

GHG Accounting in the RSB Standard



Barbara Bramble – Chair of the RSB Steering Board
Senior Advisor, Climate and Energy Program, NWF

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Sustainability and Biofuels: The RSB Standard

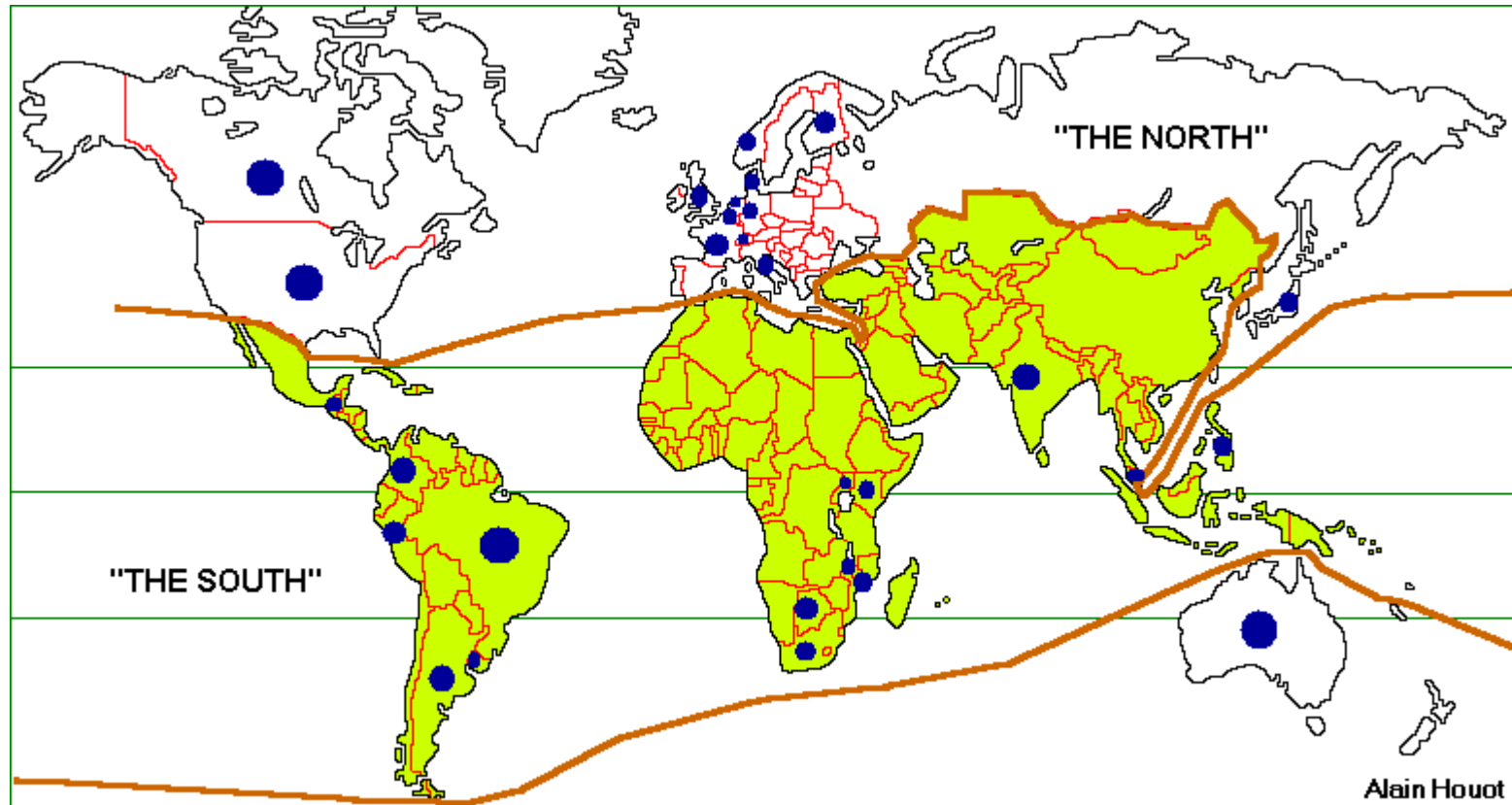
Global, voluntary, multi-stakeholder standard on sustainability and biofuels – Certification System now open

- **Enables producers and purchasers to differentiate** better biofuels
- **Covers entire supply chain**
- **Covers all feedstocks and biofuels**
- **“Benchmarking”**: working with other standards & regulations
- **Fulfills “market access standards”** for specific regulated markets, i.e. EU

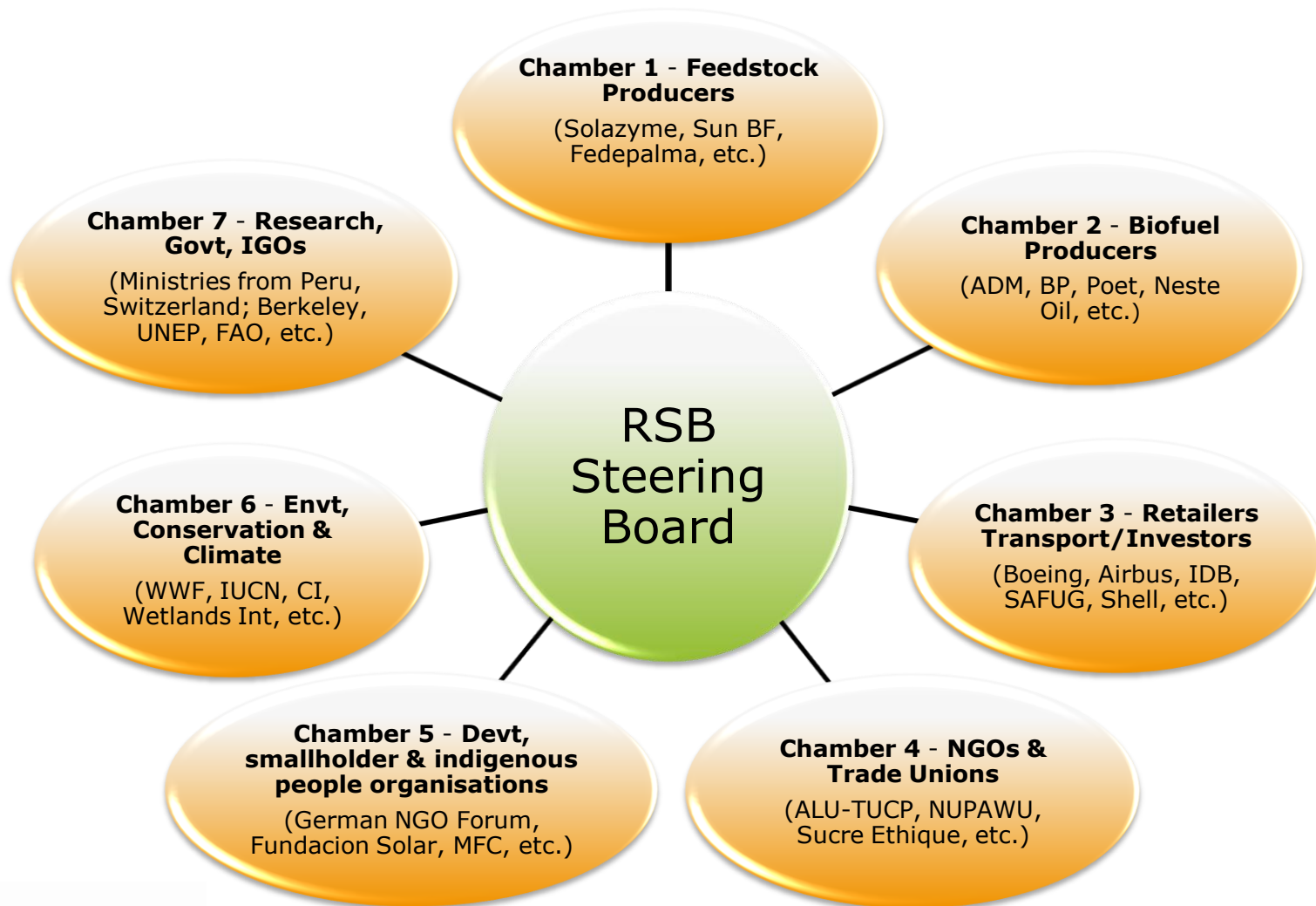


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A global discussion: RSB members



The RSB Governance



RSB Principles & Criteria

Principle 1:
Legality

Principle 2:
**Planning,
Monitoring &
Continuous
Improvement**

Principle 3:
**Greenhouse
Gas
Emissions**

Principle 4:
**Human & Labor
Rights**

Principle 5:
**Rural &
Social
Development**

Principle 6:
**Local Food
Security**

Principle 7:
Conservation

Principle 8:
Soil

Principle 9:
Water

Principle 10:
Air

Principle 11:
**Use of Technology,
Inputs, &
Management of
Waste**

Principle 12:
Land Rights

RSB Principles & Criteria

Principle 7.

“Biofuel operations shall avoid negative impacts on biodiversity, ecosystems, and conservation values.”

Criterion 7.a – “Conservation values of local, regional or global importance within the potential or existing area of operation shall be maintained or enhanced.”

- Covers all ecosystem types – not limited to forests.
- No conversion of areas with identified conservation values of global, regional or local importance after cut off date of January 1, 2009.
- No use of such areas without adequate management practices to maintain or enhance such values.

Criterion 7.b – “Ecosystem functions and services that are directly affected by biofuel operations shall be maintained or enhanced.”

RSB Principles & Criteria

Principle 3.

“Biofuels shall contribute to climate change mitigation by significantly reducing lifecycle GHG emissions as compared to fossil fuels.”

- Criterion 3a – Comply with GHG regulations.
- Biofuel operators must meet GHG regulations in the markets where they operate, e.g.
 - U.S. RFS II
 - California LCFS
 - EU Renewable Energy Directive (EU RED)
 - RSB has begun benchmarking of existing biofuel regulations & GHG requirements

Criterion 3b

- ❖ Criterion 3b – GHG Emissions: Operators must use RSB GHG methodology to calculate lifecycle GHG emissions associated with their operations
 - RSB/EMPA developed GHG accounting methodology; final version published in **July 2011**
 - For energy & material inputs – operators report actual use not default values
- ❖ In RSB system all Operators must calculate GHG contribution of their operations—enter into RSB Tool
- ❖ RSB Tool enables GHG number from each stage of production to be passed along from operator to operator down the chain of production
- ❖ Biofuel Blender reports on the Total (lifecycle) GHG emissions

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RSB GHG Calculation Methodology

4 Agriculture: modelling of ammonia emissions

4.1 Structure of ammonia (NH₃) computation

Modelling follows the guidelines of Nemecek et al (Nemecek and Kägi 2007).

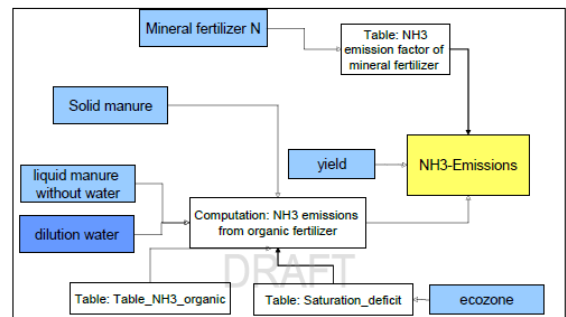


Figure 4.1: Structure for the computation of ammonia (NH₃) emissions.

4.2 Ammonia (NH₃) computation

$$NH_3 [kg NH_3 / kg] = (NH_3, organic, liquid, cattle\&pigs + NH_3, organic, solid, cattle\&pigs + NH_3, gas + NH_3, urea + NH_3, broilers + NH_3, manure) \cdot yield$$

GHG Methodology

- Attributional lifecycle methodology
- Follows economic allocation for co-products
- Users enter their own data
 - Material use (e.g., type and amount of fertilizer)
 - Energy use (e.g. amount of diesel, natural gas or electricity used, etc.)
 - Location (which affects some emission factors)
- Embedded emission factors come largely from the LCA database Ecoinvent (e.g., CO₂ emissions per kg methanol used in biodiesel production)

GHG Methodology (Cont'd)

- The methodology uses a database of options for materials, chemicals and energy types, and associated emission factors
 - For example, RSB Tool contains a drop-down list of fertilizers
- Land use and land use change information is largely based on IPCC methodology with some modifications
 - uses specific data (e.g., carbon stocks) for certain crops (e.g., miscanthus, sugarcane)
- All documentation is available in the RSB GHG Methodology document -- see www.rsb.org

- **Criterion 3c – GHG Threshold:** Biofuel blends must reduce GHG emissions by 50% compared to the fossil fuel baseline of the fuel they would replace
 - Fossil fuel baseline:
 - Global average
 - Recalculated every 5 years
 - Different for gasoline, diesel, jet
 - Final biofuel or physical blend of biofuels must meet the 50% GHG emission requirement
- ❖ **Operators who must meet GHG Threshold: Final Biofuel Blenders**

- **RSB Tool (online, freely available)**
 - User friendly application tool
 - Operators can self-assess their compliance with RSB Standards
 - Check compliance with other GHG & Sustainability Regulations
 - Enables GHG calculations (RSB, EU RED, etc.) – user enters own data

The screenshot displays the RSB Tool interface. At the top, it says "Roundtable on Sustainable Biofuels Tool" and "RSB ROUNDTABLE ON SUSTAINABLE BIOFUELS". Below this is a navigation bar with tabs: HOME, RSB APPLICATION, PRINCIPLES AND CRITERIA, RISK ASSESSMENT, GREENHOUSE GAS CALCULATION (GHG), ACKNOWLEDGEMENTS, and FEEDBACK. The main content area is titled "- Cultivation Module 5/10 - Mineral Fertilizer -" and features several sub-tabs: Context Information, Land Use Change, LDC Validation, Mechanical Work, Mineral Fertilizer (selected), Organic Fertilizer, Pesticides, Default Pathway, Validation Calculation, and Results. The "N fertilizer data" section contains two radio buttons: "No N fertilizer used" (unchecked) and "Use N fertilizer used" (checked). Below this, there is a dropdown menu for "N fertilizer" set to "ammonium nitrate, as N" and an input field for "Amount:" set to "90". A small note indicates "Amount of mineral fertilizer used in kg N/ha". A plus sign icon is visible at the bottom right of the form.

Methodology in a Nutshell

- RSB prescribes a GHG methodology for operators to use with their own production data
- RSB has determined the fossil fuel baseline
- In order to reduce GHG emissions, you must count them first
 - Includes direct but not yet indirect land use change
- GHG reduction threshold for the finished biofuel product/mix of biofuels: 50% with respect to fossil fuels
- All RSB operators must calculate and report their contribution to GHG emissions
- Final Biofuel blenders must meet RSB's GHG threshold

Thank you!



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Barbara Bramble: bramble@nwf.org

RSB Secretariat: rsb@epfl.ch

<http://www.rsb.org>