

**European Sustainable Energy Communities - effective  
Integrated Local Energy Action today  
(Sustainable NOW)**

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**Summary report and suggestions for improvement of the two  
components of the LEAP wizard – the Process Management  
Landscape Tool (PMT) and the Decision Support System (DSS)**

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Prepared by: Daniel Morchain (ICLEI), Rian van Staden (Intelligent-RE) and Andreas Walter (ecovision)

Checked by: Holger Robrecht, Maryke van Staden (ICLEI), Günter Koschwitz and Gabi Winkler (ecovision)

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## 1. Introduction

The Sustainable NOW project (September 2008 – August 2011) combined cities with extensive experience in sustainable energy practices and others that have a strong intention to become sustainable in their thinking and management of energy issues. Their goal was to develop (or improve) and implement local sustainable energy action plans (LEAPs). Other expert partners provided additional support and knowledge to the consortium.

In addition to the five LEAPs of the ‘learning’ cities, another important deliverable of the project has been the LEAP wizard. The LEAP wizard is a web-based tool that has supported the project’s ‘learning’ cities throughout the process of developing/improving and implementing their LEAPs (i) by providing a methodology that goes beyond energy and addresses a wider sustainability management perspective, and (ii) by providing relevant information and presenting case studies of sustainable energy actions in a way that supports optimal replication and decision making by other cities. With Sustainable NOW having reached its completion, the LEAP wizard remains a legacy for ‘learning’ and ‘advanced’ cities across Europe to engage in sustainable energy.

The LEAP wizard consists of two parts: the Process Management Landscape Tool (PMT) and the Decision Support System (DSS). The PMT gives the user access and step-by-step guidance to an integrated, cyclical, sustainable energy management methodology, providing real life examples of cities across the five step process. The DSS is a database that lists – to a considerable level of detail – sustainable energy actions implemented throughout Europe, allowing the user to identify actions that are likely applicable and potentially successful in a specific location or under specific circumstances. Notwithstanding, and for the sake of clarity, it should be stressed that the DSS does not support decision-making by producing a quantitative result or score, but rather by allowing the user to compare different actions implemented elsewhere and then judge by himself – and after considering his specific circumstances – on the potential transferability success of a given action in his city.

The following sections describe the PMT and DSS in more detail, explain the process of elaborating them and the barriers encountered along the way, and suggest actions to enhance their integration and their usefulness, beyond the duration of the Sustainable NOW project.

## 2. The Process Management landscape Tool (PMT): How we got there and barriers encountered

The LEAP wizard PMT brings to a user friendly platform the sustainable energy methodology proposed by the Sustainable NOW project, which is based on ICLEI’s sustainability cycle used in Sustainable NOW for training learning partners on managing their LEAP development and implementation – and is aligned with the European Commission’s “Integrated Environmental Management - Guidance in

relation to the Thematic Strategy on the Urban Environment" (2007)<sup>1</sup>. The methodology, also referred to in the Covenant of Mayors SEAP-guidance<sup>2</sup>, was tested by community partners during the project, and now serves as a free entry-point for any city across the EU and beyond to conceptualise, plan, implement, monitor, evaluate and report on its sustainable energy transition.

The PMT guides the user through the five steps needed to develop and conduct a LEAP. As the process is cyclical, the completion of the fifth step leads to a new cycle starting with an update of step one. Additionally, a number of ongoing 'continuous activities' necessary for an effective LEAP process are described.

As shown in Figure 1 below, each of the five steps of the LEAP consists of a number of sub-steps which normally (but not always) are performed in a chronological way. Information is provided for each of the steps (dark green) and the sub-steps (light green). Some of the sub-steps open up onto a new layer of activities (see Figure 2 below), as necessary tasks to complete that given sub-steps. No additional layers – other than the 'base' layer of Figure 1 and the 'second' layers, such as depicted in Figure 2 – have been designed in order to keep the structure sufficiently simple. Most steps and sub-steps offer links to relevant websites and documents (e.g. the Sustainable NOW 'learning' cities' LEAPs) to support users in understanding and completing the task in question.



Figure 1. The LEAP PMT landscape

<sup>1</sup> <http://ec.europa.eu/environment/urban/pdf/iem.pdf>

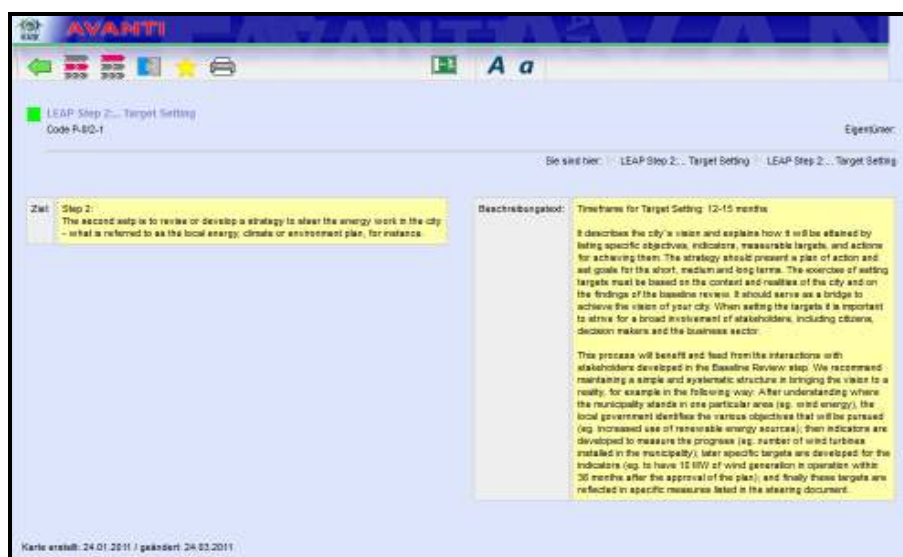
<sup>2</sup> [http://www.eumayors.eu/IMG/pdf/seap\\_guidelines\\_en-2.pdf](http://www.eumayors.eu/IMG/pdf/seap_guidelines_en-2.pdf)



**Figure 2. New layer of activities under Step 1's 'Baseline Inventory'**

As new cities start to develop their LEAPs using the PMT, they can also upload their relevant documents – through the tool's coordinator<sup>3</sup> – by which the PMT also becomes a document repository of relevant sustainable energy management literature. Furthermore, new cities can develop their own PMT landscape, and use it as an internal tool. Based on the PMT LEAP template each city is able to implement a new LEAP reflecting the individual needs and processes of each city. In this tailor-made PMT, cities can choose to modify/add/delete steps and sub-steps to accommodate to their own processes and circumstances. Any additional and individual LEAP can be managed and updated by the cities themselves and will not be accessible for the public.

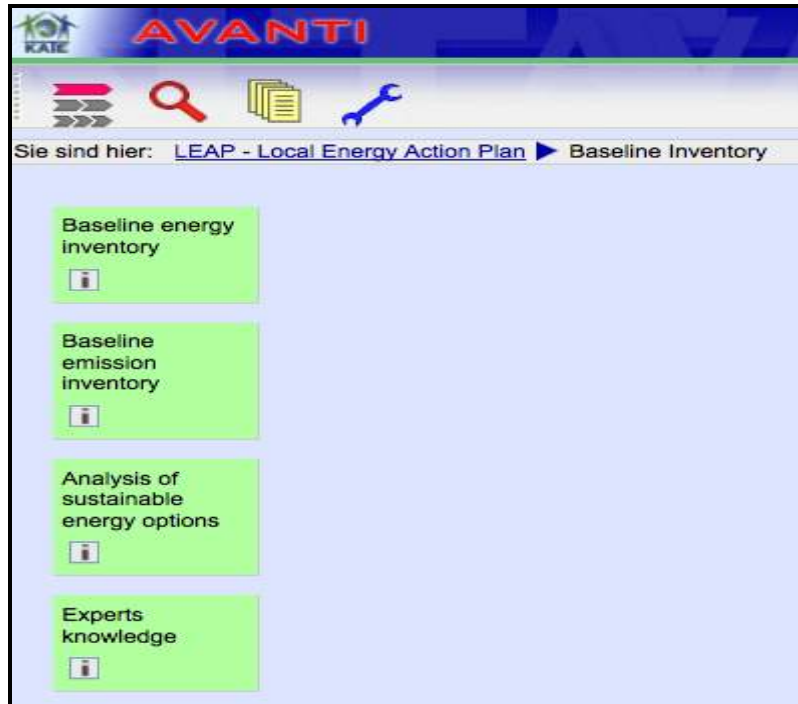
After the login the LEAP PMT landscape is displayed and the five steps of the LEAP including their sub-steps are shown. For each of the five steps more information will be presented if the "i" button is clicked. Then a new site is opened and more detailed information about the step like goal, description, activities, etc. are documented. One example is the information presented under Step 2, Target setting:



**Figure 3. Information presented under Step 2 ,Target setting'**

<sup>3</sup> The PMT coordinator is ICLEI European Secretariat, which can be contacted at sustainable-now@iclei.org

The same is applied for all the sub-steps. For each of it, additional information will be displayed in clicking the "i" button. This helps greatly to understand the LEAP and get aware of what kind of activities are required to perform the steps. Some of the sub-steps have a hierarchy below which means that additional sub-steps are defined and documented. An example is the "Baseline Inventory". This sub-step is underlined and while clicking an additional hierarchy with other sub-steps will be shown.



*Figure 4 Sub-layer of the main menu*

This results into 3 –level PMT to outline the LEAP at the maximum.

For each of the steps it is possible that documents or internal / external links are stored. This helps in adding valuable information to each of the steps to outline precisely process activities. An example is shown here for the Baseline energy inventory.



*Figure 5 Detailed information for steps and sub-steps*

The PMT (read-only version) is accessible through the link below:

**URL:** <http://emas.kate-stuttgart.org/smsplus/centralcontroller>

**Username:** leap

**Password:** #now2011

The PMT is based on an open-source software developed by project partner ecovision. The methodology has been reality-checked and adapted to the experiences of the nine community partners and other expert partners through active discussion during project meetings and as a result of review sessions within community partners. In addition, on 7 February 2011, partners ICLEI, ecovision and Ludwigsburg held a dedicated meeting in the German city, with wide participation from the city's staff from several departments, to 'test' the methodology and tool. As a result of the meeting, the practical considerations of the Ludwigsburg staff were integrated into the tool (e.g. language was made less technical and the number of layers was reduced to two). Further fine-tuning was implemented in close cooperation between ICLEI and ecovision.

A direct link to the LEAP wizard DSS is found on the sub-step 'LEAP support' of Step 2 of the process.

### Barriers to implementation

- Admittedly, the PMT software is at present not cutting-edge user-friendly, but ecovision is currently developing an updated version, which is expected to be available by end 2011. The newer version will be applied to the PMT even considering that this will take place after the project completion date. It should be noted that the Sustainable NOW and the IEE logos cannot (from a programming perspective) be added to the present version of the PMT, but will be inserted when the transition to the new version is completed.

- The issue of confidentiality has been discussed and some cities are not comfortable in publicly sharing some of the documents produced during the LEAP process, as they have been traditionally considered ‘internal’. As the documentation to be uploaded in the system will always be supplied by cities, there is no risk that confidential information is uploaded. At the same time, the trend toward increased participatory processes and inter-city collaboration is likely to make cities more comfortable in making information public, which previously was treated as confidential.
- Some potential users (cities) may be reluctant to dedicate time to learn to use a new tool to perform tasks which they already perform – or they think they already do. To avoid this barrier, it is important to stress the benefits of the methodology and of the tool, whether the city ultimately decides to use this tool or not. Likewise, by making the tool user-friendly and value-adding, at least the staff more closely related to the LEAP process is likely to take advantage of it and actively contribute to its development.
- Working with the PMT brings out the need for local governments to work across departments; a style to which a large portion of cities are not used to. The benefits of cross-departmental work and the need for it in order to develop a comprehensive and synergetic LEAP needs to be acknowledged by city staff. This should lead to a positive approach to the tool.
- The cost of operation of the PMT and the provision of a tailored service to municipalities need to be funded. A balance needs to be found that combines a wide and affordable use of the tool with sufficient funding to maintain a sharp and updated tool by a committed operator.

### **3. The Decision Support System (DSS): How we got there and barriers encountered**

The LEAP wizard DSS was developed in three phases - a Planning Phase, and Implementation Phase and a Testing/Initial Use Phase, with a brief update on each phase provided below. The whole process was completed in the duration of the project.

During the development process meetings were held with ICLEI and ecovision to explore requirements in detail, also exploring needs for improvement and specific client requirements. All of these have been dealt with. Community partners were asked to access the Wizard, use and test it – also adding their city details and case studies.

To document work conducted by the programmer a Wiki was created. It contains an outline of the project progress in terms of both organisation/timeline and content. The information presented includes the Functional Overview, a Timeline (Gantt Chart), Project Net Chart, a Resource Chart, version 1 of the Database Design, the four key Workflows and the Metalanguage API (Application Programmer Interface). The Wiki

lives here: <http://wizardwiki.intelligent-re.com/> (restricted access to project partners – to obtain access please contact the author).

## Phases

### • Planning Phase

During this phase, extensive discussions were held with the contracting partner (Ecovision), the project coordinator (ICLEI), several project partners and external actors engaged in the replication of good practices, in an attempt to determine what would be required to successfully reduce the risk involved in good practice replication.

The following key requirements were determined:

- That the process needed to be driven by the information needed for replication, rather than the information typically provided during dissemination.
- That the tool needed to support the clustering of both cities and actions in such a way that action could be selected based on a degree of affinity with the environment in which the actions were originally implemented.
- That the information provided had to be detailed, structured, homogenised and, in as far as possible, normalised.
- That workflows needed to be produced to outline the steps required in replicating any given action.
- That indicators, and their desired behaviour, needed to be integrated for each step and for the process as a whole.
- That concrete financial and resource data needed to be included.
- That it should be possible for a user to guide the action recommendation process based on specific interests and requirements, but that that guidance should be provided in an intuitive fashion.

These requirements informed the structuring of the wizard in such a way as to capture data by the local governments themselves (for use in clustering types of local governments e.g. size, geography, etc.) (see Figure 8), followed by capturing data on specific actions executed within the local governments (sustainable energy relevant actions) (see Figure 9). Lastly, a query mechanism was created to produce the required recommendations based on a set of sliders which could be used to indicate the relative interests of the user (see Figure 10). Prior to inserting sustainable energy actions, cities must insert their basic information so that they appear in the map covering the cities reflected in the tool (see Figure 6), and immediately the participating cities are displayed on a map to facilitate selection (see Figure 7).



Figure 6. Capturing a new community.



Figure 7. Display of participating communities.

The decision was made to capture the data in the form of a dialogue with the user. This was driven especially by the need to describe, for each value, in some detail exactly what was required. The methodology was based on the technique used to extract domain-specific data from experts for the construction of expert and decision support systems.

The full city information can be viewed at any time - See Figure 8.

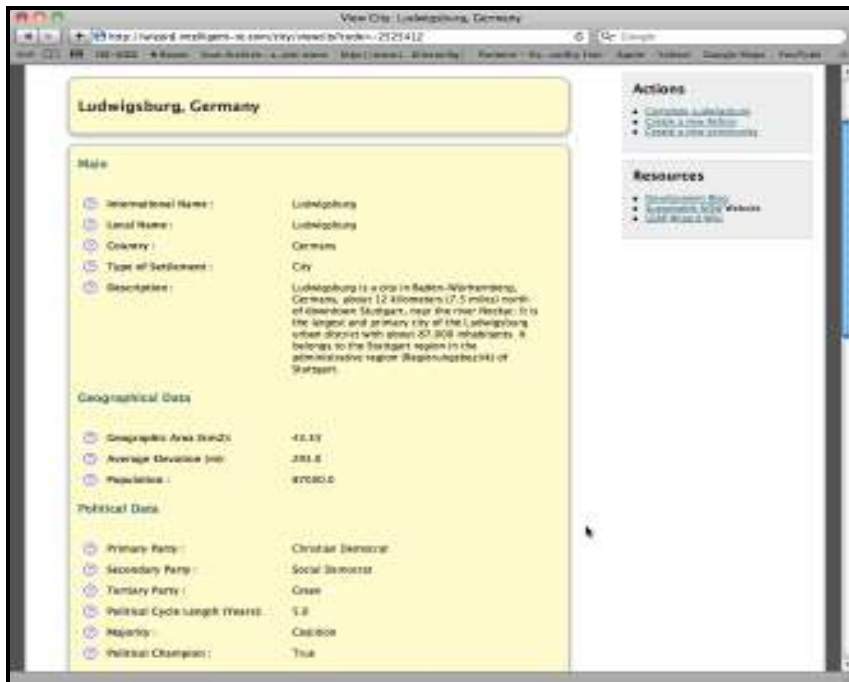


Figure 8. Display of city information.

The information on actions was defined as including detailed financial and resource data, as well as a graphical display of the steps involved that could be viewed as text also - See Figure 9.

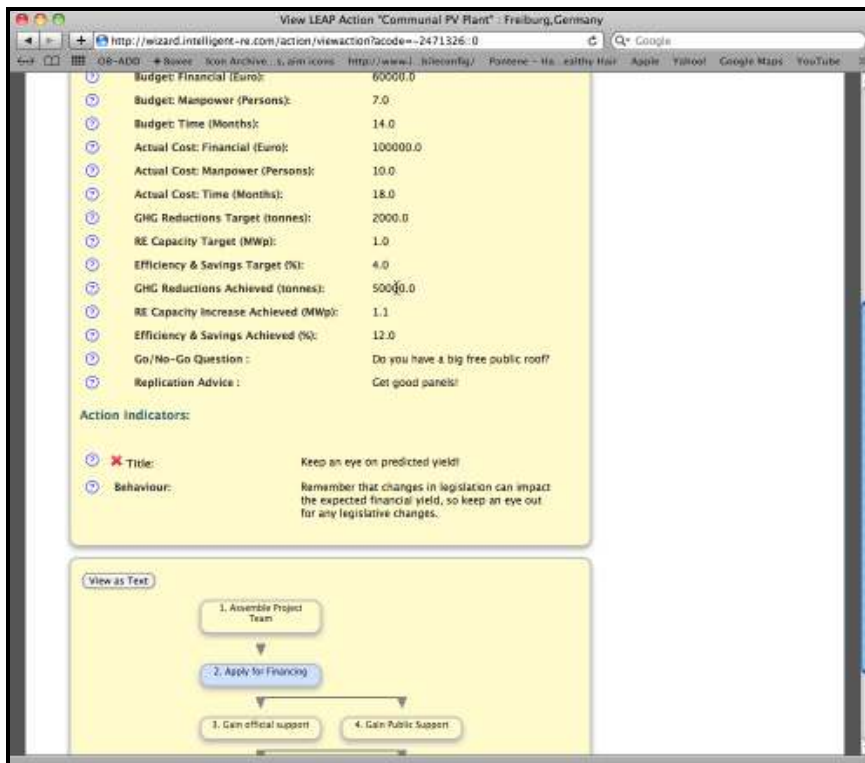


Figure 9. Display of Action data.

## • **Implementation phase**

During the implementation phase, the development of the system was reported to the project partners in the form of screen-casts and live demonstrations during project meetings in Freiburg (twice) and in Brussels.

There was some difficulty in acquiring test use and feedback during this phase because most community partners were still in the process of identifying actions to include in the DSS, and in the data collection process.

The system was implemented in three stages:

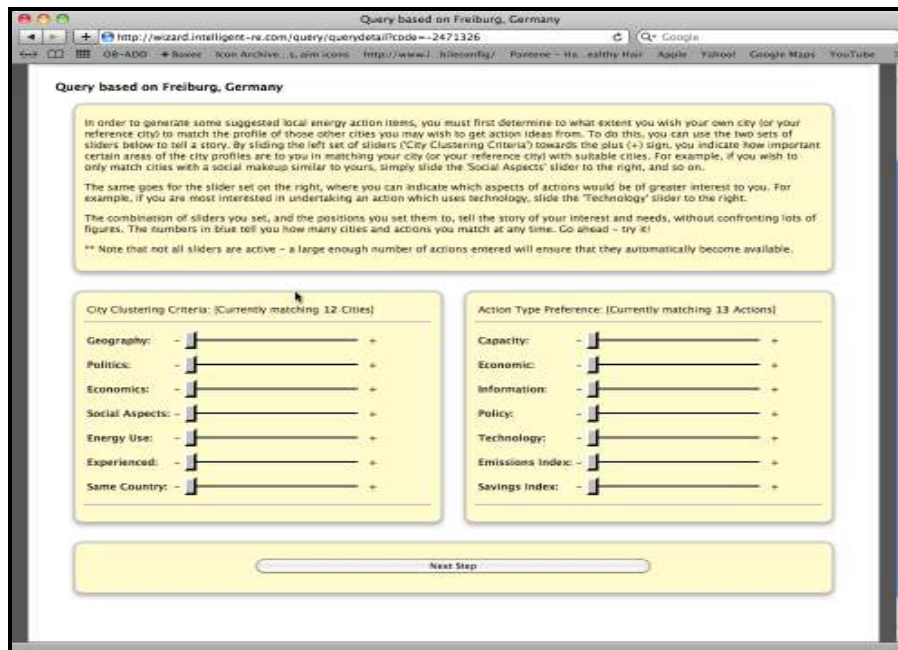
- Collection of City data
- Collection of Action data
- Implementation of Query Engine

In each implementation phase, it was possible to generate some test usage to assist in the debugging process, but most testing was conducted using self-generated test data.

## • **Testing/Initial Use Phase**

Upon completion of the main modules, the system entered a test use phase. In several cases, useful feedback could be obtained and corrections and alterations could be implemented. The full calibration of the DSS recommendation engine (decision-making support) will only be fully completed once a sufficient number of sustainable energy actions are fully inserted in the tool. Notwithstanding, the calibration process (and optimising the query results) has been initiated based on the actions that have been entered. The current interface of the query engine is presented in Figure 5.

During this phase, the translation of the user interface was also undertaken—through a sub-contract between Intelligent-RE and ICLEI.



*Figure 10. The Query Engine Interface.*

## Barriers to implementation

As more actions are entered in the system, the calibration process becomes easier and the tool's usefulness increases. Also, the process of discovering and correcting problems in the system is enhanced as more actions are inserted. However, as familiarity increases, the process is expected to accelerate.

The resource requirements involved in inserting actions are, admittedly, substantial, and this is a barrier to the large numbers of actions needed to make the tool useful (ideally no less than 150). Fortunately, it was possible to implement the translation function in the system in a very simple and accessible manner, facilitating the input process in several European languages (presently Bulgarian, German, Hungarian and Italian, in addition to English).

The system requires detailed information on actions - far beyond what is usually disseminated by local governments – and this usually can only be provided by the experts involved in the process. This has proven to be an obstacle, especially in those cases where the actions are older, and the responsible parties may have moved on. However, the focus has remained on what information is needed, rather than on what information can be easily supplied. This has meant that the local governments have to work significantly harder than they perhaps expected to find the required information, and this has posed problems in some cases. To this end they were recommended to use current or very recent cases.

Furthermore, the need to structure the information in the form of workflows has proven challenging for many partners unused to thinking in such terms, and a clear demand exists for creating capacity at local government level in terms of communicating their actions in a structured way. The identification of indicators, and the formulation of succinct behaviours for those indicators, has also proven to be difficult for many partners.

#### 4. The integrated and functioning LEAP wizard – Suggestions for improvement

The LEAP wizard, as a combination of the complementary PMT and DSS, has great potential to become a widely used tool in Europe. It can promote and support energy sustainability in cities in two ways:

On the one hand, the PMT can guide an improved process of operations and sustainable decision-making at the local government level, by providing the foundations of a continually improving process that focuses on efficiency, capitalization of synergies, integration of sectors, collaboration with stakeholders, and a long-term commitment of decision-makers.

Complementarily, the DSS can serve as an entry-point for cities into sustainable energy practices. Partly a general dissemination tool, it also provides targeted, in-depth information to cities on sustainable energy actions implemented e.g. in locations with similar characteristics. The DSS tool also provides information on environmental and economic outcomes of each action, facilitating the decision-making process of the user.

Still, there is room for improvement in the functioning, integration and better dissemination of the tool. Also, there is uncertainty regarding the continuity of the tools after the completion of the Sustainable NOW project. Consequently, the following points should be taken into consideration:

- The integration of the PMT and the DSS softwares into a single, uniform platform would be desirable. Although the 'soft' (API) integration has been completed, having a single visual domain where both tools share the exact same colours, design, etc, and are linked more directly would likely encourage the user to take advantage of the full potential of the system.
- Official endorsement, promotion – and even funding – by the Covenant of Mayors (or other European Commission sources) would give the tool greater visibility and contribute to increasing the number of sustainable energy actions in the database: both voluntarily by users, as well as by including actions from existing SEAPs stored in the CoM library (prior approval of the concerned city).
- Making the tool available in additional European languages would widen its range of influence. Presently the PMT is only available in English, and the DSS in the five project languages.
- Sufficient funding for the operation of the tool after the completion of the Sustainable NOW project is a crucial issue not only for its continued existence, but also in order to maintain a high-quality, updated and reliable product. At present, such funding source has not been secured despite attempts by the project coordinator. The tool, however, is being further promoted and expanded through the IEE co-funded project 'Covenant Capacity', which started running in 2011.
- Even though the partnership has strived to simplify the process of adding sustainable energy actions to the DSS, the input process still requires a

considerable amount of efforts by the city authority, especially as it demands input generally from different persons/departments within the local government, and the input is not intuitive (requires some internal research). In the future, the process could be made simpler by relaxing the details required. This would come at the risk, however, of jeopardising the tool's in-depth benefits.

A testing period could indicate whether creating lower levels of depth for 'quick-reference actions' would be beneficial or not.

- The navigation of the PMT needs to be made more intuitive (as discussed above, a new version is under development by the software developer – ecovision). Continued collaboration between the two software developers (ecovision for the PMT and Intelligent-RE for the DSS) beyond the duration of the Sustainable NOW project would be beneficial to facilitate the smooth and complementary development of both components of the LEAP wizard.
- The term LEAP should be substituted for SEAP in the future developments of the tool, as SEAP is the acronym more widely used, including by the Covenant of Mayors.

## 5. Conclusions

The creation of the LEAP wizard has shown that while it was possible to gain wide acceptance of the need for structured information to reduce the risk involved in replication of good practices, it has proven difficult for local governments to provide such detailed, structured information on their actions – and to make use of it. This has to do, in part, with the fragmentation of responsibilities for actions within local governments. In addition, records are not always kept at such a level of detail.

Unfortunately, this means that not only is it hard for local governments to communicate their actions in such a way as to minimise replication risk, it is also clear that the lessons learned and capacity created during such actions are often quickly lost within the local governments themselves.

This challenge has in fact helped to make the point that narrative case studies need to move towards a more factual representation, as is offered through the DSS, while the DSS may need to take a more pragmatic angle to the problem.

The wizard (both PMT and DSS) has the potential of serving both as an effective dissemination tool, as well as a knowledge management tool for local governments.

The project has not included a market potential analysis for the PMT. However, experience shows a need for a low cost electronic management handbook and dashboard solution particularly for smaller and medium-sized municipalities. The experience from the 'learning' cities of Sustainable NOW shows that using the methodology can bring considerable benefits to local governments, but the learning process most likely requires direct interaction between the local government and energy management experts (e.g. ICLEI). In other words, an online PMT without follow-up tailored support to local governments will fall short of delivering a new, improved energy management approach to local governments.

Keeping the wizard alive and in a state of ongoing development beyond the life of the Sustainable NOW project will be a challenge. A long-term funding perspective would be required to make it a reliable and updated tool, populated with an adequate amount of actions that contribute to building capacity in local governments. In support of this, ICLEI as Covenant of Mayors supporter and Climate Alliance as part of the Covenant of Mayors secretariat have the opportunity to promote the wizard as part of the Covenant of Mayors tool-box. Future IEE-projects could contribute to the further population of the tools.