

# Trade of Fossil Fuels

## Worked Examples

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### Instructions

We recommend you first watch the tutorial videos on the trade of fossil fuels before using this workbook. You should then try to complete the example tasks using what you have learned there, before checking against the solutions provided. These examples are intended as reinforcement learning rather than the primary instruction tool.

For the following exercises, use any or all the data provided to calculate the trade account elements you can derive from the information given. The methods described in the solution section are not necessarily prescriptive but illustrate a reasonable way to proceed.

We provide here two examples, one based on a fictitious UNSD questionnaire on energy statistics, and one based on trade data that we retrieved from UN Comtrade. The values for the first example do not represent any specific country, nor do they pretend to be indicative of typical energy uses. Rather, they are relatively ‘simple’ numbers so that the learning

focuses on the process rather than the math. The values for the second example refer to Italy, which was chosen as a an example illustrative of the trade of complex products derived from fossil fuels.

It is fundamental that you first attempt to solve the exercise without looking at the solution. By doing so, you will maximize your learning experience and be ready to apply this knowledge to your country data.

## Exercise #1: the UNSD Energy Questionnaire

In this exercise, we will look through some data available in a fictitious UNSD Energy Questionnaire and try to fill in the data in the Material Flow Compiler file.

Assume that, for this first example, you have some specific conversion coefficients for Gasworks Gas (GG) and for Natural Gas (including liquid natural gas) (NG). Specifically, these conversion factors are 28 and 19, respectively.

Pretend that, when looking at the UNSD Energy Questionnaire (note that its official name is Annual Questionnaire on Energy Statistics (AQES). We abbreviate it to UNSD Energy Questionnaire for convenience). We first explore the reported data for coal and peat (Figure 1).

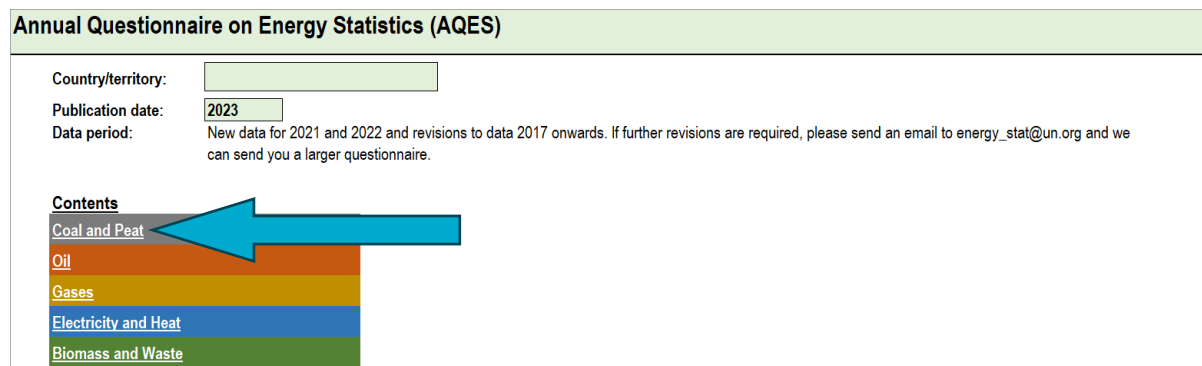


Figure 1 – Section of the UNSD Energy Questionnaire that we will first explore: Coal and Peat.

Scrolling through the tab labeled ‘Coal and Peat,’ you find the following data (from Table 1 to Table 16).

Table 1 – Coal and Peat; Hard coal data for 2020.

2	Hard Coal (CL); Metric tons, thousand (WSR)			Unit	2020 fn
3	CL01	Production		WSR	690
4	CL022	Receipts from other sources		WSR	80
5	CL03	Imports		WSR	580
6	CL04	Exports		WSR	350
7	CL051	International marine bunkers		WSR	40
8	CL06	Stock changes		WSR	-80
9	CLGA	Total energy supply		+CL01WSR	1040

Table 2 – Coal and Peat; Anthracite data for 2020.

64	<b>Anthracite (AT); Metric tons, thousand (WSR)</b>			<b>Unit</b>	<b>2020 fn</b>
65	AT01	Production		WSR	200
66	AT022	Receipts from other sources		WSR	120
67	AT03	Imports		WSR	540
68	AT04	Exports		WSR	325
69	AT051	International marine bunkers		WSR	0
70	AT06	Stock changes		WSR	100
71	<b>ATGA</b>	<b>Total energy supply</b>		<b>+AT01WSR</b>	<b>435</b>

Table 3 – Coal and Peat; Coking coal data for 2020.

126	<b>Coking coal (CC); Metric tons, thousand (WSR)</b>			<b>Unit</b>	<b>2020 fn</b>
127	CC01	Production		WSR	2200
128	CC022	Receipts from other sources		WSR	100
129	CC03	Imports		WSR	3500
130	CC04	Exports		WSR	220
131	CC051	International marine bunkers		WSR	50
132	CC06	Stock changes		WSR	0
133	<b>CCGA</b>	<b>Total energy supply</b>		<b>+CC01WSR</b>	<b>5530</b>

Table 4 – Coal and Peat; Other bituminous coal data for 2020.

188	<b>Other bituminous coal (OB); Metric tons, thousand (WSR)</b>			<b>Unit</b>	<b>2020 fn</b>
189	OB01	Production		WSR	150
190	OB022	Receipts from other sources		WSR	0
191	OB03	Imports		WSR	20
192	OB04	Exports		WSR	5
193	OB051	International marine bunkers		WSR	0
194	OB06	Stock changes		WSR	-30
195	<b>OBGA</b>	<b>Total energy supply</b>		<b>+OB01WSR</b>	<b>195</b>

Table 5 – Coal and Peat; Brown coal data for 2020.

250	<b>Brown Coal (LB); Metric tons, thousand (WSR)</b>			<b>Unit</b>	<b>2020 fn</b>
251	LB01	Production		WSR	200
252	LB022	Receipts from other sources		WSR	0
253	LB03	Imports		WSR	100
254	LB04	Exports		WSR	250
255	LB051	International marine bunkers		WSR	0
256	LB06	Stock changes		WSR	-50
257	<b>LBGA</b>	<b>Total energy supply</b>		<b>+LB01WSR</b>	<b>100</b>

Table 6 – Coal and Peat; Sub-bituminous coal data for 2020.

312	<b>Sub-bituminous coal (SB); Metric tons, thousand (WSR)</b>			<b>Unit</b>	<b>2020 fn</b>
313	SB01	Production		WSR	25
314	SB022	Receipts from other sources		WSR	0
315	SB03	Imports		WSR	0
316	SB04	Exports		WSR	20
317	SB051	International marine bunkers		WSR	0
318	SB06	Stock changes		WSR	0
319	<b>SBGA</b>	<b>Total energy supply</b>		<b>+SB01WSR</b>	<b>5</b>

Table 7 – Coal and Peat; Lignite data for 2020.

374	<b>Lignite (LN); Metric tons, thousand (WSR)</b>		<b>Unit</b>	<b>2020 fn</b>
375	LN01	Production	WSR	1100
376	LN022	Receipts from other sources	WSR	20
377	LN03	Imports	WSR	20
378	LN04	Exports	WSR	660
379	LN051	International marine bunkers	WSR	0
380	LN06	Stock changes	WSR	-80
381	<b>LNGA</b>	<b>Total energy supply</b>	<b>+LN01WSR</b>	<b>560</b>

Table 8 – Coal and Peat; Peat data for 2020.

436	<b>Peat (PT); Metric tons, thousand (WSR)</b>		<b>Unit</b>	<b>2020 fn</b>
437	PT01	Production	WSR	680
438	PT03	Imports	WSR	480
439	PT04	Exports	WSR	50
440	PT06	Stock changes	WSR	0
441	<b>PTGA</b>	<b>Total energy supply</b>	<b>+PT01WSR</b>	<b>1110</b>

Table 9 – Coal and Peat; Oil shale / oil sands data for 2020.

487	<b>Oil Shale / Oil Sands (OS); Metric tons, thousand (WSR)</b>		<b>Unit</b>	<b>2020 fn</b>
488	OS01	Production	WSR	90
489	OS022	Receipts from other sources	WSR	50
490	OS03	Imports	WSR	140
491	OS04	Exports	WSR	180
492	OS06	Stock changes	WSR	0
493	<b>OSGA</b>	<b>Total energy supply</b>	<b>+OS01WSR</b>	<b>100</b>

Table 10 – Coal and Peat; Coke oven coke data for 2020.

531	<b>Coke Oven Coke (OK); Metric tons, thousand (WSR)</b>		<b>Unit</b>	<b>2020 fn</b>
532	OK01	Production	WSR	500
533	OK022	Receipts from other sources	WSR	0
534	OK03	Imports	WSR	600
535	OK04	Exports	WSR	190
536	OK06	Stock changes	WSR	10
537	<b>OKGA</b>	<b>Total energy supply</b>	<b>+OK01WSR</b>	<b>900</b>

Table 11 – Coal and Peat; Gas coke data for 2020.

591	<b>Gas Coke (GK); Metric tons, thousand (WSR)</b>		<b>Unit</b>	<b>2020 fn</b>
592	GK01	Production	WSR	1870
593	GK022	Receipts from other sources	WSR	0
594	GK03	Imports	WSR	0
595	GK04	Exports	WSR	1460
596	GK06	Stock changes	WSR	0
597	<b>GKGA</b>	<b>Total energy supply</b>	<b>+GK01WSR</b>	<b>410</b>

Table 12 – Coal and Peat; Patent fuel data for 2020.

641	<b>Patent fuel (BC); Metric tons, thousand (WSR)</b>		<b>Unit</b>	<b>2020 fn</b>
642	BC01	Production	WSR	140
643	BC022	Receipts from other sources	WSR	50
644	BC03	Imports	WSR	10
645	BC04	Exports	WSR	40
646	BC06	Stock changes	WSR	0
647	<b>BCGA</b>	<b>Total energy supply</b>	<b>+BC01WSR</b>	<b>160</b>

Table 13 – Coal and Peat; Brown coal briquettes data for 2020.

696	Brown Coal Briquettes (BB); Metric tons, thousand (WSR)			Unit	2020 fn
697	BB01	Production		WSR	550
698	BB022	Receipts from other sources		WSR	40
699	BB03	Imports		WSR	30
700	BB04	Exports		WSR	330
701	BB06	Stock changes		WSR	0
702	<b>BBGA</b>	<b>Total energy supply</b>	<b>+BB01</b>	<b>WSR</b>	<b>290</b>

Table 14 – Coal and Peat; Peat products data for 2020.

754	Peat Products (BP); Metric tons, thousand (WSR)			Unit	2020 fn
755	BP01	Production		WSR	160
756	BP022	Receipts from other sources		WSR	20
757	BP03	Imports		WSR	940
758	BP04	Exports		WSR	10
759	BP051	International marine bunkers		WSR	30
760	BP06	Stock changes		WSR	0
761	<b>BPGA</b>	<b>Total energy supply</b>	<b>+BP01</b>	<b>WSR</b>	<b>1080</b>

Table 15 – Coal and Peat; Coal tar data for 2020.

815	Coal Tar (CT); Metric tons, thousand (WSR)			Unit	2020 fn
816	CT01	Production		WSR	900
817	CT022	Receipts from other sources		WSR	0
818	CT03	Imports		WSR	0
819	CT04	Exports		WSR	690
820	CT06	Stock changes		WSR	0
821	<b>CTGA</b>	<b>Total energy supply</b>	<b>+CT01</b>	<b>WSR</b>	<b>210</b>

Table 16 – Coal and Peat; Other coal products data for 2020.

862	Other coal products (CP); Metric tons, thousand (WSR)			Unit	2020 fn
863	CP01	Production		WSR	280
864	CP022	Receipts from other sources		WSR	25
865	CP03	Imports		WSR	150
866	CP04	Exports		WSR	0
867	CP051	International marine bunkers		WSR	0
868	CP06	Stock changes		WSR	-90
869	<b>CPGA</b>	<b>Total energy supply</b>	<b>+CP01</b>	<b>WSR</b>	<b>545</b>

After the ‘Coal and Peat’ tab, we now look at the ‘Oil’ tab (Figure 2).

**Annual Questionnaire on Energy Statistics (AQES)**

Country/territory:

Publication date:

Data period:  New data for 2021 and 2022 and revisions to data 2017 onwards. If further revisions are required, please send an email to energy\_stat@un.org and we can send you a larger questionnaire.

**Contents**

- Coal and Peat
- Oil** ←
- Gases
- Electricity and Heat
- Biomass and Waste

Figure 2 – Section of the UNSD Energy Questionnaire that we will explore second: Oil.

And the following tables show what you find in this tab (from Table 17 to Table 41).

Table 17 – Oil; Conventional crude oil data for 2020.

2	<b>Conventional crude oil (CR); Metric tons, thousand (WSR)</b>			<b>Unit</b>	<b>2020 fn</b>
3	CR01	Production		WSR	4200
4	CR03	Imports		WSR	200
5	CR04	Exports		WSR	2850
6	CR06	Stock changes		WSR	-50
7	<b>CRGA</b>	<b>Total energy supply</b>	<b>+CR01</b>	<b>WSR</b>	<b>1600</b>

Table 18 – Oil; Natural gas liquids data for 2020.

56	<b>Natural Gas Liquids (GL); Metric tons, thousand (WSR)</b>			<b>Unit</b>	<b>2020 fn</b>
57	GL01	Production		WSR	490
58	GL03	Imports		WSR	90
59	GL04	Exports		WSR	260
60	GL06	Stock changes		WSR	0
61	<b>GLGA</b>	<b>Total energy supply</b>	<b>+GL01</b>	<b>WSR</b>	<b>320</b>

Table 19 – Oil; Additives and oxygenates data for 2020.

113	<b>Additives and Oxygenates (AO); Metric tons, thousand (WSR)</b>			<b>Unit</b>	<b>2020 fn</b>
114	AO01	Production		WSR	0
115	AO022	Receipts from other sources		WSR	0
116	AO03	Imports		WSR	150
117	AO04	Exports		WSR	15
118	AO06	Stock changes		WSR	0
119	<b>AOGA</b>	<b>Total energy supply</b>	<b>+AO01</b>	<b>WSR</b>	<b>135</b>

Table 20 – Oil; Other hydrocarbons data for 2020.

124	<b>Other hydrocarbons (OH); Metric tons, thousand (WSR)</b>			<b>Unit</b>	<b>2020 fn</b>
125	OH01	Production		WSR	100
126	OH022	Receipts from other sources		WSR	30
127	OH022H	Of which: Hydrogen		WSR	10
128	OH03	Imports		WSR	20
129	OH04	Exports		WSR	40
130	OH06	Stock changes		WSR	10
131	<b>OHGA</b>	<b>Total energy supply</b>	<b>+OH01</b>	<b>WSR</b>	<b>100</b>

Table 21 – Oil; Aviation gasoline data for 2020.

204	<b>Aviation Gasoline (AV); Metric tons, thousand (WSR)</b>			<b>Unit</b>	<b>2020 fn</b>
205	AV01	Production	<b>+AV01</b>	WSR	<b>180</b>
206	AV013	From refineries		WSR	55
207	AV014	From plants		WSR	125
208	AV022	Receipts from other sources		WSR	80
209	AV03	Imports		WSR	60
210	AV04	Exports		WSR	10
211	AV052	International aviation bunkers		WSR	25
212	AV06	Stock changes		WSR	0
213	<b>AVGA</b>	<b>Total energy supply</b>	<b>+AV01</b>	<b>WSR</b>	<b>285</b>

Table 22 – Oil; Motor gasoline data for 2020.

240	<b>Motor Gasoline (MO); Metric tons, thousand (WSR)</b>		<b>Unit</b>	<b>2020 fn</b>
241	MO01	Production	+MO0 WSR	8350
242	MO013	From refineries	WSR	5200
243	MO014	From plants	WSR	3150
244	MO022	Receipts from other sources	WSR	0
245	MO03	Imports	WSR	500
246	MO04	Exports	WSR	2580
247	MO051	International marine bunkers	WSR	450
248	MO052	International aviation bunkers	WSR	300
249	MO06	Stock changes	WSR	-60
250	<b>MOGA</b>	<b>Total energy supply</b>	<b>+MO0 WSR</b>	<b>5580</b>

Table 23 – Oil; Motor gasoline of which biogasoline data for 2020.

303	<b>Of which: biogasoline (ZG); Metric tons, thousand (WSR)</b>		<b>Unit</b>	<b>2020 fn</b>
304	ZG022	Receipts from other sources	WSR	0
305	ZG03	Imports	WSR	100
306	ZG04	Exports	WSR	850
307	ZG051	International marine bunkers	WSR	0
308	ZG052	International aviation bunkers	WSR	0
309	ZG06	Stock changes	WSR	0
310	<b>ZGGA</b>	<b>Total energy supply</b>	<b>+ZG02 WSR</b>	<b>-750</b>

Table 24 – Oil; Gasoline-type jet fuel data for 2020.

363	<b>Gasoline-type jet fuel (GJ); Metric tons, thousand (WSR)</b>		<b>Unit</b>	<b>2020 fn</b>
364	GJ01	Production	+GJ01 WSR	670
365	GJ013	From refineries	WSR	550
366	GJ014	From plants	WSR	120
367	GJ022	Receipts from other sources	WSR	0
368	GJ03	Imports	WSR	60
369	GJ04	Exports	WSR	95
370	GJ052	International aviation bunkers	WSR	150
371	GJ06	Stock changes	WSR	-60
372	<b>GJGA</b>	<b>Total energy supply</b>	<b>+GJ01 WSR</b>	<b>545</b>

Table 25 – Oil; Kerosene-type jet fuel data for 2020.

384	<b>Kerosene-type Jet Fuel (JF); Metric tons, thousand (WSR)</b>		<b>Unit</b>	<b>2020 fn</b>
385	JF01	Production	+JF01 WSR	750
386	JF013	From refineries	WSR	330
387	JF014	From plants	WSR	420
388	JF022	Receipts from other sources	WSR	50
389	JF03	Imports	WSR	0
390	JF04	Exports	WSR	220
391	JF051	International marine bunkers	WSR	100
392	JF052	International aviation bunkers	WSR	50
393	JF06	Stock changes	WSR	0
394	<b>JFGA</b>	<b>Total energy supply</b>	<b>+JF01 WSR</b>	<b>430</b>

Table 26 – Oil; Kerosene-type jet fuel of which bio jet kerosene data for 2020.

437	<b>Of which: bio jet kerosene (ZJ); Metric tons, thousand (WSR)</b>		<b>Unit</b>	<b>2020 fn</b>
438	ZJ022	Receipts from other sources	WSR	50
439	ZJ03	Imports	WSR	0
440	ZJ04	Exports	WSR	80
441	ZJ052	International aviation bunkers	WSR	0
442	ZJ06	Stock changes	WSR	-50
443	<b>ZJGA</b>	<b>Total energy supply</b>	<b>+ZJ02 WSR</b>	<b>20</b>

Table 27 – Oil; Other kerosene data for 2020.

485	<b>Other kerosene (KR); Metric tons, thousand (WSR)</b>		<b>Unit</b>	<b>2020 fn</b>
486	KR01	Production	+KR01 WSR	350
487	KR013	From refineries	WSR	220
488	KR014	From plants	WSR	130
489	KR022	Receipts from other sources	WSR	20
490	KR03	Imports	WSR	630
491	KR04	Exports	WSR	290
492	KR051	International marine bunkers	WSR	30
493	KR052	International aviation bunkers	WSR	100
494	KR06	Stock changes	WSR	0
495	<b>KRGA</b>	<b>Total energy supply</b>	<b>+KR01 WSR</b>	<b>580</b>

Table 28 – Oil; Gas oil / diesel oil data for 2020.

550	<b>Gas Oil/ Diesel Oil (DL); Metric tons, thousand (WSR)</b>		<b>Unit</b>	<b>2020 fn</b>
551	DL01	Production	+DL01 WSR	3780
552	DL013	From refineries	WSR	1580
553	DL014	From plants	WSR	2200
554	DL022	Receipts from other sources	WSR	0
555	DL03	Imports	WSR	450
556	DL04	Exports	WSR	1790
557	DL051	International marine bunkers	WSR	200
558	DL06	Stock changes	WSR	150
559	<b>DLGA</b>	<b>Total energy supply</b>	<b>+DL01 WSR</b>	<b>2090</b>

Table 29 – Oil; Gas oil / diesel oil of which biodiesel data for 2020.

617	<b>Of which: biodiesel (ZD); Metric tons, thousand (WSR)</b>		<b>Unit</b>	<b>2020 fn</b>
618	ZD022	Receipts from other sources	WSR	0
619	ZD03	Imports	WSR	300
620	ZD04	Exports	WSR	60
621	ZD051	International marine bunkers	WSR	0
622	ZD06	Stock changes	WSR	50
623	<b>ZDGA</b>	<b>Total energy supply</b>	<b>+ZD02 WSR</b>	<b>190</b>

Table 30 – Oil; Fuel oil data for 2020.

680	<b>Fuel Oil (RF); Metric tons, thousand (WSR)</b>		<b>Unit</b>	<b>2020 fn</b>
681	RF01	Production	+RF01 WSR	1520
682	RF013	From refineries	WSR	890
683	RF014	From plants	WSR	630
684	RF022	Receipts from other sources	WSR	150
685	RF03	Imports	WSR	2780
686	RF04	Exports	WSR	260
687	RF051	International marine bunkers	WSR	30
688	RF06	Stock changes	WSR	550
689	<b>RFGA</b>	<b>Total energy supply</b>	<b>+RF01 WSR</b>	<b>3610</b>

Table 31 – Oil; Liquefied petroleum gas data for 2020.

747	<b>Liquefied Petroleum Gas (LP); Metric tons, thousand (WSR)</b>		<b>Unit</b>	<b>2020 fn</b>
748	LP01	Production	+LP01 WSR	1590
749	LP013	From refineries	WSR	850
750	LP014	From plants	WSR	740
751	LP022	Receipts from other sources	WSR	60
752	LP03	Imports	WSR	690
753	LP04	Exports	WSR	850
754	LP06	Stock changes	WSR	-90
755	<b>LPGA</b>	<b>Total energy supply</b>	<b>+LP01 WSR</b>	<b>1580</b>



Table 32 – Oil; Refinery feedstocks data for 2020.

812	Refinery Feedstocks (FS); Metric tons, thousand (WSR)		Unit	2020	fn
813	FS01	Production	+FS01	WSR	180
814	FS013	From refineries		WSR	180
815	FS022	Receipts from other sources		WSR	20
816	FS03	Imports		WSR	120
817	FS04	Exports		WSR	20
818	FS06	Stock changes		WSR	0
819	<b>FSGA</b>	<b>Total energy supply</b>	<b>+FS01</b>	<b>WSR</b>	<b>300</b>

Table 33 – Oil; Naphtha data for 2020.

830	Naphtha (NP); Metric tons, thousand (WSR)		Unit	2020	fn
831	NP01	Production	+NP01	WSR	720
832	NP013	From refineries		WSR	330
833	NP014	From plants		WSR	390
834	NP022	Receipts from other sources		WSR	40
835	NP03	Imports		WSR	370
836	NP04	Exports		WSR	0
837	NP06	Stock changes		WSR	200
838	<b>NPGA</b>	<b>Total energy supply</b>	<b>+NP01</b>	<b>WSR</b>	<b>930</b>

Table 34 – Oil; White spirit and special boiling point industrial spirits data for 2020.

886	White spirit and special boiling point industrial spirits (WS); Metric tons, thousand (WSR)		Unit	2020	fn
887	WS01	Production	+WS01	WSR	130
888	WS013	From refineries		WSR	40
889	WS014	From plants		WSR	90
890	WS022	Receipts from other sources		WSR	0
891	WS03	Imports		WSR	20
892	WS04	Exports		WSR	10
893	WS06	Stock changes		WSR	0
894	<b>WSGA</b>	<b>Total energy supply</b>	<b>+WS01</b>	<b>WSR</b>	<b>140</b>

Table 35 – Oil; Lubricants data for 2020.

929	Lubricants (LU); Metric tons, thousand (WSR)		Unit	2020	fn
930	LU01	Production	+LU01	WSR	210
931	LU013	From refineries		WSR	60
932	LU014	From plants		WSR	150
933	LU022	Receipts from other sources		WSR	20
934	LU03	Imports		WSR	340
935	LU04	Exports		WSR	160
936	LU051	International marine bunkers		WSR	10
937	LU06	Stock changes		WSR	-50
938	<b>LUGA</b>	<b>Total energy supply</b>	<b>+LU01</b>	<b>WSR</b>	<b>450</b>

Table 36 – Oil; Bitumen data for 2020.

976	Bitumen (BT); Metric tons, thousand (WSR)		Unit	2020	fn
977	BT01	Production	+BT01	WSR	120
978	BT013	From refineries		WSR	70
979	BT014	From plants		WSR	50
980	BT022	Receipts from other sources		WSR	0
981	BT03	Imports		WSR	220
982	BT04	Exports		WSR	60
983	BT051	International marine bunkers		WSR	0
984	BT06	Stock changes		WSR	80
985	<b>BTGA</b>	<b>Total energy supply</b>	<b>+BT01</b>	<b>WSR</b>	<b>200</b>

Table 37 – Oil; Paraffin waxes data for 2020.

1029	<b>Paraffin waxes (PW); Metric tons, thousand (WSR)</b>			<b>Unit</b>	<b>2020 fn</b>
1030	PW01	Production	+PW0	WSR	200
1031	PW013	From refineries		WSR	10
1032	PW014	From plants		WSR	190
1033	PW022	Receipts from other sources		WSR	60
1034	PW03	Imports		WSR	280
1035	PW04	Exports		WSR	500
1036	PW06	Stock changes		WSR	-60
1037	<b>PWGA</b>	<b>Total energy supply</b>	<b>+PW0</b>	<b>WSR</b>	<b>100</b>

Table 38 – Oil; Petroleum coke data for 2020.

1066	<b>Petroleum Coke (PK); Metric tons, thousand (WSR)</b>			<b>Unit</b>	<b>2020 fn</b>
1067	PK01	Production	+PK01	WSR	1540
1068	PK013	From refineries		WSR	980
1069	PK014	From plants		WSR	560
1070	PK022	Receipts from other sources		WSR	0
1071	PK03	Imports		WSR	390
1072	PK04	Exports		WSR	860
1073	PK06	Stock changes		WSR	-40
1074	<b>PKGA</b>	<b>Total energy supply</b>	<b>+PK01</b>	<b>WSR</b>	<b>1110</b>

Table 39 – Oil; Refinery gas data for 2020.

1121	<b>Refinery Gas (RG); Metric tons, thousand (WSR)</b>			<b>Unit</b>	<b>2020 fn</b>
1122	RG01	Production	+RG0	WSR	2250
1123	RG013	From refineries		WSR	2250
1124	RG022	Receipts from other sources		WSR	30
1125	RG06	Stock changes		WSR	-310
1126	<b>RGGA</b>	<b>Total energy supply</b>	<b>+RG0</b>	<b>WSR</b>	<b>2590</b>

Table 40 – Oil; Ethane data for 2020.

1175	<b>Ethane (EA); Metric tons, thousand (WSR)</b>			<b>Unit</b>	<b>2020 fn</b>
1176	EA01	Production	+EA01	WSR	920
1177	EA013	From refineries		WSR	640
1178	EA014	From plants		WSR	280
1179	EA022	Receipts from other sources		WSR	0
1180	EA03	Imports		WSR	80
1181	EA04	Exports		WSR	690
1182	EA06	Stock changes		WSR	-60
1183	<b>EAGA</b>	<b>Total energy supply</b>	<b>+EA01</b>	<b>WSR</b>	<b>370</b>

Table 41 – Oil; Other oil products not elsewhere classified data for 2020.

1221	<b>Other oil products n.e.c. (PP); Metric tons, thousand (WSR)</b>			<b>Unit</b>	<b>2020 fn</b>
1222	PP01	Production	+PP01	WSR	780
1223	PP013	From refineries		WSR	480
1224	PP014	From plants		WSR	300
1225	PP022	Receipts from other sources		WSR	0
1226	PP03	Imports		WSR	20
1227	PP04	Exports		WSR	670
1228	PP051	International marine bunkers		WSR	20
1229	PP06	Stock changes		WSR	-90
1230	<b>PPGA</b>	<b>Total energy supply</b>	<b>+PP01</b>	<b>WSR</b>	<b>200</b>

After the 'Oil' tab, we now move onto the 'Gases' tab.

## Annual Questionnaire on Energy Statistics (AQES)

Country/territory:

Publication date:

Data period: New data for 2021 and 2022 and revisions to data 2017 onwards. If further revisions are required, please send an email to [energy\\_stat@un.org](mailto:energy_stat@un.org) and we can send you a larger questionnaire.

### Contents

Coal and Peat	
Oil	
Gases	←
Electricity and Heat	
Biomass and Waste	

Figure 3 – Section of the UNSD Energy Questionnaire that we will explore next: Gases.

And the following tables show what you find in this tab (from Table 42 to Table 44).

Table 42 – Gases; Natural gas data for 2020.

2	Natural Gas (including LNG) (NG); Terajoules (HSO)		Unit	2020	fn
3	NG01	Production	HSO	54500	
4	NG022	Receipts from other sources	HSO	6500	
5	NG03	Imports	HSO	88700	
6	NG04	Exports	HSO	49500	
7	NG051	International marine bunkers	HSO	3650	
8	NG052	International aviation bunkers	HSO	8700	
9	NG06	Stock changes	HSO	1560	
10	<b>NGGA</b>	<b>Total energy supply</b>	<b>+NG0</b> HSO	<b>86290</b>	

Table 43 – Gases; Gasworks gas data for 2020.

76	Gasworks Gas (GG); Terajoules (HSO)		Unit	2020	fn
77	GG01	Production	HSO	29800	
78	GG022	Receipts from other sources	HSO	0	
79	GG03	Imports	HSO	45100	
80	GG04	Exports	HSO	39800	
81	GG06	Stock changes	HSO	-5400	
82	<b>GGA</b>	<b>Total energy supply</b>	<b>+GG0</b> HSO	<b>40500</b>	

Table 44 – Gases; Goke oven gas data for 2020.

131	Coke Oven Gas (OG); Terajoules (HSO)		Unit	2020	fn
132	OG01	Production	HSO	78600	
133	OG022	Receipts from other sources	HSO	9000	
134	OG06	Stock changes	HSO	-8200	
135	<b>OGGA</b>	<b>Total energy supply</b>	<b>+OG0</b> HSO	<b>95800</b>	

Note that in reality you might encounter data in the following tables:

- ‘Oil’ tab: Total refinery output (GR).
- ‘Gases’ tab: Blast furnace gas (BG); and Other recovered gases (BO).
- ‘Electricity and Heat’ tab: Electricity, net installed capacity of electric power plants (EC); Total Electricity (EL); Thermal Electricity (ET); Heat (ST); Heat from

combustible fuels (HF); Direct use of geothermal heat (DG); and Direct use of solar thermal heat (DS).

- ‘Biomass and Waste’ tab: Fuelwood (FW); Charcoal (CH); Bagasse (BS); Animal waste (AW); Other Vegetal Material and Residues (VW); Municipal Wastes (MW); Industrial Waste (IW); Black liquor (PU); Biogasoline (AL); Biodiesel (BD); Bio jet kerosene (BJ); Other liquid biofuels (OL); Biogases (BI); and Uranium (UR).

None of these categories requires to be reported in the trade of fossil fuels, so you can disregard them for this specific accounting task.

These tables are sufficient to compile the data for trade of fossil fuels in the tabs labeled ‘Table\_B’ and ‘Table\_C’ of the Compiler up until category B.4.3 and C.4.3 (i.e., all traded fossil fuels excluding compound products). Remember, the best way to fill in fossil fuel trade data in Tables B and C is to rely on the supporting tabs ‘Fossil Fuels Tool\_Imp’ and ‘Fossil Fuels Tool\_Exp’ of the Compiler.

Once you have finished filling in fossil fuel data, verify your answers in the answer section of this document. We provide a step-by-step guide you can follow.

## Exercise #2

In this exercise, we will focus on those materials that need to be recorded in categories B.4.compound and C.4.compound (remember, category B.xxx records imports, and C.xxx records exports). These two categories record imports and exports of materials that, while produced with mixed products, are primarily derived from fossil fuels (e.g., vehicle tires).

As a reminder, you can use the Compiler’s tab ‘Corresp HS2017\_Trade’ to look at the correspondence between the HS2017 trade codes and the economy-wide MFA codes, and the ‘Corresp SITC Rev.4\_Trade’ tab to check the correspondence between the SITC Revision 4 codes and the economy-wide MFA codes. In this exercise, we will use the HS2017 as an example.

We will focus on trade category ‘Woven fabrics of artificial staple fibers, containing 85% or more by weight of artificial staple fibers, unbleached or bleached,’ which corresponds to the HS2017 category 5516.11 (Table 45).

Table 45 – Extract of tab ‘Corresp HS2017\_Trade’ of the Compiler that shows the economy-wide MFA categories corresponding to the HS2017 category.

3926	55.16	Woven fabrics of artificial staple fibres	B.4.compound C.4.compound Mixed / compounded prod
3927		Containing 85% or more by weight of artificial staple fibres	B.4.compound C.4.compound Mixed / compounded prod
3928	5516.11	-- Unbleached or bleached	B.4.compound C.4.compound Mixed / compounded prod
3929	5516.12	-- Dyed	B.4.compound C.4.compound Mixed / compounded prod
3930	5516.13	-- Of yarns of different colours	B.4.compound C.4.compound Mixed / compounded prod

Searching on the UN Comtrade database, and using Italy as an example, we see the reported imports and exports for 2020 (Table 46). In this table, we can confirm that Italy is the country that is the trading partner (column labeled as ‘Reporter’). Furthermore, we can confirm that these data encompass all trade because under the column ‘Partner’ we can see that we have the whole world and not one specific country. In other words, all exports to any country and territory in the world are reported. We can confirm that we are looking at the correct commodity code under the ‘Commodity Code’ column. Finally, remember that imports are labeled with the letter ‘M’ under the ‘Trade Flow’ column, while exports are marked with the letter ‘X’ in the same column.

Table 46 – Excerpt from the UN Comtrade database for the imports and exports of category 551611 for Italy in 2020.

Period	Trade Flow	Reporter	Partner	2nd Partner	Customs Desc	Transport Mode	Commodity Code	Trade Value (US\$)	Net Weight(kg)	Gross Weight	Qty Unit	Qty	Alternate Quantity unit	Alternate Quantity
2020	M	Italy	World	World	TOTAL CPC	TOTAL MOT	551611	\$23,372,467			N/A		m²	26952620
2020	X	Italy	World	World	TOTAL CPC	TOTAL MOT	551611	\$6,296,708	528302		kg	528302	m²	4476087

Given the data reported in Table 46, your goal is to fill in data for categories B.4.compound and C.4.compound.

## Solution to Exercise #1

### Imports

The first step is to fill in the imports and exports of fossil fuels in the tabs ‘Fossil Fuels Tool\_Imp’ and ‘Fossil Fuels Tool\_Exp’ of the Compiler. In all the tables we report in Exercise #1 (from Table 1 to Table 44), you can find imports and exports. Because we are only interested in trade, we can disregard all the other values that are reported.

You can simply copy the data present in the import field of these tables into the column H of the tabs ‘Fossil Fuels Tool\_Imp’ of the Compiler. You can match the two-letter UNSD Code that you see in the headers of the tables with the UNSD code reported in column B. Here is what the import tab looks like after copying in all the data in column H ‘Input (UNSD Data).’ (Please note that several columns have been hidden for practicality. Your version of the compiler might look slightly different, but it should essentially behave similarly.)

Table 47 – Preliminary data filled in the ‘Fossil Fuels Tool\_Imp’ tab of the Compiler.

	A	B	H	I
12	UNSD Questionnaire	UNSD Code	Input (UNSD Data)	Output (MFA, tonnes)
13	Brown Coal Briquettes (BB); Metric tons, thousand (WSR)	BB	30	30000
14	Brown Coal (LB); Metric tons, thousand (WSR)	LB	100	100000
15	Lignite (LN); Metric tons, thousand (WSR)	LN	20	20000
16	Sub-bituminous coal (SB); Metric tons, thousand (WSR)	SB	0	0
17	Anthracite (AT); Metric tons, thousand (WSR)	AT	540	540000
18	Coking coal (CC); Metric tons, thousand (WSR)	CC	3500	3500000
19	Hard Coal (CL); Metric tons, thousand (WSR)	CL	580	580000
20	Other bituminous coal (OB); Metric tons, thousand (WSR)	OB	20	20000
21	Peat Products (BP); Metric tons, thousand (WSR)	BP	940	940000
22	Peat (PT); Metric tons, thousand (WSR)	PT	480	480000
23	Patent fuel (BC); Metric tons, thousand (WSR)	BC	10	10000
24	Other coal products (CP); Metric tons, thousand (WSR)	CP	150	150000
25	Coal Tar (CT); Metric tons, thousand (WSR)	CT	0	0
26	Gasworks Gas (GG); Terajoules (HSO)	GG	45100	1217700
27	Gas Coke (GK); Metric tons, thousand (WSR)	GK	0	0
28	Coke Oven Gas (OG); Terajoules (HSO)	OG	0	0
29	Additives and Oxygenates (AO); Metric tons, thousand (WSR)	AO	150	150000
30	Aviation Gasoline (AV); Metric tons, thousand (WSR)	AV	60	60000
31	Bitumen (BT); Metric tons, thousand (WSR)	BT	220	220000
32	Conventional crude oil (CR); Metric tons, thousand (WSR)	CR	200	200000
33	Gas Oil/ Diesel Oil (DL); Metric tons, thousand (WSR)	DL	450	450000
34	Refinery Feedstocks (FS); Metric tons, thousand (WSR)	FS	120	120000
35	Gasoline-type jet fuel (GJ); Metric tons, thousand (WSR)	GJ	60	60000
36	Natural Gas Liquids (GL); Metric tons, thousand (WSR)	GL	90	90000
37	Kerosene-type Jet Fuel (JF); Metric tons, thousand (WSR)	JF	0	0
38	Other kerosene (KR); Metric tons, thousand (WSR)	KR	630	630000
39	Liquified Petroleum Gas (LP); Metric tons, thousand (WSR)	LP	690	690000
40	Lubricants (LU); Metric tons, thousand (WSR)	LU	340	340000
41	Motor Gasoline (MO); Metric tons, thousand (WSR)	MO	500	500000
42	Naphtha (NP); Metric tons, thousand (WSR)	NP	370	370000
43	Other hydrocarbons (OH); Metric tons, thousand (WSR)	OH	20	20000
44	Coke Oven Coke (OK); Metric tons, thousand (WSR)	OK	600	600000
45	Petroleum Coke (PK); Metric tons, thousand (WSR)	PK	390	390000
46	Other oil products n.e.c. (PP); Metric tons, thousand (WSR)	PP	20	20000
47	Paraffin waxes (PW); Metric tons, thousand (WSR)	PW	280	280000
48	Fuel Oil (RF); Metric tons, thousand (WSR)	RF	2780	2780000
49	White spirit and special boiling point industrial spirits (WS); Metric tons, thousand (WSR)	WS	20	20000
50	Of which: biodiesel (ZD); Metric tons, thousand (WSR)	ZD	300	-300000
51	Of which: biogasoline (ZG); Metric tons, thousand (WSR)	ZG	100	-100000
52	Of which: bio jet kerosene (ZJ); Metric tons, thousand (WSR)	ZJ	0	0
53	Ethane (EA); Metric tons, thousand (WSR)	EA	80	80000
54	Natural Gas (including LNG) (NG); Terajoules (HSO)	NG	88700	1774000
55	Refinery Gas (RG); Metric tons, thousand (WSR)	RG	0	0
56	Oil Shale / Oil Sands (OS); Metric tons, thousand (WSR)	OS	140	140000
57	Blast Furnace Gas (BG); Terajoules (HSO)	BG		NA
58	Other recovered gases (BO); Terajoules (HSO)	BO		NA
59	Total Refinery Output (GR); Metric tons, thousand (WSR)	GR		NA

Table 47 displays the ‘Fossil Fuels Tool\_Imp’ with the data copied in. But these data are converted with the default conversion factors. In Exercise #1, we said that there are domestic conversion factors that should be applied to Gasworks Gas (GG), which has a local conversion factor of 28, and for Natural Gas (including liquified natural gas) (NG), which has a local conversion factor of 19. After typing these numbers in cells F26 and F54, we obtain the following results.

Table 48 – Gasworks Gas (GG) data converted with a local conversion factor.

UNSD Code	Default ConvFactor	Local ConvFactor	ConvFactor applied	Input (UNSD Data)	Output (MFA, tonnes)
GG	27	28	28	45100	1262800

Table 49 – Natural Gas (including liquid natural gas) (NG) data converted with a local conversion factor.

UNSD Code	Default ConvFactor	Local ConvFactor	ConvFactor applied	Input (UNSD Data)	Output (MFA, tonnes)
NG	20	19	19	88700	1685300

If you compare the results of the ‘Output (MFA, tonnes) of Table 48 and Table 49 with those displayed in Table 47, you can notice that the mass of Gasworks Gas went from 1,217,700 t to 1,262,800 t, and the mass of Natural Gas (including liquefied natural gas) went from 1,774,000 t to 1,685,300 t.

At this point you can refresh the pivot table at the bottom of the ‘Fossil Fuels Tool\_Imp’ tab (please refer to the videos to see how). Once you refresh the pivot table, it will look like the results displayed in Table 50 of this document.

Table 50 – Summary of import data.

70	<b>Summary report</b>	
71	This section summarizes the results as they should be inputted in the 'Table_B' tab. Some values, like totals, will be at	
72	<b>IMPORTANT:</b> refresh this table by selecting it, click on top the 'PivotTable Analyze' tab, then click on the 'Refresh' but	
73	<b>Row Labels</b>	<b>Sum of Output (MFA, tonnes)</b>
74	B.4.1.1.1	150000
75	B.4.1.1.2	0
76	B.4.1.2.1	540000
77	B.4.1.2.2	3500000
78	B.4.1.2.3	600000
79	B.4.1.3	1420000
80	B.4.1.4	2022800
81	B.4.2.1	6990000
82	B.4.2.2	1765300
83	B.4.3	140000
84	N/A	0
85	<b>Grand Total</b>	<b>17128100</b>

You can now proceed to copy these data into the tab ‘Table\_B.’ (Please note that several rows and columns are hidden for convenience.)

Table 51 – The compiled import data for fossil fuels.

	A	B	M
1	<b>Table_B - Imports of materials</b>		
2	<b>(tonnes)</b>		
3	Material category	Description	2020
65	<b>B.4</b>	<b>FOSSIL FUELS</b>	17128100
66	<b>B.4.1</b>	<b>Coal and peat</b>	8232800
67	B.4.1.1	Brown coal	150000
68	B.4.1.1.1	Lignite (brown coal)	150000
69	B.4.1.1.2	Other sub-bituminous coal	0
70	B.4.1.2	Hard coal	4640000
71	B.4.1.2.1	Anthracite	540000
72	B.4.1.2.2	Coking coal	3500000
73	B.4.1.2.3	Other bituminous coal	600000
74	B.4.1.3	Peat	1420000
75	B.4.1.4	Coal derived products n.e.c.	2022800
76	<b>B.4.2</b>	<b>Conventional petroleum and gas</b>	8755300
77	B.4.2.1	Crude oil and liquid petroleum products	6990000
78	B.4.2.2	Natural gas and gaseous petroleum products	1765300
79	<b>B.4.3</b>	<b>Oil shale and tar sands</b>	140000
80	<b>B.4.compound</b>	<b>Mixed / compounded products mainly from fossil fuels</b>	
81	<b>B.5</b>	<b>MIXED / COMPLEX PRODUCTS n.e.c.</b>	
82	<b>B.6</b>	<b>WASTE FOR FINAL TREATMENT AND DISPOSAL</b>	
83	<b>TOTAL IMPORTS OF MATERIALS</b>		<b>17,128,100</b>

Ultimately, based on the UNSD Energy Questionnaire, this fictitious country imported 17,128,100 t of fossil fuels.

## Exports

The calculation for the exports is exactly the same of the imports. For this reason, we report here only the solution. Remember that the Compiler’s tab ‘Fossil Fuels Tool\_Exp’ can aid you in preparing the data. The data should ultimately be reported in the tab ‘Table\_C’ of the Compiler.

The following Table 52 displays the tab ‘Fossil Fuels Tool\_Exp’ filled in with the data provided in this exercise. The data were then summarized in the pivot table at the bottom of the tab.

Finally, these data were reported in ‘Table\_C’ of the Compiler (see Table 53 of this document).



Table 52 – The filled ‘Fossil Fuels Tool\_Exp’ of the Compiler with the data provided in Exercise #1.

UNSD Code	Local ConvFactor	ConvFactor applied	Input (UNSD Data)	Output (MFA, tonnes)
BB		1000	330	330000
LB		1000	250	250000
LN		1000	660	660000
SB		1000	20	20000
AT		1000	325	325000
CC		1000	220	220000
CL		1000	350	350000
OB		1000	5	5000
BP		1000	10	10000
PT		1000	50	50000
BC		1000	40	40000
CP		1000	0	0
CT		1000	690	690000
GG	28	28	39800	1114400
GK		1000	1460	1460000
OG		27	0	0
AO		1000	15	15000
AV		1000	10	10000
BT		1000	60	60000
CR		1000	2850	2850000
DL		1000	1790	1790000
FS		1000	20	20000
GJ		1000	95	95000
GL		1000	260	260000
JF		1000	220	220000
KR		1000	290	290000
LP		1000	850	850000
LU		1000	160	160000
MO		1000	2580	2580000
NP		1000	0	0
OH		1000	40	40000
OK		1000	190	190000
PK		1000	860	860000
PP		1000	670	670000
PW		1000	500	500000
RF		1000	260	260000
WS		1000	10	10000
ZD		-1000	60	-60000
ZG		-1000	850	-850000
ZJ		-1000	80	-80000
EA		1000	690	690000
NG	19	19	49500	940500
RG		1000	0	0
OS		1000	180	180000
BG		N/A		NA
BO		N/A		NA
GR		N/A		NA

Table 53 – ‘Table\_C’ of the Compiler filled with the data provided in Exercise #1. Note that several rows and columns are hidden for convenience.

	A	B	M
1	<b>Table_C - Exports of materials</b>		
2	<b>(tonnes)</b>		
3	Material category	Description	2020
65	<b>C.4</b>	<b>FOSSIL FUELS</b>	18074900
66	<b>C.4.1</b>	<b>Coal and peat</b>	4254400
67	C.4.1.1	Brown coal	1260000
68	C.4.1.1.1	Lignite (brown coal)	1240000
69	C.4.1.1.2	Other sub-bituminous coal	20000
70	C.4.1.2	Hard coal	900000
71	C.4.1.2.1	Anthracite	325000
72	C.4.1.2.2	Coking coal	220000
73	C.4.1.2.3	Other bituminous coal	355000
74	C.4.1.3	Peat	60000
75	C.4.1.4	Coal derived products n.e.c.	2034400
76	<b>C.4.2</b>	<b>Conventional petroleum and gas</b>	13640500
77	C.4.2.1	Crude oil and liquid petroleum products	12010000
78	C.4.2.2	Natural gas and gaseous petroleum products	1630500
79	<b>C.4.3</b>	<b>Oil shale and tar sands</b>	180000
80	<b>C.4.compound</b>	<b>Mixed / compounded products mainly from fossil fuels</b>	
81	<b>C.5</b>	<b>MIXED / COMPLEX PRODUCTS n.e.c.</b>	
82	<b>C.6</b>	<b>WASTE FOR FINAL TREATMENT AND DISPOSAL</b>	
83	<b>TOTAL EXPORTS OF MATERIALS</b>		<b>18,074,900</b>

Ultimately, the total export of fossil fuel for our fictitious country was 18,074,900 t (see the total sum of category C4 in line 65 of Table 53).

## Solution to Exercise #2

The goal is to report trade data for the commodity code 551611 in mass. Looking at Table 46, you can see that exports are reported using multiple units: the trade value (\$6,296,708), the net weight (528,302 kg), and the area of fabric (4,476,087 m<sup>2</sup>). Data for imports are reported in only two units: monetary value (\$23,372,467) and area (26,952,620 m<sup>2</sup>).

First, export data is the easiest to use, as it is already reported in mass. Keeping in mind that the economy-wide MFA reports data in metric tons, you simply have to convert the mass of fabric from kilograms to metric tons. This is done in Equation 1.

$$mass_t = mass_{kg} \times 10^{-3} = \frac{mass_{kg}}{1000} \quad (1)$$

In our case, the reported 528,302 kg correspond to 528.302 t.

Second, we need to find a way to convert monetary or area data to mass. While it is possible to calculate the average price per kg of exports (\$6,296,708 / 528,302 kg = 11.92 \$/kg), it would be **very incorrect** to divide the total import trade value (\$23,372,467) by the price per kg of exports (11.92 \$/kg). This strategy would be incorrect because the average import

value per unit of mass and the average export value per unit of mass tend to be radically different.

A much better alternative is to use the average mass per unit of area, as the assumption that the average mass per unit of area of imports and exports is similar is fairly reasonable. Let us try to do that.

The average mass per unit of area of exports is reported in Equation 2.

$$\frac{528,302 \text{ kg}}{4,476,087 \text{ m}^2} = 0.118 \frac{\text{kg}}{\text{m}^2} \quad (2)$$

We can then multiply the result of Equation 2 with the area of imported fabric (Equation 3).

$$26,952,620 \text{ m}^2 \times 0.118 \frac{\text{kg}}{\text{m}^2} = 3,181,154 \text{ kg} = 3,181.154 \text{ t} \quad (3)$$

We now know that the mass of imports was 3,181.154 t and the mass of exports was 528.302 t. You can then proceed to record these values into categories B.4.compound (imports) (Table 54) and C.4.compound (exports) (Table 55).

*Table 54 – Excerpt from tab ‘Table\_B’ of the Compiler where we reported data for mixed and compounded products mainly from fossil fuels. Note that this screenshot hides several rows and columns for convenience. Note also that it reports solely materials related to this exercise.*

	A	B	M
1	<b>Table_B - Imports of materials</b>		
2	<b>(tonnes)</b>		
3	Material category	Description	2020
65	<b>B.4</b>	<b>FOSSIL FUELS</b>	3181.154
66	<b>B.4.1</b>	<b>Coal and peat</b>	0
67	B.4.1.1	Brown coal	0
68	B.4.1.1.1	Lignite (brown coal)	
69	B.4.1.1.2	Other sub-bituminous coal	
70	B.4.1.2	Hard coal	0
71	B.4.1.2.1	Anthracite	
72	B.4.1.2.2	Coking coal	
73	B.4.1.2.3	Other bituminous coal	
74	B.4.1.3	Peat	
75	B.4.1.4	Coal derived products n.e.c.	
76	<b>B.4.2</b>	<b>Conventional petroleum and gas</b>	0
77	B.4.2.1	Crude oil and liquid petroleum products	
78	B.4.2.2	Natural gas and gaseous petroleum products	
79	<b>B.4.3</b>	<b>Oil shale and tar sands</b>	
80	<b>B.4.compound</b>	<b>Mixed / compounded products mainly from fossil fuels</b>	3181.154
81	<b>B.5</b>	<b>MIXED / COMPLEX PRODUCTS n.e.c.</b>	
82	<b>B.6</b>	<b>WASTE FOR FINAL TREATMENT AND DISPOSAL</b>	
83		<b>TOTAL IMPORTS OF MATERIALS</b>	<b>3,181</b>

Table 55 – Excerpt from tab ‘Table\_C’ of the Compiler where we reported data for mixed and compounded products mainly from fossil fuels. Note that this screenshot hides several rows and columns for convenience. Note also that it reports solely materials related to this exercise.

	A	B	M
1	<b>Table_C - Exports of materials</b>		
2	<b>(tonnes)</b>		
3	Material category	Description	2020
65	<b>C.4</b>	<b>FOSSIL FUELS</b>	528.302
66	<b>C.4.1</b>	<b>Coal and peat</b>	0
67	C.4.1.1	Brown coal	0
68	C.4.1.1.1	Lignite (brown coal)	
69	C.4.1.1.2	Other sub-bituminous coal	
70	C.4.1.2	Hard coal	0
71	C.4.1.2.1	Anthracite	
72	C.4.1.2.2	Coking coal	
73	C.4.1.2.3	Other bituminous coal	
74	C.4.1.3	Peat	
75	C.4.1.4	Coal derived products n.e.c.	
76	<b>C.4.2</b>	<b>Conventional petroleum and gas</b>	0
77	C.4.2.1	Crude oil and liquid petroleum products	
78	C.4.2.2	Natural gas and gaseous petroleum products	
79	<b>C.4.3</b>	<b>Oil shale and tar sands</b>	
80	<b>C.4.compound</b>	<b>Mixed / compounded products mainly from fossil fuels</b>	528.302
81	<b>C.5</b>	<b>MIXED / COMPLEX PRODUCTS n.e.c.</b>	
82	<b>C.6</b>	<b>WASTE FOR FINAL TREATMENT AND DISPOSAL</b>	
83	<b>TOTAL EXPORTS OF MATERIALS</b>		<b>528</b>

Earlier I mentioned that treating the average value per unit of mass for import and exports tends to provide incorrect results. Let us explore the degree to which our results would have differed. We said that the average value of exports was 11.92 \$/kg. If divided \$23,372,467 (the value of imports) by 11.92 \$/kg, we would obtain 1,960,980 kg, which is about only two thirds of the 3,181,154 kg we calculated using area values.

In summary, try to avoid using monetary data whenever possible. If no other alternative is available, it is better to compare monetary data of previous years related to the same flow (imports or exports) rather than trying to compare the value of imports and exports for the same year.