Greenhouse Gas Emissions Inventories

National greenhouse gas inventories are essential tools for countries to transparently report their anthropogenic emissions and removals of greenhouse gases. They provide a fundamental basis for mutual trust and confidence among countries that are needed for effective implementation of international agreements to address climate change. They are also essential tools in developing policies and in monitoring impact. They provide invaluable information for those developing policies related to climate change (IPCC 2019).

The Parties to the United Nations Framework Convention on Climate Change (UNFCCC) develop, periodically update and publish their national greenhouse gas inventories, using comparable methodologies to be agreed upon by the Conference of the Parties. The "comparable methodologies" agreed on are those produced by the Intergovernmental Panel on Climate Change (IPCC). Further, the Parties to the Paris Agreement decided in December 2018 that each Party shall use the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, and shall use any subsequent version or refinement of the IPCC guidelines agreed upon by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA) (IPCC 2019).

The IPCC methodologies supporting the greenhouse gas emissions may be accessed here. Under the UNFCCC reporting guidelines on annual inventories for Annex I Parties, inventory submissions are in two parts:
Common reporting format (CRF) tables – a series of standardized data tables containing mainly quantitative information;
National Inventory Report (NIR) – a report containing transparent and detailed information on the inventory. It should include descriptions of the methodologies used in the estimations (including references and sources of information), the data sources, the institutional arrangements for the preparation of the inventory (including quality assurance and control procedures), and recalculations and changes compared with the previous inventory.

It is intended the student get to:
1. Understand the Common Report Format (CRF) on the national greenhouse gas emissions inventory, as required by the UNFCCC.
2. Explore the emissions of greenhouse gas (GHG) emissions for Portugal or any other country (CRF is in English), and the data behind them.
3. Analyse and interpret the greenhouse gas emissions structure and trend for a specific economic sector/activity you may select.

Explore the Portuguese greenhouse gas emission inventory

Other countries' National Inventory Submissions may be accessed here.

Access **Agência Portuguesa do Ambiente webpage:** http://www.apambiente.pt/
Página inicial» Instrumentos» Inventário Nacional de Emissões Atmosféricas (INERPA)

Submissões no âmbito da Convenção Quadro das Nações Unidas sobre Alterações Climáticas (UNFCCC):

- National Inventory Report (NIR). Versão de 15.04.2020.
- Common Report Format (CRF). Versão de 15.04.2020.

The NIR file – National Inventory Report – is a pdf file reporting the methodology, assumptions and data, adopted to estimate the greenhouse gas emissions provided in the CRF (excel) file.
The CRF file - Common Report Format (CRF)[1] - includes a large set of excel files corresponding to the yearly emissions inventories since 1990. Usually, the latest version is available.

Download the CRF file, unzip and save in a folder. Since the excel file contains a huge number of worksheets, the following table guides you through the most important regarding the energy sector (table 1), but you may explore the other worksheets.

Table1s1, e Table1s2	Emissions by type of greenhouse gas in the combustion activities (ENERGY)
Table1.A(a)s1 a s4	energy consumption and implied emission factors in combustion activities
Table 1.D	International Bunkers (fuels consumed in the international shipping and aircrafts)
Table10s1 a Table10s5	GHG emissions trends 1990 to 2018 by sector and activity subcategories, per GHG
Table10s6	Summary of GHG emissions trends 1990-2018 by major activity sectors
Summary2	Consolidated balance sheet of 2018 emissions

After understanding the greenhouse gas (GHG) emissions inventory, and based on these worksheets, you may want to answer the following regarding the energy sector (or other sector of your interest), through adequate indicators and graphics:

[1] CRF is a common format for all countries to submit emissions report to the UNFCCC.

What has been the GHG emissions trend of the energy sector in the period 2000-2018? (Table10s6).
What is the annual average rate of GHG emissions in that period?
What is the representativeness of your selected sector in the total national emissions in 2018 (Summary2)? How it compares with the year 2008? (to answer this last question, you must download the respective file regarding the year, 2008 – PRT_2020_2008_xxxx.xls)

IPCC 2019, 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Calvo Buendia, E., Tanabe, K., Kranjc, A., Baasansuren, J., Fukuda, M., Ngarize, S., Osako, A., Pyrozhenko, Y., Shermanau, P. and Federici, S. (eds). Published: IPCC, Switzerland.