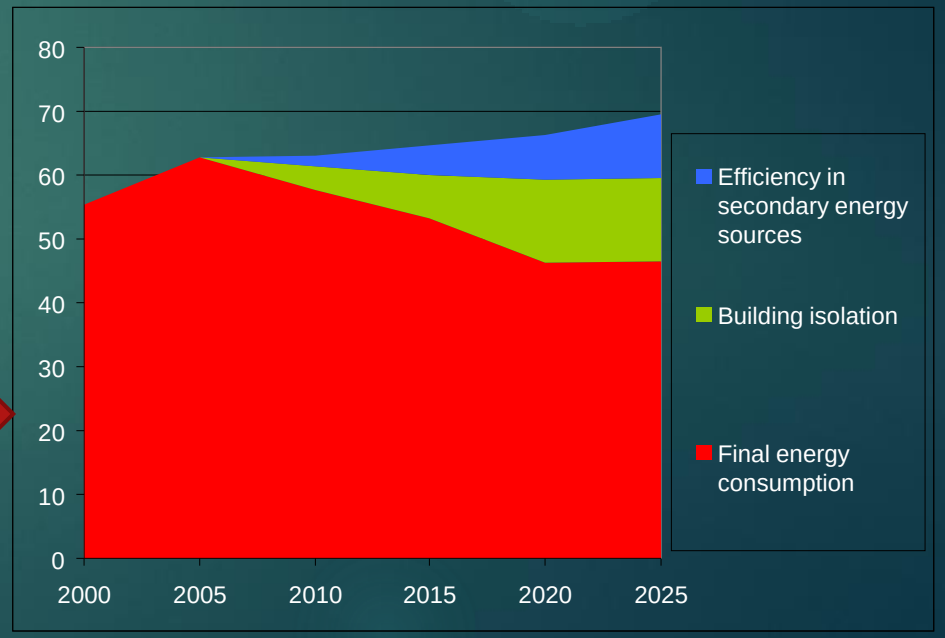
- The Energy Systems Analysis and Optimization Laboratory undertake research concerning strategies and policies in relation to long-term energy development, with focus on environment goals, security of supply and decision-support systems in relation to investments in new technology
- The research area of the laboratory focus on the following issues
  - Energy – Environment policy studies (energy efficiency, RES, climate policy)
  - Energy – Environment modelling

Modelling Approach

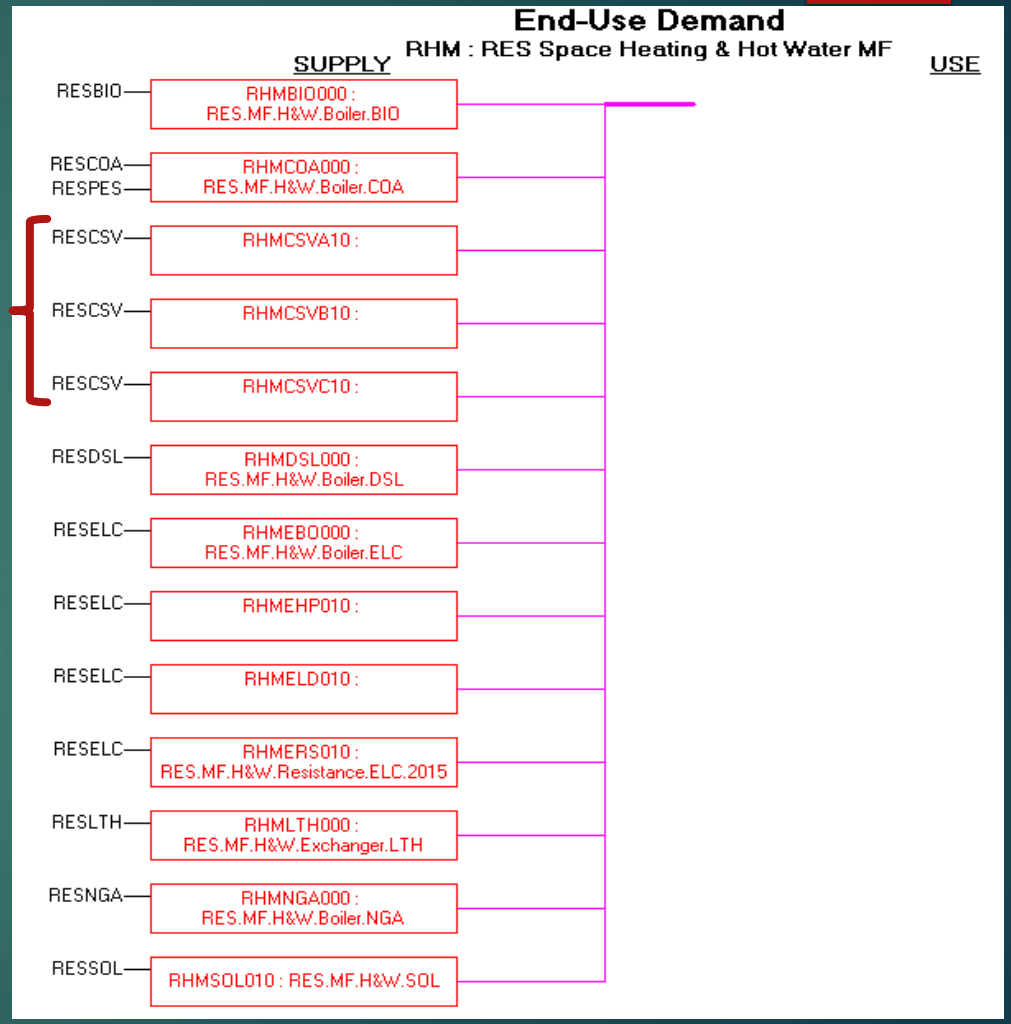
- ETSAP (http://iea-etsap.org/) tools are used
- Model covers entire energy system of Latvian (energy balance) and other IPCC CRF sectors represented at GHG emission level
- Further final demand disaggregation
- Find the corresponding energy service demands to final demands (between them technologies stands)
- Account for energy efficiency in technologies that provides energy services (modelled) and energy efficiency at the consumer, e.g., the heating boiler in building vs. building insulation
- Addition to above end use demands are price elastics

- Energy consumption in Residential sector divided by sub sector with corresponding fuel use
  - Space Heating & Hot Water MF, Space Heating & Hot Water SF, Cooking, Lighting, Refrigerators and freezers, Electric Equipment, Dishwashing, Air Conditioning, Clothes Drying, Clothes Washing



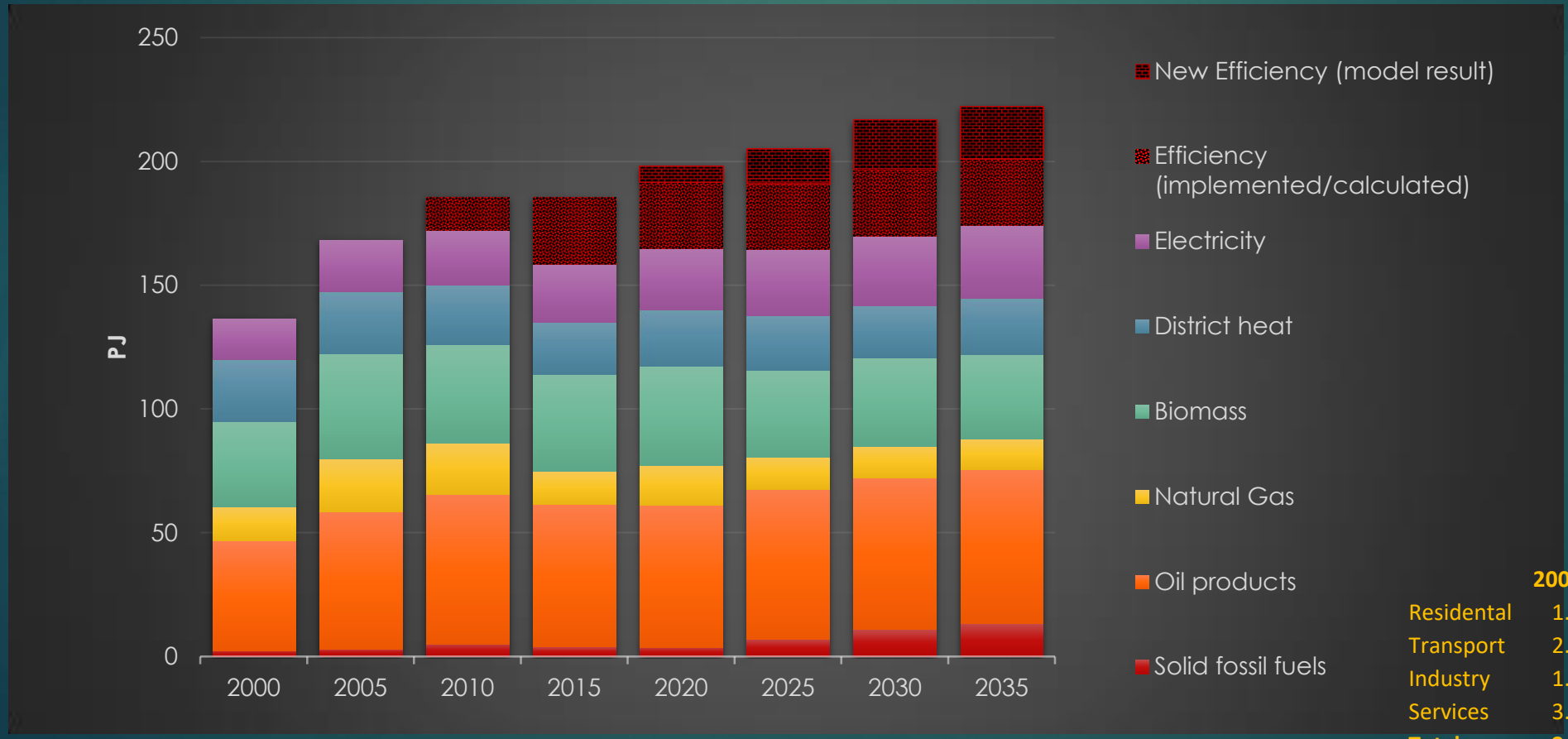
Modelling Approach

- Energy efficiency representation in model
  - With parameters
    - Potential
    - Costs
    - Life time
  - In three packages with different parameters
- Specific energy efficiency targets can be modeled, e.g., specific energy consumption in buildings (e.g., kWh/m2), energy intensity etc.



Energy savings and Final Energy Consumption by Fuel

Scenario with existing measures



Energy savings, PJ	2008	2009	2010	2011	2012	2013	2014	2015
Residental	1.2	2.0	6.7	6.4	7.9	9.9	10.2	12.1
Transport	2.1	0.8	1.6	7.0	7.5	7.5	8.3	8.8
Industry	1.9	0.9	1.3	2.7	2.8	2.8	3.0	3.3
Services	3.0	4.0	3.7	3.4	3.4	3.3	2.9	2.6
Total	**8.2**	**7.7**	**13.2**	**19.6**	**21.6**	**23.4**	**24.5**	**26.8**

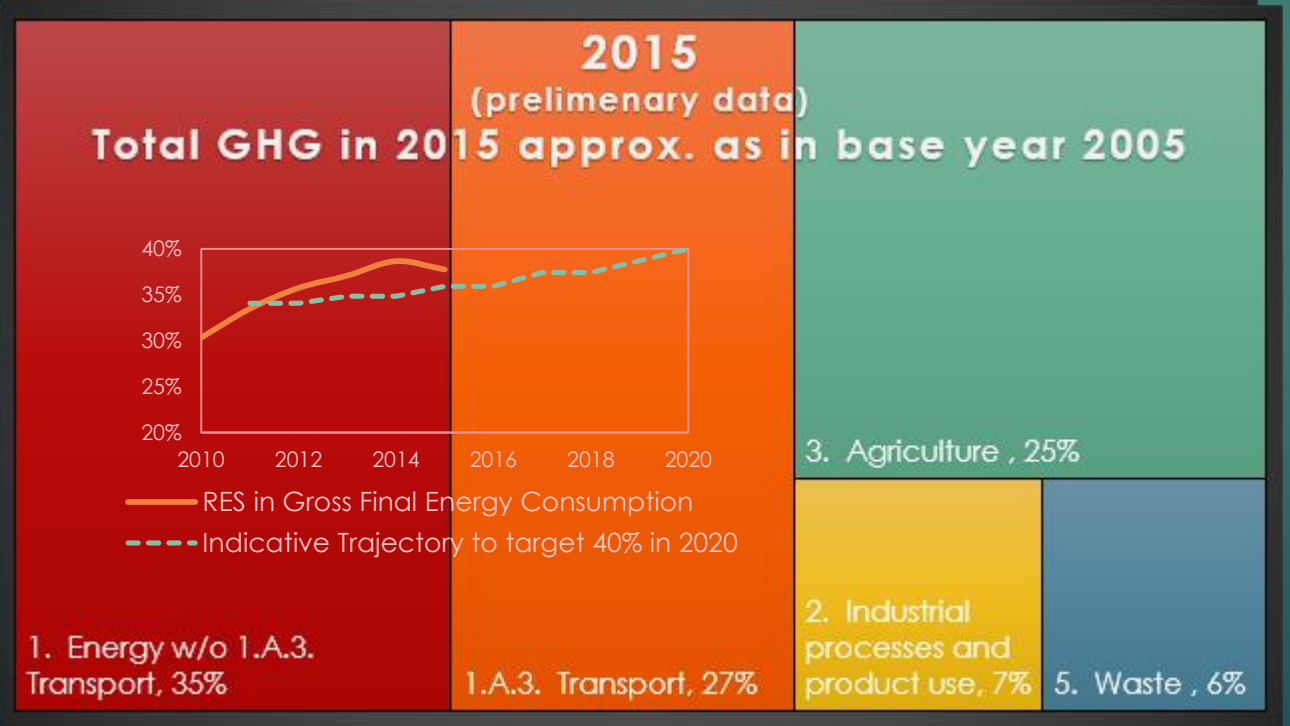
Monitoring & Verification procedure is an important source for input data

- Energy savings are calculated using top-down and bottom-up approaches
  - Overall, around 10% of total energy savings are calculated using a bottom-up approach
- Latvia has a bottom-up M&V system in place since 2010 to monitor energy savings of NEEAPs under the previous EED
  - Ex-post metered savings are calculated for public budget co-financed projects (EU Funds, national green investment scheme)
- In addition to information about energy savings bottom-up M&E system gives information on projects implemented energy savings costs, which can be used as reference values for inputs in models

Gains and difficulties of modelling

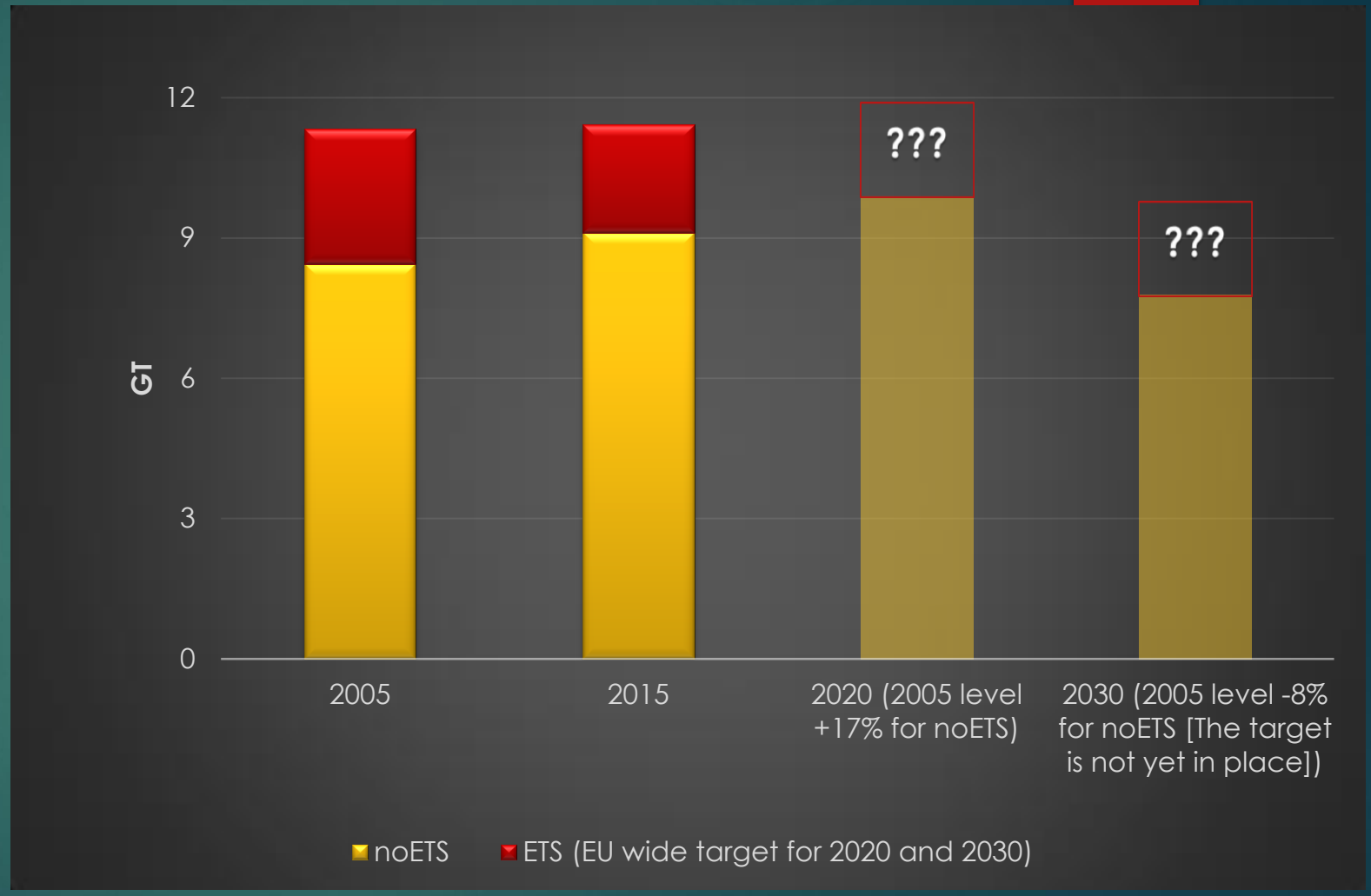
- Energy efficiency measures representation in model is an important element to elaborate GHG emission scenarios – WOM, WEM, WAM

- Life time of energy efficiency measures?
- Difficulties to avoid double-counting in implemented/calculated energy savings – autonomous efficiency trends of technologies vs. energy savings at end use
- Despite the some fairly large investment costs, energy optimization models likes efficiency measures
  - It is difficult to put the administrative and other barriers for the implementation of energy efficiency measures in the model
    - Different discount rates in different sectors



- **Total GHG in 2015 approx. as in base year 2005**
- **… but structure is changed**
  - **Energy (w/o Transport) less emitting**
    - Wider use of RES and higher Energy efficiency
  - **Transport and Waste the same**
  - **Agriculture and Industrial processes emitting more**

- **Approx. 20% of total GHG emissions is covered by EU Emission Trading system (ETS)**
  - Target is EU wide
- **On track to achieve No–ETS target for 2020**
  - Target for 2030 is under negotiations
- **Our modelling analysis shows that the most effective policies and measures (PAMs) for GHG emission reductions are within Energy sector**



Thank you for attention!!!

- Whether and how national regulations on energy efficiency are implemented in the energy modelling?
  - Standards for new buildings – lower energy consumption (kWh/m2)
- Has energy modelling been used in any way in preparation of the National Energy Efficiency Action Plan?
  - Primary energy sievings was calculated using modelling approaches
- Use of modelling (methods), standards and software tools
- Effectiveness of energy modelling towards energy efficiency (demand side)
  - the energy efficiency aspects in energy modelling
- Key success factors and difficulties/shortcomings of modelling