

# EC4MACS:



## Review of the PRIMES model

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*Stakeholders: Users/policy makers- European Commission*

*those modelled- countries, energy industries etc*

*interface other models- GAINS/IAM etc*

### Questionnaire:

1. Assessment of model design
2. Representation of reality/ information required by stakeholders
3. Treatment of uncertainties
4. Communication with stakeholders

## Assessment of model design

Sophisticated state of the art model- supply and demand modules, flexibility to represent many factors-> *need a lot more detailed information to understand what has been assumed in any scenario undertaken*

### ? Limitations of model structure and implied system boundaries

- i) *External influences ; e.g. climate policies likely to induce significant relocation of production both within Europe and between Europe and rest of world-> change in sectoral activities. May result in overestimate of cost of climate policies?*
- ii) *? Representation of risk e.g energy security*
- iii) *equilibrium “myopic” approach 5 year time steps :major commitments e.g new coal fired power stations +CCS-> lifetime several decades*
- iv) *? sources outside core modelling: nuclear energy not mentioned*
- v) *Output for other models e.g. assumptions re energy efficiencies important for further measures in GAINS/IAM*

## Representation of reality

Great effort and progress has been made in representing different demand and supply aspects realistically. However

i) “Model no better than data fed into it” (*e.g. EUROSTAT + adaptations*)

-> *much greater transparency needed to assess properly*

? *Comparison with data used in national energy projection modelling*

ii) *Representation new developments/technologies “staged development”- e.g. renewables/fuel-cells/CHP .*

*Lack of info on rate at which new build can enter market; evolution energy mix*

? *Transport measures – electric vehicles etc. REMOVE/GAINS/PRIMES*

*(legislative limits versus technology to achieve?)*

iii) *Behavioural change- what/how represented? e.g. improved insulation, elasticity of demand re price, tax incentives etc. But many other factors influence behavioural change too. Decisions not solely economic.*

## Treatment of uncertainties

Limited to comparisons of scenarios- show e.g. effect of changing parameters such as C price.

Complex model with many modules- “black box”, difficult to understand sensitivity/uncertainties-in data, model assumptions and parameters, what is included and what is left out, external influences etc.

Much more work needed to verify and indicate sensitivities

If additional measures/behavioural change included then would tend to reduce energy demand and costs-> bias.

? How sensitive are national projections to forecast activity data in different sectors, and how sensitive are estimated energy demands and how these are met to prices/costs, elasticity assumptions etc.

? Comparison with other models. e.g. national modelling of energy projections taking account of country specific factors

## Communication with stakeholders

**General comment:** too little information available; lack of transparency

*“credibility of PRIMES harmed by lack of openness and access to key model assumptions”*

*“PRIMES technology data base and technical-economic assumptions and other data should be made public”*

*“same degree of openness as for GAINS”*

### **Suggestions**

*Website analogous to GAINS from which data can be downloaded, and covering different scenarios*

*Version of model (?simplified) which other modellers can experiment with, e.g. changing national data*

**Communication between models:** *when PRIMES is used in conjunction with other models (e.g. GAINS) how is it ensured that no double-counting, over or under estimation occurs?*