

Guidelines for using Green Build Monitoring Tool questionnaire for urban areas

The main purpose for this tool is to “monitor” city ability in relation to more sustainable housing and energy supply systems. And for possible developing procedure of giving a “European Green Cities Certificate” to cities that has reached a certain good level that can inspire other European cities.

Monitoring / evaluation tools for individual buildings have been developed in several other projects e.g. in the Green Catalogue project. Therefore focus is here primarily on an urban area and secondly on the building level.

The monitoring tool comprises 7 criteria for monitoring/evaluating the urban area.

For criteria 1, 2 and 3 it is possible to get figures and compare them to own regional or national standards/levels.

1. Energy consumption for the district
Yearly average energy consumption per m² dwelling for heating, domestic hot water and electricity compared to own national standard / national average.
2. Energy supply for the district
Based on biomass/solar/waste heat or merely use of fossil fuels. Percentage contribution of total heating/cooling consumption for each fuel type - and calculation of emissions of CO₂ and SO₂. Compared to own average national levels.
3. Energy distribution within the district
Based on e.g. one low-temperature collective system or smaller local networks or merely individual building solutions. Monitoring energy loss percentage of total consumption compared to average own national levels.
General evaluation of activities to reduce energy losses and possible integrated solutions to meet the risks for big energy losses due to a growing number of low-energy buildings in the district.

For the criteria below (4), 5, 6 and 7 it is not considered possible to get figures. In Austria it may be possible for part of criterion 4, but most likely a qualitative evaluation has to be made.

It will instead be a matter of registration of city policies / instruments / subsidies / building regulation to support such improvements in sustainable direction and registration of identified already built good examples in the urban area or the city.

4. Building integrated use of solar
Percentage individual building solar use in the district, evaluation of solar installation efficiency, and a general evaluation regarding high/medium/low degree of architectural well-integrated solar installations.

5. Efficient building ventilation systems with heat recovery
Percentage buildings in the district fulfilling conditions of ventilation with heat recovery at least 80% efficiency, air ventilation rate minimum 0,4 per hour, air tightness of building max 1,0 per hour and energy consumption max 0,4 W/m³ for ventilator.
6. Natural/emission free building materials – to reduce ventilation needs and to avoid/reduce environmental harmful substances e.g. PVC surface materials or freon in insulation.
General evaluation of materials used for outer walls, roofs, inner walls, floors, ceilings, windows, insulation etc. throughout the district.
7. Efficient use of glazing – daylight use optimization and considerations regarding passive solar contribution in winter periods and shading contribution in summer periods.
General evaluation regarding degree of proper architectural considerations to both passive solar use and shading – especially to identify combined solutions to meet both requirements.

Regarding criterion 2 there could also be carried out some energy balance calculations to evaluate consequences of possible e.g. changing from oil to biomass fuels in specific energy supply plants. Calculation has been done for the urban area Piaseczno (Poland) and could possible also be carried out for other partner cities.

Background information for developing EGCN Green Build Monitoring Tool

EGCN partners from Austria, Belgium, Czech Republic, Denmark, Greece, Hungary, Italy, Lithuania and Poland have been developing Green Build Tools aiming at monitoring on urban districts regarding proper low-energy building demand/supply conditions.

Why focus on urban districts?

We can give at least 3 reasons:

1. Previous work on Green Build Tools and similar monitoring tools has been focused on individual building level / building energy demand.
2. European Cities are counting for more than 80% population in Northern, Western and Southern Europe – and in Eastern Europe cities are fast expanding attracting more citizens due to higher living standard etc.
3. Rational use of energy in especially some of the Western and Northern European cities has met a growing new challenge from low-energy housing causing periodical problems with high energy losses in the distribution networks due to low consumption housing concepts.

Part of EGCN project aim was to prepare possible “European Green Cities Certificate” awarding cities with a certain high degree of fulfilling proper low-energy building demand/supply conditions.

Specification of technology conditions

EGCN has been developing preliminary selected criteria for monitoring on urban districts – based on following main important technology areas:

- Building integrated solar and optimized use of glazing
- Energy efficient ventilation and natural/emission free building materials
- Renewable energy integrated in supply for heating/cooling at building/district level

Same technology areas that are highlighted throughout EGCN dissemination activities, conferences and training etc. as well as on www.europeangreencities.com

The reason for this choice is that promoting these technology areas all of them will contribute to reach European energy policy objectives and therefore useful in the sense of supporting market development and supporting innovation initiatives.

Screening audit for urban area

For each urban district being screened with above defined EGCN Green Build monitoring tool a report should be worked out to characterize this urban area according to considered proper urban sustainable building and building energy supply systems.

Basic information from the screening audit should firstly be filled into the questionnaire – and then evaluation and additional review of planning documents regulating the area and approved development plans etc. can be used to work out the screening report with highlighted main observations.

During site visits should be taken representative photos of buildings and areas etc. to be illustrating in the report and for presentation in common partner meetings etc.

For some urban areas it may be difficult to fill in all the specified required information for the questionnaire. Then it is important to give other information that can indicate an estimate and be used for evaluation.

Screening report with filled in questionnaire as annex should give an actual presentation of the selected urban area before project start.