

## **WP 4: EPI-SoHo Approach and Implementation Technique Embedding**

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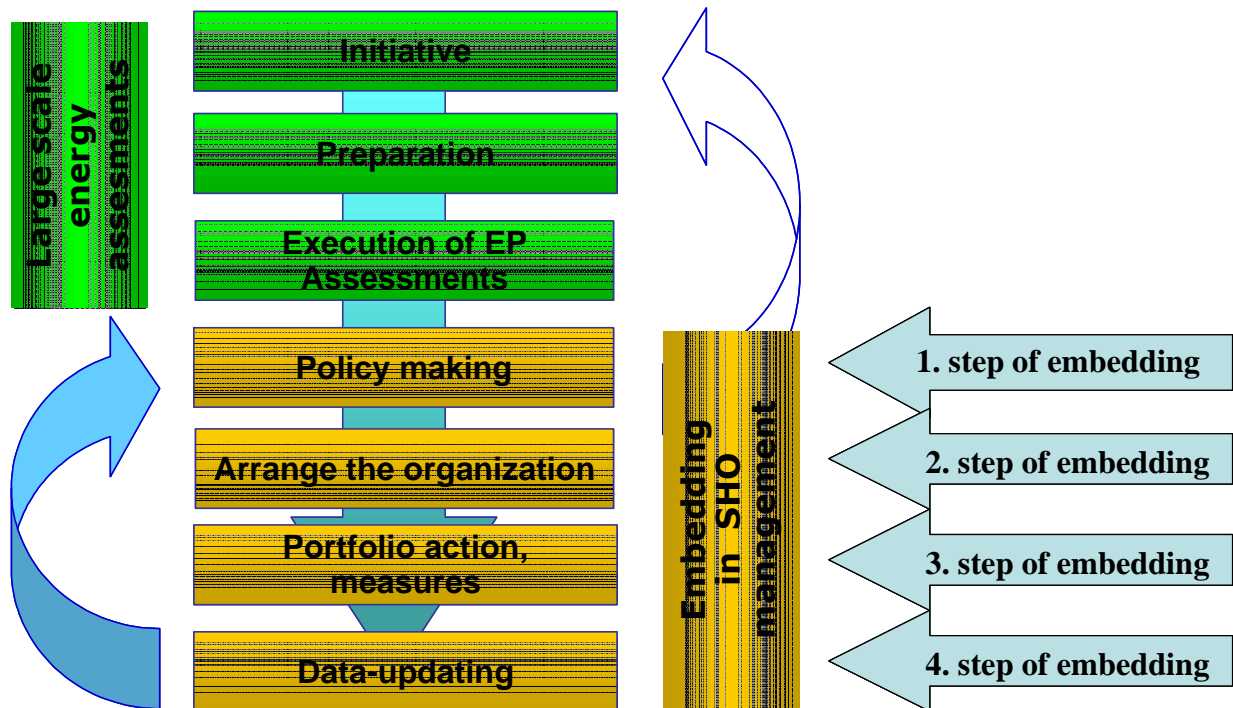
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# 1 Objectives

The aim of this report is to provide guidance on the generic approach on embedding energy performance data in the management process of Social Housing Organisations (SHO). The starting point for the elaboration of the embedding approach was the scheme presented in the Terms of Reference (see figure 1 below and WP 3) which contains 3 steps of assessment and 4 steps of embedding.

*Figure 1: EPI-SoHo Approach (ToR)*



The EPI-SoHo approach presented in figure 1 describes a process-orientated procedure resulting from the Dutch experiences with Energy Performance Assessments in the city of Tilburg.

In addition to this approach in the following a further management approach is introduced to describe the integration (embedding) of energy into other management issues in detail.

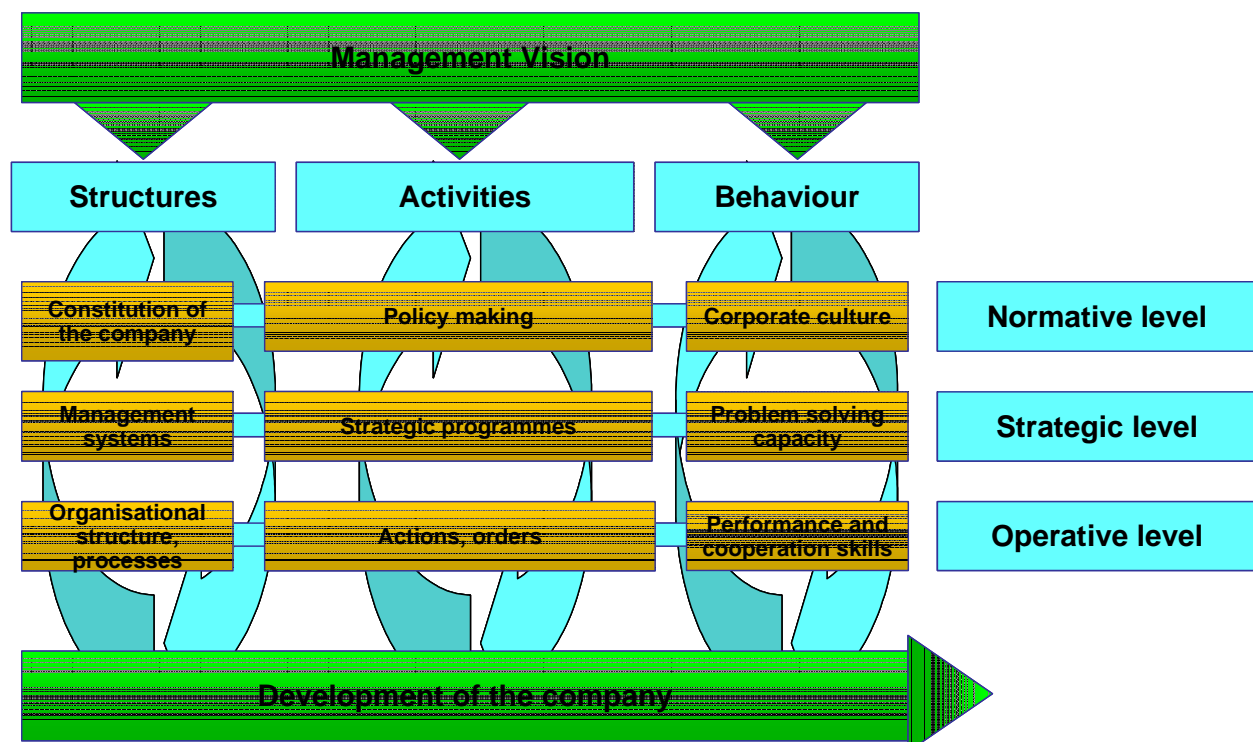
## 2 St. Gallen Management Approach and EPI-SoHo

The aim of the St. Gallen Management approach is to classify decision problems of the management of a company. It provides a good overview about the relationship of internal success factors and offers a framework for processes in all relevant sectors of a company. The St. Gallen Management approach defines three dimensions of a company based on a general management vision (see figure 2):

- As the first dimension three horizontal levels are defined as normative, strategic and operational management. On the normative level the goals of the company are specified. This level is concerned by external influences like regulations and other stakeholder requirements. On the strategic level the guidelines from the normative level are further concretised and on the operative level the ideas of the both superior levels will be carried out.
- The second dimension contains three vertical pillars marking structures, activities and behaviour of a company. The central pillar of 'activities' contains the policy making, the strategic programmes and the operative business of a company. The left pillar deals with 'structures' of a company e.g. the implementation of a management system or the organisational structure. The pillar of 'behaviour' concerns on normative level the corporate culture, on strategic level the capacity for problem solving and on operative level the concrete job performance and cooperation skills of the members of the organisation.
- The development of a company over time can be interpreted as third dynamic dimension of the approach.

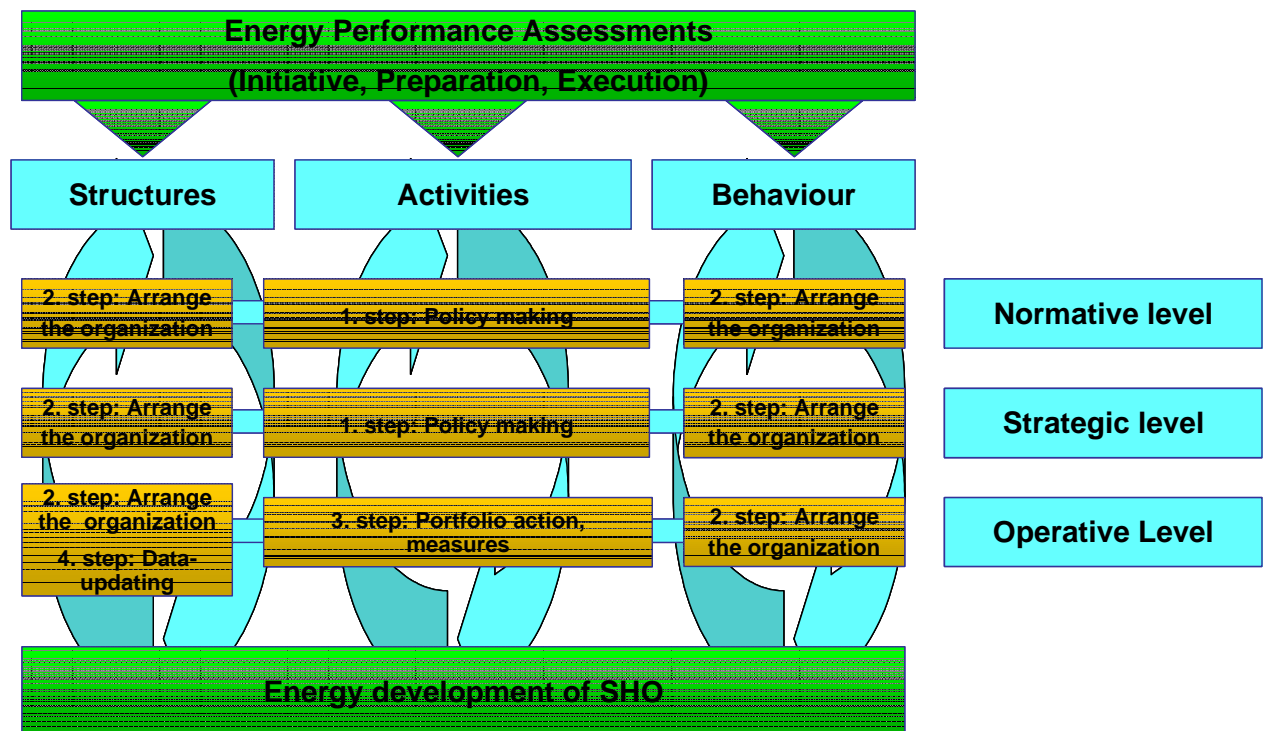
The harmonisation of the modules within the respective dimension is a precondition for a successful management. The internal harmonisation occurs in three steps: within one module, on horizontal level and vertically within one pillar.

*Figure 2: St. Gallen Management Approach (based on Bleicher (1996), pp. 76 and 81)*



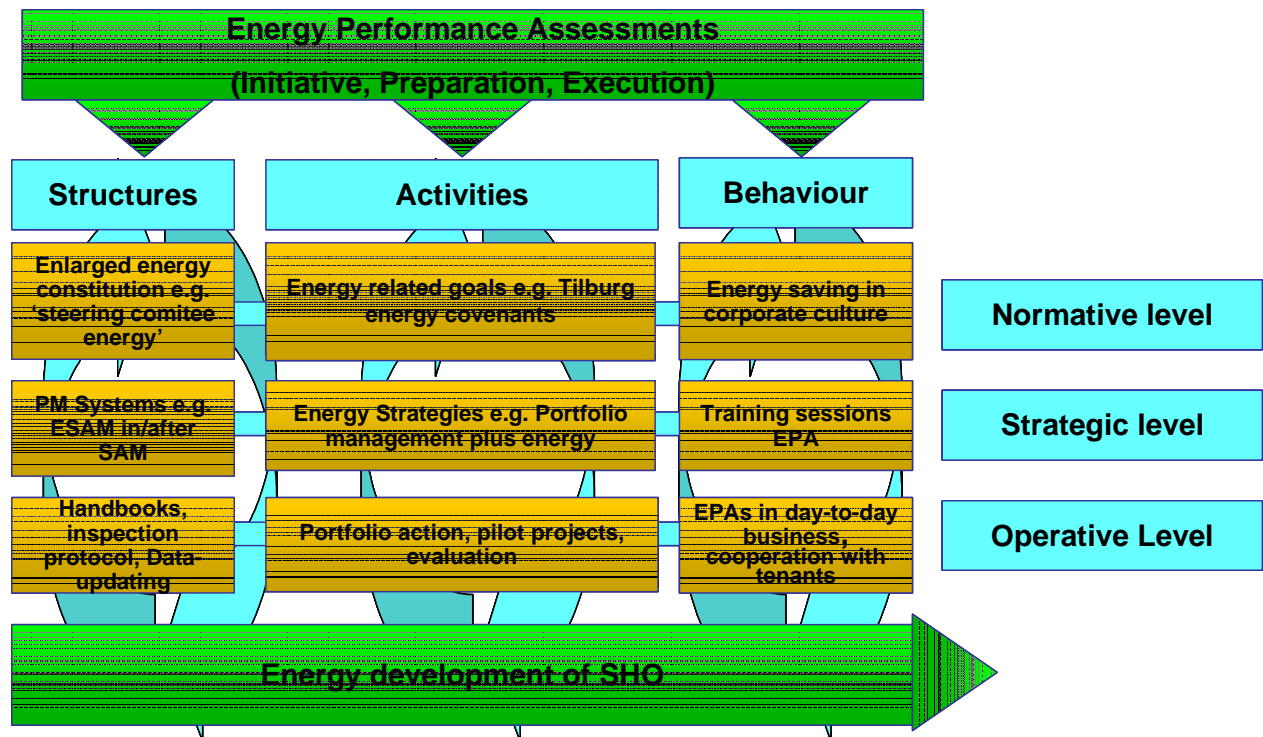
The management concept of St. Gallen was adapted by IWU to the EPI-SoHo approach from the ToR and the four steps of embedding. It is assumed that the assessment phase is finished when the embedding phase starts. Figure 3 clarifies that embedding EP-data refers to different management levels and that EPI-SoHo is not only focussed on portfolio management (Policy Making and portfolio action on the pillar of activities). The approach points out that the integration of energy performance data on the pillars of structures and behaviour (processes, data management, functions etc.) is also of importance. To underline the fact that the St. Gallen approach should be not interpreted as ‘top-down’-approach linked with hierarchies the relationship between the modules are illustrated with feed-back cycles.

*Figure 3: ToR approach of embedding in St. Gallen Management Approach*



In a second step the modules from figure 3 have to be fulfilled with concrete contents and examples. It can be pointed out that based on the original EPI-SoHo approach (figure 1) and the additional management approach of St. Gallen (figures 2 and 3) the following tools and examples are possible outcomes of the enlarged EPI-SoHo approach of embedding (figure 4). The tools and examples are described in the next chapter starting with the central pillar of activities.

Figure 6: Enlarged EPI-SoHo approach of embedding



## 2.1 Embedding energy in SHO management - Activities

Based on Energy Performance Assessments (EPA) and the available energy data in Social Housing Organisations the pillar of activities is crossing all management levels of the St. Gallen concept. In the context of EPI-SoHo the level of activities contains the modules 'Energy related goals' on the level of normative management, 'Energy strategies for the housing stock' on the level of strategic management and 'Portfolio action and evaluation' on the level of operative management. The whole procedure is based on 'Portfolio Management in 8 modules' (PM 8)<sup>1</sup> and was also adapted to the new challenge of the EPBD regulations within the running EIE-project ESAM.

### 2.1.1 Normative level - Energy related goals

'Energy related goals' is established on the level of normative management and forms the basis of all actions taken by the organisation. This module is affected by external influences like national regulations and aims of the stakeholders. The SHO could express in its *energy saving policy* that it feels obligated to sustainable development and energy saving. This global company goal could be broken down into a concrete energy conservation plan using the outcomes of EPAs. The SHO could commit itself to top the legal requirements concerning the energetic refurbishment of a building (e.g. using a higher thickness of insulating or an insulating material with better heat transition coefficient) or to conclude an agreement with the municipality about reduction of CO<sub>2</sub> (see also WP 6 Energy Covenants).

<sup>1</sup> PM 8 was developed within the SUREURO project.

### 2.1.2 Strategic level - Energy strategies for the housing stock

‘Energy strategies for the housing stock’ is established on the level of strategic management and contains steps and tools which are mostly assigned to Portfolio Management.

We have to emphasize that this procedure is only an example. The procedure in detail might be very different in the several SHOs, but in principle the several procedures should be comparable.

- Integrated product performance

An assessment of the *integrated product performance* helps to identify the current quality of the housing stock. All information about the housing stock in its current condition, including the technical condition, the financial results and the functionality for target groups are analysed in such a way that changes can be measured. Integrated product performance includes also the measurement of the energetic quality of a building e.g. by an EPA or other methods (see D 4.1 report).

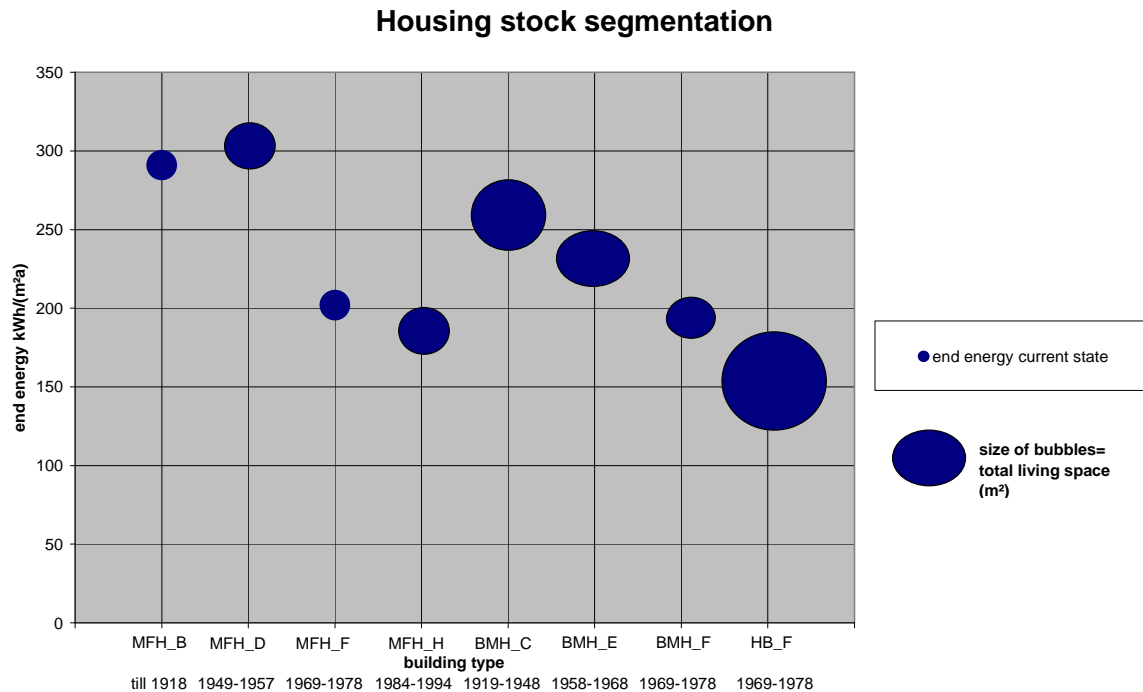
- Market analysis

External influences, which normally cannot be controlled (environmental factors) such as, for instance, competition, laws, social developments, economic situation etc. are analysed in a *market analysis*. This module provides an answer to questions about the state of the market or the competitors in the market and should also comprise the registration of developments and trends in the market. Concerning energy it can be examined whether the market honours a higher energetic quality of a building by a higher rent or a reduced vacancy rate (e.g. ‘ecological rent level’ in Darmstadt/Germany). On the other hand prognoses can be made or evaluated over the future development of the energy prices as well as the possible sources of energy in future.

- Segmentation of the housing stock

A *segmentation of the entire housing stock* must enable the company to define workable ‘Strategic Business Units’ within their housing stock. ‘Strategic Business Units’ are product-(or object) -market combinations with own opportunities and risks. They must be homogeneous and clearly definable. A segmentation of the housing stock can be drawn up from the side of demand, or from the side of supply. On the side of demand, the customer takes up the central position; what different target groups does the market consist of and what are their demands (e.g. one product-market combination could be ‘basic (low price) dwellings for elderly people’). On the side of supply, the stock takes up central position; what dwellings exist, and which customer groups or which regional markets can the SHO serve (a product market combination could be e.g. ‘multi-family houses from the 1960s with elevator in a certain area’). An example for a possible segmentation of the housing stock using the information from the EPAs is a building typology with information about building type (e.g. small and big multi family houses, high rise buildings), building age and energetic quality (see figure 5).

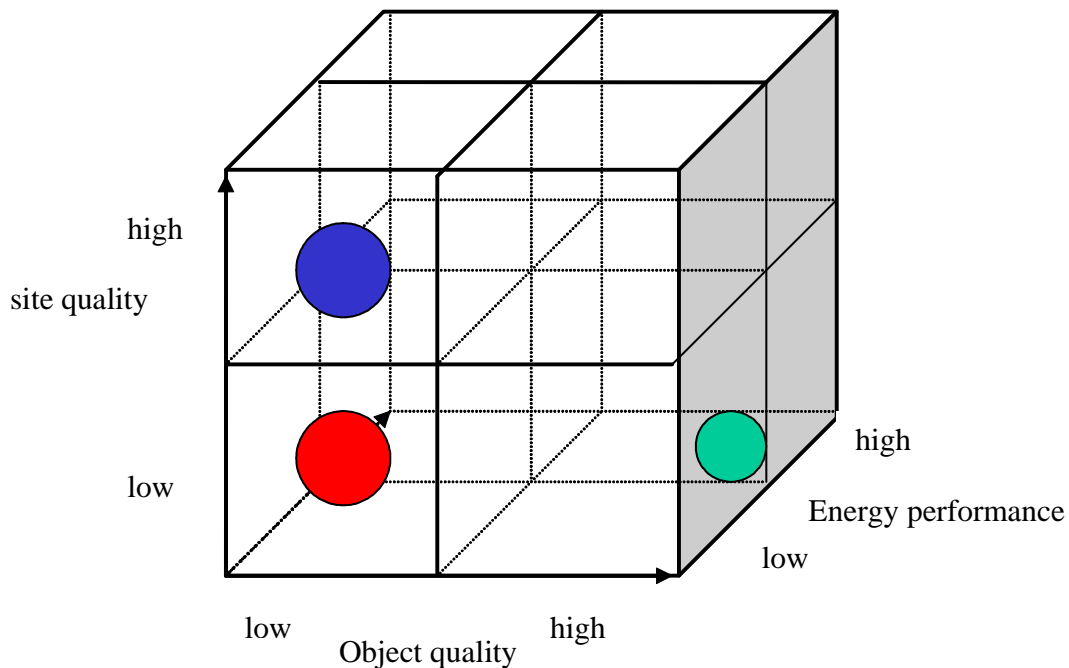


*Figure 5: Housing stock segmentation (example)*

- Product strategies including the information of EPAs  
After segmenting the housing stock a portfolio matrix should be developed. A number of different types of a portfolio matrix are available. Most of them are working with a market dimension (e.g. a commercial axis) and an object dimension (e.g. a technical axis). Every dimension is influenced by a number of different criteria (e.g. for market dimension: rent level, vacancy rate; for technical dimension: equipment of dwellings, building quality). Every housing unit is rated by a scoring model. Depending upon the selected type of matrix different *product strategies* can be developed (reallocation, selling, social modification e.g.). The existing portfolio models are different regarding to the amount and the complexity of used data and the dimensions (axes) of the portfolio matrix. The data coming out from the strategic diagnosis of the housing stock are used to describe the chosen dimensions of the portfolio matrix (using a scoring model). How many criteria and sub-criteria will be used in this context depends on a lot of factors (e.g. the used information system, the available financial resources for the strategic diagnosis etc.).

In the following simplified example a portfolio matrix with three dimensions is used: the quality of the site, the object quality (without energy criteria) and the energy performance of a housing unit.

*Figure 6: Portfolio Matrix including energy (example)*



By distinction of two standards for object and site quality and two energetic standards (high energy performance and low energy performance; more standards are possible) the following strategic recommendations can be formulated:

- For housing units with high site but low object quality: ‘Invest in object quality’ but no additional investment in energy performance (only regular maintenance) if the current energy performance is already high or improvement of the energy performance if the current energy performance is low (legal requirements or better standard).
- For housing units with high site and high object quality: ‘Preserve standard’ but no additional investment in energy performance (only regular maintenance) if the current energy performance is already high or improvement of the energy performance if the current energy performance is low (legal requirements or better standard).
- For housing units with low site and low object quality: ‘Sale or Demolition or Urban renovation’. No investment in energy performance if the current energy performance is high or low (sale or demolition). In case of urban renovation: investment in energy performance due to legal requirements.
- For housing units with low site but high object quality: ‘No further investments’ in object quality and energy performance (only regular maintenance) if the current energy performance is already high or improvement of the energy performance due to legal requirements if the current energy performance is low.

With the help of an EPA the detailed level of energetic improvement can be determined. For SHO it could be suitable to define 3 standards of energetic improvement:

1. Improvement due to legal requirements on national level

2. Improvement to a 'sustainable' energy performance (e.g. in Germany: 10-litre-house)
3. High energetic building quality (e.g. in Germany: 4 to 7-litre-house or better)

The mentioned strategic recommendations are only examples. The strategies are of course subject to the SHO's own vision influenced by stakeholder requirements (e.g. covenants) and advancing legislation. It is therefore possible that in all four sectors of the portfolio matrix the minimum investment strategy should at least be at a certain level.

It is also possible to define more than three dimensions e.g. the suitability for target groups as additional dimension. Furthermore it is also thinkable to define only two dimensions with the energy performance as sub-criteria of the dimension technical quality. In this case the weight of the sub-criteria and the scale has to be determined.

- Investment plan and financial framework  
*Investment plan and financial framework* is focusing on the implementation of developed strategies with regard to the projects. Based on strategic portfolio policy, refurbishment projects and measures are set out in mid- and long-term investment and maintenance plans; processes are optimised to make things happen. To determine financial consequences of the different strategies, the total of strategies is tested against the financial framework of the organisation. This occurs in this module and applies to all housing or rental units for which the strategies have been determined. The aim of the module is drawing up and determining an (long-term) investment plan. A part of this investment plan is the (project) annual budget. The management of an SHO has to take into account the financial resources and the problem to refund the energetic refurbishment by rent increases. This could be very important for the success of realising energy saving measures e.g. in Germany the SHO has to invest in energy saving measures but the tenants are realizing the savings of heating costs (so called investor-user-dilemma). Analyses of all possible ways of financing and refunding the energetic refurbishment are therefore part of these steps.
- Risk analysis  
The *risk analysis* computes all possible consequences of a selected strategy e.g. with the aid of a calculation model. In this way, it is possible to determine whether, and if so, under which conditions, the strategy is financially viable. In the context of a risk analysis the financial consequences of the selected energy strategy and possible alternatives can be discussed. For this a calculation model has to be developed which considers the future maintenance costs as well as the investment costs and on the income side the future vacancy rate. A calculation of scenarios under consideration of a general risk reduction through energetic refurbishment should be possible.

### 2.1.3 Operative level - Portfolio action and evaluation

This module is established on the level of operative management and includes a detailed testing and further development of the strategic recommendations on object level.

In case of *project preparation*, the objectives of the refurbishment project, the vision, the preconditions, the area development plan and so on are all brought together, allowing the preconditions and requirements for that particular project to become visible. If required, the project leader can change the project proposal and may then submit the project for approval again. The project leader prepares the project on the basis of the material submitted from the step policy making.

The aim of *project realisation* is to implement the draft mix of refurbishment measures (including energy saving measures). During the pre-implementation phase, the approved project

undergoes the final preparations and is made ready for implementation. After that the project is contracted out and the project is implemented. When the project is completed, the project leader draws up a supervisory plan, containing all information required for property management. The project leader is in charge of the aftercare over an agreed period.

After the realisation of the project, the project is evaluated. This *project evaluation* contains e.g. a cost-benefit-analysis with the help of EPA, an inventory on client satisfaction with energetic refurbishment, the tuning of internal procedures and an assessment of the quality of work delivered by contractors and subcontractors (EPA after refurbishment, metering of energy consumption).

## **2.2 Embedding energy in SHO management - Structures**

The structures of a company are the institutional framework for all activities within a company. The structures should be completed by energy aspects

- on normative management level by a *constitutive implementation of energy saving* e.g. the set-up of a steering committee for energy saving projects with members of the organisation and external experts (e.g. from municipality, scientists)
- on strategic management level by the integration of a portfolio management system including energy (cross connection to the running IEE project ‘ESAM’). Portfolio management systems are defining procedures and structures as basis for all further activities concerning the planning and controlling of the total housing stock as described above. Portfolio management systems are often connected with software solutions. On the pillar of structures a portfolio management system determines the general way how energy is integrated in the management process.

The ESAM project shows that the energy performance of buildings (dwellings) can be used in strategic asset management (SAM) in different ways which will depend on the market situation and on the situations and objectives of each SHO<sup>2</sup>:

1. Criteria or indicators of the energy performance can be integrated at all steps of the SAM process: The precondition for this case is that a SAM already exists (or will be implemented soon) and all energy relevant data (from ECs or EPAs) for all buildings of the building stock are already available.
  2. Criteria or indicators of the energy performance can be used on its own to define an investment plan only for energetic retrofitting of the housing stock. This case is suitable for (smaller) companies with no existing SAM system.
  3. Criteria or indicators of the energy performance can also be taken into account only in the implementation phase of SAM, through the use of specific tools to maximize the energy efficiency of the refurbishments for example. This case is suitable if a running SAM system is not to be changed.
- on operative management level by defining processes, functions, tasks and responsibilities, by selection of a project organisation form for instance a single project group or a project group and working groups, by selection of the project group members (also external energy experts and tenants or tenants’ representatives) and by documentation through inspection and quality protocols and handbooks. The technical changes that have been made in the housing stock

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<sup>2</sup> For detailed information see ESAM project

must be administrated, including of course the EP-data. Based on the updated EP data the management can evaluate its policy and outcome (data-management including data-updating).

### **2.3 Embedding energy in SHO management - Behaviour**

The behaviour of all members of an organisation as well as the structures are important success factors for the activities of a company. The behaviour level should be completed by energy aspects

- on normative level by an enlargement of the existing corporate culture based on a top management that is sensible for energy saving issue and by symbolic elements (e.g. energy saving in office buildings, offer of EPA for employees' homes...)
- on strategic level by workshops, training regarding to EPA and energy saving for employees, qualification on energy issues as criterion for the selection of new employees
- on operative level by using EP data in day to day business and front-office (renting, selling, maintenance, complaints)

### 3 Experiences from the pilot projects

The general experience from the pilot projects with the EPI-SoHo-approach is that there is no conflict between the 7-steps-scheme from the ToR (WP 3) and the St. Gallen management scheme presented above. On the contrary: they are complementing each other.

In the ToR the 7-steps-scheme was defined in a rough way from a more process-orientated point of view based on the experiences from Tilburg. In 4.1 and 4.2 the 7 steps should be filled with detailed contents. By working on 4.1 and 4.2 we realised that also structural and behavioral questions are of importance. The St. Gallen scheme is helpful to show that for example the step "Arrange the organization" concerns different management levels and is a structural as well as a behavioral question.

To summarize the differences between the two approaches it can be pointed out that

- the 7 steps-scheme is looking in a more project- and process-orientated way to assessment and embedding and
- the St. Gallen scheme is looking in a more structural way to the SHO

A project without a clear defined goal (structure) is worthless; a structure without knowing how to come to it (project) also. Both approaches are complementing each other very well.

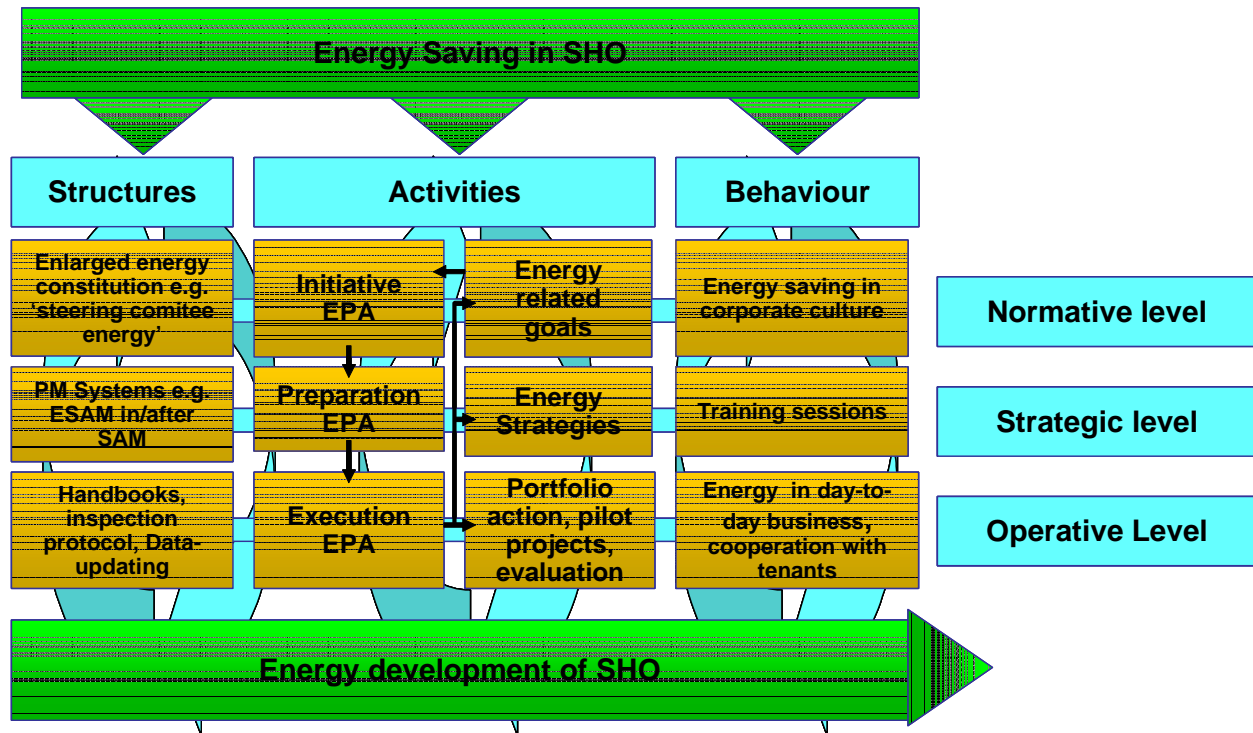
**The 7-steps-scheme from the ToR and the St. Gallen management approach are complementing each other. Both approaches together are forming the EPI-SoHo-approach.**

### Recommendations from the Pilot sites

As mentioned above the original EPI-SoHo approach of embedding was the result of the Dutch experiences in Tilburg – the embedding phase starts when the EPAs are finished. For most of the SHO in Europe the preoccupation with energy saving and the energy performance of buildings or dwellings is not motivated by intrinsic factors but motivated by external influences like national regulations or needs of the tenants. Therefore the Epi-SoHo approach is often not a step-by-step process starting with the initiative phase for EPA but a process starting with the step policy making and different feed back cycles. The several National reports clearly demonstrate how the EPI-SoHo approach can be adapted to specific needs and applied under varying circumstances and on different stages. For these SHO the initiative for EPAs belongs to 'Policy making' influenced from the national regulation or the aims of their stakeholders. The preparation and execution of EPAs are part of the development of 'Energy strategies' on strategic level (Integrated Product Performance). For SHO with these framework conditions it would be more suitable to use a modified scheme of the EPI-SoHo approach. The distinction between assessment phase and embedding phase is here cancelled; the scheme integrates the whole issue 'Energy Saving in SHOs'.

As a feedback of the project partners we propose to read this report in the context with the practice orientated reports of the National pilot projects (reports to Workpackage 5) to make the approach more clear. The National reports contain useful information on the actual use of the approach together with a discussion of the lessons learnt during the pilot projects and the obstacles and barriers encountered. In additions, the reports touch on different characteristics of the social housing sector and social housing organisations in the participating countries.

Figure 6: Integral EPI-SoHo approach



**The integral EPI-SoHo approach tries to link the 7-steps scheme and the St. Gallen scheme on a theoretical level. Both schemes are integrated in one overall EPI-SoHo management approach of assessment and embedding.**

The main idea for the pilot projects is that the EPI-SoHo approach should be flexible enough to give the SHOs a certain degree of freedom to work with. Because of the different framework conditions and special national circumstances each partner can choose to follow either the 7 steps-scheme or the St. Gallen-scheme as a main frame knowing that both schemes are being complementary. Based on this the partners have to develop their own way to go through the EPI-SoHo-project, they have to define and to describe their own individual method based on the EPI-SoHo- approach.

**For the pilot projects each SHO can choose to follow either the 7 steps-scheme or the St. Gallen-scheme as a main frame to go through the EPI-SoHo-project.**