Deliverable 6.1 Data Model Evolution and Code Lists

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Acronyms

CREEA	Compiling and Refining Environmental and Economic Accounts
DESIRE	DEvelopment of a System of Indicators for a Resource Efficient Europe (http://www.fp7desire.eu/)
EC	European Commission
EEMRIO	Environmentally Extended multi-regional input output
EGDI	European Geological Data Infrastructure
ELV	End of Life Vehicle
EXIOBASE	EXIOBASE project (http://exiobase.eu)
EXIOPOL	Exiopol project (https://www.universiteitleiden.nl/en/research/research-projects/science/cml-exiopol)
IO	Input Output
JRC	Joint Research Centre of the European Commission
M4EU	Minerals 4EU project (http://minerals4eu.eu)
MRIO	Multi-regional Input Output
ProSUM	Prospecting Secondary raw materials in the Urban mine and Mining waste (http://www.prosumproject.eu/)
RMIS	Raw Material Information System
RoW	Rest of World
UMDM	Urban Mine Data Model
SUT	Supply Use Table
WEEE	Waste Electronic and Electrical Equipment
WFS	Web Feature Service

Executive summary

The aim of the PANORAMA project is to build a comprehensive material stock and flow database to support a web-based information service on the theme of raw material stocks and flows. This service will be aligned with the existing Raw Materials Information Service (RMIS) hosted by the European Union's Joint Research Centre (JRC) and the European Geological Data Infrastructure (EGDI).

This report is on the first task of work package 6 to design and implement a suitable IT infrastructure for the new information service. A data model has been developed based on the existing ProSUM Urban Mine and EXIOBASE data models to create a model to manage data on stocks and flows of materials and their compositions across Europe. The EXIOBASE database was developed in 3 stages between 2012 and 2015 to develop multi-regional input-output (MRIO) database. It uses supply-use-tables (SUTs) to create a matrix of input-output tables for different products. These matrixes need to be disaggregated into lists to be able to provide the information required by the project

The ProSUM Urban Mine data model is a unified data model that is able to store consolidated data on the composition, stocks and flows for WEEE, ELV and batteries. The data is organised in a logical structure that is able to group together the three waste types in a unified data model.

In addition to modifying existing data models, new and updated code list vocabularies have been developed to both extend the existing models and to allow new data to be added to the database. The process of updating the code lists will be ongoing as the database is implemented and new data is added. Additional modifications to the data model may still be required to accommodate the new data that needs to be stored in the database.

During the implementation phase, the issue of optimising the data for the information services being provided will need to be addressed to ensure that the data is provided in a format that requires little to no further processing before being presented on the information service and portrayals.

Finally, A period of testing will be required during the implementation phase to ensure that there are no data modifications after import into the database and that data is delivered for the services in the correct format. This testing will be completed over the next 12 months during task 4.3 Pre-processing of data sets and quality control, in close cooperation with the team setting up the database.

1. Introduction

The aim of work package 6 is to design and implement a suitable IT infrastructure for a user interface to a new information service. Task 6.1 is to adapt the existing data models developed for the DESIRE and ProSUM projects to manage the data for this service. These data models can manage data on product compositions, stocks and flows but require modification and updated vocabularies to present the information for this project.

The data model developed for the ProSUM urban mine platform has been enhanced with features from the EXIOBASE database to generate mass balances between different input and output tables. The new data model being developed requires the ability to assess the material cycle for a list of elements outlined in Deliverable 3.1 Report on data sources as input to work package 4 (Table 1). Many of these elements are found on the EC's Critical Raw Materials list from 2017. The new database needs to be flexible enough to store input data from a variety of different sources identified in Tasks 3.1 and 3.2, and robust enough to estimate precise mass balances for the different commodities. This will be achieved by estimating the size of different flows within an open system of a trading country (Figure 1).

This report briefly describes the EXIOBASE and the Urban Mine data models and describes how the latter has been enhanced to fulfil the aims of the PANORAMA project. The updated data model and code list vocabularies are described in detail. It is likely that this improved data model will need to be further developed and modified during the implementation phase as data is added to the data tables. These changes may be documented in a supplement to this report and will be a part of Task 6.2: Implementation of the IT Infrastructure.

This report will also be used as an input to other project tasks including:

- Task 4.3: Pre-processing of data sets and quality control
- Task 5.4: Deliver reconciled data sets
- Task 6.2: Implementation of the IT infrastructure.

This task is an important foundation stone in the project allowing large and diverse data sets to be broken down and stored in a database management system. It is also a critical component of the Knowledge Data Platform being developed. The long-term maintenance of the database and other IT infrastructure is being developed under Work Package 0: Go To Market Strategy.

Substance	Inclusion criteria
Aluminium (Al)	Volumes, variety of uses
Cerium (Ce)	Critical according to EU CRM list
Cobalt (Co)	Critical according to EU CRM list
Copper (Cu)	Volumes, variety of uses
Dysprosium (Dy)	Critical according to EU CRM list
Germanium (Ge)	Critical according to EU CRM list
Indium (In)	Critical according to EU CRM list
Iron (Fe)	Volumes, variety of uses
Lanthanum (La)	Critical according to EU CRM list
Natural Graphite	Critical according to EU CRM list
Niobium (Nb)	Critical according to EU CRM list
Neodymium (Nd)	Critical according to EU CRM list
Palladium (Pd)	Critical according to EU CRM list
Platinum (Pt)	Critical according to EU CRM list
Tantalum (Ta)	Critical according to EU CRM list
Tungsten (W)	Critical according to EU CRM list

Table 1: List of elements to be assessed during the project.
(From: PANORAMA Deliverable 3.1)

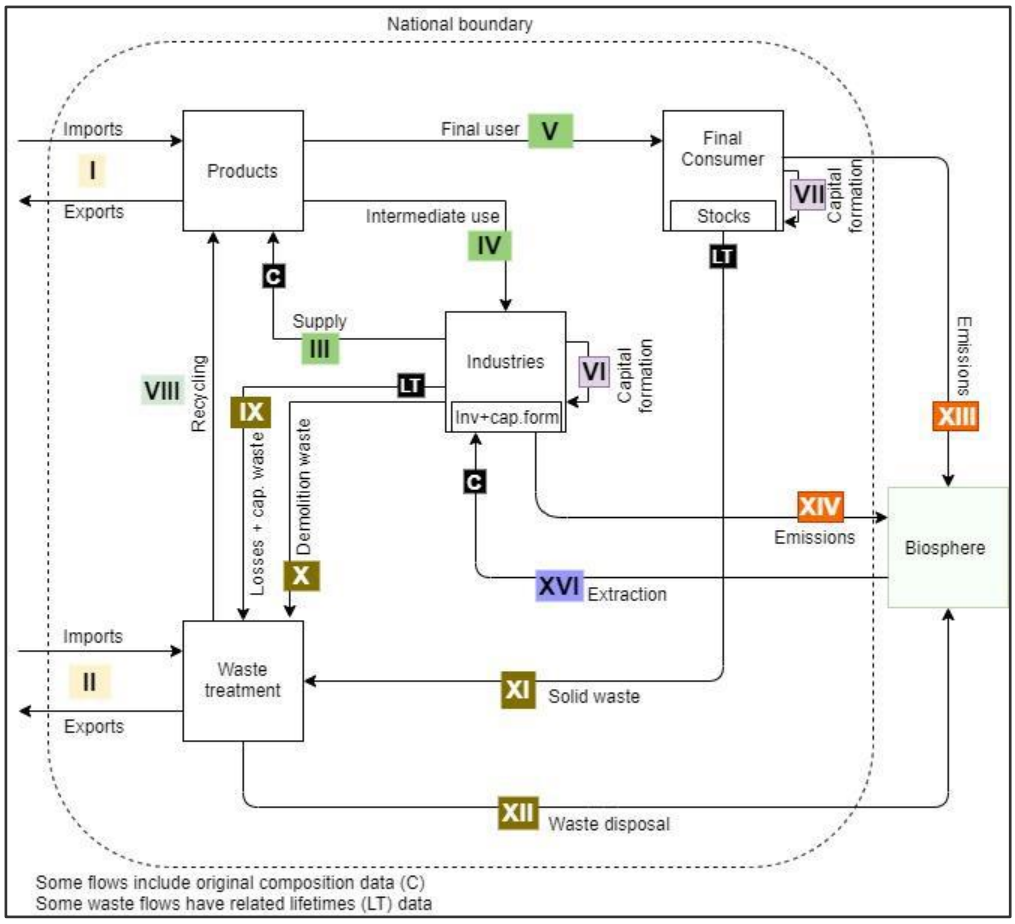


Figure 1: Representation of material flows within a country.
(From: PANORAMA Deliverable 3.1)

2. Definitions

The definitions used in this document are the same as the ProSUM project and are intended to provide a common understanding of the terminology between the projects.

UML

The Unified Modelling Language is a standardized general-purpose modelling language in the field of software engineering. It is a graphical language for visualizing, specifying, constructing, and documenting the artefacts of a software-intensive system.

Data model

A data model organizes data elements and standardizes how the data elements relate to one another. This is an abstract conceptual model used to represent structured data. The model is transformed into a relational database model, which in turn generates a relational database. Thus, data models describe the structure, manipulation and integrity aspects of the data stored in data management systems such as relational databases.

UML class diagram

A type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, operations (or methods), and the relationships among objects.

Member field/Member variable/Attribute

These are variables associated to a specific object. The variable may contain a complex object containing multiple member variables of its own.

Association

An association is a link between classes or corresponding instance objects. An association role describes the role of a class within the association and is typically shown in a UML class diagram as an arrow (Table 2).

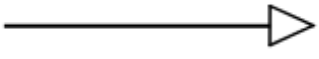
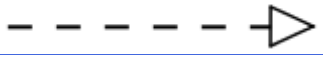
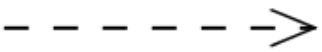
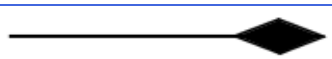
Relationship Type	UML Representation
Association	
Inheritance	
Realisation/Implementation	
Dependency	
Aggregation	
Composition	

Table 2: UML representation of relationship types.

Class

A class is an extensible template for creating objects which group member fields and methods that operate on these fields e.g. “Product” is a class.

Realization/Implementation

Realization is a specialized abstraction relationship between two sets of model elements, one representing a specification (the supplier) and the other represents an implementation of the latter (the client). An interface realization is when an interface defines certain methods, and another class implements the logic of these methods.

Dependency

Dependency is a directed relationship which is used to show that some UML element or a set of elements requires, needs or depends on other model elements for specification or implementation

Aggregation/Composition

Aggregation and Composition are subsets of association meaning they are specific cases of association. In both aggregation and composition object of one class "owns" object of another class. But there is a subtle difference: Aggregation implies a relationship where the child can exist independently of the parent. Example: Class (parent) and Student (child). Delete the Class and the Students still exist. Composition implies a relationship where the child cannot exist independent of the parent. Example: House (parent) and Room (child). Rooms don't exist separate to a House.

<<Data Type>>

A data type stereotype is a class that includes a set of attributes that can be logically grouped together. Each attribute can be another datatype or a codelist.

<<Code list>>

A code list represents a controlled vocabulary containing a finite set of codes, where each code value refers to a meaning or concept that is distinct from meanings associated to other codes in the code list.

<<Feature type>>

A feature type is a class representing an abstraction of a real-world phenomenon. This term is related to the WFS standard. Typically, a data related to a FeatureType can be requested using a HTTP request in a Web Feature Service.

Member field/Member variable/Attribute

These are variables associated to a specific object. The variable may contain a complex object containing multiple member variables of its own.

Stereotype

This concept is visualized in a UML diagram by “<<*Some Name*>>” for example <<Code list>>. The element having a stereotype has some properties that are specific for a particular specialized problem domain. A stereotype can occur at the class level, association or attribute.

Multiplicity

This is an association relationship indicating that at least one of two related classes make references to each other. This relationship is usually described as “A has a B”, e.g. a product has a number of components and the components belong to a product. Multiplicity defines the minimum and maximum number of objects of Class A associated to another object of Class B. Typical values are [0..1]: either 0 or 1, [1..1]: only 1 or [1..*]: 1 or any number of instances of a particular class.

<<Voidable>>

This is a stereotype that indicates a particular value cannot be provided, but that the attribute or association should be created. This can be specified with or without a reason e.g. “unknown”.

Logical Data model

A data model of a specific problem domain expressed independently of a particular database management product or storage technology.

Physical Data model

A representation of a data design as implemented, or as intended to be implemented, in a database management system.

FK/Foreign Key

A column (or collection of columns) in a table that uniquely identifies a row of another table or in the same table.

PK/Primary key

A column or set of columns that is unique for each record in a dataset. In ProSUM, primary keys were implemented as single whole number valued columns without any meaning attached to them and are post-fixed with “dbk” (database key).

3. Description of EXIOBASE

The EXIOBASE database was developed in 3 stages between 2012 and 2015 in an attempt to develop multi-regional input-output (MRIO) database (Wood, *et. al*. 2015). The current version, EXIOBASE v3, is an Environmentally Extended multi-regional input output (EEMRIO) database (Figure 2) developed during the DESIRE project. The database is briefly described in this section and a detailed description of the database is given in Stadler, K. *et. Al. 2018*.

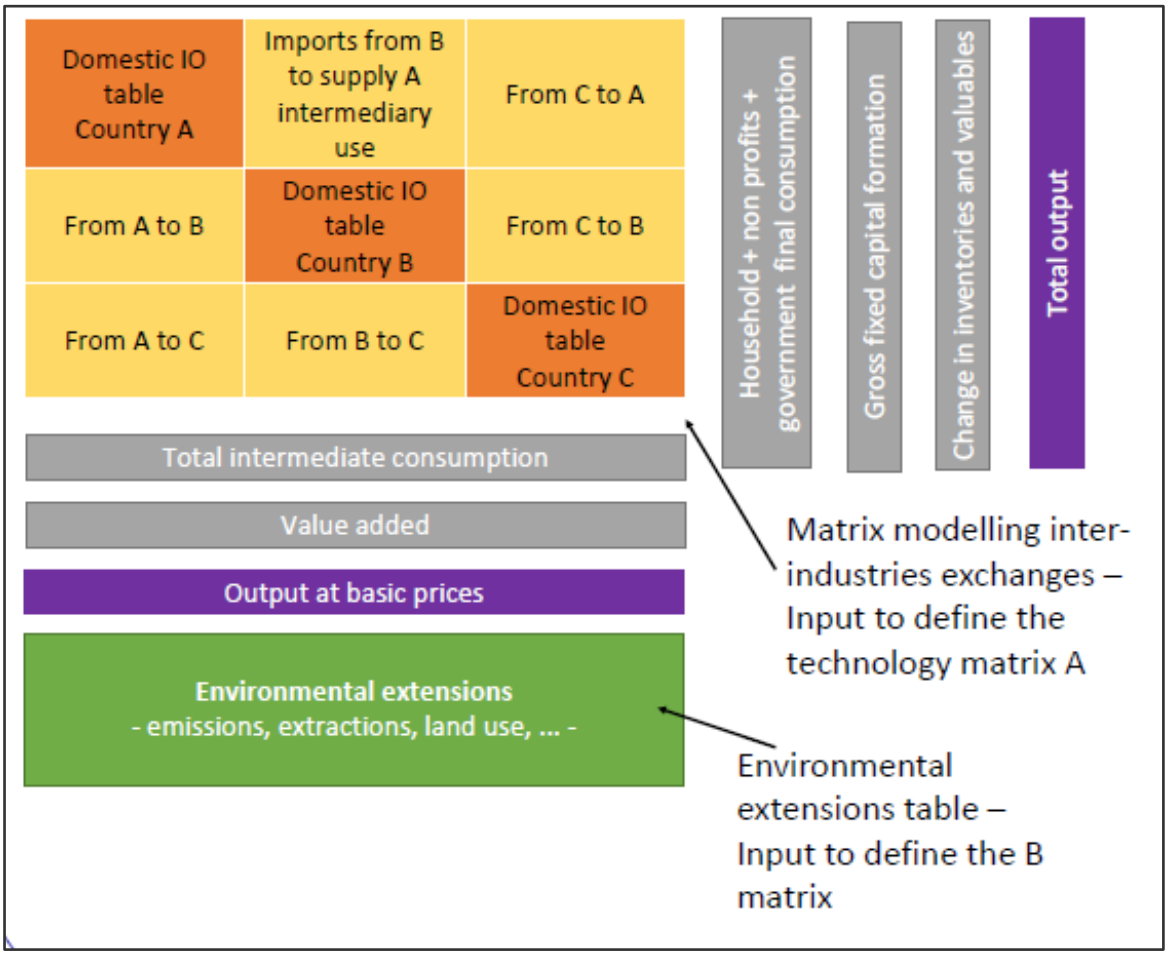


Figure 2: A simplified overview of an EEMRIO database

The EXIOBASE database is a compilation of the following information:

1. National input output tables.
2. Intercountry input output tables.
3. The final demand for each country and each region.
4. Social and environmental accounts.

The ***National input output tables*** *describe the sale and purchase relationships between producers and consumers within an economy. They can either show flows of final and intermediate goods and services defined according to industry outputs (industry × industry tables) or according to product outputs (product × product tables)*[1]. National input outputs are available for each country in the database and defined for 5 regions and "Rest of the World" (RoW).

The ***Intercountry input output tables*** describe the sale and purchase relationships between two countries.

The ***final demand*** is *the sum of final consumption, investment and stock building expenditures by the private and general government sectors*[2].

Social and environmental accounts describe the environmental interventions (in terms of emissions, energy consumption, raw materials extraction, water consumption and land use) and socio-economic indicators associated to each industry or product output.

The database aimed to answer some sustainability questions of the EU and its main trading partners by assessing the environmental impacts of regional economic activities. This is achieved by tracking emissions, resource use and other environmental pressures in supply chains using supply-use-tables (SUT) that are used to derive input-output (IO) tables. The SUTs are collected from statistical offices such as Eurostat and harmonized to produce aggregated data sets.

A set of generic supply and use coefficients were built into the EXIOBASE2 database to represent the expected output of a product based on the technology in use by the industry. These are used to balance the value of inputs required to produce one unit value of output, e.g. the amount of iron ore used to produce one ton of steel. These coefficients are estimated based on the available data although to some extent they may be averaged across economic sectors and regions. The coefficients are then used to estimate an initial SUT for a period of time which is then balanced using data from other sources.

Three application modules made using Java, are used to import, transform and export the data in the database. These application modules were developed in the EXIOPOL and CREEA projects and were updated for the DESIRE project. As these applications were originally developed to handle data for just a single year, they will most likely require updating to be able to automate the process for the years being considered in this project.

[1] Definition from: http://www.oecd.org/sti/ind/input-outputtables.htm
[2] Definition from: https://data.oecd.org/gdp/domestic-demand-forecast.htm

4. Description of the Urban Mine data model

The Urban Mine data model is a unified data model (created during the ProSUM project) that is able to store consolidated data on the composition, stocks and flows for WEEE, ELV and batteries. The data is organised in a logical structure that is able to group together the three waste types in a unified data model (Figure 3).

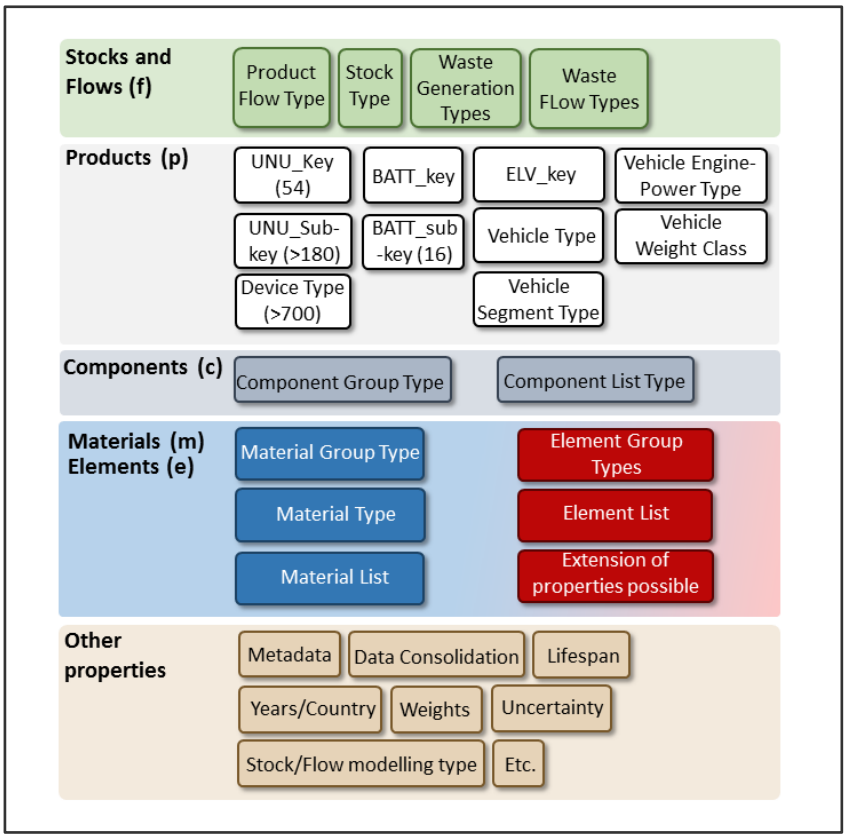


Figure 3: Simplified view of the Urban Mine data organisational model
(From: ProSUM Internal Report T5.3.1 EU-Urban mining knowledge data platform specifications)

The Urban Mine data model was completed with an improvement of the Earth Resource ML data model for Primary Raw Material to handle mining waste for specific sites rather than as an aggregated dataset for each specific country. The Urban Mine data model is described in detail in the report Deliverable 5.5 ProSUM Data Models & Code Lists (*https://geusgitlab.geus.dk/m4eu/2017-ProSUM-v1.1.2/tree/master/00-cookbook-m4eu/Deliverable with a PDF-file of 1162 pages*) or (http://www.prosumproject.eu/sites/default/files/D5%205%20ProSUM_DataModels%26CodeLists_final.pdf opens *a PDF-file of 1162 pages*)

The unified Urban Mine data model is able to serve data coming in the form of databases, via a WFS and through the use of portrayals. The model considers parameters from product characterisation, stocks and flow management and waste characterisation (Figure 4).

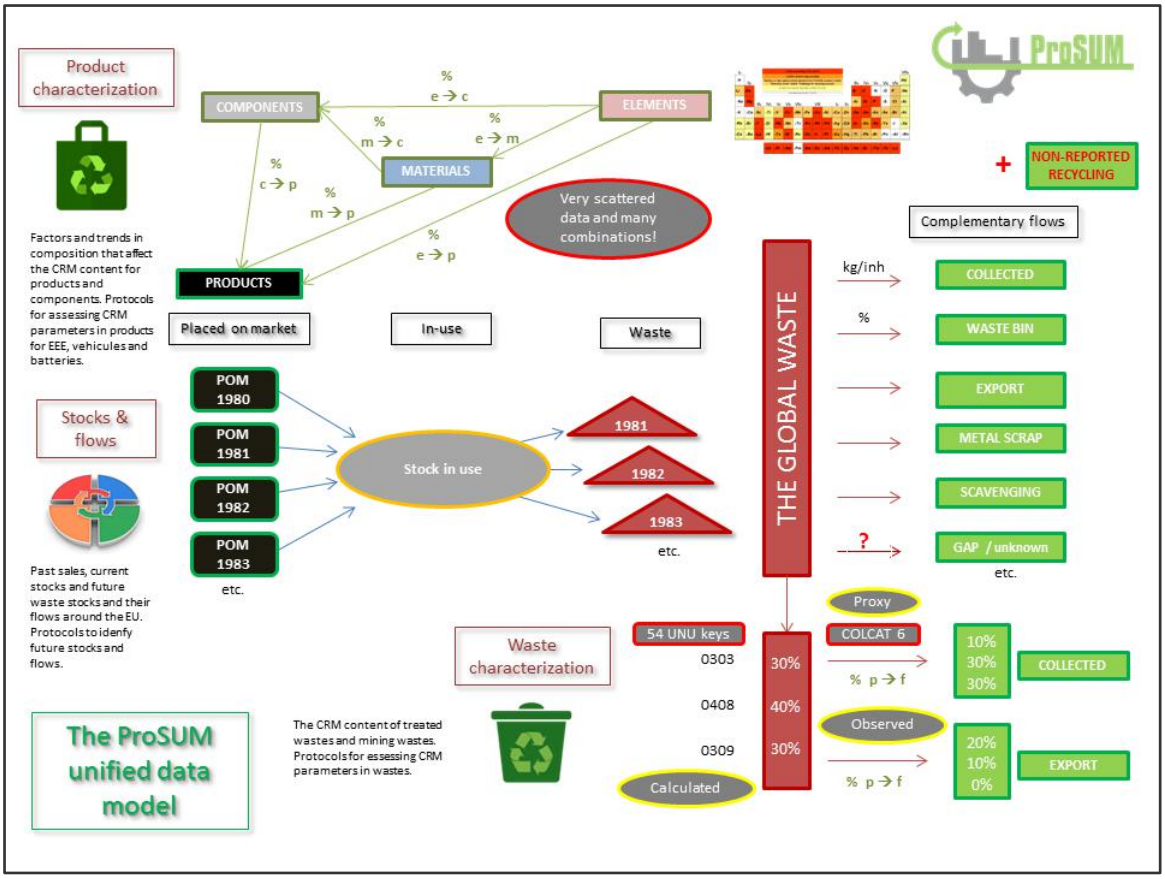


Figure 4: Parameters that are managed by the Urban Mine data model
(From: ProSUM Internal Report T5.3.1 EU-Urban mining knowledge data platform specifications)

The central point in the model is the *FeatureType* Product that may be composed of other products or components (Figure 5). Each product can be described as a composition of materials or elements. An element is the basic building block in the model which can be combined into a material that can be assembled with other materials into a component or product (Figure 6).

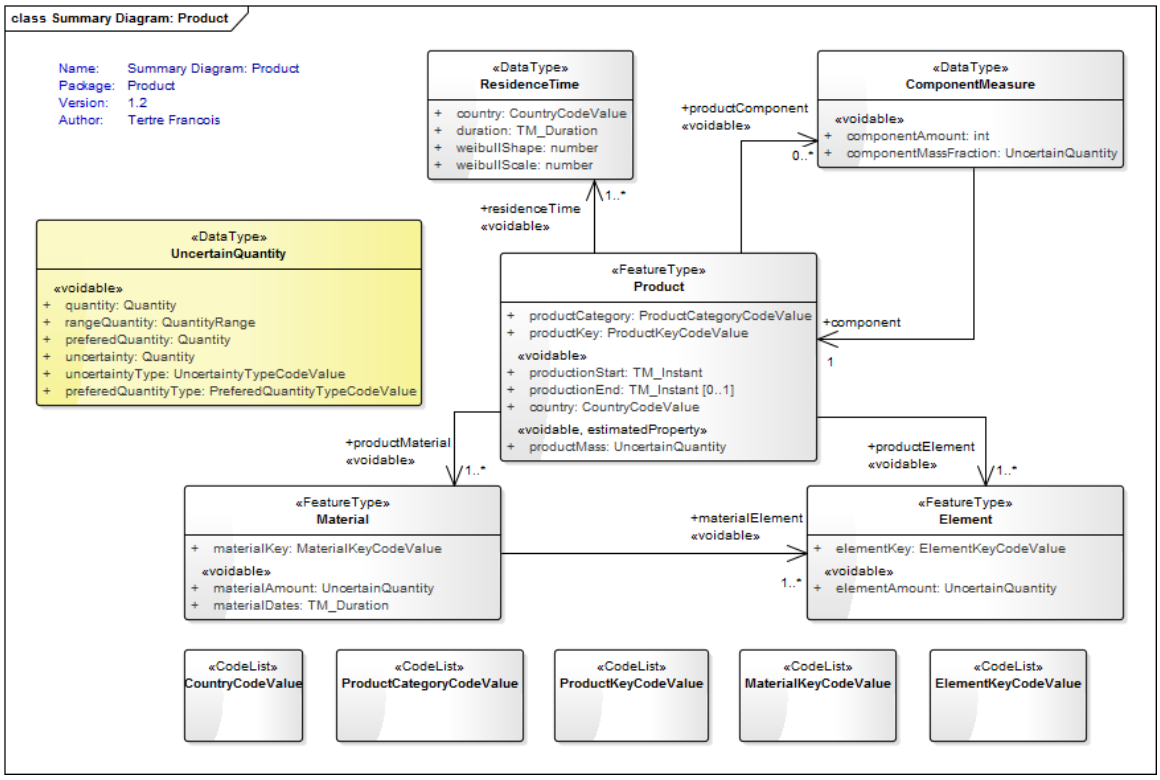


Figure 5: Summary diagram of Product and its associated code lists

Element	Material	Component	Product
A	AB	ABAC	1001
B			
A	AC		
C		ACBD	
B	BD		
D			
A			1002
B			
C			
A	ABC		1003
B			
C			
A		ABC	1004
B			
C			

Figure 6: Structure of Products within the Urban Mine data model using hypothetical examples. In some cases, there is only information about elements in a material in a product (no component, product 1003), in other cases there is only information about elements in a component (product 1004). In rare cases only information about elements in a product are present (product 1002). All these options can be stored in the unified model.

Stocks and flows within the model are determined using different methods. The vehicles stocks and flows data model are based on *stock-lifespan* approach (Binder et al., 2001; Müller et al., 2009; Walk, 2009), and the batteries and WEEE stock and flow analysis is based on *multivariate sales-stock-lifespan* analysis (Huisman, 2012).

A detailed description of how stocks and flows are handled by the model are described in detail in the report ProSUM Deliverable 3.3 Product stocks and flows; Chapter 2. Model for stocks and flows of end of life products.

5. Evolution Urban Mine Data Model

The main changes consist of considering data from other providers like ProSUM, EXIOBASE, Europrom, etc. In the PANORAMA project we decided to take the Urban Mine Data Model (UMDM) as a starting point and increase the data model in order to support problems related to categories data which are different according to providers, confidentiality/aggregated data problems (imposed in ProSUM data) and units conversions problems which are also different according their sources. In order to fit into the PANORAMA data model, EXIOBASE, which is available as matrixes on EXIOBASE website should be disaggregated into lists (Figure 7).

		Country 1		Country 2	
		Activity 1	Activity 2	Activity 1	Activity 2
Country 1	Product 1	15	8	3	5
	Product 2	6	25	5	2
Country 2	Product 1	10	3	16	3
	Product 2	4	20	2	15

Country 1	Product 1	Activity 1	Country 1	15
Country 1	Product 1	Activity 2	Country 1	8
Country 1	Product 1	Activity 1	Country 2	3
Country 1	Product 1	Activity 2	Country 2	5
Country 1	Product 2	Activity 1	Country 1	6
Country 1	Product 2	Activity 2	Country 1	25
Country 1	Product 2	Activity 1	Country 2	5
Country 1	Product 2	Activity 2	Country 2	2
Country 2	Product 1	Activity 1	Country 1	10
Country 2	Product 1	Activity 2	Country 1	3
Country 2	Product 1	Activity 1	Country 2	16
Country 2	Product 1	Activity 2	Country 2	3
Country 2	Product 2	Activity 1	Country 1	4
Country 2	Product 2	Activity 2	Country 1	20
Country 2	Product 2	Activity 1	Country 2	2
Country 2	Product 2	Activity 2	Country 2	15

Figure 7: From the matrix representation of EXIOBASE to the list representation

In order to maximize the compatibility with existing databases that use already use the UMDM, first of all, we have worked on code lists. The PANORAMA data model, for the moment, is still open on future changes that are sure to happen during the rest of the project.

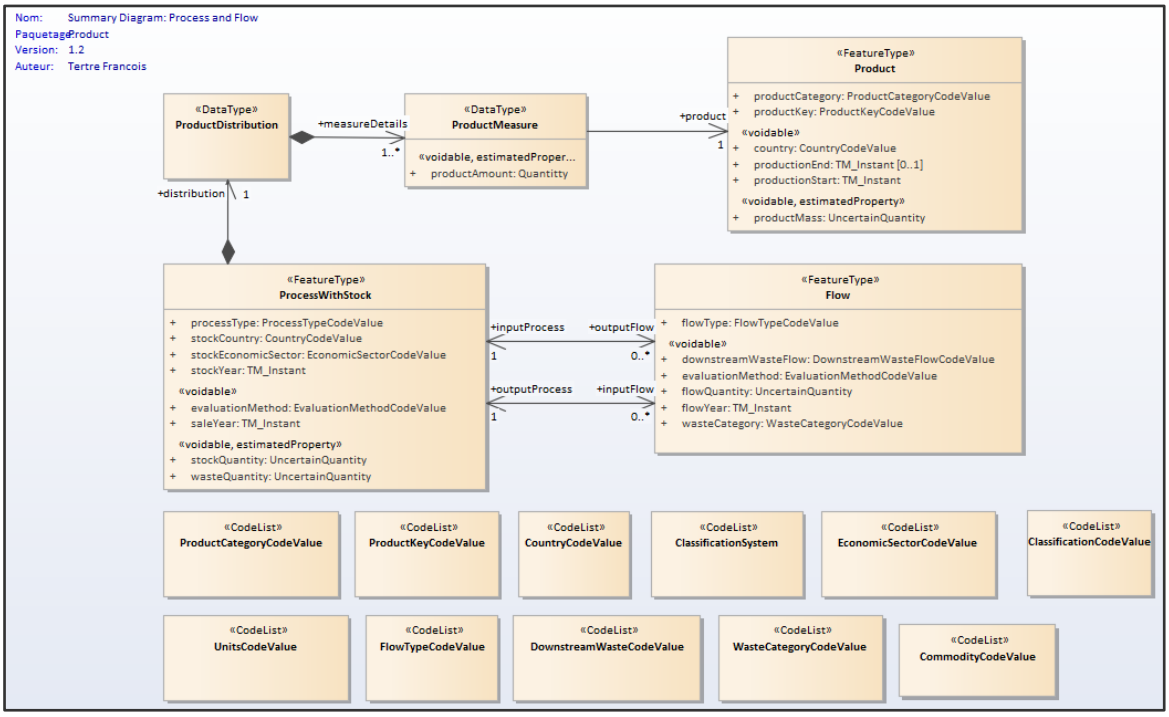


Figure 8: Summary diagram of new codes lists for PANORAMA data model.

6. Code Lists

This section details the different values used in the code list value tables.

6.1 CountryCodeValue

The country code values have been taken from the ISO 3166-1 standard published by the International Organization for Standardization (ISO). The codes define the names of countries, dependent territories, and special areas of geographical interest. The official name of the standard is *Codes for the representation of names of countries and their subdivisions – Part 1: Country codes*. It defines three sets of country codes of which the three-letter ISO 3166-1 alpha-3 codes are used in this project (Annex 1).

6.2 DownstreamWasteFlowCodeValue

The codes in this table will be defined later in the project.

6.3 EconomicSectorCodeValue

The code list for this table is derived from the EXIOBASE table "Industries". This table will need to be refined later in the product to reflect the relevant industries for the products being evaluated in the project.

6.4 ElementKeyCodeValue

The element codes are the same as is the ProSUM project and are defined in the codes list from that project (Annex 2).

6.5 FlowTypeCodeValue

This code list describes the different types of material flows such as imports, exports, emissions, etc. These flow types are described in PANORAMA Deliverable 3.1: Report on the data sources as input to WP4. The code list table can be found in Annex 3.

6.6 MaterialKeyCodeValue

These values describe the different types of material that are being studied in the project. This code list is derived from the EXIOBASE HSUT classification (Annex 4)

6.7 ProductCategoryCodeValue

The code list for this table contains over 200 product classifications. The code values will be refined later in the project based on the product categories being evaluated (Annex 5).

6.8 UnitsCodeValue

This table contains a list of the different units of measurement that are used for the different stocks and flows. Many of the codes are the same as in the ProSUM project (Annex 6).

6.9 ResourceCodeValue

This table will be defined later in the project.

6.10 ClassificationSystem

This table lists the different classification systems used in this project. These include current and former versions of systems produced by the UN, EC and others for classifying economic activities, products and commodities (Annex 7).

6.11 CommodityType

This table contains a list of for classifying items within the ProductCategoryCode Table (Table 3).

code	name	description	url
Element	element	Elemental substance	none
Material	material	Mix of substances	none
Component	component	Semi-finished products OR products which are not used individually	none
Product	product	Finished products	none
Organic	organic	Organic products such as food	none

Table 3: List of codes in the CommodityType table

6.12 EvaluationMethodCodeValue

This table is used to describe the evaluation method used for the data on stocks (Table 4).

code	name	description	url
Quantative	quantative	Quantitative methods are used to investigate things that can be measured or quantified to generate numerical data.	none
Qualitative	qualitative	Qualitative methods use words or text in data collection and analysis, rather than using numerical measurement and quantification.	none
Mixed	mixed	Mixed methods involve a combination of quantative and qualitive evaluation methods.	none

Table 4: List of codes in the EvaluationMethodCodeValue table

6.13 WasteCategoryCodeValue

This table will be defined later in the project.

6.14 UncertaintyTypeCodeValue

This table was defined during the ProSUM project to describe the level of uncertainty of within the Flow feature type (Annex 8).

7. Description of Data Types

7.1 ProductDistribution

This is the distribution of products in a stock (flow). As a stock (flow) can be composed of many products with their own proportion, this product distribution allows representing the composition of the stock in each product.

7.2 ProductMeasure

This data type is made to be used with the previous one (ProductDistribution), it is used to precise, for a specific distribution the quantity of a specific product (it can be in unit or in percentage of the total distribution).

7.3 ComponentMeasure

A product (e.g. a laptop) is composed of multiple components that can be themselves considered as product (e.g. cells, screen, keyboard…). The ComponentMeasure data type precise the relation between the product and its components with their respective amount (number of this specific component in the product), mass (total mass of this specific component in the product) or mass fraction (the mass of this specific component is a percentage of the product).

7.4 ResidenceTime

Residence time characterize the holding, stay time expressed in year of the product stocks in a country. This is characterized by a Weibull function defined by its shape and its scale.

7.5 UncertainQuantity

A generic data type used to extend Quantity (standard data type) with the possibility to represent uncertainties. This quantity can be a single value or a range to represent extrema, with the possibility to have in this case a preferredQuantity.

8. Description of Feature Types

8.1 Flow

This feature type allows identifying the displacement of stocks during their life.

8.2 ProcessWithStock

This feature type describes the steps a stock will follow during its life.

8.3 WastedProduct

This is an unwanted materials or unusable substance produced during or resulting of a manufacturing process.

8.4 Product

It is the result of a manufacturing process or waste treatment. It can in different loops, recycling, final use or be an element composing another product.

9. Discussion

The data model that has been developed uses the same data and feature types as the ProSUM data model but with changes to the code list values (Figure 9). Using an existing data model that is being utilised in a similar way should make the implementation process easier and having people who are already familiar with the model is another major benefit.

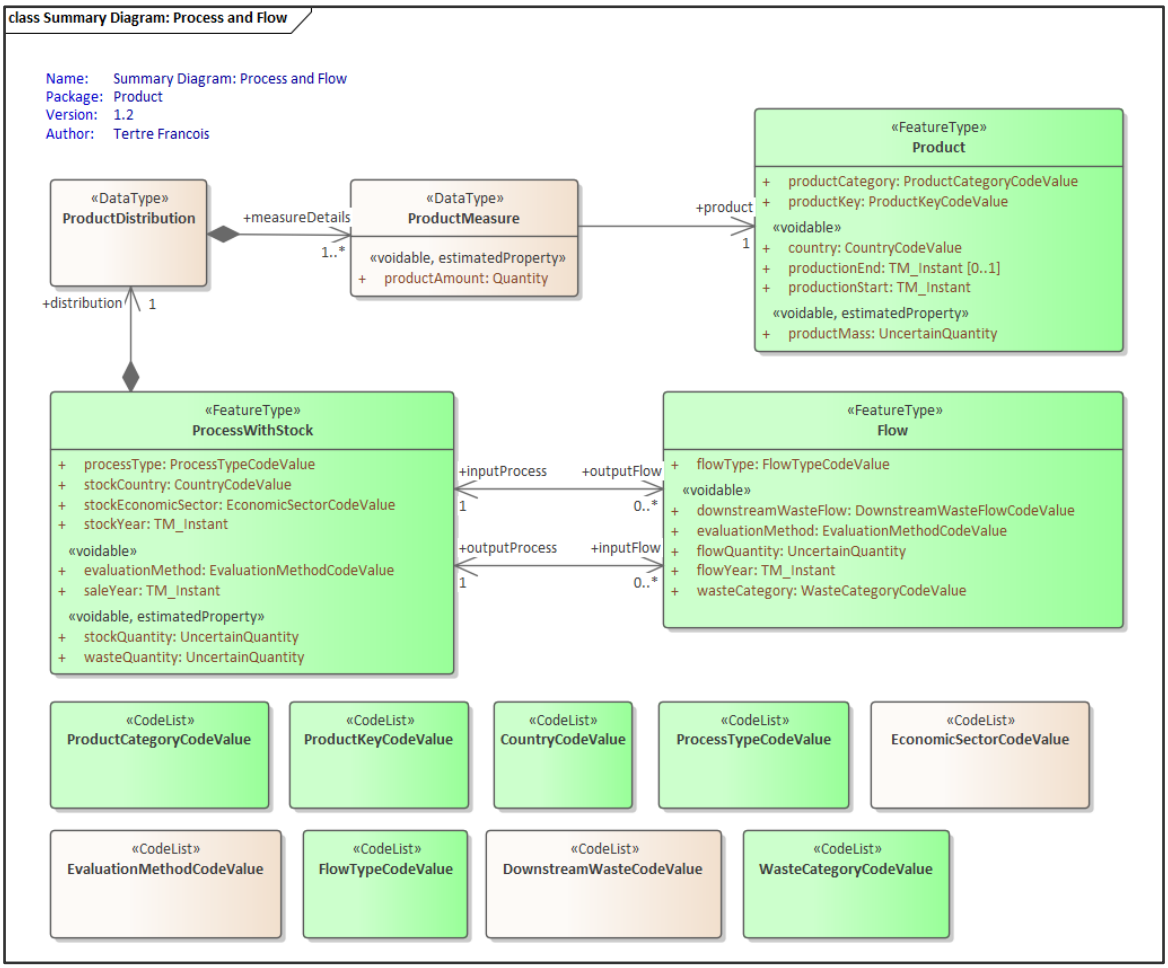


Figure 9: Conceptual UML model of the associations between Product, ProcessWithStock and Flow and their attributes and codelist values.

The exact structure of the database and its tables will not be clear until data is ready to be imported into the different tables. It is highly likely that the database will be created in PostgreSQL which was used for the ProSUM and other European raw material information projects such as M4EU.

During the implementation phase, the issue of optimising the data for the information services being provided will need to be addressed. This is to ensure that the data is provided in a format that requires little to no further processing before being presented on the information service.

This will also be the case for data that is exported from the database to be used in various portrayals.

A period of testing will be required during the implementation phase to ensure that there are no data modifications after import into the database. This testing will be completed during task 4.3 Pre-processing of data sets and quality control in close cooperation with the team setting up the database.

10. Conclusions

This deliverable describes the initial design of the PANORAMA data model. It was decided to use the existing Urban Mine data model that is already used by geological surveys and other data providers to present similar information on a web platform. This has other benefits including a familiarity with the model and the fact that the model is already in use.

The initial data model will require some modification to be able to accommodate the different types of data that will need to be stored. This will be done as data becomes available to be imported into the database. Additional tasks that will need to be completed before finalising the data model and associated codes lists include quality control of the data and optimising the data so that it is exported in an efficient way for use on the web platform or in data portrayals. This will be an ongoing and iterative process during the next 12 months during tasks 4.3, 5.4 and 6.2.

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ANNEX

Annex 1. Country Codes

Code	Name	Description	URL
ABW	Aruba	ISO 3166 Alpha-3 code Aruba	https://www.iso.org/obp/ui/#iso:code:3166:AW
AFG	Afghanistan	ISO 3166 Alpha-3 code Afghanistan	https://www.iso.org/obp/ui/#iso:code:3166:AF
AGO	Angola	ISO 3166 Alpha-3 code Angola	https://www.iso.org/obp/ui/#iso:code:3166:AO
AIA	Anguilla	ISO 3166 Alpha-3 code Anguilla	https://www.iso.org/obp/ui/#iso:code:3166:AI
ALA	Åland Islands	ISO 3166 Alpha-3 code Åland Islands	https://www.iso.org/obp/ui/#iso:code:3166:AX
ALB	Albania	ISO 3166 Alpha-3 code Albania	https://www.iso.org/obp/ui/#iso:code:3166:AL
AND	Andorra	ISO 3166 Alpha-3 code Andorra	https://www.iso.org/obp/ui/#iso:code:3166:AD
ARE	United Arab Emirates	ISO 3166 Alpha-3 code United Arab Emirates	https://www.iso.org/obp/ui/#iso:code:3166:AE
ARG	Argentina	ISO 3166 Alpha-3 code Argentina	https://www.iso.org/obp/ui/#iso:code:3166:AR
ARM	Armenia	ISO 3166 Alpha-3 code Armenia	https://www.iso.org/obp/ui/#iso:code:3166:AM
ASM	American Samoa	ISO 3166 Alpha-3 code American Samoa	https://www.iso.org/obp/ui/#iso:code:3166:AS
ATA	Antarctica	ISO 3166 Alpha-3 code Antarctica	https://www.iso.org/obp/ui/#iso:code:3166:AQ
ATF	French Southern Territories	ISO 3166 Alpha-3 code French Southern Territories	https://www.iso.org/obp/ui/#iso:code:3166:TF
ATG	Antigua and Barbuda	ISO 3166 Alpha-3 code Antigua and Barbuda	https://www.iso.org/obp/ui/#iso:code:3166:AG
AUS	Australia	ISO 3166 Alpha-3 code Australia	https://www.iso.org/obp/ui/#iso:code:3166:AU
AUT	Austria	ISO 3166 Alpha-3 code Austria	https://www.iso.org/obp/ui/#iso:code:3166:AT
AZE	Azerbaijan	ISO 3166 Alpha-3 code Azerbaijan	https://www.iso.org/obp/ui/#iso:code:3166:AZ
BDI	Burundi	ISO 3166 Alpha-3 code Burundi	https://www.iso.org/obp/ui/#iso:code:3166:BI

Code	Name	Description	URL
BEL	Belgium	ISO 3166 Alpha-3 code Belgium	https://www.iso.org/obp/ui/#iso:code:3166:BE
BEN	Benin	ISO 3166 Alpha-3 code Benin	https://www.iso.org/obp/ui/#iso:code:3166:BJ
BES	Bonaire, Sint Eustatius and Saba	ISO 3166 Alpha-3 code Bonaire, Sint Eustatius and Saba	https://www.iso.org/obp/ui/#iso:code:3166:BQ
BFA	Burkina Faso	ISO 3166 Alpha-3 code Burkina Faso	https://www.iso.org/obp/ui/#iso:code:3166:BF
BGD	Bangladesh	ISO 3166 Alpha-3 code Bangladesh	https://www.iso.org/obp/ui/#iso:code:3166:BD
BGR	Bulgaria	ISO 3166 Alpha-3 code Bulgaria	https://www.iso.org/obp/ui/#iso:code:3166:BG
BHR	Bahrain	ISO 3166 Alpha-3 code Bahrain	https://www.iso.org/obp/ui/#iso:code:3166:BH
BHS	Bahamas	ISO 3166 Alpha-3 code Bahamas	https://www.iso.org/obp/ui/#iso:code:3166:BS
BIH	Bosnia and Herzegovina	ISO 3166 Alpha-3 code Bosnia and Herzegovina	https://www.iso.org/obp/ui/#iso:code:3166:BA
BLM	Saint Barthélemy	ISO 3166 Alpha-3 code Saint Barthélemy	https://www.iso.org/obp/ui/#iso:code:3166:BL
BLR	Belarus	ISO 3166 Alpha-3 code Belarus	https://www.iso.org/obp/ui/#iso:code:3166:BY
BLZ	Belize	ISO 3166 Alpha-3 code Belize	https://www.iso.org/obp/ui/#iso:code:3166:BZ
BMU	Bermuda	ISO 3166 Alpha-3 code Bermuda	https://www.iso.org/obp/ui/#iso:code:3166:BM
BOL	Bolivia, Plurinational State of	ISO 3166 Alpha-3 code Bolivia, Plurinational State of	https://www.iso.org/obp/ui/#iso:code:3166:BO
BRA	Brazil	ISO 3166 Alpha-3 code Brazil	https://www.iso.org/obp/ui/#iso:code:3166:BR
BRB	Barbados	ISO 3166 Alpha-3 code Barbados	https://www.iso.org/obp/ui/#iso:code:3166:BB
BRN	Brunei Darussalam	ISO 3166 Alpha-3 code Brunei Darussalam	https://www.iso.org/obp/ui/#iso:code:3166:BN
BTN	Bhutan	ISO 3166 Alpha-3 code Bhutan	https://www.iso.org/obp/ui/#iso:code:3166:BT
BVT	Bouvet Island	ISO 3166 Alpha-3 code Bouvet Island	https://www.iso.org/obp/ui/#iso:code:3166:BV
BWA	Botswana	ISO 3166 Alpha-3 code Botswana	https://www.iso.org/obp/ui/#iso:code:3166:BW
CAF	Central African Republic	ISO 3166 Alpha-3 code Central African Republic	https://www.iso.org/obp/ui/#iso:code:3166:CF
CAN	Canada	ISO 3166 Alpha-3 code Canada	https://www.iso.org/obp/ui/#iso:code:3166:CA

Code	Name	Description	URL
CCK	Cocos (Keeling) Islands	ISO 3166 Alpha-3 code Cocos (Keeling) Islands	https://www.iso.org/obp/ui/#iso:code:3166:CC
CHE	Switzerland	ISO 3166 Alpha-3 code Switzerland	https://www.iso.org/obp/ui/#iso:code:3166:CH
CHL	Chile	ISO 3166 Alpha-3 code Chile	https://www.iso.org/obp/ui/#iso:code:3166:CL
CHN	China	ISO 3166 Alpha-3 code China	https://www.iso.org/obp/ui/#iso:code:3166:CN
CIV	Côte d'Ivoire	ISO 3166 Alpha-3 code Côte d'Ivoire	https://www.iso.org/obp/ui/#iso:code:3166:CI
CMR	Cameroon	ISO 3166 Alpha-3 code Cameroon	https://www.iso.org/obp/ui/#iso:code:3166:CM
COD	Congo, the Democratic Republic of the	ISO 3166 Alpha-3 code Congo, the Democratic Republic of the	https://www.iso.org/obp/ui/#iso:code:3166:CD
COG	Congo	ISO 3166 Alpha-3 code Congo	https://www.iso.org/obp/ui/#iso:code:3166:CG
COK	Cook Islands	ISO 3166 Alpha-3 code Cook Islands	https://www.iso.org/obp/ui/#iso:code:3166:CK
COL	Colombia	ISO 3166 Alpha-3 code Colombia	https://www.iso.org/obp/ui/#iso:code:3166:CO
COM	Comoros	ISO 3166 Alpha-3 code Comoros (the)	https://www.iso.org/obp/ui/#iso:code:3166:KM
CPV	Cabo Verde	ISO 3166 Alpha-3 code Cabo Verde	https://www.iso.org/obp/ui/#iso:code:3166:CV
CRI	Costa Rica	ISO 3166 Alpha-3 code Costa Rica	https://www.iso.org/obp/ui/#iso:code:3166:CR
CUB	Cuba	ISO 3166 Alpha-3 code Cuba	https://www.iso.org/obp/ui/#iso:code:3166:CU
CUW	Curaçao	ISO 3166 Alpha-3 code Curaçao	https://www.iso.org/obp/ui/#iso:code:3166:CW
CXR	Christmas Island	ISO 3166 Alpha-3 code Christmas Island	https://www.iso.org/obp/ui/#iso:code:3166:CX
CYM	Cayman Islands	ISO 3166 Alpha-3 code Cayman Islands	https://www.iso.org/obp/ui/#iso:code:3166:KY
CYP	Cyprus	ISO 3166 Alpha-3 code Cyprus	https://www.iso.org/obp/ui/#iso:code:3166:CY
CZE	Czech Republic	ISO 3166 Alpha-3 code Czech Republic	https://www.iso.org/obp/ui/#iso:code:3166:CZ
DEU	Germany	ISO 3166 Alpha-3 code Germany	https://www.iso.org/obp/ui/#iso:code:3166:DE
DJI	Djibouti	ISO 3166 Alpha-3 code Djibouti	https://www.iso.org/obp/ui/#iso:code:3166:DJ
DMA	Dominica	ISO 3166 Alpha-3 code Dominica	https://www.iso.org/obp/ui/#iso:code:3166:DM

Code	Name	Description	URL
DNK	Denmark	ISO 3166 Alpha-3 code Denmark	https://www.iso.org/obp/ui/#iso:code:3166:DK
DOM	Dominican Republic	ISO 3166 Alpha-3 code Dominican Republic	https://www.iso.org/obp/ui/#iso:code:3166:DO
DZA	Algeria	ISO 3166 Alpha-3 code Algeria	https://www.iso.org/obp/ui/#iso:code:3166:DZ
ECU	Ecuador	ISO 3166 Alpha-3 code Ecuador	https://www.iso.org/obp/ui/#iso:code:3166:EC
EGY	Egypt	ISO 3166 Alpha-3 code Egypt	https://www.iso.org/obp/ui/#iso:code:3166:EG
ERI	Eritrea	ISO 3166 Alpha-3 code Eritrea	https://www.iso.org/obp/ui/#iso:code:3166:ER
ESH	Western Sahara	ISO 3166 Alpha-3 code Western Sahara	https://www.iso.org/obp/ui/#iso:code:3166:EH
ESP	Spain	ISO 3166 Alpha-3 code Spain	https://www.iso.org/obp/ui/#iso:code:3166:ES
EST	Estonia	ISO 3166 Alpha-3 code Estonia	https://www.iso.org/obp/ui/#iso:code:3166:EE
ETH	Ethiopia	ISO 3166 Alpha-3 code Ethiopia	https://www.iso.org/obp/ui/#iso:code:3166:ET
FIN	Finland	ISO 3166 Alpha-3 code Finland	https://www.iso.org/obp/ui/#iso:code:3166:FI
FJI	Fiji	ISO 3166 Alpha-3 code Fiji	https://www.iso.org/obp/ui/#iso:code:3166:FJ
FLK	Falkland Islands (Malvinas)	ISO 3166 Alpha-3 code Falkland Islands (Malvinas)	https://www.iso.org/obp/ui/#iso:code:3166:FK
FRA	France	ISO 3166 Alpha-3 code France	https://www.iso.org/obp/ui/#iso:code:3166:FR
FRO	Faroe Islands	ISO 3166 Alpha-3 code Faroe Islands	https://www.iso.org/obp/ui/#iso:code:3166:FO
FSM	Micronesia, Federated States of	ISO 3166 Alpha-3 code Micronesia, Federated States of	https://www.iso.org/obp/ui/#iso:code:3166:FM
GAB	Gabon	ISO 3166 Alpha-3 code Gabon	https://www.iso.org/obp/ui/#iso:code:3166:GA
GBR	United Kingdom	ISO 3166 Alpha-3 code United Kingdom of Great Britain and Northern Ireland (the)	https://www.iso.org/obp/ui/#iso:code:3166:GB
GEO	Georgia	ISO 3166 Alpha-3 code Georgia	https://www.iso.org/obp/ui/#iso:code:3166:GE
GGY	Guernsey	ISO 3166 Alpha-3 code Guernsey	https://www.iso.org/obp/ui/#iso:code:3166:GG
GHA	Ghana	ISO 3166 Alpha-3 code Ghana	https://www.iso.org/obp/ui/#iso:code:3166:GH

Code	Name	Description	URL
GIB	Gibraltar	ISO 3166 Alpha-3 code Gibraltar	https://www.iso.org/obp/ui/#iso:code:3166:GI
GIN	Guinea	ISO 3166 Alpha-3 code Guinea	https://www.iso.org/obp/ui/#iso:code:3166:GN
GLP	Guadeloupe	ISO 3166 Alpha-3 code Guadeloupe	https://www.iso.org/obp/ui/#iso:code:3166:GP
GMB	Gambia	ISO 3166 Alpha-3 code Gambia (the)	https://www.iso.org/obp/ui/#iso:code:3166:GM
GNB	Guinea-Bissau	ISO 3166 Alpha-3 code Guinea-Bissau	https://www.iso.org/obp/ui/#iso:code:3166:GW
GNQ	Equatorial Guinea	ISO 3166 Alpha-3 code Equatorial Guinea	https://www.iso.org/obp/ui/#iso:code:3166:GQ
GRC	Greece	ISO 3166 Alpha-3 code Greece	https://www.iso.org/obp/ui/#iso:code:3166:GR
GRD	Grenada	ISO 3166 Alpha-3 code Grenada	https://www.iso.org/obp/ui/#iso:code:3166:GD
GRL	Greenland	ISO 3166 Alpha-3 code Greenland	https://www.iso.org/obp/ui/#iso:code:3166:GL
GTM	Guatemala	ISO 3166 Alpha-3 code Guatemala	https://www.iso.org/obp/ui/#iso:code:3166:GT
GUF	French Guiana	ISO 3166 Alpha-3 code French Guiana	https://www.iso.org/obp/ui/#iso:code:3166:GF
GUM	Guam	ISO 3166 Alpha-3 code Guam	https://www.iso.org/obp/ui/#iso:code:3166:GU
GUY	Guyana	ISO 3166 Alpha-3 code Guyana	https://www.iso.org/obp/ui/#iso:code:3166:GY
HKG	Hong Kong	ISO 3166 Alpha-3 code Hong Kong	https://www.iso.org/obp/ui/#iso:code:3166:HK
HMD	Heard Island and McDonald Islands	ISO 3166 Alpha-3 code Heard Island and McDonald Islands	https://www.iso.org/obp/ui/#iso:code:3166:HM
HND	Honduras	ISO 3166 Alpha-3 code Honduras	https://www.iso.org/obp/ui/#iso:code:3166:HN
HRV	Croatia	ISO 3166 Alpha-3 code Croatia	https://www.iso.org/obp/ui/#iso:code:3166:HR
HTI	Haiti	ISO 3166 Alpha-3 code Haiti	https://www.iso.org/obp/ui/#iso:code:3166:HT
HUN	Hungary	ISO 3166 Alpha-3 code Hungary	https://www.iso.org/obp/ui/#iso:code:3166:HU
IDN	Indonesia	ISO 3166 Alpha-3 code Indonesia	https://www.iso.org/obp/ui/#iso:code:3166:ID
IMN	Isle of Man	ISO 3166 Alpha-3 code Isle of Man	https://www.iso.org/obp/ui/#iso:code:3166:IM
IND	India	ISO 3166 Alpha-3 code India	https://www.iso.org/obp/ui/#iso:code:3166:IN

Code	Name	Description	URL
IOT	British Indian Ocean Territory	ISO 3166 Alpha-3 code British Indian Ocean Territory (the)	https://www.iso.org/obp/ui/#iso:code:3166:IO
IRL	Ireland	ISO 3166 Alpha-3 code Ireland	https://www.iso.org/obp/ui/#iso:code:3166:IE
IRN	Iran, Islamic Republic of	ISO 3166 Alpha-3 code Iran, Islamic Republic of	https://www.iso.org/obp/ui/#iso:code:3166:IR
IRQ	Iraq	ISO 3166 Alpha-3 code Iraq	https://www.iso.org/obp/ui/#iso:code:3166:IQ
ISL	Iceland	ISO 3166 Alpha-3 code Iceland	https://www.iso.org/obp/ui/#iso:code:3166:IS
ISR	Israel	ISO 3166 Alpha-3 code Israel	https://www.iso.org/obp/ui/#iso:code:3166:IL
ITA	Italy	ISO 3166 Alpha-3 code Italy	https://www.iso.org/obp/ui/#iso:code:3166:IT
JAM	Jamaica	ISO 3166 Alpha-3 code Jamaica	https://www.iso.org/obp/ui/#iso:code:3166:JM
JEY	Jersey	ISO 3166 Alpha-3 code Jersey	https://www.iso.org/obp/ui/#iso:code:3166:JE
JOR	Jordan	ISO 3166 Alpha-3 code Jordan	https://www.iso.org/obp/ui/#iso:code:3166:JO
JPN	Japan	ISO 3166 Alpha-3 code Japan	https://www.iso.org/obp/ui/#iso:code:3166:JP
KAZ	Kazakhstan	ISO 3166 Alpha-3 code Kazakhstan	https://www.iso.org/obp/ui/#iso:code:3166:KZ
KEN	Kenya	ISO 3166 Alpha-3 code Kenya	https://www.iso.org/obp/ui/#iso:code:3166:KE
KGZ	Kyrgyzstan	ISO 3166 Alpha-3 code Kyrgyzstan	https://www.iso.org/obp/ui/#iso:code:3166:KG
KHM	Cambodia	ISO 3166 Alpha-3 code Cambodia	https://www.iso.org/obp/ui/#iso:code:3166:KH
KIR	Kiribati	ISO 3166 Alpha-3 code Kiribati	https://www.iso.org/obp/ui/#iso:code:3166:KI
KNA	Saint Kitts and Nevis	ISO 3166 Alpha-3 code Saint Kitts and Nevis	https://www.iso.org/obp/ui/#iso:code:3166:KN
KOR	Korea, Republic of	ISO 3166 Alpha-3 code Korea, Republic of	https://www.iso.org/obp/ui/#iso:code:3166:KR
KWT	Kuwait	ISO 3166 Alpha-3 code Kuwait	https://www.iso.org/obp/ui/#iso:code:3166:KW
LAO	Lao People's Democratic Republic	ISO 3166 Alpha-3 code Lao People's Democratic Republic	https://www.iso.org/obp/ui/#iso:code:3166:LA
LBN	Lebanon	ISO 3166 Alpha-3 code Lebanon	https://www.iso.org/obp/ui/#iso:code:3166:LB

Code	Name	Description	URL
LBR	Liberia	ISO 3166 Alpha-3 code Liberia	https://www.iso.org/obp/ui/#iso:code:3166:LR
LBY	Libya	ISO 3166 Alpha-3 code Libya	https://www.iso.org/obp/ui/#iso:code:3166:LY
LCA	Saint Lucia	ISO 3166 Alpha-3 code Saint Lucia	https://www.iso.org/obp/ui/#iso:code:3166:LC
LIE	Liechtenstein	ISO 3166 Alpha-3 code Liechtenstein	https://www.iso.org/obp/ui/#iso:code:3166:LI
LKA	Sri Lanka	ISO 3166 Alpha-3 code Sri Lanka	https://www.iso.org/obp/ui/#iso:code:3166:LK
LSO	Lesotho	ISO 3166 Alpha-3 code Lesotho	https://www.iso.org/obp/ui/#iso:code:3166:LS
LTU	Lithuania	ISO 3166 Alpha-3 code Lithuania	https://www.iso.org/obp/ui/#iso:code:3166:LT
LUX	Luxembourg	ISO 3166 Alpha-3 code Luxembourg	https://www.iso.org/obp/ui/#iso:code:3166:LU
LVA	Latvia	ISO 3166 Alpha-3 code Latvia	https://www.iso.org/obp/ui/#iso:code:3166:LV
MAC	Macao	ISO 3166 Alpha-3 code Macao	https://www.iso.org/obp/ui/#iso:code:3166:MO
MAF	Saint Martin (French part)	ISO 3166 Alpha-3 code Saint Martin (French part)	https://www.iso.org/obp/ui/#iso:code:3166:MF
MAR	Morocco	ISO 3166 Alpha-3 code Morocco	https://www.iso.org/obp/ui/#iso:code:3166:MA
MCO	Monaco	ISO 3166 Alpha-3 code Monaco	https://www.iso.org/obp/ui/#iso:code:3166:MC
MDA	Moldova, Republic of	ISO 3166 Alpha-3 code Moldova, Republic of	https://www.iso.org/obp/ui/#iso:code:3166:MD
MDG	Madagascar	ISO 3166 Alpha-3 code Madagascar	https://www.iso.org/obp/ui/#iso:code:3166:MG
MDV	Maldives	ISO 3166 Alpha-3 code Maldives	https://www.iso.org/obp/ui/#iso:code:3166:MV
MEX	Mexico	ISO 3166 Alpha-3 code Mexico	https://www.iso.org/obp/ui/#iso:code:3166:MX
MHL	Marshall Islands	ISO 3166 Alpha-3 code Marshall Islands	https://www.iso.org/obp/ui/#iso:code:3166:MH
MKD	Republic of North Macedonia	ISO 3166 Alpha-3 code Republic of North Macedonia	https://www.iso.org/obp/ui/#iso:code:3166:MK
MLI	Mali	ISO 3166 Alpha-3 code Mali	https://www.iso.org/obp/ui/#iso:code:3166:ML
MLT	Malta	ISO 3166 Alpha-3 code Malta	https://www.iso.org/obp/ui/#iso:code:3166:MT
MMR	Myanmar	ISO 3166 Alpha-3 code Myanmar	https://www.iso.org/obp/ui/#iso:code:3166:MM

Code	Name	Description	URL
MNE	Montenegro	ISO 3166 Alpha-3 code Montenegro	https://www.iso.org/obp/ui/#iso:code:3166:ME
MNG	Mongolia	ISO 3166 Alpha-3 code Mongolia	https://www.iso.org/obp/ui/#iso:code:3166:MN
MNP	Northern Mariana Islands	ISO 3166 Alpha-3 code Northern Mariana Islands	https://www.iso.org/obp/ui/#iso:code:3166:MP
MOZ	Mozambique	ISO 3166 Alpha-3 code Mozambique	https://www.iso.org/obp/ui/#iso:code:3166:MV
MRT	Mauritania	ISO 3166 Alpha-3 code Mauritania	https://www.iso.org/obp/ui/#iso:code:3166:MR
MSR	Montserrat	ISO 3166 Alpha-3 code Montserrat	https://www.iso.org/obp/ui/#iso:code:3166:MS
MTQ	Martinique	ISO 3166 Alpha-3 code Martinique	https://www.iso.org/obp/ui/#iso:code:3166:MQ
MUS	Mauritius	ISO 3166 Alpha-3 code Mauritius	https://www.iso.org/obp/ui/#iso:code:3166:MU
MWI	Malawi	ISO 3166 Alpha-3 code Malawi	https://www.iso.org/obp/ui/#iso:code:3166:MW
MYS	Malaysia	ISO 3166 Alpha-3 code Malaysia	https://www.iso.org/obp/ui/#iso:code:3166:MY
MYT	Mayotte	ISO 3166 Alpha-3 code Mayotte	https://www.iso.org/obp/ui/#iso:code:3166:YT
NAM	Namibia	ISO 3166 Alpha-3 code Namibia	https://www.iso.org/obp/ui/#iso:code:3166:NA
NCL	New Caledonia	ISO 3166 Alpha-3 code New Caledonia	https://www.iso.org/obp/ui/#iso:code:3166:NC
NER	Niger	ISO 3166 Alpha-3 code Niger	https://www.iso.org/obp/ui/#iso:code:3166:NE
NFK	Norfolk Island	ISO 3166 Alpha-3 code Norfolk Island	https://www.iso.org/obp/ui/#iso:code:3166:NF
NGA	Nigeria	ISO 3166 Alpha-3 code Nigeria	https://www.iso.org/obp/ui/#iso:code:3166:NG
NIC	Nicaragua	ISO 3166 Alpha-3 code Nicaragua	https://www.iso.org/obp/ui/#iso:code:3166:NI
NIU	Niue	ISO 3166 Alpha-3 code Niue	https://www.iso.org/obp/ui/#iso:code:3166:NU
NLD	Netherlands	ISO 3166 Alpha-3 code Netherlands	https://www.iso.org/obp/ui/#iso:code:3166:NL
NOR	Norway	ISO 3166 Alpha-3 code Norway	https://www.iso.org/obp/ui/#iso:code:3166:NO
NPL	Nepal	ISO 3166 Alpha-3 code Nepal	https://www.iso.org/obp/ui/#iso:code:3166:NP
NRU	Nauru	ISO 3166 Alpha-3 code Nauru	https://www.iso.org/obp/ui/#iso:code:3166:NR
NZL	New Zealand	ISO 3166 Alpha-3 code New Zealand	https://www.iso.org/obp/ui/#iso:code:3166:NZ

Code	Name	Description	URL
OMN	Oman	ISO 3166 Alpha-3 code Oman	https://www.iso.org/obp/ui/#iso:code:3166:OM
PAK	Pakistan	ISO 3166 Alpha-3 code Pakistan	https://www.iso.org/obp/ui/#iso:code:3166:PK
PAN	Panama	ISO 3166 Alpha-3 code Panama	https://www.iso.org/obp/ui/#iso:code:3166:PA
PCN	Pitcairn	ISO 3166 Alpha-3 code Pitcairn	https://www.iso.org/obp/ui/#iso:code:3166:PN
PER	Peru	ISO 3166 Alpha-3 code Peru	https://www.iso.org/obp/ui/#iso:code:3166:PE
PHL	Philippines	ISO 3166 Alpha-3 code Philippines	https://www.iso.org/obp/ui/#iso:code:3166:PH
PLW	Palau	ISO 3166 Alpha-3 code Palau	https://www.iso.org/obp/ui/#iso:code:3166:PW
PNG	Papua New Guinea	ISO 3166 Alpha-3 code Papua New Guinea	https://www.iso.org/obp/ui/#iso:code:3166:PG
POL	Poland	ISO 3166 Alpha-3 code Poland	https://www.iso.org/obp/ui/#iso:code:3166:PL
PRI	Puerto Rico	ISO 3166 Alpha-3 code Puerto Rico	https://www.iso.org/obp/ui/#iso:code:3166:PR
PRK	Korea, Democratic People's Republic of	ISO 3166 Alpha-3 code Korea, Democratic People's Republic of	https://www.iso.org/obp/ui/#iso:code:3166:KP
PRT	Portugal	ISO 3166 Alpha-3 code Portugal	https://www.iso.org/obp/ui/#iso:code:3166:PT
PRY	Paraguay	ISO 3166 Alpha-3 code Paraguay	https://www.iso.org/obp/ui/#iso:code:3166:PY
PSE	Palestine, State of	ISO 3166 Alpha-3 code Palestine, State of	https://www.iso.org/obp/ui/#iso:code:3166:PS
PYF	French Polynesia	ISO 3166 Alpha-3 code French Polynesia	https://www.iso.org/obp/ui/#iso:code:3166:PF
QAT	Qatar	ISO 3166 Alpha-3 code Qatar	https://www.iso.org/obp/ui/#iso:code:3166:QA
REU	Réunion	ISO 3166 Alpha-3 code Réunion	https://www.iso.org/obp/ui/#iso:code:3166:RE
ROU	Romania	ISO 3166 Alpha-3 code Romania	https://www.iso.org/obp/ui/#iso:code:3166:RO
RUS	Russian Federation	ISO 3166 Alpha-3 code Russian Federation	https://www.iso.org/obp/ui/#iso:code:3166:RU
RWA	Rwanda	ISO 3166 Alpha-3 code Rwanda	https://www.iso.org/obp/ui/#iso:code:3166:RW
SAU	Saudi Arabia	ISO 3166 Alpha-3 code Saudi Arabia	https://www.iso.org/obp/ui/#iso:code:3166:SA
SDN	Sudan	ISO 3166 Alpha-3 code Sudan	https://www.iso.org/obp/ui/#iso:code:3166:SD

Code	Name	Description	URL
SEN	Senegal	ISO 3166 Alpha-3 code Senegal	https://www.iso.org/obp/ui/#iso:code:3166:SN
SGP	Singapore	ISO 3166 Alpha-3 code Singapore	https://www.iso.org/obp/ui/#iso:code:3166:SG
SGS	South Georgia and the South Sandwich Islands	ISO 3166 Alpha-3 code South Georgia and the South Sandwich Islands	https://www.iso.org/obp/ui/#iso:code:3166:GS
SHN	Saint Helena, Ascension and Tristan da Cunha	ISO 3166 Alpha-3 code Saint Helena, Ascension and Tristan da Cunha	https://www.iso.org/obp/ui/#iso:code:3166:SH
SJM	Svalbard and Jan Mayen	ISO 3166 Alpha-3 code Svalbard and Jan Mayen	https://www.iso.org/obp/ui/#iso:code:3166:SJ
SLB	Solomon Islands	ISO 3166 Alpha-3 code Solomon Islands	https://www.iso.org/obp/ui/#iso:code:3166:SB
SLE	Sierra Leone	ISO 3166 Alpha-3 code Sierra Leone	https://www.iso.org/obp/ui/#iso:code:3166:SL
SLV	El Salvador	ISO 3166 Alpha-3 code El Salvador	https://www.iso.org/obp/ui/#iso:code:3166:SV
SMR	San Marino	ISO 3166 Alpha-3 code San Marino	https://www.iso.org/obp/ui/#iso:code:3166:SM
SOM	Somalia	ISO 3166 Alpha-3 code Somalia	https://www.iso.org/obp/ui/#iso:code:3166:SO
SPM	Saint Pierre and Miquelon	ISO 3166 Alpha-3 code Saint Pierre and Miquelon	https://www.iso.org/obp/ui/#iso:code:3166:PM
SRB	Serbia	ISO 3166 Alpha-3 code Serbia	https://www.iso.org/obp/ui/#iso:code:3166:RS
SSD	South Sudan	ISO 3166 Alpha-3 code South Sudan	https://www.iso.org/obp/ui/#iso:code:3166:SS
STP	Sao Tome and Principe	ISO 3166 Alpha-3 code Sao Tome and Principe	https://www.iso.org/obp/ui/#iso:code:3166:ST
SUR	Suriname	ISO 3166 Alpha-3 code Suriname	https://www.iso.org/obp/ui/#iso:code:3166:SR
SVK	Slovakia	ISO 3166 Alpha-3 code Slovakia	https://www.iso.org/obp/ui/#iso:code:3166:SK
SVN	Slovenia	ISO 3166 Alpha-3 code Slovenia	https://www.iso.org/obp/ui/#iso:code:3166:SI
SWE	Sweden	ISO 3166 Alpha-3 code Sweden	https://www.iso.org/obp/ui/#iso:code:3166:SE
SWZ	Eswatini	ISO 3166 Alpha-3 code Eswatini	https://www.iso.org/obp/ui/#iso:code:3166:SZ
SXM	Sint Maarten (Dutch part)	ISO 3166 Alpha-3 code Sint Maarten (Dutch part)	https://www.iso.org/obp/ui/#iso:code:3166:SX
SYC	Seychelles	ISO 3166 Alpha-3 code Seychelles	https://www.iso.org/obp/ui/#iso:code:3166:SC

Code	Name	Description	URL
SYR	Syrian Arab Republic	ISO 3166 Alpha-3 code Syrian Arab Republic	https://www.iso.org/obp/ui/#iso:code:3166:SY
TCA	Turks and Caicos Islands	ISO 3166 Alpha-3 code Turks and Caicos Islands	https://www.iso.org/obp/ui/#iso:code:3166:TC
TCD	Chad	ISO 3166 Alpha-3 code Chad	https://www.iso.org/obp/ui/#iso:code:3166:TD
TGO	Togo	ISO 3166 Alpha-3 code Togo	https://www.iso.org/obp/ui/#iso:code:3166:TG
THA	Thailand	ISO 3166 Alpha-3 code Thailand	https://www.iso.org/obp/ui/#iso:code:3166:TH
TJK	Tajikistan	ISO 3166 Alpha-3 code Tajikistan	https://www.iso.org/obp/ui/#iso:code:3166:TJ
TKL	Tokelau	ISO 3166 Alpha-3 code Tokelau	https://www.iso.org/obp/ui/#iso:code:3166:TK
TKM	Turkmenistan	ISO 3166 Alpha-3 code Turkmenistan	https://www.iso.org/obp/ui/#iso:code:3166:TM
TLS	Timor-Leste	ISO 3166 Alpha-3 code Timor-Leste	https://www.iso.org/obp/ui/#iso:code:3166:TL
TON	Tonga	ISO 3166 Alpha-3 code Tonga	https://www.iso.org/obp/ui/#iso:code:3166:TO
TTO	Trinidad and Tobago	ISO 3166 Alpha-3 code Trinidad and Tobago	https://www.iso.org/obp/ui/#iso:code:3166:TT
TUN	Tunisia	ISO 3166 Alpha-3 code Tunisia	https://www.iso.org/obp/ui/#iso:code:3166:TN
TUR	Turkey	ISO 3166 Alpha-3 code Turkey	https://www.iso.org/obp/ui/#iso:code:3166:TR
TUV	Tuvalu	ISO 3166 Alpha-3 code Tuvalu	https://www.iso.org/obp/ui/#iso:code:3166:TV
TWN	Taiwan, Province of China	ISO 3166 Alpha-3 code Taiwan, Province of China	https://www.iso.org/obp/ui/#iso:code:3166:TW
TZA	Tanzania, United Republic of	ISO 3166 Alpha-3 code Tanzania, United Republic of	https://www.iso.org/obp/ui/#iso:code:3166:TZ
UGA	Uganda	ISO 3166 Alpha-3 code Uganda	https://www.iso.org/obp/ui/#iso:code:3166:UG
UKR	Ukraine	ISO 3166 Alpha-3 code Ukraine	https://www.iso.org/obp/ui/#iso:code:3166:UA
UMI	United States Minor Outlying Islands	ISO 3166 Alpha-3 code United States Minor Outlying Islands	https://www.iso.org/obp/ui/#iso:code:3166:UM
URY	Uruguay	ISO 3166 Alpha-3 code Uruguay	https://www.iso.org/obp/ui/#iso:code:3166:UY
USA	United States	ISO 3166 Alpha-3 code United States	https://www.iso.org/obp/ui/#iso:code:3166:US
UZB	Uzbekistan	ISO 3166 Alpha-3 code Uzbekistan	https://www.iso.org/obp/ui/#iso:code:3166:UZ

Code	Name	Description	URL
VAT	Holy See (Vatican City State)	ISO 3166 Alpha-3 code Holy See (Vatican City State)	https://www.iso.org/obp/ui/#iso:code:3166:VA
VCT	Saint Vincent and the Grenadines	ISO 3166 Alpha-3 code Saint Vincent and the Grenadines	https://www.iso.org/obp/ui/#iso:code:3166:VC
VEN	Venezuela, Bolivarian Republic of	ISO 3166 Alpha-3 code Venezuela, Bolivarian Republic of	https://www.iso.org/obp/ui/#iso:code:3166:VE
VGB	Virgin Islands, British	ISO 3166 Alpha-3 code Virgin Islands, British	https://www.iso.org/obp/ui/#iso:code:3166:VG
VIR	Virgin Islands, U.S.	ISO 3166 Alpha-3 code Virgin Islands, U.S.	https://www.iso.org/obp/ui/#iso:code:3166:VI
VNM	Viet Nam	ISO 3166 Alpha-3 code Viet Nam	https://www.iso.org/obp/ui/#iso:code:3166:VN
VUT	Vanuatu	ISO 3166 Alpha-3 code Vanuatu	https://www.iso.org/obp/ui/#iso:code:3166:VU
WLF	Wallis and Futuna	ISO 3166 Alpha-3 code Wallis and Futuna	https://www.iso.org/obp/ui/#iso:code:3166:WF
WSM	Samoa	ISO 3166 Alpha-3 code Samoa	https://www.iso.org/obp/ui/#iso:code:3166:WS
YEM	Yemen	ISO 3166 Alpha-3 code Yemen	https://www.iso.org/obp/ui/#iso:code:3166:YE
ZAF	South Africa	ISO 3166 Alpha-3 code South Africa	https://www.iso.org/obp/ui/#iso:code:3166:ZA
ZMB	Zambia	ISO 3166 Alpha-3 code Zambia	https://www.iso.org/obp/ui/#iso:code:3166:ZM
ZWE	Zimbabwe	ISO 3166 Alpha-3 code Zimbabwe	https://www.iso.org/obp/ui/#iso:code:3166:ZW

Annex 2. ElementKeyCodeValue

code	name	description	url
Ac	actinium	Actinium	http://www.prosumproject.eu/codelist/elementCodeValue/Ac
Ag	silver	Silver	http://www.prosumproject.eu/codelist/elementCodeValue/Ag
Al	aluminium-	Aluminium-	http://www.prosumproject.eu/codelist/elementCodeValue/Al
Am	americium	Americium	http://www.prosumproject.eu/codelist/elementCodeValue/Am
Ar	argon	Argon	http://www.prosumproject.eu/codelist/elementCodeValue/Ar
As	arsenic	Arsenic	http://www.prosumproject.eu/codelist/elementCodeValue/As
At	astatine	Astatine	http://www.prosumproject.eu/codelist/elementCodeValue/At
Au	gold	Gold	http://www.prosumproject.eu/codelist/elementCodeValue/Au
B	boron	Boron	http://www.prosumproject.eu/codelist/elementCodeValue/B
Ba	barium	Barium	http://www.prosumproject.eu/codelist/elementCodeValue/Ba
Be	beryllium	Beryllium	http://www.prosumproject.eu/codelist/elementCodeValue/Be
Bi	bismuth	Bismuth	http://www.prosumproject.eu/codelist/elementCodeValue/Bi
Bk	berkelium	Berkelium	http://www.prosumproject.eu/codelist/elementCodeValue/Bk
Br	bromine	Bromine	http://www.prosumproject.eu/codelist/elementCodeValue/Br
C	carbon	Carbon	http://www.prosumproject.eu/codelist/elementCodeValue/C
Ca	calcium	Calcium	http://www.prosumproject.eu/codelist/elementCodeValue/Ca
Cd	cadmium	Cadmium	http://www.prosumproject.eu/codelist/elementCodeValue/Cd
Ce	cerium	Cerium	http://www.prosumproject.eu/codelist/elementCodeValue/Ce
Cf	californium	Californium	http://www.prosumproject.eu/codelist/elementCodeValue/Cf
Cl	chlorine	Chlorine	http://www.prosumproject.eu/codelist/elementCodeValue/Cl
Cm	curium	Curium	http://www.prosumproject.eu/codelist/elementCodeValue/Cm

code	name	description	url
Co	cobalt	Cobalt	http://www.prosumproject.eu/codelist/elementCodeValue/Co
Cr	chromium	Chromium	http://www.prosumproject.eu/codelist/elementCodeValue/Cr
Cs	caesium	Caesium	http://www.prosumproject.eu/codelist/elementCodeValue/Cs
Cu	copper	Copper	http://www.prosumproject.eu/codelist/elementCodeValue/Cu
Dy	dysprosium	Dysprosium	http://www.prosumproject.eu/codelist/elementCodeValue/Dy
Er	erbium	Erbium	http://www.prosumproject.eu/codelist/elementCodeValue/Er
Es	einsteinium	Einsteinium	http://www.prosumproject.eu/codelist/elementCodeValue/Es
Eu	europium	Europium	http://www.prosumproject.eu/codelist/elementCodeValue/Eu
F	fluorine	Fluorine	http://www.prosumproject.eu/codelist/elementCodeValue/F
Fe	iron	Iron	http://www.prosumproject.eu/codelist/elementCodeValue/Fe
Fm	fermium	Fermium	http://www.prosumproject.eu/codelist/elementCodeValue/Fm
Fr	francium	Francium	http://www.prosumproject.eu/codelist/elementCodeValue/Fr
Ga	gallium	Gallium	http://www.prosumproject.eu/codelist/elementCodeValue/Ga
Gd	gadolinium	Gadolinium	http://www.prosumproject.eu/codelist/elementCodeValue/Gd
Ge	germanium	Germanium	http://www.prosumproject.eu/codelist/elementCodeValue/Ge
H	hydrogen	Hydrogen	http://www.prosumproject.eu/codelist/elementCodeValue/H
He	helium	Helium	http://www.prosumproject.eu/codelist/elementCodeValue/He
Hf	hafnium	Hafnium	http://www.prosumproject.eu/codelist/elementCodeValue/Hf
Hg	mercury	Mercury	http://www.prosumproject.eu/codelist/elementCodeValue/Hg
Ho	holmium	Holmium	http://www.prosumproject.eu/codelist/elementCodeValue/Ho
I	iodine	Iodine	http://www.prosumproject.eu/codelist/elementCodeValue/I
In	indium	Indium	http://www.prosumproject.eu/codelist/elementCodeValue/In
Ir	iridium	Iridium	http://www.prosumproject.eu/codelist/elementCodeValue/Ir

code	name	description	url
K	potassium	Potassium	http://www.prosumproject.eu/codelist/elementCodeValue/K
Kr	krypton	Krypton	http://www.prosumproject.eu/codelist/elementCodeValue/Kr
La	lanthanum	Lanthanum	http://www.prosumproject.eu/codelist/elementCodeValue/La
Li	lithium	Lithium	http://www.prosumproject.eu/codelist/elementCodeValue/Li
Lr	lawrencium	Lawrencium	http://www.prosumproject.eu/codelist/elementCodeValue/Lr
Lu	lutetium	Lutetium	http://www.prosumproject.eu/codelist/elementCodeValue/Lu
Md	mendelevium	Mendelevium	http://www.prosumproject.eu/codelist/elementCodeValue/Md
Mg	magnesium	Magnesium	http://www.prosumproject.eu/codelist/elementCodeValue/Mg
Mn	manganese	Manganese	http://www.prosumproject.eu/codelist/elementCodeValue/Mn
Mo	molybdenum	Molybdenum	http://www.prosumproject.eu/codelist/elementCodeValue/Mo
N	nitrogen	Nitrogen	http://www.prosumproject.eu/codelist/elementCodeValue/N
Na	sodium	Sodium	http://www.prosumproject.eu/codelist/elementCodeValue/Na
Nb	niobium	Niobium	http://www.prosumproject.eu/codelist/elementCodeValue/Nb
Nd	neodymium	Neodymium	http://www.prosumproject.eu/codelist/elementCodeValue/Nd
Ne	neon	Neon	http://www.prosumproject.eu/codelist/elementCodeValue/Ne
Ni	nickel	Nickel	http://www.prosumproject.eu/codelist/elementCodeValue/Ni
No	nobelium	Nobelium	http://www.prosumproject.eu/codelist/elementCodeValue/No
Np	neptunium	Neptunium	http://www.prosumproject.eu/codelist/elementCodeValue/Np
O	oxygen	Oxygen	http://www.prosumproject.eu/codelist/elementCodeValue/O
Os	osmium	Osmium	http://www.prosumproject.eu/codelist/elementCodeValue/Os
P	phosphorus	Phosphorus	http://www.prosumproject.eu/codelist/elementCodeValue/P
Pa	protactinium	Protactinium	http://www.prosumproject.eu/codelist/elementCodeValue/Pa
Pb	lead	Lead	http://www.prosumproject.eu/codelist/elementCodeValue/Pb

code	name	description	url
Pd	palladium	Palladium	http://www.prosumproject.eu/codelist/elementCodeValue/Pd
Pm	promethium	Promethium	http://www.prosumproject.eu/codelist/elementCodeValue/Pm
Po	polonium	Polonium	http://www.prosumproject.eu/codelist/elementCodeValue/Po
Pr	praseodymium	Praseodymium	http://www.prosumproject.eu/codelist/elementCodeValue/Pr
Pt	platinum	Platinum	http://www.prosumproject.eu/codelist/elementCodeValue/Pt
Pu	plutonium	Plutonium	http://www.prosumproject.eu/codelist/elementCodeValue/Pu
Ra	radium	Radium	http://www.prosumproject.eu/codelist/elementCodeValue/Ra
Rb	rubidium	Rubidium	http://www.prosumproject.eu/codelist/elementCodeValue/Rb
Re	rhenium	Rhenium	http://www.prosumproject.eu/codelist/elementCodeValue/Re
REE	rare-earth-elements	Rare-earth-elements	http://www.prosumproject.eu/codelist/elementCodeValue/REE
Rh	rhodium	Rhodium	http://www.prosumproject.eu/codelist/elementCodeValue/Rh
Rn	radon	Radon	http://www.prosumproject.eu/codelist/elementCodeValue/Rn
Ru	ruthenium	Ruthenium	http://www.prosumproject.eu/codelist/elementCodeValue/Ru
S	sulphur	Sulphur	http://www.prosumproject.eu/codelist/elementCodeValue/S
Sb	antimony	Antimony	http://www.prosumproject.eu/codelist/elementCodeValue/Sb
Sc	scandium	Scandium	http://www.prosumproject.eu/codelist/elementCodeValue/Sc
Se	selenium	Selenium	http://www.prosumproject.eu/codelist/elementCodeValue/Se
Si	silicon	Silicon	http://www.prosumproject.eu/codelist/elementCodeValue/Si
Sm	samarium	Samarium	http://www.prosumproject.eu/codelist/elementCodeValue/Sm
Sn	tin	Tin	http://www.prosumproject.eu/codelist/elementCodeValue/Sn
Sr	strontium	Strontium	http://www.prosumproject.eu/codelist/elementCodeValue/Sr
Ta	tantalum	Tantalum	http://www.prosumproject.eu/codelist/elementCodeValue/Ta

code	name	description	url
Tb	terbium	Terbium	http://www.prosumproject.eu/codelist/elementCodeValue/Tb
Tc	technetium	Technetium	http://www.prosumproject.eu/codelist/elementCodeValue/Tc
Te	tellurium	Tellurium	http://www.prosumproject.eu/codelist/elementCodeValue/Te
Th	thorium	Thorium	http://www.prosumproject.eu/codelist/elementCodeValue/Th
Ti	titanium	Titanium	http://www.prosumproject.eu/codelist/elementCodeValue/Ti
Tl	thallium	Thallium	http://www.prosumproject.eu/codelist/elementCodeValue/Tl
Tm	thulium	Thulium	http://www.prosumproject.eu/codelist/elementCodeValue/Tm
U	uranium	Uranium	http://www.prosumproject.eu/codelist/elementCodeValue/U
V	vanadium	Vanadium	http://www.prosumproject.eu/codelist/elementCodeValue/V
W	tungsten	Tungsten	http://www.prosumproject.eu/codelist/elementCodeValue/W
Xe	xenon	Xenon	http://www.prosumproject.eu/codelist/elementCodeValue/Xe
Y	yttrium	Yttrium	http://www.prosumproject.eu/codelist/elementCodeValue/Y
Yb	ytterbium	Ytterbium	http://www.prosumproject.eu/codelist/elementCodeValue/Yb
Zn	zinc	Zinc	http://www.prosumproject.eu/codelist/elementCodeValue/Zn
Zr	zirconium	Zirconium	http://www.prosumproject.eu/codelist/elementCodeValue/Zr

Annex 3. FlowTypeCodeValue

code	name	description	url
reported	Reported		http://www.prosumproject.eu/codelist/flowType/reported
wasteBin	Waste Bin		http://www.prosumproject.eu/codelist/flowType/wasteBin
exportForReuse	Export for Reuse		http://www.prosumproject.eu/codelist/flowType/exportForReuse
otherRecycling	Other Recycling		http://www.prosumproject.eu/codelist/flowType/otherRecycling
scavengedParts	Scavenged parts		http://www.prosumproject.eu/codelist/flowType/scavengedParts
domesticNewVehiclesPOM	New vehicles POM, domestic		http://www.prosumproject.eu/codelist/flowType/domesticNewVehiclesPOM
importedNewVehiclesPOM	New vehicles POM, imported		http://www.prosumproject.eu/codelist/flowType/importedNewVehiclesPOM
domesticNewComponentPOM	New components POM, domestic		http://www.prosumproject.eu/codelist/flowType/domesticNewComponentPOM
importedNewComponentPOM	New components POM, imported		http://www.prosumproject.eu/codelist/flowType/importedNewComponentPOM
importedSecondHandVehicles	Imported Second hand vehicles		http://www.prosumproject.eu/codelist/flowType/importedSecondHandVehicles
importedSecondHandComponents	Imported Second hand components		http://www.prosumproject.eu/codelist/flowType/importedSecondHandComponents
domesticReportedELVForRecovery	Reported ELV for recovery, domestic		http://www.prosumproject.eu/codelist/flowType/domesticReportedELVForRecovery

code	name	description	url
domesticUnReportedELVForRecovery	Unreported ELV for recovery, domestic		http://www.prosumproject.eu/codelist/flowType/domesticNewVehiclesPOM
domesticUnreportedELVIllegalDumping	Unreported ELV illegal dumping, domestic		http://www.prosumproject.eu/codelist/flowType/domesticUnreportedELVIllegalDumping
exportedReportedELVForRecovery	Reported ELV for recovery, exported		http://www.prosumproject.eu/codelist/flowType/exportedReportedELVForRecovery
exportedUnreportedELVForRecovery	Unreported ELV for recovery, exported		http://www.prosumproject.eu/codelist/flowType/exportedUnreportedELVForRecovery
exportedReportedSecondHandVehicles	Reported second hand vehicles, exported		http://www.prosumproject.eu/codelist/flowType/exportedReportedSecondHandVehicles
exportedUnreportedSecondHandVehicles	Unreported second hand vehicles, exported		http://www.prosumproject.eu/codelist/flowType/exportedUnreportedSecondHandVehicles
exportedReportedSecondHandComponents	Reported second hand components, exported		http://www.prosumproject.eu/codelist/flowType/exportedReportedSecondHandComponents
exportedUnreportedSecondHandComponents	Unreported second hand components,		http://www.prosumproject.eu/codelist/flowType/exportedUnreportedSecondHandComponents
Inflow	Inflow (purchase)		
Stock	Stock		
Outflow	Outflow (waste)		
I	Trade flows of products (imports/exports)		
II	Trade flows of waste (imports/exports)		
III	Supply of product		
IV	Use of products: intermediate		

code	name	description	url
V	Use of products: final		
VI	Capital formation: intermediate		
VII	Capital formation: final		
VIII	Recycling		
IX	Waste flows: manufacturing losses + capital depreciation (intermediate)		
X	Waste flows: demolition waste		
XI	Waste flows: households		
XII	Waste flows: disposal after treatment		
XIII	Emissions (final)		
XIV	Emissions (intermediate)		

Annex 4. MaterialKeyCodeValue

code	name	description	url
food	food	food	
manure	manure	manure	
textile	textile	textile	
wood	wood	wood	
paper	paper	paper	
plastics	plastics	plastics	
glass	glass	glass	
ashes	ashes	ashes	
steel	steel	steel	
preciousMetals	precious metals	precious metals including gold, silver	
aluminium	aluminium	aluminium	
cerium	cerium	cerium	
cobalt	cobalt	cobalt	
copper	copper	copper	
dysprosium	dysprosium	dysprosium	
germanium	germanium	germanium	
indium	indium	indium	
iron	iron	iron	
lanthanum	lanthanum	lanthanum	
graphite	natural graphite	natural graphite	
niobium	niobium	niobium	

code	name	description	url
neodymium	neodymium	neodymium	
palladium	palladium	palladium	
platinum	platinum	platinum	
tantalum	tantalum	tantalum	
tungsten	tungsten	tungsten	
lead	lead	lead	
non-ferrousMetals	non-ferrous metals	non-ferrous metals	
construction materials and mining waste	construction materials and mining waste	construction materials and mining waste (excl. unused mining material)	
oilsAndHazardousMaterials	oils and hazardous materials	oils and hazardous materials	
sewage	sewage	sewage	
mining waste	mining waste	mining waste	
unused waste	unused waste	unused waste	

Annex 5. ProductsClassificationCodeValue

code	name	description	url
C_PARI		Paddy rice	
C_WHEA		Wheat	
C_OCER		Cereal grains nec	
C_FVEG		Vegetables, fruit, nuts	
C_OILS		Oil seeds	
C_SUGB		Sugar cane, sugar beet	
C_FIBR		Plant-based fibers	
C_OTCR		Crops nec	
C_CATL		Cattle	
C_PIGS		Pigs	
C_PLTR		Poultry	
C_OMEA		Meat animals nec	
C_OANP		Animal products nec	
C_MILK		Raw milk	
C_WOOL		Wool, silk-worm cocoons	
C_MANC		Manure (conventional treatment)	
C_MANB		Manure (biogas treatment)	
C_FORE		Products of forestry, logging and related services (02)	
C_FISH		Fish and other fishing products; services incidental of fishing (05)	
C_ANTH		Anthracite	
C_COKC		Coking Coal	

code	name	description	url
C_OTBC		Other Bituminous Coal	
C_SUBC		Sub-Bituminous Coal	
C_PATF		Patent Fuel	
C_LIBC		Lignite/Brown Coal	
C_BKBP		BKB/Peat Briquettes	
C_PEAT		Peat	
C_COIL		Crude petroleum and services related to crude oil extraction, excluding surveying	
C_GASE		Natural gas and services related to natural gas extraction, excluding surveying	
C_GASL		Natural Gas Liquids	
C_OGPL		Other Hydrocarbons	
C_ORAN		Uranium and thorium ores (12)	
C_IRON		Iron ores	
C_COPO		Copper ores and concentrates	
C_NIKO		Nickel ores and concentrates	
C_ALUO		Aluminium ores and concentrates	
C_PREO		Precious metal ores and concentrates	
C_LZTO		Lead, zinc and tin ores and concentrates	
C_ONFO		Other non-ferrous metal ores and concentrates	
C_STON		Stone	
C_SDCL		Sand and clay	
C_CHMF		Chemical and fertilizer minerals, salt and other mining and quarrying products n.e.c.	
C_PCAT		Products of meat cattle	
C_PPIG		Products of meat pigs	

code	name	description	url
C_PPLT		Products of meat poultry	
C_POME		Meat products nec	
C_VOIL		products of Vegetable oils and fats	
C_DAIR		Dairy products	
C_RICE		Processed rice	
C_SUGR		Sugar	
C_OFOD		Food products nec	
C_BEVR		Beverages	
C_FSHP		Fish products	
C_TOBC		Tobacco products (16)	
C_TEXT		Textiles (17)	
C_GARM		Wearing apparel; furs (18)	
C_LETH		Leather and leather products (19)	
C_WOOD		Wood and products of wood and cork (except furniture); articles of straw and plaiting materials (20)	
C_WOOW		Wood material for treatment, Re-processing of secondary wood material into new wood material	
C_PULP		Pulp	
C_PAPR		Secondary paper for treatment, Re-processing of secondary paper into new pulp	
C_PAPE		Paper and paper products	
C_MDIA		Printed matter and recorded media (22)	
C_COKE		Coke Oven Coke	
C_GCOK		Gas Coke	

code	name	description	url
C_COTA		Coal Tar	
C_MGSL		Motor Gasoline	
C_AGSL		Aviation Gasoline	
C_GJET		Gasoline Type Jet Fuel	
C_KJET		Kerosene Type Jet Fuel	
C_KERO		Kerosene	
C_DOIL		Gas/Diesel Oil	
C_FOIL		Heavy Fuel Oil	
C_RGAS		Refinery Gas	
C_LPGA		Liquefied Petroleum Gases (LPG)	
C_REFF		Refinery Feedstocks	
C_ETHA		Ethane	
C_NAPT		Naphtha	
C_WHSP		White Spirit & SBP	
C_LUBR		Lubricants	
C_BITU		Bitumen	
C_PARW		Paraffin Waxes	
C_PETC		Petroleum Coke	
C_NSPP		Non-specified Petroleum Products	
C_NUCF		Nuclear fuel	
C_PLAS		Plastics, basic	
C_PLAW		Secondary plastic for treatment, Re-processing of secondary plastic into new plastic	
C_NFER		N-fertiliser	

code	name	description	url
C_PFER		P- and other fertiliser	
C_CHEM		Chemicals nec	
C_CHAR		Charcoal	
C_ADDC		Additives/Blending Components	
C_BIOG		Biogasoline	
C_BIOD		Biodiesels	
C_OBIO		Other Liquid Biofuels	
C_RUBP		Rubber and plastic products (25)	
C_GLAS		Glass and glass products	
C_GLAW		Secondary glass for treatment, Re-processing of secondary glass into new glass	
C_CRMC		Ceramic goods	
C_BRIK		Bricks, tiles and construction products, in baked clay	
C_CMNT		Cement, lime and plaster	
C_ASHW		Ash for treatment, Re-processing of ash into clinker	
C_ONMM		Other non-metallic mineral products	
C_STEL		Basic iron and steel and of ferro-alloys and first products thereof	
C_STEW		Secondary steel for treatment, Re-processing of secondary steel into new steel	
C_PREM		Precious metals	
C_PREW		Secondary preciuos metals for treatment, Re-processing of secondary preciuos metals into new preciuos metals	
C_ALUM		Aluminium and aluminium products	
C_ALUW		Secondary aluminium for treatment, Re-processing of secondary aluminium into new aluminium	

code	name	description	url
C_LZTP		Lead, zinc and tin and products thereof	
C_LZTW		Secondary lead for treatment, Re-processing of secondary lead into new lead	
C_COPP		Copper products	
C_COPW		Secondary copper for treatment, Re-processing of secondary copper into new copper	
C_ONFM		Other non-ferrous metal products	
C_ONFW		Secondary other non-ferrous metals for treatment, Re-processing of secondary other non-ferrous metals into new other non-ferrous metals	
C_METC		Foundry work services	
C_FABM		Fabricated metal products, except machinery and equipment (28)	
C_MACH		Machinery and equipment n.e.c. (29)	
C_OFMA		Office machinery and computers (30)	
C_ELMA		Electrical machinery and apparatus n.e.c. (31)	
C_RATV		Radio, television and communication equipment and apparatus (32)	
C_MEIN		Medical, precision and optical instruments, watches and clocks (33)	
C_MOTO		Motor vehicles, trailers and semi-trailers (34)	
C_OTRE		Other transport equipment (35)	
C_FURN		Furniture; other manufactured goods n.e.c. (36)	
C_RYMS		Secondary raw materials	
C_BOTW		Bottles for treatment, Recycling of bottles by direct reuse	
C_POWC		Electricity by coal	
C_POWG		Electricity by gas	
C_POWN		Electricity by nuclear	
C_POWH		Electricity by hydro	

code	name	description	url
C_POWW		Electricity by wind	
C_POWP		Electricity by petroleum and other oil derivatives	
C_POWB		Electricity by biomass and waste	
C_POWS		Electricity by solar photovoltaic	
C_POWE		Electricity by solar thermal	
C_POWO		Electricity by tide, wave, ocean	
C_POWM		Electricity by Geothermal	
C_POWZ		Electricity nec	
C_POWT		Transmission services of electricity	
C_POWD		Distribution and trade services of electricity	
C_COOG		Coke oven gas	
C_MBFG		Blast Furnace Gas	
C_MOSG		Oxygen Steel Furnace Gas	
C_MGWG		Gas Works Gas	
C_MBIO		Biogas	
C_GASD		Distribution services of gaseous fuels through mains	
C_HWAT		Steam and hot water supply services	
C_WATR		Collected and purified water, distribution services of water (41)	
C_CONS		Construction work (45)	
C_CONW		Secondary construction material for treatment, Re-processing of secondary construction material into aggregates	
C_TDMO		Sale, maintenance, repair of motor vehicles, motor vehicles parts, motorcycles, motorcycles parts and accessories	

code	name	description	url
C_TDFU		Retail trade services of motor fuel	
C_TDWH		Wholesale trade and commission trade services, except of motor vehicles and motorcycles (51)	
C_TDRT		Retail trade services, except of motor vehicles and motorcycles; repair services of personal and household goods (52)	
C_HORE		Hotel and restaurant services (55)	
C_TRAI		Railway transportation services	
C_TLND		Other land transportation services	
C_TPIP		Transportation services via pipelines	
C_TWAS		Sea and coastal water transportation services	
C_TWAI		Inland water transportation services	
C_TAIR		Air transport services (62)	
C_TAUX		Supporting and auxiliary transport services; travel agency services (63)	
C_PTEL		Post and telecommunication services (64)	
C_FINT		Financial intermediation services, except insurance and pension funding services (65)	
C_FINS		Insurance and pension funding services, except compulsory social security services (66)	
C_FAUX		Services auxiliary to financial intermediation (67)	
C_REAL		Real estate services (70)	
C_MARE		Renting services of machinery and equipment without operator and of personal and household goods (71)	
C_COMP		Computer and related services (72)	
C_RESD		Research and development services (73)	
C_OBUS		Other business services (74)	
C_PADF		Public administration and defence services; compulsory social security services (75)	

code	name	description	url
C_EDUC		Education services (80)	
C_HEAL		Health and social work services (85)	
C_INCF		Food waste for treatment: incineration	
C_INCP		Paper waste for treatment: incineration	
C_INCL		Plastic waste for treatment: incineration	
C_INCM		Inert/metal waste for treatment: incineration	
C_INCT		Textiles waste for treatment: incineration	
C_INCW		Wood waste for treatment: incineration	
C_INCO		Oil/hazardous waste for treatment: incineration	
C_BIOF		Food waste for treatment: bio-gasification and land application	
C_BIOP		Paper waste for treatment: bio-gasification and land application	
C_BIOS		Sewage sludge for treatment: bio-gasification and land application	
C_COMF		Food waste for treatment: composting and land application	
C_COMW		Paper and wood waste for treatment: composting and land application	
C_WASF		Food waste for treatment: wastewater treatment	
C_WASO		Other waste for treatment: wastewater treatment	
C_LANF		Food waste for treatment: landfill	
C_LANP		Paper for treatment: landfill	
C_LANL		Plastic waste for treatment: landfill	
C_LANI		Inert/metal/hazardous waste for treatment: landfill	
C_LANT		Textiles waste for treatment: landfill	
C_LANW		Wood waste for treatment: landfill	
C_ORGA		Membership organisation services n.e.c. (91)	

code	name	description	url
C_RECR		Recreational, cultural and sporting services (92)	
C_OSER		Other services (93)	
C_PRHH		Private households with employed persons (95)	
C_EXTO		Extra-territorial organizations and bodies	

Annex 6. UnitsCodeValue

code	name	description	url
g	gram		http://www.prosumproject.eu/codelist/uomCodeValue/g
gramPerUnit	grams per unit		http://www.prosumproject.eu/codelist/uomCodeValue/gramPerUnit
kg	kilograms		http://www.prosumproject.eu/codelist/uomCodeValue/kg
kgPerKg	kgPerKg		http://www.prosumproject.eu/codelist/uomCodeValue/kgPerKg
kgPerUnit	kilograms per unit		http://www.prosumproject.eu/codelist/uomCodeValue/kgPerUnit
m	meters		http://www.prosumproject.eu/codelist/uomCodeValue/m
m2	square meters		http://www.prosumproject.eu/codelist/uomCodeValue/m2
m3	cubic meters		http://www.prosumproject.eu/codelist/uomCodeValue/m3
massPercentage	mass percentage		http://www.prosumproject.eu/codelist/uomCodeValue/massPercentage
mgPerKg	milligrams per kilogram	(equal to ppm mass)	http://www.prosumproject.eu/codelist/uomCodeValue/mgPerKg
numberPerUnit	number per unit		http://www.prosumproject.eu/codelist/uomCodeValue/numberPerUnit
tons	tons		http://www.prosumproject.eu/codelist/uomCodeValue/tons
unit	units		
kW	kilo Watt		
M€	million euros		

Annex 7. ClassificationSystem

code	name	description	url
ISIC_Rev_4	ISIC Revision 4	International Standard Industrial Classification of All Economic Activities Revision 4	https://unstats.un.org/unsd/publications/catalogue?selectID=396
ISIC_Rev_3.1	ISIC Revision 3.1	International Standard Industrial Classification of All Economic Activities Revision 3.1	https://unstats.un.org/unsd/publications/catalogue?selectID=318
ISIC_Rev_3	ISIC Revision 3	International Standard Industrial Classification of All Economic Activities Revision 3	https://unstats.un.org/unsd/classifications/Econ/ISIC#ISIC3
CPC_Ver_2.1	CPC Version 2.1	Central Product Classification (CPC) Version 2.1	https://unstats.un.org/unsd/classifications/unsdclassifications/cpcv21.pdf
CPC_Ver_2	CPC Version 2	Central Product Classification (CPC) Version 2	https://unstats.un.org/unsd/iiss/Central-Product-Classification-CPC.ashx

code	name	description	url
CPC_Ver_1.1	CPC Version 1.1	Central Product Classification (CPC) Version 1.1	https://unstats.un.org/unsd/publications/catalogue?selectID=327
PC_2008	PC2008	Eurostat Prodcom List 2008	https://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_CLS_DLD&StrNom=PRD_2008&StrLanguageCode=EN&StrLayoutCode=HIERARCHIC
PC_2009	PC2009	Eurostat Prodcom List 2009	https://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_CLS_DLD&StrNom=PRD_2009&StrLanguageCode=EN&StrLayoutCode=HIERARCHIC
PC_2010	PC2010	Eurostat Prodcom List 2010	https://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_CLS_DLD&StrNom=PRD_2010&StrLanguageCode=EN&StrLayoutCode=HIERARCHIC
PC_2011	PC2011	Eurostat Prodcom List 2011	https://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_CLS_DLD&StrNom=PRD_2011&StrLanguageCode=EN&StrLayoutCode=HIERARCHIC
PC_2012	PC2012	Eurostat Prodcom List 2012	https://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_CLS_DLD&StrNom=PRD_2012&StrLanguageCode=EN&StrLayoutCode=HIERARCHIC
PC_2013	PC2013	Eurostat Prodcom List 2013	https://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_CLS_DLD&StrNom=PRD_2013&StrLanguageCode=EN&StrLayoutCode=HIERARCHIC
PC_2014	PC2014	Eurostat Prodcom List 2014	https://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_CLS_DLD&StrNom=PRD_2014&StrLanguageCode=EN&StrLayoutCode=HIERARCHIC
PC_2015	PC2015	Eurostat Prodcom List 2015	https://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_CLS_DLD&StrNom=PRD_2015&StrLanguageCode=EN&StrLayoutCode=HIERARCHIC
PC_2016	PC2016	Eurostat Prodcom List 2016	https://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_CLS_DLD&StrNom=PRD_2016&StrLanguageCode=EN&StrLayoutCode=HIERARCHIC

code	name	description	url
PC_2017	PC2017-18	Eurostat Prodcom List 2017-18	https://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_CLS_DLD&StrNom=PRD_2017&StrLanguageCode=EN&StrLayoutCode=HIERARCHIC
HS_1992	HS H0 (1992)	Harmonized Commodity Description and Coding Systems Revision 1992	https://unstats.un.org/unsd/tradekb/Knowledgebase/50018/Harmonized-Commodity-Description-and-Coding-Systems-HS
HS_1996	HS H1 (1996)	Harmonized Commodity Description and Coding Systems Revision 1996	https://unstats.un.org/unsd/tradekb/Knowledgebase/50018/Harmonized-Commodity-Description-and-Coding-Systems-HS
HS_2002	HS H2 (2002)	Harmonized Commodity Description and Coding Systems Revision 2002	https://unstats.un.org/unsd/tradekb/Knowledgebase/50018/Harmonized-Commodity-Description-and-Coding-Systems-HS
HS_2007	HS H3 (2007)	Harmonized Commodity Description and Coding Systems Revision 2007	https://unstats.un.org/unsd/tradekb/Knowledgebase/50018/Harmonized-Commodity-Description-and-Coding-Systems-HS

code	name	description	url
HS_2012	HS H4 (2012)	Harmonized Commodity Description and Coding Systems Revision 2012	https://unstats.un.org/unsd/tradekb/Knowledgebase/50018/Harmonized-Commodity-Description-and-Coding-Systems-HS
HS_2017	HS H5 (2017)	Harmonized Commodity Description and Coding Systems Revision 2017	https://unstats.un.org/unsd/tradekb/Knowledgebase/50018/Harmonized-Commodity-Description-and-Coding-Systems-HS
SITC_Rev_4	SITC Revision 4	Standard International Trade Classification (SITC) Revision 4	https://unstats.un.org/unsd/publications/catalogue?selectID=104
NACE_Rev_2	NACE Rev.2	Statistical Classification of Economic Activities in the European Community	https://ec.europa.eu/eurostat/documents/3859598/5902521/KS-RA-07-015-EN.PDF
NACE_Rev_1.1	NACE Rev.1.1	Statistical Classification of Economic Activities in the European Community	https://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_CLS_DLD&StrNom=NACE_1_1

code	name	description	url
NACE_Rev_1	NACE Rev.1	Statistical Classification of Economic Activities in the European Community	https://ec.europa.eu/eurostat/documents/3859598/8634073/CA-80-93-436.pdf/bd973dfc-cb58-478e-ae7f-2b0b5763a491
CPA_1993	CPA 1993	Statistical classification of products by activity	https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.1993.342.01.0001.01.ENG
CPA_1996	CPA 1996	Statistical classification of products by activity	https://ec.europa.eu/eurostat/en/web/products-manuals-and-guidelines/-/CA-14-98-114
CPA_2002	CPA 2002	Statistical classification of products by activity	https://ec.europa.eu/eurostat/en/web/products-manuals-and-guidelines/-/KS-44-02-610-1F
CPA_2008	CPA 2008	Statistical classification of products by activity	https://ec.europa.eu/eurostat/web/cpa-2008/overview
CPA_2014	CPA 2.1	Statistical classification of products by activity	https://ec.europa.eu/eurostat/web/cpa-version-2.1/overview
CN_1992	CN 1992	The Combined Nomenclature 1992	https://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_CLS_DLD&StrNom=HS_1992&StrLanguageCode=EN&StrLayoutCode=
CN_1996	CN 1996	The Combined Nomenclature 1996	https://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_CLS_DLD&StrNom=HS_1996&StrLanguageCode=EN&StrLayoutCode=

code	name	description	url
CN_2002	CN 2002	The Combined Nomenclature 2002	https://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_CLS_DLD&StrNom=HS_2002&StrLanguageCode=EN&StrLayoutCode=
CN_2007	CN 2007	The Combined Nomenclature 2007	https://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_CLS_DLD&StrNom=HS_2007&StrLanguageCode=EN&StrLayoutCode=
CN_2012	CN 2012	The Combined Nomenclature 2012	https://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_CLS_DLD&StrNom=HS_2012&StrLanguageCode=EN&StrLayoutCode=
CN_2017	CN 2017	The Combined Nomenclature 2017	https://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_CLS_DLD&StrNom=HS_2017&StrLanguageCode=EN&StrLayoutCode=
UNU_KEYS	UNU-KEYS	E-Waste Classification	https://www.researchgate.net/publication/236838742_A_systematic_and_compatible_classification_of_WEEE
EC_LoW	LoW	The List of Waste (LoW) provides an EU-wide common terminology for waste classification	https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.C_.2018.124.01.0001.01.ENG&toc=OJ:C:2018:124:TOC#ntr12-C_2018124EN.01000101-E0012

Annex 8. UncertaintyTypeCodeValue

code	name	description	url
conf90	90% confidence interval	90% confidence interval	http://www.prosumproject.eu/codelist/uomUncertaintyValue/conf90
conf95	95% confidence interval	95% confidence interval	http://www.prosumproject.eu/codelist/uomUncertaintyValue/conf95
conf99	99% confidence interval	99% confidence interval	http://www.prosumproject.eu/codelist/uomUncertaintyValue/conf99
sd	standard deviation of sample	standard deviation of sample	http://www.prosumproject.eu/codelist/uomUncertaintyValue/standardDeviationOfSample
sem	standard error of the mean of the sample	standard error of the mean of the sample	http://www.prosumproject.eu/codelist/uomUncertaintyValue/standard error of the mean of the sample
unknown	unknown	unknown	http://www.prosumproject.eu/codelist/uomUncertaintyValue/unknown