

Guidance note – Reporting of energetic refurbishment and construction of new energy-efficient buildings in EGSS accounts

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1. Purpose and overview

The task force on the classification of environmental activities (TF) identified in June 2018 the need to further clarify the recording of “*low energy consumption and passive buildings and energetic refurbishment of existing buildings*” as listed in the indicative compendium of environmental goods and services¹. This note recalls the available guidance, summarises reporting practices, and presents recommendations for a consistent and accurate recording of relevant production activity in the Environmental Goods and Services Section (EGSS) accounts. The guidance note should help national compilers to comply with their reporting obligations under Regulation 691/2011 (Annex 5) and Regulation (EU) 2015/2174, with a view to a harmonised implementation of the legal provisions and available guidance and, consequently, to a better cross-country comparability of the EGSS data.

Key considerations and proposals

Eurostat has consolidated the feedback from the TF and the working group on Monetary Environmental Statistics and Accounts (MESA WG) in this guidance note. The recommendations account for the information sources available to data compilers (identified by a TF survey in February 2019; see section 4.3) and the information needs of policy makers (identified by a TF survey in December 2019; see section 4.4, pages 13-15). *The recommendations were discussed and endorsed in the task force meeting of 12-13 March 2020 and supported by the 2020 MESA WG.*

To ensure consistent reporting on “*low energy consumption and passive buildings and energetic refurbishment of existing buildings*” across countries, the following is recommended:

energetic refurbishment of existing buildings

- identify ‘energetic refurbishment’ as any refurbishment activity that decreases the specific energy consumption [kWh/m²] of public or private buildings in a country (see Section 4.2); exclude refurbishment activities that do not decrease the specific energy consumption of buildings (see definition in Section 4);
- ensure complete coverage of relevant activities, with a focus on the installation of insulating materials, triple-glassed windows, and energy-efficient heating, cooling, and ventilation technologies (see Section 4.3);
- report the (full) value of relevant production output (as well as related employment, GVA and exports of the activity) under NACE F, irrespective of the building’s energy-efficiency class prior to and after the energetic refurbishment;
- classify activities as heat/energy saving and management under CReMA 13B;

construction of new low-energy consumption and passive buildings (referred to below as energy-efficient buildings)

- identify relevant buildings as those being classified as ‘nearly zero-energy buildings (NZEB)’ in the national labelling schemes following Directive 2010/31/EU;

¹ Regulation (EU) 2015/2174 (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32015R2174>).

- consider construction activity only and disregard unrelated property costs, e.g., for the acquisition of land;
- classify relevant construction activity under CReMA 13B;
- estimate in the EGSS accounts both the (full) value of output (and related employment, GVA and exports (if any)) of the construction of NZEBs as well the part of the output (as well as employment, GVA and exports (if any)) related to energy-efficiency measures undertaken for the construction of the NZEBs; report both items² in the EGSS questionnaire that will be adapted to accommodate the new entries (with one of the valuation approaches reported under a memo item).
- where data availability is limited and construction of NZEBs cannot be traced under the two approaches (i.e., either data on total construction output are not available or data on the share of output related to energy efficiency measures is missing), Eurostat may apply a generic correction factor to recalculate missing data before publication; if corrections are made, data will be flagged as Eurostat estimate with footnote 's'.

2 Reporting requirements

Regulation (EU) 691/2011 on European environmental economic accounts³ defines environmental products as goods and services that are produced 1) for preventing, reducing and eliminating pollution and any other degradation of the environment or 2) for the purpose of resource management. The indicative compendium in Regulation (EC) 2015/2174 operationalises this definition with a concrete list of environmental goods, services, and activities. One item in this list refers to “*low energy consumption and passive buildings and energetic refurbishment of existing buildings*”, referred to here as construction of new energy-efficient buildings and energetic refurbishment of existing buildings. Concrete guidance on how to implement the indicative compendium is provided by the EGSS operational list⁴ that proposes CEPA and CReMA categories for all environmental products and activities as well as CPA, CN, and NACE codes under which relevant goods and/or services are reported in official statistics⁵. On the construction of new energy-efficient buildings and energetic refurbishment of existing buildings, the following information is provided:

- “*Low energy consumption and passive buildings*”: CPA (2008)⁶ codes 16.23.20 (prefabricated wooden buildings), 41.00.10 (residential buildings), 41.00.20 (non-residential buildings), 43.99.7 (assembly and erection works of prefabricated constructions); CN (2016) code

² Given that the EGSS accounts follow a spectrum of activities along the value chain, it needs to be recalled that the EGSS output includes the value of final and intermediate products, and depending on the arrangements, the data might vary considerable across countries. Consequently, key EGSS indicators relevant for cross-country comparability analyses are GVA and employment.

³ See: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02011R0691-20140616>.

⁴ See: <https://ec.europa.eu/eurostat/web/environment/methodology>.

⁵ Please note that there is no one-to-one correspondence and in many cases, the codes refer to a group of products or activities within which the environmental products and activities are included.

⁶ Statistical classification of products by activity in the European economic community, 2008 version. RAMON – Reference and Management of Nomenclatures. Eurostat. Source: http://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_NOM_DTL&StrNom=CPA_2008&StrLanguageCode=EN&IntPcKey=&StrLayoutCode=HIERARCHIC. Retrieved: 11 October 2018.

9406.00.20 (prefabricated buildings of wood other than mobile homes); NACE (Revision 2)⁷ codes C16.23 (manufacture of other builder's carpentry and joinery), F41 (construction of buildings), and F43 (specialised construction activity);

- “*Energetic refurbishment of existing buildings*”: CPA (2008) code 43.29.11 (insulation works); NACE (Revision 2) codes C16.23 (manufacture of other builder's carpentry and joinery), F41 (construction of buildings), and F43 (specialised construction activity);
- “*Engineering and architectural services for low energy consumption and passive buildings and energetic refurbishment of existing buildings*”: CPA (2008) codes 71.11 (architectural services), 71.12.12 (engineering services for building projects), NACE M 71.1 (architectural and engineering activities and related technical consultancy).

For all the products and activities covered under the indicated CPA/CN or NACE code, a fraction representing the value of the environmental products in the total needs to be calculated.

Both, ***energetic refurbishment and the construction of new energy-efficient buildings are to be reported under CREMA 13B*** (heat/energy saving and management). Energetic refurbishment serves a resource management purpose, given that as a result of the refurbishment the building consumes less energy for its conventional (residential or non-residential) use. New energy-efficient buildings represent adapted goods. The manufacturing of materials and technologies such as insulation materials or triple-glassed windows that are relevant for the energy efficiency of buildings is covered under NACE C. Engineering and consultancy services are covered under NACE M but may be relevant as a secondary activity of construction companies under NACE F that covers as a primary activity the building refurbishment and construction activities⁸.

The 2016 EGSS handbook suggests ***adapted products*** such as energy-efficient buildings ***should be identified by their technical characteristics and their actual environmental impacts*** relative to standard products. To this end, auxiliary product information from environmental labels or energy standards should be taken into consideration. Following this guidance, buildings could be considered as energy-efficient if they received the highest environmental rating in a respective labelling scheme. Energetic refurbishment of existing buildings is undertaken specifically for the purpose of saving energy, even though the construction activity itself does not save energy. Thus, it can be considered as a process of adapting a fixed asset to be resource efficient, and it is not straightforward to define it in terms of conventional boundary case between a specific or connected product and an adapted product.

According to the 2016 EGSS handbook, ***the full product value is to be considered when valuing EGSS output*** irrespective of the type of environmental good or service.

⁷ NACE Rev. 2. RAMON – Reference and Management of Nomenclatures. Eurostat Source: http://ec.europa.eu/Eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_NOM_DTL&StrNom=NACE_RE V2& StrLanguageCode=EN.

⁸ An exception presents the production of pre-fabricated houses covered under NACE C (see Section 4.3).

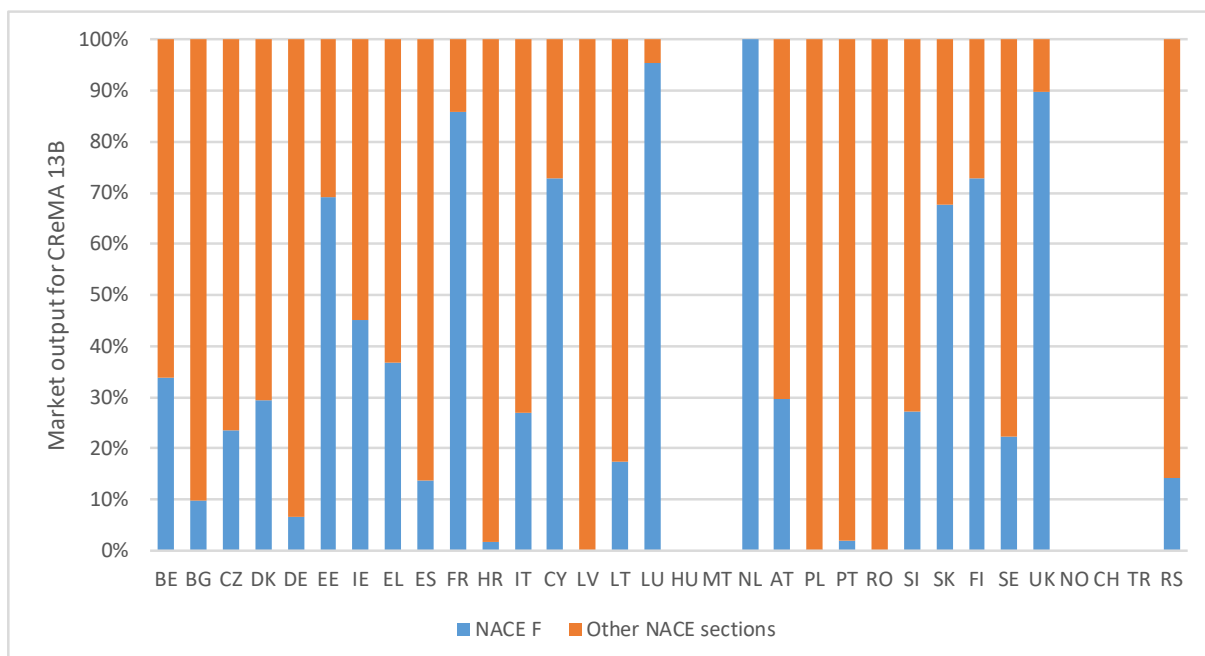
3 State of play

An analysis of the 2019 EGSS data transmission revealed that countries still differ in their reporting of energetic refurbishment and the construction of new energy-efficient buildings. A few countries appear to report in their EGSS accounts relatively large shares of the overall economic activity recorded under NACE F41 (construction of buildings) whereas others exclude construction activity under NACE F from EGSS reporting (Figures 1 and 2).

In the 2019 EGSS data reporting, the majority of countries reported market output for NACE F and CReMA 13B (Figure 1). Yet, a few countries do not and for those that do, activity levels vary considerably. Given that refurbishment and the construction of new buildings involves large investments, low shares of NACE F in the market output for CReMA 13B point to an incomplete coverage of activities.

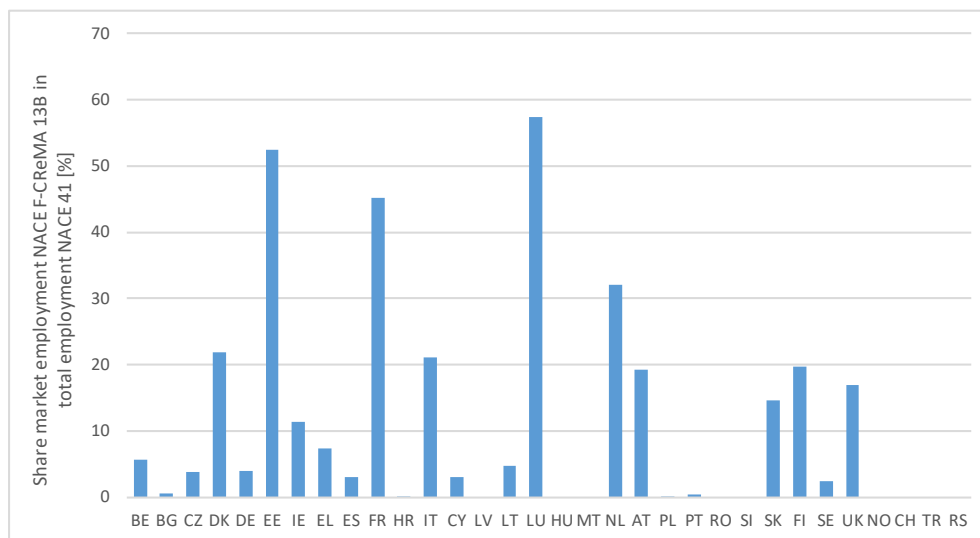
This expectation is confirmed by the response of countries during the 2018 and 2019 data validations. Countries generally report on energetic refurbishment activities (specifically improvements in building insulation) but less so on the construction of new energy-efficient buildings. For the latter activity, data are often not available or its contribution to the overall production output of NACE F for CReMA 13B cannot be identified (e.g., due to survey design and/or problems with interpretation of source data). This also causes cross-country variability in the market employment under NACE F-CReMA 13B and its contribution to the economy-wide jobs in buildings construction (as reported under NACE 41 in SBS; Figure 2).

Figure 1: Share of NACE F in the market output for CReMA 13B, by country, 2017



Source: Eurobase table [env_ac_egss1]; confidential data are excluded

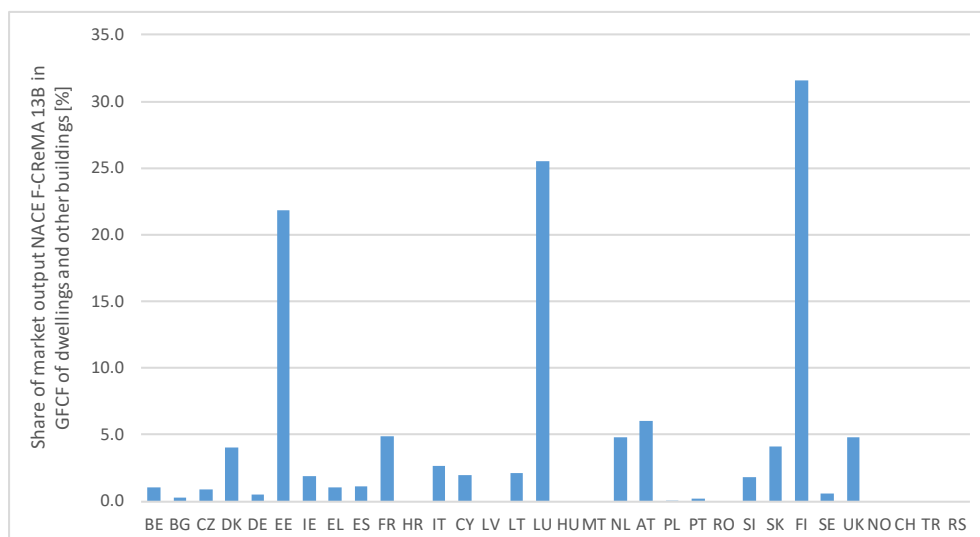
Figure 2: Share of market employment under NACE F-CReMA 13B in the total employment related to construction of residential and non-residential buildings (NACE 41), by country, 2017



Source: Eurobase tables [env_ac_eggs1; sbs_na_con_r2]; confidential data are excluded; employment in the two Eurobase tables given in FTE

On the use side, energetic refurbishment and the construction of energy-efficient buildings both are recorded as gross fixed capital formation (GFCF). Eurostat has calculated the ratio of EGSS market output under NACE F-CReMA 13B to GFCF in dwellings and other buildings and structures (Figure 3). Also this ratio differs considerably across countries⁹.

Figure 3: Ratio of market output under NACE F-CReMA 13B to the gross fixed capital formation (GFCF) related to dwellings and other buildings and structures, by country, 2017



Source: Eurobase tables [env_ac_eggs2; nama_10_an6]; confidential data are excluded

⁹ Eurostat notes the differences in concepts and valuation of the two components of the ratio; the comparison still yields useful findings in terms of countries' diverse approaches with regard to the recording of environmental activities assigned to the NACE construction division.

The task force discussed reporting practices first in November 2018 and proposals towards a harmonised reporting in the 2019 and 2020 MESA WGs. Detailed questions of valuation principles and the delimitation of relevant production activity were discussed in the task force meeting of June 2019.

In preparation of the November 2018 TF, countries sent Eurostat information about the energy-efficiency certification for buildings in their countries. Task force members highlighted difficulties in identifying relevant construction activity and pointed to certificates for already existing and newly constructed buildings as a reference for assessing the energy-efficiency of buildings.

The task force confirmed that the ***energetic refurbishment of existing buildings and the construction of new energy-efficient buildings both constitute resource management activities - they are part of EGSS but fall outside the scope of EPEA as set out under Regulation 691/2011¹⁰***.

A survey launched by the task force to identify the information needs of policy makers suggests: 1) a majority supports reporting energy efficiency-related costs rather than the full value of construction costs related to energy-efficient buildings and 2) there is broad support to continue reporting efficiency-related costs of 'nearly-zero energy' buildings even after these buildings become standard and might no longer classify as environmental products.

4 Recommendations

4.1 Scope of the recommendations

The recommendations in this section should ensure that energetic refurbishment and construction of energy-efficient buildings is recorded according to Regulation (EC) 691/2011 - ***consistently*** across countries, ***accurately*** regarding the technical characteristics and environmental impacts of products, and in a ***practical*** manner, that does not imply excessive burden on data compilers.

The recommendations in this document concern activities of the construction sector under NACE F. The manufacturing of products that contribute to the energy efficiency of buildings, such as condensing gas boilers, heat pumps¹¹, triple-glassed windows, and insulation materials is covered separately in the indicative compendium of Regulation (EC) 2015/2174 and should be recorded under NACE C - CReMA 13B. Engineering and architectural services for energetic refurbishment and the construction of energy-efficient buildings should be recorded under NACE M – CReMA 13B. The

¹⁰ Eurostat notes that starting from the 2020 EPEA data collection, the EPEA questionnaire was extended to give countries a possibility to report (on a voluntary basis) data on key resource management categories, including CReMA 13B (energy saving). Given that the EPEA reporting guidance will need to be further elaborated for this purpose, this guidance note does not provide at this stage recommendations for the reporting of energetic refurbishment or energy efficient buildings in EPEA accounts. Based on the experience gathered in the upcoming EPEA data submissions, the note can be extended and guidance complemented in the course of its future review.

¹¹ The production, installation, and maintenance of heat pumps should be classified, per default, under CReMA 13B. If driven exclusively by renewable energy, the operation and maintenance of heat pumps may be classified under CReMA 13A (see provisions CEPA and CReMA explanatory notes).

same applies to relevant research and consultancy services. This note focuses on the use of these products in the construction sector.

4.2 Defining relevant products and activities

Consistent with Directive 2010/31/EU, this guidance note considers *buildings* as roofed constructions having walls, for which energy is used to condition the indoor climate.

Energetic refurbishment is considered as any refurbishment aimed at changing the building envelope or technical building systems to significantly decrease the amount of energy [kWh/m²] needed to meet the energy demand for one or several building services, including space heating and cooling, water heating, ventilation, lighting, and auxiliaries. In line with Annex I of Directive 2010/31/EU¹², energetic refurbishment addresses one or several of the following building characteristics: (i) thermal capacity, insulation, capacity for passive heating and/or cooling, (ii) installed heating and cooling technologies, (iii) ventilation and built-in lighting, (iv) design, positioning and orientation as far as relevant for energy use.

Energetic refurbishment may include the installation of active solar systems as well as other renewable energy technologies. The installation of such technologies as part of energetic refurbishment or construction activity for new energy-efficient buildings is a resource management activity and should be reported in EGSS. If activities can be separated from other refurbishment and construction activities, they should be reported under CReMA 13A. If these are not individually identifiable, data compilers may include them, per convention, in the reporting under CReMA 13B. Care should be taken to correct potential double-counting of activities arising from the use of heterogeneous data sources for the reporting of CReMA 13A and 13B activities and/or to avoid such a double counting through a proper design of data surveys.

Non-energetic refurbishment includes all refurbishment activities that do not have the potential to significantly decrease the calculated or measured amount of energy consumed by a building.

Construction of *low-energy consumption and passive buildings* is defined as the construction of new buildings that are compliant with the national standard for nearly zero-energy buildings according to Directive 2010/31/EU⁸. This guidance note uses the terms “*low energy consumption and passive buildings*” (Regulation (EC) 2015/2174) and “*nearly zero-energy buildings*” (Directive 2010/31/EU) synonymously to mean energy-efficient buildings.

4.3 Identifying relevant products and activities

Energetic refurbishment of existing buildings

Energetic refurbishment should be identified based on the definition in Section 4.2 and distinguished from other refurbishment activities through its impact on the energy consumption [kWh/m²] of the refurbished building. Information could be obtained through dedicated EGSS surveys, that may need to be adapted or expanded to this end. Where detailed information from the EGSS survey and other business surveys is unavailable, the output of energetic refurbishment activities may be estimated

¹² <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02010L0031-20181224&from=EN>.

based on: (i) information from national subsidy schemes, (ii) data on dedicated expenditures of government, business, and households, or (iii) the domestic consumption of relevant materials and technologies plus a mark-up for transport and installation services of the construction sector (adjusted to ESA2010 valuation rules for output). Administrative data from public entities such as national energy, environmental or housing agencies could be consulted as these often manage or monitor environmental/energy-efficiency programs. Structural business statistics include energetic refurbishment as part of the reporting under NACE 43; potentially relevant NACE and CPA codes are listed in Table 1.

Table 1: Indicative list of NACE and CPA codes that are relevant for the energetic refurbishment of buildings

NACE code	Description	CPA code	Description
16.23	Manufacture of other builders' carpentry and joinery	n/a	n/a
41.20	Construction of residential and non-residential buildings (incl. remodeling or renovating existing residential structures)	41.00.31; 41.00.32; 41.00.32; 41.00.33; 41.00.34	Construction works for residential buildings (incl. renovation works)
		41.00.41; 41.00.42; 41.00.43; 41.00.44; 41.00.47; 41.00.48; 41.00.49	Construction works for non-residential buildings (incl. renovation works)
43.21	Electrical installation	43.21.10	Electrical installation works
43.22	Plumbing, heat and air-conditioning installation	43.22.11; 43.22.12; 43.22.20	Plumbing, heat and air conditioning installation works
43.29	Other construction installation (including building insulation)	43.29.11; 43.29.19	Other construction installation works
43.31; 43.32; 43.33	Building completion and finishing	43.31.10; 43.32.10; 43.33.29	Building completion and finishing works
43.91; 43.99	Other specialized construction activities	43.91.11; 43.91.19; 43.99.10; 43.99.40; 43.99.50; 43.99.60; 43.99.70; 43.99.90	Other specialized construction works

Construction of new energy-efficient buildings

Eurostat recommends identifying energy-efficient buildings – including residential, public, and commercial buildings - based on the national certification schemes according to Directive 2010/31/EU¹³. The directive provides a framework for the energy certification of buildings and the implementation of national plans to increase the number of so-called 'nearly zero-energy buildings'

¹³ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32010L0031&from=EN>.

– defined as buildings that consume nearly zero or a very low amount of energy, which is to be covered to a very significant extent by renewable sources “produced on-site or nearby”. Article 9 of the Directive obliges Member States to ensure that:

- after 31 December 2018, new buildings occupied and owned by public authorities are nearly zero-energy buildings;
- by 31 December 2020, all new buildings are nearly zero-energy buildings.

Even though national certifications schemes provide countries with flexibility to define ‘nearly zero-energy’ buildings, the directive ensures a general comparability of energy-efficient buildings across the EU.

Eurostat recommends including in the EGSS accounts (the construction of) new buildings that are certified as ‘nearly zero-energy’ by the national certification/labelling schemes.

Following this recommendation, most countries would need to modify their data compilation approach and adjust their surveys or engage in additional research to determine relevant activity. In a first instance, EGSS surveys could acquire specific information on the construction of nearly-zero energy buildings. Complementary information could be obtained from national action plans on nearly-zero buildings¹⁴, data bases on energy certificates/labelling schemes, subsidy programmes for the construction of buildings and housing in general, business reports of the construction sector, or programs issuing dedicated loans and financing. As for building refurbishment, administrative data from public entities such as national energy, environmental or housing agencies that manage or monitor environmental programs could be consulted. Where shares of ‘nearly-zero energy’ buildings in the newly constructed buildings are available, these could be combined with information on economy-wide buildings construction. Relevant data sources may be structural business statistics and national accounts, specifically the reporting under NACE 41 (construction of buildings) and data on the gross fixed capital formation in dwellings and other buildings and structures. Table 2 provides an overview of potentially relevant NACE and CPA codes. The manufacturing of prefabricated wooden buildings under NACE C represents a minor, but not negligible activity that should be included in EGSS if buildings are classified as energy-efficient by a national labelling scheme.

Table 2: Indicative list of NACE and CPA codes that are relevant for the construction of energy-efficient buildings

NACE	Description	CPA	Description
16.23	Manufacture of other builders’ carpentry and joinery	16.23.20	Prefabricated wooden buildings
41.20	Construction of residential and non-residential buildings	41.00.11; 41.00.12; 41.00.13; 41.00.14	Residential buildings
		41.00.21; 41.00.22; 41.00.23; 41.00.24; 41.00.27; 41.00.28; 41.00.29	Non-residential buildings
		41.00.31; 41.00.32; 41.00.32;41.00.33;	Construction works for

¹⁴ For a compilation of national plans for nearly zero-energy buildings, see: <https://ec.europa.eu/energy/en/topics/energy-efficiency/energy-performance-of-buildings/nearly-zero-energy-buildings/content/eu-countries-nearly-zero-energy-buildings-national-plans-0>.

NACE	Description	CPA	Description
		41.00.34	residential buildings
		41.00.41; 41.00.42; 41.00.43; 41.00.44; 41.00.47; 41.00.48; 41.00.49	Construction works for non-residential buildings
71.1	Architectural and engineering activities and related technical consultancy	71.11.1; 71.11.2; 71.12.12	Plans and drawings for architectural purposes; architectural services for buildings; engineering services for building projects

Products for energetic refurbishment and the construction of energy-efficient buildings

So far, section 4.3 recommends identifying relevant products based on CPA and NACE codes (Tables 1 and 2). However, these codes also cover non-environmental construction products/activities that should be excluded from EGSS reporting. To assist data compilers in distinguishing between environmental versus non-environmental construction activities, the following items can be considered relevant for both energetic refurbishment and the construction of energy-efficient buildings:

- replacement/installation of triple-glassed windows and state-of-the art outside doors;
- replacement/installation of thermal façade, roof, and floor insulation;
- replacement/installation of thermal insulation inside the buildings, inside and outside basements, and on the attic's floor;
- replacement/installation of heat pumps for heating and cooling purposes, including apparatus, pipes, and wells for heat exchange and distribution;
- replacement/installation of space heat generators and water heater (specifically solar thermal collectors and condensing gas boilers);
- replacement/installation of any other solar systems as well as other heating systems running on energy from renewable sources (see Section 4.2 for the reporting of renewables);
- replacement/installation of radiators, floor heating systems, mechanical ventilation systems, space cooling system (state-of-the-art air-conditioner);
- replacement/installation of (automatic) shading systems for windows to avoid overheating in summer and state-of-the-art lighting systems;
- replacement/installation of auxiliary systems and control electronics for the technologies above
- installation of smart meters, smart micro-grids, and other electronics for an efficient management of energy supply and demand.

In practice, it may be difficult to separate these activities from non-environmental construction activity. Task force members confirmed that data are generally unavailable if not obtained through a dedicated survey – a problem considered in a greater detail in the next section.

The recommendations above also raise the issue of potential double-counting of activities, for example, when insulation panels produced by company A, are purchased and installed by company B in a building constructed by company C. Overall, Eurostat regards it consistent with the EGSS handbook to report domestic production of energy-efficient technologies under NACE C and environmental output related to energetic refurbishment and the construction of new energy-efficient buildings (which uses the products of NACE C as intermediate input) under NACE F. The reported EGSS production output for total NACE may include double counting but gross value added and employment still represent environmental production activity in a consistent manner.

If construction costs related to energy-efficiency (mainly activities assigned to NACE 41.20/43.2 or products under CPA 41.00.3/4) are to be captured separately, two questions arise:

- how the costs differ from the production value of energy-efficiency products reported in EGSS already under NACE C plus the value of installation services and other measures recorded as output under NACE 43.2, and
- whether indeed a separate entry for the construction costs under NACE F offers any additional information for the users.

In Eurostat's understanding, for large countries, domestic production of energy-efficiency technologies under NACE C and NACE 43.2 may be a good proxy of the energy efficiency-related share of new construction recorded under NACE 41; small countries may, however, import a non-negligible part of efficiency technologies used in the construction sector. This part will not be captured in the output of the domestic manufacturing industry.

4.4 Measurement principles

To account for the available guidance and the information needs of data users, the following valuation principles are recommended.

Energetic refurbishment of existing buildings

The full value of production output related to energetic refurbishment should be recorded at basic prices, irrespective of the energy efficiency improvements achieved through the refurbishment.

Construction of new energy-efficient buildings

Energy-efficient buildings are adapted goods. According to the UN System of Environmental-Economic Accounting 2012 – Central Framework (SEEA-CF)¹⁵ and the EGSS handbook¹⁶, their full value should be measured at basic prices. In this context, a few unique features of buildings need to be noted:

¹⁵ https://unstats.un.org/unsd/envaccounting/seeaRev/SEEA_CF_Final_en.pdf.

¹⁶ <https://ec.europa.eu/eurostat/documents/3859598/7700432/KS-GQ-16-008-EN-N.pdf/f4965221-2ef0-4926-b3de-28eb4a5faf47>.

- The cost share related to energy efficiency improvements may be relatively small in buildings¹⁷. For family houses in Germany, efficiency measures could account for up to 40%¹⁸ of the total construction costs but for larger buildings¹⁹ and buildings located in warmer countries like Italy, Croatia, or Portugal, this share is likely lower.
- The costs to achieve the nearly-zero energy standard in Europe may vary across countries, depending on climate and the national implementation of Directive 2010/31/EU.
- Building construction is a large economic activity and the chosen recording approach has a significant impact on the overall magnitude of the environmental goods and services sector.
- According to Directive 2010/31/EU, new public buildings/all new buildings need to comply with the 'nearly zero-energy' standard after 31 December 2018/2020. From these dates, new buildings classified as energy-efficient in EGSS would just satisfy the regulatory standard for all newly constructed buildings. Thus, it is debatable whether to still consider them environmental products even though it is important to stress that the energy efficiency technologies employed in this context might still have a considerable comparative advantage vis-à-vis the energy consumption standards of already existing buildings.

In view of these observations, the task force decided to inquire about information needs of policy makers. The outcome (Table 4) suggests that:

- Six out of nine respondents consider information on *efficiency-related costs* more important than information on total construction costs of energy-efficient buildings. Half of the respondents support reporting *efficiency-related investments* instead of total investments. Two respondents support reporting both efficiency-related and total construction costs. Respondents emphasized that reporting efficiency-related costs rather than total costs would ensure consistency in the reporting of newly constructed buildings and energetic refurbishment activities.
- Three out of eight respondents support considering NZEBs as normal buildings once becoming the regulatory standard; five out of eight respondents prefer to continue considering NZEB as environmental products because: 1) the nearly-zero energy standard is expected to change and become more stringent in the future, implying that buildings qualifying as NZEB to date may not do so in a few years and 2) given the current rates of refurbishment, buildings classified as NZEB to date will remain more energy-efficient than the average building stock in the next decade. There is broad support to continue reporting efficiency-related costs in NZEB in the case these would not classify as environmental products anymore (e.g., response of ES, DE, and FR).
- Six out of eight respondents support reporting only efficiency-related costs rather than total construction costs after NZEB become standard in 2021. One respondent supports reporting both cost shares related to efficiency and total construction costs and one respondent supports reporting total construction costs.

¹⁷For modular products such as buildings, it may be feasible to separate efficiency-related from non-efficiency related costs. But this is more difficult for integrated products such as electric vehicles where electric powertrains affect control electronics, braking system, and the design of chassis components.

¹⁸<https://www.bauratgeber-deutschland.de/hausbau/hausbau-kosten/>.

¹⁹<https://www.engr.psu.edu/ae/thesis/portfolios/2014/bwm5151/Tech%20Reports/Technical%20Report%201%20Revision%202.pdf>.

Table 4: Summary - Preferences policy makers regarding information about the construction of energy-efficient buildings: ■ – preference for total costs, ■ – preference for costs-shares related to energy efficiency, ■ – preference for both; □ – no response

Country or EC-DG	Q1: Preference for reporting full construction costs (red), efficiency-related costs (green), both (yellow).	Q2: Preference for reporting total investments (red), efficiency-related investments (green), both (yellow).	Q3: After 2021, NZEB should be considered environmental products (red), standard products (green).	Q4: After 2021, full construction costs (red), efficiency-related cost (green), both (yellow) should capture environmental activity of construction.
AT	■	■	■	■
DE	■	■	■	■
ES	■	■	■	■
FR	■	■	■	■
IE	■	□	□	□
NL	■	■	■	■
PT	■	■*	■	■
ENER C.4	■	■	■	■
ENV F.1	■	■	■	■

* for a transitional period, only energy-efficiency related investments to be considered

The TF meetings on 17 January and 2 February 2020 confirmed that members regard information on both full construction costs and partial-costs related to energy-efficiency measures important. Given the peculiarities mentioned above, the TF considers reporting only the total value of newly constructed energy-efficient buildings in EGSS accounts may overestimate the environmental activities in the construction sector. On the other hand, in discussions and consultations on this matter, it was also pointed out that estimation of the portion of a newly constructed building's value generated through energy-efficiency measures is not a straightforward task for statisticians and diverse approaches followed across countries might substantially affect the EGSS data comparability.

Consistent with the position of the TF, the information needs of policy makers and in view of the practical considerations, Eurostat recommends reporting both the full value/construction costs of energy-efficient buildings (at basic prices) and the efficiency-related costs of such buildings. Eurostat notes that the recording of data on energy-efficiency related measures undertaken for an energy-efficient building's construction ensures a more stable approach over time, given the existing definition of adapted goods; on the other hand, the data on the full value of the buildings ensure greater cross-country comparability. Parallel data compilation and reporting under the two measurement approaches will permit national compilers and Eurostat to gather the essential experience, being in a position to monitor the EGSS data quality and ensuring transparency for data users in terms of the size of revisions arising from a potentially revised guidance.

The necessary information on energy-efficiency related costs could be obtained, for example, by establishing dedicated surveys, adapting existing surveys, or consulting research and technical reports or administrative sources. If pertinent information remains unavailable, data compilers may apply a default conversion factor of 0.2, i.e., assuming as a first preliminary and generic

estimate that 20%²⁰ of the construction costs in new energy-efficient buildings are related to energy efficiency. Where incomplete questionnaires are transmitted, Eurostat may apply this factor to complete data gaps. If so, any such corrections will be communicated during data validation and items will be flagged as Eurostat estimate with footnote 's'.

Eurostat will adapt the 2021 EGSS data questionnaire to accommodate adequate data reporting.

This approach accounts for cross-country differences in the reporting of relevant activities and ensures users obtain relevant information on energetic refurbishment and the construction of energy-efficient buildings. The approach can also preserve time-series consistency of EGSS reporting after 'nearly zero-energy' buildings become standard in the EU.

4.5 Classification

Consistent with EGSS handbook and operational list, energetic refurbishment and construction of energy-efficient buildings should be reported, per default, as an activity for heat/energy saving and management under CReMA 13B. Installation costs for renewable energy technologies can be reported under CReMA 13A if these are separable from the overall value of energetic refurbishment or construction activities. If done, data compilers should avoid double counting of such installation costs under CReMA 13B and 13A. Considering market activities, energetic refurbishment should be reported as an 'environmental specific service' (recognising that it is not straightforward to classify this process of adapting a fixed asset to be resource efficient in terms of a conventional boundary case between a specific/connected and adapted product²¹), the construction of energy-efficient buildings should be reported as a 'cleaner and more resource efficient product'.

4.6 Implementation and future work

National Statistical Institutes are asked to implement the recommendations of this guidance note without undue delay as part of their regular methodological review procedure. Once implemented, reporting principles should be applied, as far as feasible, to all years covered in the data reporting to Eurostat, most importantly the mandatory reference period from 2014-onwards. Eurostat will assess the implementation of the guidance in the course of the EGSS data validation and inform users about important comparability issues through country caveats in the metadata or specific information in country quality reports (once publishable).

To accommodate technological developments, new priorities of policy makers, and ongoing regulatory developments such as amendments to Regulation 691/2011 and work on a sustainability finance taxonomy²², as well as the data availability for compilers, the guidance note might need to

²⁰ Preliminary generic estimate based on information from Miller (2013) [<https://www.engr.psu.edu/ae/thesis/portfolios/2014/bwm5151/Tech%20Reports/Technical%20Report%201%20Revision%202.pdf>] and Bauratgeber (2019) [<https://www.bauratgeber-deutschland.de/hausbau/hausbau-kosten/>].

²¹ The convention might be modified for the needs of the reporting energy saving activities and measures in EPEA – see also footnote 10.

²² https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/eu-taxonomy-sustainable-activities_en.

be reviewed in the future. Such a review may specifically address the issue of mandatory implementation of the nearly zero-energy standard for all new buildings in the EU and the valuation of such buildings at full versus partial costs in environmental accounts.

Improving the energy-efficiency of buildings is a key element in the European Green Deal²³. Future work should monitor policy developments and the availability of data sources that allow differentiating highly energy efficient and self-sufficient buildings from those complying with the mandatory NZEB standard.

Abbreviations and acronyms

CEPA	-	Classification of Environmental Protection Activity
CN	-	Combined Nomenclature
CPA	-	Statistical classification of Products by Activity
CReMA	-	Classification of Resource Management Activity
EC	-	European Commission
EGSS	-	Environmental Goods and Services Sector
EPEA	-	Environmental Protection Expenditure Accounts
NZEB	-	Nearly-Zero Energy Buildings
MESA WG	-	Monetary Environmental Statistics and Accounts Working Group
NACE	-	Nomenclature statistique des Activités économiques dans la Communauté Européenne

²³ https://ec.europa.eu/commission/presscorner/detail/en/fs_19_6725.