

## Figure 1 SBI Classification and Relation to Energy Sectors

301B Figure 1: Placeholder for Image.

## 497B SQL Queries

In this report, tables are included that display certain intermediate results; for example, the building stock divided into size classes. These tables aim to:

- Quantitatively verify the construction of the Enriched BAG,
- Build knowledge,
- Provide insight into the usability of the delivered files.

To support this final goal, the underlying SQL queries are also mentioned, which helped to produce the results. These provide insight into which attributes have been processed to create the table. Note: The file name within these queries does not match the descriptions mentioned above as it was continuously changed during the process.

## 7B Decimal Separators

In this report, the decimal separator in tables is represented by a period [.]. The thousand separator is a comma [,]. This follows the American style. However, in the text, a comma is regularly used as a decimal separator. We assume the reader will recognize which situation applies.

““

““latex

## 1 Aggregating VBOs to Buildings

We aggregate the VBO information from the previous chapter at the level of the building within which they are located.

The steps to arrive at a dominant building-use function are explained using this fictional building. The first VBO within the building has a usage area of 50 m<sup>2</sup> and is provided with the usage functions office and catering. The second VBO has a usage area of 100 m<sup>2</sup> and is only provided with the usage function office.

- The area of the VBO is assigned to each usage function. The idea behind this is that it is difficult to determine which proportion should be applied for each situation. For other possible strategies, see Recommendation 4.
- At the building level, this is aggregated to usage function.
- This results in the % dominance of a usage function; in this example, the office function has a dominance of 75%. Note: when the area of VBO1 is evenly divided over the two usage functions, the office function has a dominance of  $150/200 = 83\%$ . Using both methodologies, this fictional building ultimately gets 'office' as the dominant usage function.

SBI letter	SBI description	Energy sector for
A	Agriculture, forestry, and fishing	agriculture
B	Mining and quarrying	industry
C	Industry	industry
D	Production and distribution of and trade in electricity, gas, steam, and cooled air	production
E	Water supply; waste and wastewater management and remediation activities	industry
F	Construction	industry
G	Wholesale and retail trade; repair of motor vehicles	services
H	Transportation and storage	services
I	Accommodation and food service activities	services
J	Information and communication	services
K	Financial institutions	services
L	Real estate activities	services
M	Consultancy, research, and other specialized business services	services
N	Rental of movable goods and other business services	services
O	Public administration, government services, and compulsory social security	services
P	Education	services
Q	Healthcare and welfare services	services
R	Culture, sports, and recreation	services
S	Other services	services
T	Households as employers	services
U	Extraterritorial organizations and bodies	services
No economic activity		housing construction

Table 1: SBI Classification and Energy Sector Mapping

## 2 Analysis: Inventory Divided by Usage Objectives and Types of Land Use

As an equivalent of paragraph 3.7, we can now create an overview of the building inventory by usage function and types of land use. The results of this analysis are shown in Table 12 in terms of the number of buildings, and in Table 13 in terms of total building area (expressed in  $m^2 \cdot 1000$ ). The tables have been added to the Excel file available for download, and related SQL queries have been added as Appendix B. Again, including the residential function significantly affects the percentage indicating the relative inventory per usage function.

The columns are slightly arranged differently compared to the tables in paragraph 3.7:

- Columns 1 to 14 show the buildings that have only one usage function. Column 1 the greenhouses, columns 2 to 12 the original BAG usage functions, columns 13 and 14 the two added usage functions.
- Column 15 shows buildings with mixed usage functions, one of which is the residential function.
- Column 16 shows buildings with mixed usage functions, without the residential function.

““

““latex

Building (Pand)	Usage Area (m <sup>2</sup> )	Usage Function
VBO1	50m <sup>2</sup>	Office, 50m <sup>2</sup> Catering, 50m <sup>2</sup>
VBO2	100m <sup>2</sup>	Office, 100m <sup>2</sup>
Usage Function Related Area (m <sup>2</sup> ) Dominance:	Total Area (m <sup>2</sup> )	Dominance (%)
Office	150m <sup>2</sup>	75%
Catering	50m <sup>2</sup>	25%
Total	200m <sup>2</sup>	100%

## TNO PUBLIC TNO -report — TNO 2023 P10648

**Table 19 Label stock by label classes, vbo level**

**The energy index:**

The NEN detailed method energy indices (EI's) differ from the ISSO basis method EI's. Furthermore, the NTA labels do not have an EI in the received file. In order to determine an average label per building later,  $[EI_{i,ss0}]$  has been introduced. It provides an EI value for non-ISSO situations that could have been calculated.  $++++$ ], there is only an average value. This table is used in section 5.2.3 to determine an average label class per building based on

**Table 20 EI Boundaries Between Label Classes for Variable  $[ei_{i,ss0}]$**

**The usage function according to the label system:**

A labeled vbo can also have multiple usage functions according to the label methodology. In the methodology, a building is categorized into so-called 'energy zones'. An energy zone is assigned a usage function. Each

Note: This also applies to  $A_p$  plus labels calculated with the EP and EPA methods. This software was applied before 2015.

Label	EPA original (%)	EPA after promotion (%)	NTA original (%)	Total NTA & EPA after promotion (%)
G	6%	6%	2%	8%
F	2%	2%	1%	3%
E	4%	4%	1%	5%
D	5%	5%	1%	6%
C	10%	10%	3%	13%
B	8%	8%	2%	10%
A	39%	6%	3%	9%
A+	0.2%	9%	5%	14%
A++	0.3%	15%	4%	18%
A+++	0.3%	3%	2%	5%
A++++	0.1%	8%	1%	8%
A+++++	0%	0%	0.2%	0.2%
TOTAL	76%	76%	24%	100%

Table 2: Label distribution by original and promoted classifications

““

Label	ei_isso min	ei_isso average	ei_isso max	ei_isso max - min
G	1.76	2.28	42.05	40.29
F	1.61	1.68	1.75	0.14
E	1.46	1.53	1.60	0.14
D	1.31	1.38	1.45	0.14
C	1.16	1.23	1.30	0.14
B	1.06	1.10	1.15	0.09
A	1.01	1.03	1.05	0.04
A+	0.91	0.96	1.00	0.09
A++	0.69	0.80	0.90	0.21
A+++	0.63	0.66	0.68	0.05
A++++	0.00	0.48	0.62	0.62
A+++++	-0.25	-0.25	-0.25	0

Table 3: EI boundaries for variable ei\_isso

## Appendix F

TNO PUBLIC

TNO Report — TNO 2023 P10648

The facade area is calculated at 278 m<sup>2</sup>. Three neighboring buildings share this facade. It is calculated that 66

The building is not perfectly round [round = 0]; the ground area is also not a perfect rectangle [groundbox\_equal = 0]; which is obviously visually assessable with the figures.

**Left figure:** *Floorperimetersharedwithneighboringbuildings*

**Right figure:** *Facadeareasharedwithneighboringbuildings*

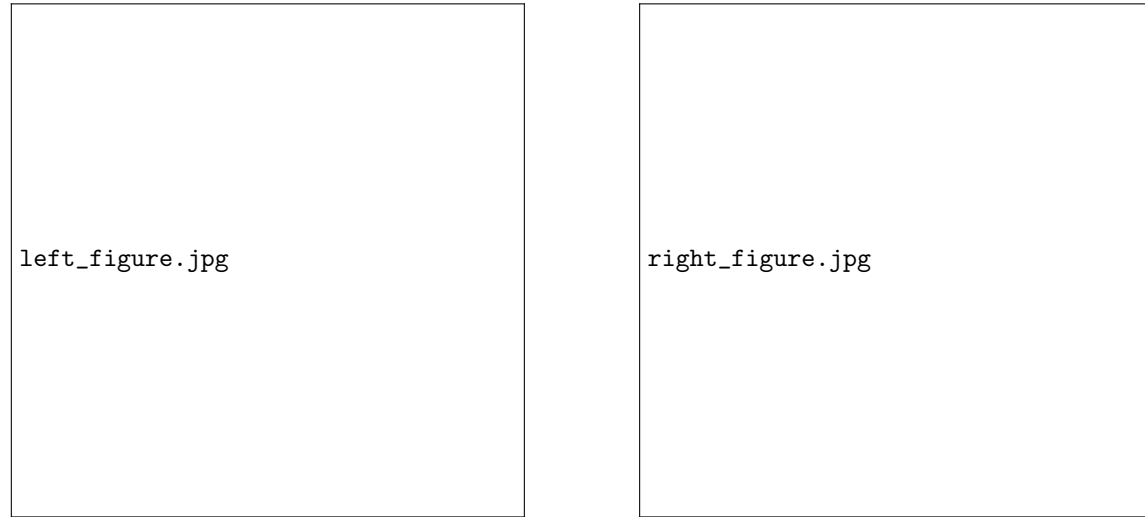


Figure 1: Illustrations showing floor perimeter and facade area shared with neighboring buildings.