Welcome to SEEALand National Statistical Office. We are keen to work together to compile our air emissions account and compile indicators that inform climate change.

A lot of groundwork has already been done. We have already compiled the emissions that arise from energy use. We also have some detailed information from the air emission inventories which can be used to compile the air emission account.

Let me summarize what we have:

Based on the energy account, we have compiled the air emissions due to energy use following accounting principles. The only piece of information missing from the energy account was the purchases of jet kerosene by SEEALand airlines and the purchases of jet kerosene by foreign airlines at SEEALand international airport. We now have this information.

We know that we also must include data on industrial processes and product use, agriculture and waste.

**Part 1: updated the air emission account with the information above.**

All relevant information has been reflected in the account shown in tab “partial air emission account” except for the following additional information that needs to be added in the air emissions account:

* Cement production which is part of manufacturing: 2,000 kilotonnes (thousand tonnes) of cement were produced with emission factor of 0.6 tonnes of CO2 for each tonne of cement.
* There are 1,000,000 head of non-dairy cattle which produce 40kg of methane per head per year
* There are 600,000 heads of dairy cattle which produce 150 kg of methane per head per year
* 2,500 kilotonnes of waste are sent to managed waste disposal site; for each tonne of waste there are 0.01 tonnes of methane that are emitted on average.

The information of jet kerosene purchases is now available as well:

* SEEALand airlines purchased abroad the equivalent of 40,000 TJ of jet kerosene; on average the use of each TJ generates 70 tonnes of CO2. Emissions of methane and nitrous oxide are also generated but they are small and should be ignored for this exercise.
* SEEALand international airport sold 10,000 TJ of jet kerosene to foreign airlines.

**Part 2: Calculate air emissions in CO2 equivalent units (using GWP as below)**

1 unit of Methane (CH4) has GWP of 25 units of CO2

1 unit of Nitrous oxide has GWP of 298 units of CO2

**Part 3: Indicator calculation**

Total CO2 emissions for the national economy

Total GHG emissions for the national economy (using GWP)

Emission intensity (overall and for different industries)

**Part 4: Input output analysis—we will discuss together what each step means!**

Here are the steps to follow so we understand what drives emissions:

1. calculate input coefficient matrix (n by n matrix of industries) defined as input for a particular cell divided by the column total
2. calculate emission coefficient matrix (k pollutants by n industries matrix) defined as emission divided by total input at basic prices
3. calculate the Leontief matrix (n by n matrix) defined at identity matrix minus input coefficient matrix
4. calculate the inverse of the Leontief matrix
5. calculate direct and indirect emissions per unit of output defined as emission coefficient matrix times the inverse of the Leontief matrix
6. calculate emission content of final demand which is equal to direct and indirect emissions times final use (we have final use as a diagonal matrix)