

Energy Town Planning Scheme (ETPS), Faenza, Italy

1. Key issue / sub issue addressed

Key issue 3 “Strategies, tools and instruments”
Sub issue 3.1: “Integrated strategies, tools and instruments”
Good Practice Example n.

2. Name and location for good practice example and responsible institution(s)

Faenza’ Energy Town Planning Scheme (ETPS), Italy

The Municipality of Faenza (located in northern Italy with a population of 58,020 inhabitants), as part of its new land use plan, has decided to introduce in 2011 as a project requirement, the drafting of a strategic plan for the development of energy efficiency in constructions, referred to as Energy Town Planning Scheme (ETPS).

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3. List of relevant key words

Energy efficiency, energy enhancement project, town planning, CO₂ emissions reduction

4. Description of good practice example:

Background

Sustainable urban development was chosen by the Municipality of Faenza as the founding strategy for its town planning since 1998, when regulatory actions aimed at the mitigation/prevention of impacts caused by local anthropization were introduced, which became part of overarching legislation only several years later.

In line with the 2020 European strategy on energy and climate and with the commitments undertaken by Italy in this respect, the Municipal Structural Plan (local land use plan) defines as priorities energy saving and the reduction of climate-altering emissions.

In order to turn these issues into action, the Municipality of Faenza decided to introduce the Energy Town Planning Scheme (ETPS) as an element between the strategies of town planning itself and the sustainable development actions which turn local government guidelines on energy saving into operations.

Objectives

The goal of the ETPS is to measure and monitor the development of sustainability of energy performances of the building stock in Faenza, defining suitable measures for structural planning purposes. The ETPS, as in-depth topic associated with energy saving in buildings, will also be the basis for the drafting of the Sustainable Energy Action Plan (SEAP) required by the Covenant of Mayors which Faenza has recently decided to join.

Implementation

The first step by the ETPS was a survey of the necessary data to implement the 'General Energy Balance and the CO₂eq emission Inventory' defining the typical energy profile of the municipal area and its buildings and to reconstruct an energy appraisal framework for the municipal area, using a scale-based system (city, urban sector, building). For this purpose the energy consumption and production data associated with the various activities linked to the Municipality of Faenza were reconstructed, then deducing the CO₂ emission values. In order to understand the energy behaviour of urban buildings and to allow for dynamic planning of energy suitability, the choice was made to use the BEMS methodology for the energy census and mapping of buildings and zoning of urban energy consumptions (*Progetto BEMS – Building Energy Mapping System - Milan Politecnico, 2006*). This working method has allowed for a definition of the most energy intensive urban areas, where priority is to establish intervention strategies aimed at curtailing energy requirements in building or planning concrete mitigation actions.

The second step was the implementation of a energy enhancement project based on known and foreseeable elements associated with the theoretical increase in population, buildings and production activities. Three energy enhancement scenarios were assessed: a 'Business As Usual scenario' (BAUs), without adding any measures to those already envisaged by the national legislation and the urban plans currently in use; a 'With Measure scenario' (WMs), assessing the effects of definitive measures in terms of municipal town planning standards to verify whether these were plausibly sufficient to achieve the set goals. A third 'With Measure scenario Plus' (WM-Plus) was taken into account, consisting in a broadened series of actions to make sure that the set goals could be achieved by 2020.

5. Description of good practice example:

b) Cost benefit, effects and results achieved

The 'General Energy Balance and the CO₂eq emission Inventory' represents the appraisal framework for the 'Energy Town Planning Scheme' (ETPS) because it outlines the current energy requirement and the emissions from the building on which the aforesaid Plan is expected to act.

- The outcome of this work has underscored how the building sector in the Municipality of Faenza accounts for 32% of the city's energy consumptions and is responsible for 50% of greenhouse gas emissions;
- Within this work the urban area of Faenza Municipality was divided into 40 'Urban Energy Districts (BEU)' then grouped together resulting in 8 'Macro Urban Energy Districts (MBEU)' which basically coincides with the traditional division of the Faenza city centre into neighbourhoods. The choice was made to define Urban Energy Districts with homogeneous energy features.

The Energy Enhancement Project provided three energy enhancement scenarios:

- With the 'Business As Usual scenario' (BAUs) the -20% CO₂ emissions target by 2020, as compared with the levels of 2005 (national target value) will not be achieved;
- The 'With Measure scenario' (WMs) makes it possible to cut consumptions by 11.5% compared with 2005 levels. In order to meet the target value of -20% a further reduction in emissions of 34,773 ton CO₂eq is necessary;
- In order to achieved the -20% CO₂ emissions target by 2020, further measures have been considered within WMs-Plus scenario in order to encourage energy efficiency improvement intervention of existing buildings, mainly in the historic centre. Such targets can be achieved with measures on local taxes (i.e. the local council property tax, waste management tax) to promote general energy saving interventions and direct measures of the municipal administration on citizenship, in order to make public the economic benefits of interventions.

6. Description of good practice example:

c) Planning procedures, involvement of stakeholders and possible participation structures

'With Measure scenario' (WMs) represents the most relevant planning procedure within the ETSP. This scenario, which could be identified as the urban plan scenario, consists of the modification of the BAU trend scenario subsequent to the adoption of measures or projects aimed at the promotion of energy saving and energy efficiency. The measures interest two macro areas of intervention:

M1) Measures on town planning and buildings legislation, complementary to the town planning tools aimed at encourage:

- energy efficiency in the residential, tertiary and industrial sector;
- local production of energy from renewable energy sources;

M2) Measures targeting the municipal administration aimed at encourage:

- energy efficiency and fostering renewable energy sources in local governmental measures;
- knowing in detail the dynamics of local energy consumption and production;
- public initiatives to reduce energy consumption of municipal facilities;
- intensive awareness campaigns targeting direct stakeholders and citizens.

The most interesting measures among M1 are:

- major urban implementation plans shall make provision for District Heating with 'two and three source' Combined Heat Power plant;
- smaller unitary projects and urban implementation plans, involving new buildings or renovations, shall make provision for central heating systems for all the buildings (small district heating networks);
- in case it is not possible to meet the minimum performance target in the area of the intervention, it will be possible, by compensating CO₂ emissions, in a greater quantity

than what required by law, with an equivalent handover of standard trees or interventions on other buildings;

- in historic centre, in order to increase energy efficiency by favouring specific interventions of renovation an equivalence is established between the non-emitted CO₂ subsequent to the intervention, and a certain quantity of Gross Usable Surface (GUS) to be transferred outside the historic centre. Developers that operate outside the historic centre, in purposely designated areas, will buy the GUS from the owners of buildings that will be retrofitted in the historic centre. This measure will allow an improvement in areas where current energy efficiency is low.

The most interesting measures among M2 are:

- Introduction of a district heating development strategic plan and promotion of efficient heating islands to centralize consumption of different dwellings in central heating plants with a major component of renewable energy sources.

7. Photos, maps, graphics, etc.

Fig.1 Faenza's historic centre – overview

Fig. 2 Mapping of the energy consumption in each Urban Energy Districts (BEU) expressed in toe (tonnes of oil equivalent), with the relevant energy consumption and production centres

Fig. 3 Energy enhancement scenarios (1. Business As Usual scenario (BAUs); 2. With Measure scenario (WMs); 3. With Measure Plus scenario (WMs-Plus).

8. Innovation fostered - local / regional developments triggered

Faenza's Energy Town Planning Scheme fostered some important innovations related to the integration of energy issues to spatial planning:

- The ETPS has been devised as an element between the strategies of town planning itself and the sustainable development actions which turn local government guidelines on energy saving into operations;
- The energy enhancement project was drafted simultaneously with the new urban plan;
- ETPS is a flexible instrument, which means that it needs to be possible to adjust its implementation tools to the varying goals and to reprocess them in order to define on each occasion the current situation;
- ETPS proposed a 'burden sharing' approach for the Faenza territory to distribute the percentage objectives to be achieved fairly among all industries (buildings, manufacturing, trade,...). In this perspective, the ETPS was developed presuming that the

building industry will have to achieve such goals without having recourse to the compensation of other sectors of the energy industry in Faenza.

Faenza's Energy Town Planning Scheme stimulated six other municipalities in the Romagna Faentina area to pursue the same ETPS strategies and objectives when designing and drafting their own Municipal Structural Plan (PSC) in associated form which was then approved on 2010.

9. Lessons learnt – practical recommendations

Faenza's ETPS experience provided some important key-lessons:

- Sustainable urban development was chosen by the Municipality of Faenza as the founding strategy for its town planning since 1998;
- Integration of energy-related issues and planning policy;
- Intensive municipal measures for the reduction of CO₂ emissions;
- Shifting approach from building-scale to urban planning;
- Growing awareness of energy-related issues.

10. Related Links

<http://www.comune.faenza.ra.it/>

<http://www.comune.faenza.ra.it/Guida-ai-servizi/Settore-Territorio/I-Libri-del-Settore-Territorio>

(Biourbanistica Energia e Pianificazione – IT/EN - file pdf e Il Piano Regolatore dell'Energia – IT – file pdf)

11. Contact possibilities

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