

## **MODEL DESCRIPTION**

*E-audyt* is the method developed by NAPE to assess the potential energy and environmental performance of the buildings used for Green City Building project. A feature of *E-audyt* that sets it apart from existing assessment systems is that the method is designed from the outset to allow users to reflect the very different priorities - technologies, energy consumption, in-door and out-door climate, sustainability and environmental impact of the building. Basing on the *GBTool* developed in the Green Building Challenge process *E-audyt* takes into consideration Polish condition, circumstances and categories most interesting for the Polish building market.

### **Categories**

Assessment of building performance is made in seven general CATEGORIES:

- **R** - Resource Consumption
- **L** - Loadings
- **Q** - Indoor Environmental Quality
- **S** - Service Quality
- **E** - Economics
- **M** - Pre-Operations Management
- **T** - Commuting Transportation (not yet operational)

### **Sub-Categories**

Each **Category** comprises of several *Sub- Categories*. *Sub-Categories* are the principal performance characteristics that collectively define the overall performance of a building. It is anticipated that the *Sub-Categories* will remain valid across a broad range of building types, although within the framework of GCB only housing building were assessed. Criteria and sub-criteria in these performance issues are scored using the -2 to +5 assessment scale.

### **Criteria and Sub-Criteria**

The third level of assessment parameters are collectively called *Performance Criteria*. In many cases, these constitute the lowest level of assessment, but in some cases, they are derived through the aggregation of several *Performance Sub-criteria*.

*Performance Sub-criteria* represent the basic building block (e.g., lowest level of description) of the overall assessment framework.

*Performance Criteria and Sub-criteria* represent distinct aspects of building performance and are specific and logical sub-sets of the *Performance Categories*. Unlike the *Performance Categories* which are generic and broadly applicable, *Performance Criteria and sub-criteria* are much more building - and region-specific. Moreover, their inclusion in the assessment framework is affected by a host of practical issues in their assessment.

### **Scoring**

Scoring is made at the *Sub-criterion* and *Criterion* level. All performance criteria and sub-criteria are set within performance scales ranging from -2 to +5. The performance scales are:

- **0**: *Minimum acceptable performance* for the relevant occupancies within the region, as defined by regulations or, where there are no relevant regulations, by industry consensus.
- **5**: *Demanding Performance*: Represents a performance target that is considerably in advance of current practice.

- **-2:** Unsatisfactory Performance
- **1-4: Intermediate Performance Levels:** Represent varying degrees of performance between the primary benchmarks:
  - A score of one (1) represent a *moderate* improvement e.g., “good practice” within the region.
  - A score of three (3) represent a *significant* improvement in performance and is understood to represent “best current practice” within the region.

## Weightings

Some flexibility is permitted in customizing the weighting:

- Weightings at the sub-criteria and criteria level are defined in separate sheet (“wagi”). Criteria or Sub-criteria could not be evenly weighted and may represent preferences of the assessor or of building owner.

The various sections of *E-audyt* data sheets have been colour coded to identify what must be completed by the user and what should be untouched:

- *Light green* - Here users are required to put the (numerical) score for criterion
- *Dark Blue*: The weight for sub-criterion (transferred automatically for sheet “wagi”)
- *Light Blue*: The weight for criterion (transferred automatically for sheet “wagi”)
- *Yellow* - Here users are required to put the (numerical) score for sub-criterion
- *Dark green* – The score is calculated automatically
- *Red* – Total score for category

*Note that colours appear different on various monitors, and you may therefore want to adjust the colours to suit (on Windows machines, go to Tools>Options>Colors in Excel and, after selecting the colour being used, modify it to suit.*

## APPLICATION in the FRAME OF GCB PROJECT

Developed model was used for assessment of the GCB project pilot investment at Jerozolimska 17a. At the first stage the existing building (which will be matter of the renovation) was assessed. The preliminary results are as follow:

TOTAL SCORE	1.7	4.1
RESOURCE CONSUMPTION	1,23	4,20
Net life-cycle use of primary energy	1,00	4,00
Use of land and change in quality of land	1,50	5,00
Net consumption of potable water	3,00	4,00
Re-use of existing structure or on-site materials	0,00	3,00
Amount and quality of off-site materials used	-1,00	4,33
LOADINGS	0,49	4,36
Emission of GHG's from building production and operations	-1,00	4,50
Emission of ozone-depleting substances	5,00	5,00
Emission leading to acidification from building operations	0,00	4,00
Solid wastes	-1,10	3,80
Liquid effluents	-0,50	4,00
Hazardous wastes	0,00	5,00
Environmental impacts on site and adjacent properties	1,00	4,00

<b>INDOOR ENVIRONMENTAL QUALITY</b>	<b>2,45</b>	<b>4,42</b>
Air Quality and Ventilation	0,81	4,58
Thermal Comfort	0,00	3,50
Daylighting and Illumination	5,00	5,00
Noise and Acoustics	5,00	5,00
Electro-Magnetic Pollution	0,00	3,00
<b>SERVICE QUALITY</b>	<b>2,73</b>	<b>4,10</b>
Flexibility and Adaptability	1,80	4,00
Controllability of Systems	3,00	3,33
Maintenance of Performance	3,13	4,50
Privacy and access to sunlight and views	4,00	4,50
Quality of Amenities and Site Development	1,00	5,00
Impact on quality of service of site and adjacent properties	4,25	4,75
<b>ECONOMICS</b>	<b>2,50</b>	<b>3,50</b>
Economic Performance	2,50	3,50
<b>MANAGEMENT</b>	<b>1,70</b>	<b>4,65</b>
Construction Process Planning	1,00	4,00
Performance Tuning	0,00	5,00
Building Operations Planning	0,50	5,00
<b>COMMUTING TRANSPORT</b>	<b>1,00</b>	<b>1,00</b>
Gas emission	1,00	1,00

As it was presented in the table above the total score for the old building is relatively poor – only 1,7. The assessment of the project of the new building shows the significant improvement in each category – the final score gained by the new building is 4,1 what is a very good value.

The information about building performance done at the design phase is of great importance for the building developer or future building owner (At the case – Technical and Architecture department of the Piaseczno Municipality) since it provides the information about future building class, energy costs, and environment impact. The investor has still time to make additional improvement and necessary changes, according to his needs and expectations.

Third assessment will be done when building will be erected – what allows to compare the final score for the project and real building.

More information:

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