Sustainable Energy Management Systems

Subproject 1

Workpackage 1.05

Monitoring and evaluation

Deliverable N° 1.05.2:

Report on implementation process and structures

English Executive Summary

Final version

Version: DE6.8 - with minor corrections compared to vs DE6.7

Munich, 3 August 2012

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The research and demonstration done in the project "Sustainable Energy Management Systems (SEMS)" and the establishment and maintenance of this publication receive funding from the European Community's Sixth Framework Programme (FP6/2002-2006) under grant agreement n° TREN/07/FP6EN/S07.70442/038514.

English Executive Summary

The SEMS project

The SEMS process monitoring report which is summarised here has been established in the frame of the EU CONCERTO research and demonstration project „Sustainable Energy Management Systems“ (SEMS), which has been conducted by 24 project partners within the 6th EU-Framework Programme (FP6) under the lead of the Institute for Material Flow Management (IfaS) of the Polytechnical University of Trier from June 2007 until May 2012.

Within the SEMS project four smaller regions, the association of municipalities (VG) Weilerbach in Palatinate, Germany, the Canton Redingen, Luxembourg, the area of the local authority association for waste disposal (GVA) in the region of Tulln in Lower Austria, and the City and County Community Słubice, Poland – here called SEMS core regions to distinguish them from three further cities, respectively smaller regions with observer status in the project – aimed at reducing significantly their energy demand by energy saving measures and at covering the remaining energy demand at a noticeable rate by renewable energies. Thereby the energy supply of these four regions should be transformed substantially towards a sustainable energy supply within the five project years.

Within the frame of the research activities of the SEMS project, a monitoring of the energy change (Energiewende) processes in the SEMS core regions has been conducted. The process monitoring report presents this activity. The focus is on the analysis of the results and the presentation of the derived new, and confirmed prior, transferable findings.

The reference model

The reference model which was used for the process monitoring is a result of the EC project „100% RENET“, which was conducted under the lead of B.A.U.M. within the 5th EC Framework Programme. A result of that project are the specifications for a reference model with an ideal-typical approach (ideal-typical implementation process), an ideal-typical implementation structure, and recommendations for communication, public relations and awareness-raising activities in energy regions. This reference model was found to ensure verifiably higher chances for success for energy regions than other approaches, implementation structures, and communication activities.

The ideal-typical implementation structure for energy regions is based on four columns: (1) a non-profit support network, (2) a structure for economic operations, (3) a coordination unit, and (4) a political process manager.
The ideal-typical implementation process consists of six steps: (1) preparation, (2) regional analysis, (3) definition of targets, (4) regional action programme, (5) implementation of measures and projects, and (6) monitoring and evaluation. The steps 4-6 are run through

iteratively, i.e. an adaptation of the regional action plan follows each evaluation, new measures are implemented, etc. The SEMS project comprised a four-fold iteration of the steps 4-6 in the core regions.

With regard to communication, public relations and awareness-raising, the reference model refers to the AID (act-inform-develop) strategy that is known from marketing, and to target group-oriented communication. Behind this is the insight that a step-wise approach, coupled with a clear view for the target groups is decisive for the success of the operations.

Implementation structures in the SEMS core regions

The implementation structures in the four SEMS core regions were quite different from each other during the SEMS project. Only in Redingen an ideal-typical implementation structure in pattern with the reference model existed already before the SEMS project started. This structure was further developed during the project and became even more alike to the reference model. The coordination unit's role was fulfilled by the non-profit support structure (Réidener Energieatelier a.s.b.l.) before the project start. After project start it was established as a separate unit with an own office and was staffed with Mrs. Silvana Roulling in the position of the energy change manager (ECM). Further, an organisation for economic operations for the energy change exists in form of the Energipark Réiden s.a. and its subsidiary EIDA s.a. A political process manager can also be clearly identified: the Mayor of Beckerich, Mr. Camille Gira.

In the VG Weilerbach, only the political process manager existed before the project. He was replaced by his successor in the position of the mayor, Mme. Anja Pfeiffer who acted as political process manager from the moment on when she was elected. The coordination unit was established in the VG Weilerbach within the SEMS project and it played a very important role during the project time. In Tulln also a political process manager, Mr. Siegfried Schönbauer, existed before the SEMS project. The coordination unit was established during the project in form of the association ESCO. A non-profit support network and an organisation for economic operations in pattern with the reference model were missing in Weilerbach as well as in Tulln.

In Słubice the role of the political process manager and the ECM are fulfilled by a single person since Mr. Waldemar Buchta took over the position of the ECM whose office represents the coordination unit. A formalised non-profit support unit does not exist, but its role was played by the Local Steering Committee (LSC) during the SEMS project which gathered representatives of the SEMS project partners and relevant other stakeholders in Słubice as well as the SEMS project coordinator IfaS. An organisation for economic operations for the energy change in pattern with the reference model does not exist in Słubice, but a promising gamete of such an organisation has been created during the SEMS project.

In Weilerbach and Redingen a further structure element could be identified which has played an important role, but which is not described in the reference model so far: a multi-level sup-

port network that replaces the non-profit support network at regional level in Weilerbach, and complements it in Redingen. While it links players at different administrative and political levels (association of communities, district, Land) in Weilerbach, it is more horizontally developed in the Canton of Redingen and it links the latter with other cantons and with communities in Luxembourg and Belgium. The multi-level support network allows achieving a better efficiency in the implementation of various tasks in the frame of the energy change and it can obviously even replace a regional non-profit support network.

A precondition for the existence of a multi-level support network is that efforts towards an energy change are made at other administrative and political levels and/ or neighbouring regions. But this is already the case at most levels all over the EU, differently to the time of the 100% RENET project within which the reference model was formulated. Thus it makes sense to complement the reference model by the new element of a multi-level (supra-regional) support network within the ideal-typical implementation structure.

The example of the SEMS project area Tulln shows yet the limit of the need for this new structure element: In case that the concept of the energy change has already been adopted by all administrative and political levels and integrated in various fields of action, such that the activities required for an energy change are part of development efforts under other headlines, an energy change can also make good progress without a multi-level support network, even if there is no regional non-profit support network nor an organisation for economic activities within the energy change.

In all four SEMS core regions, a coordination unit staffed by an energy change manager has been established within the project. These units played a predominant role in the implementation of the SEMS work programme as the analysis of the processes has shown. It can also be seen that the processes wouldn't have been as dynamic as they were if the coordination units had not existed.

The implementation processes in all four SEMS core regions have been quite successful during the SEMS project though none of it had a non-profit support network for the energy change which is usually the first element of an implementation structure to be set up in an energy region. Hence, the question arises if really all four columns of an ideal-typical implementation structure, now complemented by the multi-level support network as fifth column, are necessary in all situations.

When looking at the chances of the activities developed under SEMS to be continued after the project end one can see that they are the highest in Redingen – just because the canton has the most comprehensive implementation structure of all SEMS core regions and this structure is not going to disappear with the end of the project. Thus the findings of the SEMS process monitoring don't give reason to abandon the recommendations for the set-up of an ideal-typical implementation structure – except if the concept of the energy change is solidly adopted by all administrative and political levels and activities for the energy change are integrated in other topics, as it tends to be the case in the project area of Tulln.

Another result of the analysis of the implementation structures is that the upper limit for the size of a region for which the reference model can be considered to be applicable must be drawn at a smaller number of inhabitants than the reference model does. The example of Tulln where the project area was extended to the whole area of the local authority association for waste disposal (GVA) shows, that an area with 84.000 inhabitants is already too large for a coherent regional energy change. Hence the reference model value of the upper limit of 100,000 inhabitants should be lowered to a value clearly below 80,000.

Implementation processes in SEMS core regions

The implementation processes observed in Weilerbach and Redingen before and during the project have been very much in pattern with the ideal-typical implementation process that is described in the reference model. In Tulln and Słubice they deviated from the ideal-typical reference, but came closer to it during the SEMS project. This more or less good accordance with the ideal-typical implementation process is basically true for the rough structure of six process steps: (1) preparation, (2) regional analysis, (3) definition of targets (4) regional action programme, (5) implementation of measures and projects, and (6) monitoring and evaluation. These steps were more or less given by the frame of the SEMS project and the necessary preparation before the project start. In the course of the annual adaptations of the SEMS work programme the steps 4 to 6 were repeated iteratively. However, within the individual steps the processes deviated noticeably, partially also substantially, from the ideal-typical reference:

Preparation: The motivation of important key players and their involvement in the preparation of the SEMS project were neglected. This turned out to be a problem during the implementation, e.g. when it came to the detailed planning of the district heating networks in Weilerbach. The development of a vision has only involved many citizens in Redingen where the energy change had started a long time before SEMS. First pilot projects however, which serve as lighthouse examples and which encourage the people for the aim of a sustainable energy supply of the region, e.g. outstanding energetic refurbishments of buildings, have been executed in all SEMS core regions within the project time at the latest.

Regional analysis: The assessment of the general regional and socio-economic situation, of the human and social resources, and of the energy saving and renewable energy use potentials was made in an approximate manner during the preparation of the SEMS funding proposal and has been refined during the project – however with very different intensity and with a focus in the different core regions.

Definition of targets: This has been done in the frame of the establishment of the SEMS work programme, but a large number of regional players have not been involved. At this point the deviation from the reference model was substantial.

Regional action plan: The SEMS work programme was equivalent to a set of regional action programmes for the four core regions and it contained a concrete catalogue of measures (installations and “soft” measures). It has been adapted annually to changes in the overall framework and in regional preferences.

Implementation of measures and project: The implementation of the SEMS work programme consisted in the set-up of installations for using renewable energies, investments in energy saving measures, communication activities, etc.

Monitoring and evaluation: The CONCERTO programme obliged the SEMS core regions to comprehensive monitoring and evaluation of their processes. In Redingen this allowed to make good for omissions of the past.

The processes in the SEMS core regions have all been quite successful and partially very successful during the SEMS project. This is true with regard to the fulfilment of the SEMS work programme, but it can also be said in comparison with other regions in the respective countries, respectively in comparison with former process phases in the same SEMS core region. However there were big differences in the success of individual measures and between the core regions.

Measures for which relatively small amounts of money had to be invested, such as installations of solar-thermal collectors, biomass heating systems, energy-saving heating pumps, etc., were implemented very successfully in all core regions. Here, the intensive consultation activities of the energy change managers and the various communication activities have borne fruits.

Contrary to this, energetic refurbishments of buildings were very difficult to get implemented and the success was extremely different from one core region to another. Successful core regions were Weilerbach and Tulln where a strong regional refurbishment dynamics could already been created in 2008 when the heating oil prices were at an all-time high. The dynamics broke down in Weilerbach in 2009 as a result of the then much lower heating oil prices and the financial crisis, but accelerated again afterwards. A decisive role played presumably the copycat effect among neighbours that came into play because many energetic refurbishments had already been finished in 2008.

The construction of district heating networks to which biogas or biomass heating plants were connected went on with particular success in Redingen and Tulln. There the planning was done systematically and with a stronger involvement of stakeholders. They were not started only after the beginning of the SEMS project, but were part of a longer-ranging planning and adjustment process.

It is remarkable that the relative savings achieved through energetic refurbishments of buildings were much higher than the savings that are achieved on the average in the respective countries through energetic refurbishments of buildings. This can be attributed to the very

intensive consultation activities in the SEMS core regions which encouraged house owners to undertake more ambitious refurbishments.

In the case of Redingen the heat produced in biogas plants is used to a much higher extend than it is the case usually. This can be attributed to the strong involvement of research institutes and specialised planning offices which allowed a comprehensive potential and demand assessment and an optimisation of the sites and dimensions of biogas plants at regional level.

The grid given by the SEMS support project had a predominantly positive effect, but also some draw-backs. It is obvious that SEMS forced the implementation processes into a scheme that is very close to the ideal-typical case. An exception is the involvement of citizens which was very poor in the beginning as a result of the time-pressure during the preparation of the SEMS funding proposal, but also as a result of lack of insight in the need of citizen involvement during the preparation of SEMS, notably in Weilerbach and Słubice. This could be made up to a large extend during the project.

The SEMS project allowed setting up a coordination unit in all core regions. These units played a central role for the project implementation, and the consultation and communication activities, which were deployed by them, were decisive for a good part of the achieved successes. The coordination units allowed also developing documentation and monitoring activities at a level which would not have been possible without the project.

There were considerable copycat effects between the SEMS core regions that allowed preventing the “multiple reinvention of the wheel”. The involvement of research institutes in the project made a much deeper investigation possible than it would have been without SEMS, notably with regard to the optimised use of biomass.

One problem was that four years elapsed between the SEMS funding request and the effective start of the project. The attention and mobilisation of the citizens that could be achieved during the preparation phase were lost because not much happened immediately afterwards. The start of the project would better have been a few weeks or months after the submission of the funding request in order to prevent that – for EC funded projects an unthinkably short time.

As a result, the experiences with the implementation processes in the SEMS core regions confirm the approach recommended in the reference model. The implementation in the frame of SEMS has led to a process that was close to the ideal-typical case. However the grid provided by the EC support scheme was also partially too rigid and obstructive for an optimum process design.

<u>Communication, public relations and awareness-raising in the SEMS core regions</u>

The communication activities that were developed by the SEMS core regions (in the frame of the process monitoring public relations and awareness-raising activities were included under the term “communication activities”) provide a very rich portfolio of interesting and innovative approaches to communication in energy regions which is worth to be taken on by other regions. In particular the coordination unit of the VG Weilerbach has been very creative and has developed communication instruments and methods which were already taken on by the other SEMS core regions.

For analysing these activities six steps were distinguished in the communication process, thus further differentiating and completing the act-inform-develop scheme picked up by the 100% regions handbook: (1) catch the eye, (2) arouse the curiosity, (3) let see, touch and understand, (4) provide guidance for action, (5) create a competitive environment, and (6) celebrate the success.

Verifiably, the communication activities have shown a big success when these steps were optimally adjusted and when a felicitous combination of various communication instruments was used, e.g. in the case of the block of ice bet.

The communication activities in the SEMS core regions were different from each other with regard to the weight that was given to marketing on one side and to technical information on the other side. While a strong focus on marketing could be observed in the VG Weilerbach, notably the regional players in Redingen and Tulln preferred to put the accent on specialised information. Presumably, the marketing-orientation in Weilerbach was an advantage in the phase of catching the eye, but only, because the provision of competent specialised information in the subsequent phases was secured.

Role of energy regions in the present international context

At the end of the SEMS project two issues that are important in the context of the here presented reflections, are intensely discussed by the general public as well as by the specialist world. First, there is the need to increase the use of renewable energies in order to slow down the very rapidly on-going climate change. Secondly, there is also the need to coordinate, partially to correct, and to complement the strongly increasing use of renewable energies by accompanying measures. In this context, sustainability criteria for energetically used biomass have been established at EU level and criteria for the proper selection of sites for wind power and PV plants is discussed, and the extension of the electric grid, smart grid concepts and storage of electric energy are reflected.

In the conflict between these two both very important issues, the role of energy regions can anew be specified:

1. To achieve progress in important, but difficult sectors of the energy change, such as the energetic refurbishment of buildings and general saving of energy, and the use of renewable energies in the fields of heating and mobility.
2. To avoid and correct misguided developments and to achieve a broad consensus among citizens for planned measures which is the more important the more dynamic and comprehensively the energy change is going on.

The role of energy regions in the establishment of a broad consensus among citizens can be strikingly called “anti-NIMBY effect” (anti-not-in-my-backyard effect) of energy regions.

Hence, energy regions still have an important role to play for the worldwide energy change, but the inverse is still true, too: The worldwide energy change is important for regions. Regions can profit disproportionately much from the advantages that go hand in hand with a change towards the use of decentralised renewable energy sources if they take on an active role within the energy change:

1. Less outflow of capital from the region for paying for conventional energy imports.
2. Value creation and employment in the region, notably among farmers, craftsmen and small and medium enterprises.
3. A broader spread of income from capital if larger parts of the population invest in renewable energies in the region.

Conclusions for energy regions

The findings within the SEMS process monitoring allow to confirm the practicability of the guidelines for the process management of energy regions which were developed in the 100% RENET project, laid down in the handbook „Towards a 100% region“, and used as reference model within the SEMS project. However, some new insights were also gained which allow complementing and modifying these guidelines at some points. These are:

1. It is advantageous if players from different energy regions network among each other and with supra-regional levels, thus optimising the efficiency of their own actions. It is recommended to establish a multi-level support network as fifth column of an ideal-typical implementation structure of energy regions.
2. The ideal-typical implementation process that follows a scheme of six steps can be recommended without any change. However, an eye should be kept on optimising the interplay of energy change processes with specific support programmes (see also recommendations for support programmes below).
3. Differentiation of communication activities. It is recommended to follow an approach with six steps, to combine intelligently different communication instruments, e.g. following the example of the VG Weilerbach, and to put a strong focus on the identified relevant target groups.

A successful energy change that is implemented along these guidelines can bear the following advantages for a region:

1. Citizens and a large number of regional key players are involved in the energy change. This allows making use of a broad range of competences, to avoid misguided developments, and to achieve a broad consensus for important projects even if controversial aspects have to be considered (e.g. for the construction of wind parks).
2. The success of the process is put on many shoulders and does not depend on the engagement of only a few persons. It is therefore more stable and sustainable.
3. The element of the action programme ensures commitment and clarity with regard to responsibilities. The progress can be assessed against the bindingly agreed plans.
4. Sustainable energy supply becomes an integrated element of a comprehensive regional development.
5. The region can have financial advantages if the concerted energy change process leads right from the beginning to private persons and companies from the region investing in renewable energies or energy saving measures within the region.
6. A good process management contributes to more investments in sustainable energy supply in the region, to a larger share of investments done by citizens from the region, and thereby to a return of cash flow into the region, thus promoting its prosperity.

Good process management requires above all financing and staffing a coordination unit. The costs related to an energy change manager amount to about 60,000 € per year. Depending on the extent to which professional external support is searched, how many events are organised and how many materials are produced, some 10,000 to 100,000 € per year have to be added to this, in particular at the early stages of an energy change process.

If the process is well managed, this money is well invested. Let’s take as an example a region with about 50,000 inhabitants that is characterised by small and medium-size towns with rural surroundings and that engages in an energy change process over a period of 20 years from 2012 on. Then about 1.500 € per year and inhabitant can be turned back into the region

due to the changes introduced in the electricity and heat sector alone. Each year, a higher and higher share of the capital flow that leaves the region for paying conventional energy imports can be turned back into the region. In 2032 this share will amount to 75 Mio. € per year.

Conclusions for the design of support programmes for energy regions

Within the frame of the process monitoring in the SEMS project, a number of points could be identified where it came to an inefficient interplay between the CONCERTO programme, respectively the SEMS project, and the implementation processes in the core regions. For avoiding such inefficiencies the following adaptations would be desirable in future support programmes for energy regions:

1. A two-stage support of (1) development of a vision, establishment of a non-profit support network, and a first energy change action programme on the basis of a potential assessment and a broad involvement of citizens, and (2) implementation, monitoring and regular adaptation of the energy change action programme. I.E. the first stage covers the steps 1-4 of an ideal-typical implementation process, the second the steps 5-6, including a multiple iteration of the steps 4-6. It is not sufficient that already today such a form of two-stage support effectively exists in form of the IEE programme (stage I, steps 1-4) and the CONCERTO programme (stage II, steps 5-6 + iterations of 4-6). Both programmes are not sufficiently linked to each other and should be coupled much more strongly.
2. A successful completion of stage I should entrain the right for support in stage II. Stage I is considered to be completed successfully if specific quality criteria are fulfilled, e.g. a proven sufficient involvement of citizens.
3. The support for stage II is accorded without delay if stage I is completed successfully. Eventually, implementation measures should be eligible for support retroactively.
4. The adaptation of the energy change action programme becomes explicitly a part of the work programme. Reasonable adaptations are not criticised, but seen positively as a sign of a good adaptation dynamics and are supported accordingly.