



Sustainable Energy Community Tools

Project EIE/05/155/SI2.419594

Standard Terms of Reference for Development of Municipal Heat Plans

These Terms of Reference (ToR) outlines the minimum scope of work and tasks involved when preparing a municipal heat plan. The ToR are intended as a guide to the municipalities in defining a quality heat supply plan and contracting the proper heat supply planner.

1. Background

Economic background for heat planning is a municipality's need to have a well-founded long-term strategic plan for development of the municipal heat sector (hereafter Heat Plan) that best suits the need of the local community for space heating and hot tap water.

Legal background for heat planning is set by the Law on Heat, which puts mandatory requirements on municipalities to elaborate Heat Plans.

The Law on Heat defines a Heat Plan as a special planning document of a municipality that sets possible and alternative heating modes within delimited consumer territories (zones) and of which purpose is to satisfy heat demand of consumers at least cost and not exceeding permitted negative impact on environment.

The Heat Plan shall lay down the overall framework for the future development of the municipal heat sector within a 15 years period.

Heat Plans must be in compliance with the legal documents as follows:

- National Energy Strategy;
- Principal Directions of Heat Sector Development;
- Law on Heat;
- Law on Planning Territories;
- Law on Environment Protection;

- Law on Evaluation of Impact on Environment by Planned Economic Activities;
- National Energy Efficiency Programme.

The procedures and stages of heat planning must comply with the Rules of Preparation of Special Municipal Plans of the Heat Economy.

2. Objective

The objective of the assignment is to assist the Municipality of (hereafter Municipality) in developing a Heat Plan meeting the requirements of the Law on Heat and other abovementioned laws and documents.

3. Scope of Work

The Consultant shall assist the Municipality to carry out the following tasks:

- 1) Managing and coordinating the overall heat planning process, involving all relevant stakeholders
- 2) Mapping and Surveying the existing heat supply situation.
- 3) Determining municipal priorities and preferences for future development of the municipal heat sector.
- 4) Identifying and analysing various options meeting the municipal priorities.
- 5) Setting up and analysis of a number of scenarios for the heat plan combing the various options of heat production and grouping heat consumers into delimited territories - zones. Evaluation of the scenarios to determine the most feasible heat plan.
- 6) Developing an action plan for the 15 years planning period (prioritisation of investments and projects).

4. Working Programme

4.1. Managing and coordinating the general heat planning process

Most of planning work will be carried out within a municipal planning group (hereafter Planning Group) including the stakeholders as follows:

- Municipal authorities;
- Consultant (assisting the municipality);
- District Heating Company;
- Owners of power plants and CHP plants;

- Owners of industrial/commercial heat sources;
- Gas Distribution Company;
- Representatives of the heat consumers.

At Municipality's request the Consultant must take organisational leadership within Planning Group.

4.2. Mapping and surveying the existing heat supply situation

This should comprise a proper resource, capacity and demand mapping of the existing situation, or verification of already performed mapping.

The mapping should beyond a proper registration of various subjects clearly identify current technical, economic, environmental and organisational problems.

Consumers' ability to pay for the existing heating costs will be investigated as a priority problem.

An energy balance should be elaborated showing the current consumption, transmission, distribution, production and import of heat energy in the municipality as well as current supply and availability of fuel resources.

Market Analysis

Includes the following issues:

- Classification and grouping of the various types of consumers. Large-scale consumers should be registered separately and be subject for interviews as found appropriate and relevant by the Consultant.
- Current demand for heat energy.
- Characteristics of the existing building stock relevant to heat planning.
- Heating forms.
- Consumer comfort level.

The Consultant shall evaluate potential for saving heat energy at end-users' level.

On the market analysis basis the Consultant shall make a 15 year forecast of the heat demand taking into account inter alia the following factors:

- New building construction.
- Developments in reconstruction of existing buildings.
- Government and municipal policy and support measures towards reconstruction of existing building stock.
- The impact from energy-saving measures planned to implement in buildings.

Mapping of the Heating Supply System

This should include a registration of all existing district heating systems.

Measures and data to register for each system shall include:

- Production figures.
- Type of fuels. Main and reserve fuel. Fuel consumption.

- Sizes and utilisation of installed capacities.
- Atmosphere pollution from heat production. Flue gas cleaning technologies (if any).
- Length and capacities of transmissions and distribution networks. Heat losses.
- Technical devices installed at end-users (substations).
- Current costs. Production and distribution costs. Fixed and variable costs.

Where centralised hot tap water supply systems is the case, measures and data for each system shall include:

- Production figures.
- Sizes and utilisation of installed capacities.
- Length and capacities of distribution networks. Hot tap water losses.
- Technical devices installed at end-users.
- Current costs. Production and distribution costs. Fixed and variable costs.

The registration should also include a mapping of the potential utilisation of industrial surplus heat.

Mapping of local biomass and other indigenous sources

This should include a mapping of the availability and the prices of local biomass and other indigenous sources. with regard to possibly establishing future biomass supply to local heating plants.

Identification of problems

The Consultant will give an overall characteristic of the current heat economy and identify the main technical and economical problems with relation to the current status of the existing heat supply system.

4.3. Determining municipal priorities

The Consultant shall assist the Municipality in formulating municipal priorities. These should inter alia include heating cost affordable to pay by the local community and some overall development objectives related to the existing technical, economic and environmental problems and obstacles defined in the mapping of the existing situation. The objectives should be in accordance with the National Energy Strategy and government Directions of Heat Sector Development.

In relation to these development objectives some qualitative as well as quantitative targets for the development of the local heating sector in general and for specific elements in particular should be set up.

4.4. Identifying and analysing various options and scenarios meeting the municipal priorities

This should include identification and analysis of various options and scenarios meeting the municipal priorities and objectives. Here the options are understood as basic technical or economic elements, which can be combined into concerted aggregates – scenarios. Various scenarios should be assessed, indicating the costs, investments, time schedule, technical and economic feasibility, barriers and obstacles associated with each scenario.

The measures associated with various scenarios should be divided into urgent (to be implemented in 1 year), short term (from 1 to 5 years) and long term (more than 5 years).

The scenarios should be reviewed in relation to their relevance for:

- State policies;
- Municipal priorities and preferences;
- Legislative and fiscal framework;
- Local conditions, i.e. market conditions, fuel availability etc.

4.5. Scenario analysis

The scenarios should be analysed in terms of technical, economic, financial, environmental and social consequences. Each scenario should be compared against the reference scenario, in which the existing situation is maintained for unlimited perspective.

Technically the scenarios should be evaluated through technical efficiency and compliance of applied technical solutions to modern technologies.

Economically each scenario will be evaluated using economic analysis. The outcome of economic analysis will be characterised by Net Present Value and Economic Rate of Return.

Financially each scenario will be evaluated from the point of view of 1) district heating company and 2) heat consumers. Financial (cash flow) analysis will be used. The outcome of financial analysis will be characterised by Net Present Value and Financial Rate of Return. This will determine the financial viability of the analysed scenario.

In the financial analysis, the level of affordable tariffs for heat consumers cannot be exceeded. An affordability threshold determined in previous planning stages should be used for this purpose. It may set a limit to the scope of the investment programme.

The environmental assessment should include calculation of emissions and overall impact on local environment by implementing a scenario in question. The Consultant will prove that overall level of emissions in this case will not exceed permitted limits of pollutants in atmosphere.

Social evaluation of each scenario will be carried out by analysing consequences of implementation of the scenario on the poorest consumer groups and, if necessary, proposing special measures to mitigate financial burden on these consumers.

The sensitivity of the scenarios will be investigated with respect to possible changes in fuel prices, tariffs for consumers and investment costs. Other risks and barriers associated with each scenario should be carefully described and assessed too.

All assumptions used in scenario analysis should be listed beforehand, so that it would be possible to judge on what grounds the evaluation result was based.

The Consultant shall use economic parameters and data annexed to this Terms of Reference in the form of Heat Planning Catalogue, except cases when more precise data can be obtained from the actual situation.

Each scenario should describe inter alia delimitation of the overall consumer area into zones with uniform or preferred heating modes (zones).

Based on the comparison with the reference scenario the most feasible scenario should be recommended for implementation.

4.6 Developing an action plan for 15 years

The Consultant will together with the Planning Group develop a 15-year action plan as a constituent part of the Heat Plan to implement the best scenario. This plan should include a staged schedule for implementation of recommended technical, economic and organisational options.

The action plan should describe:

- Specific actions and measures to undertake in various stages of implementation of the Heat Plan.
- Timing.
- Investments needed and anticipated sources of financing.
- Necessary preconditions to implement specific actions or measures.
- Role of various stakeholders and the division of responsibilities between them in relation to implementation of these actions or measures.

Institutional/organisational means foreseen to implement in the municipal heat economy management structures with regard to these actions or measures.