The LAIPP project: Dissemination of IPP tools in the furniture industries of Marche Region

The challenge of globalization requires the firms a big effort in order to increase and enhance their products quality. Recently, European governments have started a process of markets development based on the Integrated Product Policy (IPP) with the main goal of developing technical guidelines, tools and services for the companies that allow the application and spreading of ecodesign practices and of environmental management systems along the product chain. Indeed, environmental quality standards are now both in Europe and in the world, one of the most important aspect related to the quality of products.

LAIPP project (Dissemination of IPP in furniture industries) arises in the framework of the Marche Regione characterised by a high presence of small and medium furniture enterprises. LAIPP, of the overall duration of 30 months, has been over on March 31\textsuperscript{th}, 2007, and contributed in a consistent way towards disseminating ecolabels together with the principles and instruments of IPP: it represents a reference for the companies of the sector that have the opportunity to exploit the tools and services developed by project.

Project activities took place in Marche Region where is located one of the major furniture cluster at national level, but the ambitious project goal was the one to become a “reference” for all the sector companies and moreover to disseminate results at national and international level. Project partnership included a wide range of actors with different mission such as industries, public administrations, technology centres, universities and national research institutes but all together deeply involved in reaching same goals, working both on the request of eco-friendly products and on the developing the offer.

The numerous project goals have been fully complied, and in some cases results has gone beyond the prefixed ones. They can be shortly summarised:

- Survey on a large number of furniture sector companies with the aim to create a database for benchmarking on environmental performance.

- Sector study and LCA (Life Cycle Assessment) activities on different type of products such as kitchen (including cooker hoods) and office furniture. LCA activities involved six important companies and their supply chain in order to develop an LCA database for the evaluation of the environmental aspects of their products.

- Application in one company of “TESPI”, an ecodesign software to generate an integrated design approach (available at www.ecosmes.net).

- The use by companies of specific software to evaluate product life cycle. (eVerdEE).
- Product Category Rules for two product groups and assignment of EDP label in compliance with the Swedish Environmental Management Council.

- Elaboration and implementation in some companies of a POEMS system, taking into account the existing environmental management procedures as well as LCA results.

- Training activities carried out inside the companies located in the Region.

- Technical Table with public administrations on Green Public Procurement Procedures.

- Development of Sector Technical Guidelines available on-line to inform and support companies in IPP application by using simplified softwares provided with database (eVerdEE e TESPI). Master Guideline have also been elaborated to support LCA and SGA implementation, with information also about clean technologies, environmental standards and rules, BAT, POEMS, etc.

- Dissemination of project results within main furniture clusters at national at European level.

The most relevant activities in the framework of project’s aims will be described in next items.

**Simplified LCA Software and Database for Life Cycle Assessment of Furniture sector’s products**

In the LAIPP project, experiences and results of previous projects concerning the Furniture Sector (eLCA, MATT) have been integrated in order to produce a sector-specific database which includes inventory and impact assessment data for kitchens (cooker hoods included) and office furniture. The DB together with the LCA software tool eVerdEE and with the eVerdEE general DB, which includes impact assessment data of the commonest processes (energy, packaging, materials, transport), allows the enterprises, especially SMEs, to carry out LCA studies by themselves, with reduced time and cost investments. The quality of the DB is guaranteed by the methodological approach of the product chain studies, which are based on detailed LCA and involve stakeholders and sector-specific technical competencies.

The sector-specific database is a “key” result of the entire project, since with eVerdEE firms can e.g. identify the significant environmental aspects of their products, implement the POEMS system, start ecodesign processes or perform a screening LCA, useful to the detailed study for EPD definition.

A considerable number of firms participated in the data collection: the partner firms (Elica, Grossi Lamiere, Mobilpref, Scavolini, Upp), were able to involve their suppliers and have been supported by the service centres Cosmob and Meccano.

Another important aspect of the data collection has been the establishment of a “Technical Working Group”, constituted by LCA and sector experts, with the aim to support each firm in this delicate phase, crucial for the entire analysis.
eVerdEE, an on-line tool available at the web site www.ecosmes.net, is a simplified LCA software with sound scientific bases, well structured procedure and user-friendly interface. It has been developed according to the ISO 14040 series, but two types of simplifications have been adopted. The methodological simplifications concern:

- the life cycle model;
- the system boundaries definition;
- the choice of elementary flows and indicators/impact categories;
- the data quality documentation and evaluation.

The procedural simplifications concern the following items:

- the user-friendliness of the inventory procedure, which is guided and offers predefined forms where users input their quantitative data referred to the reference flow, choose a corresponding entry from the database and evaluate the quality of the data they have input selecting between predefined options;
- the availability of a help-on-line system, which gives practical advice to solve methodological problems such as allocation rules, choice of the processes from the database, inventory compilation;
- the visualization of the results in a matrix, which allows the main issues related to the life cycle of the product to be identified; the comparison between two products, or between two scenarios of the same product, by the interpretation of a target plot.

The sector specific database has been initially implemented in GaBi Professional, a detailed LCA software, (see Fig. 1), in order to allow the development of PCRs (for office desks and cooker hoods) and the performing of a detailed LCA study for the definition of the EPD (for an office desk produced by UPPER). Secondly it has been implemented in eVerdEE to identify the significant environmental aspects for POEMS implementation in three partners firms. Both activities are described in the next paragraphs.

![Diagram](image)

**Figure 1 - Relation between the DB developed and the tools used in the LAI PP project**
A very important aspect is that we performed the LCA studies with both software (characterised by different structures, database, elementary flows and impact assessment methods) and we obtained the same impact assessment results.

**Dissemination of the Type III eco-labels (EPD)**

The EPD (Environmental Product Declarations) is a **Type III** eco-label and it is regulated by the standard ISO 14025. The Environmental Product Declarations is a voluntary management tool and it is an innovative instrument, able to communicate in a transparent and reliable way the main environmental aspects and impacts of a product/service, increasing the visibility and the social acceptance. The EPD information are addressed to consumers and to industrial and commercial users of the product. It is based on a Life Cycle Assessment (LCA) of the product/service and allows the quantification of the environmental impacts of the whole life cycle, from “cradle-to-grave”: from the extraction of raw materials to the production phase and the final disposal.

The LCA and the related EPD allow to:

- Clarify to the consumer/user the interaction between product and environment;
- Enhance significant environmental aspects;
- Quantify potential environmental impacts associated to life cycle.

The main characteristics of EPD are:

- **Objectivity**, due to the use of life cycle assessment (LCA) methodology for the calculation of environmental performances;
- **Comparability**, assured by PCR (Product Category Rules) which defines the significant environmental performances of each product group, in order to ensure consistency between declarations within the same product category;
- **Credibility** of the EPD information and the adopted calculation methodology, thanks to the third party verification and approval.

The EPD attribution is based on the existence of an EPD programme managed by an independent operator that is in charge of its administration. The standard ISO 14025 requires this function could be carried out by a society or a body, by an industrial or a trading association, by public authorities, agencies or universities. Currently, there are several EPD programmes, among which the most diffused is managed by the Swedish Environmental Management Council (www.environdec.com).

The procedure for creating an EPD includes the following steps:

- Development and approval of PCRs (Product Category Rules). PCRs define the technical and functional aspects for each product/service category, the common rules for carrying out the LCA study and the requirements for compiling the EPD report. This provides the
possibility to compare different EPDs of products/services belonging to the same category. The Product Category Rules can be developed by an interested party, and they are submitted to an open consultation phase with the participation of all the stakeholders.

- Drawing up of the EPD declaration, including all the information defined in the relative PCR and derived by the LCA study.
- Third party independent verification, that assures reliability and accuracy of EPD information.
- The final approval and registration is completed after an audit conducted by an accredited certified body. The EPDs is evaluated periodically and its validity (usually 3 years) is established by the verificator and it is indicated on the declaration.

EPD is composed of five main parts:

1. **Description of the company and of the product/service** can include information related to the manufacturing site and ato environmental initiatives, such as the existence of an environmental management system (EMAS or ISO 14001). The product is described and also briefly the manufacturing process;

2. **The environmental performance declaration of product or service** is the core of the EPD, because it is here that the company communicates to the public, through the environmental parameters defined by the PCR, the environmental profile of the product or service, in term of resources use, emissions of pollutants and of waste generation throughout the whole lifecycle;

3. **Other environmental information:** in this part the company communicates other information, such as the proper use and maintenance of the product or other actions to be undertaken to reduce the environmental impact;

4. **Information about reuse, recycling and end of life;**

5. **Information from the producer and the certification body:** the producer might include specific information concerning the reference PCR, the programme operator, internal contacts, etc. The Certification Body communicates information about itself and the period on which the EPD is valid.

During the LAIPP project, according to the Swedish Environmental Management Council (SEMC), we developed PCRs for two product groups: office desks and cooker hoods. These two products are particularly suited for EPD application, for their position in the supply chain and for the interests toward Green Public Procurement (in particular for office desks).

PCRs for office desks and cooker hoods are available at [www.environdec.com](http://www.environdec.com), and also the **EPD® certification** of Light and Win office desk, produced by UPPER, developed during the LAIPP project.

We will try to spread this IPP tool in the wood furniture sector as much as possible, by developing new PCRs and by giving the firms the support necessary to perform LCA and obtain the EPD certification. We will also analyse the role that EPD can play in GPP procedures.
EMS and development of a new scheme: POEMS

In the LAIPP partners firms, Environmental Management Systems have been implemented and/or modified - if already existing - in compliance with ISO 14001 but much more product-oriented. This choice has been justified by the characteristics of the wood product chains, in which the main environmental impacts are related to the upstream processes (pre-manufacture phase), and the consideration of only the production phase (manufacture phase) would be restrictive. Therefore it has been decided to adopt an EMS model that considers also aspects related to the supplying and the ecodesign of the product (i.e. the consideration of the environmental characteristics of the product from the design phase).

The product-oriented EMS model and the related procedures (available on the web site of the project) consist of:

- Questionnaire for the Environmental Review of the companies of the sector;
- Register of legislative accomplishments;
- Procedure for suppliers’ management;
- Informative Questionnaire for suppliers;
- Form for Qualified Suppliers;
- Procedure for the Evaluation of the Environmental Aspects Significance;
- Ecodesign procedure.

Besides the revision of the traditional EMS model, one of the most innovative objective of the project was the testing of a new product-oriented environmental management system, i.e. POEMS, developed in order to support the integration of product policies into the firms. The POEMS (Product-Oriented Environmental Management Systems) is a new “tool” aimed at combining the flexibility of the traditional EMSs (EMAS, ISO 14001) with the ecolabels (Ecolabel, EPD; etc.)

Indeed, the ecolabels for example are more effective for green purchases by Public Administrations (GPP – Green Public Procurement), but they are bound by complex and sometimes slow procedures (e.g. definition of criteria for the label assignment to the product category; approval of the Product Category Rules – PCR for the Environmental Product Declaration – EPD).

Another objective of POEMS implementation was the extension of the concept of continuum improvement principle to the whole life cycle of the product (life cycle thinking approach), from the extraction of raw materials to distribution, use and end of life. The aim is to pass from a phase in which the focus of the environmental problems was related to the production phase, to another one based on a life cycle approach, according to the main goal of the most recent sustainable development policies.
The POEMS model foresees the drafting of a Product Environmental Report, in which the environmental performances of the product are reported (similarly to EPD). The POEMS, developed by ENEA in collaboration with the other partners of the LAIPP project, has been tested in three companies Elica, Scavolini and UPPER, and its main features are the following:

- It is similar to the traditional environmental management systems (ISO 14001 for the environmental aspects and ISO 9001 for the quality ones)
- It applies to a single product/service;
- It is based on LCA;
- It doesn’t require the respect of predefined ecolabels criteria (contrary to Ecolabel and to the other type I labels);
- It is based on the continuum improvement principle along the whole life cycle of the product;
- It foresees the drafting of an Product Environmental Report (PER) in which the environmental data and the commitments to the improvement are reported.

After the identification of the product/service, the necessary steps for the POEMS implementation are (Figura 1):

- The performing of a (simplified) LCA study of the product, in order to identify the most significant environmental impacts;
- The implementation of a product-oriented EMS in order to manage and improve the identified environmental impacts;
- The drawing up of an environmental communication document (Product Environmental Report).

![Figura 1 Steps for the POEMS implementation](image-url)
As regards the testing phase, the firms performed the LCA study in autonomy with the eVerdEE software, they identified the significant environmental problems, developed the improvement programme and the PER, exploring also the related commercial opportunities. This phase has been very important for the development and definition of the standard, by considering the remarks and the difficulties faced by the firms.

From the normative viewpoint, the standard developed in the framework of the LAIPP project has been proposed to the National Normative Body (UNI) for its approval as Technical Report. Further developments are still in progress, and are under discussion with an “ad hoc” working group established by UNI.

**The GPP Laboratory**

The GPP Laboratory has been developed in the framework of LAIPP project, due to the great interest of the issue at national and European level. The activity saw the involvement of a broad range of stakeholders, among which the LAIPP’s partners (in particular UPPER and important Public Administrations of the Marche Region), and gave important input for future developments and initiatives on the topic. Its main activity has been the setting up of a working group, aimed at supporting the development of a green demand by identifying and applying tools and criteria for the wood furniture sector. This experience has been coordinated by the Technology Laboratory for the Quality - COSMOB in Pesaro, and has been presented during several conferences, among which Ecoprocura 2006 in Barcelona. The presentation has been particularly appreciated for the innovative approach of the initiative, i.e. the sector-specific approach, with focus on the territory; the involvement of all the stakeholders that deal with the product; the focus on methods and tools life-cycle-oriented as a basis for the criteria development.

The Laboratory has been characterised by a practical approach: it allowed not only a broad dissemination and increasing awareness of the stakeholders involved in the process, but it has been able to make available knowledge and tools for putting GPP into practice. In particular, integrated initiatives have been undertaken with a double purpose: to support public administrators in drawing up and realising GPP tenders, and to allow enterprises of the territory to “replay” to these tenders, i.e. to make available the green product(s) the public administrations are looking for.

The choice of intervening in the wood furniture sector has been suggested by the following reasons: its representativeness on the market, both at national and European level; it the structure based on SMEs and the their propension to innovation. In this context of excellence, an important role is played by the Market district, interested in the improvement of its role and image also from the environmental viewpoint. The GPP Laboratory has been organised in 4 meetings and represented an opportunity to combine all the stakeholders and the expertises available on the territory, in order to overcome the barriers in developing green purchases. (Tab. 1)
The initiative, promoted by the municipality of Pesaro as a partner of the project, is part of an “awareness path” on GPP issues promoted by the Marche Region. The topics discussed were:

- Analysis of the wood furniture purchasing procedures of Local Entities;
- Awareness and training initiatives, regarding both GPP methodological aspects and contents, i.e. technical specifications for the wood furniture sector and ecological criteria;
- Experimentation in the tenders of methods and tools developed in the framework of the LAIPP project.

The use of ecological criteria in public tender is a problem that has not been solved yet. For some sectors the problem can be overcome by referring to the ecolabel criteria but we cannot do the same for the wood furniture sector as criteria has not been approved so far. This aspect required a survey on the available product-oriented methods and tools for the sector, starting from those already used (e.g. FSC) and those developed during the project: life cycle assessment studies (LCAs), Product-Oriented Environmental Management Systems (POEMS), Environmental Product Declaration (EPD).

The EPD, in particular, is a useful tool that guarantees a transparent dialogue between enterprises and the Public Administrations; it allows the comparison of environmental performances of products that belong to the same category, according to a life cycle perspective, i.e. from the extraction of raw materials to the end of life. Indeed, the information reported are objective, transparent and reliable due to certification of an independent accredited third party.

Despite the scarce presence of EPDs in the market so far, their use in a tender would represent an incentive for the enterprises to promote the product eco-innovation, according to the main objective of GPP.

In the framework of the Italian National Action Plan on GPP, that defines the strategy for the GPP diffusion, a National Working Group (with the involvement of the interested Ministries and of technical experts) and a Permanent Working Group (with the aim to assure a broad sharing of proposal and initiatives) have been set up. ENEA is involved in these activities and will make available, in cooperation with the other partners, the LAIPP experience with reference both to the GPP Laboratory and to the sector-specific methods and tools developed in the framework of the project.
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<tr>
<th>Stakeholders</th>
<th>Role</th>
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<tr>
<td><strong>Public Administrations</strong></td>
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<tr>
<td>Marche Region</td>
<td>To promote GPP practices on the territorial jurisdiction. Indeed, this allows the starting of a collaboration and of an open dialogue with enterprises, by promoting their development on the territory.</td>
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<tr>
<td>Province of Pesaro-Urbino</td>
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<td>Province of Ancona</td>
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<td>Province of Macerata</td>
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<td>Municipality of S.Benedetto Tronto</td>
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<td>Municipality of di Urbino</td>
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<td>Comunità Montana Urbania</td>
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<td>CCIAA Ancona</td>
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<tr>
<td>UPPE</td>
<td>GPP involves not only buyers of products and services but also producers, that should be able to make available products with improved environmental performances along the whole life cycle. For this reason it is necessary to stimulate the use of appropriate methods and tools for the analysis and the communication of results.</td>
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<tr>
<td>Elica</td>
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<td>Grossi Lamiere</td>
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<td>Mobilpref</td>
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<td><strong>Enterprises</strong></td>
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<tr>
<td>COSMOB</td>
<td>Technical Centers that make available specialized services in the wood furniture sector and in mechanics in the Marche Region. They aimed at promoting the technological, commercial and managerial development of the enterprises.</td>
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<tr>
<td>Meccano</td>
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<tr>
<td>ENEA Research Centre</td>
<td>Technical and scientific competences on environmentla policy (LCA, ecodesign, ecolabels, POEMS)</td>
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<td><strong>Technical Structures</strong></td>
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<tr>
<td>University of Urbino</td>
<td>Technical and scientific competences, analysis of the demand by public authorities</td>
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<tr>
<td>Univ. Politecnica delle Marche</td>
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<tr>
<td>ARPAT -AF Educazione Ambientale</td>
<td>Training on specific aspects related to GPP</td>
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<td>SVIM</td>
<td>Development of Regional Industrial Policies</td>
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<td>Assindustria Pesaro e Urbino</td>
<td>Diffusion and awareness</td>
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Tab. 1 The stakeholders that took part to the GPP Laboratory