



Implementation of Sustainability Assurance Frameworks: Ongoing Developments and Pending Issues

Biomass GHG accounting: Belgian case
Methodologies and actual verification

SGS Belgium

Environmental Services

06 March 2015

WHEN YOU NEED TO BE SURE



- SGS presentation
- Energy/carbon balance requirements in Belgium (green certificates)
- Perspectives of international harmonization
- Demonstration of actual values (monitoring and verification)

- *SGS : Leader in inspection, verification, testing and certification*
- Environmental Services

ENVIRONMENTAL SERVICES WORLD-WIDE

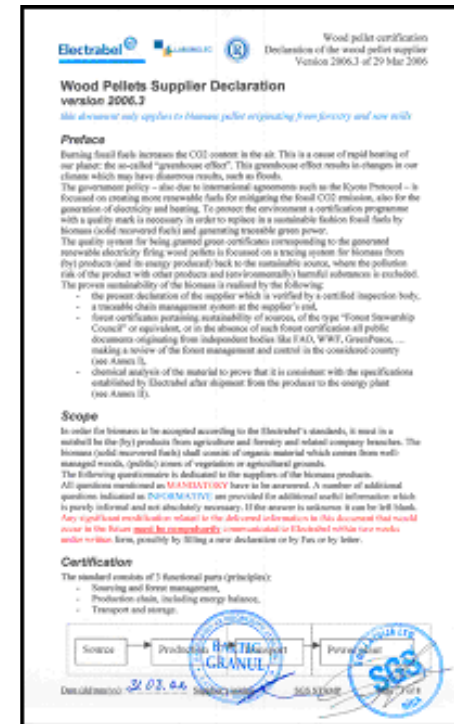


ENVIRONMENTAL SERVICES OFFICES LOCATED ON ALL MAJOR CONTINENTS.
ENVIRONMENTAL GROUP TURNOVER OF CHF 4300 MILLION.

- Climate Change Programme
- Sustainability supply chain verification and certification
 - Biofuel ISCC, RSPO certification
 - Biomass sustainability verification
 - Tractebel/SGS procedure for pellets
 - » Pellet producer inspection
 - » Declaration
 - » balance
 - >100 inspected pellet producers
 - » America/Canada
 - » Russia/Baltics
 - » Europe



**SPEED UP EMISSIONS
VERIFICATION, PLEASE!**



Wallonia :

- CO₂ balance of the supply chain
- 1 green certificate = 456 kg avoided CO₂ (ref 1 MWh power ed by CCPP)
- 1 MWh power production green electricity gives right to 1 green certificate if no CO₂ at all is emitted

- In the calculation the GHG footprint for power used throughout the supply chain is always 456 kg /Mwhe
 - wherever the power is used
 - whatever the source (renewables, CHP, nuclear etc...)
 - Reflects a possible substitution between power produced from biomass and power consumed in the supply chain
- All fuels have a LCA referenced CO₂ emission factor

Flanders :

- Energy balance of the supply chain
- 1 green certificate = 1 MWh green power
- 1 MWh power production green electricity gives right to 1 green certificate, excluding energy involved in the preparation and transport
- In the calculation no GHG power is needed as the green certificates only rely on the difference between power produced with biomass and energy used to make the biomass available and ready for use

In both cases : transport and preparation footprint need to be calculated and verified

- EF for power:
 - 456 kg CO₂/MWh is at the core of the calculation of green certificates in Wallonia => it will not change
 - GHG balance not needed in Flanders
 - For other countries, there is a need to reflect local footprint of the power and the use of renewables
- Differences in scope could exist
 - e.g. in Flanders forestry operations and harvesting are out of scope but they are included in Wallonia, LUC
- Different roles of the GHG calculation
 - Minimum savings for eligibility of biomass (e.g; UK, Netherlands)
 - Determines the amount of GC, hence direct financial impact

=> An identical calculation in all countries is probably not possible unless more legislation comes at the European level

- EF fossil fuel (reflecting life cycle)
- LHV fossil fuel
- Reference values for specific fuel use of trucks, trains, ships
- Activity data collection :
 - monitoring and verification requirements => one set of data
 - application of different calculation methodologies to the same data
- Occupancy rate for transport

Emission factor : For pellets : Use of Supramax, handysize and Coasters

- In Laborelec/SGS procedure : Approached based on spec Baltex

Bulk carrier type		Specifications of the Baltex reference			Pellet load
		Fuel use	volume	deadweight	
Handysize	15 000-40 000 mt	22 mt/jour	37 523 m ³	28 000 mt	24 922 mt
Supramax	40 000-60 000 mt	30 mt/jour	67 756 m ³	52 454 mt	45 002 mt

- speed 14 knots (as reference)
- 0,66417 MT/m³ (stowage factor pellets)

=> Results for pellets

Handysize	0.0575 MJ / t km
Supramax	0.0433 MJ / t km

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■ comparaison with other sources:

- 0.05-0.06 MJ/tkm : Kranke/Schmied/Schön (2011) : pour Handymax, Handysize à 14 noeuds : 1,23 – 1.56 g fuel/tkm
- 0.10 MJ/tkm : selon Borken, Patyk, Reinhardt (1997) : pour Massengutschiffe 40 000 mt : valeur de 2.5 g fuel /tkm
- Biograce
 - Biograce II : 0,101 Handysize – 0,0656 Supramax
 - Ocean bulk carrier Panamax (Fuel oil) : 0.10 MJ/tkm (JEC database)

(assumes return empty)

Utilisation rate of bulk carrier

- Biograce seems to assume 50 % (return empty)
- What is backhaul / utilisation rate?
- SGS assessed the travel route of 3 particular bulk carriers in 2013
 - > 80 % : South East USA
 - > 70 % West Coast Canada



- Some activity data are easily measurable and verifiable :
 - Power and fuel use at conversion plant
 - Moisture contents
 - Input-output
 - Actual LHV of pellets
- Other activity data are difficult to monitor :
 - => need for relevant default values
 - Energy used for harvesting, forestry
 - Actual fuel use for transport (use of MJ/tkm and actual distance instead)
- Note : In Biograce 2, measuring material in MJ instead of tons makes it difficult to use it because LHV is not necessarily measured at each stage of the production process (depend on Hr not measured)

- Need traceability and chain transparency (e.g. origin of forestry raw material - traders – nb of actors issues)
- Raw material type need to be clearly identified (to apply the right preparation factors) : need in a same definitions
- Verification scope : Methodology / Actual values
- Reference period



Thank you for your attention

www.sgs.com

catherine.neve@sgs.com

François.ducarme@sgs.com

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