

GHG Accounting for Solid & Gaseous Biomass – the UK Approach

Biograce II – Policy Makers Workshop, Brussels

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Contents

1. UK Greenhouse Gas Requirements for Bioenergy
2. Reporting & the UK Solid & Gaseous Biomass Carbon Calculator
3. Methodological Issues

E4tech: Strategic thinking in sustainable energy

- International consulting firm, offices in London and Lausanne
- Focus on sustainable energy – expertise in biofuels & bioenergy
- Established 1997, always independent
- Deep expertise in technology, business and strategy, market assessment, techno-economic modelling, policy support...
- A spectrum of clients from start-ups to global corporations



LONDON



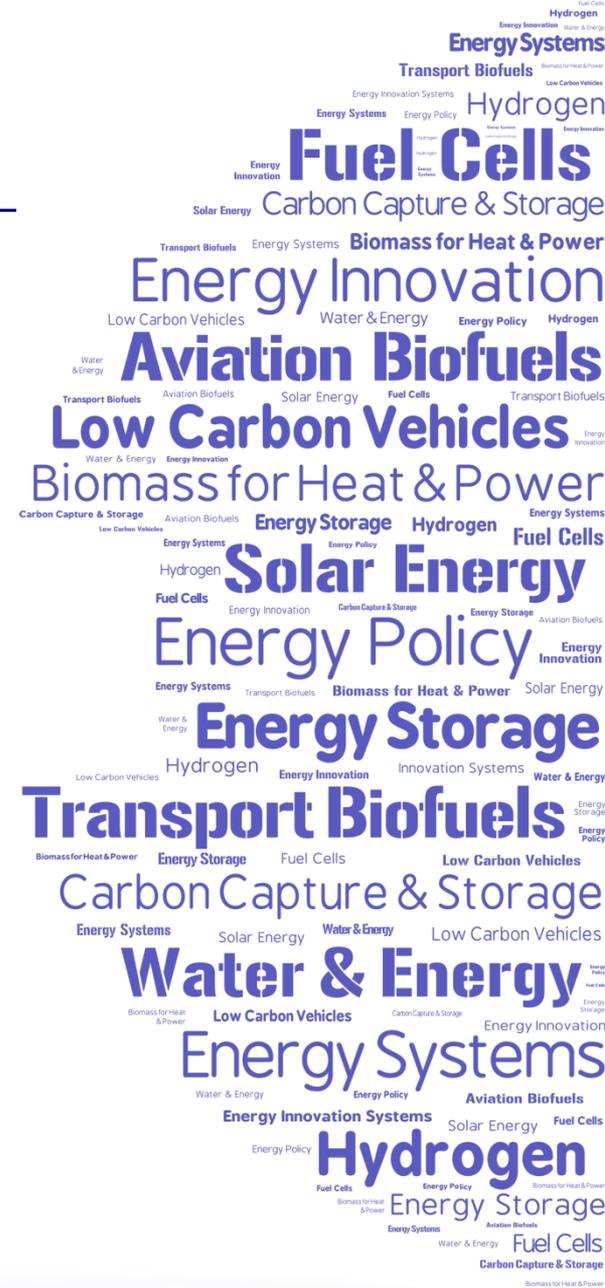
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DAIMLER



BRITISH AIRWAYS



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The UK has introduced mandatory GHG reporting for biomass in most energy applications

- The UK has some GHG reporting requirement for biomass used in all types of energy applications (but not at all scales)
- Each policy mechanism has its own GHG target

Fuel type	End Use	GHG requirement
Biofuels	Transport	>50% saving over FF baseline from Jan 2017 <42 gCO ₂ e/MJ[fuel]
Solid & Gaseous Biomass	Heat	>60% saving over FF baseline from Oct 2015 <34.8 gCO ₂ e/MJ[heat]
Solid & Gaseous Biomass	Power	>60% saving over FF baseline from 2015 <285 gCO ₂ e/kWh[electricity]
Biomethane	Grid Injection	<34.8 gCO ₂ e/MJ[biomethane]

- Each scheme also has some reporting requirement on land use

One harmonised GHG methodology used for solid & gaseous biomass regardless of application (more or less)

- Three key policy mechanisms supporting biomass for heat and power:
 1. Renewables Obligation (RO)
 2. Contracts for Difference (CfD)
 3. Renewable Heat Incentive (RHI)
- Each uses same GHG calculation methodology – adapted version of RED Annex V.C methodology for biofuels/bioliquids
 - Aligns with GHG methodology for solid & gaseous biomass set out in EC Communication SEC(2010)65-66
- For RO & RHI defined in legislation – for CfD defined in individual contracts
- Emission coefficients not defined in legislation
 - RO Sustainability Guidance for biomass provides tables of standard values to be used – no requirement to use these, literature data can be used

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GHG reporting requirements vary

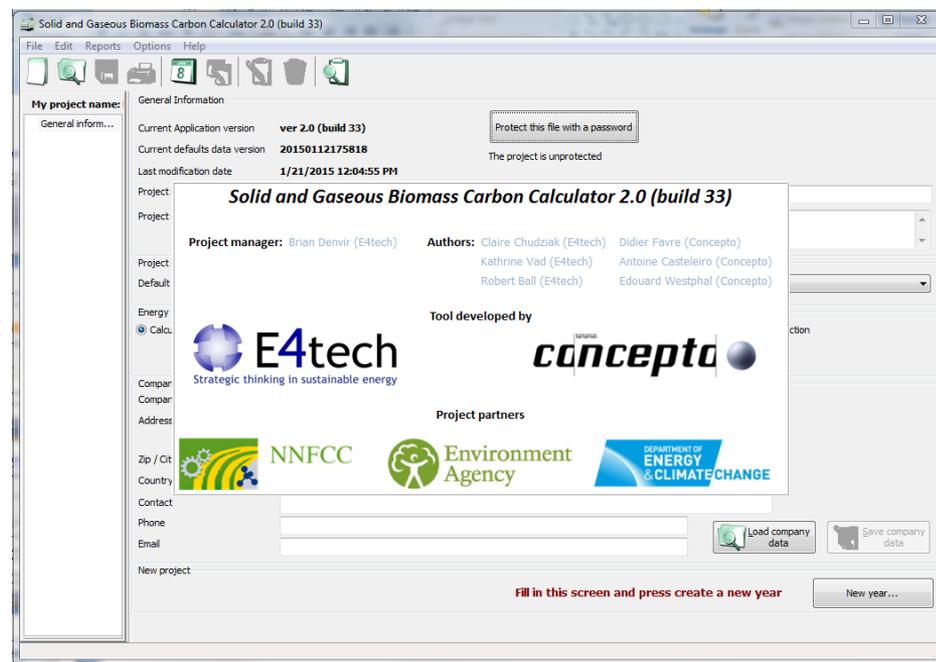
- **Renewables Obligation:**
 - **Stations >1MWe** - Mandatory annual report prepared by independent auditor demonstrating that GHG requirements have been met, plus monthly GHG report
 - Voluntary Schemes can be used to demonstrate compliance
- **Contracts for Difference:**
 - As yet undecided – likely to match RO requirements
- **Renewable Heat Incentive:**
 - **Biomass Suppliers List** – list of accredited suppliers of woody biomass – must report on GHG emissions – verified by administrator
 - **Self-reporters** – heat generators must produce audited annual GHG report plus quarterly declarations

UK does not prescribe a specific GHG calculation tool or set of standard values, but for all policy mechanisms operators are recommended to use one of the national carbon calculators:

- **Biofuels & Bioliquids Carbon Calculator** (for reporting under the RTFO and RO)
- **Solid & Gaseous Biomass Carbon Calculator 'B2C2'** (for reporting under the RO and RHI)

The B2C2 is an application designed to assist with GHG reporting obligations under both the RO & RHI

- **Greenhouse Gas Calculator** which allows users to assess the carbon intensity of both:
 - a) biomass & biogas **fuels**, and
 - b) final energy products
 - Electricity
 - Heat
 - Biomethane for grid injection
- Built in 2011 primarily as a reporting tool for generators operating under the RO, but with a provision for future RHI users
- Freely downloadable **desktop application** – available from Ofgem website
- Encompasses most common solid & gaseous biomass fuels and feedstocks
 - **Fuels** include woody & grassy chips/pellets, charcoal, biogas, biomethane etc.
 - **Feedstocks** include LRF, SRF, SRC, forestry residues, miscanthus, AD feedstocks etc.



The tool is flexible, allowing users to build bespoke fuel chains

- **Modular GHG calculator** – fuel chains are represented by linear, modular chains
- Users can either:
 - a) Select from pre-defined '**default fuel chains**' and adapt accordingly, or
 - b) Build **bespoke fuel chains** from scratch



- Calculator encompasses a database of **default values** –built up from a mixture of pre-existing databases and input from industry sources
- Users can replace default values with **actual data**, or create their own chain entirely
- GHG Calculation Methodology – as set out in SEC(2010) 65-66 – aligns with reporting requirements of RO and RHI
- **Reporting function** allows power generators to submit reports to Ofgem under Renewables Obligation
- Users can seek support via email account: b2c2support@e4tech.com – this requires resource

Next steps for the B2C2

- **Update released January 2015 :**
 - No methodological changes but improved functionality and data quality based on user feedback
- **RHI-focussed user manual to be released April 2015:**
 - Original user manual designed around RO users
 - New manual provides a clear walkthrough for all types of RHI-claimant using the tool
- **Methodology update?:**
 - No formal plans to update methodology to align with Biograce II as yet – several questions remain.....



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Several outstanding methodological questions

- GHG Calculation methodology defined in legislation – aligns with RED approach
- Some nuances between approach for biofuels and that set out in Staff Working Document which complicate matters:
 - 1.4 conservative factor or 1.2?
 - NOx and CH4 emissions at combustion?
 - Manure credit?
 - Digestate as a co-product?
 - Marginal electricity factors?
 - Methane slip default assumptions?
- There are practical implications to harmonising the GHG calculation approach:
 - B2C2 – aligning default values in fuel chains & updating tool
 - Impact on GHG balance – negative for some chains – pushback from industry – could negatively impact on projects
- Broader methodological questions – carbon debt and counterfactuals – difficult to include
- ***Election in May so no decisions on these questions expected soon!***

Final thoughts & lessons learned

- **Defining the GHG methodology** for any policy (e.g. RO, RHI) essential – preferably in legislation
- Details of GHG methodology are tricky (particularly around issues like accounting for co-products)
- Many ways to support reporting parties:
 - **Guidance documents** on how to report essential
 - Tools such as **carbon calculators** – provide common platform for all reporters, allow for greater consistency in reporting, remove methodological questions, user friendly etc.
 - **Workshops** and help-desks (on using the tools and on reporting requirements) helpful
- All of this can be costly for government and industry
 - Auditing for bigger operators only, or where sustainability risk seems high
 - Allow use of voluntary schemes
- Harmonised GHG approach across the EU has advantages but very difficult to agree an appropriate approach (especially with industry)
 - Harmonising LHVs and other standard values may prove easier and would be a step in the right direction