

Exercise

Calculate the CO₂ emissions based on the energy PSUT (physical supply and use table) you have and the following information.

Typical emission factors for combustion of fuels are:

	Emissions factor ton CO ₂ /TJ
Coal	96
Gasoline	70
Fuel wood	110

Assume in addition, that from your IPCC emission inventory you get the information that 139 kilotonnes of CO₂ is released due to production processes, which chemically transform raw materials from one form to another. These processes take place within 'other industries'.

Exercise

SUPPLY TABLE										
	UNIT: Petajoule (10 ¹⁵)	Agriculture and forestry	Mining	Electricity supply	Other industries	Households	Inventories	Imports	Environment	Total
Natural inputs	Extraction of coal								200	200
	Electricity from solar panels and wind mills								36	36
	Wood								20	20
Products	Coal		198							198
	Gasoline							40		40
	Electricity			156						156
	Fuel wood	20								20
Residuals	Losses during extraction (coal)		2							2
	Losses during distribution (electricity)			9						9
	Losses during transformation			66						66
	Other losses (due to end use)									
	gasoline	15	3	1	14	12				45
	electricity	4	5		77	24				110
fuel wood					20				20	
Total supply of energy		39	208	232	91	56	0	40	256	922

Exercise

USE TABLE

	UNIT: Petajoule (10 ¹⁵)	Agriculture and forestry	Mining	Electricity supply	Other industries	Households	Inventories	Exports	Environment	Total	
Natural inputs	Extraction of coal		200							200	
	Electricity form solar panels and wind mills			36						36	
	Wood	20								20	
Products	Coal			195			3			198	
	Gasoline	15	3	1	14	12	-5			40	
	Electricity	4	5		77	24		46		156	
	Fuel wood					20				20	
Residuals	Losses during extraction (coal)									2	2
	Losses during distribution (electricity)									9	9
	Losses during transformation									66	66
	Other losses (due to end use)										
	gasoline									45	45
	electricity									110	110
	fuel wood									20	20
Total use of energy		39	208	232	91	56	-2	46	252	922	



Solution

1. USE TABLE for Energy

	UNIT: Petajoule (10 ¹⁵)	Agriculture and forestry	Mining	Electricity supply	Other industries	Households	Inventories	Exports	Environment	Total
Natural inputs	Extraction of coal		200							200
	Electricity form solar panels and wind mills			36						36
	Wood	20								20
Products	Coal			195			3			198
	Gasoline	15	3	1	14	12	-5			40
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	Other losses (due to end use)									
	gasoline								45	45
	electricity								110	110
fuel wood								20	20	
Total use of energy		39	208	232	91	56	-2	46	252	922
		Emission relevant energy use								

Solution

2. CO2 EMISSION FACTORS, Tonnes CO2/TJ

		Agriculture and forestry	Mining	Electricity supply	Other industries	Households
Products	Coal	96	96	96	96	96
	Gasoline	70	70	70	70	70
	Electricity	0	0	0	0	0
	Fuel wood	110	110	110	110	110

3. ENERGY RELATED CO2 EMISSIONS ACCOUNT, 1000 tons

		Agriculture and forestry	Mining	Electricity supply	Other industries	Households	Inventories	Exports	Environment	Total
Products	Coal			18 720						18 720
	Gasoline	1 050	210	70	980	840				3 150
	Electricity									
	Fuel wood					2 200				2 200
Total CO2 Emissions - energy related		1 050	210	18 790	980	3 040				24 070



Solution

3. ENERGY RELATED CO2 EMISSIONS ACCOUNT, 1000 tons

		Agriculture and forestry	Mining	Electricity supply	Other industries	Households	Inventories	Exports	Environment	Total
Products	Coal			18 720						18 720
	Gasoline	1 050	210	70	980	840				3 150
	Electricity									
	Fuel wood					2 200				2 200
Total CO2 Emissions - energy related		1 050	210	18 790	980	3 040				24 070

4. NON ENERGY RELATED CO2 EMISSION

		Agriculture and forestry	Mining	Electricity supply	Other industries	Households	Inventories	Exports	Environment	Total
	Industrial processes				139					139

5. CO2 EMISSIONS ACCOUNTS - ALL EMISSIONS

		Agriculture and forestry	Mining	Electricity supply	Other industries	Households	Inventories	Exports	Environment	Total
	CO2 Emissions	1 050	210	18 790	1 119	3 040				24 209

