

# Exercise 9: Building Energy Balances

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Please open the file BalanceBuilder\_Statistland.xls

The purpose of the IEA Balance Builder is to build a country energy balance following the IEA methodology. This can be done either by filling by hand the “**Data in physical units**” and “**Conversion factors**” worksheets or by uploading data from the IEA data questionnaires. Whenever data need to be adjusted, it is good practice to adjust the corresponding questionnaire and re-upload it.

You are presented with a partially filled balance builder, follow the instructions below to complete the data and answer the questions regarding the aggregated and disaggregated balance worksheets.

Note that yellow cells indicate errors (as explained in the “**Main Menu**” worksheet).

Before starting, open the “**Data in physical units**” worksheet. You will note the following issues:

- there is an arithmetic error for other bituminous coal
- natural gas is missing
- anthracite has data on the “**Data in physical units**” worksheet but no data on the “**Disaggregated balance**” worksheet, due to missing net calorific values in the “**Conversion factors**” worksheet.

Now do the following:

1. Upload the natural gas questionnaire (file: STATISLAND\_Gas.xls) to fill in the missing natural gas data (go to the “**Main Menu**” sheet section “A. Automatic Upload”, fill in the file path and click the corresponding button on the left). Check then in the “**Data in physical units**” sheet that the data for Natural Gas have been uploaded.
2. Please adjust the coal questionnaire STATISLAND\_Coal.xls for 2010 according to the following:
  - a. **Anthracite** previously reported as stocked was actually exported.
  - b. **Other bituminous coal**: consumption in Industry Sector - Non-metallic minerals was accidentally left out. It should be 913 kt.
  - c. **Blast furnace gas** used in autoproducer electricity plants is actually 566 TJ.
  - d. “**Table 4**”: Update the following net calorific values:  
Anthracite: 26700 kJ/kg for production, 26500 kJ/kg for exports and 26750 kJ/kg for all remaining flows.
3. Once you are done with the above changes you can upload the coal questionnaire.
4. Check the Balance Builder to make sure that all the errors were corrected.

## Disaggregated balance

5. What is the difference between a negative and a positive number in **stock changes** (row 15)?

6. What is the difference between a negative number in **transformation processes** (rows 17-37) and a negative number in **energy industry own use** (rows 39-55)?

7. Production of **motor gasoline** equals 12570 kt in the “Data in physical units” worksheet, why is it zero in the disaggregated balance?

8. Why does **other bituminous coal** appear as a negative number on the main activity producer electricity plants row of the disaggregated balance?

9. Are **coking coal** and **lignite** transformed or consumed directly?  
If transformed, into what other products? If consumed, by which sector?  
What is the difference between a negative number and a positive number in the transformation sector?

### Aggregated balance

10. What is the efficiency (as percentage) of **coal** and **natural gas** main activity producer electricity plants? (1 GWh = 0.086 ktoe)

11. Is this country energy self sufficient? For all fuels?  
(self sufficiency is calculated as production / TPES)

12. What does the negative number in the total column of **main activity producer electricity plants** indicate?

The oil refineries row has a positive number in the total column. Is this correct?

## Bonus question

1. Look at the nuclear and hydro columns in the “**Data in physical units**” worksheet, numbers are reported in electricity output not in production and transformation, why?  
Looking at nuclear and hydro in the “**aggregated balance**” worksheet we find numbers in production; how are they calculated? What is the implied efficiency?