



CONSULTATION ON EC4MACS MODELLING METHODOLOGY

Please fill in one questionnaire for each model, and provide your comments in the respective boxes.

Please return the questionnaire to the EC4MACS coordinator Hans Benzinger (benzing@iiasa.ac.at) before June 15, 2009.

<i>Name</i>	Antti Tohka
Institution	Finnish Environment Institute
Country	Finland
Phone	+358443005680
E-mail	antti.tohka@ymparisto.fi

<i>Model</i>	GAINS, PRIMES
--------------	----------------------

1 Assessment of model design

To what extent does the structure of each model provide a scientifically credible representation of the reality?

Due national and expert consultations each model can project the future scientifically credible way and most of the cases they should be also be able to reproduce the current situation. If the current starting point is wrong, reason for this should be first found out before making the projections.

What are the limitations of the model structure and the implied system boundaries and to what extent may these restrict the validity of the conclusions and policy

In case of GAINS the input from PRIMES is in crucial position. Because sectors in PRIMES differ from GAINS adaption of the data should be done carefully, so for example different fuels wouldn't mix between themselves. For example uncommercial wood fuels (logs from own forest), black liquor, wood fuels to power plants are all in the same sector in PRIMES (biofuels). If this activity is split in wrong way to GAINS sectors, results will be wrong and give wrong message for policy making.

Also energy balance seems to be different in PRIMES than it is in some national models, this should be taken into account, when data is submitted either from PRIMES or from national models.

2 Representation of reality in the modules

To what extent does the structure of each model provide a scientifically credible representation of reality?

Modules it themselves represent close enough reality. Activities can be delivered from national or PRIMES projections and emissions can be adapted to national circumstances. Biggest problem is limited amount of control technologies, for example only a few for NOx and SO2 in power plant sectors and fixed control efficiencies over the time with the. Some cases like fluidized bed combustion and low-sulphur fuels/co-firing these fixed control efficiencies don't reflect reality so that control strategy could be done robust way both in emission and cost side.



3 Treatment of uncertainties

Have the most policy-relevant uncertainties (related to variability of the system inexactness of input data and lack of knowledge) been adequately addressed?

Depends from NEC-report. Sometimes effect of carbon price, meteorology and fuel prices are taken into account in detailed enough way, but sometimes not. Problem is also lack of knowledge, especially in case of Russia and EECCA countries and EU countries that are not submitting data to IIASA. In Russian and EECCA knowledge of distribution of the emissions are not so good and state of technology used is question mark. How this affects to source-receptor data and critical loads should be at least discussed.

Is there an alternative formulation conceivable that could provide better policy-relevant insights into uncertainties?

There should be more country specific projections including at least one country submission and several PRIMES projections.

Do available model results represent uncertainties accurately? Are there other ways conceivable for attaining more robust conclusions?

I think model in this form can't represent uncertainties. Only way to have some kind of the clue of uncertainties is to have several model runs with different assumptions. Then some variation would be wider and it would give better picture to policy makers. Earlier there has been a use of various carbon prices in model runs. That is a good example how sensitivity should be approached in a simple way.

Is there a risk that the model gives policy advice that systematically underestimates or overestimates the need for policy measures to protect the environment? What are the major reasons for a bias, if any?



*50*50 km² ecosystem average in EMEP grid cell can give wrong answer and uncertainty of Russian/EECCA emissions can affect results in Eastern-Europe. Maximal technical reduction applicability can be also overestimated and some case misleading. Because RAINS (not GAINS) is mostly lacking non-technical measures some valid measures are not taken into account. Then again, cost for some non-technical measures is unclear and applicability hard to estimate.*

If national data and emission estimates would be reviewed by a third party even just with a few lines.



4 Communication with stakeholders, policy-makers and public

How do the modelling teams verify the quality of input data that are used in model? Is the quality of the input data obtained from national sources and from other models sufficiently guaranteed? In what way do teams give feedback to providers of input to maximise the robustness of model results?

In case of GAINS yes, in case of PRIMES, not really. Other models I don't know.

In what way are users and stakeholders involved in the modelling process, and is this sufficient to ensure transparency and acceptability of the results for policy advice?

Earlier there were bilateral consultations and every stakeholder have a possibility to interact with IIASA stuff as much as they like. In my experience bilateral consultations do not necessary mean, that data would be right, if country experts are not familiarised themselves with "GAINS way of thinking". There should be also more pressure on stake holders so that they would be more responsible the accuracy of the data in GAINS. Data submissions to IIASA should have the same status than submissions to CLRTAP so long as GAINS is the official emission model for EC.

Are the presentations of the results clear? If not, can the communication and dissemination of the results be improved?

In NEC-reports there should be a link to used GAINS activity pathway and control strategy (emission vector) and old data should be available longer so it could be checked and used also later.

National submissions should not be changed at IIASA. If there is a mistake or data missing, that country representatives should be asked to fix the problem. In my experience this is a only way to achieve results that can be approved as results from national submissions. If results are based on something else than national submission, this should be made clear.

Is the model structure transparent? (e.g., are the assumptions clearly exposed and motivated, and is their influence on the model-results explained?)

In case of PRIMES. Not at all.

In case of GAINS. Completely transparent and clear assumptions.





5 Other comments

Please fill in text here ...

Thank you for providing this feedback to the EC4MACS team!

Please return this questionnaire to the EC4MACS coordinator Hans Benzinger (benzing@iiasa.ac.at) before June 15, 2009.

You will receive information on the EC4MACS review workshop that is planned for October 2009.