Uncertainty subgroup

CARB EWG 8/IV/10

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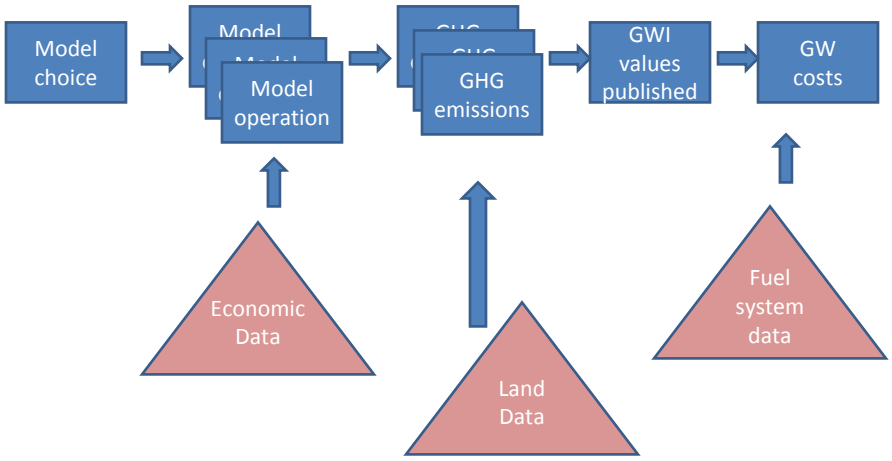
Assignment

- Conducting a more comprehensive sensitivity analysis and validating land use change estimates with empirical data.
- What is robust policy in the face of enduring uncertainty
- What are the major areas of uncertainty and how do we address them?
- What are the metrics and benchmarks to reduce and measure uncertainty?
- Is there empirical data or more site specific data – use in modeling is different than looking at it inferentially through economic models
- Policy consequences and implications from uncertainty
- Is it possible to choose on the safe side? Which side is that?
- Policy choice and the actual consequence and how uncertainty affects it. What is the best consequence
- Effectiveness of government policy and law on LUC

Uncertainties

- Epistemic: how the world actually responds to fuel policies, and how models represent that
- Parametric: model parameters are observations with intrinsic variation or error
- Emissions-warming/cost relationship
- Policy-emissions relationship

Uncertainties

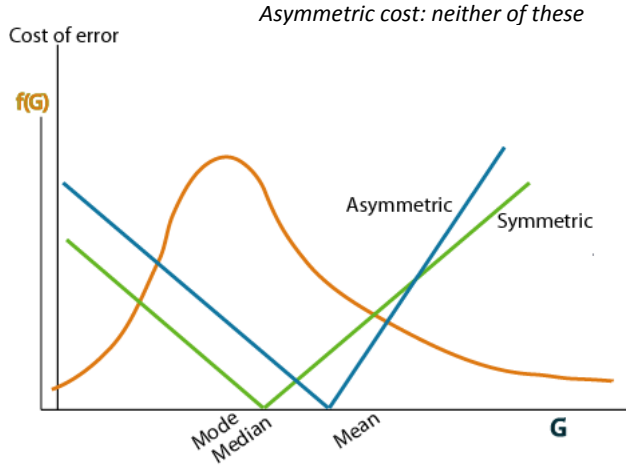


Tasks

- **What are the costs of being wrong in each direction?**

If published GWI_i is larger/smaller than "true" value, less/more fuel *i* will be used than optimal and more GHG released. Industrial policy, infrastructure, investment, and irreversibility of ILUC may make it more costly to err a given amount in one direction than the other

The optimal value of GW_i depends on the distribution of *GW* and the cost of error.*
Linear cost: median of f is optimal
Quadratic cost: mean of f is optimal
Asymmetric cost: neither of these



Tasks

- **Which factors contribute the most and least uncertainty to *GWI_i*?**

Examples:

Parametric: land use and carbon data, elasticities, yield assumptions, production period.

Epistemic: model structure and assumptions, land use practice and policy in non-production regions

Tasks

- **How can different models and estimation protocol improve LCFS implementation?**

Combination of results from different models

-published

-including agency contract work

Better model than GTAP

Tasks

- **Policy design issues beyond GWI_i**

Does uncertainty in ILUC (or other) estimates of critical quantities suggest a different structure for LCFS implementation? Are there lessons in other regulatory contexts?

Is a "most likely" value of GWI_i the right value to use in calculating AFCI?

Policies in non-production regions

Tasks

- **Improving statistical and inferential methodology**

Classical, Bayesian, Max-ent, minimax and other methods exist with which to combine information (for example, estimates from different models) into a single judgment (which may be a pdf, not a number).

Tasks

- **Epistemic uncertainties**

The underlying logic of most current estimates of ILUC, crop displacements and land use changes through economic signals, may be inferior to other conceptual structures, like epidemiological processes, and one or another of these may have less uncertainty in its estimates. Biofuel policy may have *de minimis* or very small influence on more general determinants of land use, which could be more precisely understood.

Issues

- Uncertainty questions tend to expand out of the subgroup to larger questions like treatment of time, model improvements and understanding the mechanism of ILUC.
- Differentiating (i) uncertainty in estimates of well-defined quantities from (ii) uncertainty about policy effects and goals.
- Policy in non-production regions affects ILUC