



New Integrated Renovation Strategy to Improve Energy  
Performance of Social Housing



Centro de Recursos  
Ambientales de Navarra

# Guide of Integrated Strategies for Energy Retrofitting of Social Housing

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## INTEGRATED STRATEGY

D 6.1 Strategies Guide



### ANALYSIS

D 2.1  
Social  
Housing  
D 2.2  
Case  
Studies

### GUIDES

D 3.1  
Technica  
l Guide  
D 5.1  
Financial  
Guide

### INFORMATION; QUALIFICATION

D 4.1  
Forums

D 6.2  
Retrofitting  
Plans

D 7.2  
Diffusion  
Materials  
D 7.3  
Training  
Courses

# Guide to Integrated Rehabilitation Strategies for the Improvement of Energy Efficiency and Thermal Conditions of European Social Housing

## 0. Index

1. Introduction
2. Nature of the challenge we are facing.
3. SWOT analysis.
4. Recommendations to the stakeholders. Strategies.
5. Lessons learned & conclusions

## 1. Introduction

### 1.1 Integrated strategies:

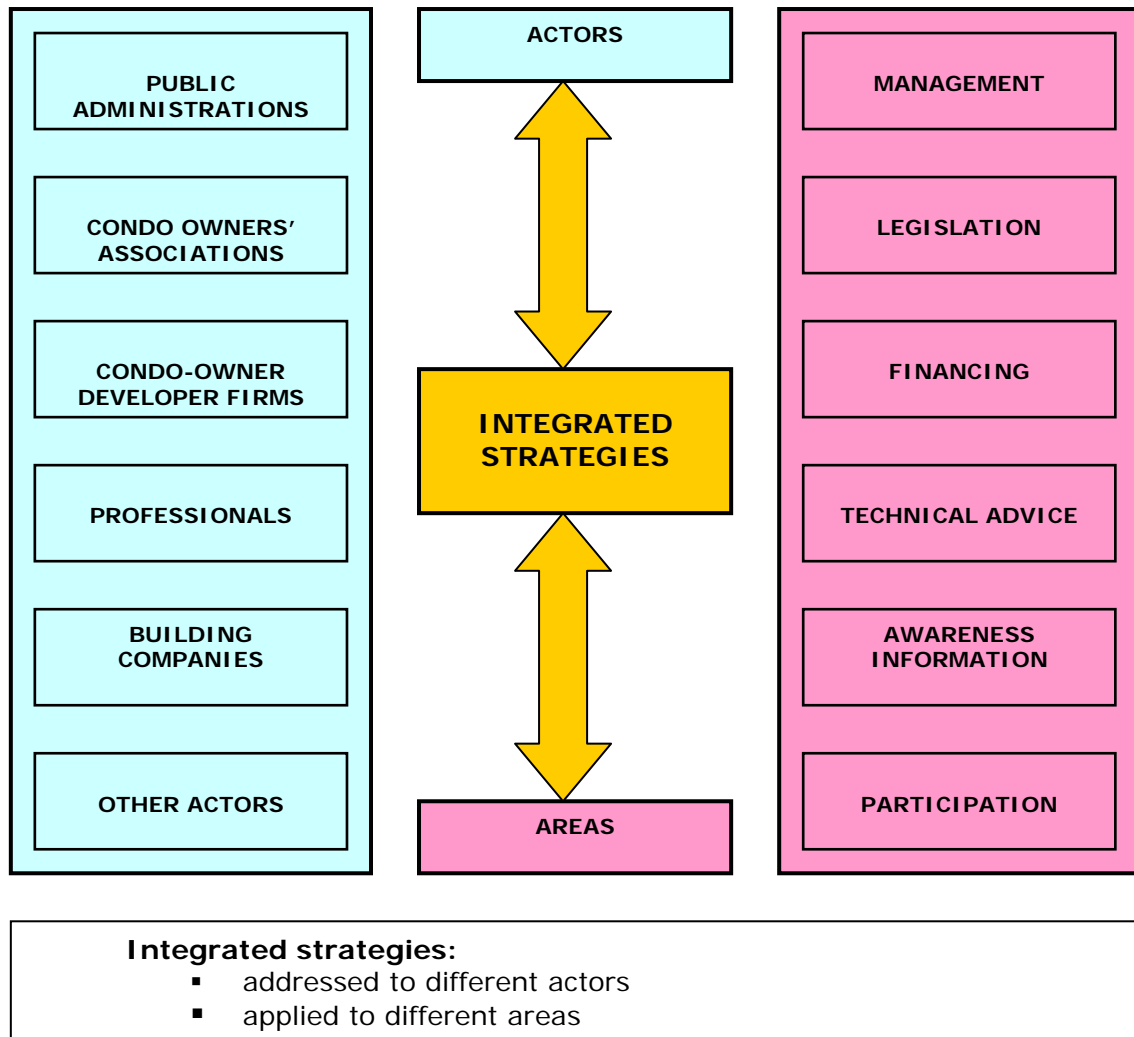
Why is it necessary to talk about integrated strategies when working for the promotion and support of rehabilitation to improve the energy efficiency and thermal comfort of European social housing?

It is necessary because, as it has been verified during this and other projects, this problem may not be solved acting in one single direction. Success stories are hard to find, and this type of actions need to rely on different **strategies, mostly non-technological strategies, duly coordinated and combined**, to promote and attain the renovation of buildings according to energy-saving criteria as a regular practice throughout Europe.

Therefore this guide provides a set of **recommendations addressed to the different actors** (public administrations, individual co-owners, developer companies, professionals and other actors) participating in the rehabilitation of buildings and **applied in different fields** (management, legislation, financing, technical advice, awareness, information and participation, etc.), so as to achieve a substantial improvement of energy efficiency and thermal comfort conditions.

The NIRSEPES Project has brought together different bodies from several European regions and therefore from **different rehabilitation settings**. Needless to say, the socio-economic, technical, statutory and awareness conditions as regards problems caused by excessive energy consumption in the housing sector and their consequences on climate change are also different.

Among all the differentiating aspects, **housing tenure** has a paramount influence when choosing the strategies to apply. Depending on the tenure, recommendations should target certain actors or groups of them.



## 1.2 Housing tenure

The regions participating within NIRSEPES Project feature two clearly different **housing tenure** statuses:

- **Large developer companies** being the actual co-owners of the buildings they keep under rental status. Social housing is subsidised by public administrations. This type of tenure is predominant in the **German region of North Rhine-Westphalia**, representing the background of Northern European countries.

The main actors in this context are developer or promoting companies. They are in charge of performing improvements in the buildings they own in order to increase their competitiveness vis-à-vis other companies operating in the same urban region.

In recent years, the region of North Rhine-Westphalia has featured a decrease in population due to demographic change and industrial conversion which has led to the posting of inhabitants to the periphery of the conurbations. In housing terms, this has meant that many apartments are being left unoccupied, and owner companies are actually making efforts to

compete and to keep the rental rate of their buildings at sustainable levels so as to maintain them. The offer now exceeds the demand and eventual tenants chose the buildings featuring better conditions as regards quality / price ratio.

The increase of energy efficiency, which allows to reduce heating costs to be paid by tenants, as well as the improvement in thermal comfort, together with the offer of social services and the full renovation of entire districts allows to maintain the demand for housing owned by companies making investments in performing such improvements. Hence an obstacle for retrofitting is the dilemma between investor (which has to accept the costs for insulation measures) and user / tenants (saving heating costs). Under social housing conditions the investor could not easily raise the rental fee to economical return of investment. Taking vacancy into account due to an over supply of apartments for instance the economical retrofitting for owner's interest opens the door for more investment into the quality of apartments – mainly energetic quality.

- **Individual co-owners**, who, for their most part, live in condominium buildings/apartment blocks and establish associations of co-owners to manage and maintain the building. Some users are not the actual owners, the latter renting their property due to different circumstances and residing in another dwelling. This form of tenure is typical in the **regions of Athens and Navarre**, and is representative of Mediterranean countries.

The main actors in this case are the individual co-owners of the dwellings. They have the capacity to decide what they invest their money in. However, difficulties arise when making decisions on the investments to be made, since decisions need to be agreed by the co-owners, who usually have different interests.

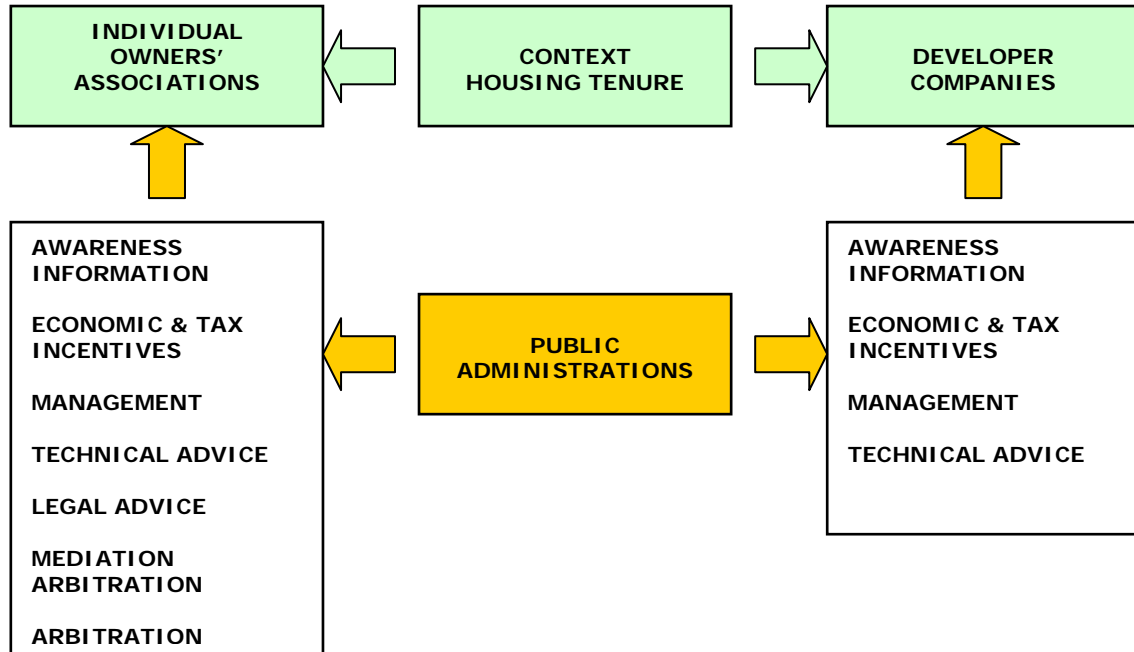
The operation of these associations of co-owners is governed by law, which lays down the conditions under which the building is to be managed by the co-owners: on a self-management basis or hiring the services of a company in charge of managing and maintaining common areas and facilities in the building and of securing the payment by all the co-owners of the expenses resulting from the operation, maintenance or repair work of such common areas and facilities. However, legislation does not favour the reaching of agreements, since it does not provide for that decisions regarding improvements in common areas be taken by a simple majority but by large majorities.

In both contexts, the role of **public administrations** is significant, for they have the capacity to define a rehabilitation strategy and the corresponding action plan to encourage private actors, whether companies or individuals, to **overcome reluctances towards energy-focused rehabilitation**. They may also **allot resources to facilitate the services required** for these private actors to operate, such as technical advice, public aid management, conflict mediation, etc. Furthermore, they may **raise the awareness** of stakeholders and **promote, through information and training campaigns**, a more favourable social attitude towards a rational use of energy in general and in the housing sector in particular.

The **other actors**, i.e. building professionals and companies, energy supply companies, energy services companies, training centres, banking entities, etc., play in both cases a secondary role, although at certain times they may prove crucial for the success of a rehabilitation strategy based on energy-saving criteria.

**Housing tenure:**

- Associations of individual condominium owners. Owned dwelling.
- Developer companies-owned buildings. Rented dwelling.



Work meeting held with rehabilitation offices in Navarre to define integrated strategies.

## 2. Nature of the challenge we are facing

Rehabilitating buildings to improve their energy efficiency is a difficult challenge, as the development of the NIRSEPES project has shown. It requires a previous analysis of the general context where it is to take place, as well as of the aspects influencing it, most of which are not connected with technology, but rather with society and management.

### 2.1 A problem that is not self-evident:

The problem of housing has become increasingly stronger in most European cities in the last decades. The general response of **public bodies** has relied on developing huge areas of derelict land. The public sector has focused in supplying new houses.

However, the rehabilitation of the existing housing stock has been approached by public representatives on very few occasions, if any. Although it may be coherent and interesting, this topic seems has always been left to be tackled with in the next governmental term by the next government.

Despite the fact that the "unbuilt city" amounts to 20% of the actual problem, and the "already built city" amounts to 80% of the problem, nobody seems to realise so. Under the current conditions and circumstances of urbanisation focusing on growth, the problem remains unnoticed by public and private bodies.

From an energy point of view we may make the same reflection: the application of new directives on thermal conditions of buildings, deriving in the different countries from the **transposition of Directive 2002/91/EC on the energy performance of buildings**, shall address mostly **new buildings**, thus preventing energy costs to increase exponentially. However, this shall not solve the problem of energy consumption and greenhouse gas emissions, for which the residential sector in the European Union is responsible up to 27%, since **80% of existing buildings shall keep its consumption rate unaltered**.

**Co-owners** approach the problem in a way which is very similar to that of the public administrations. Households always seem to feel that there are other problems more urgent than the improvement and rehabilitation of common areas and facilities in existing buildings.

We are not aware of the energy saving we may attain by improving the insulating capacity of our façades and roofs. **We do not realise** that our consumption of energy may be reduced by half, if not more. And we are less aware of this insofar as energy is not expensive. We fail to imagine forthcoming scenarios where the price of energy could be four times higher.

This lack of awareness is especially serious in **Mediterranean countries** where energy is heavily subsidised.

Under the present circumstances, the problem is far from becoming self-evident. There are **huge negative habits and reluctances** that need to be overcome to launch the first rehabilitation work of the thermal insulation body of a building where the users are also the actual owners. At first, this type of action shall be very difficult to promote, as the NIRSEPES Project has shown. More emphasis needs to be placed on this issue.

This problem is much more visible in the **northern European context**. There are many examples of rehabilitation work done, social awareness is stronger, and the price that end users pay for energy is more adjusted to the actual price. Additionally, the harshness of the climate favours better construction standards, with thicker insulation bodies and higher rehabilitation rates. This is so because the thermal conditions of a deficiently insulated building in such a climate has a stronger impact on the quality of life than similar features in a milder climate, at least during winter time. Consequently, co-owners and companies are readier to perform this type of renovation work.

## 2.2 Not so much a technical problem....:

As we have gathered from our experience in the NIRSEPES project, we can state that the main difficulty does not rely on the actual existence of feasible efficient, energy-saving solutions at a reasonable cost.

Solutions consisting of air gaps and external thermal insulation panels are well known to technical firms projecting rehabilitation solutions. Developer companies are also quite familiar with these systems and their application.

We can reasonably expect that this type of rehabilitation work of the insulation body becoming more frequent and widespread, the price of the solution may fall down substantially, although right now the prices are rather high. However, the main problem is one of a quite different kind...

## 2.3 ... as a management and communication problem:

For **developer companies** this solution involves introducing a new factor to consider when managing their housing and services stock, as well as a communication work using energy-efficiency as the differentiating factor vis-à-vis their competitors to.

For **associations of individual co-owners**, which tend to have low-profile administration and management standards, it is difficult to approach solutions to difficult problems. Conflicts are usually frequent, and unanimous agreements are also difficult to reach. Past conflicts sometimes are not properly solved, marring present relations.

This type of situations have been known to rehabilitation policy makers and managers for historical districts, who, in the case of Navarre, launched the **housing & building rehabilitation offices (ORVES – “oficinas de rehabilitación de viviendas y edificios”)** in the 80's to manage the built environment having rehabilitation needs and historical interest.

These bureaus actually hold a valuable know-how as far as managing rehabilitation solutions with associations of individual co-owners. This know-how may be transferred to other urban settings having a lower historical interest but sharing the same needs for rehabilitation policies, i.e. districts built between the 40's and 80's. Such districts actually contain most of the built social housing featuring manifest problems resulting from defective thermal insulation.

These bureaus have much more to offer to associations of individual co-owners than financial support, namely:

- The help to give a better technical approach to rehabilitation solutions, beyond administrative proceedings.
- They provide help to hire the necessary technical projects.

- They act as external and neutral arbitrators and moderators for debates and agreements between the members of the associations.
- They provide advice as regards procedures with local governments, i.e. building permits and other authorisations.
- They provide advice to find the most economic solution and contracts for the building work.

These entities have successfully attained their objectives, and we may take advantage of their human and technical resources to overcome similar habits and reluctances when managing the rehabilitation of the thermal insulation bodies of social housing built from the 40's to the 80's. Additionally, since they centralise the information on rehabilitation, they may prove ideal communication instruments to introduce this new asset in the renovation of the housing stock. This is the reason why dissemination materials produced in Navarre to promote energy-focused rehabilitation of buildings under the NIRSEPES Project have been distributed first and foremost via these bureaus.

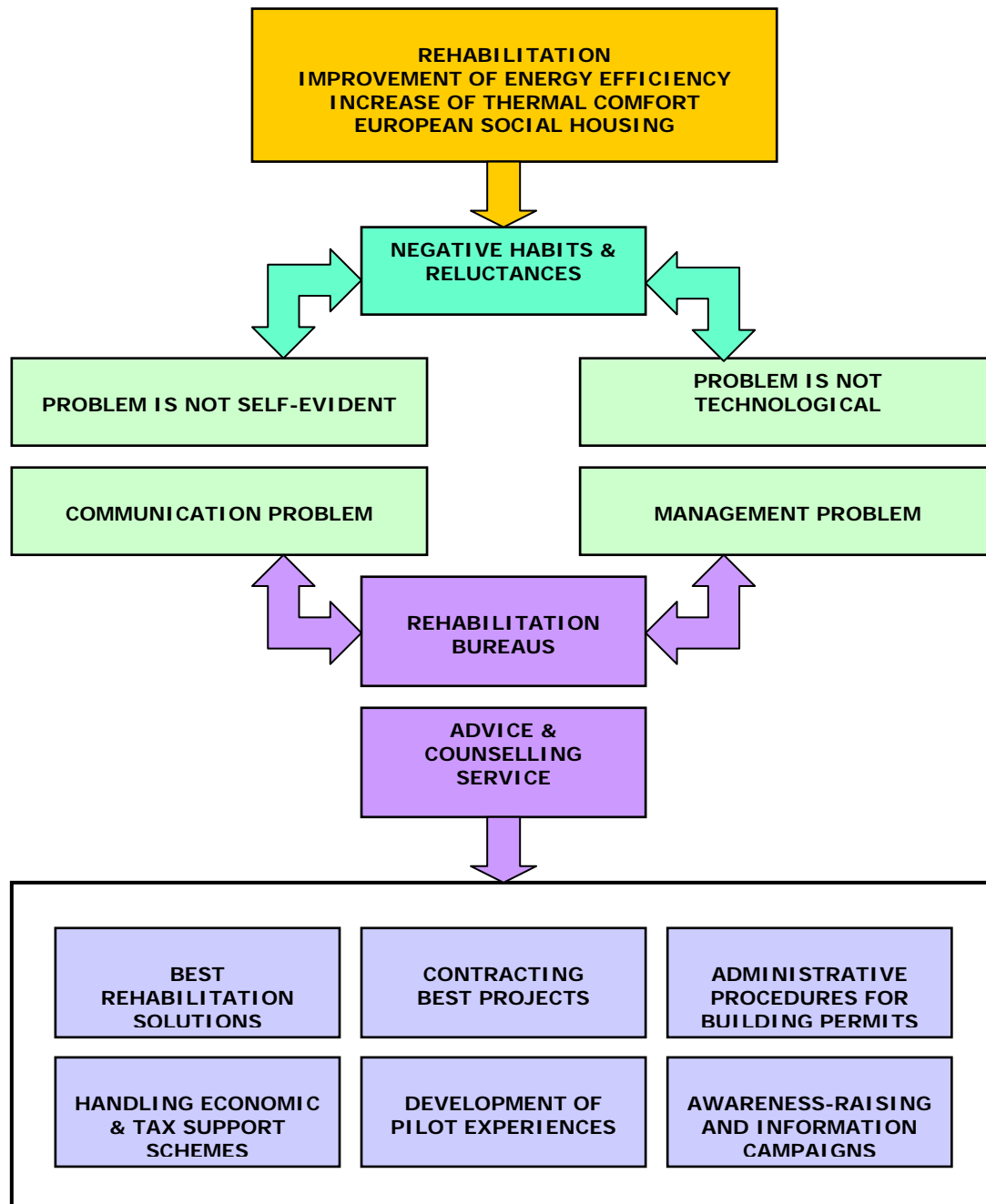
If the performance of these entities in Navarre has proven most efficient, **it is advisable to extend them to other European regions** having a similar background, such as the region of Athens.

In North-Rhine-Westfalia and other German regions retrofitting offices driven by communities, commercial chambers and other official corporations are in principle successful. The success of the offices depends directly to their ability to hold up request. Problems occurred by lack of financing, limits concerning the competition with offers of services by the free market and liability. More awareness programs, services of banks, general consumer counseling, energy agencies and a support program for energy consulting service for owners by accredited private experts produced a more differentiated and targeted climate for retrofitting activities. Due to this there have been left few offices.



**Management as a way to overcome negative habits & reluctances:**

- The problem is not self-evident.
- The problem is not technical.
- The problem is a management issue.



### 3. SWOT Analysis.

Prior to making recommendations to each of the stakeholders, it is necessary to explain which are the main **weaknesses & threats** we are facing and the **strengths & opportunities** identified under NIRSEPES through the public participation process implemented in each of the participating regions.

This analysis shall allow to draw conclusions shared by the different European backgrounds, in addition to the general considerations mentioned in the previous chapter.

#### **3. EEPP Developer companies owning residential buildings**

Decision making originates mainly to the "Investor – user dilemma": Retrofitting investments are costs for the housing companies while the "early wins" by energy saving could be realised by the user. Investments for maintenance could not be used to rise the hire charges due to German legislation. Only modernisation expenditure (which includes more than energetic retrofitting) could give reasons for raising the hire. Also the maximum amount is limited by law. One of various limiting instruments is a rent table for each community which classifies buildings and assigns them to average hire charges. An important detail using this table is that old buildings (with usually lower hire charges) could not be ascend to new ones even if they were retrofitted on a low-energy-level equal to new buildings. These aspects are affecting the complete buildings with flats let for rent. Social housing sets additional limits but has smooth transition to the free residential housing market and is not basically different. The situation for social housing in North Rhine-Westphalia is described in number D 2.1 of this handbook.

Retrofitting is often not agreed or discarded by facing economic facts even if this is asserted by the decision maker. It is often a political decision with various fuzzy information. To thin out the staff of housing companies, as practised in last years, causes that complex tasks - as retrofitting measures are – could not be managed in an optimised way.

#### **SWOT Analysis:**

<b>Weaknesses and Threats</b>	<b>Strengths and Opportunities</b>
<ul style="list-style-type: none"><li>• "Investor – user dilemma": Retrofitting investments are costs for the housing companies while the "early wins" by energy saving could be realised by the user.</li><li>• Retrofitting investments exceeds often the temporal planning span of housing companies. Payback over ten years times are not convincing. Even if they are remarkable shorter than the durability of the retrofitting measures.</li></ul>	<ul style="list-style-type: none"><li>• Demographic change focuses on the existing building stock ("Residential space in Germany is built"). But in future other structures of flats will be need (single household, elderly people, patchwork families, increase of poor people etc.). Living space can in future only be let, when it fits the upcoming requirements.</li><li>• Limits set in the Kyoto Protocol, energy prices, legislation (e.g. EC-</li></ul>

<p>Political or business strategies change so fast, that the companies are taking alternatives for their investments into account to keep flexibility e.g. to consider other target groups of tenants or market developments (by selling, expiring the building substance etc.).</p> <ul style="list-style-type: none"> <li>• Retrofitting is uncomfortable for the tenants and the owner. There is still an urgent need for technical and organisational innovation to reduce the construction time and annoyance.</li> <li>• The investment into an old house for retrofitting increases the value of this house not in an adequate amount. For that reasons the return of investment is limited to the rent market. The increase of rents due to retrofitting is limited by law and by the regional market.</li> <li>• Dramatic increase in the price of energy in forthcoming years will change the basis for investments. Economy of retrofitting measures will be expanded when energy price rate is significant above the interest rate.</li> <li>•</li> </ul>	<p>directives) and importance of maintaining the building substance will hold the official awareness for retrofitting on the daily agenda.</p> <ul style="list-style-type: none"> <li>• Retrofitting has become a market for the whole construction industry. For that reason this sector will contribute in promoting remedial measures for the existing building stock. Advanced training and certification structures are developing.</li> </ul>
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### **3. CCVV Associations of individual co-owners.**

Below is a summary of the obstacles and opportunities identified in this background:

#### **3. CCVV.1. Housing tenure:**

Decisions regarding investments to be made in common areas and facilities of buildings, such as thermal insulation bodies or thermal facilities, need to be agreed by the majority of the **members of the association**. In most cases the reaching of agreements is most difficult, which means this is a substantial obstacle.

**Managing agents of buildings in co-ownership**, who could make proposals for solutions as well as favour the reaching of agreements, do not currently play an active role as regards this issue. This is so because they get no economic advantage from the management of buildings according to energy efficiency and saving criteria, although they do find problems and receive complaints from co-owners due to the lack of thermal comfort. A typical situation is one where certain owners request that a higher average temperature or the extension of the number of hours of central heating to meet their individual and not always justified demands.

On the other hand, despite securing their collaboration through an improved awareness and training, it needs to be mentioned that most associations of co-owners are **self-managed** by the co-owners themselves

However, this last circumstance could become an opportunity if the users-owners understood how improving thermal conditions can **revalorise their property**, and

how rehabilitating their building using energy criteria can help them save money and improve the thermal conditions and their quality of life.

### 3. CCVV.2. Energy-saving and -efficiency housing policies:

It can be stated that in Spain and in Greece the priority focuses on building new houses, rather than on **rehabilitating** existing building. The general public in Navarre is particularly aware of this issue and existing policies favour rehabilitation strategies by allocating resources albeit much lower than those allotted to promoting and building new houses. In Greece there is no public aid available, and management is not supported by public bodies. As regards social housing, OEK, a developer company, has the capacity to support and promote the rehabilitation of social housing buildings, primarily those it owns, and at least as far as common facilities are concerned, as in the case of the "Solar Village".

Rehabilitation policies in Navarre have promoted the establishment of rehabilitation offices and bureaus providing advice to citizens and helping them with the administrative procedures to obtain financial help from the Department for Housing and other local entities.

These **rehabilitation bureaus** are most efficient, and citizens feel them as facilitators providing advice, arbitrating in conflicts between co-owners and solving problems instead of causing them. This is an advantage we may use to overcome negative habits and reluctances regarding energy-aware rehabilitation schemes.

It needs to be mentioned here that **in Germany** there were rehabilitation bureaus, but that these were reduced, by general programs e.g. with approved private experts to perform these tasks and whose services are subsidised in order to make them less burdensome to the general public. The services provided by these private technicians are the same than those provided by ORVEs in Spain. The service has been outsourced, although the price for hiring the service of these technicians is lower than the actual market price.

These subsidised consultants follow a compulsory and continuing training stage in, among other issues, energy efficiency and saving. They are also provided with an energy simulation software application which allows to assess projects and to estimate the actual energy saving to be attained by the rehabilitation. This energy saving certificate is used to determine the amount of public aid that is usually granted in the form of loans, whose interest rates are set according to the energy saving certificates and the actual income of the applicants.

These public and private advisors perform duties of an exclusively technical and economic nature, since the existence of associations of co-owners is very rare; dwellings are for the most part single-family houses, and apartment blocks belong to one single owner, as mentioned above.

**Public aids** available in Navarre do not encourage interventions in common areas of the buildings, since they are granted to individual owners according to their income and these prefer to make improvements having a more direct beneficial impact for their own areas. These aids do not encourage the agreement between

the co-owners, if any, because they are handled individually, thus increasing the load of administrative procedures.

However, there is proof that **aids granted to associations of co-owners** may stimulate the agreement of the owners concerning common areas of the buildings is those aid schemes granted to improve the accessibility of the buildings (lifts, ramps, etc.).

On the other hand, the major obstacle right now in Greece and in Spain is the fact that **energy saving and efficiency criteria have not been specifically integrated** into policies or legislation, and no aids exist conditioned to attaining this objective. It is important to consider that **public support is**, in this case, **most necessary** to break initial negative habits and reluctance of owner to start integrated interventions in their buildings to save energy, first and foremost, due to their **lack of awareness of actual advantages** and, secondly, since they involve a **substantial increase of investment** with respect to current maintenance and repair actions being developed in buildings constructed over 30 years ago.

### 3. CCVV.3. Economic incentives:

In the case of Navarre, new financial schemes have been set up specifically for **energy saving and efficiency actions**, more particularly for: rehabilitation of thermal insulation bodies, improvement of the efficiency of thermal facilities and installation of regulation and control, in buildings managed by associations of individual co-owners. However, these schemes have not proven a sufficient incentive, because they have not been overtly publicised and because they are not being managed by the rehabilitation bureaus currently centralising the management of other types of aids and information and advice services to the citizens.

This example shows that the sheer existence of economic aid schemes does not encourage the renovation of dwellings, and that they only become a true strength when citizens become aware of their existence, are provided with advice to manage them and when there are clear and coherent technical criteria in line with those applicable when applying for rehabilitation subsidies.

The fact that aids are granted during a specific time of the year is also a weakness, especially considering, as mentioned above, the enormous difficulties that associations of co-owners find when trying to adopt quick decisions on certain issues.

However, the major obstacle we need to overcome from an economic point of view is the **financing of the actions**. All the aids and schemes mentioned are direct, limited and are actually granted when the works have been completed.

However there is one exception to this: the so-called "qualified loans". These loans allow owners to obtain special conditions from banking entities subsidised by the Government.

It would be interesting if the association of co-owners could enter an overall agreement with a banking entity to reduce interest rates, so that the works could be repaid as soon as possible.

**In Germany**, public aid schemes consist of a combination of direct and indirect promotion. The most important items are (see also number D 2.1 of this handbook):

- low interest loans where the interest rate depends on the energy saving effect general and especially with better conditions for social housing
- loans for disbursements for socially disadvantaged people

The idea could be transferred to Spanish and Greek contexts, being substantial advantage with respect to existing direct aids.

Current **land-use regulations do not allow to increase the surface of built area**, a circumstance that might help to generate appreciations that would be used to finance the intervention. It has been verified that other European regions or municipalities have used this mechanism, for instance, by allowing owners to add a new storey to the building.

On an urban scale, allowing to perform **urban operations generating appreciations** to be used to finance the rehabilitation work would be an opportunity. **In Germany**, for instance, developer companies may combine in some examples the building of new houses in plots where they are allowed to increase the surface of floor area with the rehabilitation of buildings whose rehabilitation is paid for with the benefits of the sale or rental of the newly built buildings.

Another form of **financing** that may prove efficient is the possibility of renting the roof of the building, for instance, to install photovoltaic facilities.

Difficulties to finance the interventions do not only affect the owners, but most especially the **building companies. Payments may not be guaranteed**, and therefore the companies do not try to convince owners to perform additional interventions beyond regular ones, which they feel can be more easily assumed by all the owners.

### **3. CPVV.4. Information, training and awareness-raising:**

One of the major obstacles we need to overcome to promote and standardise the rehabilitation of buildings according to energy criteria is connected with the **fact that society is not aware** in general of the environmental consequences of energy consumption and in particular with the bond between domestic energy consumption and climate change.

The extent to which the residential sector contributes to energy consumption and CO<sub>2</sub> emissions is not known, nor the relation between design, construction, maintenance and use of buildings and energy consumption. Consequently, the best solutions to apply to reduce consumption are not known either.

Although the general public is, in general, **aware of the lack thermal comfort**, owners of social dwellings with defective insulation conditions are used to such conditions, despite the fact that they are below those of buildings constructed according to current energy-aware building standards. The lack of motivation to save energy adds up to the lack of motivation to improve their living conditions.

Contradictory as it may seem, however, the districts with a larger number of this type of buildings suffer from higher rates of ageing population, depopulation and urban degradation, which only makes the situation worse.

As mentioned above, in Navarre, the existence of rehabilitation bureaus has been defined as an opportunity, since they may provide information and advice regarding energy saving aspects, as well as other aspects of urban renovation. However, this potential can be limited by the fact that the information only reaches those owners that contact the rehabilitation offices with the intention of doing some kind of rehabilitation work or other. The problem is that these bureaus cannot reach beyond the users of the service, since they lack resources to launch specific campaigns.

CRANA, the Environmental Resources Centre of Navarre, the partner entity of the Project in Navarre, has launched an **energy consultancy service for associations of co-owners**. The service has been operative for three years and has proven most efficient to inform and convince co-owners of the need to save energy and renovate buildings for this purpose. It is most desirable to provide a similar service in those areas considering the need to promote energy efficiency in blocks.

As regards the **public administrations** in charge of promoting rehabilitation schemes with energy criteria, a defective awareness has been identified which means that **no energy-saving and efficiency criteria have been specifically integrated in policies and legislation in force**. These criteria do however exist, but only within the scope of energy-saving and efficiency local, regional and national bodies, and there is no mainstreaming of this policy in other domains.

Clear and well-oriented criteria are required to facilitate the mainstreaming of energy efficiency in rehabilitation policies. These criteria must seek the utmost efficiency, and for this purpose the policy needs **examples of interventions to draw actual data** regarding energy saving and pay-off periods so as to set up the conditions for public aid schemes.

**Professionals and developer companies** also need a wider technical knowledge of energy efficiency and how it affects the design and construction of buildings in general and rehabilitation in particular. The regions within NIRSEPES Project feature interesting opportunities to improve this situation, since they may rely on the partnering entities of the Project: CENER, CRES and Öko-Zentrum), to provide technical information and training.

On the other hand, we need to consider the fact that the building of new houses in Spain, as well as in other European regions, is losing the leading role it has played in recent years. Rehabilitation and energy-efficiency may now look as more promising professional fields providing added value in a most competitive market.

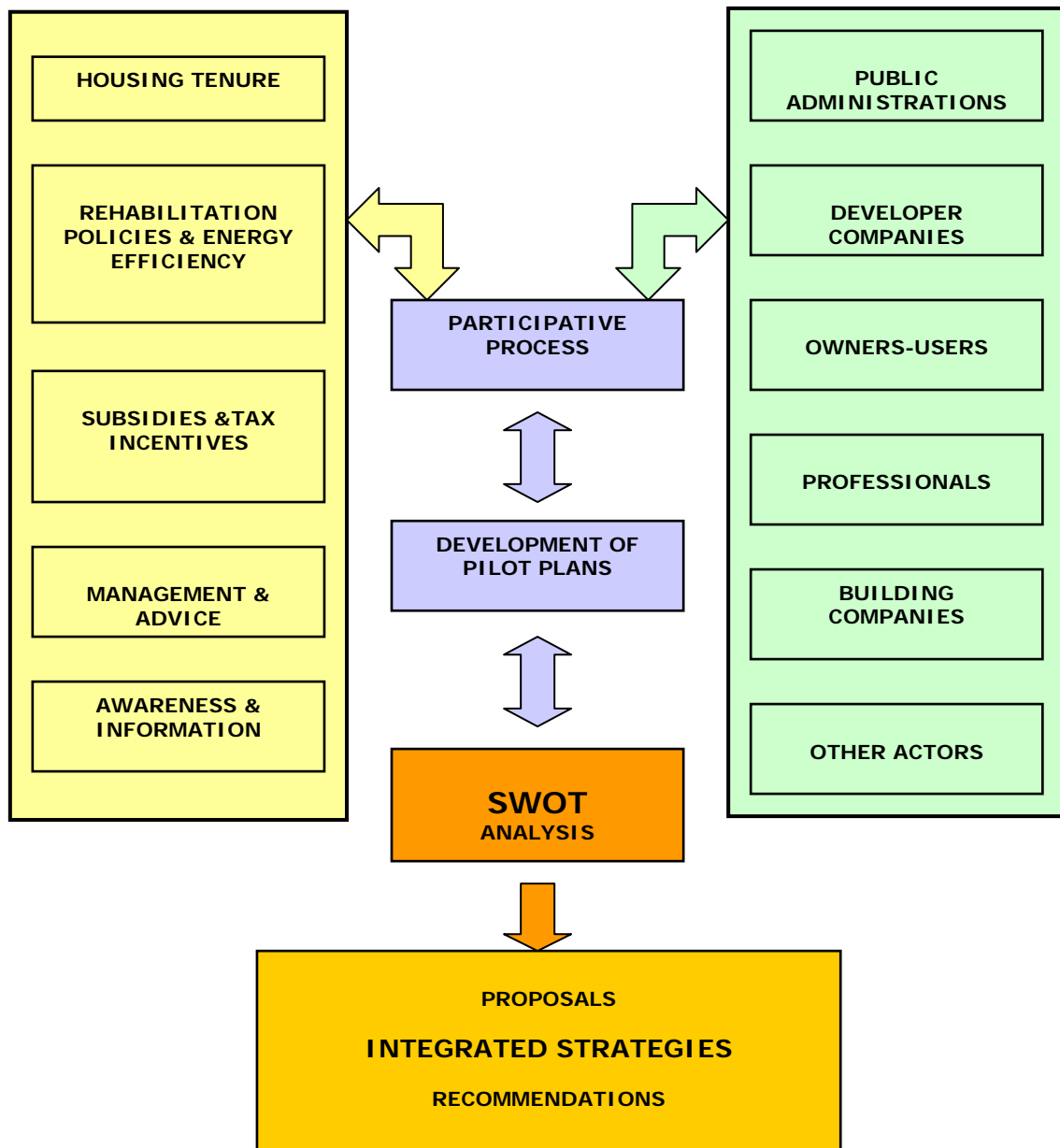
We may also consider as an opportunity in the field of communication **the increasing social interest in environmental issues** in general and in climate change in particular, disseminated by scientists and mass media and most especially by European institutions promoting projects such as NIRSEPES.

The ever-present threat of **an increase in the prices of fossil fuels**, frequently mentioned in many media headlines, may also support the need to anticipate and fit dwellings requiring the minimum amount of energy possible.



**Strategic proposals following SWOT analysis:**

- Proposal for integrated strategies, based on the recommendations addressed to the actors and applied in different backgrounds.
- Following SWOT analysis (weaknesses, threats / strengths, opportunities)
  - DAFO of the lessons learned from the development of the pilot plans.
  - DAFO of the participative process.



### 3. CCVV.5. Summary of SWOT Analysis:

<b>Weaknesses</b> <ul style="list-style-type: none"><li>• Rehabilitation policies play a secondary role with respect to the construction of new houses.</li><li>• Failure to integrate energy-saving criteria into rehabilitation policies.</li><li>• Little number of examples of direct public interventions due to the scarce number of residential buildings owned by the Administrations.</li><li>• Defective coordination as regards criteria and management of aids from different public administrations.</li><li>• Defective dissemination of existing aids to rehabilitation and energy efficiency.</li><li>• Urban planning in general, whose priority is developing new residential areas and the urban renovation of historical heritage districts.</li><li>• Lack of pilot experiences on the rehabilitation of the thermal insulation body of residential buildings.</li><li>• Lack of awareness on actual energy consumption and lack of actual data on the energy saving attained by the rehabilitation of thermal insulation bodies in residential buildings.</li><li>• Symptoms of decline in many districts: ageing population, generational renewal preventing to break existing habits and reluctances.</li><li>• Difficulty to reach agreements regarding integral interventions in buildings managed by associations of co-owners.</li><li>• Low-profile management standards in buildings managed (usually self-managed) by associations of co-owners.</li><li>• Lack of ability on the part of managing agents of associations of co-owners to promote a more energy-efficient management of facilities.</li><li>• Lack of well-defined rehabilitation strategies and criteria, at a time when the age and state of conservation of European social dwellings demand that rehabilitation take place.</li></ul>	<b>Threats</b> <ul style="list-style-type: none"><li>• Dramatic increase in the price of energy in forthcoming years.</li><li>• Failure to comply in many European countries with the limits set in the Kyoto Protocol as regards CO<sub>2</sub> emissions.</li><li>• Current urban planning trends approach urban growth envisaging the need to develop tools securing the economic feasibility of urban renovation.</li></ul>
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<p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>• Setting the energy-aware rehabilitation of buildings as a priority in the building sector by European and regional policies.</li> <li>• Existence of European programmes to promote energy efficiency and rehabilitation of social housing (NIRSEPES).</li> <li>• Favourable context for rehabilitation, due to the age and state of conservation of European social housing (over 30 years).</li> <li>• Existence of aid schemes for rehabilitation and integration of energy efficiency, supported by national, regional and municipal administrations.</li> <li>• Existence of rehabilitation bureaus with a vast know-how on the management of rehabilitation policies and very positively assessed by users (Navarre).</li> <li>• Existence of certifying technicians that can provide advice on energy saving in rehabilitation work (North Rhine-Westphalia).</li> <li>• Prior experience of some technical advice services (e.g. Navarre) to promote energy saving actions in associations of co-owners.</li> </ul>	<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• EC need to comply with the limits set in the Kyoto Protocol as regards CO<sub>2</sub> emissions.</li> <li>• Existence of the 2002/91/EC Directive on the energy performance of buildings and its compulsory transposition to the legal system of member countries, including directives on rehabilitation of buildings.</li> <li>• Introduction into action plans of energy saving and efficiency strategies and of energy-saving and efficiency actions in existing buildings to fight climate change.</li> <li>• Expectations for increased price of energy in forthcoming years.</li> <li>• Interest in increased energy saving and promoting energy saving strategies in their own facilities on the part of local administrations.</li> <li>• Existence of districts with urging needs to renovate and rehabilitate buildings due to substantial deficiencies in residential buildings: central heating, lifts, bad conservation state of common areas and facilities.</li> <li>• Successful experiences of overcoming bad habits and reluctances as regards rehabilitation to improve accessibility of buildings.</li> <li>• Existence of examples of energy-aware rehabilitations in different European contexts allowing to draw valuable conclusions.</li> <li>• Existence of research and training centres focusing on energy saving and efficiency in the building sector in the participating regions within NIRSEPES Project.</li> </ul>
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#### 4. Recommendations to the stakeholders

The main strategies need to consider their influence over the **most important actors intervening in the rehabilitation process** (public administrations, individual owners, developer companies, professionals and other actors), as well as their eventual application in **other relating settings** (management, legislation, financing, technical advice, awareness-raising, information and participation, etc.)

In this chapter, as in previous ones, we need to consider the two different scenarios, bound to the housing tenure, to propose the strategies required to promote rehabilitation and the improvement of energy efficiency in European social housing:

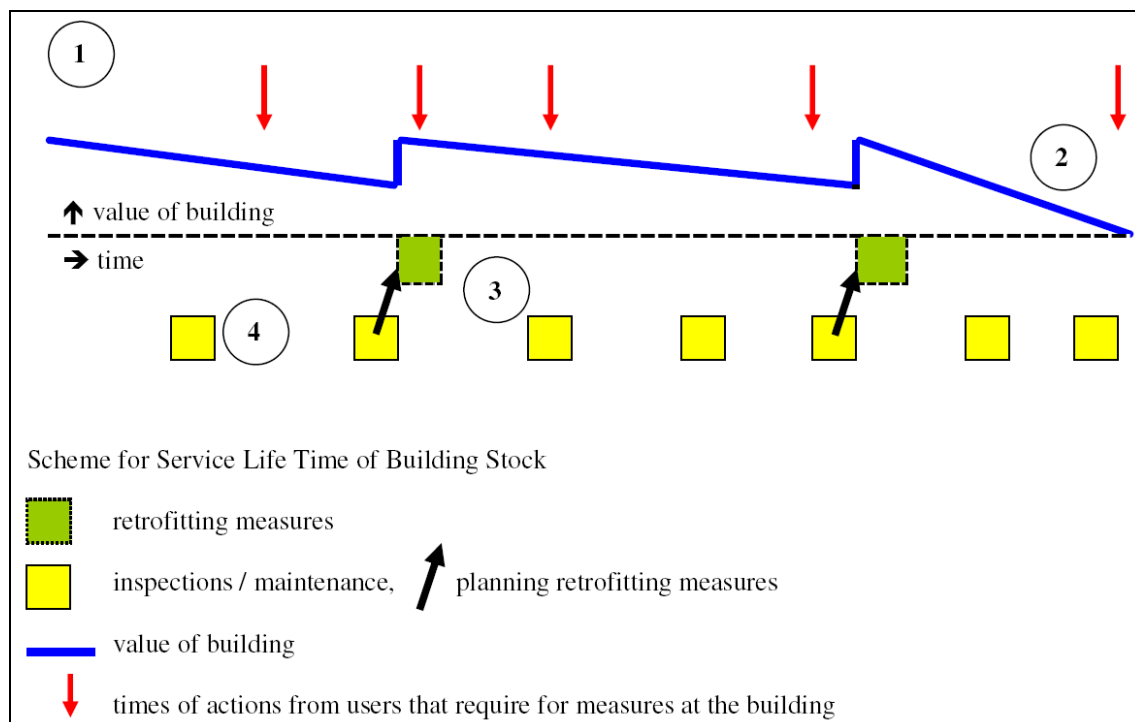
#### PRIVATE ACTORS

##### 3. EEPP Developer companies owning residential buildings:

Monitoring the state of preservation and energy quality of buildings and development of adequate measures due to the requirements for appartments (market) and the demands of the tenants are the main recommendations of the project. This is meant, more systematic approach. Economic evaluations are often used but not really brought to a complete picture.

Some concepts are shown below for systematisation:

##### 1. Monitoring the existing building substance and parameterise quality



At point 1 building is erected. From this point on the value is decreasing. Inspections and maintenance must be executed beginning with the

inspection at point 4. The second inspection will start the preparation of the first retrofitting measures at point 3. With an older age of the building the periods of the inspection and maintenance will get shorter. At point 2 the value of the building decreases leading up to demolition of the building.

## 2. Develop quality assurance for necessary actions in the various phases.

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Phase 7
Early Detection	Inventory & Analysis	Aims & Options	Concept & Measures	Preparation	Execution	Post-processing

Different departments and people are concerned during the working phases. The whole model underlies repetition. More Details see in Report D 6.2 "Retrofitting Plan" of this Handbook.

## 3. Define a workflow for energy inspections and planning of retrofitting

Basic principles:

- Survey of existing documents and records:  
e.g. blueprints, description of constructionm, fotos etc.
- Are any rights of third parties concerned:  
e.g. historic monument list, rights for any other use of the buidling or the site?
- Survey of old construction accounts:  
e.g. used construction materials
- Information of damages:  
e.g. mould, fire, indoor air pollution
- Survey of old minutes of former meetings concerning the object and their users
- Summarising relevant legal requirements for the building
- Survey of heat, electricity and water consume
- Development of scheme for documentation of the results of this points

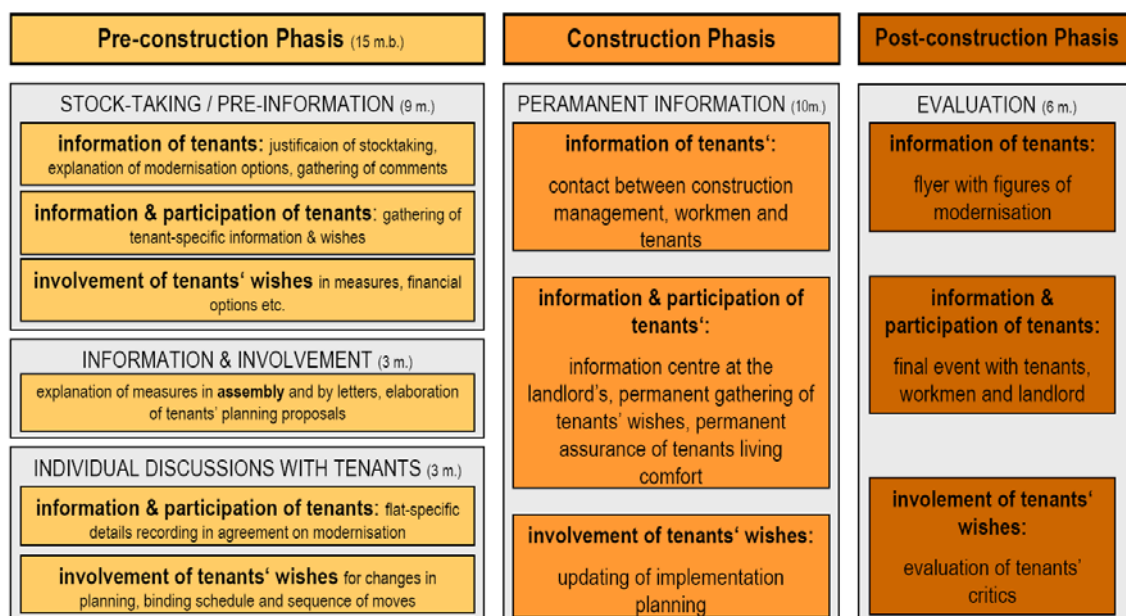
Basic planning procedure

<b>Step 1</b> <ul style="list-style-type: none"> <li>• Objectives, commitments</li> <li>• general requirements</li> <li>• contract placing for planning</li> </ul>	<b>Step 2</b> <ul style="list-style-type: none"> <li>• searching of documents</li> <li>• stock-taking (measures drawings, pictures, building materials, condition of substance, damages, immediate measures due to hazards)</li> <li>• integrated documentation</li> </ul>
<b>Step 3</b>	<b>Step 4</b>

<ul style="list-style-type: none"> <li>• requirements concerned to customer demands, repair and regulations</li> <li>• possibilities, real estate strategy, repair and retrofitting concept, feasibility and financing</li> </ul>	<ul style="list-style-type: none"> <li>• decision for retrofitting concept,</li> <li>• time-measure-plan,</li> <li>• legal applications,</li> <li>• planning,</li> <li>• announcement and contract procedures</li> </ul>
<b>Step 5</b> <ul style="list-style-type: none"> <li>• Execution of retrofitting measures,</li> <li>• quality assurance, control measurements</li> <li>• acceptance procedure</li> </ul>	<b>Step 6</b> <ul style="list-style-type: none"> <li>• documentation,</li> <li>• accounting,</li> <li>• hand-off to the owner/users,</li> <li>• implementation of an inspection and maintenance organisation and system.</li> </ul>

#### 4. Planning co-operation with tenants

The social aspect in various retrofitting projects is neglected even though the tenants are “clients”. Very important is the co-operation when retrofitting measures have to be executed inside the apartments - in particular when the tenants stay in their flats while craftsmen are working there. There is an urgent need for care when elderly people are effected; normally they want no change even when the service will be better afterwards.



Co-operation with tenants in various phases of an retrofitting project. Average project months for apartment buildings with around 15-20 flats are given in brackets.

#### 4. Define requirement specification

Very often retrofitting projects will start without detailed planning based on clear requirement formulation.

Based on

- customer and tenants demands,
- repair and corrective maintenance,
- laws and regulations

it is essential to specify requirements for any further planning, deliverables, tenders, quality assurance and technical approvals. Requirements specifications should be given as categorisations, values for property or prescriptive limits.

Not all requested demands and requirements are prescribed by standards, laws and other regulations. To avoid later problems they should be revealed, discussed and fixed in contracts. It is also a matter of fact that EN, ISO-standards etc. are not valid as stand of the art that need no further agreement.

Requirements specification are not only a wise decision for clearer contract conditions, they avoid usually unnecessary costs that rise during the execution because of absent pre-investigation and development of detailed planning.

Examples for a checklist concerning subject areas in that requirements have to be specified:

- building materials and construction
  - thermal protection  
(e.g. U-values, thermal bridges, infrared qualities of transparent materials, airtightness)
  - protection against moisture  
(e.g. driving rain, roofs, sealings of constructions under earth, sealing against rising moisture in walls, treatment of construction part with moisture and salt problems, sealing of inside moisture-prone areas, conditions against mould)
  - fire protection requirements  
(e.g. categorisation of building materials and constructions - radiation, smoke, dripping etc. -, escape routes, sprinkler)
  - insulation of sound and vibration  
(e.g. sound level, sound insulation, room acoustic)
  - wood protection  
(e.g. kind of wood, resistivity against insects and fungi, chemical wood protection due to hazard)
- building climatic concept, energy demand and comfort
  - establish comfort and hygiene criteria
  - energy concept (e.g. qualitative or better quantified investigations of all energy influences)
  - optimise facade construction (e.g. day light, electric light, shading, solar gains, room temperature, ventilation)
  - proof use of renewable energy

## 5. Quality assurance of retrofitting measures

It is rather common, that housing companies are working on poor quality assurance. They are often outsourcing planning details and co-ordination of the various craftsmen works. The matrix below shows this practise in the row for "level 3". One effect of this is, that they have only bad documentation of their building stock and therefore no good basis for economic decisions.

	level 1 very good	level 2 poor	level 3 as possible to avoid
strategy	Arrangements for objectives and controlled by requirements specifications	Formally description with some objectives	Vocal arrangements
planning	Continuous control of requirements specifications during planning workflow	Co-ordinated planning but no control of requirements	small co-ordination between the craftsmen
communication	Moderated meetings with all concerned persons	Meetings with relevant persons	Commitments for construction details ad hoc Few consolidation of concerned persons
Implementation	Fixed project organisation Clear conditions Benchmarking	Considered choice of contract forms Experienced construction site management	Placing of work stepp by step by few experienced people
audit	Measurements and certificates Complete minutes	Control of efficiency at the end	Only for legal requirements

## **4. CCVV Associations of individual co-owners.**

The main actors intervening in this case are users-owners and public administrations.

### **4. CCVV.1 Associations of individual co-owners:**

The agreement of co-owners is hard to reach and, in order to succeed in introducing energy-aware rehabilitation the proposal covers the launching of different strategies combined so as to secure that rehabilitation becomes a standard to improve the energy efficiency of buildings.

Such combined strategies must include the following:

- **Identification** of people interested in dynamizing the process.
- **Raising the awareness and training** the owners on issues regarding energy saving.



- **Technical advice** allowing to diagnose the conditions of the building and to propose improvements from an energy-saving and economic point of view.
- Being aware of **the socio-economic characteristics** of the owners of the buildings in order to provide adequate advice on public economic aid and funding schemes.
- Propose **solutions to conflicts arising** between co-owners and to particular difficulties to cover the expected investments.
- **Seeking financing** so that the work is done at the lowest cost possible.
- Securing, once a decision has been made to start the works, that they comply with **technical requirements** set and that payment to the building company is guaranteed to prevent delays or stops in the work.
- Minimizing the demand for energy of the building to attain the highest energy saving possible, improving the **management of the facilities** and **changing energy use habits** of users of the building.

Before actually succeeding in standardizing this kind of rehabilitation as regular practice in European social dwellings, i.e. that the associations of co-owners take the initiative and reach reasonable agreements, it is necessary to rely on a **dynamizing actor to get the process in motion**. The actor may be internal, i.e. one of the co-owners of the building willing to make the effort to defend the proposal and to work to bring it to a good end, or an external agent, for instance the managing agent, provided that he/she has the training required and receives economic incentives for the task, or an energy services firm hired by the association, or a representative of a public body. The most recommended option is relying on a co-owner having sufficient interest and willingness and securing external support by somebody with sufficient technical knowledge and mediating skills.

This first strategy yields the first recommendation: allotting technical and economic resources to favour the presence of such dynamizing actor, opting for one or all the possibilities described:

- **Managing agent:** providing specific training to managing agents and facilitating, by means of changes in the legislation and contracting conditions, their commitment to promote energy saving strategies, to propose solutions and to contribute to securing their success.
- **Energy services firm:** facilitating their being engaged by associations of co-owners and raising their awareness, who usually seek energy saving through improved thermal facilities, so that they may include among their services the rehabilitation of the insulation body of the building.
- **Public body:** allotting resources to provide energy consultancy services to associations of co-owners, to diagnose existing problems, to propose solutions and to provide continuing advice during the entire process, to ultimately secure that the necessary interventions are carried out.

Once the necessary elements to dynamize the process are in place, a rehabilitation plan needs to be launched including the combined strategies defined above. We recommend the following specific actions:

- **Awareness & information:**
  - Informing the co-owners, via their representatives (president or vice-presidents of the association) on the intention to conduct a process leading to the improvement of the energy efficiency and thermal conditions of the building.
  - Informing the co-owners of issues regarding energy consumption in the residential sector and their consequences on climate change.

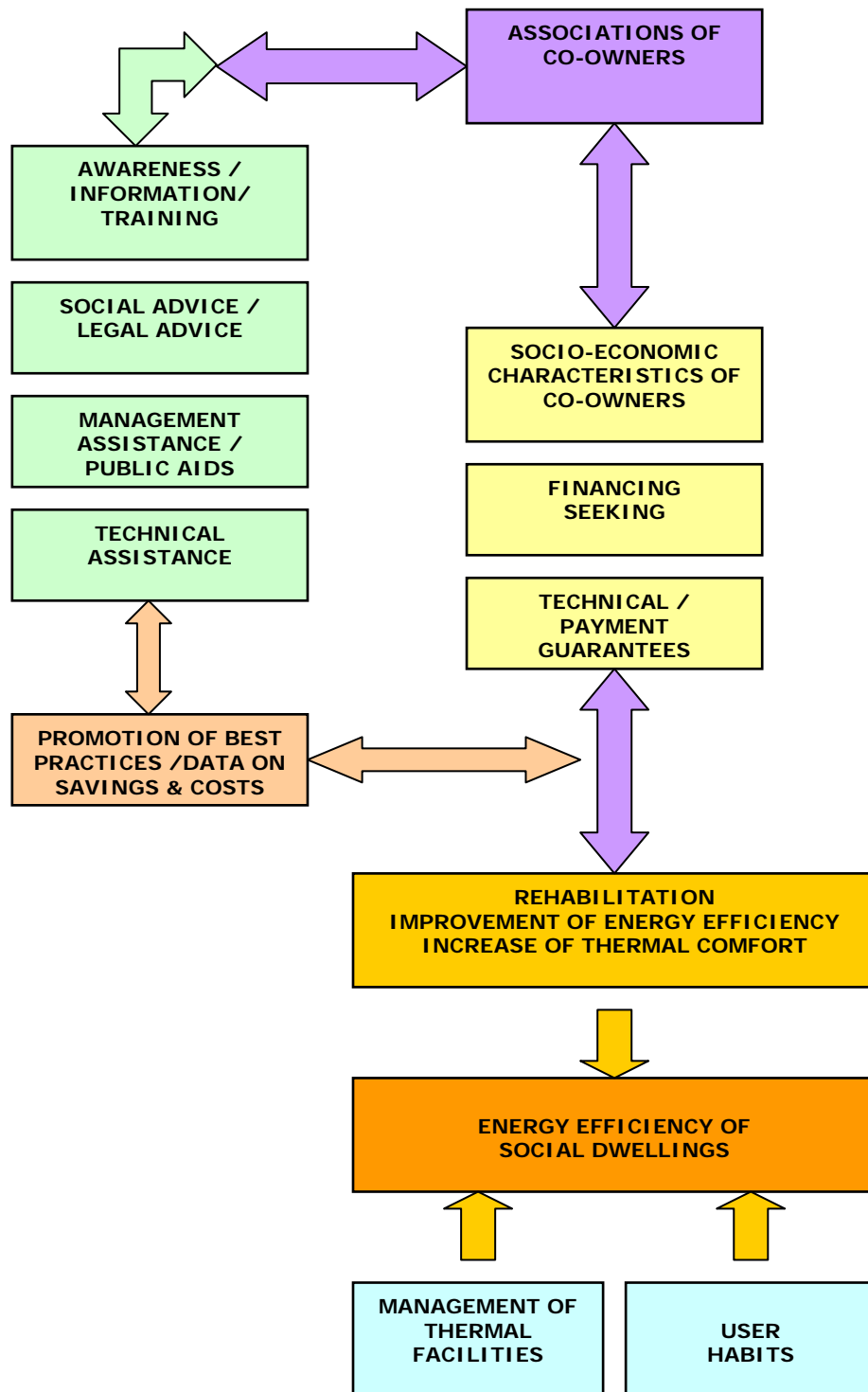
- Raising the awareness of co-owners on the consequences of domestic energy consumption, by means of an information sheet with advice for a more rational use of energy at home.
- Disseminating specific information on public subsidies and possibilities for financing the actions.
- **Technical advice:**
  - Drawing up a technical report with a diagnosis of the energy problems of the building and proposing priority actions to improve the energy efficiency of the building, prioritised by their cost-benefit ratio.
  - Making the technical report available to all the owners for them to study it.
- **Socio-economic characteristics:**
  - Carrying out surveys among the co-owners to assess their knowledge on energy issues, their willingness to invest in the improvement of the building and more specifically in energy efficiency and saving actions, as well as their socio-economic characteristics as regards the abstention of eventual public aids.
  - Attending the meetings of representatives of the association of co-owners to present the advantages of energy-aware rehabilitation and answer their questions on this issue.
- **Conflict solution (mediation & arbitration):**
  - Despite the information and technical guarantees regarding energy saving and investments, certain co-owners may not agree to spend their savings in improving common areas and facilities of the building they live in because they have other priorities or because they simply do not feel the need. This is the reason why a mediator is required – to solve eventual conflicts (regardless of the proposal to adapt the legislation in force so that expenses agreed by a majority be effective).
- **Financing seeking:**
  - Analysing all the financing possibilities for the actions planned, including banking entities or companies that may be interested in exploiting the economic potential of the building – e.g. renting the roof for the latter to install profitable elements not causing nuisances to the users of the building.  
Banking entities may feel interested in promoting this kind of actions, now they are prone to support initiatives helping to mitigate social or environmental problems to increase their social prestige by means of effectively showing their concern and corporate social responsibility.
- **Technical and payment guarantees:**
  - Managing the financial public aids granted to the co-owners to guarantee the payments to rehabilitation companies, to avoid stops in the works should the association fail to comply with the payments scheduled or certain co-owners fail to pay the amounts due by them.
- **Promotion of good practices on management and use of dwellings:**
  - Providing technical information and advice to the associations of co-owners and their managing agents, to secure a better management of common facilities. It is most recommended for associations of co-owners of buildings with a common central heating system to install individual measuring devices to adapt the operation of the facilities to the actual demand.
  - Providing information the users on the most efficient way to use the buildings. It would be interesting to demand rehabilitation companies to furnish a user manual once the works have been completed, with specific information regarding energy consumption and saving (thermostats and valves in radiators, opening/closing devices for blinds, recommendations for ventilation, use of sun shades, instructions for greenhouses and other passive energy systems, etc.).

**Action plan for associations of co-owners of buildings:**

- Awareness, information and training.
- Management assistance for rehabilitation and financial aids.
- Mediation to solve conflicts between co-owners.

**Energy-aware rehabilitation:**

- Becoming aware of financing possibilities.
- Seeking financing on behalf of the association of co-owners.
- Setting up technical and payment guarantees.



## PUBLIC ACTORS

### 4. CCVV.2 Public administrations:

Overcoming a difficult challenge like this one, which, as stated before, is not self-evident, requires breaking initial negative habits and reluctances and becoming standard practice. In order to break these factors, public administrations play a crucial role. They have the capacity to define strategies and to apply them by means of action plans, regulations and economic incentives. The strategy that public administrations should follow to encourage privately promoted rehabilitation processes based on energy criteria has several pillars:

- **Reinforcing urban renovation policies:**

Traditionally, urban planning, as a technique, has solved problems resulting from urban growth. Urban renovation of districts between the 40's and the 70's poses disciplinary challenges that Spanish cities, and cities in other countries with similar circumstances, have not managed to tackle adequately.

Urban growth is an extraordinary feat from the point of view of sustainable development. In many cases this growth helps to finance the ordinary operations of municipal administrations. The funding of the systematic renovation of a city with a low growth rate poses a problem which has been hardly dealt with so far and which requires a serious consideration.

To change these urban trends it is recommended to:

- Introduce in Municipal Plans **rehabilitation promotion criteria**, defining the areas that may be altered (dwelling at ground level or in attics), increase of height or surface of floor area, using for this purpose even derelict urban spaces, as a means to generate appreciations allowing to encourage privately promoted rehabilitation.
  - Defining in the Municipal Plan **preferential rehabilitation areas**, including districts dating to the 40's-70's as well as historical heritage districts.
  - Developing **legal frameworks adapted to the need for urban renovation**, by means of ordinances allowing to integrate highly energy-efficient building solutions, increases of surface of floor area, increases of maximum height to allow the installation of passive energy systems, etc.
  - Creating a **fund to cover for eventual failures to pay providers** to prevent stops of relevant community initiatives, registering the loans granted as liens on the property in the Land Register.
- **Reinforcing the management capacities of privately promoted rehabilitation based on energy criteria:**

During the life of the NIRSEPES Project, the region of Athens and Navarre have proven the major problem affecting these urban policies concerns the actual management of the policies, beyond the mere technical difficulties that may arise as a consequence of introducing energy-saving solutions..

The Project has shown that it is necessary for administrations to make available and at the disposal of the privately-promoted rehabilitation service an additional management service to support the restoration of historical heritage districts as well as districts built between the 40's and the 80's, since they also need rehabilitation policies. In this sense, the support and reinforcement of the management capacity and the advice on energy saving provided by the rehabilitation bureaus in Navarre has been most positively valued, and it is recommended that similar offices be created in the region of Athens and in other regions sharing similar circumstances.

In order to reinforce the management capacity of privately promoted rehabilitation actions, it is recommended to:

- Search for a mechanism facilitating the **joint work** of **local and regional bodies** concerned with the management of rehabilitation policies.
  - Create **rehabilitation offices** (or similar services), or further supporting them, in the regions or municipalities where they already exist, reinforcing their management capacity to provide technical assistance, enlarging their capacities on energy saving, as well as legal advice to associations of co-owners. These bodies should centralise all the information and capacity as regards economic aid schemes, so that the citizen may use a **“one-stop shop”** to obtain advice and handle administrative procedures regarding the rehabilitation process.
  - **Reinforcing the capacity** of the entities managing energy-aware rehabilitation **to provide advice** relying on other bodies. In Navarre, for instance, these entities may obtain advice from the Department of Innovation, Employment and Technology of the Government of Navarre, the Energy Agency of Pamplona and other agents, such as CRANA, CENER. In the case of the region of Athens, this role may be played by CRES, and Öko-Zentrum may act likewise in the region of North Rhine-Westphalia. These entities may collaborate to create new programmes or to coordinate existing ones, reinforcing their resources.
- **Coordinating existing subsidy schemes:**

In the partnering regions of the NIRSEPES Project, as well as in many other European regions, there are public aid schemes available to encourage privately promoted rehabilitation of buildings. On many occasions these schemes focus on historical heritage districts, and only very seldom do they cover dwellings in other districts around the city. However, hardly any of these schemes is in one way or another conditioned to saving energy and improving the thermal comfort of residential buildings.

Nevertheless, in addition to rehabilitation aid schemes there are other schemes to subsidise energy-saving or efficiency actions or the introduction of renewable energy systems in existing buildings. NIRSEPES Project has shown that these schemes run parallel, but are hardly coordinated. This lack of coordination does not favour integrated rehabilitation according to energy saving criteria. To make the most of these schemes the technical criteria need to be homogeneous and their administrative handling should be carried out simultaneously, thus avoiding comparative differences, duplication of efforts and ultimately saving money and time.

To coordinate these schemes, it is recommended to:

- **Concentrate and increase public aids available**, gradually optimising their complementariness and avoiding any eventual contradiction between their respective regulations.
- **Handle** rehabilitation aids **jointly** by means of a “one stop shop” to be set up in the rehabilitation bureaus or similar offices.
- Make these **aid schemes stable**, setting permanent budget headings allowing to allocate these aids every year and any time of the year.
- **Review the regulations governing these aid schemes**, facilitating integrated solutions to save energy in buildings and subsidising the expenses incurred by associations of co-owners.
- **Adopt tax measures** to encourage this kind of intervention (tax deductions, setting a minimum VAT, subsidising any eventual increase

in the actual price of the works, e.g. industrial benefit to be paid to the rehabilitation companies).

- Creating **special aid schemes** to develop pilot experiences or other actions to overcome initial reluctances, whose existence the NIRSEPES Project has demonstrated.

- **Developing new action plans and pilot experiences**

The development of the NIRSEPES Project has allowed to verify how difficult it is to develop pilot experiences leading to an integrated energy-aware rehabilitation from which to obtain data on energy saving and serving as example for other associations of co-owners needing to rehabilitate the thermal insulation body of the buildings.

Finding a sufficiently descriptive image of social housing in all the regions participating in the project has not been an easy task either: year of building, location, state of conservation, etc. The challenge of rehabilitation has not been sufficiently characterised.

However, these difficulties should not discourage the action of administrations. Quite on the contrary, they should entice them to continue with their work in the belief that sustainable urban models shall contribute to the success of the rehabilitation and improvement of the housing stock built from the 40's to the 80's, thus multiplying the life cycle of these urban settings.

The following recommendations apply to the development of new action plans and pilot experiences:

- Formulating a **Common Strategy for Urban Renovating** and the **Rehabilitation of Buildings** to improve their Energy Efficiency: inventory, geographical location, diagnosis of the starting situation, criteria for action, making estimates, blueprint for a schedule, etc. with the participation of local and regional entities.
- Promoting **Pilot Projects** to **rehabilitate specific buildings with energy saving solutions**, addressed to associations of co-owners of buildings constructed in the 40's-80's: monitoring consumptions before and after the intervention, justification of solutions, materials for subsequently communicating the progresses made, costs, profitability, pay-off term, etc.
- Introducing integral planning criteria as a means to develop a wider territorial strategy, improving public areas and facilities as an incentive and support to privately promoted rehabilitation actions. Planning the second generation of actions, with the **active participation** of the associations of co-owners and local entities.
- Developing an agreement **between regional and local entities** to launch an **Action and Monitoring Plan** encouraging periodical meetings for all the actors and to measure the progresses made and to readjust the policy.
- Setting up a **Monitoring Committee** of the policy, defining the objectives and work plan, for instance, according to the following domains: administrative areas of the regional administrations regarding housing, rehabilitation, energy saving and efficiency, budgetary issues, the partnership representing local entities, bodies connected with

managing rehabilitation actions and public entities working on the introduction of social measures to improve the environment.

- **Dissemination, awareness and information:**

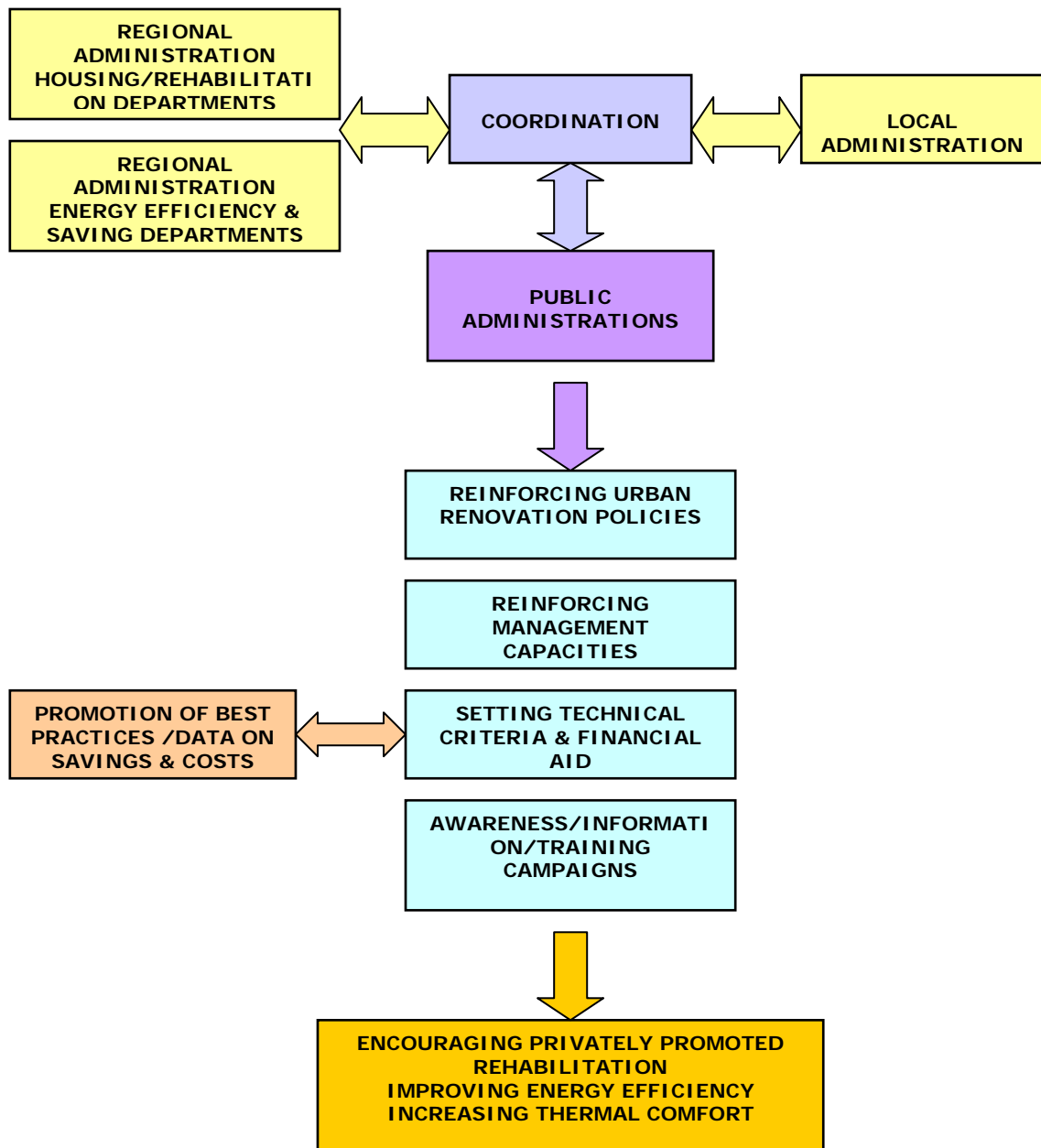
The rehabilitation and renewal campaign we seek may not seem necessary to the same extent in all the social dwellings built in the 40's-80's, especially in Southern regions, where the climate is milder and energy is cheaper. These last two factors make the need to save and improve thermal conditions less evident, although energy consumption data obtained in these buildings are quite alarming. However, these problems seem far too abstract to the associations of co-owners.

Something similar happened in, for instance, Navarre, when lifts began to be installed in old buildings several years ago. It was at first hard to convince owners of the possibilities and advantages of having a lift installed. Nowadays, most owners needing a solution to improve their accessibility are aware of a similar case in another building having completed the process. Public initiatives are not that necessary any more, for initial reluctances have been overcome.

However, this is not the case of rehabilitating the thermal insulation body of buildings, because there are hardly any examples available. Additionally, the issue is not easy to communicate.

To effectively communicate the need to rehabilitate the building to improve the energy efficiency of social housing, we recommend the following:

- Setting up a **Communication Plan** to:
  - List any actions undertaken so far regarding rehabilitation.
  - Promote the word-of-mouth communication.
  - Identify the target audience in districts with social housing and specific associations of co-owners.
  - Provide guidance on general campaigns addressing the users, to raise their awareness and give information on the environmental and economic consequences of the improvement of thermal insulation of buildings.
- **Drawing up an inventory of best practices and informing** the associations of co-owners (actual data obtained from pilot energy-saving programmes on savings obtained and pay-off terms).
- **Providing case-specific information** to the co-owners being the actual users of the buildings **dating to 40's-80's**: eventual economic and financial aids, technical options, regulations, intervention levels, savings, increase of comfort etc.).
- Setting up a follow-up committee under the Action Plan whose panel of judges shall grant an **Annual Award** to the associations having rehabilitated the thermal insulation body of the building, acknowledging most outstanding efforts and identifying best practices to act as role models.





## OTHER ACTORS INVOLVED IN REHABILITATION

### 4. CCVV.3 Professionals in the sector:

As mentioned above, arising difficulties are not technological, since the rehabilitation solutions to improve energy efficiency, and in particular those regarding the renewal of the thermal insulation body of the building, seem easy to solve.

- **Dissemination, awareness and information:**

It is necessary to raise the awareness of and to train the professionals so that they integrate the concepts of bioclimatic architecture, especially those regarding energy saving in buildings, into the standard development of projects. To attain this, we make the following recommendations:

- Information and awareness-raising campaigns addressed to professionals in the field of architecture in general, via their professional associations and other specialised bodies.
- Specific training on rehabilitation based on energy-saving criteria.
- Setting up technical criteria and “first-stop shop” solutions: drawing up a technical guide for rehabilitating according to energy criteria, disseminating the basic principles and laying down the design and building criteria.
- Dissemination of technical papers to support professionals.
- Possibility of receiving technical advice from specialised entities.

- **Enlarging competences in rehabilitation projects:**

Although, as recommended in the previous chapter, entities specialising in rehabilitation management are required, technicians hired by the co-owners to develop rehabilitation projects could provide added value, by means of information and advice to their clients on issues regarding the handling of public aid schemes.

- Knowledge regarding recommended technical criteria to be integrated into regulations governing public aid schemes.
- Information and dissemination to professionals on state grants, to be ultimately included in their catalogue of services

- **New services of professional associations connected with rehabilitation:**

It would be interesting that vis-à-vis this unusual practice, i.e. the rehabilitation of buildings to improve their energy efficiency, citizens could rely on the support of professional associations to certify that the professionals they hire possess the competencies required. To facilitate this possibility we recommend:

- Drawing up a list of professionals specialising in rehabilitation using energy-saving criteria, managed by the corresponding professional association.
- Ensuring that professionals in the sector receive continuing training on the issue.

#### **4. CCVV.4 Building companies:**

The number of building companies specialising in rehabilitation is very limited. During the participative processes these companies have hardly been present, although certain exceptional cases, such as JACAR, Montajes SL in Navarra, have shown that this is a most interesting field of action allowing companies to differentiate themselves from the competition.

- **Dissemination, awareness and information:**

It is necessary to raise the awareness of and to train the managers and technicians from these companies, supplying them technical knowledge on rehabilitation and energy efficiency of buildings, especially considering that they may have a paramount influence over owners when making decisions about rehabilitation. In many cases, the owners contact a building company without securing the advice of a professional, and ask for a quote to do the rehabilitation work. On their part, these companies hardly make suggestions to integrate bioclimatic solutions into the project.

Here are our recommendations:

- Specific awareness-raising and information campaigns for managers and technicians from building companies.
- Training courses on the integration of environmental and energy-saving criteria into rehabilitation projects.
- Providing external technical support (papers acknowledging certain solutions).

- **Payment guarantees:**

The major obstacle hampering the development of this activity by building companies is the fact that associations of co-owners frequently feature management problems and are sometimes unable to guarantee the payment of the work in due time. We therefore recommend that public aids, although granted to the owners, be transferred directly to the association of co-owners or to the contractors themselves.

## **5. Lessons learned & conclusions**

The European Project entitled NIRSEPES was closed in December 2007 and it has shown that breaking initial negative habits and reluctances to make investments in common areas and facilities of buildings leading to energy saving requires very long processes. It may therefore take months or even years to witness the actual results of the work carried out. It is necessary to insist applying existing tools as well as those that may be designed using the proposals included in this paper, to address the main stakeholders, namely public administrations to launch mechanisms encouraging and supporting the standardisation of this practice as common currency and co-owners to become aware of the consequences of residential energy consumption and of the need to invest in the improvement of their buildings beyond mere repair and maintenance work.

The NIRSEPES Project has allowed to launch a process that has increased the level of awareness of administrations, bodies in the building and rehabilitation sector and the general public. However, due to the momentum and the dimension of the problem no results have been yielded for so short a term. Nevertheless, the project has laid the foundations for future action, should the recommendations and conclusions included in the documentation of the project coincide with the right circumstances to successfully standardising rehabilitation to improve energy efficiency of buildings as common practice in social dwellings in Europe.

Working with associations of co-owners of buildings take much time and effort, but awareness, information and training actions, as well as continuing advice, is the only means to overcome the initial negative habits and reluctances currently hampering the full potential of energy-aware rehabilitation where this housing tenure is predominant. The project has also shown that economic incentives are very necessary, but they are far from being the only needs felt by the associations of co-owners, who also demand technical assistance to support their decisions when their savings are at stake and mediation and arbitration to solve their problems.

The project has also highlighted that the lack of awareness as regards individual consumption and that paying central heating costs by built floor surface are an obstacle to awareness and to the securing of substantial saving, regardless of the intervention envisaged. The conclusion we may draw here is that one of the first measures to be implemented is reducing the demand for energy of the building, i.e. the demand for central heating by the users, who do not save energy unless they see a reduction in the energy invoice. This measure may also allow to introduce further measures.

It may be therefore concluded from the process that three conditions need to be met to succeed in reducing energy consumption in existing buildings: the agreement of the owners to undertake an energy-aware rehabilitation, which becomes gradually easier to attain if every owner feels the consequences of his/her own energy consumption; the economic incentive triggering the process; the technical assistance that must provide the best and most profitable solutions from an energy and economic viewpoint, so that, once the intervention is completed, the owners actually feel that the expected advantages are true and feel satisfied. Their satisfaction shall light the fuse for other neighbouring associations of co-owners to feel encouraged to replicate the experience in their own buildings.

In order to save energy in buildings, it is crucial to reduce the demand for energy in buildings with a defective, if any, thermal insulation. Energy-aware rehabilitation shall yield benefits in itself, saving over 30% of the energy consumption in already insulated buildings and up to 70% in the case of buildings with deficient insulation

after full measures have been implemented. Still, it shall take another final condition to guarantee a decrease in energy consumption in the residential sector, namely a change of attitude on the part of the users. All of us, as users, need to become aware that energy consumption depends to a large extent on our daily habits. As far as this last aspect is concerned, we sincerely hope that the NIRSEPES Project has made its contribution to this objective.