



Data collection tool: Sectoral Activity data for GHG Emissions (S.A.G.E.) v.2.0

User Manual
Version 2.1

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1. Background and Purpose

What SAGE does

Sectoral **A**ctivity data for **G**reenhouse gas **E**missions (**SAGE**) is a greenhouse gas (GHG) ‘activity data (AD) collection’ data collection tool to support national climate measurement, reporting, and verification (MRV) systems, especially in developing countries, through robust data collection, intelligent processing, and storage. SAGE is fully compatible with the UNFCCC reporting guidelines for non-Annex I parties and the 2006 IPCC guidelines for national greenhouse gas (GHG) AD collections and was developed to support governments in collecting activity data to ultimately meet the reporting requirements under the Enhanced Transparency Framework of the Paris Agreement.

SAGE provides an intuitive and user-friendly interface for collecting data, and critical documentation to achieve transparent, accurate, consistent, comparable, and complete (TACCC) GHG AD collections. The outputs from the tool can also be used as the basis for calculating projections, and mitigation impact quantification. In the simplest terms, SAGE is a dedicated data management system with the GHG AD collection database and enabled business intelligence. It allows for inputting data collected from multiple sources, and processes it for export to GHG AD collection estimation spreadsheets or software that quantifies GHG emissions and removals. At the outset, it functions as a reliable repository for documenting, storing, processing, conducting quality control, querying GHGI activity data, and performing analytics on the available data sets.

SAGE can be run on a stand-alone computer or through the cloud using version synchronization, so that it can support multiple data collectors anytime, anywhere. Its administrative interface provides security and flexibility of views for different groups of users. Its database is robust and designed for speed and scalability.

Key features

The current version of SAGE covers the **energy sector and industrial processes and product use (IPPU)** sector with extended functionality. The key features of this version include:

- Record and store activity data (as described in the 2006 IPCC Guidelines) and parameters intrinsic to the fuel properties (e.g., fuel density or net calorific value) as a time series or on an ad-hoc basis.
- Collate activity data, keep track of data origins and uncertainties
- Automatic Conversions to the units as required in the 2006 IPCC equations for stationary combustion categories
- Category classification mapping between the IPCC and UNFCCC categories to provide flexibility of category reporting for developing countries under the UNFCCC and the ETF under the Paris Agreement
- Modular sectoral dashboard structure that allows a seamless shift between sectoral sections of the application
- Business intelligence to resolve data gap issues
- Business logic to enable default uncertainty estimates in-line with the 2006 IPCC Guidelines
- Enable Excel input/output for all configuration tables, and produce CSV files compatible with emission calculating tools (e.g., IPCC emissions calculating software tool)
- Data analytics
- Data repository
- Administrative interface for user access control and user management
- User guidance manual

Intended Users

SAGE has been designed to support developing countries working on data collection and climate change policy within national climate change teams, government statistical offices, industry associations, corporations and local government agencies. Through the use of this tool, users will increase efficacy, efficiency, and sustainability of their activity data collection and employ nationally-approved activity data for robust policy analyses.

2. Getting started

This section will guide you through the initial steps to run the SAGE software.

Accessing SAGE

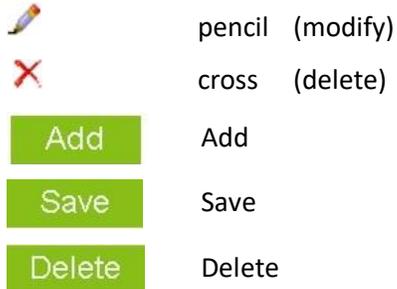
Due to data security requirements, SAGE will be installed on the server according to the guidance of your country's National Inventory Compiler or the Inventory Focal Point. Please ask your country's Inventory agency for the specific link to the software. They will set up your user account and send you the details.

Welcome to SAGE

Once you have received authentication details and the access link, you can start working with SAGE. First, access SAGE's welcome page (figure 1) and, if it is your first time with SAGE, take a couple of minutes to view a video tour of the application to familiarize yourself with its key features.

Getting to know SAGE

Users without administration rights can safely explore the tool but don't click any of the following icons:



If you think you're about to accidentally change data then click "Cancel" or "Clear".

SAGE Categories

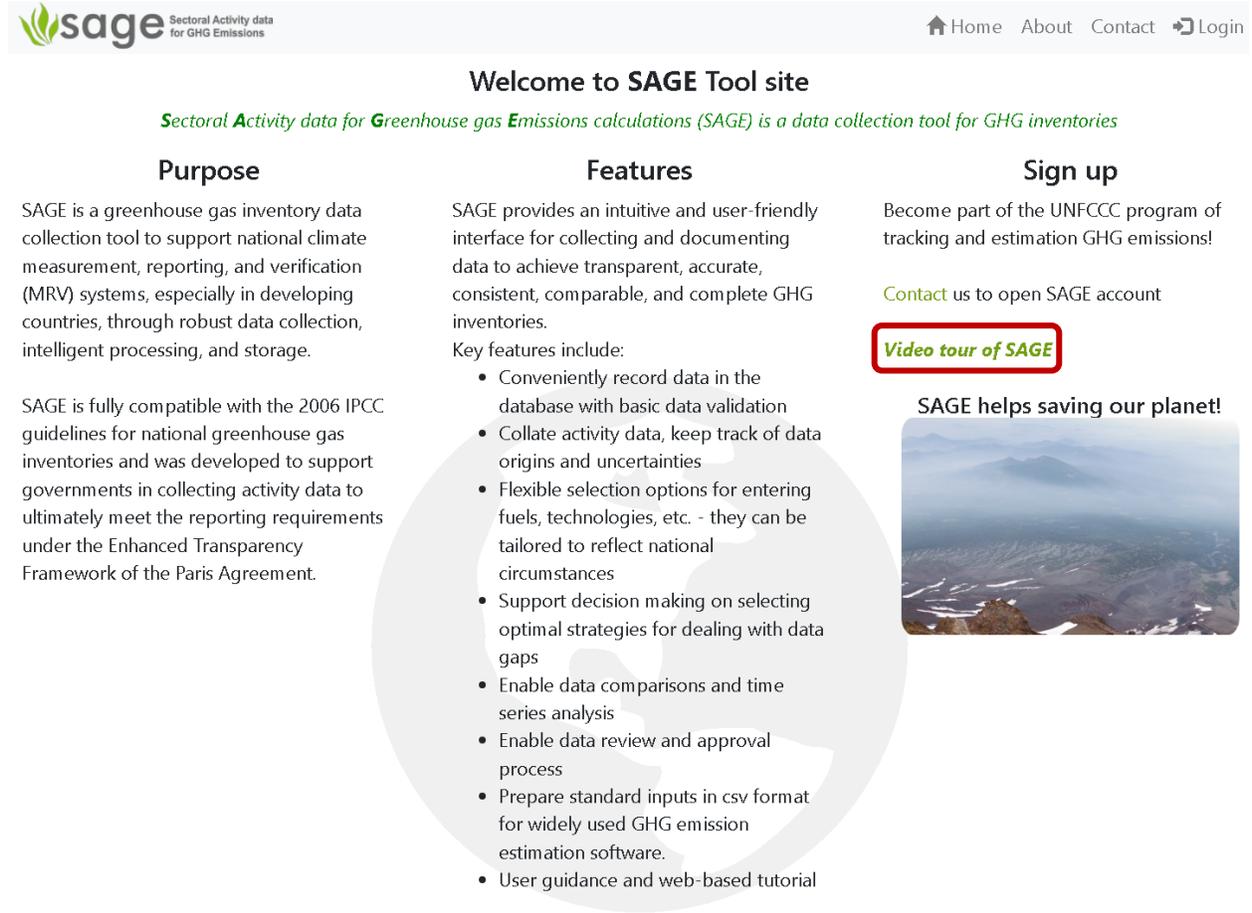
SAGE (May 2022) currently covers:

Energy: Fuel Combustion (including stationary combustion and transport), and Fugitive Emissions

IPPU: mineral industry, chemical industry, metal production, non-energy use of fuels, electric and electronic industries, ozone depleting compounds, and other industries.

Section 5 mentions categories and Appendix D lists them all. More categories may be developed and added in future (for example, user-defined categories).

Figure 1. SAGE's welcome page <http://sage.is2000.co.nz/app/welcome>



Welcome to SAGE Tool site

Sectoral Activity data for Greenhouse gas Emissions calculations (SAGE) is a data collection tool for GHG inventories

Purpose

SAGE is a greenhouse gas inventory data collection tool to support national climate measurement, reporting, and verification (MRV) systems, especially in developing countries, through robust data collection, intelligent processing, and storage.

SAGE is fully compatible with the 2006 IPCC guidelines for national greenhouse gas inventories and was developed to support governments in collecting activity data to ultimately meet the reporting requirements under the Enhanced Transparency Framework of the Paris Agreement.

Features

SAGE provides an intuitive and user-friendly interface for collecting and documenting data to achieve transparent, accurate, consistent, comparable, and complete GHG inventories.

Key features include:

- Conveniently record data in the database with basic data validation
- Collate activity data, keep track of data origins and uncertainties
- Flexible selection options for entering fuels, technologies, etc. - they can be tailored to reflect national circumstances
- Support decision making on selecting optimal strategies for dealing with data gaps
- Enable data comparisons and time series analysis
- Enable data review and approval process
- Prepare standard inputs in csv format for widely used GHG emission estimation software.
- User guidance and web-based tutorial

Sign up

Become part of the UNFCCC program of tracking and estimation GHG emissions!

Contact us to open SAGE account

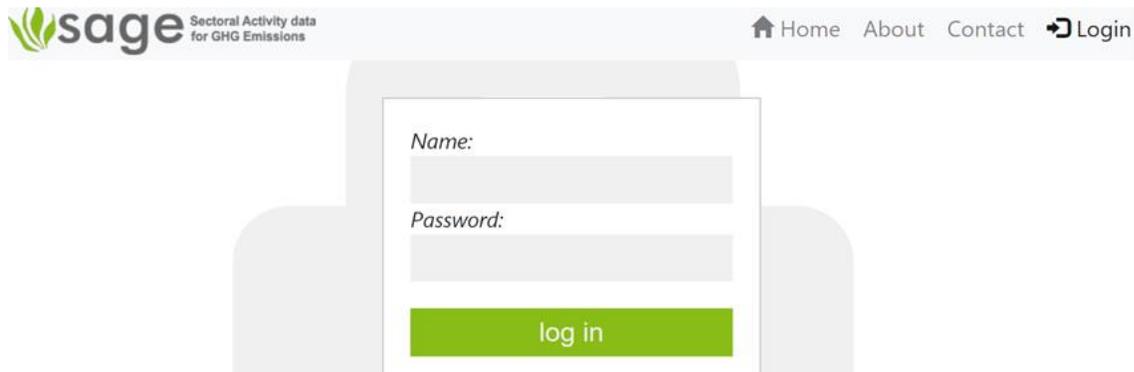
[Video tour of SAGE](#)

SAGE helps saving our planet!



Now you are ready to use your user code and login to enter the tool. Click the Login button (Figure 1). SAGE's authentication screen will open (figure 2). Enter your credentials.

Figure 2. SAGE's authentication screen



sage Sectoral Activity data for GHG Emissions

Home About Contact Login

Name:

Password:

log in

If you leave SAGE inactive for too long then you will automatically be logged out for security.

3. SAGE Summary (Cheat) Sheets

You should read the whole manual before using the tool. You've got to page 8 so you're doing better than most people. These three summary sheets give an initial overview of SAGE, are a quick reference summary which may help as a refresher if you haven't used SAGE for a while, and may also be a useful starter (if you're not going to read the rest of the manual until you get stuck). **Appendix A: Acronyms** on page 92 lists the acronyms used in this document.

3.1 Activity Data (AD) Collections (*see section 5 page 13 for details*)

'AD collection' includes an annual activity data for the GHG Inventory that can be used for GHG emission calculations, policy analysis, NDC tracking, or building projections. Each AD collection includes the activity data for all categories included in the energy or IPPU sector with supporting information for the inventory year. To enable time-series analyses and reporting, all AD collections for the same time-series should have the same name and extension showing the AD collection year, for example, AD_name-2000, AD_name-2001, and so on.

The 'AD Collections' page lets you create, view, and manage GHG AD collections, insert, edit and delete AD data, review and approve the AD by making them available for data analysis. The AD collection management process includes data entry, drafting, review, approval and publishing.

At each stage, you can list, add, view history, export, import, review change log and get info.

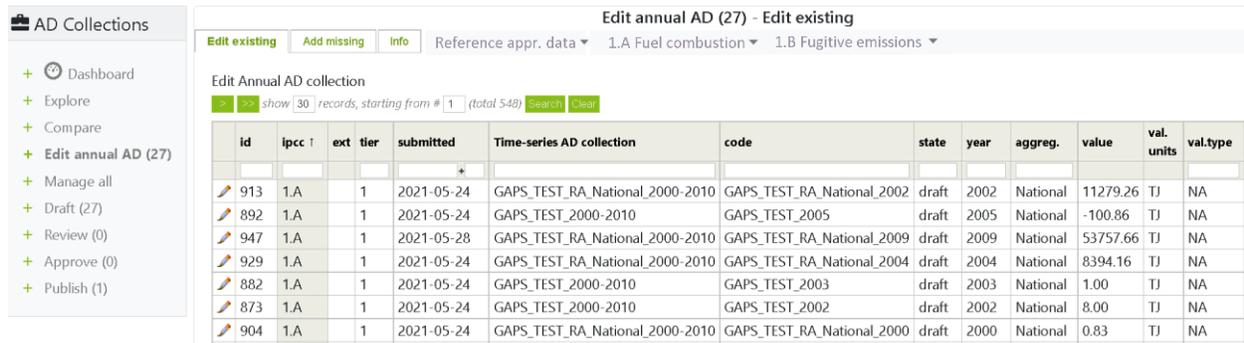
To 'manage' an AD collection, click 'Manage all' on the left and select the AD collection to work with.

AD Collection state:	Draft	AD collection is created and available for data entries
	Review	data entry is complete and AD collection is sent for technical review
	Approve	technical review is complete and the AD collection is sent for final sign-off
	Published	AD collection is successfully signed-off by an authorized person. At this stage, the AD collection is locked. AD collection is now available for data analyses and publication.
AD Collection status:	enabled	open for data entry and editing
	disabled	contents can be viewed, but not edited
	deleted	AD collection is archived and no longer can be viewed or edited.

Key points:

- An AD collection can consist of one or more annual entries arranged by IPCC categories.
- The name of an Annual AD Collection starts with the name of the relevant time-series collection followed by the year the annual collection, e.g., "ADC_2000-2010_2000" means that the collection named "ADC" belongs to the series "ADC_2000-2010" and covers the year 2000.
- Every time you open the AD collection for change or update, you must include the reason for change (for example, error fix) and a detailed message on the change (for example, who made the change and when with a specific note on the change).
- SAGE guides you through the data to input, including management of mandatory fields.
- SAGE has many features for converting between different units (energy, mass, distance, etc.).

Figure 3. Editing AD Collections



id	ipcc	ext	tier	submitted	Time-series AD collection	code	state	year	aggreg.	value	val. units	val.type
913	1.A		1	2021-05-24	GAPS_TEST_RA_National_2000-2010	GAPS_TEST_RA_National_2002	draft	2002	National	11279.26	TJ	NA
892	1.A		1	2021-05-24	GAPS_TEST_2000-2010	GAPS_TEST_2005	draft	2005	National	-100.86	TJ	NA
947	1.A		1	2021-05-28	GAPS_TEST_RA_National_2000-2010	GAPS_TEST_RA_National_2009	draft	2009	National	53757.66	TJ	NA
929	1.A		1	2021-05-24	GAPS_TEST_RA_National_2000-2010	GAPS_TEST_RA_National_2004	draft	2004	National	8394.16	TJ	NA
882	1.A		1	2021-05-24	GAPS_TEST_2000-2010	GAPS_TEST_2003	draft	2003	National	1.00	TJ	NA
873	1.A		1	2021-05-24	GAPS_TEST_2000-2010	GAPS_TEST_2002	draft	2002	National	8.00	TJ	NA
904	1.A		1	2021-05-24	GAPS_TEST_RA_National_2000-2010	GAPS_TEST_RA_National_2000	draft	2000	National	0.83	TJ	NA

See Figure 7 on page 14 to see the summarized process for managing AD collections in SAGE.

3.2 Data Gaps (see section 7 page 58 for details)

‘Data Gaps’ reveals data gaps in the existing AD collections, guides users through options to fill data gaps appropriately (per UNFCCC requirements) performs time series analysis

The Data Gaps **Dashboard** (Figure 43) overview indicates when each method should be used.

Click ‘Switch to’ at the top, then ‘Data Gaps’ to get to this component.

To find the gaps in the time series,

Click ‘Find’ (on the left)

Choose *data categories*, then use the available category-specific filters if available (e.g., fuel, product, process, etc.) to narrow down your search, or use “all” option.

Select AD collection

Select year(s) (if entering more than one year then use a comma or hyphen between years)

To fill data gaps, use SAGE to try any of the following methods:

Interpolate to fill in internal data gaps for up to 3 points using linear regression,

Extrapolate to estimate missing data points in the beginning and in the end of the time series using linear regression,

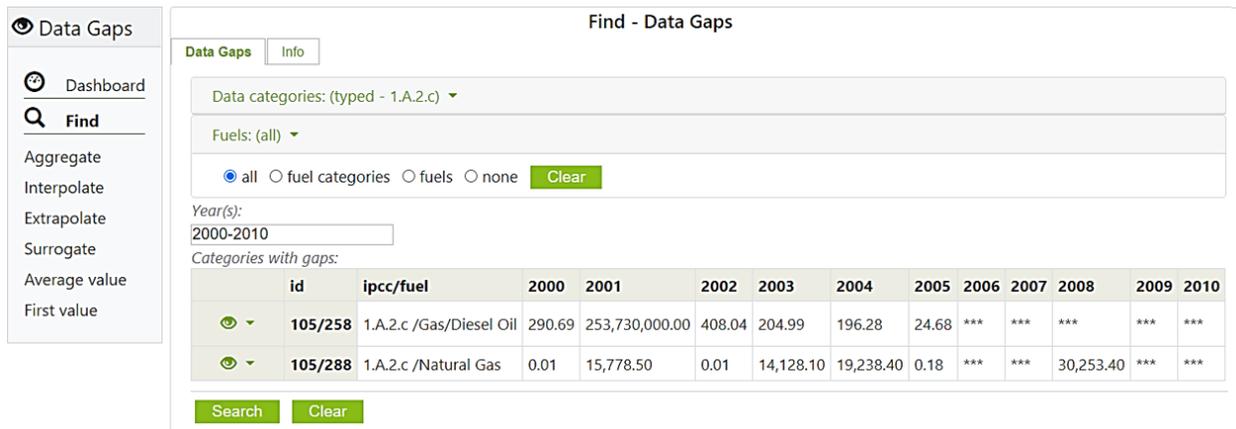
Surrogate method filling gaps using statistical methods,

Average value fill gaps using simple averages,

First value fill gaps using the first value,

SAGE includes explanatory information for each method and provides guiding messaging and relevant dialog boxes to help navigate different gap filling techniques.

Figure 4. Finding Data Gaps



		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	105/258	1.A.2.c /Gas/Diesel Oil	290.69	253,730,000.00	408.04	204.99	196.28	24.68	***	***	***	***
	105/288	1.A.2.c /Natural Gas	0.01	15,778.50	0.01	14,128.10	19,238.40	0.18	***	***	30,253.40	***

Click the eye button at the beginning of each time series with data gaps to select the preferred method to fill the gaps from the available list.

3.3 Analytic (see section 8 page 66 for details)

Users with 'Reader' access rights can use the 'Analytic' function on published data.

All other users can use the 'Analytic' function to analyze data and check data quality during the AD collection production (before it's published).

Click 'Switch to' at the top, then 'Analytic' to get to this component or use the global link "Analytic" on the top of the screen.

Analytic options are:

Total values: Select a category or categories and a year
Shows total energy consumed as a result of combusting selected fuels in selected years

Historical trends: Select a category or categories, fuel(s), and year(s)
Shows time series analysis for fuel consumption for the combination you selected

Rank by category: Select an Activity Data (AD) collection and a year
This shows the energy in TJ used ranked by IPCC category for your chosen parameters.
Please note that this option is applicable to the Energy sector only.

Rank by fuel: Select an AD collection and a year
This shows the energy in TJ used ranked by fuel for your chosen parameters. Please note that this option is also applicable to the Energy sector only.

AD Change: Select an AD collection, select whether you want sub-categories summed, and a year or years
If entering years, separate each with a comma (',')
This shows year(s) as columns, IPCC categories as rows and the energy in TJ or an industry activity data (e.g., a mass of a product) as values
If you select more than one year then this allows you to compare differences (shown 'Δ')

Performance Indicator: Select data category or categories, a fuel or fuels (or other available category-specific parameters), an AD collection, whether you want sub-categories summed, and a year or years (use a hyphen between a pair of years if you want to show a range), comparative data, comparative data name and comparative data units. This shows a time series table of consumption (summed if required), by category, fuel, AD collection, and by year(s).

Analytic

- Dashboard
- Total values**
- Historical trend
- Rank by Category
- Rank by Fuel
- AD Change
- Performance Indicator

Total values - 1.A

1.A | 1.B.1.a Coal | 1.B.2.a Oil | 1.B.2.b Gas | Info

Data categories: (all) ▾

Time-series AD collection:
Fuels: (all) ▾

AD inventory:
Test_2000-2010 ▾

Year:
2000

Consumption:
Fuels: All

year	ipcc	category	total (TJ)
2000	1.A.1.a	Main Activity Electricity and Heat Production	9,686.7600
2000	1.A.1.b	Petroleum Refining	12,366.0000
2000	1.A.1.c	Manufacture of Solid Fuels and Other Energy Industries	19,590.9000
2000	1.A.2.c	Chemicals	16,242.7000
2000	1.A.2.e	Food Processing, Beverages and Tobacco	8,374.5400
2000	1.A.4.a	Commercial/Institutional	4,442.3500
2000	1.A.4.b	Residential	3,491.8800
Total			74,195.1300

4. Navigating between SAGE components

Once you are logged in, SAGE’s **Quick links** page will be displayed (figure 3). This page displays the functional components of the tool (AD Collections, Analytic, and Data Gaps) and allows you to navigate between these components. This page is available to all users, but available links will depend on the specific group permissions set by your system administrator.

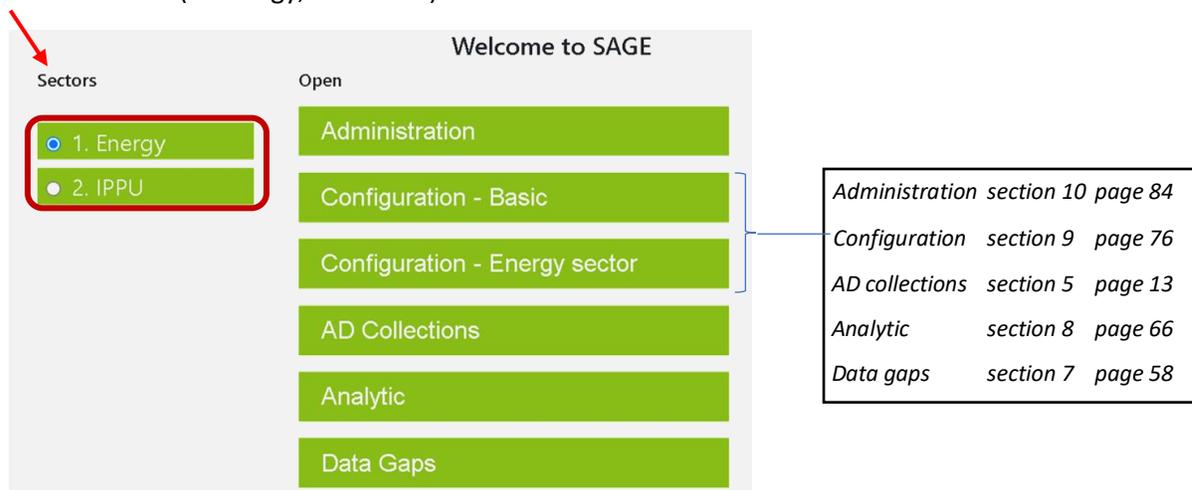
Across the top of the screen, there is a global navigation pane with menus (Figure 3 shows them in the red box) – **Switch to**, **Analytic**, **Data Gaps**, **AD Collections**, and **Configuration**

Figure 5. SAGE’s quick links page

The top menu row is visible in all screens of SAGE (regardless of the component you are using):



To change the sector you are working on, click the  button to show the menu below, and then click on the relevant sector (1. Energy, or 2. IPPU).



Click any menu (along the top row) to see the list of modules available in that component of SAGE.

Click any component to go to that component.

The components shown will depend on which sector you currently have selected.

E.g., if you are in the Energy sector then Energy sector configuration and Energy sector AD collections will be available but other sector configuration and other sector AD collections will not be available.

To open the list of links, click the menu:

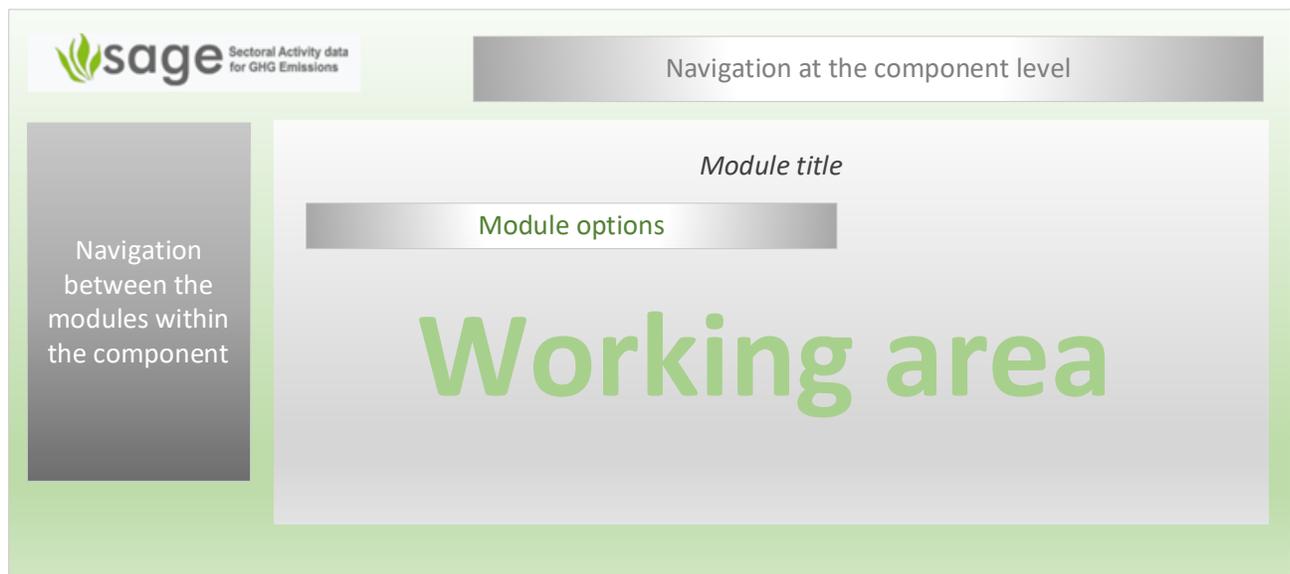
- Switch to** allows to quickly switch between key components of SAGE (AD Collections, Analytic, and Data Gaps). Depending on your requirements, there may also be Administration and/or Configuration components.
- Analytic** opens the list of links to the available data analysis modules

- Data Gaps** opens the menu of links for filling in data gaps in the fuel consumption time series
- AD Collections** opens the list of links to Activity Data Collections management and drafting
- Configuration** enables you to customize the default selection options for the currently selected sector (Energy or IPPU) to reflect your country's national circumstances

The big green buttons in the middle of the screen are also quick links to relevant SAGE modules, however, unlike the top screen navigation menus, they are available only in the **Quick links** page. When you click any quick link, SAGE will open the relevant component window. The windows for all functional components in SAGE are organized in the same way (figure 4):

- the global navigation pane across the top for switching between different SAGE components is located across the top,
- the local navigation pane to switch between different modules within the component is located on the left side of the screen,
- the working area for the current module that includes the module control options (presented in a form of tabs), forms, tables and results specific for each module. These are different for different components and modules.

Figure 6. Functional interface organization



5. Activity Data (AD) Collections - Energy

5.1 Overview

5.1.1 The overall 'AD Collections' process

Sets of data are put into 'AD Collections'.

There may be any number of 'AD Collections' for any particular time period – there may be zero, one or many AD Collections for a period.

Each AD Collection must first be created before data can be put into the AD Collection.

Once data is in an AD Collection, you can optionally try to fill data gaps.

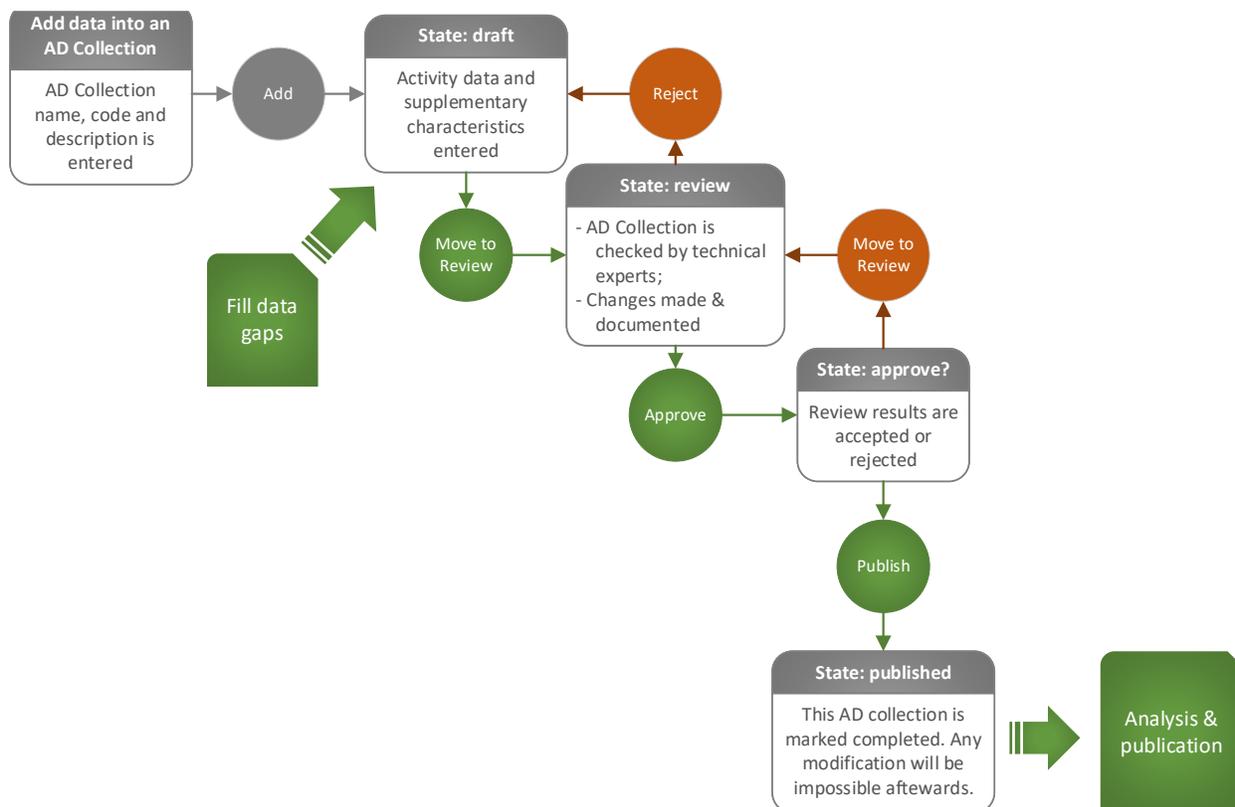
Once satisfied with data state in an AD collection, the AD Collection can be processed through a signoff process; draft ready for review, reviewed and ready for approval, approve and ready for publishing.

To put data into a draft 'AD collection',
 data is entered,
 data gaps are optionally filled,
 the AD collection is reviewed, may be approved or rejected,
 approved AD collection is either published or rejected,
 'published' AD collection can be analyzed and put into publications

Filling data gaps can require quite different skills from the rest of the AD collection process so it has been logically separated in SAGE (and in this manual).

Figure 7 summarizes processing and management of AD collections in SAGE.

Figure 7. AD Collection pathway through the SAGE system



5.1.2 How to navigate the AD Collection

Click the **AD Collection** quick link (or use the top navigation menu panel) to open the AD Collection component.

SAGE uses the term annual activity data (AD) collection for the GHG AD collection emissions calculation. Each AD collection includes the activity data for all categories and fuels with supporting information for one AD collection year. To enable time-series analyses and reporting, all AD collections for the same time-series should have the same name and extension showing the AD collection year, for example, AD_name-2000, AD_name-2001, and so on.

The AD Collection page lets you create, view, and manage GHG AD collections, insert, edit and delete AD collection data, review and approve the AD Collection data by making them available for data analysis.

5.1.3 Dashboard

Dashboard shows Information, History and Changes:

Info:

Annual Activity Data (AD) Collections

SAGE uses the term annual AD collection to describe an annual activity data collection for the GHG inventory emissions calculation. Each annual AD collection includes the activity data for all categories and fuels with supporting information for one inventory year. To enable time-series analyses and reporting, all inventories for the same time-series should have the same name and extension showing the AD collection year, for example, **AD collection name-2000**, **AD collection name_name-2001**, and so on.

The AD collection page enables you to create, view, and manage GHG activity data collections, insert, edit and delete data, review and approve the AD collection data by making them available for data analysis. The following groups of options are available here:

- **Explore** - to view all available annual AD collections and records
- **Manage** - to create and manage annual AD collections
- **Edit annual AD** - to view, create and manage records within annual AD collections
- **Draft** - to view and export editable annual AD collections (drafts)
- **Review** - to signify that the data entry is complete and request a technical review of the collection's data
- **Approve** - to accept/reject the results of the collection's data review and request approval for annual AD collections data publication
- **Publish** - to approve annual AD collections data for viewing and analysis by all intended users

History:

Editions history

<< < > >> show 10 records, starting from # 1 (total 153) Search Clear

id	AD inventory	survey	code	year	date	num of records	state	status	edited by	edition reason	details
77	My AD 1990-2020	My AD	My AD_2018	2018	2021-05-14 22:26:33	0	draft	enabled	Admin (UNFCCC Data Collection Agency)	first draft	National AD 1990-2020, latest reporting year, created 14 May 2021
76	My AD 1990-2020	My AD	My AD_2019	2019	2021-05-14 22:26:22	0	draft	enabled	Admin (UNFCCC Data Collection Agency)	first draft	National AD 1990-2020, latest reporting year, created 14 May 2021

Changes:

Changes log

<< < > >> show 10 records, starting from # 1 (total 949) Search Clear

id ↓	date	action	user name	details
8860	2021-05-14 22:32:54	dctsur_op_ad_1a1_delete_record	Admin	rec_id=810
8859	2021-05-14 22:31:52	dctsur_op_ad_1a1_new_record	Admin	rec_id=100000000; name=100000000
8858	2021-05-14 22:26:33	dctsur_op_manage_new_record	Admin	rec_id=100000000; name=My Ad
8850	2021-05-14 17:57:10	dctsur_op_publish_export	Admin	sage_export_publ_ad.zip download processed

5.1.4 Explore

The 'Explore' menu on the left shows 4 options:

Time-series AD collection

This shows all AD collections for the entire time series, years they cover, status, etc. as below.

Explore Time-series AD collection

show 30 records, starting from # 1 (total 12) Search Clear

Time-series AD collection ↓	years range	state	Annual AD	records	categories
Uncertainty_2000-2005	2000-2005	draft	6	166	5
Test_2000-2010	2000-2010	draft	11	151	8
RA_National_2000-2010	2002-2010	draft	9	27	1

Annual AD Collection

This shows the activity data across all categories for one year, their codes, states, etc. as below.

Explore Annual AD collection

> >> show 30 records, starting from # 1 (total 77) Search Clear

Time-series AD collection ↓	code	year	state	approach	records	categories
AB_AD_2011-2020	2011-AB_AD_v1	2011	draft	sectoral	6	4
AB_AD_2011-2020	2012-AB_AD_v1	2012	draft	sectoral	6	4

Annual AD

This shows the activity data within each of the AD collections, including information as below.

Explore Annual AD collection data

> >> show 30 records, starting from # 1 (total 985) Search Clear

id ↓	submitted	Time-series AD collection	code	state	year	ipcc	tier	aggreg.	val.type	value	units
979	2021-08-26	My AD_1990-2020	My AD_2020	draft	2020	1.A.3.a.ii	3	Airport	NA	500037.93	TJ
977	2021-05-28	GAPS_TEST_RA_National_2000-2010	GAPS_TEST_RA_National_2010	draft	2010	1.A	1	National	NA	506.42	TJ

Info

The info tab shows information about how to use the ‘Explore’ functions.

5.1.5 Top-of-Page Tabs

Each module in the **AD Collections** component includes the following control tabs:

- List** displays a table with the list of records; each record has a “pencil” icon  at the beginning (this is the edit option). The list of the individual records for each category also has a “cross” icon  at the end (to delete a record),
- Add** allows new item creation (an AD collection, an AD collection record, or a record in a configuration table),
- History** displays record change history
- Export** this is only available when either
 1. a particular AD collection and a category are selected; in this case you can export the data in a .csv file
 2. The Draft section allows to export the entire collection if the all of data entries in that collection are flagged as “ready” (in which case, a pencil icon appears at the beginning of the relevant collection record).
 3. in the ‘Publish’ section; one can export the whole AD collection of SAGE as a .csv file or as a file ready for IPCC import
- Import** (in the current version of SAGE) importing is available by category when ‘Edit annual AD’ is selected
- Changes** contains a log of changes performed over the records within the module,
- Info** provides user guidance for each option in the module.

5.2 AD Collection Creation/Management Process

5.2.1 Background

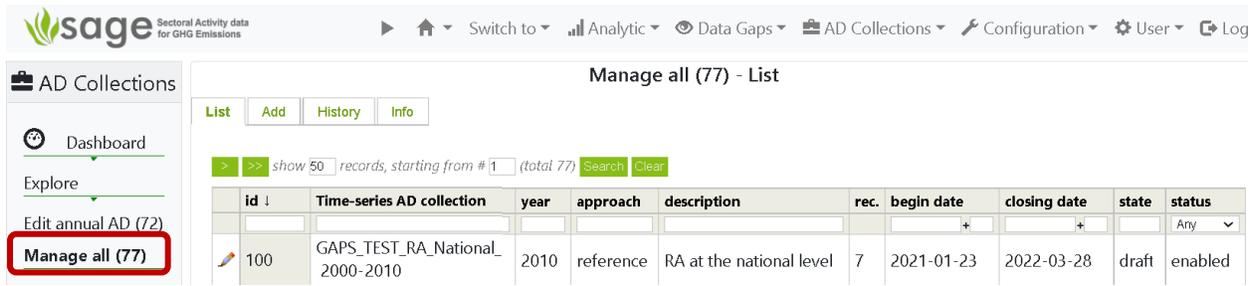
The ‘Create AD Collection process is a subset of the AD Collection process (see 5.1.1 *The overall ‘AD Collections’ process*).

Every time you open the AD collection for change or update, you must include the reason for change (for example, error fix) and a detailed message on the change (for example, who made the change and when with a specific note on the change).

5.2.2 View available AD Collections

To view all available AD collections, select the AD collection component, then click **Manage all** link in the local navigation pane. The list of all available AD collections will be displayed (Figure 8):

Figure 8. Manage AD collections option in the local navigation pane



The screenshot displays the Sage web application interface. The top navigation bar includes the Sage logo and menu items: 'Switch to', 'Analytic', 'Data Gaps', 'AD Collections', 'Configuration', 'User', and 'Log'. The left-hand navigation pane is titled 'AD Collections' and contains options: 'Dashboard', 'Explore', 'Edit annual AD (72)', and 'Manage all (77)', which is highlighted with a red rectangular box. The main content area is titled 'Manage all (77) - List' and features a 'List' tab, 'Add', 'History', and 'Info' buttons. Below these is a control bar showing 'show 50 records, starting from # 1 (total 77)' with 'Search' and 'Clear' buttons. A table with the following columns is displayed: 'id', 'Time-series AD collection', 'year', 'approach', 'description', 'rec.', 'begin date', 'closing date', 'state', and 'status'. The first row of data is: id 100, Time-series AD collection 'GAPS_TEST_RA_National_2000-2010', year 2010, approach 'reference', description 'RA at the national level', rec. 7, begin date '2021-01-23', closing date '2022-03-28', state 'draft', and status 'enabled'.

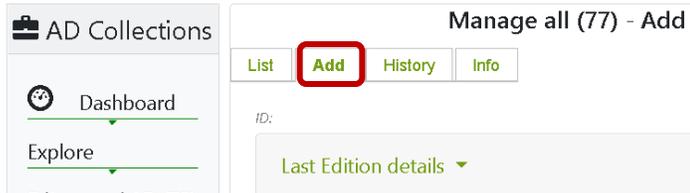
You can also check the **state** and **status** of each AD collection in this page.

5.2.3 Add new AD Collection

To add a new AD Collection:

1. Click the "Add" tab (Figure 9).

Figure 9. Use tab "Add" to add a new AD Collection



2. Use the provided 'new AD collection' form to create a new AD collection
All fields in this form are mandatory.

Figure 10. The 'new AD collection' form

Name: AD collection name
include the name and reporting year

Code: include a unique, user-defined code
Please use <INV>_<year>_<version>_<date created YYYY MM DD> an example for AD collection reported up to 2017, version 1, created 19 Jan 2021: AD_2017_v1_20210119

Year: the year of coverage
the year this AD collection covers

Description: the AD collection description
this allows users to make notes and comments regarding the AD collection

Timeframe for data entry: in many countries, the data may be entered only within the agreed period or by the agreed date. Enter start and finish dates to specify the time frame when the AD collection is open for editing here.

Status: When a new AD collection is created, it is automatically assigned **draft** state, The state will change as the AD collection goes through review and approval processes. The status determines whether the record is enabled or currently disabled for data entry.

Edition details: the compiler can make any additional comments and provide further details

Reason for change: If the compiler wants to document a change in the AD collection or the AD collection is to be moved through the review and approval process then record it here.

- An AD collection can consist of several annual entries.
- Each year of the AD collection will have the same AD collection name that shows all years covered by that AD collection followed by a year covered by this AD collection instance, which should be reflected in the AD collection title, for example, "AD_2000-2010_2000".

5.2.4 Edit existing AD Collection

To edit existing AD collection names and details:

1. Click the "List" tab. You will see the existing table with records. Each record has a "pencil" button on the left for editing,
2. To modify the existing entry - click the "pencil" button before the record, then make your modification using the form provided, and
3. Click "Save" to save the updated record.

5.2.5 Delete existing AD Collection

To delete an existing AD collection record:

1. Click the "List" tab. You will see the existing table with records.
2. Click the "cross" at the right-hand end of the record to delete.

5.3 AD Collections Data Entry Process

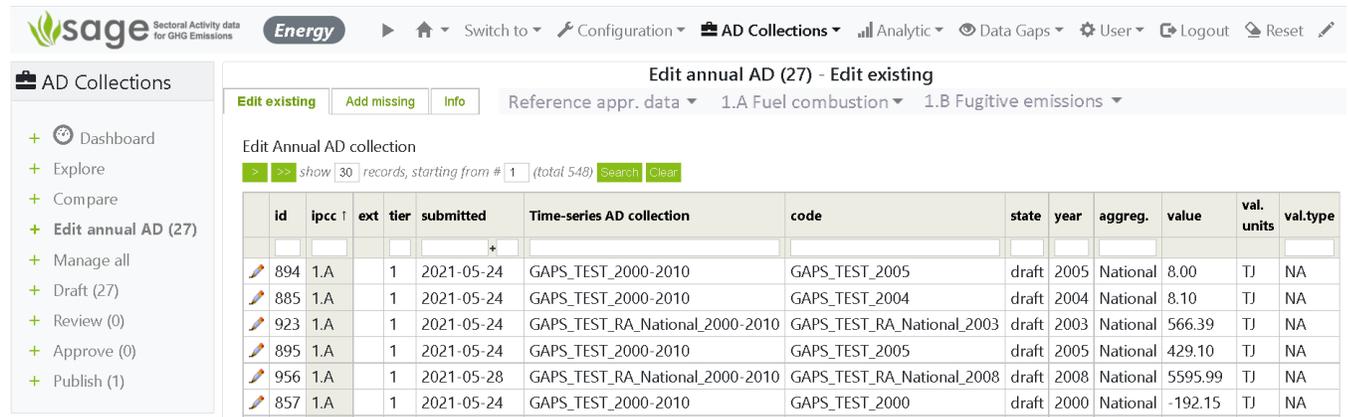
The AD collection data entry process is a subset of the AD collection process (see 5.1.1 *The overall 'AD Collections' process*).

5.3.1 Background

The AD collection drafting page enables you to view, insert, edit and delete AD collection activity data and information. But first, you have to select which AD collection you are going to work with. To do that:

Step 1 On the left, click 'Edit annual AD' to see the AD collections available for drafting. The list of AD collections available will appear.

Figure 11. Select AD Collection for data entry - Energy

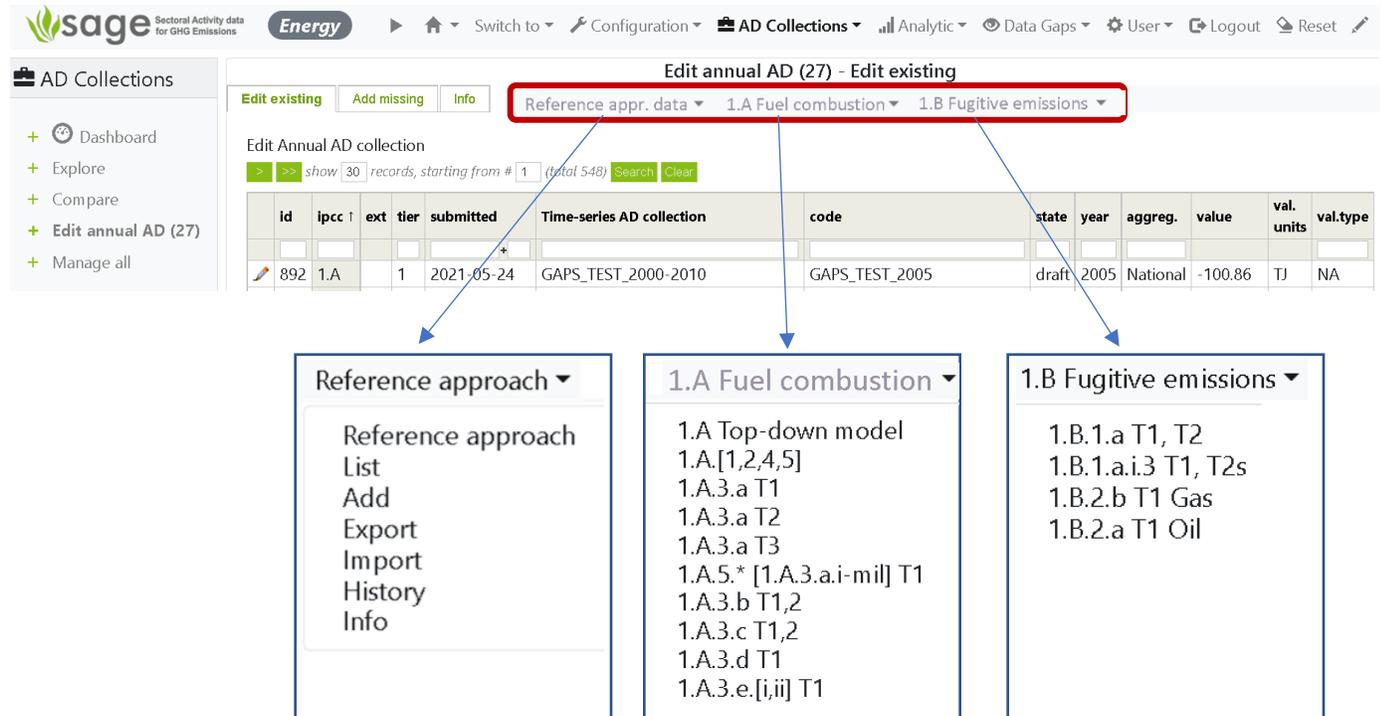


The screenshot shows the Sage Energy interface for editing AD collections. The top navigation bar includes the Sage logo, 'Energy' category, and various utility icons. The main content area is titled 'Edit annual AD (27) - Edit existing' and shows a table of AD collections. The table has columns for id, ipcc, ext, tier, submitted, Time-series AD collection, code, state, year, aggreg., value, val. units, and val.type. The table contains 7 rows of data, each with a pencil icon for editing.

id	ipcc	ext	tier	submitted	Time-series AD collection	code	state	year	aggreg.	value	val. units	val.type
894	1.A		1	2021-05-24	GAPS_TEST_2000-2010	GAPS_TEST_2005	draft	2005	National	8.00	TJ	NA
885	1.A		1	2021-05-24	GAPS_TEST_2000-2010	GAPS_TEST_2004	draft	2004	National	8.10	TJ	NA
923	1.A		1	2021-05-24	GAPS_TEST_RA_National_2000-2010	GAPS_TEST_RA_National_2003	draft	2003	National	566.39	TJ	NA
895	1.A		1	2021-05-24	GAPS_TEST_2000-2010	GAPS_TEST_2005	draft	2005	National	429.10	TJ	NA
956	1.A		1	2021-05-28	GAPS_TEST_RA_National_2000-2010	GAPS_TEST_RA_National_2008	draft	2008	National	5595.99	TJ	NA
857	1.A		1	2021-05-24	GAPS_TEST_2000-2010	GAPS_TEST_2000	draft	2000	National	-192.15	TJ	NA

Step 2 At the top, click the AD collection to work on and then click the sector from the pop-up menu as below.

Figure 12. Obtain list of records for the selected AD collection



The option tabs for record entries in the AD collection are the same as those for AD collection management, but they refer to a single record rather than the entire AD collection:

- List** displays a table with the list of records; each record has a “pencil” icon at the beginning (this is the edit option) and a “cross” icon at the end (to delete a record),
- Add** allows entry of a new activity data record that includes the fuel consumption value and relevant supplementary information (e.g., fuel characteristics, uncertainty, and comments),
- Export** allows exporting existing activity data to an Excel (CSV) file,
- Import** allows importing data from Excel templates (for all tables and records, and for entire time series),
- History** contains a log of changes performed on records within the module,
- Info** provides relevant notes and guidance helping you understand available options and how to use them

5.3.2 How to edit activity data records

To edit existing AD collection names and details:

- click the **List** tab. You will see the existing table with records. Each record has a **pencil** button on the left for editing
- to modify the existing entry - click the "pencil" button before the record, then make your modification using the form provided, and
- click **Save** to save the updated record.
- To remove a record from the list, click the **cross** icon at the end of the record.

5.3.3 How to add a new data record – manual entry

The process of adding a new activity data record is similar to adding a new AD collection. To add a new activity data record, click **Add** and then use the provided form to create a new record. This will include entering both activity data and supporting information.

This form includes three main sections – Reference approach (or top-down approach for fuel combustion), 1A Stationary Combustion, and 1B Fugitive emissions. For higher tiers (T2 and T3). SAGE provides additional entry fields to enable entries for combustion technology, operating conditions, control technology, maintenance quality, equipment age, and CO₂ captured.

When the entries are complete, SAGE calculates the value of the fuel consumption in TJ (so it is ready for entry in the IPCC equations) and saves the record in the database.

For higher tiers (T2 and T3). SAGE provides additional entry fields to enable entries as required (e.g., for combustion technology, operating conditions, control technology, maintenance quality, equipment age, and CO₂ captured).

*General information fields (all entries here are **mandatory**) (Figure 13):*

Category	Select IPCC category for the data entry
Aggregation	Select the level of aggregation (national, regional, or facility) your data will represent. If additional aggregation levels are required (e.g., city, island, state) - they can easily be included by authorized users at the configuration level, please ask.
Statistics quality	Describe the reliability of the data used; your selection in this option will help SAGE to determine the correct default level of uncertainty for the activity data if the actual uncertainty is unknown.
Methodological tier	Identify the level of details required for the activity data entry.

Figure 13. Filling the general section in the activity data entry form - Energy

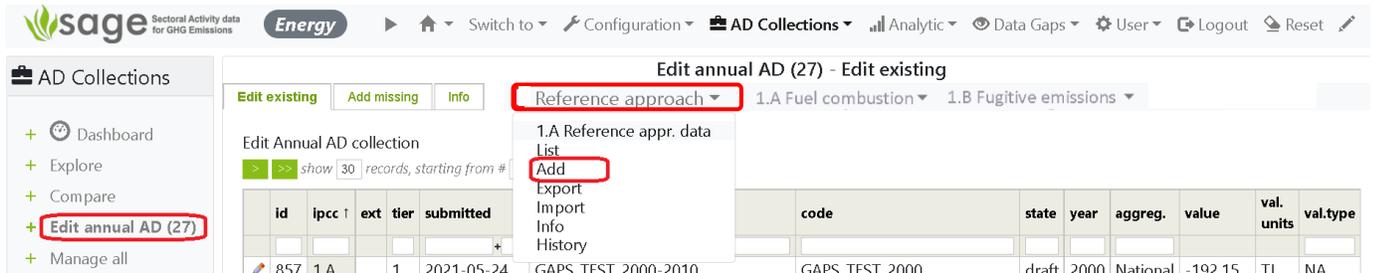
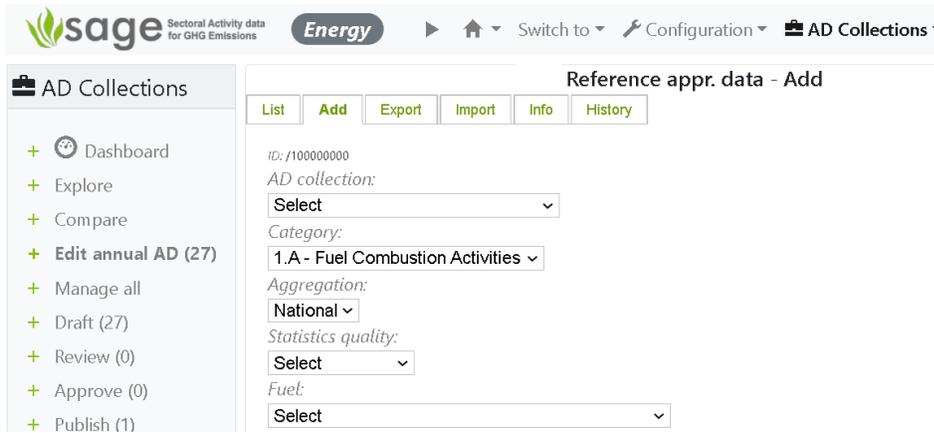
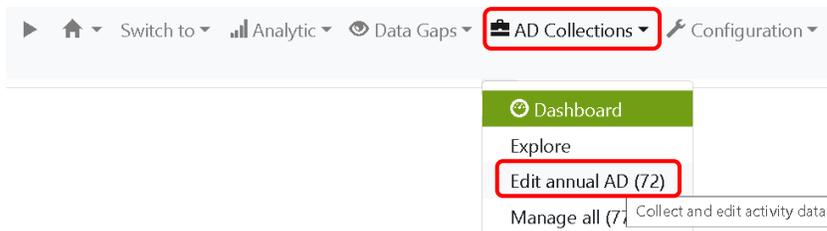


Figure 14. Filling a section in the activity data entry form - Energy



To choose the fuel and fuel characteristics:

1. Open an AD collection
AD collection menu at the top, then *Edit annual AD* menu item



2. Find the AD collection to change and click the pencil icon on its left.



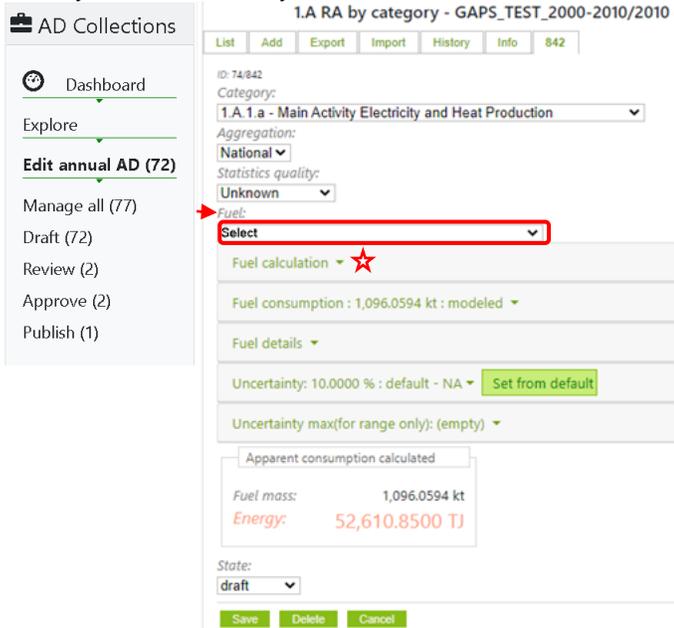
- Near the top, click *Add* to add an item



1.A.[1,2,4,5] – My AD_1990-2020

List Add Export Import History Info

- Part-way down the form, you will see *Fuel*:



AD Collections

- Dashboard
- Explore
- Edit annual AD (72)
- Manage all (77)
- Draft (72)
- Review (2)
- Approve (2)
- Publish (1)

1.A RA by category - GAPS_TEST_2000-2010/2010

List Add Export Import History Info 842

ID: 74/842

Category: 1.A.1.a - Main Activity Electricity and Heat Production

Aggregation: National

Statistics quality: Unknown

Fuel: Select

Fuel calculation ☆

Fuel consumption : 1,096.0594 kt : modeled

Fuel details

Uncertainty: 10.0000 % : default - NA Set from default

Uncertainty max(for range only): (empty)

Apparent consumption calculated

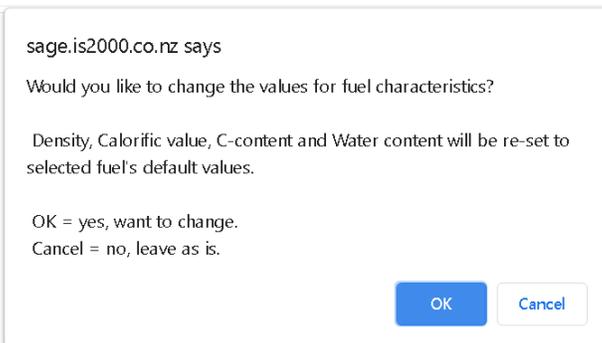
Fuel mass: 1,096.0594 kt

Energy: 52,610.8500 TJ

State: draft

Save Delete Cancel

- Click “Select” under *Fuel* and then click a fuel type to select it
- Now you will see the following message:



sage.is2000.co.nz says

Would you like to change the values for fuel characteristics?

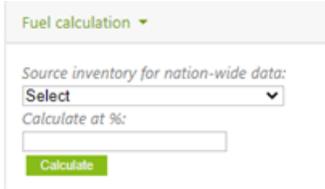
Density, Calorific value, C-content and Water content will be re-set to selected fuel's default values.

OK = yes, want to change.
Cancel = no, leave as is.

OK Cancel

Click ‘OK’ to proceed and change the values for fuel characteristics.

- To calculate the amount of fuel consumed on the basis of nation-wide apparent consumption, next click *Fuel calculation* (☆ above in the diagram of step 4) and the following will display.



Enter the source and calculation percentage and click *Calculate*.

*Fuel consumption fields (most entries here are **mandatory**) (Figure 15):*

Figure 15. Fuel section in the activity data entry fields

Fuel consumption

Value
Units
Type
Source
Reference

Value - enter the fuel consumption value

Units - select the unit of measurement for the fuel consumption value you have entered. If an additional unit is required - it can be added to the list of available units by authorized users at the configuration level, please make an inquiry.

Type - indicates if the data are coming from a survey (actual measurements and observation) or they are modelled (e.g., estimated on a basis of other parameters). If the entered datapoint is calculated using extrapolation, interpolation or other modeling techniques or suggested on a basis of an expert judgement, please select "modelled"

Source, Date issued, and Reference - are for entering the detailed information on the data source and including additional comments (in the **Reference** field)

Uncertainty - can be selected as a default value (click **Select from default** link), in which case SAGE will provide the default value using the logical path suggested by the 2006 IPCC Guidelines. You can override this value if you have the actual (or more suitable) uncertainty data available for the entered fuel consumption.

Optional entry: if the uncertainty is not an IPCC default, and it is available in the form of a range, enter the top range figure in the field **Uncertainty max** (for range only).

*Fuel (most entries here are **mandatory**)*

This group includes intrinsic fuel characteristics used for unit conversion and emission estimates.

Fuel - select the fuel name from the list. Once the fuel is selected, SAGE will ask you if you would like to set/change all fuel characteristics to their default values. If you respond **OK** in the dialog box, all fuel characteristics will be set to their defaults. SAGE will display these values on the screen and flag them as "default". The characteristics include:

Density, which is used to recalculate volume-based units to mass (mandatory)

Calorific value to convert amount of fuel to energy value (TJ) used in most IPCC equations. You can also choose whether it is gross or net calorific value (GCV or NCV) and insert the conversion factor (if different from the 2006 IPCC default) (mandatory)

Carbon content of fuel, which also can be set as default or have a custom entry (mandatory)

Water content of fuel, which may be useful for wood-based fuels, for example (optional)

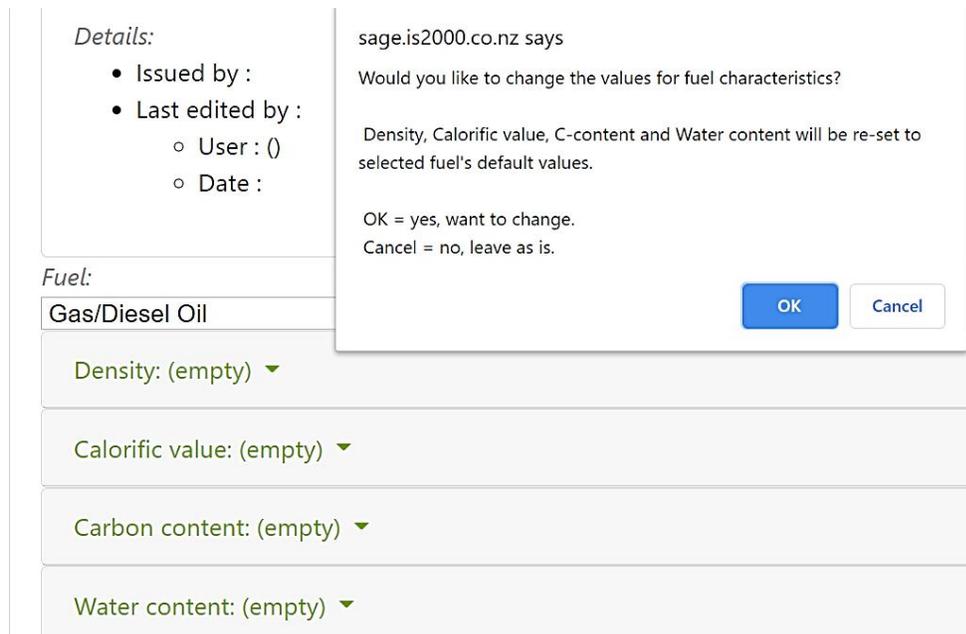
For each characteristic, if the value is not available by default, then you will need to provide the type of source, the source (actual data provider), the data published/accessed, and a reference/comment. If you chose the default characteristics then SAGE will enter this information for you automatically (Figure 17).

For calorific value, the default is the NCV value. The steps you have to follow to fill this section are:

Step 1 Select fuel from the drop-down menu of fuels. Unless the same fuel has been selected for the previous entry, SAGE will offer to set the fuel characteristics to their default values (Figure 16).

Step 2 in the dialogue box, click **OK** to use default values, or **Cancel** to override with different values. If you click “Cancel”, you will need to enter the fuel characteristics manually, record the source for these data, and provide the reference (this is mandatory). An example of such entry for calorific value is included in Figure 17.

Figure 16. Fuel section in the activity data entry form – selecting fuel characteristics.



The screenshot shows a web form for entering activity data. On the left, there is a 'Details' section with a list of items: 'Issued by:', 'Last edited by:', 'User: ()', and 'Date:'. Below this is a 'Fuel:' section with a dropdown menu currently showing 'Gas/Diesel Oil'. Underneath are four more dropdown menus, each labeled with a characteristic and '(empty)': 'Density:', 'Calorific value:', 'Carbon content:', and 'Water content:'. A dialog box is overlaid on the right side of the form. The dialog box has a title 'sage.is2000.co.nz says' and contains the text: 'Would you like to change the values for fuel characteristics? Density, Calorific value, C-content and Water content will be re-set to selected fuel's default values. OK = yes, want to change. Cancel = no, leave as is.' At the bottom of the dialog box are two buttons: 'OK' and 'Cancel'.

Figure 17. Activity data entry form filled with default data and calculated energy consumption value

Fuel:

Density: (empty) ▾

Value:

Units:

Type:

Default/Custom:
 NA

Source:

Date issued:

Reference:

Figure 18. Activity data entry form filled with default data and calculated energy consumption value

Category:

Aggregation:

Statistics quality:

Tier:

Fuel consumption: 1000 m3 : data from survey ▾

Fuel:

Density: 0.724 kg/m3 : default ▾

Calorific value: 48 TJ/Gg : default ▾

Carbon content: 15.3 kg/kJ : default ▾

Water content: (empty) ▾

Tier 2 data ▾

Tier 3 data ▾

Uncertainty: 60 % : default - modeled data ▾ Select from default

Uncertainty max (for range only): (empty) ▾

Fuel mass:
 0.000724 kt
Energy: 0.034752 TJ

State:

Set methodological tier

In most categories, 2006 IPCC Guidelines require more detailed activity data for higher methodological tiers. SAGE provides additional menu options and entry fields to record these additional details.

For tier 2, the record will consist of the data and information provided for tier 1 plus the additional entry for tier 2. For tier 3, SAGE record the information provided for tiers 1 and 2 and the additional information entered for tier 3. Note that you may want to record country-specific values for fuel characteristics for higher tier estimations.

For tier 2, the additional information includes technology description (Figure 19). Tier 2 parameters may optionally be entered in tier 1.

For tier 3, the additional information includes **operation conditions, control technology, maintenance quality, equipment age, and CO₂ captured** (Figure 20). Tier 3 parameters may optionally be entered in tier 2 or tier 1.

E.g., Tier 1 may simply use default values for fuel characteristics (e.g., calorific values) and aggregated fuel type (e.g., oil)

Tier 2 may be more precise by having country-specific parameters for fuels and disaggregating fuels (not just oil, but identify specific oil fractions or/and sources)

Tier 3 may be more precise still, by having a value for each fuel for each country for different groups or individual oil wells, gas fields, or coal basins

Figure 19. Technology selection for tier 2

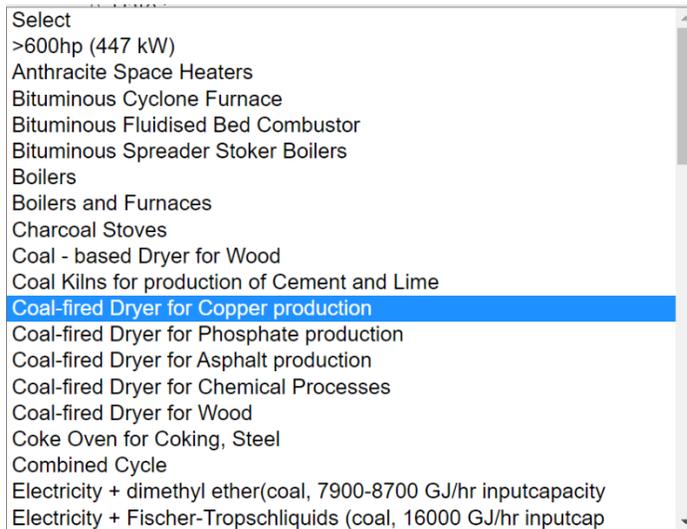


Figure 20. Additional entry fields for tier 3

Tier 3 data

- Operating conditions
- Control technology

Maintenance quality
 Equipment age (years)
 CO2 captured (tonnes)

5.3.4 How to add a new data record – import from Excel

Users can import data from Excel into SAGE for all categories and fuels.

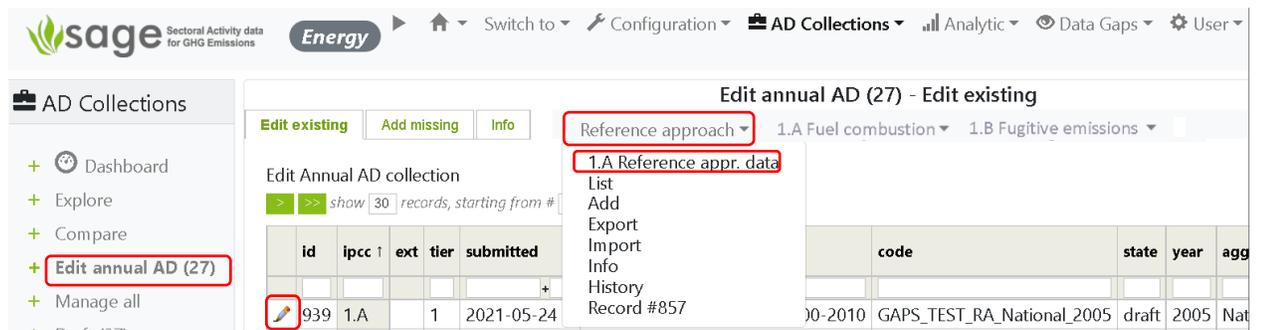
Note: *Appendix B* and *Appendix C* contain a Data Dictionary and other information related to import data.

1. Create the file with data, ready to be imported.

a. One way to do that is:

Click 'AD collection', 'Edit annual AD', click the AD collection, click the category

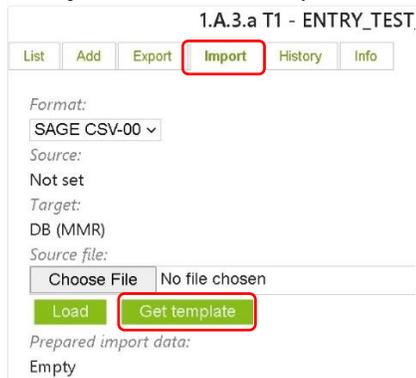
Figure 21. Import data



Click tab at top 'Import'



The system shows the import form



Follow the instructions in the template file.

b. An alternative way is:

export a similar set of data from a similar AD collection
open that exported file (e.g., in Excel)

Delete the first 2 columns (showing 'ID' and 'AD collection ID')

Delete the first 3 rows (delete all blank rows but keep the 'header' column name row)

Change the data as appropriate

2. Click 'AD collection', click 'Edit annual AD', click the AD collection to edit, click the category to import

3. Click 'import'

Figure 22. Import AD data



id	submitted	ipcc	tier	aggreg.	type	coal amount	total (kt)	waste (kt)	mine depth	uncert.	basin name	state	
8	2021-04-28	1.B.1.a.i	T1	National	1	1637.43 kt	1637.43	0		5 %		draft	✗
14	2021-05-04	1.B.1.a.ii	T1	National	1	85424.2 kt	85424.2	0		5 %		draft	✗

4. Choose the import format, choose the file to import and click 'Load'

5.3.5 How to calculate energy consumption of fuels in TJ

SAGE calculates the energy consumption from fuel consumption and fuel data automatically as soon as the data are entered. The fuel energy consumption value is displayed under the entry form and is recorded in the database.

SAGE uses the IPCC methodology to calculate consumption.

To calculate emissions using the equations in the 2006 IPCC Guidelines, the fuel consumption should be converted to its energy value in Terajoules (TJ). The following processes apply:

GCV to NCV

For the energy calculation, SAGE checks if the calorific value is entered in NCV or GCV and converts it to NCV, if necessary, using the conversion factor entered by the user or the default IPCC value:

$$NCV = GCV \cdot \left[\frac{NCV}{GCV} \text{ conversion factor} \right]$$

Then, if the fuel consumption value is entered as a volume, the volume is converted to SI volume unit, then to mass using density in kg/m³, and then to energy using the SAGE’s in-built unit converter and calorific value converted (if necessary) to GCV:

$$\text{Energy consumption (TJ)} = \text{Fuel consumption(volume)} \cdot \text{Base factor(SI)} \cdot \text{Density} \cdot \text{NCV} \rightarrow \text{TJ}$$

Consumption calculation

If fuel consumption is entered in mass units, they are first converted to SI units, then the calorific value is applied:

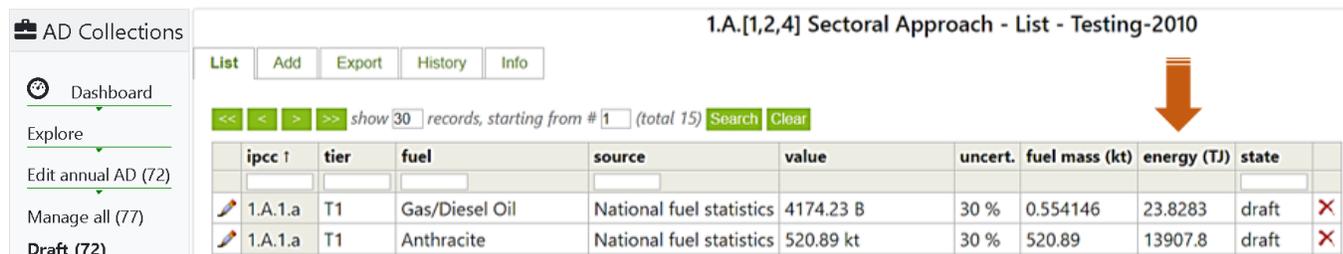
$$\text{Energy consumption (TJ)} = \text{Fuel consumption(volume)} \cdot \text{Base factor(SI)} \cdot \text{NCV} \rightarrow \text{TJ}$$

If fuel consumption is entered in energy units, they are first converted to SI base units, then to TJ:

$$\text{Energy consumption (TJ)} = \text{Fuel consumption value (energy)} \cdot \text{Base factor(SI)} \rightarrow \text{TJ}$$

The results of the calculation are displayed under the entry fields in the activity data entry form and can be viewed through the LIST tab of the AD collection draft (Figure 23).

Figure 23. SAGE calculates and displays the energy consumption for each activity data entry



ipcc t	tier	fuel	source	value	uncert.	fuel mass (kt)	energy (TJ)	state
1.A.1.a	T1	Gas/Diesel Oil	National fuel statistics	4174.23 B	30 %	0.554146	23.8283	draft
1.A.1.a	T1	Anthracite	National fuel statistics	520.89 kt	30 %	520.89	13907.8	draft

5.3.6 Estimating activity data using the top-down (“Reference”) approach

The “Reference approach” is a top-down method to measure consumption. That means it measures total of a fuel produced, imported, exported, bought/sold, international bunker fuels, and stock change to determine how much of fuel was consumed in the period (apparent consumption value).

SAGE can apply the reference approach to estimating apparent consumption by fuel to **individual fuel combustion categories**. For this, SAGE needs to know the total apparent consumption for a fuel across the entire combustion sector (1.A) and the proportion of the fuel consumed in a particular category (for example, by road transport category 1.A.3.b) for a year ‘X’.

This may initially seem complicated so a summary flow chart follows which may help.

Decide to use top-down (reference) approach

Add an AD collection for the year 'X', select 'Reference approach'

Enter the data (refer to section 5.3.6)



Category consumption estimation

Verification only

End

In a different AD collection created using the 'Sectoral approach' for the same year 'X':

1. Choose 'Reference approach'

2. Select Fuel and use 'Fuel calculation' menu

3. Enter estimated percentage of consumption in the category of the total apparent consumption

SAGE will use the top-down approach to calculate the amount of fuel consumed by the selected category.

To enable comparison of fuel combustion calculated using the reference and sectoral approaches, the total apparent consumption for a fuel across the entire combustion sector (1.A) and all relevant data entries must be made in a separate annual AD collection.

SAGE applies the approach described in the 2006 IPCC GLs (v.2, chapter 6, section 6.10.1) for default uncertainty if "default" is selected by users (±5% for a given fuel if case of well-developed statistics and ±10% otherwise). However, if users know the actual uncertainties, then please enter those.

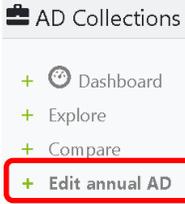
SAGE calculates and shows apparent consumption converted into kilotonnes (kt) and Terajoules (TJ).

To manage data for the reference approach:

- a. Click "AD Collections" (at the top menu)

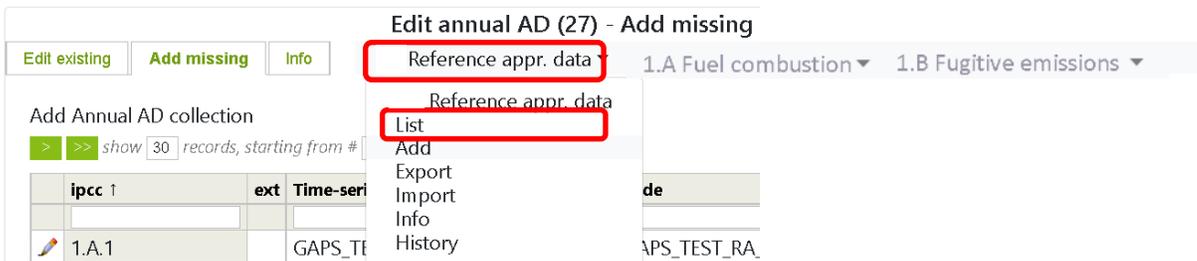


b. Click “Edit annual AD” (in the left menu)



c. At the top, click “Reference appr. data”, then click “List” in the pop-up menu

Figure 24. Edit Reference appr. data



Something similar to the following will display.

Figure 25. List AD Collections using Reference approach

id	submitted	Time-series AD collection	year	fuel	fuel_prod	fuel_exp	fuel_imp	int_bunkers	fuel_stock	aggreg.	uncert.	fuel mass, kt	energy, TJ	state
554	2021-04-19	ENTRY_TEST_2000-2005	2005	Crude Oil	200.00 TJ	20.00 TJ	10,000,000.00 TJ	20,000.00 TJ	10.00 TJ	National	0%	235,937.83	9,980,170.00	published
856	2021-05-24	GAPS_TEST_2000-2010	2000	Anthracite	4.00 TJ	1.00 TJ	1.00 TJ	0.00 TJ	100.00 TJ	National	5%	-3,595,505.62	-96.00	published
857	2021-05-24	GAPS_TEST_2000-2010	2000	Gas/Diesel Oil	0.00 TJ	0.00 TJ	10.00 TJ	2.15 TJ	200.00 TJ	National	5%	-4,468,604.65	-192.15	published
858	2021-05-24	GAPS_TEST_2000-2010	2000	Natural Gas	0.00 TJ	0.00 TJ	82.00 TJ	0.00 TJ	0.00 TJ	National	5%	1,708,333.33	82.00	published
859	2021-05-24	GAPS_TEST_2000-2010	2000	Wood/Wood Waste	0.00 TJ	0.00 TJ	8.00 TJ	0.00 TJ	0.00 TJ	National	5%	512,820.51	8.00	published
860	2021-05-24	GAPS_TEST_2000-2010	2000	Jet Kerosene	0.00 TJ	0.00 TJ	479.37 TJ	73.43 TJ	0.00 TJ	National	5%	9,204,988.66	405.94	published
861	2021-05-24	GAPS_TEST_2000-2010	2000	Motor Gasoline	0.00 TJ	0.00 TJ	946.34 TJ	0.00 TJ	0.00 TJ	National	5%	21,362,076.75	946.34	published

Once you’re in the ‘AD collection’, ‘Reference approach’ component:

1. To show all records, click the “List” tab at the top



2. To edit a record, click the “List” tab near the top of the page and click the pencil icon (left of the particular record)

AD Collections

- + Dashboard
- + Explore
- + Compare
- + **Edit annual AD (27)**
- + Manage all
- + Draft (27)
- + Review (0)
- + Approve (0)
- + Publish (1)

Reference appr. data - Record #554

id: 62/554

AD collection:

Category:

Aggregation:

Statistics quality:

Fuel:

Fuel properties

Fuel Production : 200.0000 TJ : survey

Fuel Export : 20.0000 TJ : survey

Fuel Import : 10,000,000.0000 TJ : survey

International bunkers : 20,000.0000 TJ : survey

Fuel Stock change : 10.0000 TJ : survey

Uncertainty details [Set from default](#) :

Uncertainty (symmetric OR min value for range): 0.0000 % : application default - modeled

Uncertainty max (max value, use for range only): (empty)

Apparent consumption calculated

Fuel mass: 235,937.8281 kt

Energy: 9,980,170.0000 TJ

State:

While editing a record, you can change data in many fields.

Fuel Production

Value:

Units:

Type:

Default/Custom: NA

Source:

Date issued:

Reference:

Details:

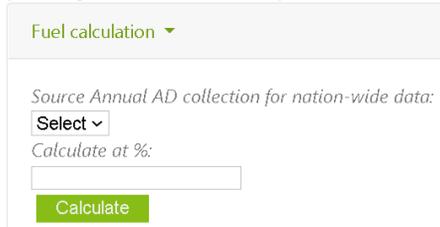
- Issued by :
 - Organisation : Ministry of Economy
- Last edited by :
 - User : Admin (UNFCCC Data Collection Agency)
 - Date : 2021-05-13

'Category', 'Aggregation' and 'Statistics quality' have restricted-selection lists (click-and-pick). For "Aggregation" selection list, only the "National" option is available because the fuel consumption calculation for the top-down approach refers to the nation-wide apparent consumption value.

Click 'OK' to set all fuel characteristics to their default values.

To update data in an area like 'Fuel Calculation', you must be in a 'Top-down model' (not a 'Reference approach'). Click the green heading 'Fuel Calculation' and the relevant required information will be shown. 'Fuel Calculation' requires a name of the AD collection containing nation-wide apparent consumption values calculated across the entire fuel combustion sector for the same year as the current entry is associated with, and the percentage of the selected fuel (e.g., gas/diesel oil) consumed by the selected category (e.g., 10):

To update data in an area like 'Fuel Production', click on the green heading 'Fuel Production' and the relevant required information will be shown. 'Fuel Production' requires a value, units, data type (survey / modelled /etc.), data source, date issued, reference and comments are all needed.



SAGE also requires the following metadata in the 'Fuel consumption' area:

- type of data origin (e.g., modeled)
- Type of data source (menu '**Source**', e.g., top-down approach)
- when the data was issued/calculated (field '**Data issued**')
- Reference and/or comments (field '**Reference and comments**')
- Uncertainty value (to use the default value, click the green button '**Set from default**')

To save changes, click 'Save'.

To delete the record, click 'Delete'

To discard the changes and revert the record to what it previously was, click 'Cancel'.

3. To **delete** a record, click the top "List" and click the cross icon (on the right of the record)

4. To **add** a record, click the top "Add" tab and enter data for a new record



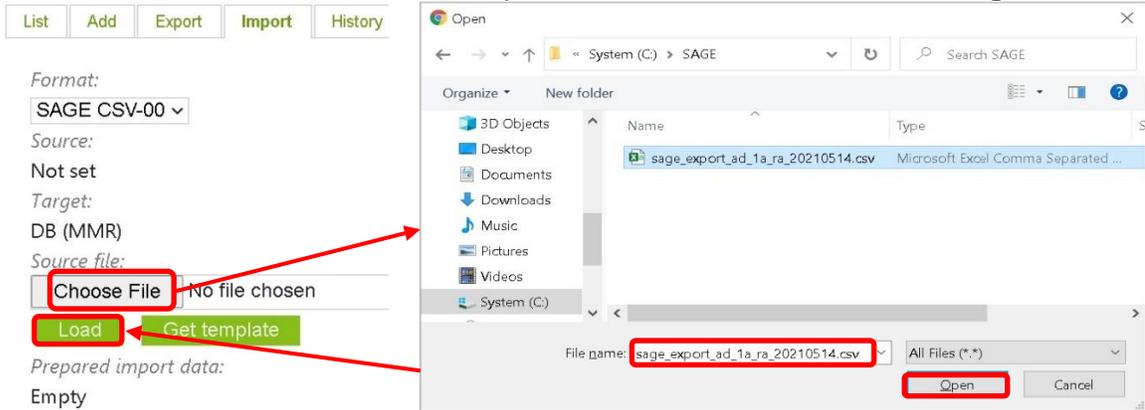
This shows a blank record. The process to add a record is similar to the edit process except it starts with a blank record. (Edit process is described above in '5.1.4 Explore' page 16).

5. To **Export** data, click the top "Export" tab, enter file name, enter description, choose output format if needed, click "Export All".

The file will save wherever your internet browser defaults to. In many internet browsers (e.g., Google Chrome), a link to the file will probably show at the bottom of the web page.



6. To **Import data**, click the top “Import” tab, choose an input format if needed, click “Choose File”, use the file browser to find the file, click “Open” in the file browser, click “Load” in Sage.



7. To **see edition history**, click ‘History’ tab at the top and it will show something similar to below.

List Add Export Import **History** Info

Editions history

<< < > >> show 10 records, starting from # 1 (total 2) Search Clear

id	Time-series AD collection	survey	code	year	date	num of records	state	status	edited by	edition reason	details
74	GAPS_TEST_2000-2010	GAPS_TEST	GAPS_TEST_2010	2010	2021-05-11 21:27:56	0	draft	enabled	Admin (UNFCCC Data Collection Agency)	testing	xxx
74	GAPS_TEST_2000-2010	GAPS_TEST	GAPS_TEST_20010	20010	2021-05-11 20:52:38	0	draft	enabled	Admin (UNFCCC Data Collection Agency)	New AD	by Admin; based on the ENTRY_TEST_2000-2005 data with gaps

8. To **see Information** about how to use the ‘Reference Approach’, click the Info tab at the top of the page.



It will show similar information of how to use the AD collection – Reference approach module.

Show all records

To show all records, click the "List" tab near the top of the page.

Add new record

To add a new record, click the "Add" tab near the top of the page and then use the provided form to create a new record. Please include the record name, code, and description.

Edit a record

click the "List" tab near the top of the page and click the pencil icon (on the left of the record).

While editing a record, you can change data in many fields.

'Category', 'Aggregation' and 'Statistics quality' have restricted selection lists (click-and-pick).

To update data in an area like 'Fuel Production', click on the green heading 'Fuel Production' and the relevant required information will be shown. 'Fuel Production' requires a value, units, data type (survey / modelled /etc.), data source, date issued, reference and comments are all needed.

Delete a record

Click the "List" tab near the top of the page and click the cross icon (on the right of the record).

Export record(s)

To export a record or multiple records, click the "Export" tab near the top of the page. Enter file name, enter description, choose output format if needed, and click "Export All". The file will save wherever your internet browser defaults to. In many internet browsers, a link to the file will probably show at the bottom of the page.

Import record(s)

Click the "Import" tab near the top of the page. Choose an input format if needed, click "Choose File", use the file browser to find the file, click "Open" in the file browser, click "Load" in Sage.

- To show the last record you viewed**, click the relevant tab at the top of the page. In the case below, the last record IDs viewed were 783 and 777. They are not necessarily sorted by 'last viewed date' or numerically.



To optionally edit that record, follow the "Edit" process above ('5.1.4 Explore' page 16).

5.3.7 Specific for 'Stationary Combustion' (St. Combustion)

To work on a 'combustion' AD collection, you can click on 'AD collection' at the top and then click pop-up menu 'Edit annual AD'.

Figure 26. Edit a 'combustion' AD

Then click '1.A (1,2,4,5) St. Combustion' in the body of the page and click pop-up menu '1.A (1,2,4,5)'.

Something similar to the following will be displayed:

Figure 27. List ‘combustion’ ADs

1.A.[1,2,4,5] - GAPS_TEST_2000-2010/2005 (GAPS_TEST_2005) - List

List Add Export Import History Info													
<< < > >> show <input type="text" value="30"/> records, starting from # <input type="text" value="1"/> (total 7) Search Clear													
id	submitted	ipcc 1	tier	fuel	aggreg.	value	value type	source	uncert.	fuel mass (kt)	energy (TJ)	state	
 654	2021-05-11	1.A.1.a	T1	Natural Gas	National	1204.1199951171875 kt	modeled	National fuel statistics	10 %	1204.1199951171875	57797.76171875	draft	
 650	2021-05-11	1.A.1.a	T1	Anthracite	National	255256 t	modeled	National fuel statistics	10 %	255.25599670410156	6815.3349609375	draft	
 657	2021-05-11	1.A.1.b	T1	Gas/Diesel Oil	National	286.68798828125 kt	modeled	National fuel statistics	10 %	286.68798828125	12327.583984375	draft	
 663	2021-05-11	1.A.2.a	T1	Natural Gas	National	39.24869918823242 kt	modeled	National fuel statistics	10 %	39.24869918823242	1883.9376220703125	draft	
 672	2021-05-11	1.A.2.d	T1	Natural Gas	National	41.099998474121094 kt	modeled	National fuel statistics	20 %	41.099998474121094	1972.800048828125	draft	
 681	2021-05-11	1.A.4.b	T1	Wood/Wood Waste	National	538.1409912109375 kt	modeled	National fuel statistics	100 %	538.1409912109375	8395	draft	
 679	2021-05-11	1.A.4.b	T1	Natural Gas	National	102.03600311279297 kt	modeled	National fuel statistics	20 %	102.03600311279297	4897.72802734375	draft	

The ‘stationary combustion’ data entry form includes the following fields (see *Appendix B* for more detail of field contents options):

- Category
- Aggregation
- Statistics quality
- Tier
- Fuel consumption – Value
- Fuel consumption – Units
- Fuel consumption – Type

Once all data is entered, save the record.

5.3.8 Specific for ‘Transport’

To work on a ‘Transport’ AD collection, you can click on ‘AD collection’ at the top and then click pop-up menu ‘Edit annual AD’.

Then click ‘1.A (3,5) Transport’ in the body of the page and, in the pop-up menu, click whichever area you want to work on.

Figure 28. List of Transport sector items

Edit annual AD (27) - Edit existing

Reference approach ▼ **1.A Fuel combustion** ▼ 1.B Fugitive emissions ▼

Edit Annual AD collection

> >> show 30 records, starting from # 1 (total 548)

	id	ipcc ↑	ext	tier	submitte
	954	1.A		1	2021-05
	911	1.A		1	2021-05

- 1.A Top-down model
- 1.A.[1,2,4,5]
- 1.A.3.a T1
- 1.A.3.a T2
- 1.A.3.a T3
- 1.A.5.* [1.A.3.a.i-mil] T1
- 1.A.3.b T1,2
- 1.A.3.c T1,2
- 1.A.3.d T1
- 1.A.3.e.[i,ii] T1

To see the category names, hover over the category ID.

Figure 29. Category name screentips

1.A Fuel combustion ▼

- 1.A Top-down model
- 1.A.[1,2,4,5]
- 1.A.3.a T1
- 1.A.3.a T2** Civil Aviation Tier 1
- 1.A.3.a T3
- 1.A.5.* [1.A.3.a.i-mil] T1
- 1.A.3.b T1,2
- 1.A.3.c T1,2
- 1.A.3.d T1
- 1.A.3.e.[i,ii] T1

The 'transport' data entry form includes the following fields:
(See Appendix B for more detail of field contents options):

- Category
- Aggregation
- Statistics quality
- Tier
- Airport code
- Fuel consumption total – Value
- Fuel consumption total – Units
- Fuel consumption total – Type
- Fuel consumption total – Source
- Fuel consumption total – Date issued
- Fuel consumption total – Reference/comments
- Fuel – Type
- Fuel – Density
- Fuel – Calorific value – Value
- Fuel – Calorific value – Units
- Fuel – Calorific value – Type

- Fuel – Calorific value – Source
- Fuel – Calorific value – Date issued
- Fuel – Calorific value – Reference/comments
- Fuel – Carbon content – Value
- Fuel – Carbon content – Units
- Fuel – Carbon content – Type

Once all data is entered, save the record.

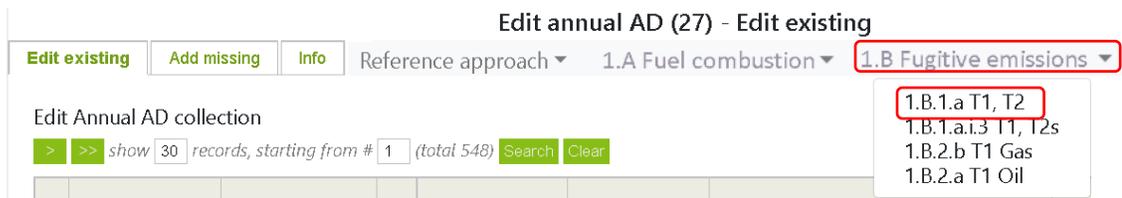
5.3.9 Specific for ‘Fugitive Emissions’

Fugitive emissions

are presented in production units (not TJ the way fuel combustion emissions are)
 are calculating emissions that escaped from other processes
 are not related to use of fuels ((they're not combusting anything)
 therefore have a different data interface than combustion emissions

To manage fugitive emissions,
 click “AD collection” tab near the top of the page,
 click “Edit annual AD” sub-menu or on the left of the page

Figure 30. Editing Solid fuels data



Find the AD collection to work with in the body of the page
 Click the popup menu item for that AD collection (titled 1.B.[1,2] Fugitive)
 Click the relevant sub-section under either “Solid fuels” or “Oil and Natural gas”

Figure 31. List editable inventories

id	ipcc	ext	tier	submitted	Time-series AD collection	code	state	year	aggreg.	value	val. units	val.type
872	1.A		1	2021-05-24	GAPS_TEST_2000-2010	GAPS_TEST_2002	draft	2002	National	75.00	TJ	NA
863	1.A		1	2021-05-24	GAPS_TEST_2000-2010	GAPS_TEST_2001	draft	2001	National	-146.00	TJ	NA
890	1.A		1	2021-05-24	GAPS_TEST_2000-2010	GAPS_TEST_2004	draft	2004	National	0.35	TJ	NA
882	1.A		1	2021-05-24	GAPS_TEST_2000-2010	GAPS_TEST_2003	draft	2003	National	1.00	TJ	NA
928	1.A		1	2021-05-24	GAPS_TEST_RA_National_2000-2010	GAPS_TEST_RA_National_2004	draft	2004	National	69293.90	TJ	NA
947	1.A		1	2021-05-28	GAPS_TEST_RA_National_2000-2010	GAPS_TEST_RA_National_2009	draft	2009	National	53757.66	TJ	NA

For **'1.B.1.a T1, T2 Underground & Surface mines'**, enter:

Category	underground or surface
Aggregation level	usually National but there are many options to pick from
Statistics quality	unknown or well-developed
Tier	T1 or T2
Coal waste %	0 to 100
amount	value
Mine depth	metres
Tier2 basin name	name
basin location	place
Methane flared	value
units	e.g., kg
type	pick from survey, modelled, etc.
source	pick from '2006 IPCC default', 'ICAO', etc.
issued	date
reference	reference and comments
Methane utilised	value
units	e.g., kg
type	pick from survey, modelled, etc.
source	pick from '2006 IPCC default', 'ICAO', etc.
Date issued	date
Reference	reference and comments
Uncertainty	either set from default or else enter value
units	e.g., kg
type	pick from survey, modelled, etc.
source	pick from '2006 IPCC default', 'ICAO', etc.
issued	date
reference	reference and comments
Uncertainty max (for range only)	either set from default or else enter value
units	e.g., kg
type	pick from survey, modelled, etc.
source	pick from '2006 IPCC default', 'ICAO', etc.
issued	date
reference	reference and comments
State	pick 'draft' or 'published' (only certain users can 'publish')

For **'1.B.1.a.i.3 – Abandoned underground mines'**, enter:

Aggregation level	usually National but there are many options to pick from
Statistics quality	unknown or well-developed
Tier	T1 or T2
Mines number	the number of mines
Gassy mines fraction %	the percent of gassy mines
Interval of mine closure	1900-1925, 1925-1950, 1950-1975, 1975-present
Closed mines	the number of closed mines
Tier2 coal rank	pick anthracite, bituminous or sub-bituminous
Years since abandoned	enter year(s)
Methane utilised	value

	units	e.g., kg
	type	pick from survey, modelled, etc.
	source	pick from '2006 IPCC default', 'ICAO', etc.
	Date issued	date
	Reference	reference and comments
Uncertainty		either set from default or else enter value
	units	e.g., kg
	type	pick from survey, modelled, etc.
	source	pick from '2006 IPCC default', 'ICAO', etc.
	issued	date
	reference	reference and comments
Uncertainty max (for range only)		either set from default or else enter value
	units	e.g., kg
	type	pick from survey, modelled, etc.
	source	pick from '2006 IPCC default', 'ICAO', etc.
	issued	date
	reference	reference and comments
State		pick 'draft' or 'published' (only certain users can 'publish')

For **'1.B.2.b – Natural gas'**, enter:

Aggregation level		usually National but there are many options to pick from
Statistics quality		unknown or well-developed
Tier		T1 or T2
Gas type and origin*		pick from 'coal-bed methane', 'deep-cut extraction', etc.
Activity		pick from export, flaring, import, production, venting
Value		value
Units		pick from e.g., m ³
Type		pick from survey, modelled, etc.
Source		pick from '2006 IPCC default', 'ICAO', etc.
Date issued		date
Reference		reference and comments
Uncertainty		either set from default or else enter value
	units	e.g., kg
	type	pick from survey, modelled, etc.
	source	pick from '2006 IPCC default', 'ICAO', etc.
	issued	date
	reference	reference and comments
Uncertainty max (for range only)		either set from default or else enter value
	units	e.g., kg
	type	pick from survey, modelled, etc.
	source	pick from '2006 IPCC default', 'ICAO', etc.
	issued	date
	reference	reference and comments
State		pick 'draft' or 'published' (only certain users can 'publish')

For '1.B.2.a – Oil', the only difference from the above '1.B.2.b – Natural gas' is the selection for the 4th item (see * above).

Instead of "Gas type and origin", for 1.B.2.a Oil' the selection is

Oil type and origin pick from 'bitumen API gravity < 10', etc.

5.4 'AD collection' Signoff Process (draft, review, approve, publish)

5.4.0 Signoff Process Overview

The 'AD collection' signoff process is a subset of the AD collection process (see 5.1.1 *The overall 'AD Collections' process*).

Click the **AD Collections** quick link (or use the top navigation menu panel) to open the AD collection

The following modules are available here:

- Manage** to create and manage AD collections
- Draft** to enter/update data
- Review** to signify that the data entry is complete and request a technical review of the AD collection data
- Approve** to accept/reject the results of the AD collection data review and request approval for AD collection data publication
- Publish** to approve AD collection data for viewing and analysis by all intended users

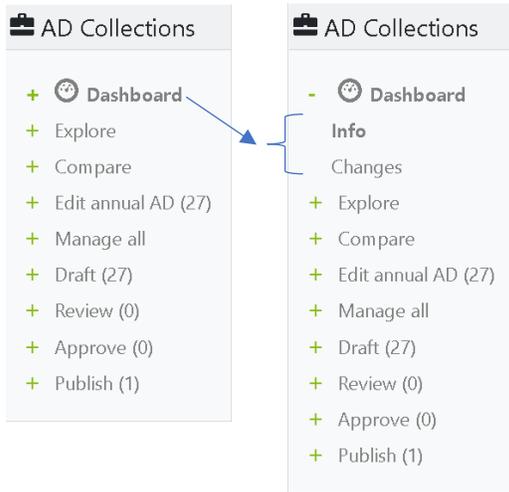
That relates to the four **states** of AD collections that show their progress in the approval process:

- Draft** the AD collection is created and available for data entries
- Reviewed** data entry is complete and the AD collection is sent for technical review
- Approved** the technical review is complete and the AD collection is sent for final sign-off
- Published** the AD collection data are successfully signed-off by an authorized person. At this stage, the AD collection is locked. It also means that the AD collection data are made available for data analyses and are ready for publication.

The AD collection **status** could be switched between "enabled", "disabled", and "deleted". When an AD collection is enabled, it is open for data entry and editing. When an AD collection is disabled, its contents can still be viewed, but not edited. When an AD collection is deleted, it is archived and no longer can be viewed or edited.

The left navigation pane sometimes shows green pluses.

Click a plus to see the sub-menu of the menu-item:



5.4.1 Draft (enter AD collection)

This section is covered in section **5.3 AD Collections Data Entry Process** on page 20.

5.4.2 Move to Review

After the AD collection data are entered and gaps are filled, you might want to send the AD collection for review.

To do so:

- In the List tab, click the pencil ("edit") icon at the AD collection you would like to send for review. The AD collection details screen will open.
- Enter the information in the **Reason for change** field (this is mandatory). This will flag why the AD collection needs a review. For example, "data entry is complete" or "issue fixed"
- Enter the information in the **Edition detail** field (this is also mandatory). You might want to note here who will be doing the review and when it will be complete.
- Scroll down and click the **Move to review** button on the bottom of the screen. SAGE will ask a confirmation for proceeding with the review.
- Click **OK** in the dialog box to proceed, otherwise, click **Cancel**.
- When the state is changed to **Review**, the data in the AD collection will be locked for editing unless an authorized user will change the AD collection status back to **Draft**.

5.4.3 Review

Once an AD collection is in the 'Review' state, authorized users (Administrators, or 'Power Users') can 'Reject' it back to 'Draft' state or 'Approve' it to be ready to approve.

5.4.4 Approve

After the review is complete, authorized users (Administrators, or 'Power Users') may accept or reject the reviewed AD collection. If it is rejected then it will become open for editing again.

- In the List tab, click the pencil ("edit") icon at the reviewed AD collection that you would like to approve. The AD collection details screen will open.
- Enter the information in the **Reason for change** field (this is mandatory). This will flag that the review results are accepted or rejected. For example, "review accepted".
- Enter the information in the **Edition details** field (this is also mandatory). You might want to note here who approved the AD collection and when. For example, "AD collection compiler has approved the AD collection on 31 January 2021".

5.4.5 Publish

After the review is approved, designated users (Administrators, or 'Power Users') may accept the reviewed AD collection or reject the reviewed version and open it for editing again. Here is what you need to do:

- In the List tab, click the pencil ("edit") icon at the approved AD collection that you would like to publish. The AD collection details screen will open.

- Enter the information in the **Reason for change** field (this is mandatory). This will flag that the review results are accepted. For example, "review accepted"
- Click 'Move to review' to reject or click 'Publish' to accept and publish
- Enter the information in the **Edition details** field (this is also mandatory). You might want to note here who approved the AD collection and when. For example, " AD collection compiler has approved the AD collection on 31 January 2021".

5.5 AD Collection Export Process

Once an AD collection is published, you may want to export data.

To export data:

- Use the Export tab to export any published AD collection in a form of SAGE CSV file or in the IPCC time-series template
- choose option "single file" to export all categories in a single file (suitable for analytical or data presentation and reporting purposes)
- choose option "multiple files" to export each category in a separate CSV file (suitable for subsequent data entries)

If you want to import SAGE data into IPCC software then you will need to save the CSV file as Microsoft Excel 97-2003 Worksheet.

6. Activity Data (AD) Collections - IPPU

6.1 Overview

6.1.1 The overall 'AD Collections' process

Sets of data are put into 'AD Collections'.

There may be any number of 'AD Collections' for any particular time period – there may be one or many AD Collections for a period.

Each AD Collection must first be created before data can be put into the AD Collection.

Once data is in an AD Collection, you can optionally try to fill data gaps.

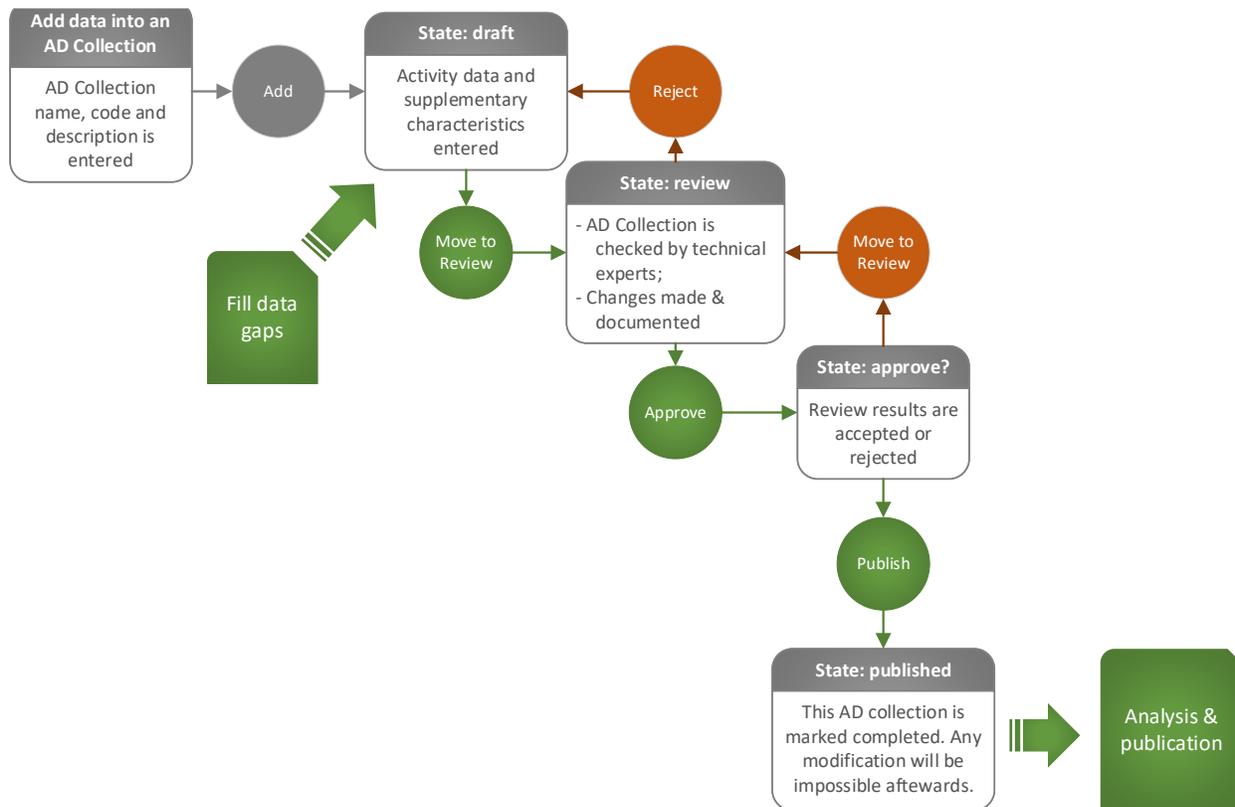
Once satisfied with data state in an AD collection, the AD Collection can be processed through a signoff process; draft ready for review, reviewed and ready for approval, approve and ready for publishing.

To put data into a draft 'AD collection',
 data is entered,
 data gaps are optionally filled,
 the AD collection is reviewed, may be approved or rejected,
 approved AD collection is either published or rejected,
 'published' AD collection can be analyzed and put into publications

Filling data gaps can require quite different skills from the rest of the AD collection process so it has been logically separated in SAGE (and in this manual).

Figure 32 summarizes processing and management of AD collections in SAGE.

Figure 32. AD Collection pathway through the SAGE system



6.1.2 How to navigate the AD Collection

SAGE uses the term annual activity data (AD) collection for the GHG AD collection emissions calculation. Each AD collection includes the activity data for all IPPU categories with supporting information for one AD collection year. To enable time-series analyses and reporting, all AD collections for the same time-series should have the same name and extension showing the AD collection year, for example, AD_name-2000, AD_name-2001, and so on.

To open the AD Collection component when you don't know which part of the AD Collection you want to use, click the **Switch To** quick link in the top menu and then **AD Collections**.

Instead, if you know which part of AD Collection component you want to use, click the top link to **AD Collections** and then click the component in the pop-up menu under that.

The AD Collection page lets you create, view, and manage GHG AD collections, insert, edit and delete AD collection data, review and approve the AD Collection data by making them available for data analysis.

6.1.3 Dashboard

Dashboard shows Information. History (if there is any), and Changes:

Info:

Info
Changes

Activity Data (AD) Collections

SAGE uses the term annual AD collection to describe an annual activity data collection for the GHG inventory emissions calculation. Each annual AD collection includes the activity data for all categories and fuels with supporting information for one AD collection year.

To enable time-series analyses and reporting, all AD collections for the same time-series should have the same name and extension showing the AD collection year, for example, **AD collection name-2000**, **AD collection name_name-2001**, and so on. The following groups of options are available here:

- **Manage** - to create and manage inventories
- **Draft** - you can perform data entry here
- **Review** - to create and manage inventories
- **Review** - to create and manage inventories
- **Approve** - approve inventory data for viewing and analyses by all intended users

History:

Editions history

<<
<
>
>>
show 10 records, starting from # 1 (total 153)
Search
Clear

id	AD inventory	survey	code	year	date	num of records	state	status	edited by	edition reason	details
77	My AD 1990-2020	My AD	My AD_2018	2018	2021-05-14 22:26:33	0	draft	enabled	Admin (UNFCCC Data Collection Agency)	first draft	National AD 1990-2020, latest reporting year, created 14 May 2021
76	My AD 1990-2020	My AD	My AD_2019	2019	2021-05-14 22:26:22	0	draft	enabled	Admin (UNFCCC Data Collection Agency)	first draft	National AD 1990-2020, latest reporting year, created 14 May 2021

Changes:

Changes log

<<
<
>
>>
show 10 records, starting from # 1 (total 949)
Search
Clear

id	date	action	user name	details
8860	2021-05-14 22:32:54	dctsur_op_ad_1a1_delete_record	Admin	rec_id=810
8859	2021-05-14 22:31:52	dctsur_op_ad_1a1_new_record	Admin	rec_id=100000000; name=100000000
8858	2021-05-14 22:26:33	dctsur_op_manage_new_record	Admin	rec_id=100000000; name=My Ad
8850	2021-05-14 17:57:10	dctsur_op_publish_export	Admin	sage_export_publ_ad.zip download processed

6.1.4 Explore

The 'Explore' menu on the left shows 4 options:

Time-series AD collection

This shows all AD collections for the entire time series, years they cover, status, etc. as below.

Explore Time-series AD collection

show records, starting from # (total 2) Search Clear

Time-series AD collection ↓	years range	state	Annual AD	records	categories
<input type="text"/>	<input type="text"/>	<input type="text"/>			
IPPU_1_2016-2020	2018-2018	approve	1	2	2
IPPU_1_2016-2020	2016-2020	draft	4	61	40

Annual AD collection

This shows the activity data across all categories for one year, their codes, states, etc. as below.

Explore Annual AD collection

show records, starting from # (total 5) Search Clear

Time-series AD collection ↓	code	year	state	records	categories
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>		
IPPU_1_2016-2020	IPPU_1_2016-2020_2016	2016	draft	38	29
IPPU_1_2016-2020	IPPU_1_2016-2020_2017	2017	draft	11	10
IPPU_1_2016-2020	IPPU_1_2016-2020_2018	2018	approve	2	2
IPPU_1_2016-2020	IPPU_1_2016-2020_2019	2019	draft	5	4
IPPU_1_2016-2020	IPPU_1_2016-2020_2020	2020	draft	7	6

Annual AD

This shows the activity data within each of the AD collections, including information as below.

Explore Annual AD collection data

> >> show records, starting from # (total 64) Search Clear

id ↑	submitted	Time-series AD collection	code	col.state	AD state	year	ipcc	tier	aggreg.	val.type	value	units
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
1	2022-01-12	IPPU_1_2016-2020	IPPU_1_2016-2020_2016	draft	draft	2016	2.A.1	1	Region A	NA	4.44	t
2	2022-01-12	IPPU_1_2016-2020	IPPU_1_2016-2020_2016	draft	draft	2016	2.A.1	1	Region B	NA	4.44	t
3	2022-01-13	IPPU_1_2016-2020	IPPU_1_2016-2020_2016	draft	draft	2016	2.A.1	1	Province	NA	5.00	t
4	2022-04-28	IPPU_1_2016-2020	IPPU_1_2016-2020_2016	draft	published	2016	2.A.1	1	Facility	survey	1000.00	t
5	2022-02-04	IPPU_1_2016-2020	IPPU_1_2016-2020_2016	draft	draft	2016	2.A.3	1	National	survey	100.00	t
6	2022-02-03	IPPU_1_2016-2020	IPPU_1_2016-2020_2016	draft	draft	2016	2.A.1	1	National	NA	0.32	t

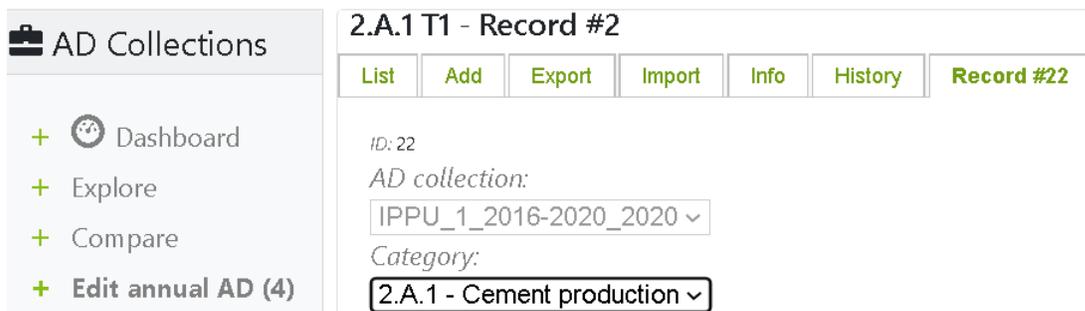
Info

The info tab shows brief information about how to use the 'Explore' functions.

6.1.5 Top-of-Page Tabs

Once you're adding or editing an AD collection, each module in the **AD Collections** component includes the following control tabs:

- List** displays a table with the list of records; each record has a “pencil” icon  at the beginning (this is the edit option) and a “cross” icon  at the end (to delete a record),
- Add** allows new item creation (an AD collection, an AD collection record, or a record in a configuration table),
- Export** this is only available when either
 1. a particular AD collection is selected; in this case you can export
 2. in the 'Publish' section; one can export the whole AD collection of SAGE as a .csv file or as a file ready for IPCC import
- Import** (in the current version of SAGE) importing is available by category when 'Edit annual AD' is selected
- Info** shows a summary of what each option does [show all records, add new record, edit a record, delete a record, export record(s), import record(s)]
- History** displays record change history
- Changes** contains a log of changes performed over the records within the module,
- Info** provides user guidance for each option in the module.
- Record #** if you have recently worked on other records, then shortcuts to those records also appear in the top-of-page tab list



The screenshot shows the 'AD Collections' interface. On the left is a sidebar with a 'Dashboard' icon and a list of options: '+ Dashboard', '+ Explore', '+ Compare', and '+ Edit annual AD (4)'. The main content area is titled '2.A.1 T1 - Record #2' and contains a row of tabs: 'List', 'Add', 'Export', 'Import', 'Info', 'History', and 'Record #22'. Below the tabs, there are form fields for 'AD collection:' with a dropdown menu showing 'IPPU_1_2016-2020_2020' and 'Category:' with a dropdown menu showing '2.A.1 - Cement production'.

6.2 AD Collection Creation/Management Process

6.2.1 Background

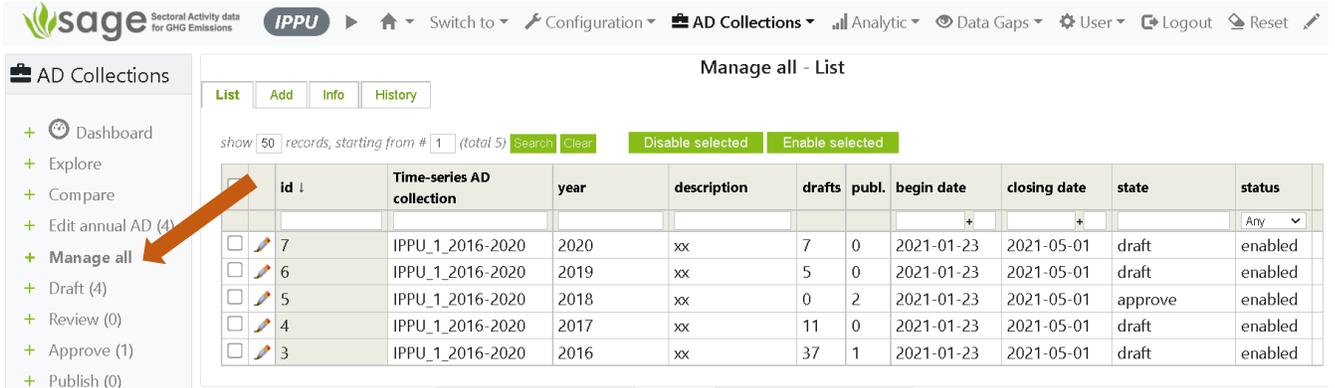
The 'Create AD Collection process is a subset of the AD Collection process (see 6.1.1 *The overall 'AD Collections' process* on page 46).

Every time you open the AD collection for change or update, you must include the reason for change (for example, error fix) and a detailed message on the change (for example, who made the change and when with a specific note on the change).

6.2.2 View available AD Collections

To view all available AD collections, select the AD collection component, then click **Manage all** link in the local navigation pane. The list of all available AD collections will be displayed (Figure 8):

Figure 33. Manage AD collections option in the local navigation pane



The screenshot shows the 'Manage all - List' page for AD Collections. The left navigation pane has a 'Manage all' link highlighted with an orange arrow. The main content area displays a table with the following data:

	id	Time-series AD collection	year	description	drafts	publ.	begin date	closing date	state	status
<input type="checkbox"/>	7	IPPU_1_2016-2020	2020	xx	7	0	2021-01-23	2021-05-01	draft	enabled
<input type="checkbox"/>	6	IPPU_1_2016-2020	2019	xx	5	0	2021-01-23	2021-05-01	draft	enabled
<input type="checkbox"/>	5	IPPU_1_2016-2020	2018	xx	0	2	2021-01-23	2021-05-01	approve	enabled
<input type="checkbox"/>	4	IPPU_1_2016-2020	2017	xx	11	0	2021-01-23	2021-05-01	draft	enabled
<input type="checkbox"/>	3	IPPU_1_2016-2020	2016	xx	37	1	2021-01-23	2021-05-01	draft	enabled

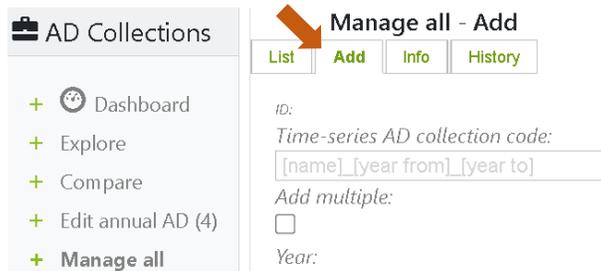
You can also check the **state** and **status** of each AD collection in this page.

6.2.3 Add new AD Collection

To add a new AD Collection:

1. Click the "Add" tab (Figure 34).

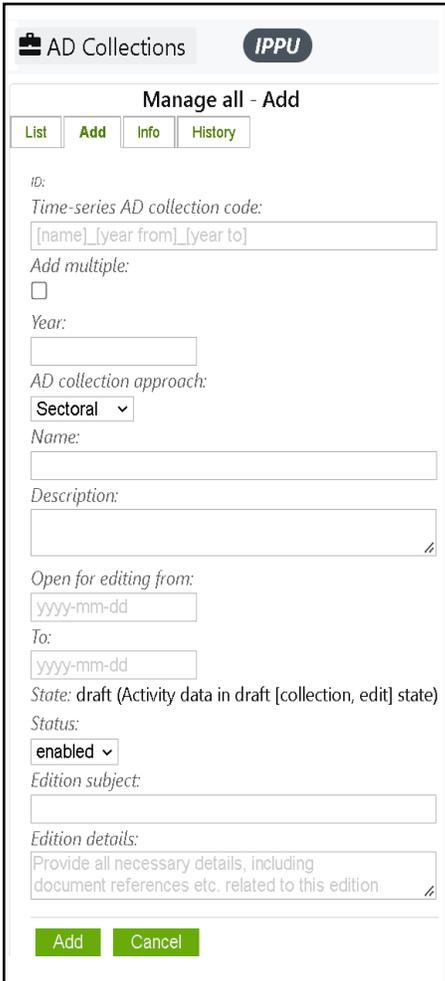
Figure 34. Use tab "Add" to add a new AD Collection



2. Use the provided 'new AD collection' form to create a new AD collection

All fields in this form are mandatory.

Figure 35. The 'new AD collection' form

 <p>The screenshot shows the 'new AD collection' form. It includes a sidebar with 'AD Collections' and 'IPPU' buttons. The main area is titled 'Manage all - Add' with tabs for 'List', 'Add', 'Info', and 'History'. The 'Add' tab is selected. The form contains the following fields:</p> <ul style="list-style-type: none"> ID: (auto-generated) Time-series AD collection code: [name]_[year from]_[year to] Add multiple: <input type="checkbox"/> Year: [text input] AD collection approach: Sectoral (dropdown) Name: [text input] Description: [text area] Open for editing from: [date input] To: [date input] State: draft (Activity data in draft [collection, edit] state) Status: enabled (dropdown) Edition subject: [text input] Edition details: [text area] <p>Buttons for 'Add' and 'Cancel' are at the bottom.</p>	<p>ID: The system automatically assigns an ID</p> <p>Time-series AD collection: include the name and reporting year</p> <p>Add multiple: Tick this if you want to add multiple years in the range</p> <p>Year(s): Enter the year(s) the AD collection covers</p> <p>AD collection approach: choose Sectoral or Reference</p> <p>Name: a unique, user-defined code IPPU_<#>_<year(s)>_<v>_<version>_<date created yyyy mm dd> E.g., for AD collection reported up to 2021, version 3, created 29 Apr 2022: IPPU_2021_v3_20220429</p> <p>Description: the AD collection description this allows users to make notes and comments regarding the AD collection</p> <p>Timeframe for data entry: in many countries, the data may be entered only within the agreed period or by the agreed date. Enter start and finish dates to specify the time frame when the AD collection is open for editing here.</p> <p>Status: When a new AD collection is created, it is automatically assigned draft state, The state will change as the AD collection goes through review and approval processes. The status determines whether the record is enabled or currently disabled for data entry.</p> <p>Edition details: the compiler can make any additional comments and provide further details</p>
---	---

- A time-series AD collection can consist of several annual entries.
- Each year of the time-series AD collection will have the same AD collection name that shows all years covered by that collection followed by a year covered by this AD collection instance, which should be reflected in the AD collection title, for example, "IPPU_2000-2010_2000".

6.2.4 Edit existing AD Collection

To edit existing AD collection names and details:

1. Click the "List" tab. You will see the existing table with records. Each record has a "pencil" button on the left for editing,
2. To modify the existing entry - click the "pencil" button before the record, then make your modification using the form provided, and
3. Click "Save" to save the updated record.

6.2.5 Delete existing AD Collection

To delete an existing AD collection record:

1. Click the "List" tab. You will see the existing table with records.
2. Click the "cross" at the right-hand end of the record to delete.

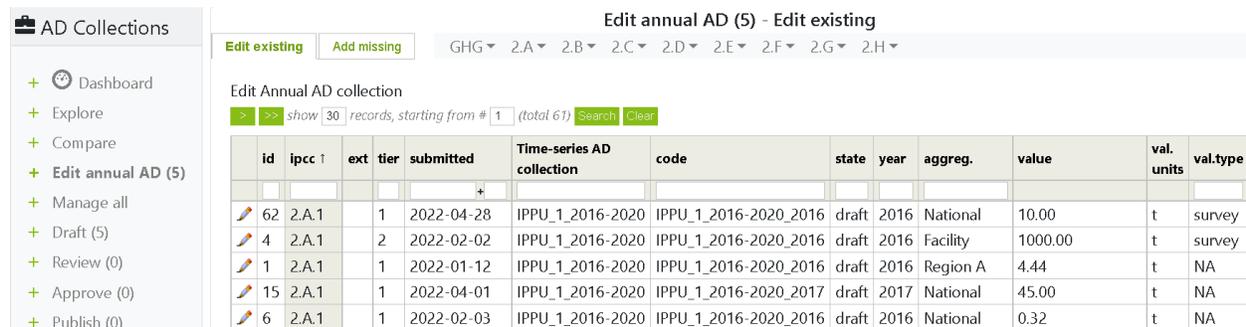
6.3 AD Collections Data Entry Process

The AD collection data entry process is a subset of the AD collection process (see 6.1.1 *The overall 'AD Collections' process on page 46*).

6.3.1 Background

The AD collection drafting page enables you to view, insert, edit and delete AD collection activity data and information. But first, you have to select which AD collection you are going to work with. To do that: In the left menu, click Draft and the system will show the list of AD collections available for drafting.

Figure 36. Select AD Collection for data entry - IPPU



The screenshot shows a web interface for editing AD collections. On the left is a navigation menu with options like 'Dashboard', 'Explore', 'Compare', 'Edit annual AD (5)', 'Manage all', 'Draft (5)', 'Review (0)', 'Approve (0)', and 'Publish (0)'. The main area is titled 'Edit annual AD (5) - Edit existing' and includes filters for GHG (2.A, 2.B, 2.C, 2.D, 2.E, 2.F, 2.G, 2.H) and a search bar. Below the filters is a table with columns: id, ipcc, ext, tier, submitted, Time-series AD collection, code, state, year, aggreg., value, val. units, and val.type. The table contains five rows of data.

id	ipcc	ext	tier	submitted	Time-series AD collection	code	state	year	aggreg.	value	val. units	val.type
62	2.A.1		1	2022-04-28	IPPU_1_2016-2020	IPPU_1_2016-2020_2016	draft	2016	National	10.00	t	survey
4	2.A.1		2	2022-02-02	IPPU_1_2016-2020	IPPU_1_2016-2020_2016	draft	2016	Facility	1000.00	t	survey
1	2.A.1		1	2022-01-12	IPPU_1_2016-2020	IPPU_1_2016-2020_2016	draft	2016	Region A	4.44	t	NA
15	2.A.1		1	2022-04-01	IPPU_1_2016-2020	IPPU_1_2016-2020_2017	draft	2017	National	45.00	t	NA
6	2.A.1		1	2022-02-03	IPPU_1_2016-2020	IPPU_1_2016-2020_2016	draft	2016	National	0.32	t	NA

The option tabs for record entries in the AD collection are the same as those for AD collection management, but they refer to a single record rather than to the entire AD collection:

List	displays a table with the list of records; each record has a “ pencil ” icon at the beginning (this is the edit option) and a “ cross ” icon at the end (to delete a record),
Add	allows entry of a new activity data record that includes the fuel consumption value and relevant supplementary information (e.g., fuel characteristics, uncertainty, and comments),
Export	allows exporting existing activity data to an Excel (CSV) file,
Import	allows importing data from Excel templates (for all tables and records, and for entire time series),
History	contains a log of changes performed on records within the module,
Info	provides relevant notes and guidance helping you understand available options and how to use them

6.3.2 How to edit activity data records

To edit existing AD collection names and details:

- click the **List** tab. You will see the existing table with records. Each record has a **pencil** button on the left for editing
- to modify the existing entry - click the "pencil" button before the record, then make your modification using the form provided, and
- click **Save** to save the updated record.
- To remove a record from the list, click the **cross** icon at the end of the record.

6.3.3 How to add a new data record – manual entry

The process of adding a new activity data record is similar to adding a new AD collection. To add a new activity data record, click **Add** and then use the provided form to create a new record. This will include entering both activity data and supporting information.

This form has nine category groups, shown by the tabs at the top. These are: GHG, 2A, 2B, 2C, 2D, 2E, 2F, 2G, and 2H.

Please note that GHG does not represent a particular IPPU category. It includes the capture and storage of greenhouse gases for each of the categories included in the sector. The form associated with the GHG tab, provides selection of category menu and for each category, selection of gases.

*General information fields (all entries here are **mandatory**) (Figure 37):*

Category	Select IPCC category for the data entry
Aggregation	Select the level of aggregation – national, regional, or facility – the list of aggregations relevant for your country will be set up in the relevant configuration table by your national inventory compiler. If additional

aggregation levels are required (e.g., city, island, state) - they can easily be included by authorized users at the configuration level, please ask.

Statistics quality Describe the reliability of the data used; your selection in this option will help SAGE to determine the correct default level of uncertainty for the activity data if the actual uncertainty is unknown.

Methodological tier Identify the level of details required for the activity data entry.

The category you choose affects the data required in the form (e.g., GHG sector requires GHG gas details' whereas subcategories of 2.A.1 Cement production requires information about type of cement produced). The first example below is based on 'GHG' tab for recording GHG capture and storage, and the next example is based on one of the production and product use categories (2.A.1).

Figure 37. Filling the general section in the activity data entry form - IPPU – category GHG

The screenshot shows the SAGE interface for editing activity data. The left sidebar has 'Edit annual AD (4)' highlighted. The main area is titled 'Edit annual AD (4) - Edit existing' and shows a dropdown menu for 'GHG' with an 'Add' option selected. Below the menu is a table with the following data:

id	ipcc	ext	tier	submitted	AD	code	state	year
62	2.A.1		1	2022-04-28	IPPU_1_2016-2020	IPPU_1_2016-2020_2016	draft	2016
4	2.A.1		2	2022-04-28	IPPU_1_2016-2020	IPPU_1_2016-2020_2016	draft	2016
1	2.A.1		1	2022-01-12	IPPU_1_2016-2020	IPPU_1_2016-2020_2016	draft	2016

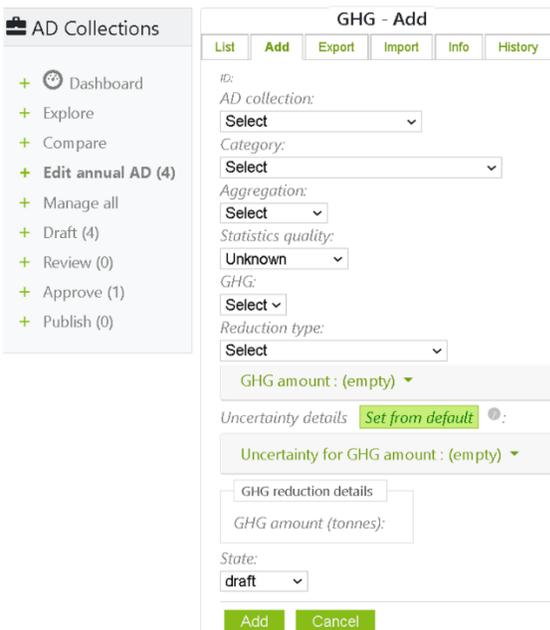
Figure 38. Filling the general section in the activity data entry form - IPPU – category 2A

The screenshot shows the SAGE interface for editing activity data. The left sidebar has 'Edit annual AD (4)' highlighted. The main area is titled 'Edit annual AD (4) - Edit existing' and shows a dropdown menu for '2.A' with '2.A.1 T1' selected. Below the menu is a table with the following data:

id	ipcc	ext	tier	submitted	Time-collect	state	year	aggreg.	
66	2.A.1		1	2022-04-30	IPPU_1_2016-2020	IPPU_1_2016-2020_2017	draft	2017	National
2	2.A.1		1	2022-01-12	IPPU_1_2016-2020	IPPU_1_2016-2020_2016	draft	2016	Region B
22	2.A.1		1	2022-04-11	IPPU_1_2016-2020	IPPU_1_2016-2020_2020	draft	2020	National
15	2.A.1		1	2022-04-01	IPPU_1_2016-2020	IPPU_1_2016-2020_2017	draft	2017	National
62	2.A.1		1	2022-04-28	IPPU_1_2016-2020	IPPU_1_2016-2020_2016	draft	2016	National

Once the AD collection is selected, click 'Add' to add an item.

Figure 39. Adding activity data to IPPU – GHG category



AD collection: Choose the AD collection to add to.

Category: **Mandatory:** Select an IPCC category for the data entry e.g., cement production (2.A.1)

The system automatically shows the relevant fields and selectable items. Some categories (like cement production) can only produce GHG of CO₂ but some (e.g., 2.B.10 – Other) can produce a wide range of GHG's.

Aggregation: **Mandatory:** Select the level of aggregation (national, regional, or facility) your data will represent

Statistics quality: **Mandatory:** Describe the reliability of the data used

GHG: Select the greenhouse gas being reported

Reduction type: Select 'capture and store' or 'other'

GHG amount: Enter the value, units (e.g., tonnes, gigagrams), type (not applicable, survey, or modeled), source (e.g., IPCC, Expert judgement), date issued, and any reference/comments

Uncertainty for GHG amount: Enter the percentage value, type (survey or modeled), source (e.g., IPCC or expert judgement), and any reference/comments

When the entries are complete, SAGE calculates the amount of captured GHG or production (depending on category being reported) in the correct units in line with the 2006 IPCC Guidelines, and saves the record in the database. In the second example above, SAGE calculates the amount of Cement produced when button 'Add' is clicked (because category 2.A.1 was selected).

When the entries are complete, SAGE calculates the production or product usage value as required for entering into the IPCC equations and saves the record in the database.

6.3.3 How to add or edit gas Bank record

Only for the IPPU sector, only for category 2F items, there is an extra tab “Bank”.

Figure 40. IPPU - Bank

id	Time-series AD collection	code	ipcc	application	aggreg.	chemical	chem. produced	chem. exp.
20	IPPU_1_2016-2020	IPPU_1_2016-2020_2020	2.F.1.a	air-conditioning	National	HFC-134a	1,000.00 t	0.00 t

A "bank" is the amount of HFCs and other fluorinated ODS-substitutes contained in equipment in use. It is important for the inventory compiler to keep track of the bank and the flows of chemicals into and out of the bank. The following equation summarizes how the bank changes over the year due to emissions and other flows.

$$\text{Bank}_y = \text{Bank}_{y-1} + \text{Addition}_y - \text{Removal}_y$$

Where: Bank_y = Refrigerant bank on December 31st of year y , kg

Bank_{y-1} = Refrigerant bank on December 31st of year $y-1$ /January 1st of year y , kg

Addition_y = Addition of new substances year y , kg

Removal_y = Removal of substances exported, emitted or destroyed year y , kg

In the bank calculating module, SAGE reads the input data from two sources:

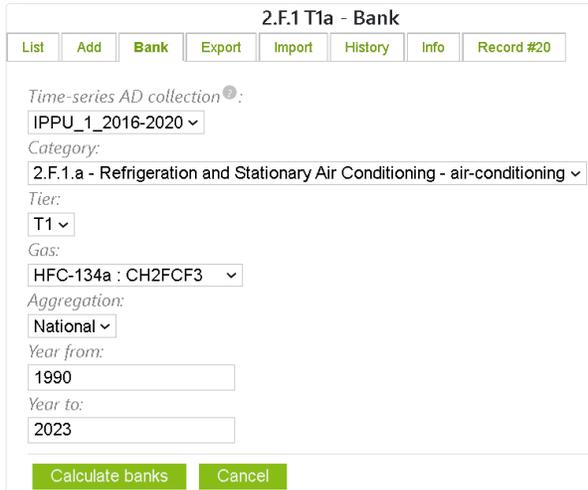
- The configuration table “Gas bank data” (see Figure 41 below) – for each gas, each category, and application group, provides a year of gas introduction to the national market, growth rate in new equipment, lifetime, emission factor from installed base, and % of gas destroyed at End-of-Life
- The activity data record that provides the data for a particular gas consumed in a particular category and application

Figure 41. IPPU – Gas bank configuration data

id	ipcc	appl.	ghg	intro year	growth rate, %	lifetime, years	installed base EF, %	destroyed EF, %
1	2.F.1.a	air-conditioning	HFC-23	1995	1.50	15	15.00	0.00
2	2.F.1.a	commercial	HFC-23	1997	1.50	15	15.00	25.00
3	2.F.1.a	transport	HFC-23	1997	1.50	9	15.00	25.00
4	2.F.1.a	industrial	HFC-23	1997	1.50	30	15.00	25.00
5	2.F.1.a	domestic	HFC-23	1997	1.50	20	15.00	25.00
6	2.F.1.b		HFC-23	1997	1.50	16	15.00	25.00

The ‘Bank entry’ data entry form is similar to other AD collection data entry forms. The ‘Gas’ in this form is sourced from the ‘Gas’ chosen in the related AD collection record.

Figure 42. IPPU – Bank entry



The banks are calculated as a time series for all the years entered by the users using the methodology described in the 2006 IPCC Guidelines¹. In the example above, the banks will be calculated from 1990 to 2023. If the “year from” entry precedes the year of the gas introduction, then the bank value for that year will be zero.

7. Time series Data gaps

7.1 Background

Data gaps can cause many problems when trying to analyze time series. Filling gaps using appropriate methods can often resolve such problems.

The **Data Gaps** module enables time series analysis for any user-selected category (or any combination of categories), reveals data gaps, and guides users through applying different options to fill the data gaps according to the 2006 IPCC Guidelines. SAGE includes the following methods:

- Interpolation** to fill in internal data gaps for up to 3 points using linear regression,
- Extrapolation** to estimate missing data points in the beginning and in the end of the time series using linear regression,
- Expert judgement** filling the gaps on a basis of an expert’s advice,
- Surrogate method** filling gaps using statistical methods.

¹ https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/3_Volume3/V3_7_Ch7_ODS_Substitutes.pdf

SAGE includes explanatory information for each method and provides guiding messaging and relevant dialog boxes to help users navigating through different gap filling techniques.

Figure 43. The Data Gaps dashboard information

Dashboard - Dashboard

About Data Gaps

When building time series for your AD collection, it is **good practice** to use the same collection period and methods consistently over the time series. However, for some categories, activity data may be unavailable for a few years or the entire time series, which creates the issue of data gaps. SAGE will help you to fill these data gaps and create a complete time series whenever possible.

Overall, there are several approaches to gap-filling:

If you know that fuels are combusted in a category **X** for the entire time series, but can't distinguish this category from category **Y** for any of the years, then report all fuels combusted under both categories X and Y under a higher level category Z and make a note that fuels used in X and Y are reported under Z, and **explain transparently** why you did it that way.

For example:

You are aware that your country has heat plants, electricity generation facilities, and a few plants that combine heat and power generation. However, only the total amount of fuels combusted by all heat and power-producing plants is known, and it is impossible to disaggregate further for the entire time period, you can report the total amount of fuels used from all these plants under the category "1.A.1.a - Main Activity Electricity and Heat Production", and make a note that the reliable data for different types of electricity and heat-producing plants are not available and therefore, they are included under 1.A.1.a.

If a few data points are missing

If for some category, you have the activity data for **some years of the time series, but other year's data are currently missing**, 2006 IPCC Guidelines suggest using one of the following data filling techniques (or their combination):

- When activity data could not be obtained for the base year or the most recent year in the AD collection, it may be possible to **extrapolate** these missing values from the closest detailed estimates. The key assumption for this method is that the observed trend in the category data that are available during the period remains constant over the period of extrapolation. SAGE will check it for you and advise if the extrapolation method is applicable.
- Similarly, when activity data could not be obtained for some years inside the time series, it may be possible to **interpolate** these missing values from the closest detailed estimates. The key assumption for this method is that the overall trend appears stable, and it is unlikely that actual emissions for the missing years are very different from the values predicted through interpolation. SAGE will check the overall stability of the historical trend before applying this method.
- The **Surrogate** method compares your data set to an underlying activity or other indicative data (the proxy data) that exhibit a similar trend over the same time period and may explain the time variations of the category. If the two data sets are similar for all available years, SAGE will use the proxy data to estimate the activity data values to fill the gaps in the time series. For example, the product output could follow the same trend as the amounts of fuels used to power its production and, therefore, be used as proxy data. Power consumption in residential areas could be related to the number of people living there, so these population data could be also used as a proxy.
- To apply the Surrogate method, SAGE will invite you to insert a data set that you think might have a similar trend as your actual activity data, then SAGE will check if the behavior of both sets for all years where the data are available is indeed similar. If the two data sets are not correlated, SAGE will let you know and suggest using another data set, if possible.

And if more data points are missing ...

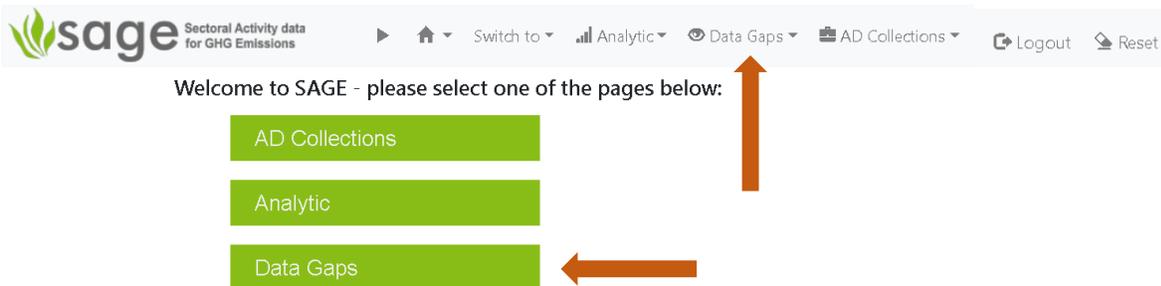
It is not advisable to use the Interpolation, Extrapolation, or the Surrogate method if the data gaps are substantial (over 1-3 consecutive data points). If this is the case, here is what you could do:

- For **up to 5** missing consecutive data points, you could use the constant values which is an average of the surrounding two data values immediately before and after the gap. This is only advisable if it is very likely that in the missing years, the values should be approximately the same, that is, there were no reasons for them to undergo growth, decline, or strong fluctuations. This has to be transparently documented in the AD collection.
- For longer gaps, it might be advisable to use the most conservative estimate from the later year closest to the data gap and use it as a constant value for the gap years. This has to be transparently documented in your AD collection and the planned actions to investigate actual data values for the missing years should also be described. To maintain AD collection transparency and accuracy, the update on progress in implementing these actions should be included in each subsequent AD collection and the time series should be recalculated as soon as the actual data become available.
- It is also possible to use **Expert Judgement** to fill some gaps. The facility for this option is provided in the AD collection **Draft** module. You can enter the fuel consumption values according to the expert judgement and document it by selecting the "**Expert judgement**" option in "**Source**" list and providing a detailed explanation and the reference to the Expert's opinion. Please see "**Annex 2A.1 A protocol for expert elicitation**" section in chapter 2, Vol. 2 of the 2006 IPCC Guidelines for further guidance.

7.2 How to fill data gaps in a time series

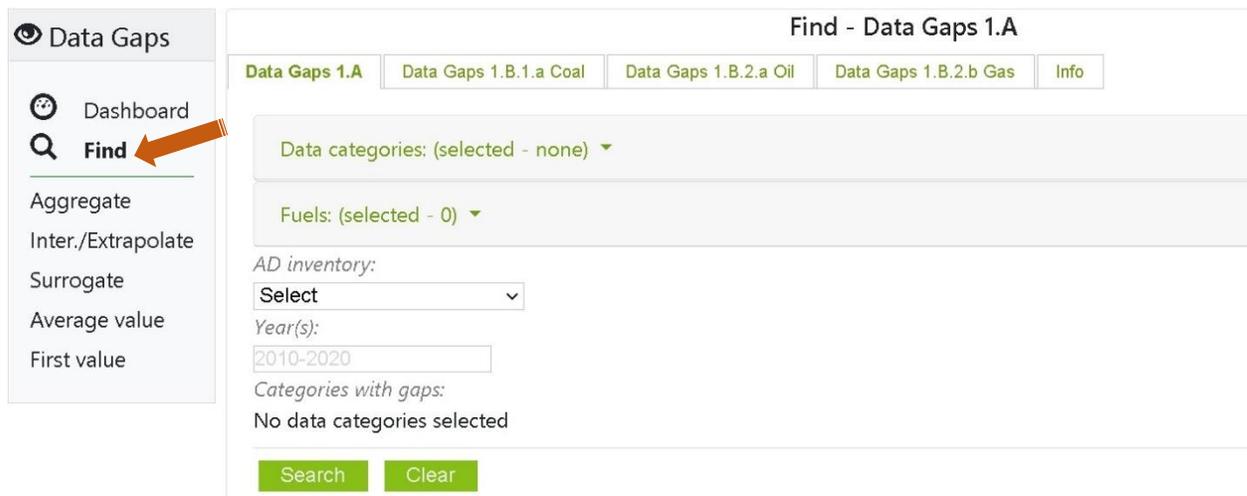
- 1 Before performing the data gap filling, please read the Data Gaps **Dashboard** information; it gives a brief method overview and the guidance when each method should be used (Figure 43).
- 2 click the **Data Gaps** menu in the global navigation pane across the top of the screen or use a quick link (Figure 44)

Figure 44. Go to Data Gaps



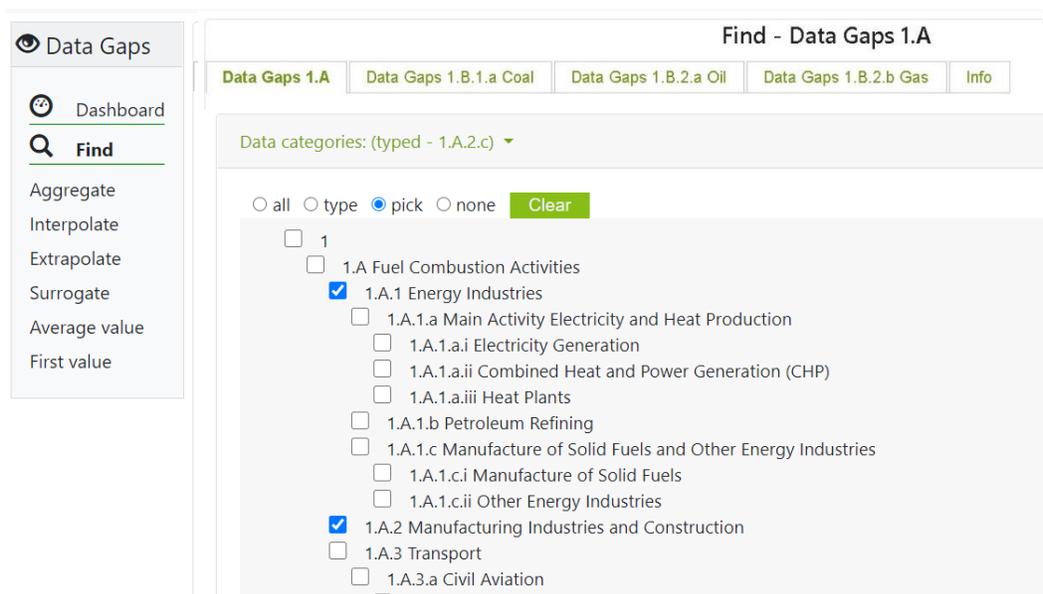
- 3 click **Find** to find the gaps in the time series (Figure 45)

Figure 45. Click Find to make selection for the data gaps search



- 4 select category (or categories) in which you'd like to search for data gaps. You can pick a single category or several categories, or type a category list in the field provided. If you are not sure which category has data gaps, select "all". In this case, SAGE will search all categories (Figure 46).

Figure 46. Selecting categories for data gap search



- 5 select fuel (or fuels) for which you'd like to search for data gaps. You can pick a single category or several categories, or type a category list in the field provided. If you are not sure which category has data gaps, select "all". In this case, SAGE will search all categories (Figure 47, all fuels are selected).
- 6 select the AD collection year (or years) in which you'd like to search for data gaps. You can type a single year, a list of years separated by commas, or a period (e.g., 2000-2010 as in Figure 47). The years with gaps are shown as *

Figure 47. Selecting fuels and years for data gap search

The screenshot shows the 'Find - Data Gaps 1.A' interface with 'Data categories: (all)' and 'Fuels: (selected - 0)'. The 'Time-series AD collection' dropdown is set to 'Test_2000-2010'. The 'Year(s)' input field contains '2000-2010'. Below this is a table titled 'Categories with gaps:' showing results for three categories: 98/*, 105/*, and 111/*.

id	ipcc/fuel	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
98/*	1.A.1.b /all	12,366.04	*	*	13,136.99	*	*	*	13,218.12	13,852.09	13,149.95	12,055.50
105/*	1.A.2.c /all	19,149.28	16,032.18	12,590.70	14,333.07	19,434.64	206.64	18,552.83	19,495.55	30,253.42	*	*
111/*	1.A.2.i /all	*	*	48,000.00	*	*	*	*	*	*	*	*

- Click the 'eye' icon  at the beginning of each time series with data gaps to select the preferred method to fill the gaps from the available list. It shows the built-in gap filling options (external options are also possible but are not described here).

Time-series AD collection:

GAPS_TEST_2000-2010

Year(s):

2000-2010

Categories with gaps:

	id	ipcc/fuel	2000	2001	2002	2003	2004
	98/*	1.A.1.b /all	12,366.04	*	*	13,136.99	*
		c /all	19,149.28	16,032.18	12,590.70	14,333.07	19,434.64
		i /all	*	*	48,000.00	*	*

Aggregate

Inter./Extrapolate

Surrogate

Average value

First value

- Select one of the 5 data gap filling options from the popup menu (above) and follow relevant instructions for that method as below in the relevant 'Gap filling option' section below:

Whichever gap filling method you choose, SAGE will default some selections to try and assist.

Gap filling option 1: Aggregate

If you use the "Aggregate" method to 'fill' data gaps it simply means you can report one category under an alternative category (because the disaggregated information is not available).

Aggregate data to the nearest higher category

When building time series for your AD collection, it is **good practice** to use the same collection period and methods consistently over the time series. However, for some categories, activity data may be unavailable for a few years or the entire time series, which creates the issue of data gaps. SAGE will help you to fill these data gaps and create a complete time series whenever possible.

Overall, there are several approaches to gap filling:

If you know that fuels are combusted in a category **X** for the entire time series, but can't distinguish this category from category **Y** for any of the years, then report all fuels combusted under both categories X and Y under a higher level category Z and make a note that fuels used in X and Y are reported under Z, and **explain transparently** why you did it that way.

For example:

You are aware that your country has heat plants, electricity generation facilities, and a few plants that combine heat and power generation. However, only the total amount of fuels combusted by all heat and power-producing plants is known, and it is impossible to disaggregate further for the entire time period, you can report the total amount of fuels used from all these plants under the category "1.A.1.a - Main Activity Electricity and Heat Production", and make a note that the reliable data for different types of electricity and heat-producing plants are not available and therefore, they are included under 1.A.1.a.

Gap filling option 2: Interpolate / Extrapolate

To use the “Interpolation / extrapolation” method, simply choose which values to use and which gaps to interpolate (within a series of available data) or extrapolate (beyond the end[s] of available data).

You can use the check boxes at the bottom of the page (“Modeled”, “Existing” and “Trend line”) to show/hide the modeled values, existing values and trend line. If that looks sensible then click ‘Calculate’ If that looks good the click ‘Save modeled data’ (otherwise click ‘Clear’ or ‘Cancel’).

Time-series AD collection: Test_2000-2010
 Category: 1.A.1.b
 Model as Reference Approach:
 Default fuel: not found
 Years range for analysis: 2000-2010



Gap filling option 3: Surrogate

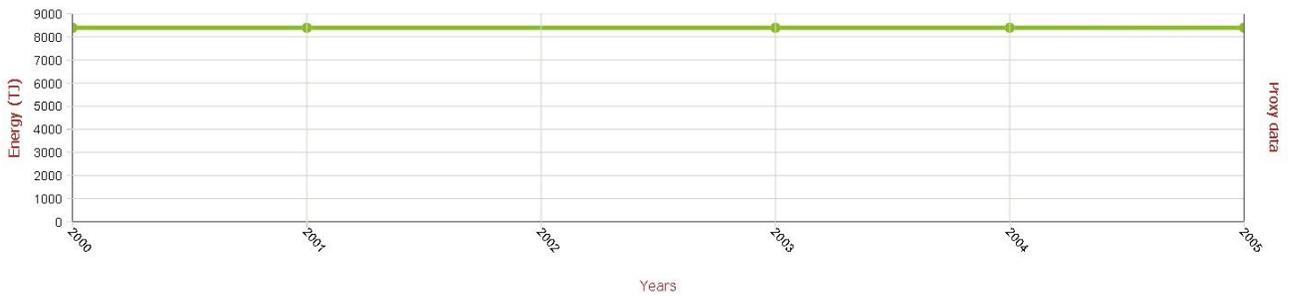
Enter the proxy value to use, select the years to use that value for, click Calculate. If that looks good, click 'Save modeled data'.

Time-series AD collection: Test_2000-2010
 Category: 1.A.1.b
 Model as Reference Approach:
 Default fuel: not found
 Years range for analysis: 2000-2010

Set proxy data for the above years:

Existing data:

years:	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
model these data:			<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
data series:	8,390.80	8,391.65	8,393.31	8,394.16	8,395.00						



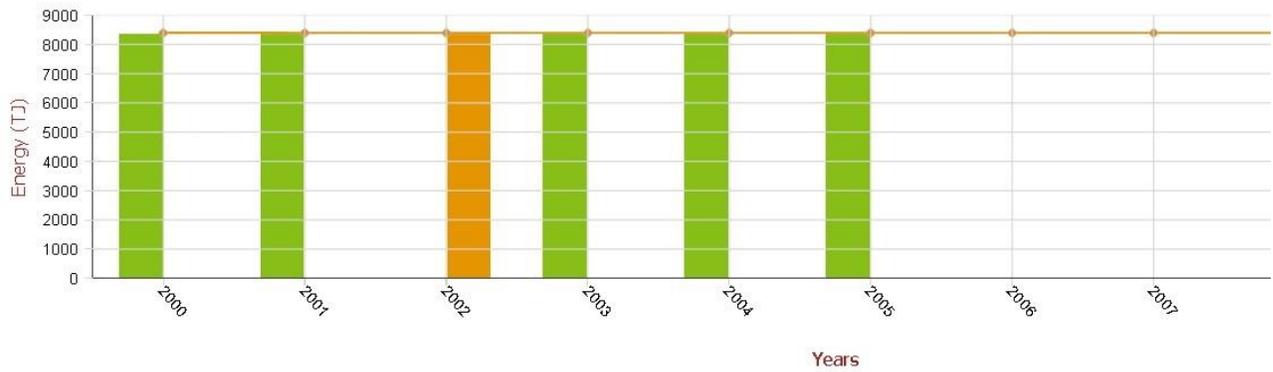
Gap filling option 4: Average value

Choose the years of data to use values from, view the modeled value, if it looks sensible, click 'Calculate' and if you're happy with that, click 'Save modeled data'.

Years range for analysis:

Existing data:

years:	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
calculate average with:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	*	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	*	*	*	*	*
model these data:			<input type="checkbox"/>								
data series:	8,390.80	8,391.65	8,392.98	8,393.31	8,394.16	8,395.00	8,392.98	8,392.98	8,392.98	8,392.98	8,392.98



MODELED EXISTING Trend line (Standard deviation = 1.56)

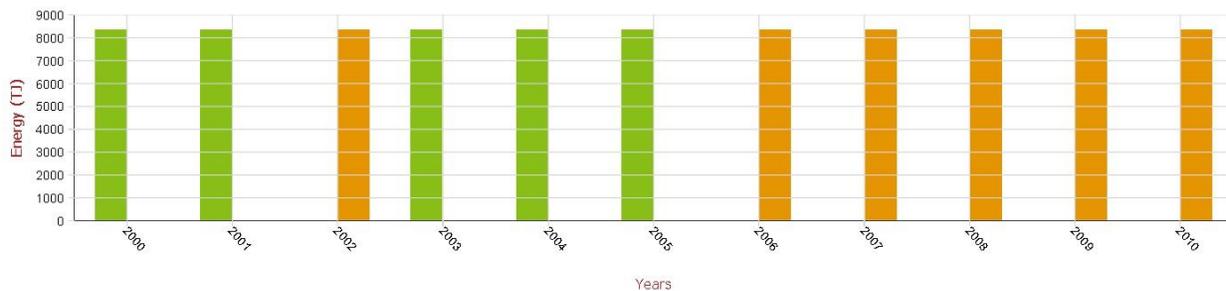
Gap filing option 5: First value

Choose the years of data to use values from, view the modeled value, if it looks sensible, click 'Calculate' and if you're happy with that, click 'Save modeled data'.

Category: 1.A.4.b
 Model as Reference Approach:
 Default fuel: not found
 Years range for analysis: 2000-2010
 Conservative Constant value:

Existing data:

years:	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
data series:	8,390.80	8,391.65	8,392.00	8,393.31	8,394.16	8,395.00	8,392.00	8,392.00	8,392.00	8,392.00	8,392.00
model these data:			<input checked="" type="checkbox"/>				<input type="checkbox"/>				



MODELED EXISTING

Fill modeled data details:

2002 (8,392.00) ▾

Calculate Save modeled data Clear Cancel

8. Activity data analysis

Use the **Analytics** component for data analysis in SAGE.

This component enables users to perform basic data analyses over the AD collections that achieved the state **Published**. SAGE includes the following analysis modules:

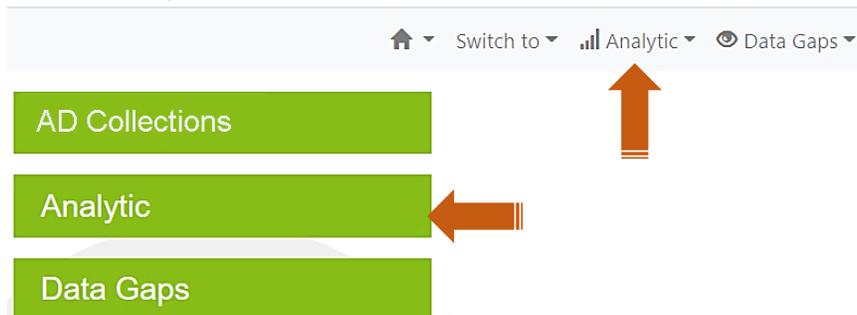
Shows:

- Total values** total energy consumed as a result of combusting one, or more, or all, fuels from selected categories in a selected year.
- Historical trend** time series for fuel consumption for selected categories, fuels, and years.
- Rank by Category** energy in TJ used ranked by IPCC category for your chosen parameters. This is not applicable to the IPPU sector because its activity data are not recorded in the energy units and describe different types of products and processes.

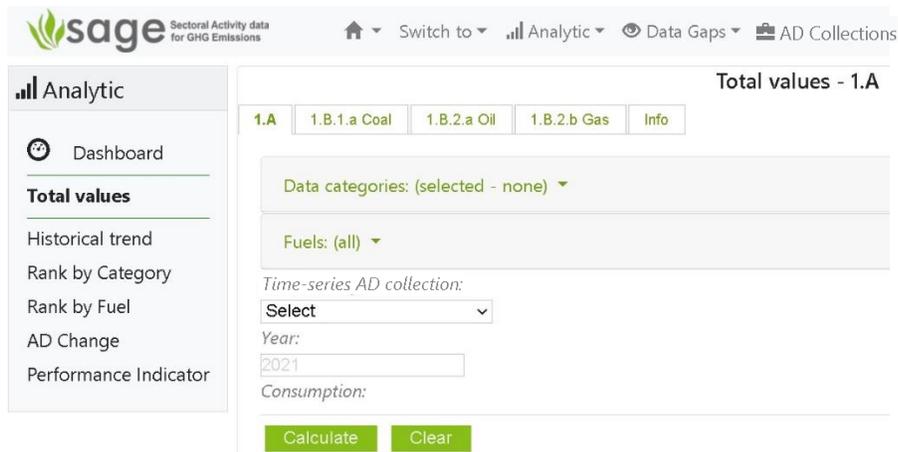
- **Rank by Fuel** energy in TJ used ranked by fuel for your chosen parameters. As above, this option is applicable to the energy sector only because the data in the IPPU sector are not so uniform.
- **AD Change** IPCC categories as rows, and energy in TJ or the industrial product amount in the relevant units as values. If you select more than one year then this allows you to compare differences.
- **Performance Indicator** time series table of consumption (summed if required), by category, category-specific application (or fuel), AD collection, and by year(s).

8.1 How to calculate total fuel consumption

Step 1 click the Analytic link.



Step 2 click the list of available analyses links on the left to select **Total values**.



Step 3 click the list of categories to select one or more categories for the analysis. You can pick any combination of categories. If all categories are selected, each of them will be included in the summation table and the amount of energy consumption by each category will also be displayed.

Below is a sample screenshot showing the ‘category selection’ screen.

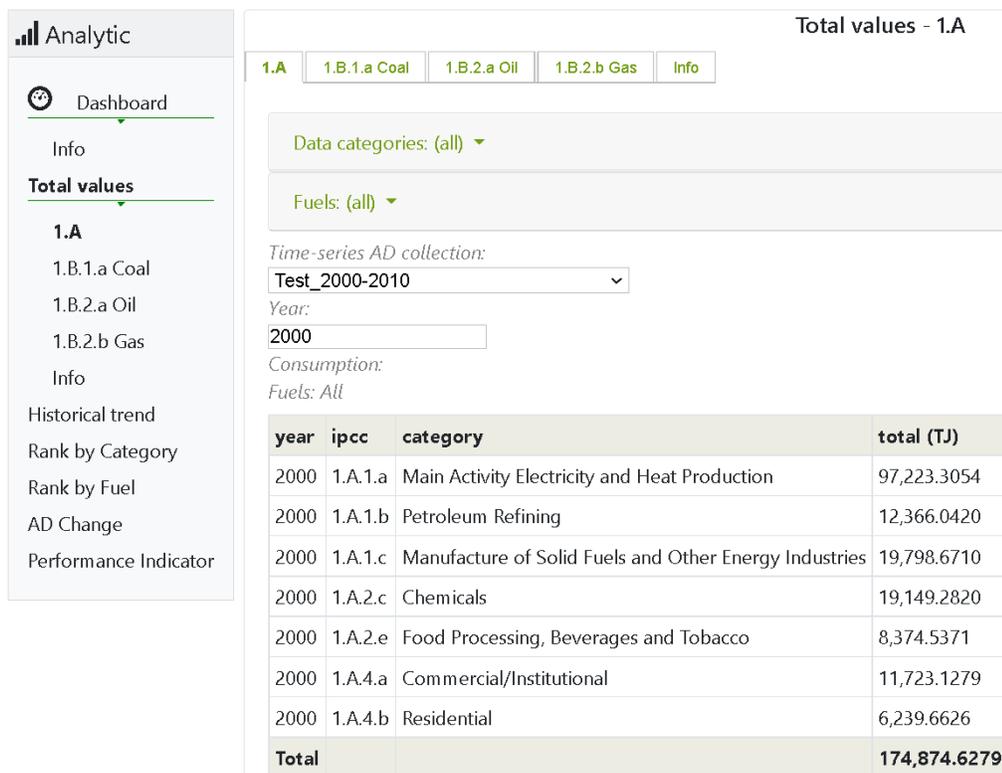
Appendix E shows the complete list of categories that you can pick from.



The screenshot shows the 'Total values - 1.A' interface. On the left is a sidebar with 'Analytic' selected. The main panel has tabs for '1.A', '1.B.1.a Coal', '1.B.2.a Oil', '1.B.2.b Gas', and 'Info'. Below the tabs, there's a 'Data categories: (selected - none)' dropdown and radio buttons for 'all', 'type in', 'pick', and 'none'. A 'Clear' button is next to the 'pick' option. Below this is a tree view of categories with checkboxes: '1', '1.A Fuel Combustion Activities', '1.A.1 Energy Industries', '1.A.1.a Main Activity Electricity and Heat Production', and '1.A.1.a.i Electricity Generation'.

Step 4 select a category-specific application (in this example - list of fuels to select one or more fuels, or all fuels; in Figure 48 – all fuels are selected selected), then select the year

Figure 48. Selecting fuels for total energy consumption analysis



The screenshot shows the 'Total values - 1.A' interface. On the left is a sidebar with 'Analytic' selected. The main panel has tabs for '1.A', '1.B.1.a Coal', '1.B.2.a Oil', '1.B.2.b Gas', and 'Info'. Below the tabs, there's a 'Data categories: (all)' dropdown and a 'Fuels: (all)' dropdown. Below these are fields for 'Time-series AD collection: Test_2000-2010', 'Year: 2000', and 'Consumption: Fuels: All'. At the bottom is a table with the following data:

year	ipcc	category	total (TJ)
2000	1.A.1.a	Main Activity Electricity and Heat Production	97,223.3054
2000	1.A.1.b	Petroleum Refining	12,366.0420
2000	1.A.1.c	Manufacture of Solid Fuels and Other Energy Industries	19,798.6710
2000	1.A.2.c	Chemicals	19,149.2820
2000	1.A.2.e	Food Processing, Beverages and Tobacco	8,374.5371
2000	1.A.4.a	Commercial/Institutional	11,723.1279
2000	1.A.4.b	Residential	6,239.6626
Total			174,874.6279

Step 5 Select AD collection, e.g., “Test_2000-2010”

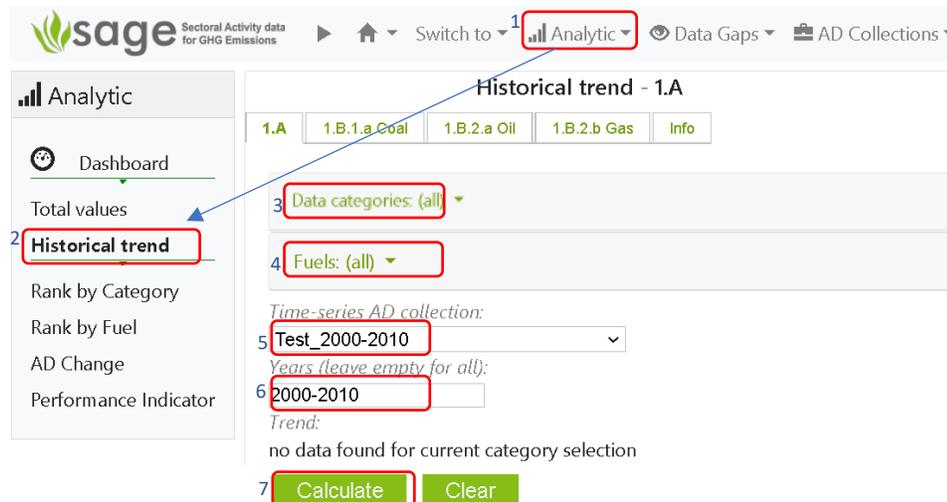
Step 6 Select a year that is included within the AD collection name e.g., 2010

Step 7 Click **Calculate**

8.2 How to display historical trends

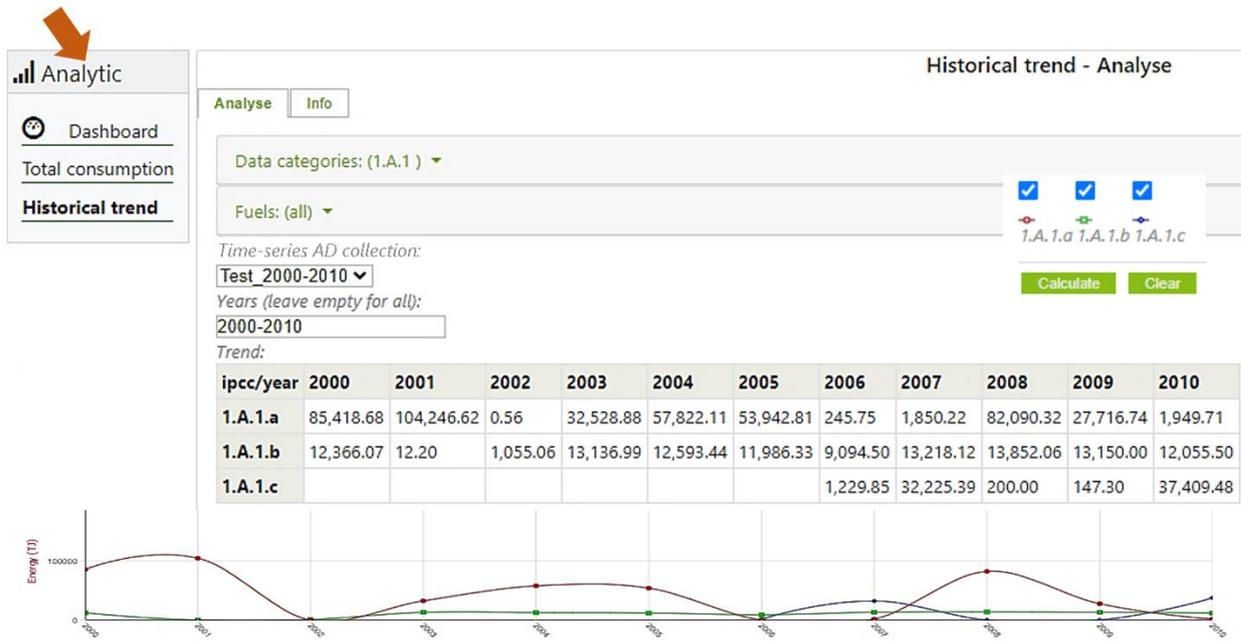
Step 1 click the **Analytic** link

Step 2 click **Historical trend** to select it as the chosen analysis type



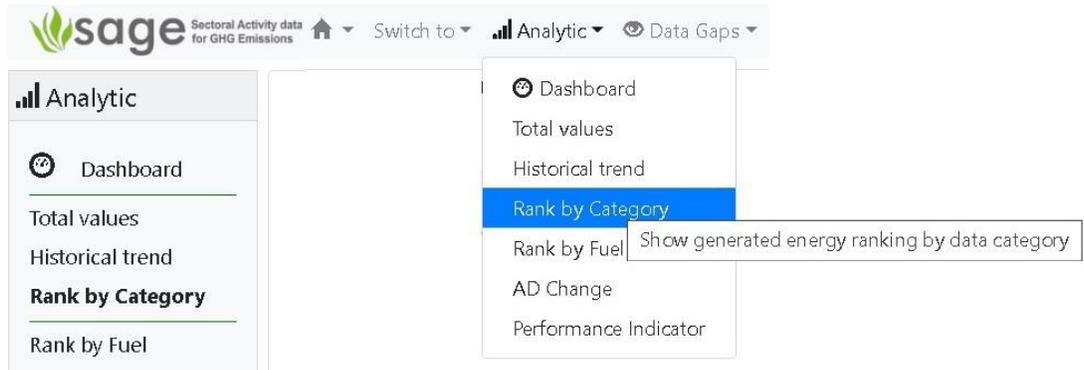
- Step 3** click the list of categories to select one or more categories for the analysis. You can pick one or more categories or select all categories. If all categories are selected, each of them will be included in the summation table and the amount of energy consumption by each category will also be displayed.
- Step 4** click the list of select a category-specific application (in this example - list of fuels to select one or more fuels, or all fuels to select one or more fuels, or all fuels), then select the time period for the time series. SAGE will show the available activity data in their energy value (TJ) or as an industrial product amount for selected AD collection, category, and the time period
- Step 5** Select the AD collection to review
- Step 6** Enter the year(s) to review if you need to
- Step 7** Click Calculate

Figure 49. Select analysis type (Historical trend is selected for all fuels in category 1.A.1 – Energy Industries)



8.3 How to 'Rank by Category' (for the Energy sector only)

Step 1 Click 'Analytic' link at the top of the page and then 'Rank by Category' menu item



'Rank by Category' form will display as below.

Rank by Category - 1.A

1.A Info

Data categories: (all) ▾

Time-series AD collection:
Select ▾

Year:

Calculate
Clear

Step 2 Select whichever data categories to include in analysis (see *Appendix E* for complete list)

Step 3 Select the ‘Activity data collection’ to analyze

Step 4 Enter the year

Step 5 Click ‘Calculate’

If it shows “no data found for current category selection” then try a different selection.

An example output follows:

Data categories: (1.A 1.A.1 1.A.1.a 1.A.2 1.A.3 1.A.5 1.B 1.C) ▾

Time-series AD collection:
Test_2000-2010 ▾

Year:

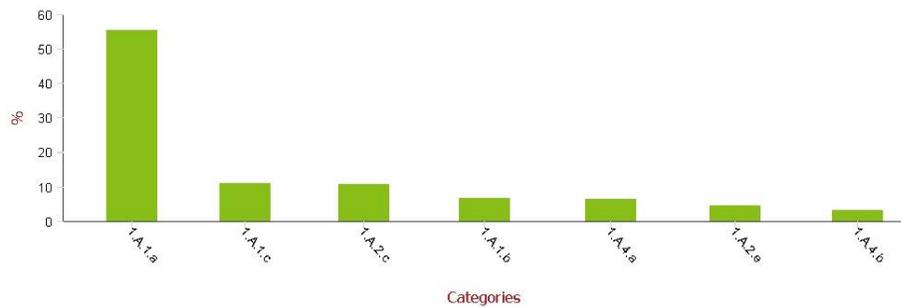
Rank by category:

ipcc	category	energy (TJ)	%
1.A.1.a	Main Activity Electricity and Heat Production	97,223.31	55.60
1.A.1.c	Manufacture of Solid Fuels and Other Energy Industries	19,798.67	11.32
1.A.2.c	Chemicals	19,149.28	10.95
1.A.1.b	Petroleum Refining	12,366.04	7.07
1.A.4.a	Commercial/Institutional	11,723.13	6.70
1.A.2.e	Food Processing, Beverages and Tobacco	8,374.54	4.79
1.A.4.b	Residential	6,239.66	3.57
Total		174,874.63	100

Rank by category group:

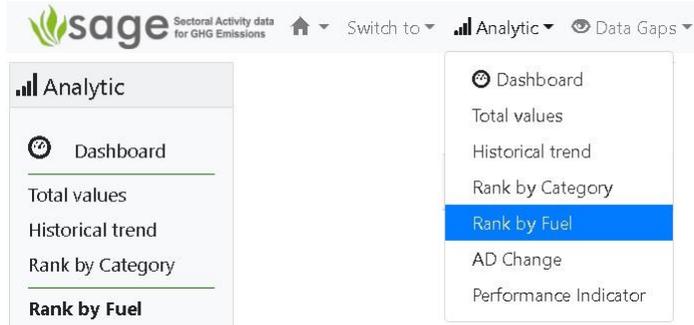
ipcc group	energy (TJ)
1.A	174,874.63
1.A.1	129,388.02
1.A.2	27,523.82
1.A.4	17,962.79

Consumption compare to the selected categories total (%):



8.4 How to 'Rank by Fuel' (for the Energy sector only)

Step 1 Click 'Analytic' link at the top of the page and then 'Rank by Fuel' menu item



'Rank by Fuel' form will display as below.

Rank by Fuel - 1.A

1.A

Fuels: (all) ▾

AD inventory: ▾

Year:

Step 2 Select whichever data categories to include in analysis (see *Appendix E* for complete list)

Step 3 Select the 'AD collection' to analyze

Step 4 Enter the year

Step 5 Click 'Calculate'

If it shows "no data found for current fuel selection" then try a different selection.

An example output follows:

Fuels: (all) ▾

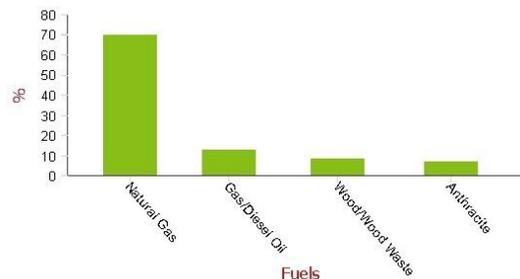
Time-series AD collection: ▾

Year:

Rank by fuel:

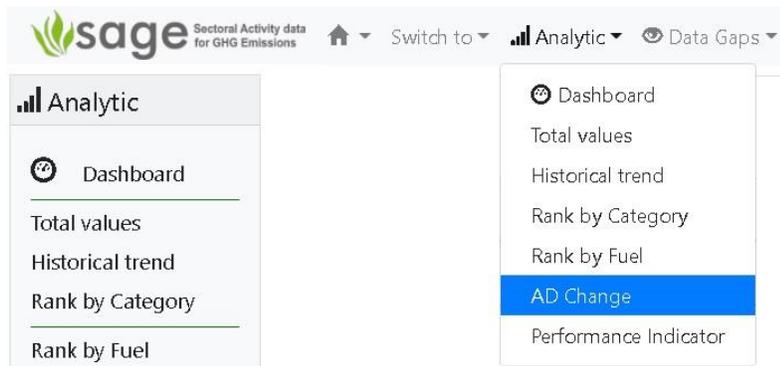
fuel	energy (TJ)	%
Natural Gas	64,579.51	70.11
Gas/Diesel Oil	12,327.60	13.38
Wood/Wood Waste	8,395.00	9.11
Anthracite	6,815.34	7.40
Total	92,117.45	100

Consumption compare to the selected fuels total (%):

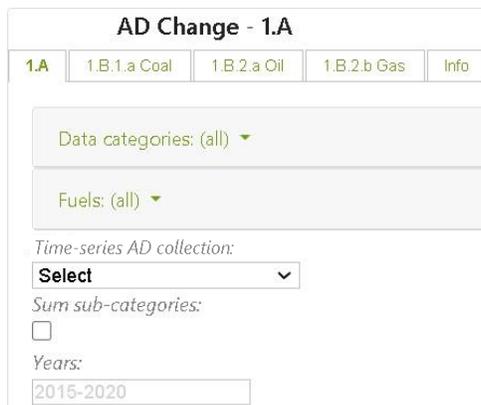


8.5 How to analyze Activity Data Changes

Step 1 Click 'Analytic' link at the top of the page and then 'AD Change' menu item



'AD Change' form will display as below.



The screenshot shows the 'AD Change - 1.A' form. At the top, there is a title 'AD Change - 1.A'. Below the title, there is a navigation bar with the following items: '1.A', '1.B.1.a Coal', '1.B.2.a Oil', '1.B.2.b Gas', and 'Info'. Below the navigation bar, there are two dropdown menus: 'Data categories: (all)' and 'Fuels: (all)'. Below the dropdown menus, there is a section titled 'Time-series AD collection:' with a dropdown menu set to 'Select'. Below this section, there is a section titled 'Sum sub-categories:' with a checkbox that is unchecked. Below the checkbox, there is a section titled 'Years:' with a text input field containing '2015-2020'.

Step 2 Select whichever data categories to include in analysis (see *Appendix E* for complete list)

Step 3 Select the Activity data collection to analyze

Step 4 Choose whether to sum sub-categories

Step 5 Enter the year

Step 6 Click 'Calculate'

If it shows "no data found for current selection" then try a different selection.

An example output follows:

1.A 1.B.1.a Coal 1.B.2.a Oil 1.B.2.b Gas Info

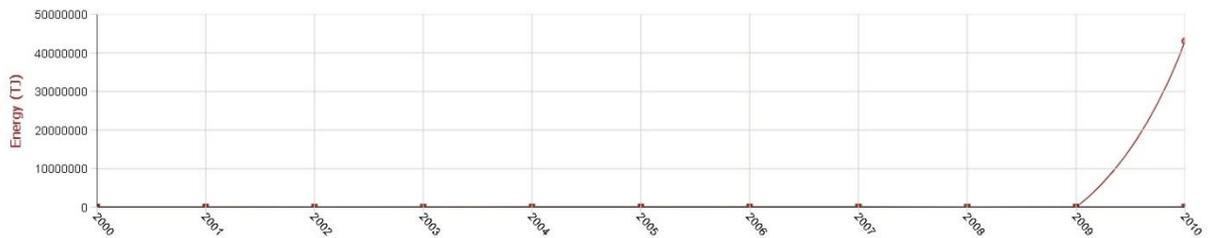
Data categories: (all)
 Fuels: (all)

Time-series AD collection:
 Test_2000-2010
 Sum sub-categories:

 Years:
 2000-2010

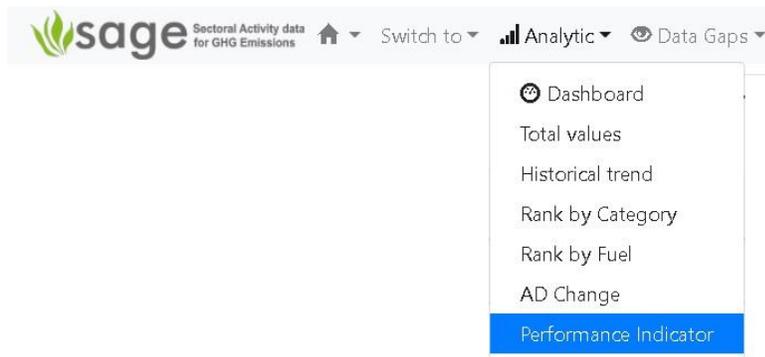
years:	units	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
<input type="checkbox"/> calculate difference for these:		<input type="checkbox"/>										
1.A.1.a Main Activity Electricity and Heat Production	TJ	97,223.31	106,198.35	25,804.53	64,182.51	126,943.57	133,052.73	132,109.59	119,899.27	53,453.62	98,208.24	96,399.31
Δ current-prev year	TJ											
Δ (current-prev)/prev year	%											
1.A.1.b Petroleum Refining	TJ	12,366.04	*	*	13,136.99	*	*	*	13,218.12	13,852.09	13,149.95	12,055.50
Δ current-prev year	TJ		*	*		*	*	*				
Δ (current-prev)/prev year	%		*	*		*	*	*				
1.A.1.c Manufacture of Solid Fuels and Other Energy Industries	TJ	19,798.67	21,500.27	23,201.88	24,903.47	26,584.29	28,270.23	30,739.45	32,445.75	33,320.61	33,485.00	37,649.53
Δ current-prev year	TJ											
Δ (current-prev)/prev year	%											
1.A.2.c Chemicals	TJ	19,149.28	16,032.18	12,590.70	14,333.07	19,434.64	206.64	18,552.83	19,495.55	30,253.42	*	*
Δ current-prev year	TJ										*	*
Δ (current-prev)/prev year	%										*	*
1.A.2.e Food Processing, Beverages and Tobacco	TJ	8,374.54	8,617.11	8,691.13	9,059.85	9,573.13	10,163.92	10,415.23	11,021.66	11,019.06	10,850.69	11,521.33
Δ current-prev year	TJ											
Δ (current-prev)/prev year	%											
1.A.2.i Mining (excluding fuels) and Quarrying	TJ	*	*	48,000.00	*	*	*	*	*	*	*	*
Δ current-prev year	TJ	*	*		*	*	*	*	*	*	*	*
Δ (current-prev)/prev year	%	*	*		*	*	*	*	*	*	*	*
1.A.4.a Commercial/Institutional	TJ	11,723.13	11,737.67	13,969.97	9,335.18	8,213.77	12,080.91	10,529.55	10,315.64	10,828.26	11,044.55	11,607.04
Δ current-prev year	TJ											
Δ (current-prev)/prev year	%											
1.A.4.b Residential	TJ	6,239.66	6,814.18	7,261.05	2,947.19	7,557.15	7,096.45	28,806.39	6,928.60	7,174.83	7,893.24	43,060,071.26
Δ current-prev year	TJ											
Δ (current-prev)/prev year	%											

Activity data



8.6 How to 'Performance Indicator'

Step 1 Click 'Analytic' link at the top of the page and then 'Performance Indicator' menu item



'Performance Indicator' form will display as below.

Performance Indicator - 1.A

1.A	1.B.1.a Coal	1.B.2.a Oil	1.B.2.b Gas	Info
-----	--------------	-------------	-------------	------

Data categories: (all) ▼

Fuels: (all) ▼

Time-series AD collection:
 ▼

Sum sub-categories:

Years:

Set comparative data for the above years:

Comparative data name:

Comparative data units:

Step 2 Select whichever data categories to include in analysis (see *Appendix E* for complete list)

Step 3 For the Energy sector, also select whichever fuels or fuel categories to include in analysis (see *Appendix F: Fuels* and/or *Appendix G: Fuel categories*)

Step 4 Select the 'Activity data AD collection' (AD AD collection) to analyze

Step 5 Choose whether to sum sub-categories

Step 6 Enter the year

Step 7 Enter a comparative data value if you want

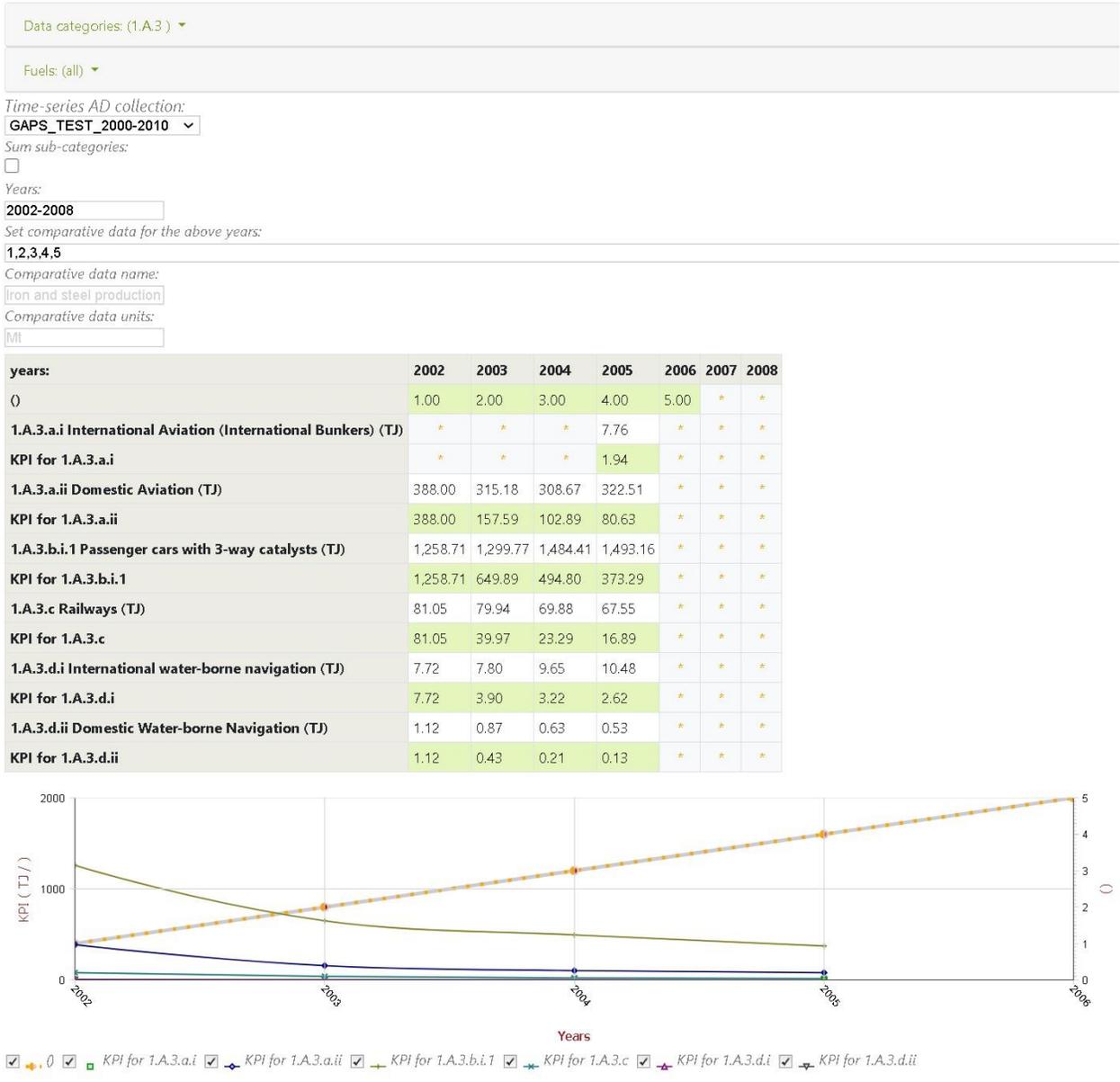
Step 8 Enter a comparative data name if you want

Step 9 Enter comparative data units if you want

Step 10 Click 'Calculate'

If it shows “no data found for current fuel selection” then try a different selection.

An example output follows:



9. Country-specific menu options and background data tables

9.1 Background

To configure background tables in SAGE, use **Configuration** component.

Only system administrator and technical users can access this component.

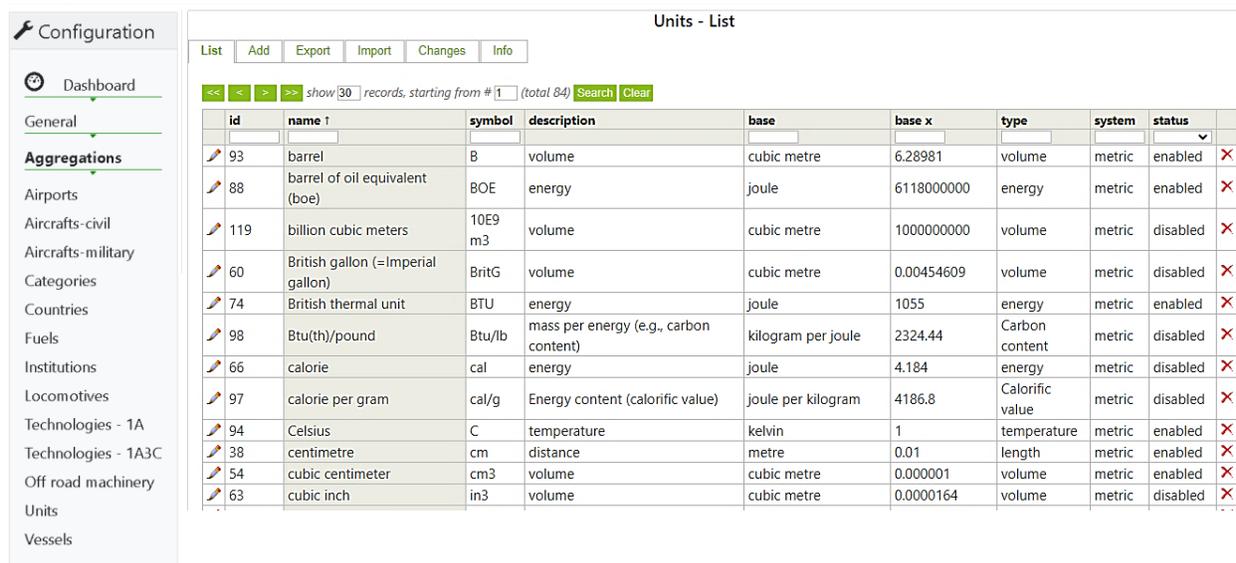
The **Configuration** component maintains and manages the core data sets for user selections. It has sections to configure basic and sectoral information. (It currently has three sections being ‘basic’, ‘Energy’ and ‘IPPU’). The component is flexible and enables authorized users to customize the default selection options to reflect their country's national circumstances. Initially, SAGE provides a list of default options that are in-line with the 2006 IPCC Guidelines. However, each country is different and some options might not be applicable to all and, thus, require adjustments. The following options are currently available for customization:

- Data aggregation levels
- Emission/removal source categories (2006 IPCC categories)
- Fuels (including such fuel characteristics as density, calorific values, Carbon content, and water content) Institutions - a very high-level indication of the source where the data are coming from
- Technologies - a list and description of technologies applied in the category or a sub-sector
- Units - a comprehensive list of units used for mass, volume, distance, energy, density, calorific values, carbon-content values. Each unit record includes calibrating coefficient to enable unit conversions to the metric units used in the IPCC equations.

In addition, authorized users can include and customize the instructional notes included in the component’s information section to tailor them to the other users’ needs. The records in the configuration tables could be added, modified, and deleted. They can be enabled or disabled on demand by the authorized users, which provides further flexibility in working with SAGE.

Another feature of this component is mapping between 2006 IPCC and UNFCCC category codes to enable an easy shift to the reporting under the ETF under the Paris Agreement. Figure 50 shows an example of the configuration table.

Figure 50. Configuration component – Units

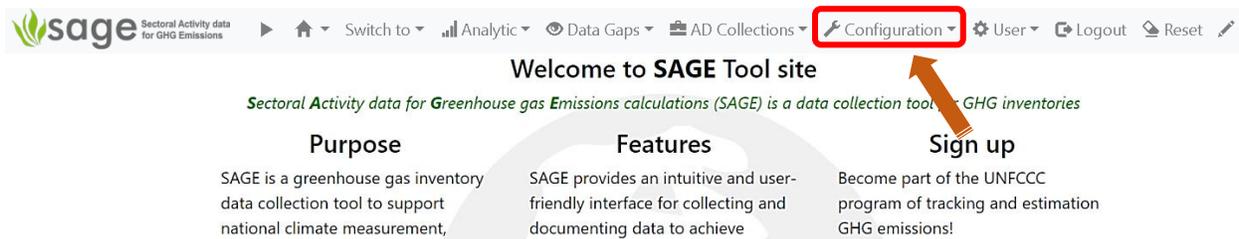


id	name †	symbol	description	base	base x	type	system	status	
93	barrel	B	volume	cubic metre	6.28981	volume	metric	enabled	✗
88	barrel of oil equivalent (boe)	BOE	energy	joule	6118000000	energy	metric	enabled	✗
119	billion cubic meters	10E9 m3	volume	cubic metre	1000000000	volume	metric	disabled	✗
60	British gallon (=Imperial gallon)	BritG	volume	cubic metre	0.00454609	volume	metric	disabled	✗
74	British thermal unit	BTU	energy	joule	1055	energy	metric	enabled	✗
98	Btu(th)/pound	Btu/lb	mass per energy (e.g., carbon content)	kilogram per joule	2324.44	Carbon content	metric	disabled	✗
66	calorie	cal	energy	joule	4.184	energy	metric	disabled	✗
97	calorie per gram	cal/g	Energy content (calorific value)	joule per kilogram	4186.8	Calorific value	metric	disabled	✗
94	Celsius	C	temperature	kelvin	1	temperature	metric	enabled	✗
38	centimetre	cm	distance	metre	0.01	length	metric	enabled	✗
54	cubic centimeter	cm3	volume	cubic metre	0.000001	volume	metric	enabled	✗
63	cubic inch	in3	volume	cubic metre	0.0000164	volume	metric	disabled	✗

9.2 How to manage Configuration tables

Step 1 click **Configuration** link using the global access menu across the top of the application screen (Figure 51).

Figure 51. Accessing Configuration component



Step 2 Click **Dashboard** link and select tab Info to familiarize yourself with available options (Figure 52)

Figure 52. Accessing information notes on configuration options and instructions through the dashboard/Info links.

Dashboard - Info

Changes
Info

Configuration options enable you to customize the default selection options to reflect your country's national circumstances. Initially, SAGE provides a list of default options for you that are in-line with the 2006 IPCC Guidelines. However, we understand that each country is different and not all options might be applicable - these you might want to adjust as necessary. The following options are currently available for customization:

- Data aggregation levels
- Emission/removal source categories (2006 IPCC categories)
- Fuels (including such fuel characteristics as density, calorific values, Carbon content, and water content)
- Institutions - a very high-level indication of the source where the data are coming from
- Technologies - a list and description of technologies applied in the category or a subsector
- Units - a comprehensive list of units used for mass, volume, distance, energy, density, calorific values, C-content values

Add notes

To add notes describing the tables, use the "Add" button and then type your text in the provided text field. You can use HTML5 tags if you wish to format the text. For plain texts, you do not need any HTML tags. Please do not forget to tick the boxes "Administrator" and "Tech User" to make your notes visible to the authorized users.

You can also specify the date from which the message will become visible - by default, it is the date you have created the message.

After you complete the entry, please click "Save".

Update or delete records

To edit existing entries in the tables:

- click the "List" tab. You will see the existing table with records. Each record has a "pencil" button on the left for editing and "cross" button for deleting the record on the right
- to modify the existing entry - click the "pencil" button before the record, then make your modification and click "Save" to save the updated record
- to delete the existing entry - click the "cross" button in the end of the line, then click "Save" to save the deletion.

Add new records

To add a new record to any table, use the "Add" button and then use the provided form to enter the new record.

Please do not forget to tick the boxes "Administrator" and "Tech User" to make your notes visible to the authorized users.

You can also specify the date from which the message will become visible - by default, it is the date you have created the message.

After you complete the entry, please click "Save".

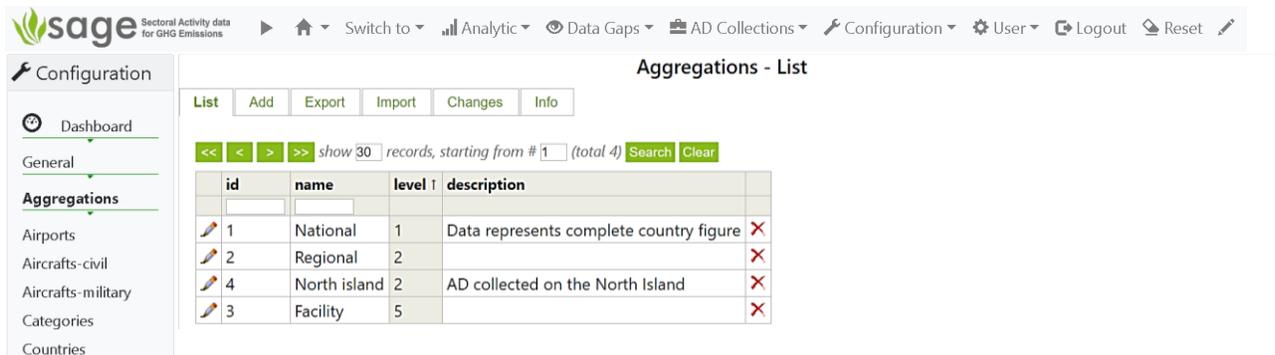
Export table to Excel

To export table into Excel/csv format, click the "**Export**" tab. In the "Export" tab, enter:

- file name to save the file under (mandatory)
- A brief file description (optional)
- Click the "Export all" button. The file will be available from the Download folder on your computer

Step 3 Use local navigation panel on the left to click the link to the table you wish to edit (Figure 53).

Figure 53. Accessing the list of records in a configuration table (Aggregations table is displayed)



id	name	level	description
1	National	1	Data represents complete country figure
2	Regional	2	
4	North island	2	AD collected on the North Island
3	Facility	5	

The table management modules are similar to the AD collection tables (section 5 page 13).

Each module in the **Configuration** component includes the following control tabs:

- List** displays a table with the list of records; each record has a **pencil** icon at the beginning (this is the edit option) and a **cross** icon at the end (to delete a record),
- Add** allows new item creation (an AD collection, an AD collection record, or a record in a configuration table),
- Export** allows exporting existing items to an Excel (CSV) file,
- Import** allows importing data from an Excel (CSV) templates,
- Changes** contains a log of changes performed over the records within the module,
- Info** provides user guidance for each option in the module.

9.2.1 Edit or delete activity a data record

Click the **List** tab. You will see the existing table with records.

To edit existing configuration tables:

- Find the record you want to modify
- Click the **pencil** button at the left of the record you want to modify,
- make your modification using the form provided, and
- click **Save** to save the updated record.

To delete existing configuration tables:

- Click the **cross** icon at the right end of the record.

9.2.2 Add a new activity data record

The process of adding a new data record in the configuration table is similar to adding a new activity data record to the AD collection. To add a new data record, click **Add** and then use the provided form to create a new record. This will include entering both activity data and supporting information.

SAGE allows importing the entire data table for each configuration table from the Excel (CSV) file as well as using the entry form for ad-hoc entries.

Importing the data table from Excel

To import the entire table, you need to access the Import screen, get the import template, populate the data cells in the import table as required, save it on your computer, and then select and load the prepared table into SAGE (Figure 54 – Figure 56):

- Step 1** Click Import tab to get to the table **Import** screen (Figure 54).
- Step 2** Click **Get template** button to get the CSV template (Figure 55). The CSV template will be downloaded to your computer (most likely, you can find it in your folder **Downloads** or similar).
- Step 3** Enter the data in the template (lines starting with # will be ignored by SAGE – you can safely delete them). Make sure that there are no gaps in the table. When you have entered the data on the table, save it as **CSV** file.
- Step 4** In **SAGE**, click the **Choose File** button, navigate to the saved CSV file with the saved configuration table in the displayed file explorer window, then click Open. The file name will be displayed in the field near the Choose File button.

Figure 54. File import screen. Use the **Choose file** button to select the file for the upload (section Units is being uploaded in this example)

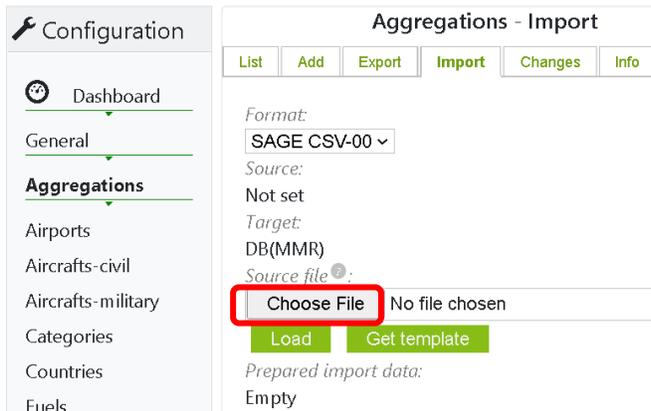
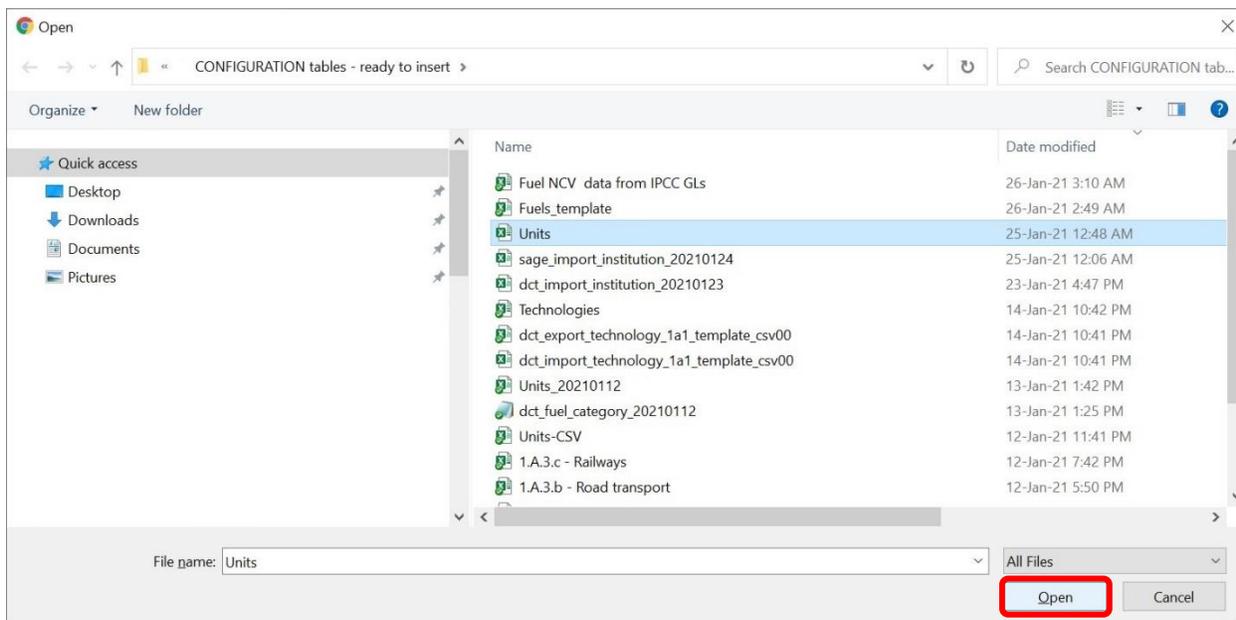
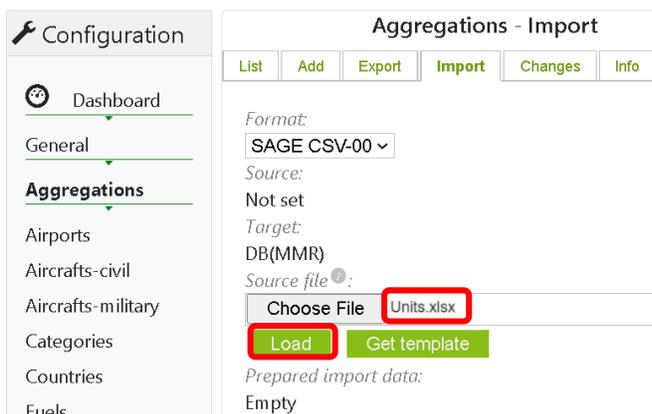


Figure 55. File import screen



Step 5 In **SAGE**, click the **Load** button. SAGE will upload the selected file to the configuration layer and will save it in the database.

Figure 56. Upload the selected file



9.2.3 Hide configuration table selections that are irrelevant to your country

You can hide a selection of a particular item from the configuration tables for your data entry personnel (for example, if your country only uses metric units then all imperial units are irrelevant to you). This is possible for all configuration tables except **Aggregations**.

Step 1 Go to the configuration component (see section 7.1 of this manual).

Step 2 Use local navigation panel on the left to click the link to the table you wish to edit. SAGE will display the list of records in the selected table (for example, table Units).

Step 3 In the displayed table, examine the column called Status. It allows you to enable or disable the record for viewing. Enabled records are visible as options in the unit selection menu and disabled records will not be visible. If you disable a record, it will still remain in the database and you will be able to enable it in the future, if necessary. SAGE advises to minimize the number of enabled. To disable a record (for example, a Barrel [B] **Figure 57**):

Step 3a type **barrel** in the search field in the column **name**, press **enter**. The record will be displayed

Step 3b click the editing icon (pencil) at the beginning of the record, SAGE will open the entry form,

Step 3c in the form, scroll down to the status **entry**, **Figure 58**

Step 3d select **disabled**, **Figure 59**

Step 3e **save** record. Now if you open the **Draft** component, open a record for editing and in the section **Fuel consumption** click menu **Units**, Barrel (B) option will not show. **Figure 60**

Figure 57. In the Draft component, fuel consumption section of the record, B (Barrel) is included in the selection.

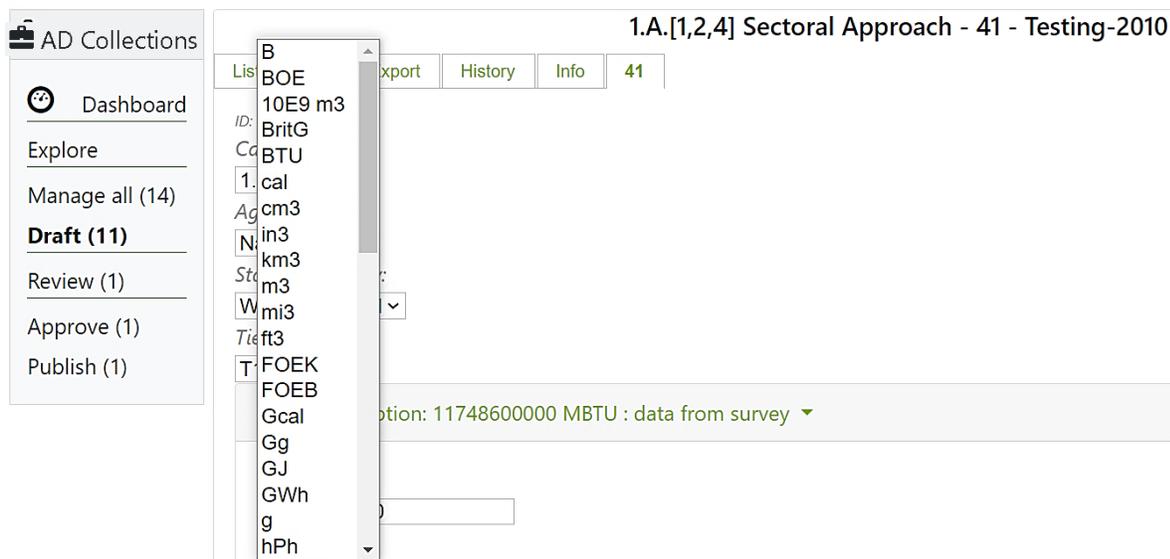


Figure 58. In the Configuration component, find the record B (Barrel) and use the pencil button for editing.



Figure 59. In the editing form, disable the unit Barrel and save the record

List Add Export Import Changes Info barrel
 ID: 93
 Symbol (changing existing will cause new unit creation):
 B
 Name (must be unique):
 barrel
 Description:
 volume
 Base unit multiply coefficient:
 6.28981
 Base unit:
 cubic metre
 Type ID:
 101
 Type name:
 volume
 System:
 metric
 Status:
 enabled
 deleted
 disabled
 enabled
 Delete Copy Cancel

Figure 60. In the Draft component, fuel consumption section of the record, B (Barrel) is excluded from the selection

AD Collections
 Dashboard
 Explore
 Manage all (14)
Draft (11)
 Review (1)
 Approve (1)
 Publish (1)

1.A.[1,2,4] Sectoral Approach - 41 - Testing-2010
 List Export History Info 41
 BOE
 10E9 m3
 BritG
 BTU
 cal
 cm3
 in3
 km3
 m3
 mi3
 ft3
 FOEK
 FOEB
 Gcal
 Gg
 GJ
 GWh
 g
 hPh
 ImpG

Option: 11748600000 MBTU : data from survey

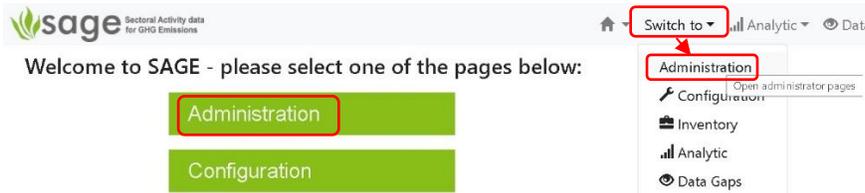
10. System administration

SAGE administration can be performed using the **Administration** component.

Only users with administrative rights have access to this component.

To access the administration component after logging in, click 'Administration'

Otherwise click 'Switch to' at the top and then 'Administration' or else on the front page, click:



The administrative component of SAGE includes a set of module controls for user management messaging, system logs and audits, system messaging and automatically performed system checks (Figure 61).

Figure 61. Administrative component modules (the User groups module is selected in this figure).

The screenshot shows the administrative interface with a top navigation bar containing: Options, Users, **User groups**, Mass email, Audit, Errors log, System, Blocked IPs, Custom text, Auto tasks, Auto tasks log, and Source Track. Below the navigation bar, there is a "User Groups" section with a table of user groups. The table has columns for "name" and "description".

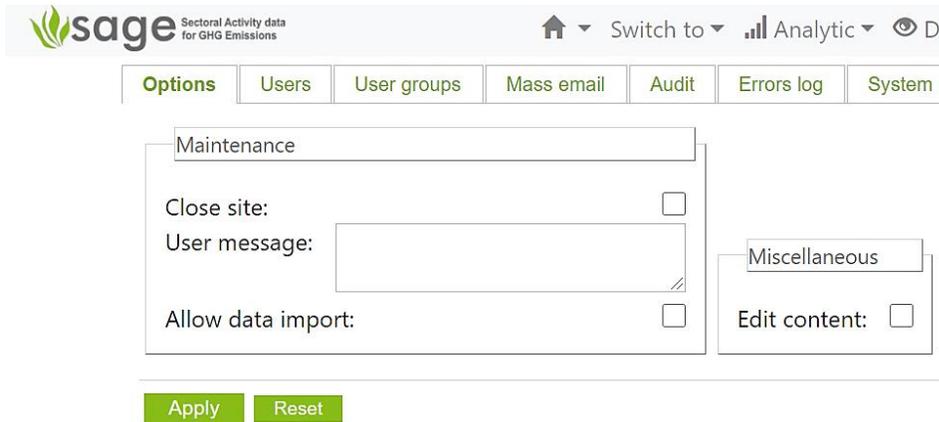
name	description
Administrator	Full access to the application interface
Anonymous	Used not logged in users. Minimal access to the application functions
Contributor	Can read all collection data (draft, published, archived), add new and edit draft data series
Power User	Can add and manage inventories, can't access SAGE configuration layer
Reader	Can read all published collection data
Tech User	Access to SAGE configuration

10.1 How to close/open the site for maintenance

A SAGE administrator can close the site for maintenance using the **Options** module (Figure 62) by checking the **Close site** box. SAGE advises to leave a message for users that will be displayed on the home page of the site. Use the **Apply** button to implement your choice. The site will be closed for all users except administrators.

To open the site again, log as administrator, go to the **Administration** component, select the **Options** module and **uncheck the Close site box**.

Figure 62. Options module – closing/opening SAGE site



The screenshot shows the 'Options' module in SAGE. The 'Maintenance' section is expanded, showing the following options:

- Close site:
- User message:
- Allow data import:
- Miscellaneous:
- Edit content:

Buttons for 'Apply' and 'Reset' are located at the bottom of the form.

10.2 How to manage users

To add new users, assign a user to a user group, edit user records, or delete a user, go to **Users** module of the **Administration** component (Figure 63).

Figure 63. Users module in SAGE



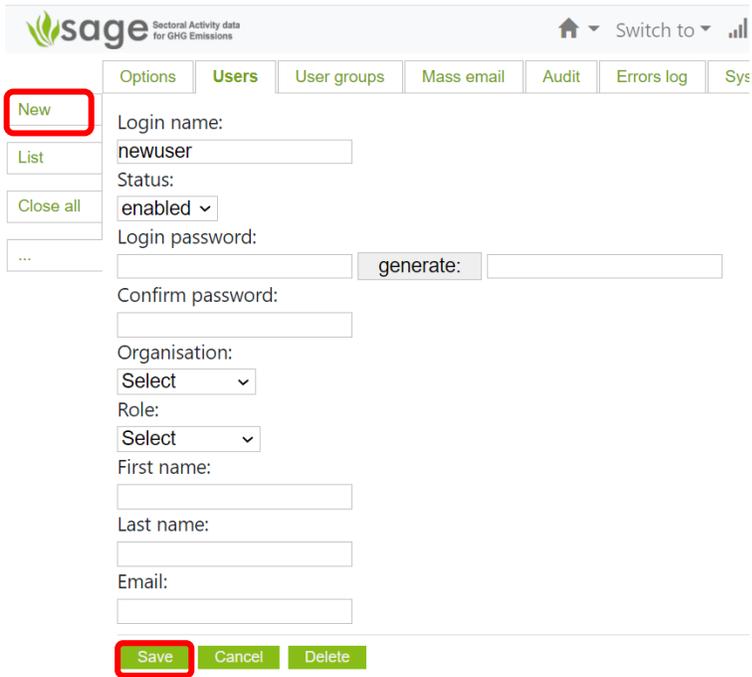
The screenshot shows the 'Users' module in SAGE. The 'Application Users' section is active, displaying a list of users. The table below represents the data shown in the screenshot:

	status	user type 1	login name	first name	last name	organisation	email	
<input type="checkbox"/>	enabled	Administrator				Any		✗
<input type="checkbox"/>	enabled	Administrator						✗
<input type="checkbox"/>	enabled	Administrator						✗
<input type="checkbox"/>	enabled	Administrator						✗
<input type="checkbox"/>	enabled	Administrator						✗
<input type="checkbox"/>	enabled	Contributor						✗
<input type="checkbox"/>	enabled	Contributor						✗
<input type="checkbox"/>	enabled	Tech User						✗

10.2.1 Add new user

In the **Users** tab, click the New button on the left of the screen. SAGE will display a user group entry form (Figure 64). Fill in the details and save the record. A new user record will be entered in the SAGE database and the e-mail will be sent to the user

Figure 64. Adding new user in SAGE



The screenshot shows the SAGE web interface for adding a new user. The 'Users' tab is active. On the left sidebar, the 'New' button is highlighted with a red box. The main form contains the following fields and controls:

- Login name:** Text input field containing 'newuser'.
- Status:** Dropdown menu set to 'enabled'.
- Login password:** Text input field followed by a 'generate:' button and another text input field.
- Confirm password:** Text input field.
- Organisation:** Dropdown menu set to 'Select'.
- Role:** Dropdown menu set to 'Select'.
- First name:** Text input field.
- Last name:** Text input field.
- Email:** Text input field.

At the bottom of the form, there are three buttons: 'Save' (highlighted with a red box), 'Cancel', and 'Delete'.

10.2.2 Edit new details

Editing user records is similar to the record editing procedure for the AD collection records or the table records in the configuration tables.

Step 1 In the **Users** tab, click the List button on the left of the screen. SAGE will display a list of users (Figure 63).

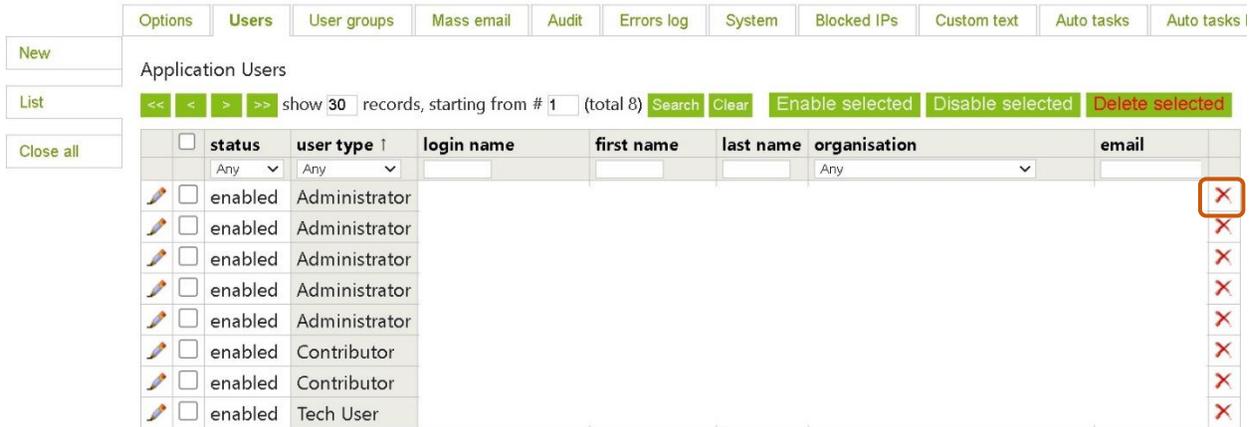
Step 2 Click the **pencil** at the beginning of the record you'd like to edit. SAGE will display the editing form. Adjust the group title, description and permissions as required (see the steps for editing contents in section 8.2.1 above).

Step 3 Save your selections by clicking on the **Save** button on the bottom of the screen.

10.2.3 Delete a user record

To delete a user record, click the **red cross** icon at the end of the record (Figure 65).

Figure 65. Deleting a user record



The screenshot shows the 'Users' tab in the SAGE application. The interface includes a navigation menu at the top with options like 'Options', 'Users', 'User groups', 'Mass email', 'Audit', 'Errors log', 'System', 'Blocked IPs', 'Custom text', 'Auto tasks', and 'Auto tasks'. Below the navigation, there are buttons for 'New', 'List', and 'Close all'. The main content area displays 'Application Users' with a search bar and pagination controls. A table lists users with columns for status, user type, login name, first name, last name, organisation, and email. The first user in the list is highlighted, and a red 'X' icon in the right margin indicates the delete action.

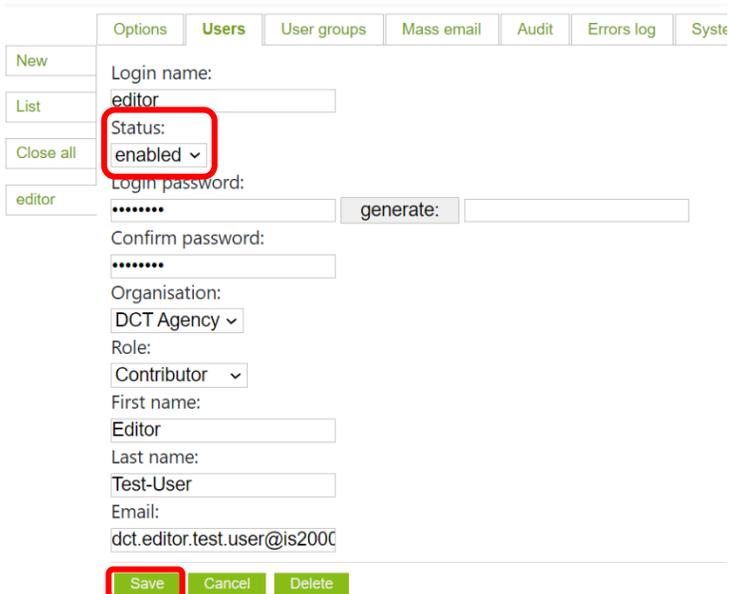
	status	user type 1	login name	first name	last name	organisation	email	
	enabled	Administrator				Any		
	enabled	Administrator						
	enabled	Administrator						
	enabled	Administrator						
	enabled	Administrator						
	enabled	Contributor						
	enabled	Contributor						
	enabled	Tech User						

10.2.4 Temporarily disable user access

SAGE lets you **disable the user access temporarily** without removing the user's record (Figure 66).

- Step 1** In the **Users** tab, click the List button on the left of the screen. SAGE will display a list of users (Figure 63).
- Step 2** Click the **pencil** at the beginning of the record you'd like to edit. SAGE will display the editing form. Adjust the group title, description and permissions as required (see the steps for editing contents in section 8.2.2 above).
- Step 3** In the user form, in the Status selection menu, select **disabled** and save the form. You can enable the user later following the same logical path.

Figure 66. How to disable or enable a user in SAGE without deleting the user record



The screenshot shows the 'Users' management interface in SAGE. At the top, there are tabs for 'Options', 'Users', 'User groups', 'Mass email', 'Audit', 'Errors log', and 'System'. Below these are buttons for 'New', 'List', and 'Close all'. The main form displays details for a user named 'editor'. The 'Status' dropdown menu is highlighted with a red box and currently shows 'enabled'. Other fields include 'Login name' (editor), 'Login password' (masked with dots), 'Confirm password' (masked with dots), 'Organisation' (DCT Agency), 'Role' (Contributor), 'First name' (Editor), 'Last name' (Test-User), and 'Email' (dct.editor.test.user@is2000). At the bottom, there are 'Save', 'Cancel', and 'Delete' buttons, with the 'Save' button also highlighted with a red box.

10.3 How to manage user groups

To manage user groups, go to the **Administration** component, select the **User Groups** module. The list of available user groups will be displayed (Figure 67).

In line with the stakeholder analysis results, it is essential for the data and operational security to set up several groups of users with different access level. The following groups of roles and skills for different users have been identified:

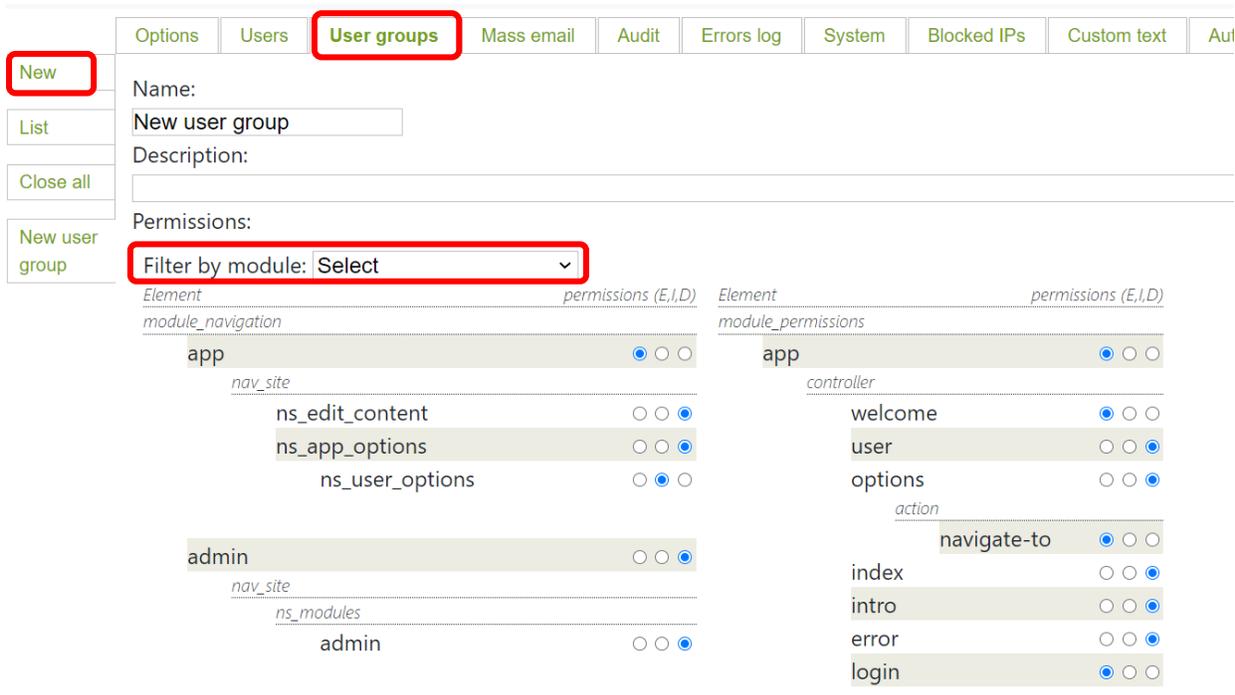
- **Administrative users** that combine some information system knowledge combined with business knowledge and sufficient authority (for example, a national AD collection compiler or a national AD collection QC manager). These users should be able to perform the administrative system control, manage user accounts, and liaise with the SAGE support group regarding updates and upgrades. SAGE administrator will also be involved in the SAGE installation process and can assist the technical user in setting up the configuration tables. This group of users should be able to access all functional blocks and the administrative control block of SAGE.
- **Technical users** will have technical knowledge of the AD collection and AD collection processes (for example, national AD collection compilers, sectoral compilers, sectoral experts, and QC experts). They should be able to enter AD collection data, add and manage AD collections, perform data gap filling, do data analysis, and create reports. This group of users should be able to access all system functional components excluding the administrative control block.
- **Power users** are the people with more administrative than technical inclinations. For example, they can make a decision on the AD collection approval and sign-off, make some corrections at the data entry level, fill the gaps, and perform data analyses, but cannot configure the background data for the configuration component. For example, team managers or team leaders that manage the AD collection group could play this role.

- **Contributors** are the people performing data entry, gap filling and data analysis. These could be AD collection experts as well as people assisting in data entry process and performing basic data quality control. They should be able to access the **AD collection drafting**, **Data Gaps**, and **Analysis** components of SAGE as well as generate reports, but cannot access **AD collection management**, **Configuration** or **Administration** components.
- **Readers** are the people who can view the data in the published AD collections and perform data analysis over the approved AD collection data, for example policy analysts or AD collection negotiators. They should be able to access only AD collection published, and analysis components as well as generate reports.
- **Anonymous** are any other people without access account who are interested to view SAGE welcome page and the SAGE introduction video, e.g., general public. They will not have an access to any other SAGE facilities.

10.3.1 Add new user group

Step 1 In the User Groups tab, click the **New** button on the left of the screen. SAGE will display a user group entry form (Figure 67).

Figure 67. Adding new user group in SAGE



The screenshot shows the SAGE User Groups management interface. The 'User groups' tab is selected. A 'New' button is highlighted in red. The form shows fields for Name (filled with 'New user group'), Description, and Permissions. The 'Filter by module' dropdown is also highlighted in red. Below the form are two tables for selecting permissions for 'app' and 'admin' modules.

Element	permissions (E,I,D)
module_navigation	
app	● ○ ○
nav_site	
ns_edit_content	○ ○ ●
ns_app_options	○ ○ ●
ns_user_options	○ ● ○
admin	○ ○ ●
nav_site	
ns_modules	
admin	○ ○ ●

Element	permissions (E,I,D)
module_permissions	
app	● ○ ○
controller	
welcome	● ○ ○
user	○ ○ ●
options	○ ○ ●
action	
navigate-to	● ○ ○
index	○ ○ ●
intro	○ ○ ●
error	○ ○ ●
login	● ○ ○

Step 2 Enter the name for the new group in the Name field and type the user group description to explain what the users of this group can and can't do.

Step 3 Set up the specific permissions for the users of this group for each module of SAGE. To switch between the modules, use **Filter by module** selection menu.

Step 4 For each element and module and each, select **one of the following**:

- E** Enabled
- I** Inherited
- D** Disabled

Step 5 Save your selections by clicking on the **Save** button on the bottom of the screen. You can also copy the entire set of permissions using the button **Copy** to save time if in some other group only few permissions will need to be modified.

10.3.2 Edit a user group

Editing user group records is similar to the record editing procedure for the AD collection records or the table records in the configuration tables.

Step 1 Click the **pencil** at the beginning of the record you'd like to edit. SAGE will display the editing form.

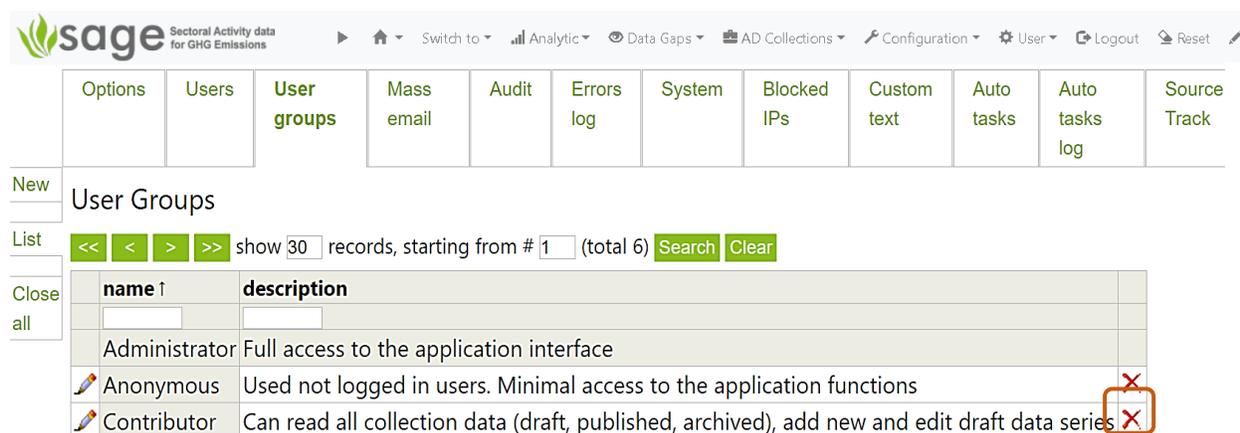
Step 2 Click the **pencil** at the beginning of the record you'd like to edit. SAGE will display the editing form. Adjust the group title, description and permissions as required (see the steps for editing contents in section 8.2.1 above).

Step 3 Save your selections by clicking on the **Save** button on the bottom of the screen. You can also copy the entire set of permissions using the button **Copy** to save time if in some other group only few permissions will need to be modified.

10.3.3 Delete a user group

To delete a user group, click the **red cross icon** at the end of the record (Figure 68).

Figure 68. Deleting a user group



10.4 Other administration menus

The remaining administration menus are hopefully quite obvious.

- Mass email** Use this if you need to send a message to a number of SAGE users
Use filters to trim the list, then click 'Message' to draft a message, then 'Send'
- Audit** This shows an audit trail of actions and this list can be filtered
Where there is a magnifying glass , you can click that for more information
- Errors log** This lists errors and details
- System** This allows setting of directory write permissions, showing log data, system data

	and a list of currently active users
Blocked IPs	This shows a list of currently blocked Internet Protocol (IP) addresses
Custom text	This shows an editable list of custom text (in HTML text format)
Auto tasks	This shows a list of automated tasks
Auto tasks log	This shows the log of completed automated tasks
Source Track	This may show the source (depending on your permissions)

Appendix A: Acronyms

Acronym	Full text	Meaning
AD	Activity Data	This describes the information you are collecting and recording that measures the emission-causing activity
CSV	Comma-separated values file	a delimited text file that uses a comma to separate values https://en.wikipedia.org/wiki/Comma-separated_values
ETF	Enhanced transparency framework	The ETF specifies how Parties to the Paris Agreement must report on progress in climate change mitigation, adaptation measures and support provided or received. It also provides for international procedures for the review of the submitted reports. https://unfccc.int/news/understanding-the-enhanced-transparency-framework-new-handbook-published-0
GHG	Greenhouse Gas	Any gas that causes increased heat reflection of heat that would otherwise have been radiated from Earth out to space
IPCC	Intergovernmental Panel for Climate Change	A team of people working between country governments to measure and address methods to reduce harmful changes to the environment of Earth
SAGE	Sectoral Activity data for GHG Emissions	This is the program you are using
T1	Tier 1	See '5.3.3 How to add a new data record – manual entry' page 22 which discusses methodological tiers
T2	Tier 2	
T3	Tier 3	
UNFCCC	United Nations Framework Convention for Climate Change	The structure defined by a united group of world nations to measure, understand and manage changes to the environment

Appendix B: Common data entry field values

Category for Stationary Combustion 1.A.[1,2,4,5]

- 1.A.1 - Energy Industries
 - 1.A.1.a - Main Activity Electricity and Heat Production
 - 1.A.1.a.i - Electricity Generation
 - 1.A.1.a.ii - Combined Heat and Power Generation (CHP)
 - 1.A.1.a.iii - Heat Plants
 - 1.A.1.b - Petroleum Refining
 - 1.A.1.c - Manufacture of Solid Fuels and Other Energy Industries
 - 1.A.1.c.i - Manufacture of Solid Fuels
 - 1.A.1.c.ii - Other Energy Industries
- 1.A.2 - Manufacturing Industries and Construction
 - 1.A.2.a - Iron and Steel
 - 1.A.2.b - Non-Ferrous Metals
 - 1.A.2.c - Chemicals
 - 1.A.2.d - Pulp, Paper and Print
 - 1.A.2.e - Food Processing, Beverages and Tobacco
 - 1.A.2.f - Non-Metallic Minerals
 - 1.A.2.g - Transport Equipment
 - 1.A.2.h - Machinery
 - 1.A.2.i - Mining (excluding fuels) and Quarrying
 - 1.A.2.j - Wood and wood products
 - 1.A.2.k - Construction
 - 1.A.2.l - Textile and Leather
 - 1.A.2.m - Non-specified Industry
- 1.A.4 - Other Sectors
 - 1.A.4.a - Commercial/Institutional
 - 1.A.4.b - Residential
 - 1.A.4.c - Agriculture/Forestry/Fishing/Fish Farms
- 1.A.5 - Non-Specified

Category for Transport 1.A.[3,5]

- 1.A.3.a.i - International Aviation (International Bunkers)
- 1.A.3.a.ii - Domestic Aviation

Aggregation

Airport	Oil field
Coal Basin	Province
Facility	Region A
Gas field	Region B
National	Regional
Oil and Gas Basin	State

Statistics quality

- Unknown
- Well developed

Tier

- T1
- T2
- T3

Airport Code (only a small subset is shown below to indicate format)

AAE - Algeria	ACV - USA	AHE - French Polynesia
AAL - Denmark	ACY - USA	AHN - USA
AAM - South Africa	ADA - Turkey	AHO - Italy
AAR - Denmark	ADB - Turkey	AIA - USA
ABE - USA	ADD - Ethiopia	AJA - France
ABI - USA	ADE - Yemen	AJR - Sweden
ABJ - Ivory Coast	ADF - Turkey	AKL - New Zealand
ABQ - USA	ADL - Australia	AKN - USA
ABR - USA	ADQ - USA	ALA - Kazakhstan
ABV - Nigeria	ADU - Iran	ALB - USA
ABX - Australia	ADZ - Colombia	ALC - Spain
ABY - USA	AES - Norway	ALF - Norway
ABZ - Scotland	AEX - USA	ALG - Algeria
ACA - Mexico	AGA - Morocco	ALL - Italy
ACC - Ghana	AGH - Sweden	All airports - Current country
ACE - Canary Islands	AGP - Spain	ALO - USA
ACH - Switzerland	AGS - USA	ALS - USA
ACK - USA	AGT - Paraguay	ALW - USA
ACT - USA	AGU - Mexico	ALY - Egypt

Note: if you are importing Airport codes then you must match exact text. For example, for Algeria, it must have “AAE - Algeria”, that is, “AAE” space hyphen space “Algeria”.

Fuel consumption – Value (simply enter a value for ‘Value’)

Fuel consumption - Units

Previously used

B		Mt
BOE	cal	MWh
m3	cm3	t
kt	in3	10E6 m3
Mt	km3	PJ
t	m3	Lb
10E6 m3	Gg	1015 BTU
TJ	GWh	st
MBTU	g	TJ
KTOE	ImpG	105 BTU
	kg	1000US bbl oil
All units	KOE	MBTU
B	kt	10E3 m3
BOE	kWh	KTOE
10E9 m3	l	TOE
bbl	Lt	USG
BritG	MTOE	Wh

Fuel consumption - Type

NA	mod-expert
survey	mod-average
modeled	mod-first-val
mod-L-regr	

Fuel consumption – Source

2006 IPCC default	International organisation
Academic source	Invoice
Country-specific	Laboratory report
Customs	Modeled data
Direct measurements	National fuel statistics
Energy balance	Organisational report
Engineering website	Sub-national statistics
Expert judgement	Technical report
Facility specific	Technology report
ICAO	Technology specific
Industry report	UNFCCC
Industry specific	unknown

Fuel (type) (only a sample is shown)

Anthracite	Condensate API gravity from 50 to 80
Aviation Gasoline	Crude Oil
B20	Deep-cut extraction
B5	Dry gas
Biodiesels	E10
Biogasoline	E3
Biogasoline (=biopetrol)	E5
Bitumen API gravity <10	E85
Bitumen	Enhanced gas recovery
Blast Furnace Gas	ETBE11
Brown Coal Briquettes	ETBE22
Charcoal	Ethane
CNG (compressed natural gas)	ethanol
Coal Bed Methane	Gas Coke
Coal Tar	Gas Works Gas
Coke Oven Coke	Gas/Diesel Oil
Coke Oven Coke and Lignite Coke	Gasoline
Coke Oven Gas	Heavy crude oil API gravity between 10 and 22
Coking Coal	Heavy Diesel

Fuel density units

g/cm ³	lb/UKG
g/l	lb/USG
kg/m ³	ton/yd ³

Value type

survey	mod-expert
modeled	mod-average
mod-L-regr	mod-first-val
mod-surrogate	

Appendix C: Data Dictionary

Following is a small subset of the data dictionary.

Attribute name	Required data format	Optional (O) or Mandatory	Attribute description	Entry type	Example of data entry
inv_code	string (text)	M	AD collection for a particular year	Fully user-defined	My_AD_2020
ipcc_category	string (text)	M	The IPCC category code as per the configuration table (must be the same syntax)	As per the <i>Category</i> menu in the entry form or from the <i>Category</i> table among the configuration tables	1.A.3.a.1
ipcc_suffix	string (text)	O	Extension of the category name that is not specified in the main IPCC category	Fully user-defined	mil (for international military aviation in category 1.A.3.a.i)
tier	integer	M	IPCC methodological tier (T1, T2, T3)	As per the <i>Tier</i> menu in the entry form (it's sufficient to enter the tier number)	1
aggregation	string (text)	M	Level of data aggregation (national, regional, etc.)	As per the <i>Aggregation</i> menu in the entry form or from the <i>Aggregations</i> table among the configuration tables	National
stat_quality	string (text)	M	Statistics quality (t is either well developed or not. If not well-developed, enter "unknown")	As per the <i>Statistics</i> quality menu	Unknown
fuel_name	string (text)	M	Name of fuel	As per the <i>Fuel</i> menu in the entry form or from the <i>Fuels</i> table among the configuration tables, column <i>Name</i>	Anthracite
fuel_name_local	string (text)	O	Additional, more name for the fuel, like "Texas oil" to provide fuel name specific for a region, oil field, etc.	Fully user-defined, max 30 characters	Texas oil
cal_type_name	string (text)	O	Calorific value type - GCV or NCV	Enter either GCV or NCV	NCV
airport_code	string (text)	M	3-letter airport code followed by the country name as: "XXX - country name" (do not forget to enter the spaces and the dash)	As per the <i>Airport code</i> menu in the entry form or from the <i>Airports</i> table among the configuration tables, columns <i>code</i> and <i>country</i>	AAE - Algeria
fuel_total_value	float	M	Total amount of fuel consumed	Fully user-defined	2500
fuel_total_units	string (text)	M	The units of measurement for fuel consumption (do not forget the space between the order of magnitude like 10E3 or 10E6 and the following unit symbol)	As per the <i>Units</i> menu options in the entry form or from the <i>Units</i> table among the configuration tables, column <i>symbol</i>	10E3 m3
fuel_total_issued_date	date	M	When the data has been published (or the website last viewed)	Please use format YYYY-MM-DD	2020-01-25
fuel_total_source	string (text)	M	The source type for the fuel value (e.g., energy balance, national fuel statistics, etc.)	As as listed in <i>Source</i> menu options in the entry form or from the <i>Institutions</i> table, column <i>name</i>	Direct measurements
fuel_total_reference	string (text)	M	A complete reference to the data source (e.g., website or the publication reference, or the report name) and any comments	Fully user-defined	https://www.stats.govt.nz/information-releases/new-zealand-energy-use-2018 These are provisional data, we will make corrections when the actual figures are available
fuel_total_type	string (text)	O	The type of data collection, e.g., survey, or modeled	Use one of the options listed in the <i>Type</i> menu in the entry form (with the exact syntax). If unknown, use NA	modeled
density_value	float	O	Fuel density value	If not known, SAGE will use the default value from the <i>Fuels</i> table among the configuration tables (column <i>density</i>).	870
density_units	string (text)	O	Measurement units for density	As per the <i>Units</i> menu options in the entry form or from the <i>Units</i> table among the configuration tables, column <i>symbol</i>	kg/m3
density_issued_date	date	O	When the data has been published (or the website last viewed)	Please use format YYYY-MM-DD	2020-01-25
density_source	string (text)	O	The source type for the density value (e.g., energy balance, national fuel statistics, etc.)	As as listed in <i>Source</i> menu options in the entry form or from the <i>Institutions</i> table among the configuration tables, column <i>name</i>	Direct measurements
density_reference	string (text)	O	The detailed reference source of density value and any relevant comments	Fully user-defined	www.engineeringtoolbox.com/liquids-densities-d_743.html
density_type	string (text)	O	The type of data collection, e.g., survey, or modeled	Use one of the options listed in the <i>Type</i> menu in the entry form (with the exact syntax). If unknown, use NA	survey
calorific_value	float	O	Calorific value	If not known, SAGE will use the default value from the <i>Fuels</i> table among the configuration tables (column <i>cal.value</i>).	44.3
calorific_units	string (text)	O	Measurement units for calorific value (also known as "heating value" in North America)	As per the <i>Units</i> menu options in the entry form or from the <i>Units</i> table, column <i>symbol</i>	TJ/Gg
calorific_issued_date	date	O	When the data has been published (or the website last viewed)	Please use format YYYY-MM-DD	2020-01-25

carbon_source	string (text)	O	The source type for the carbon content value (e.g., energy balance, national fuel statistics, etc.)	As as listed in <i>Source</i> menu options in the entry form or from the <i>Institutions</i> table among the configuration tables, column <i>name</i>	Direct measurements
carbon_reference	string (text)	O	The detailed reference source of carbon value and any relevant comments	Fully user-defined	www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf
carbon_type	string (text)	O	The type of data collection, e.g., survey, or modeled	Use one of the options listed in the <i>Type</i> menu in the entry form (with the exact syntax). If unknown, use NA	survey
water_value	float	O	Fuel density value	If not known, SAGE will use the default value from the <i>Fuels</i> table (if configured for the fuel).	15
water_units	string (text)	O	The units of measurement for water content (usually given as % of water in the fuel)	Enter %	%
water_issued_date	date	O	When the data has been published (or the website last viewed)	Please use format YYYY-MM-DD	2020-01-25
water_source	string (text)	O	The source type for the water content value (e.g., energy balance, national fuel statistics, etc.)	As as listed in <i>Source</i> menu options in the entry form or from the <i>Institutions</i> table, column <i>Name</i>	Direct measurements
water_reference	string (text)	O	The detailed reference source of water value and any relevant comments	Fully user-defined	www.engineeringtoolbox.com/water-density-specific-weight-d_595.html
water_type	string (text)	O	The type of data collection, e.g., survey, or modeled	Use one of the options listed in the <i>Type</i> menu in the entry form (with the exact syntax). If unknown, use NA	survey
uncert_1_value	float	O	Uncertainty value	If not known for the amount of fuel combusted, SAGE will calculate the uncertainty using the relevant algorithm from the 2006 IPCC Guidelines. For all other values, we strongly recommend to enter uncertainty data.	5
uncert_1_units	string (text)	O	The units of measurement for uncertainty (usually %, but could be absolute units - the same as the actual measurement)	If not %, enter the unit as per the <i>Units</i> menu options in the entry form or from the <i>Units</i> table among the configuration tables, column <i>symbol</i>	%
uncert_1_issued_date	date	O	When the data has been published (or the website last viewed)	Please use format YYYY-MM-DD	2020-01-25
uncert_1_source	string (text)	O	The source type for the uncertainty value given as a single number (e.g., energy balance, national fuel statistics, etc.)	As as listed in <i>Source</i> menu options in the entry form or from the <i>Institutions</i> table among the configuration tables, column <i>name</i>	Direct measurements
uncert_1_reference	string (text)	O	The detailed reference source of uncertainty value and any relevant comments	Fully user-defined.	Industry Report XYZ
uncert_1_type	string (text)	O	The type of data collection, e.g., survey, or modeled	Use one of the options listed in the <i>Type</i> menu in the entry form (with the exact syntax). If unknown, use NA	survey
uncert_2_value	float	O	Fuel density value	Fully user-defined. There is no need to enter uncertainty 2 value if uncertainty 1 is entered.	10
uncert_2_units	string (text)	O	The units of measurement for uncertainty (usually %, but could be absolute units - the same as the actual measurement)	If not %, enter the unit as per the <i>Units</i> menu options in the entry form or from the <i>Units</i> table among the configuration tables, column <i>symbol</i>	%
uncert_2_issued_date	date	O	When the data has been published (or the website last viewed)	Please use format YYYY-MM-DD	2020-01-25
uncert_2_source	string (text)	O	The source type for the uncertainty value given as a range or an asymmetric uncertainty (e.g., energy balance, national fuel statistics, etc.)	As as listed in <i>Source</i> menu options in the entry form or from the <i>Institutions</i> table among the configuration tables, column <i>name</i>	Direct measurements
uncert_2_reference	string (text)	O	The detailed reference source of uncertainty value and any relevant comments	Fully user-defined.	Industry Report XYZ
uncert_2_type	string (text)	O	The type of data collection, e.g., survey, or modeled	Use one of the options listed in the <i>Type</i> menu in the entry form (with the exact syntax). If unknown, use NA	modeled
fuel_mass	float	N/A	amount of fuel recalculated to kt in SAGE	N/A	N/A
energy	float	N/A	amount of fuel in energy units, calculated in SAGE	N/A	N/A
state	string (text)	N/A	State of the inventory (draft, reviewed, approved, published)	N/A	N/A
inv_issue_code	string (text)	M	Annual AD collection name and year	User entry	RA_National_2000
inv_year	integer	M	Year of the annual AD collection	User entry	2000
gcv_to_ncv	float	M	Conversion coefficient between gross and net calorific values (.95 or .9)	User entry	0.95

Appendix D: Example translation between import information and data structure – Energy Sector

When in SAGE, Aircraft Types shows a list in the following format:

Airbus A300, A306, AB4	Airbus A310, A310, 31X
Airbus A300, A306, AB6	Airbus A310, A310, 31Y
Airbus A300, A306, ABF	Airbus A319, A318, 318
Airbus A300, A306, ABX	Airbus A319, A319, 319
Airbus A300, A306, ABY	Airbus A320, A320, 320
Airbus A300, A30B, AB3	Airbus A320, A320, 32S
Airbus A310, A310, 310	Airbus A321, A321, 321
Airbus A310, A310, 312	Airbus A330-200, A330, 330
Airbus A310, A310, 313	Airbus A330-200, A332, 332
Airbus A310, A310, 31F	

(To get there, in SAGE, click  at the top, 'Energy' on the left, 'AD Collections' in the body, Edit annual AD (on the left), at the top ensure it says '1.A Reference appr. data', to the right of that, click and select '1.A.3.a T3', click Add at the top, and look for 'Aircraft code:' in the body of the page.)

Also, when setting up an import file, text in the format above is required.

The underlying data structure is presented in the table below (by going to SAGE, 'Configuration – Energy Sector', and selecting 'Aircrafts-civil').

id	plane class	generic type	ICAO	IATA	default fuel	fuel consumption (kg per LTO)	status	
							Any	▼
162	Large Commercial Aircraft	Airbus A300	A30B	AB3	Jet Kerosene	1720	enabled	✗
163	Large Commercial Aircraft	Airbus A300	A306	AB4	Jet Kerosene	1720	enabled	✗
164	Large Commercial Aircraft	Airbus A300	A306	AB6	Jet Kerosene	1720	enabled	✗
165	Large Commercial Aircraft	Airbus A300	A306	ABF	Jet Kerosene	1720	enabled	✗
166	Large Commercial Aircraft	Airbus A300	A306	ABX	Jet Kerosene	1720	enabled	✗
167	Large Commercial Aircraft	Airbus A300	A306	ABY	Jet Kerosene	1720	enabled	✗
168	Large Commercial Aircraft	Airbus A310	A310	310	Jet Kerosene	1510	enabled	✗
169	Large Commercial Aircraft	Airbus A310	A310	312	Jet Kerosene	1510	enabled	✗
170	Large Commercial Aircraft	Airbus A310	A310	313	Jet Kerosene	1510	enabled	✗
171	Large Commercial Aircraft	Airbus A310	A310	31F	Jet Kerosene	1510	enabled	✗
172	Large Commercial Aircraft	Airbus A310	A310	31X	Jet Kerosene	1510	enabled	✗
173	Large Commercial Aircraft	Airbus A310	A310	31Y	Jet Kerosene	1510	enabled	✗
174	Large Commercial Aircraft	Airbus A319	A319	319	Jet Kerosene	730	enabled	✗
175	Large Commercial Aircraft	Airbus A319	A318	318	Jet Kerosene	730	enabled	✗
176	Large Commercial Aircraft	Airbus A320	A320	320	Jet Kerosene	770	enabled	✗
177	Large Commercial Aircraft	Airbus A320	A320	32S	Jet Kerosene	770	enabled	✗
178	Large Commercial Aircraft	Airbus A321	A321	321	Jet Kerosene	960	enabled	✗
179	Large Commercial Aircraft	Airbus A330-200	A330	330	Jet Kerosene	2230	enabled	✗
180	Large Commercial Aircraft	Airbus A330-200	A332	332	Jet Kerosene	2230	enabled	✗
181	Large Commercial Aircraft	Airbus A330-300	A330	330	Jet Kerosene	2230	enabled	✗
182	Large Commercial Aircraft	Airbus A330-300	A333	333	Jet Kerosene	2230	enabled	✗
183	Large Commercial Aircraft	Airbus A340-200	A342	342	Jet Kerosene	1860	enabled	✗
184	Large Commercial Aircraft	Airbus A340-300	A340	340	Jet Kerosene	2020	enabled	✗
185	Large Commercial Aircraft	Airbus A340-300	A343	343	Jet Kerosene	2020	enabled	✗
186	Large Commercial Aircraft	Airbus A340-500	A345	345	Jet Kerosene	3370	enabled	✗
187	Large Commercial Aircraft	Airbus A340-600	A346	346	Jet Kerosene	3370	enabled	✗
188	Large Commercial Aircraft	Boeing 707	B703	703	Jet Kerosene	1860	enabled	✗
189	Large Commercial Aircraft	Boeing 707	B703	707	Jet Kerosene	1860	enabled	✗
190	Large Commercial Aircraft	Boeing 707	B703	70F	Jet Kerosene	1860	enabled	✗
191	Large Commercial Aircraft	Boeing 707	B703	70M	Jet Kerosene	1860	enabled	✗

Appendix E: Example translation between import information and data structure – IPPU Sector

When in SAGE, Lime type shows a list in the following format:

Dolomitic lime large-scale production
Dolomitic lime small-scale production
High-calcium lime
Hydraulic lime

(To get there, in SAGE, click  at the top, 'IPPU' on the left, 'AD Collections' in the body, Edit annual AD (on the left), at the top click tab '2.A', choose '2.A.2 T1' from the popup list, click Add at the top, and look for 'Lime type:' in the body of the page.)

Also, when setting up an import file, text in the format above is required.

The underlying data structure is presented in the table below (by going to SAGE, 'Configuration – IPPU Sector', and selecting 'Lime type' on the left).

<input type="checkbox"/>	id	name ↑	stoichiometric ratio	CaO range	CaO fract.	MgO range	MgO fract.	CaO-MgO fract.	status	
		<input type="text"/>							Any ▾	
<input type="checkbox"/>	 3	Dolomitic lime L-Prod	0.913	55-57	56	38-41	39.5	0.95	enabled	
<input type="checkbox"/>	 4	Dolomitic lime S-Prod	0.913	55-57	56	38-41	39.5	0.85	enabled	
<input type="checkbox"/>	 2	High-calcium lime	0.785	93-98	96	0.3-2.5	1.4	0.95	enabled	
<input type="checkbox"/>	 5	Hydraulic lime	0.785	65-92	79		0	0.75	enabled	

Appendix F: Data Categories

- 1
 - 1.A Fuel Combustion Activities
 - 1.A.1 Energy Industries
 - 1.A.1.a Main Activity Electricity and Heat Production
 - 1.A.1.a.i Electricity Generation
 - 1.A.1.a.ii Combined Heat and Power Generation (CHP)
 - 1.A.1.a.iii Heat Plants
 - 1.A.1.b Petroleum Refining
 - 1.A.1.c Manufacture of Solid Fuels and Other Energy Industries
 - 1.A.1.c.i Manufacture of Solid Fuels
 - 1.A.1.c.ii Other Energy Industries
 - 1.A.2 Manufacturing Industries and Construction
 - 1.A.2.a Iron and Steel
 - 1.A.2.b Non-Ferrous Metals
 - 1.A.2.c Chemicals
 - 1.A.2.d Pulp, Paper and Print
 - 1.A.2.e Food Processing, Beverages and Tobacco
 - 1.A.2.f Non-Metallic Minerals
 - 1.A.2.g Transport Equipment
 - 1.A.2.h Machinery
 - 1.A.2.i Mining (excluding fuels) and Quarrying
 - 1.A.2.j Wood and wood products
 - 1.A.2.k Construction
 - 1.A.2.l Textile and Leather
 - 1.A.2.m Non-specified Industry
 - 1.A.3 Transport
 - 1.A.3.a Civil Aviation
 - 1.A.3.a.i International Aviation (International Bunkers)
 - 1.A.3.a.i/mil International Aviation (International Bunkers) Mil
 - 1.A.3.a.ii Domestic Aviation
 - 1.A.3.b Road Transportation
 - 1.A.3.b.i Cars
 - 1.A.3.b.i.1 Passenger cars with 3-way catalysts
 - 1.A.3.b.i.2 Passenger cars without 3-way catalysts
 - 1.A.3.b.ii Light-duty trucks
 - 1.A.3.b.iii Heavy-duty trucks and buses
 - 1.A.3.b.iv Motorcycles
 - 1.A.3.b.v Evaporative emissions from vehicles
 - 1.A.3.b.vi Urea-based catalysts
 - 1.A.3.c Railways
 - 1.A.3.d Water-borne Navigation
 - 1.A.3.d.i International water-borne navigation
 - 1.A.3.d.ii Domestic Water-borne Navigation
 - 1.A.3.e Other Transportation
 - 1.A.3.e.i Pipeline Transport
 - 1.A.3.e.ii Off-road
 - 1.A.4 Other Sectors
 - 1.A.4.a Commercial/Institutional
 - 1.A.4.b Residential
 - 1.A.4.c Agriculture/Forestry/Fishing/Fish Farms
 - 1.A.5 Non-Specified
 - 1.A.5.a Stationary
 - 1.A.5.b Mobile
 - 1.A.5.b.i Mobile (aviation component)
 - 1.A.5.b.ii Mobile (water-borne component)
 - 1.A.5.b.iii Mobile (Other)
 - 1.A.5.c Multilateral Operations
 - 1.B Fugitive emissions from fuels
 - 1.B.1 Solid Fuels
 - 1.B.1.a Coal mining and handling
 - 1.B.1.a.i Underground mines
 - 1.B.1.a.i.1 Mining
 - 1.B.1.a.i.2 Post-mining seam gas emissions
 - 1.B.1.a.i.3 Abandoned underground mines
 - 1.B.1.a.i.4 Flaring of drained methane or conversion of methane to CO₂
 - 1.B.1.a.ii Surface mines
 - 1.B.1.a.ii.1 Mining
 - 1.B.1.a.ii.2 Post-mining seam gas emissions
 - 1.B.1.b Uncontrolled combustion and burning coal dumps
 - 1.B.2 Oil and Natural Gas
 - 1.B.2.a Oil
 - 1.B.2.a.i Venting
 - 1.B.2.a.ii Flaring
 - 1.B.2.a.iii All Other
 - 1.B.2.a.iii.1 Exploration
 - 1.B.2.a.iii.2 Production and Upgrading
 - 1.B.2.a.iii.3 Transport
 - 1.B.2.a.iii.4 Refining
 - 1.B.2.a.iii.5 Distribution of oil products
 - 1.B.2.a.iii.6 Other
 - 1.B.2.b Natural Gas
 - 1.B.2.b.i Venting
 - 1.B.2.b.ii Flaring
 - 1.B.2.b.iii All Other
 - 1.B.2.b.iii.1 Exploration
 - 1.B.2.b.iii.2 Production
 - 1.B.2.b.iii.3 Processing
 - 1.B.2.b.iii.4 Transmission and Storage
 - 1.B.2.b.iii.5 Distribution
 - 1.B.2.b.iii.6 Other
 - 1.B.3 Other emissions from Energy Production
 - 1.C Carbon dioxide Transport and Storage
 - 1.C.1 Transport of CO₂
 - 1.C.1.a Pipelines
 - 1.C.1.b Ships
 - 1.C.1.c Other (please specify)
 - 1.C.2 Injection and Storage
 - 1.C.2.a Injection
 - 1.C.2.b Storage
 - 1.C.3 Other

Appendix G: Fuels

Anthracite	LNG (liquified natural gas)
Aviation Gasoline	LNG/CNG/API gravity 77 - 92
B20	Lubricants
B5	Medium crude oil/API gravity between 22 and 31
Biodiesels	methanol
Biogasoline	Middle distillate/gasoil (for transportation)
Biogasoline (=biopetrol)	Motor gasoline/(petrol) - oil product
Bitumen	Motor Gasoline
Bitumen/API gravity <10	Municipal Wastes (biomass fraction)
Blast Furnace Gas	Municipal Wastes (non-biomass fraction)
Brown Coal Briquettes	Naphtha
Charcoal	Natural Gas
CNG (compressed natural gas)	Natural Gas Liquids (NGLs)
Coal Bed Methane	Oil Shale and Tar Sands
Coal Tar	Orimulsion
Coke Oven Coke	Other Biogas
Coke Oven Coke and Lignite Coke	Other Bituminous Coal
Coke Oven Gas	Other Kerosene
Coking Coal	Other Liquid Biofuels
Condensate/API gravity from 50 to 80	Other Petroleum Products
Crude Oil	Other Primary Solid Biomass
Deep-cut extraction	Oxygen Steel Furnace Gas
Dry gas	Patent Fuel
E10	Peat
E3	Petroleum Coke
E5	Racing fuels
E85	Refinery Feedstocks
Enhanced gas recovery	Refinery Gas
ETBE11	Residual Fuel Oil
ETBE22	Shale Oil
Ethane	Sludge Gas
ethanol	Sour Crude Oil/API gravity approx. 30
Gas Coke	Sour gas plants
Gas Works Gas	Sub-Bituminous Coal
Gas/Diesel Oil	Sulphite Lyes (Black Liquor)
Gasoline	Sweet Crude Oil/API gravity approx. 30
Heavy crude oil/API gravity between 10 and 22	Sweet gas plants
Heavy Diesel	Sweet light crude oil/API gravity >35
Industrial Wastes	Synthetic crude oil/API gravity approx. 30
Jet fuel	Thermal oil/API gravity 31.5
Jet Gasoline	Total Crude Oil/API gravity approx. 30
Jet Kerosene	Total natural gas
Landfill Gas	Very Light Oil/API gravity >35
Light crude oil/API gravity between 31 and 35	Waste Oils
Light Diesel	Waxes
Lignite	White Spirit & SBP
Liquefied Petroleum Gases	Wood/Wood Waste

Appendix H: Fuel Categories

- All
- Biofuels
- Biomass
- Gas
- Gas biomass
- Gaseous Fossil
- Gaseous fossil.Type and origin
- Liquid
- Liquid biomass
- Liquid Fossil.Primary Fuels
- Liquid Fossil.Secondary Fuels
- Liquid fossil.type and origin
- Natural gas
- Other
- Other biomass
- Other fossil fuels
- Other gas
- Other liquid
- Other non-fossil fuels
- Other solid
- Peat
- Solid
- Solid biomass
- Solid Fossil.Primary Fuels
- Solid Fossil.Secondary Fuels