

A methodological approach to identify worst-performing buildings and vulnerable households

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Introduction and purpose

This template supports municipalities in developing a structured, transparent approach to identify worst-performing buildings (WPB) and vulnerable households (VHH) in order to prioritise renovation efforts. It guides local authorities through the key analytical steps needed to locate, quantify and characterise WPB, define and map VHH, and identify their overlap. It supports the indicator selection and data collection processes, which includes data to estimate the scale of renovation required, the number of households affected, and the potential emissions savings associated with targeted interventions. Beyond technical identification, this approach is designed to inform better policy design, funding schemes and incentive structures. It is adaptable to local contexts and allows municipalities to select indicators and data sources that match their institutional capacity and data landscape.

Policy background

This template supports the implementation of two of EPBD's priorities: identifying the worst-performing residential buildings that need to be addressed through national trajectories for the progressive renovation of the residential building stock under Article 9(2), and the vulnerable households and people affected by energy poverty who should be prioritised through financial and support measures under Article 17. By combining local-level information on building performance with data on household vulnerability, the template can help municipalities identify priority areas for renovation and better target financial, technical and advisory support.

Governance

Clear mandates, responsibilities and adequate data access across national and local levels are necessary.

Data collection process

To support the municipality's own data collection process, for each indicator, the template helps assess the current status of data collection, identify who provides the data, and where access or data are incomplete.

The framework



Define worst-performing buildings (WPB)

- 1 Identify and locate WPB
- 2 Quantify WPB
- 3 Characterize WPB



Define vulnerable households (VHH)

- 4 Identify VHH by characterization



Overlap and report

- 5 Map VHH in WPB / WPB with VHH
- 6 Quantify VHH in WPB

Mapping WPB and VHH

Through three different approaches:

- 1 **Method 1** overlays a likelihood heatmaps for WPB and VHH
- 2 **Method 2** starts from already identified WPB and reaches their occupant
- 3 **Method 3** starts from VHH already identified and surveys which of them live in WPB

Definitions

Two working definitions anchor the template, but both need to be made explicit and locally meaningful while being based on the EU frameworks within EPBD and EED.



A worst-performing building (WPB)

is a building that sits at the poorest-performing end of the relevant building stock, typically identified through the national EPC scale or a nationally defined energy-performance threshold. This is consistent with EPBD Article 9(2) and Annex I, but the practical threshold should reflect the municipality's own stock profile. EPBD specifies EPC class G as corresponding to "very worst performing", however, where useful, municipalities may also define a stricter tier to sequence action and identify the buildings requiring the earliest intervention.



A vulnerable household (VHH)

is a household in energy poverty or a household that is particularly exposed to high energy costs and that lack the means to renovate the building that they occupy, according to the EPBD.

In practice, vulnerability is often a combination of factors rather than a single aspect. It often reflects the interaction between low income, poor housing conditions, high or unaffordable energy needs, poor health, age, disability, or other personal circumstances.

Municipalities should adapt the national WPB definition to their local context when the data needed to apply the national threshold is incomplete, for example due to low EPC coverage. In such cases, they may need locally valid proxies that reflect local climate and building-stock conditions.

Indicators to choose from

Municipalities select the indicators that match their data landscape

Component	Worst-performing buildings (WPB) 	Vulnerable households (VHH) 
 Identify	EPC class; measured or calculated energy demand (Annex I); energy audit; energy-demand threshold (kWh/m ²); building age with "no-regret" checks; damp/mould & heating-failure reports	Share of energy cost in income; income threshold; minimum-income/benefit receipt or near-eligibility; energy expenditure & utility arrears; demographic flags (elderly alone, single parents, low pensions, chronic illness, low digital literacy)
 Locate	Address; urban/rural; neighbourhood or district (state the granularity)	Address; vulnerability heatmap; income/benefit statistics by neighbourhood or statistical grid
 Quantify	Floor area; number of dwellings; number of buildings	Number of households & people per vulnerability category

Data collection process

The tool does not gather data itself; it helps a municipality document, per indicator, how each piece of data is (or is not) obtained, to provide a transparent, repeatable process. Four controlled vocabularies keep this comparable across indicators and municipalities:

- 1 **Process status** – working successfully · working with challenges · just introduced · not yet existing, needs implementation.
- 2 **Data availability** – publicly available · shared / not shared by a public authority · shared / not shared by a private business · likely held but content unconfirmed · source does not exist.
- 3 **Reason unavailable** – provider unknown · decision-maker unknown · provider does not recognise the decision-maker's mandate · no decision-maker mandated by government · data not recorded · available only on paper.

Indicator records shall specify:

- data source
- the collection process
- process status
- data provider
- data available
- why, where it is not available
- data content
- granularity
- format
- update frequency

Two features: First, the process-status rating turns data readiness into an explicit maturity signal, showing which needs building up. Second, the “reason unavailable” list makes the governance gap visible: when the blocker is “no mandate” or “provider does not recognise the mandate,” the solution is a national decision, not more local effort. Municipalities are encouraged to document one indicator at a time, start with what is already available, and expand coverage as man-dates and data-sharing arrangements mature.

Methods to map VHH and WPB

Once WPB and VHH are identified, the tool offers three routes to map their overlap, chosen by which data a municipality holds.

Method 1 derives a WPB likelihood heatmap and a VHH likelihood heatmap, intersects them to find priority zones where poor performance and high vulnerability coincide, then uses targeted, consent-based outreach within those zones to reach individual buildings, a scalable route that avoids privacy issues because it starts from aggregated areas. **Method 2** starts from buildings already identified as worst-performing and reaches their occupants directly, by survey or consent-based contact, to establish which are vulnerable. The barrier that vulnerable households may be harder to reach and more difficult to engage with, should be considered.

Method 3 starts from households already identified as vulnerable — through municipal networks and statistics — and analyses which of them live in worst-performing buildings.

1 **Mapping Method 1** WPB likelihood heatmap; VHH likelihood heatmap; intersecting priority zones (poor performance + high vulnerability)

2 **Mapping Method 2** Overlay of WPB × VHH locations → priority zones; on-site verification checklist; consent-based outreach to pinpoint buildings

3 **Mapping Method 3** VHH/people in WPB by vulnerability × WPB category; resulting renovation volume & emissions savings

Governance

National authorities need reliable local-level evidence to monitor policy and assess impact, including progress on EPBD implementation. At the same time, local authorities need access the data required for planning, targeting and monitoring, including data held by other public bodies and private actors such as utilities. National frameworks should therefore clearly define who can access which data, for what purpose and at what level of detail, while establishing appropriate obligations for data holders to provide access, in line with data protection and privacy requirements.