

UNSD Energy Statistics API Manual

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Table of Contents

Introduction	1
UNSD Energy Statistics Dissemination DSD	1
Energy Statistics Dissemination API	2
Building a custom query against the Energy Statistics Dataflow	6
Format of data returned by the API.....	7

Introduction

The objective of this document is to provide guidance on the usage of UNSD Energy Statistics Dissemination Data Structure Definition (DSD) and Application Programming Interface (API). The DSD and API use the [SDMX format](#), and are available at the [UNSD SDMX API](#). The API is built using Eurostat's [SDMX Reference Infrastructure](#).

UNSD Energy Statistics Dissemination DSD

The UNSD Energy Statistics Dissemination DSD is designed to facilitate the dissemination of UNSD's energy statistics data¹. The latest version of the complete DSD including the code lists, can be downloaded from the UNSD SDMX API at https://data.un.org/WS/rest/datastructure/UNSD/DSD_Energy/?references=all. The DSD ID is **DSD_ENERGY**, and its maintenance agency is **UNSD**.

The DSD in the Excel format, which uses OECD's Matrix Generator, can be downloaded from https://unstats.un.org/unsd/energystats/data/Energy_DSD_Matrix.xlsm.

The DSD is organized as follows:

Concept name	Role	Concept ID	Code list ID	Remarks
Frequency of observation	Dimension	FREQ	CL_FREQ	All UNSD Energy data in this dataset are annual. The concept is provided to facilitate interoperability.
Reference area	Dimension	REF_AREA	CL_AREA_NRG	Reference area code list, based on the M49 classification .

¹ For more information on the UNSD Energy Statistics Database please refer to: <https://unstats.un.org/unsd/energystats/data/>

Commodity	Dimension	COMMODITY	CL_COMMODITY_NRG	Commodity code list, based on the Standard International Energy Product Classification (SIEC) .
Transaction	Dimension	TRANSACTION	CL_TRANSACTION_NRG	Also referred to as “energy flow” ² in the International Recommendations for Energy Statistics (IRES) ³ .
Time Period	Dimension	TIME_PERIOD		Observational Time Period as calendar year, unless otherwise specified in the country notes ⁴ .
Unit of measure	Attribute	UNIT_MEASURE	CL_UNIT_MEASURE_NRG	Unit of measure
Unit multiplier	Attribute	UNIT_MULT	CL_UNIT_MULT	Exponent in base 10 used for calculating the actual value in the unit of measure. For example, UNIT_MULT=6 indicates that observations are in millions.
Observation status	Attribute	OBS_STATUS	CL_OBS_STATUS	Information on the quality of a value or an unusual or missing value. At this time, code A is used for actual values, and code E to indicate an estimated value.

Energy Statistics Dissemination API

UNSD Energy Statistics API is available at <https://data.un.org/WS>, and its contents can be browsed at <https://data.un.org/SdmxBrowser> at the dataflow **DF_UNDATA_ENERGY**, maintenance agency **UNSD**.

Building a query using SDMX Browser

To browse the API and construct queries, SDMX Browser can be used at <https://data.un.org/SdmxBrowser>.

² In the context of basic energy statistics and energy balances, the term “energy flow” refers to the production, import, export, bunkering, stock changes, transformation, energy use by energy industries, losses during the transformation, and final consumption of energy products within the territory of reference for which these statistics are compiled.

³ Available here: <https://unstats.un.org/unsd/energystats/methodology/ires/>

⁴ Available here: [http://data.un.org/ Docs/Energy_Statistics_Database_notes_UNdata.pdf](http://data.un.org/Docs/Energy_Statistics_Database_notes_UNdata.pdf).

Start by expanding the category tree on the left and selecting the dataflow **DF_UNDATA_ENERGY**. Dimension filters are then displayed in the **Criteria** pane on the right-hand side of the screen:

The screenshot shows the UNdata SDMX Web Service interface. On the left, a category tree is expanded to show the 'Energy' section, with 'DF_UNDATA_ENERGY - Energy statistics dataflow' selected. The right pane, titled 'Criteria', shows the 'FREQ' tab selected, with 'Annual' chosen for the frequency. The 'Criteria' pane also displays the maximum possible observations as 500,000. The interface includes a search bar, navigation icons, and a footer with copyright information.

Click on each dimension and set filters for data to be retrieved. E.g., to select reference areas:

The screenshot shows the UNdata SDMX Web Service interface with the 'Criteria' pane updated to show the 'REF_AREA' tab selected. The 'Reference Area' section lists several countries with checkboxes: [004] - Afghanistan, [008] - Albania, [012] - Algeria, and [016] - American Samoa. The 'Criteria' pane also displays the maximum possible observations as 500,000. The interface includes a search bar, navigation icons, and a footer with copyright information.

Once selections are completed, the data can be visualized, and the table pivoted, by clicking on **View Results**. More information on the tab **View Results**, features and limitations of the data browser,

including those related to number of data points that can be displayed, can be found on the SDMX Web Client Manual at https://unstats.un.org/unsd/energystats/data/SDMX_Client_Manual.pdf.

The screenshot shows the UNdata SDMX Web Service interface. The browser address bar displays <https://data.un.org/SdmxBrowser/start>. The page features the UNdata logo and the text "A world of information". The main heading is "SDMX Web Service", with the subtext "Powered by SDMX Reference Infrastructure". A language dropdown menu is set to "English".

Below the heading, there are two tabs: "Criteria" and "View Results". The "View Results" tab is active. To the right of the tabs, there is a "Download:" section with links for [HTML], [SDMX-ML], [XLS], and [PDF].

A paragraph of instructions follows: "Drag & drop the yellow background blocks to corresponding X, Y and Z axis. The Z axis is for the components used for filtering the visible data, the X axis is for the horizontal components used for creating the header of the table, while Y axis is for the components used as first columns. Use the Apply button to confirm any changes, Cancel to revert them."

The "Slice (Z-axis):" section contains five yellow blocks: FREQ, REF_AREA, COMMODITY, TRANSACTION, and TIME_PERIOD. Below these blocks, the following criteria are displayed:

- Frequency [A] - Annual
- Reference Area [004] - Afghanistan
- Commodity [0100] - Hard Coal
- Transaction [01] - Production
- Time period 1990

At the bottom, there are two input fields: "Horizontal (X-axis):" and "Vertical (Y-axis):". The "Horizontal (X-axis):" field contains the number "105".

The footer of the page includes the copyright notice "Copyright (c) 2010 by the European Commission, represented by Eurostat." and the version information "NSI Web client v3.19.0.0 08-03-2019".

Data can be downloaded in the specified formats (HTML, SDMX-ML, XLS and PDF) by clicking on the respective download links. Note that the attribute for the "Unit of measure" does not show in the browser, and it is visible in the downloads only if the format SDMX-ML is selected. There is no intention to change this, as the main purpose of this browser is to illustrate the type of data to be obtained with the API, and not to serve as the main download point.

This screenshot is identical to the one above, showing the UNdata SDMX Web Service interface. The only difference is that the "Download:" section, which contains the links [HTML], [SDMX-ML], [XLS], and [PDF], is circled in red to highlight the download options.

The data can be pivoted by moving dimensions into the horizontal and vertical axes:

The screenshot shows the UNdata SDMX Web Service interface. The main table displays data for the period 1990-1994. The dimensions are configured as follows:

- Slice (Z-axis):** FREQ
- Frequency:** [A] - Annual
- Horizontal (X-axis):** TIME_PERIOD
- Vertical (Y-axis):** REF_AREA, COMMODITY, TRANSACTION

Vertical (Y-axis)	Horizontal (X-axis): TIME_PERIOD	1990	1991	1992	1993	1994
Reference Area						
Commodity						
Transaction						
	Consumption by domestic aviation	3	3	0		
	Consumption by transport	3	3	0		
	Final consumption	3	3	0		
	Final energy consumption	3	3	0		
	International aviation bunkers	0	0	0		
	Stock changes	1	1	0		

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The query that corresponds to the selection made can be retrieved by clicking on the Criteria pane and clicking **Download Query**:

The screenshot shows the UNdata SDMX Web Service interface with the 'Criteria' pane selected. The 'Data Query' dialog box is open, displaying the generated data direct URL:

```
https://data.un.org/ws/rest/data/UNSD,DF_UNDATA_ENERGY,1.0/.004+008+012../ALL/?detail=full&dimensionAtObservation=TIME_PERIOD
```

Buttons for 'Copy URL' and 'Cancel' are visible. Below the dialog box, a list of countries is shown with checkboxes:

- ☒ [004] - Afghanistan
- ☒ [008] - Albania
- ☒ [012] - Algeria
- ☐ [016] - American Samoa
- ☐ [020] - Andorra

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For further information on the use of SDMX Browser, see Eurostat's SDMX Web Client Manual (https://unstats.un.org/unsd/energystats/data/SDMX_Client_Manual.pdf).

Building a custom query

UNSD SDMX API supports SOAP and RESTful queries. For full information on building SDMX RESTful queries, please consult online [Guidelines](#). Below, guidance is provided on building RESTful queries.

Queries can be created using the following URL structure

[https://data.un.org/WS/rest/UNSD,DF_UNDATA_ENERGY,/{key}/{startPeriod=yyyy}&endPeriod=yyyy\]&format={data_format}](https://data.un.org/WS/rest/UNSD,DF_UNDATA_ENERGY,/{key}/{startPeriod=yyyy}&endPeriod=yyyy]&format={data_format})

The key is constructed by providing zero or more dimension values, from their respective code lists, in the following order:

1. Frequency
2. Reference area
3. Commodity
4. Transaction

All dimensions must be specified in the query. Dimensions are separated by a dot (.). To specify several codes for a dimension, use the plus sign (+). Wildcarding is used by omitting a dimension, in which case all values for the dimension in question will be returned.

Start and/or end period can optionally be specified in the query string following the question mark.

In addition, format of data to be returned can be requested as described [below](#).

For example, consider the following query:

https://data.un.org/WS/rest/data/UNSD,DF_UNDATA_ENERGY,/.004+008.7000./?startPeriod=2015

As can be seen, query parameters are specified as follows:

FREQ: omitted; all frequencies will be returned. NB: This Energy dataset only has annual data.

REF_AREA: 004+008 (Afghanistan and Albania)

COMMODITY: 7000 (Total Electricity)

TRANSACTION: omitted; all transactions will be returned.

startPeriod = 2015

format: omitted; data will be returned in the default format.

Thus, the query will return data for Afghanistan and Albania, Total Electricity, all transactions, starting from 2015.

For full information on SDMX queries, please see [online guidelines](#) and the [REST cheat sheet](#).

Format of data returned by the API

By default, the Web service returns data in the SDMX 2.1 Generic format. To request other formats, the HTTP Accept header can be set in the query as described in the [HTTP Content Negotiation guidelines](#).

Alternatively, the data format can be provided in the query string using the **format** parameter. The following formats are supported in the query string:

Format name	Format parameter (query string)	HTTP Accept header
SDMX 2.1 Generic	genericdata	application/vnd.sdmx.genericdata+xml
SDMX 2.1 Structure-specific	structurespecificdata	application/vnd.sdmx.structurespecificdata+xml
SDMX JSON	jsondata	application/vnd.sdmx.data+json
SDMX CSV	csv	application/vnd.sdmx.data+csv

For example, to make the above query return SDMX 2.1 Structure-Specific format, use

https://data.un.org/WS/rest/data/UNSD,DF_UNDATA_ENERGY,/.004+008.7000./?startPeriod=2015&format=structurespecificdata

Additional formats can be specified using HTTP Accept header only, as described in the [online guidelines](#).

Further information

For further information on the SDMX API, please see <https://unstats.un.org/unsd/methodology/sdmx/>

Please contact energy_stat@un.org for further information on the Energy API.