

## **Urban Strategies and Energy Technologies: managing bottom-up change**

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### **1. Introduction**

The decisional strategies and the urban policies can be summarised into four fundamental approaches:

- *Top-down approach* - Related mainly to the activity of governments and/or institutions when introducing new regulations, as well as when reducing regulatory and procedural impediments
- *Bottom-up approach* - Organising the needs of a community and preparing the policies which comply with these needs
- *Demand-side approach* - Concerning the end-uses of citizens and their needs: mobility, housing, quality of life, economic opportunities, healthy environment, etc.
- *Supply-side approach* - Refers to the capability of the market to organise the production of goods and technologies which respond to consumers' needs.

These four approaches have different urban policy consequences.

These approaches are neither better nor worse, according to choosing either one approach or another, but they can all be equally significant and effective when pursuing the objectives for a better urban quality.

An example of actions which can be classified in different approaches (in short, one action for each sector is indicated: housing, transport, economic development).

#### **Top-down approach**

- promote regulation and building codes, which give emphasis to bioclimatic architecture or costless options to reduce the energy and environmental impact of the urban settlement
- Promote energy-efficient transportation
- Consider short-term and long term external environmental impacts and costs of the acquisition of new resources

#### **Bottom-up approach**

- Establish a neighbourhood participatory planning process that involves simultaneous consideration of City and neighbourhoods goals and strategies and includes representatives of both the City and neighbourhoods working together
- Encourage a shift towards transit, car-pools and van-pools, bicycling, and walking

- Encourage environmental stewardship in meeting City utility service needs and encourage the efficient use of resources by utility customers

**Demand-side approach**

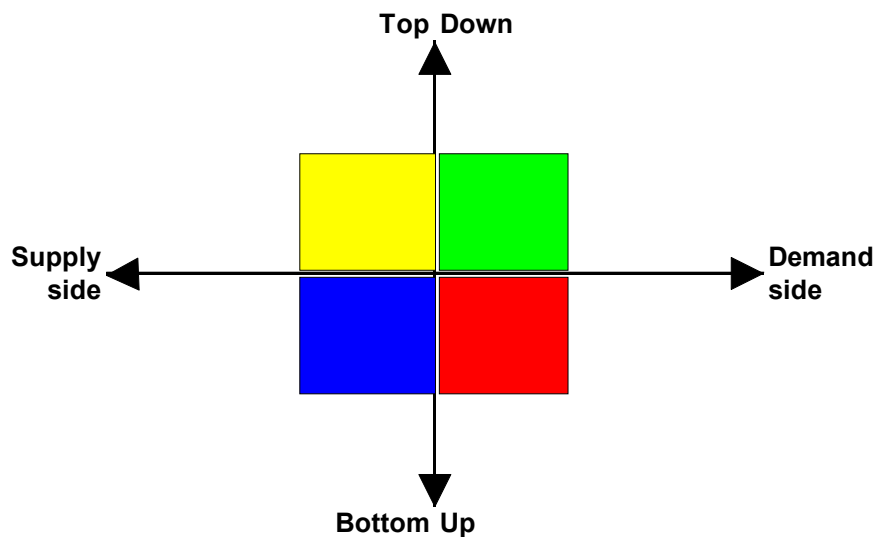
- Promote residential development that is both liveable for residents and compatible with the desired commercial function of the area.
- Facilitate mobility and access to public transportation for the greatest number of people to the greatest number of services, jobs, educational opportunities, etc.
- Encourage, at the settlement level, waste reduction and cost-effective reuse and recycling through appropriate programmes

**Supply-side approach**

- Provide a mix of housing types attractive and affordable to a diversity of ages, incomes, household types, household sizes, and cultural backgrounds
- Provide a range of viable transportation alternatives, including transit, bicycling and walking
- Provide reliable energy services at the lowest costs, consistent with the aim of environmental stewardship, social equity and economic development

**2. Urban Strategies and Demonstration Projects**

As a matter of fact, the urban policies are not exclusively “top down” or “bottom up”, or only “supply-side” or “demand-side”. The policies are an articulate combination of the four approaches and can be expressed in a Cartesian diagram which refers to, on the X axis, the supply ↔ demand and, on the Y axis, the top-down ↔ bottom-up.

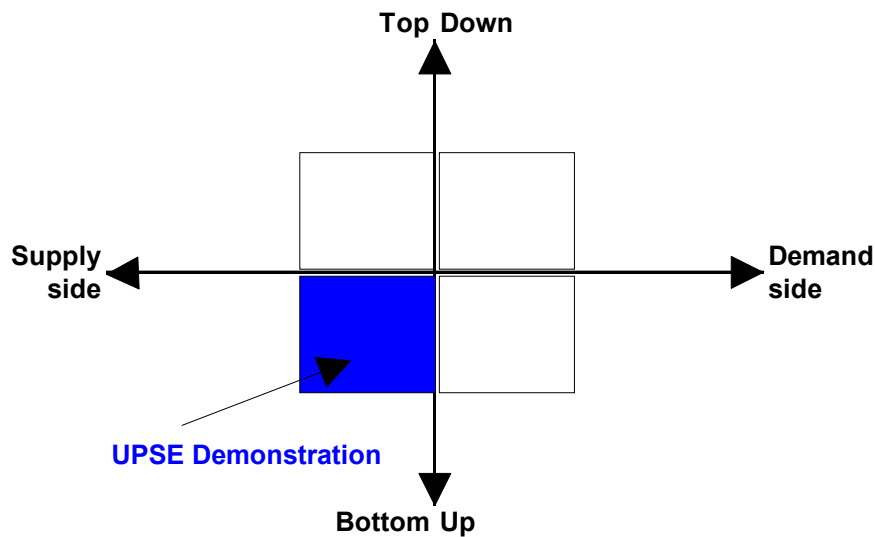


The urban strategies therefore become a combination of policies, according to “top-down / bottom-up” and “supply-side / demand-side” approaches, in which every square signifies a type of policy.

Using this framework, we tried to interpret some of the demonstration activities and research taken from our fifteen years of experience, of which we express our critical judgement.

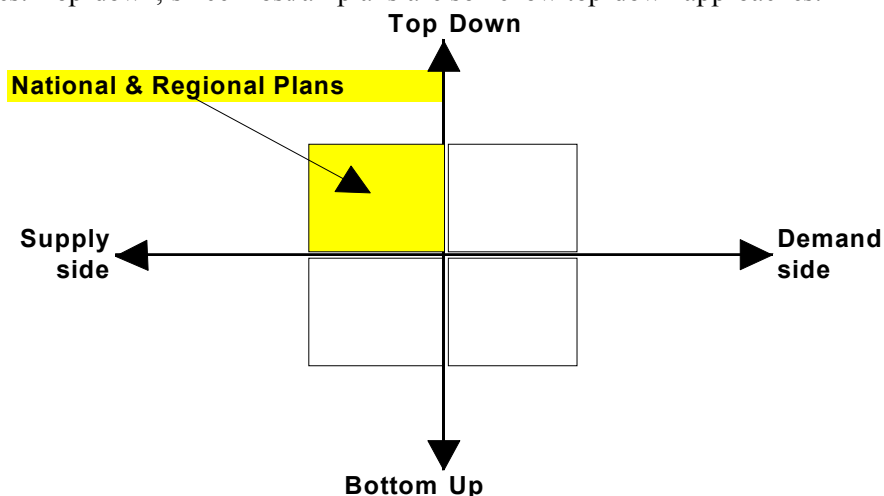
### Bottom-up / Supply-side

The UPSE Demonstration Project was, from 1981 to 1988, a strategic project for the Turin area and for the builders of this region. The approach followed in conceiving the project and in its implementation was a “bottom-up / supply-side”: the association of builders of the region (Piedmont) agreed on a building programme structured with new technologies, high standards of energy efficiency, use of solar energy and expensive use of passive measures. It was a bottom-up approach, totally governed by the builders and promoted towards the consumers and the regional authority. It was a supply-side approach, based on the market penetration of new energy technologies in the building sector. The demonstration was very successful, and, in our experience, one of the most meaningful targeted demonstration projects with many implications for designers and manufacturers. One of the builders who participated in the programme said: “we have learned a language that nobody speaks”. There were no replications of such an experience, even if the results of the building projects are still quite good and the users are very satisfied with the reduced energy bills.



### Top-down / Supply Side

National and Regional Energy Planning, in which we participated in the early '80s, were characterised by a supply-side approach, with a main concern which was the substitution of actual energy supplies with renewables and the promotion of large energy conservation programmes. Top-down, since most/all plans are somehow top-down approaches.



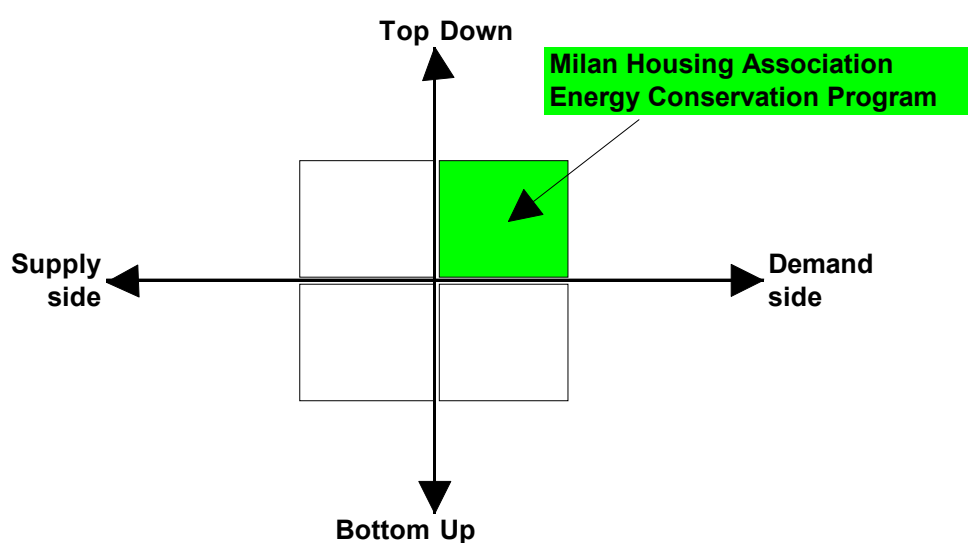
## Top-down / Demand-side

The Milan Housing Association, the largest housing association of Europe (110,000 dwellings to manage), was the field of another Demonstration Project which promoted an extensive Energy Conservation Programme on the building stock owned by the association.

The project entered the demand-side, the domestic energy consumption, by emphasising the measures for reducing the energy demand of dwellings and improving the users' comfort.

The approach was a top-down one, since the association planned all interventions, retrofits and investments, with internal decisions and rules.

The effectiveness was testified by the large impact of the conservation programme on the Italian context. For the Milan association new tools were available and energy saving procedures were introduced in the current practice. It was successful for this specific user, the programme did not affect an urban strategy for Milan.



## 3. Integrated Policies for Effective Urban Strategies

### *RESET - Renewable Energies Strategy for European Towns*

The RESET Project was promoted by RESET e.e.i.g. and the Cities of A.M.Barcelona, G.Lyon, Glasgow and Torino. The proposal came from the Action Plan for Renewable Energy Sources worked out by the Commission of the European Communities for the European Parliament, that stimulated the cities involved in the RESET Project to develop an investigation on the feasibility of substituting 15% of the real primary energy consumption with renewable energy sources, within the year 2010.

### *Bottom-up / Demand Side*

In each city the strategy concerning renewable energies was formalised, by bringing together politicians, decision makers, experts and citizens' representatives. After having created various scenarios for the year 2010, with the selection of the mix of technologies to couple future quality of life and energy needs, the preferred scenario was detailed.

*Top-down / Demand-side*

The appropriate actions, as outcomes of Community Planning events, were extracted from the ideas and proposals of such a consultation and were included in the General Action Plan of these cities, with the following procedure:

- After having developed the Local Scenario Workshops in all four cities, a task involving each city consisted of extracting the most promising "energy policies", amongst those discussed in the forum, and to translate them into "possible actions".
- This activity required a screening, made by each city with their consultants, selecting those ideas which were realistically convertible into actions for the administration, in the short, medium and long term
- The translation of policies into actions was helped by an "action form", which included a pre-estimate of the potentiality, in terms of energy conservation or substitution.

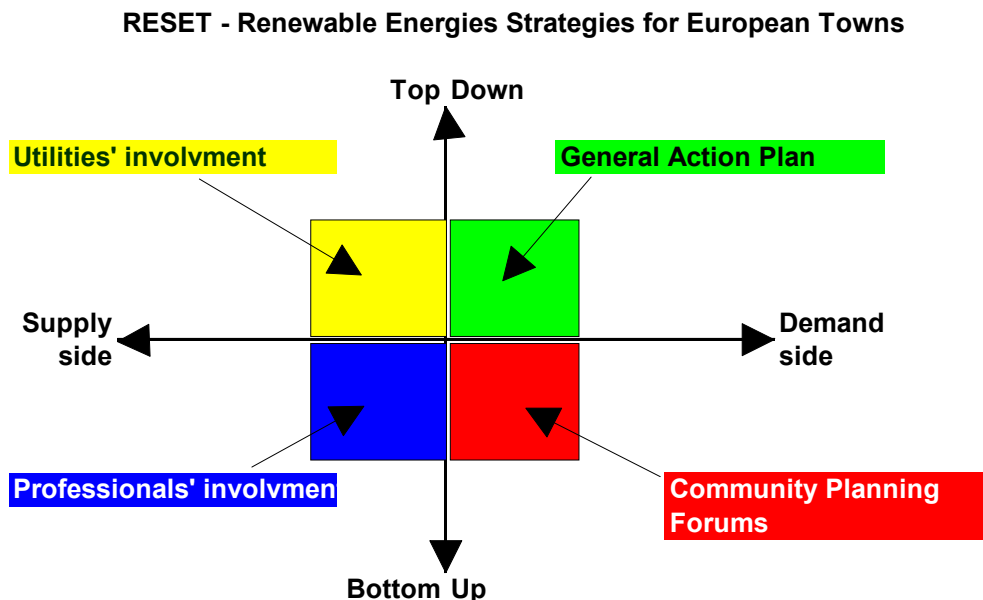
*Bottom-up / Supply-side*

Technology experts and professionals were part of the process, participating in the community planning forums and prospecting their expertise at the service of the action plan.

In some cases, such as Lyon, RESET represented a re-compacting of the expertise in the field that the Municipality did not expect to account for.

*Top-down / Supply Side*

The role of the municipal utilities and manufacturers in the process was relevant, since they were part of the formulation of the R.E. action plan. In some cases, they have detailed the actions, introducing the energy technologies to comply with the expectations detected during the community planning forums.



### ***Ten-years Energy Plan - Implementation in the Umbria Region***

The specific aim of the Umbria demonstration project was to verify the specific technical solutions, the legal regulatory framework and the financial and management tools used for developing such a strategy on residential building stock at a regional level.

#### *Top-down / Demand-side*

The implementation of a large scale strategy at the regional level of energy conservation and substitution policies was the main aim of the Regional Government entering the demonstration project, and this approach can be easily defined a “top-down / demand-side” policy.

#### *Bottom-up / Demand Side*

A Local Scenario Workshop is organised for making the different regional actors aware of the potentiality of an extensive implementation of the demonstration project. The Local Scenario Workshop puts together citizens, administrators, entrepreneurs and professionals in order to draw the mid-term perspective of the energy conservation plan for the residential sector in the Umbria region.

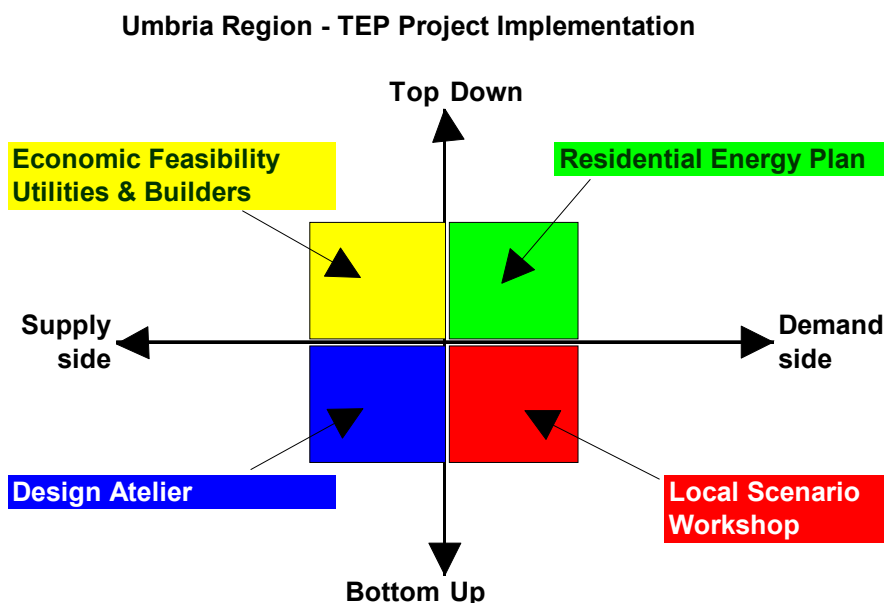
#### *Bottom-up / Supply-side*

In order to make the demonstration project known the Region wanted to interact, right from the first stages, with local, young professionals, organising a "Design Atelier" entitled "Building Renewal Via Energy."

Due to the interest expressed by the participants to continue the Design Atelier experience and the positive response from the Regional Council, it was decided that a phase of examination would be set up, for the detailed design of interventions. The objective of this phase is to supply the participants with cognitive elements in order to autonomously design interventions for energy&building requalification similar to those specified within the previous exercise.

#### *Top-down / Supply Side*

New ideas for financing new energy technologies and managing the energy conservation plan within the regional context are under examination. Builders, Development trusts, local agencies, manufacturers are participating in the planning framework of such a demonstration.



#### 4. Types of actions (projects, associated measures)

Urban Technology strategies need appropriate demonstrations at the appropriate scale.

**Appropriate demonstration** means a process which could take place and persist in the urban context. Demonstration should involve mainly urban regeneration programs, consisting of a mix of technical and non-technical interventions.

The innovations planned within the framework of the Demonstration Project should be pervasive enough to involve all aspects of the decisional process:

- planning schemes, design criteria, new regulations, building and transport re-organisation, economic development of the site, social aspects and quality of life, with the aim of facilitating the penetration of innovative urban technologies and maximizing the rational use of energy.

Appropriate demonstration means also a new way of considering the demonstration project, not only focused on the implementation of innovative technologies with a *Supply-side / Top-down attitude*, but involving in the same framework dissemination processes and promotional strategies at the urban level. These activities would be considered not only “associated measures”, but “targeted measures” as well as the others, emphasising other parts of the complex framework:

*Supply-side / Bottom-up*

*Demand-side / Top-down*

*Supply-side / Bottom-up*

All demonstration projects of the new generation should comply with this complex framework, involving relevant sub-projects for each sector of this framework, in order to maximise the effectiveness of the targeted project as a whole.

**Appropriate scale** means that, on the urban scale, no action can become prevalent enough to establish its usefulness, without having proved its usefulness to a variety of actors and to a visible scale.

Targeted Demonstration budgets have to increase quite consistently, so far, or have to be associated to on going and already funded processes promoted by the Cities.

Targeted demonstration on Urban Technologies should involve EC supports of no less than: 2 MECU per site/City, in order to be effective and visible at the city level.

## 5. Main actors to be involved

All Demonstration Projects of the new generation should catalyse the appropriate mix of :

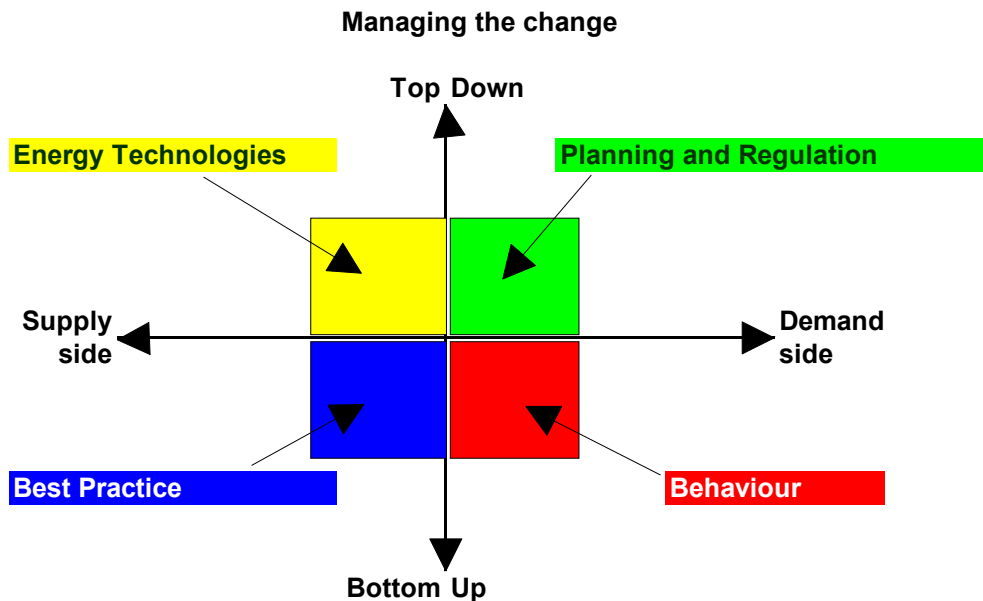
- administrators (planning and regulation promoters)
- entrepreneurs (technology manufacturers, building companies)
- technology experts (professionals)
- citizens (representatives, associations)

This mix of participants to the “Urban Technologies Demonstration Process” will help to arise the innovation where it can afford to become prevalent enough, without being overwhelmed by the inertia of the system (critical mass).

Each actor involved into the Demonstration Process will require a “targeted action”, in such a way to involve a multi-targeted set of actions in each project.

This multi-targeted strategy to Urban Technologies will involve the fulfilment of the following goals:

- Create a Vision (Administrators, Planners, Planning and Regulation)
- Plan Together (Community, Citizenship, Stewardship, Behaviour)
- Unite the Forces (Local Carriers, Professionals, Experts, Best Practice)
- Do the right things (Suppliers, Builders, Utilities, Energy Technologies)



## 6. Targeted Costs

Assuming to promote just one targeted action in the field of Urban Technology in the V Framework Programme, the scale of intervention being of 2 MECU per site/City, and 50 European conurbations interested by a targeted action, the total targeted cost can be estimated around 100 MECU.