Wood chips from Eucalyptus

Final product: electricity and heat
Electricity efficiency: 30 %
Heat efficiency: 45 %
Temperature of useful heat: 150 °C

- Transfer the data into the BioGrace II-tool

- inputs:	Input	Amount in BioGrace		Amount in GEF tool	
	Yield				
	Eucalyptus (SRC)	25.867	kg ha^{-1} year^{-1}	48.000	kg ha^{-1} year^{-1}
	Moisture content	50%		50,0%	
	Energy consumption				
	Diesel	1.469	MJ ha^{-1} year^{-1}	68	l ha^{-1} year^{-1}
	CH_4 and N_2O emissions from u (harvesting and chipping)				
	Agro chemicals				
	Synthetic N-fertiliser (	228,2	kg N ha^{-1} year^{-1}	424,0	kg N ha^{-1} year^{-1}
	Manure	0,0	kg N ha^{-1} year^{-1}	85,0	kg N ha^{-1} year^{-1}
	CaO-fertiliser (calcula	266	kg CaO ha^{-1} year^{-1}	490,0	kg CaO ha^{-1} year^{-1}
	K_2O-fertiliser (kg K	182,6	kg K_2O ha^{-1} year^{-1}	340,0	kg K_2O ha^{-1} year^{-1}
	P_2O_5-fertiliser (kg	87,5	kg P_2O_5 ha^{-1} year^{-1}	160,0	kg P_2O_5 ha^{-1} year^{-1}
	Pesticides	1,6	kg ha^{-1} year^{-1}	2,00	kg ha^{-1} year^{-1}
	Field CO_2 emissions	74,5	kg ha^{-1} year^{-1}		
	Seeding material				
	Seeds- eucalyptus cu	17,6	kg ha^{-1} year^{-1}	20	kg ha^{-1} year^{-1}
	Field N_2O emissions	4,8	kg ha^{-1} year^{-1}		kg ha^{-1} year^{-1}
	Field N_2O emissions can be calculated in the sheet N2O emissions GNOC				

- In this example we have used data from the GEF GHG calculation tool

Report on-line available: http://www.unep.org/bioenergy/Portals/48107/doc/activities/GEF%20greenhouse%20gas%20calculator_FINAL.xls

Wood chips from Eucalyptus

Final product: electricity and heat
Electricity efficiency: 30 %
Heat efficiency: 45 %
Temperature of useful heat: 150 °C

- Transfer the data into the BioGrace II-tool and add the fertiliser emission factors

- inputs:	Input	Amount in BioGrace			Amount in GEF tool	
	Yield					
	Eucalyptus (SRC)	25.867	kg ha^{-1} year^{-1}		48.000	kg ha^{-1} year^{-1}
	Moisture content	50%			50,0%	
	Energy consumption					
	Diesel	1.469	MJ ha^{-1} year^{-1}		68	l ha^{-1} year^{-1}
	CH_4 and N_2O emissions from u	(harvesting and chipping)				
	Agro chemicals					
	Synthetic N-fertiliser (	228,2	kg N ha^{-1} year^{-1}	Ammonium Nitrate	250,0	kg N ha^{-1} year^{-1}
				Urea	90,0	kg N ha^{-1} year^{-1}
				N-P-K	84,0	kg N ha^{-1} year^{-1}
	Manure	0,0	kg N ha^{-1} year^{-1}		85,0	kg N ha^{-1} year^{-1}
	CaO-fertiliser (calcula	266	kg CaO ha^{-1} year^{-1}		490,0	kg CaO ha^{-1} year^{-1}
	K_2O-fertiliser (kg K	182,6	kg K_2O ha^{-1} year^{-1}		340,0	kg K_2O ha^{-1} year^{-1}
	P_2O_5-fertiliser (kg	87,5	kg P_2O_5 ha^{-1} year^{-1}		160,0	kg P_2O_5 ha^{-1} year^{-1}
	Pesticides	1,6	kg ha^{-1} year^{-1}		2,00	kg ha^{-1} year^{-1}
	Field CO_2 emissions	74,5	kg ha^{-1} year^{-1}			
	Seeding material					
	Seeds- eucalyptus cu	17,6	kg ha^{-1} year^{-1}		20	kg ha^{-1} year^{-1}
	Field N_2O emissions	4,8	kg ha^{-1} year^{-1}			kg ha^{-1} year^{-1}
	Field N_2O emissions can be calculated in the sheet N2O emissions GNOC					

- In this example we have used data from the GEF GHG calculation tool

Report on-line available: http://www.unep.org/bioenergy/Portals/48107/doc/activities/GEF%20greenhouse%20gas%20calculator_FINAL.xls

Pellets from forestry residues

Example for the verification of an actual calculation

Check all data and information given in the sheet

It is assumed that the wood pellets are produced in Canada and shipped to Europe.

Try to answer the following questions:

- How have actual and default values been mixed? Is the use of actual and default values valid?
- Which additional information do you have to check?
- Would you verify the calculation?

Final conversion only

Fill in the data / information in the final conversion sheet

A company bought wood chips from forestry residues.
The certificate indicates that the total GHG emissions up to the gate of the company equal to 35g C02eq/MJ wood chips.
The company produces heat and electricity from a CHP with the following efficiencies: 50 % for heat production and 25% for electricity production.
The heat produced is 200°C.

Calculate efficiency

Fill in the data / information in the 'Calculate efficiency' sheet
Report the efficiencies for heat and electricity as well as the allocation factors.

A company produces 4600 MWh of heat at 100°C, 400 MWh of heat at 250°C and 2200 MWh of electricity.
It uses 1000 tons of pellets (18MJ/kg at 10%H2O) and 2000 tons of SRF Wood chips (19MJ/kg at 50%H2O).
The internal usage and losses of electricity and heat are as follows:

- 4% of electricity is used for start up, and electricity losses represent 1%
- 10% of heat (at 100°C) is used for pre-heating and heat losses represent 1%
- 10% of heat (at 250°C) is used for pre-heating and heat losses represent 1%

Pellets from Eucalyptus

Include the following data in the sheet and report the outcome

- -The production takes place in France
- -Wood chip boiler used for process energy
- -Process efficiency : 0,6 kg of wood pellets (20%H) per kg of wood chips (50%H)
- -Useful heat consumed : 0,2 MJ/MJ Wood chips (to be dried)
- -Thermal efficiency of WC boiler: 75% MJheat / MJwood chips
- -Wet chips used as fuel in the boiler
- -Electricity consumption : 0,05 MJ / MJWood pellets, gross
- -Diesel consumption : 0,003 MJ / MJWood pellets, gross