

Deliverable C1

Report on environmental project impacts

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Life Effige
Environmental Footprint
For Improving and
Growing Eco-efficiency



Abstract

In this report the information is collected concerning the LIFE EFFIGE experience of 9 companies that have implemented the environmental improvement actions during the project and have validated the results with a second PEF study. In particular, the following highlights are presented: how the project has affected the companies' environmental performance, which obstacles have been encountered, and what lessons have been learnt.

This report also includes the Annexes with the results of the monitoring of selected environmental indicators of the companies, such as electricity, fuels and water consumption, and waste production. Data collected relate to 2017, before any effect of the actions of the project, and to 2020, when most of the improvement actions have been implemented.

These Annexes are confidential. For those who were interested, the request must be sent to the LIFE EFFIGE coordinator (Scuola Superiore Sant'Anna di Pisa, www.lifeeffige.eu), who will provide the documents, upon authorization of the company that owns the data.

In questo documento è riassunta l'esperienza di 9 aziende che, partecipando al progetto LIFE EFFIGE, hanno adottato azioni di miglioramento ambientale e hanno validato i risultati eseguendo un secondo studio PEF. In particolare sono qui riportate alcune osservazioni su come il progetto ha influito sulle performance ambientali delle aziende, quali ostacoli sono stati affrontati e cosa le aziende hanno imparato.

Il documento include gli Allegati con i risultati del monitoraggio di alcuni indicatori selezionati, quali consumo di energia elettrica, combustibili e acqua e produzione di rifiuti. I dati raccolti nel 2017, all'inizio del progetto, sono confrontati con quelli del 2020, a valle delle azioni di miglioramento.

Tali allegati sono confidenziali. Chi fosse interessato può rivolgersi al coordinatore del progetto LIFE EFFIGE (Scuola Superiore Sant'Anna di Pisa, www.lifeeffige.eu), che fornirà tali documenti previa autorizzazione dell'azienda che tali dati detiene.

Executive summary

In this report the information is collected concerning the LIFE EFFIGE experience of 9 companies that have implemented the environmental improvement actions during the project and have validated the results with a second PEF study. In particular, the following highlights are presented: how the project has affected the companies' environmental performance, which obstacles have been encountered, and what lessons have been learnt.

This report also includes the Annexes, from 1 to 5, with the results of the monitoring of selected environmental indicators of the companies. Such indicators include electricity, fuels and water consumption, and waste production, and are related to the companies and to the unit of product. Data collected relate to 2017, before any effect of the actions of the project, and to 2020, when most of the improvement actions have been implemented. These data have also been used to calculate some of the key performance indicators uploaded to the LIFE Platform.

These Annexes are confidential. For those who were interested, the request must be sent to the LIFE EFFIGE coordinator (Scuola Superiore Sant'Anna di Pisa, www.lifeeffige.eu), who will provide the document, upon authorisation of the company that owns the data..

In general all sectors and companies have been affected by the consequences of the pandemic in 2020, so that, despite the actions adopted to improve the products object of the PEF studies, the consequent improvement expected at the companies could not be reached, mainly because a decrease of the production efficiency occurred.

Here below a short analysis of the impact of the LIFE EFFIGE project on the different industrial sectors is reported.

Foundry sector

In the foundry companies (ANNEX 1) the decrease of production in 2020 compared to 2017 (approx. -20%), with the consequent loss of efficiency, has been accompanied by an increase of the resources consumption per unit of product, despite the improvement actions adopted. The increase of the market demand of products that require casting at higher temperature, as occurred in 2020, also affected the trend of resources consumption. Despite the difficulties, significant progress was made in the use of renewable energy: this reflects a general trend of the sector, which is increasing its capacity for self-production of renewables by installing new photovoltaic systems.

The pandemic also stopped one of the three foundries participating in LIFE EFFIGE from the planned replacement of the melting furnaces, which has not been cancelled, but only postponed.

With the experience gained in the project, Assofond was able to increase the awareness of its member companies about the calculation of their environmental footprint and the identification of the processes that generate the most significant impacts.

Starting from this interest, the Association has launched two projects with an important potential impact on the sector:

- A project of industrial symbiosis, concerning the recycling of sand from foundries as a secondary raw material for other production processes (e.g. ceramics, glass, bricks), financed by Fondazione Cariplo with the involvement of the IUSS University of Pavia (lead partner), the University of Brescia and the Interuniversity Consortium for Materials Science and Technology (INSTM).
- The adherence to the Made Green in Italy (MGI) scheme of the Italian Ministry of Ecological Transition, based on the calculation of the Product Environmental Footprint. Assofond has already submitted the Product Category Rules for steel castings (approval expected by the end of the summer) and will submit those for iron castings by 2021.

Office furniture sector

The pandemic affected also the office furniture sector: in addition to the paralysis of commercial projects, it has also accelerated the adoption of remote working, which will likely continue even after the end of the crisis. A 15% drop of the turnover has been registered in the two companies of this sector that participated to LIFE EFFIGE (ANNEX 3). A third company, which was initially involved, was forced to close the production during 2021 and could not provide data for the 2020. Though these difficulties have affected the effectiveness of the improvement actions undertaken, the trend towards environmental improvement has been confirmed as a way to emerge strengthened from the crisis, as also observed at macro level among the companies associated with FederlegnoArredo. During the project, one of the companies has moved to fully renewable energy supply and both companies have invested on the production of customized and on-demand packaging, on the optimization of materials, and on separability, thus obtaining better overall efficiency of production and lower products environmental impacts.

At a sector level, thanks also to the Ecotool designed for the office chair, the knowledge of the PEF methodology and its practical advantages was disseminated to many companies. Moreover, all through the supply chain the interest toward the PEF method has increased and two important results have been achieved:

- The participation of the sector of wooden packaging in the Made Green in Italy scheme;
- The construction of a partnership for CO2PES & PEF, a LIFE cofunded project aimed at enhancing the ecosystem services rendered by forests and their production chains. In this project the methodology successfully tested in LIFE EFFIGE will be applied to measure the environmental footprint of some products, notably wooden pallets and construction beams.

Agrifood products (Mustard and Nougat)

CAM (Consorzio Agrituristico Mantovano) has been the reference partner for the studies concerning Mustard, a typical Italian food product based upon fruits and vegetables. In the market, there is a wide range of players, from micro farmers with very small revenues to big companies. The participation of CAM to LIFE EFFIGE had the goal to stimulate the adoption of PEF in SME and micro enterprises. The companies that completed the project activities (first PEF, Improvement Actions, and second PEF) are:

- an industrial small enterprise that is already “green oriented” and made some investments in the past, but without using any environmental monitoring tool;
- a micro farmer who makes all the production inside the firm and was quite confident that his activity generates very low environmental impacts.

The company having an industrial production has appreciated the benefits that PEF as environmental monitoring tool can give and has decided to invest, being aware that the company can reach the carbon neutrality in few years thanks to their commitment. From 2017 to 2020 this company has obtained significant reduction of energy and water consumption per unit of product thanks to the improvement actions adopted (ANNEX 2). This reduction has been also induced by an increase of production following the introduction of new products (vegetables in oil), in addition to the different types of mustard and jam.

The micro enterprise has reduced the production of fruit preserves very much due to the lockdown measures that have limited the possibilities of selling this type of products. Therefore, the total consumption of resources has slightly decreased, but the consumption per unit of product has noticeably increased. The participation to LIFE EFFIGE has highlighted that even if the small size of the enterprise reduces the possible improvement actions, a number of possible actions remains. Such type of enterprises has not the skills, the knowledge and the contractual capacity to make the most part of actions, but the support of the Consortium has been very useful, for example, in obtaining better prices for a power supply contract with certified origin from 100% renewable sources.

Despite the great attention on environmental certifications by the big players of the agrifood sector, SMEs have a strong difficulty to introduce tools of environmental management. LIFE EFFIGE has involved two medium sized companies and one micro company that produce nougat, a traditional Italian food with a production process defined since more than a century and difficult to innovate. After the first PEF study, the micro company decided not to complete the path proposed by the project, but the project succeeded in stimulating both medium sized companies to introduce environmental considerations in management and investments decisions.

Due to the pandemic, not all identified improvement actions could be implemented, but the companies are committed in continuing the environmental improvement process. In particular, a company is waiting for the approval of the installation of a photovoltaic plant, procedure that has required more time than usual, because the firm is located in an

internationally protected UNESCO site. Due to a decrease of production of about 15%, the expected efficiency increase of the use of resources could not be reached (ANNEX 5). Nevertheless, the participation to the project has demonstrated that the adoption of environmental improvement actions is not necessarily expensive, on the contrary, it can generate a reduction of the costs, and that the use of a monitoring tool like the PEF method can provide useful information to support the management decisions.

School meal service

A contracted supply service for school meals in the Forlì District has been selected by Camst to contribute to the activities of LIFE EFFIGE, because it allows higher standardization if compared to other catering services. On the other side, menus and sanitization protocols are defined by the tender specifications and the national and regional guidelines on proper nutrition, so possibilities of introducing changes are poor. As an example, it was not possible to implement the “dry cleaning” system used in other Camst's centralized kitchens to save water, as the sanitization protocols were already fixed by the contract. Moreover, the pandemic has affected the school catering service very much, so data collection in 2019-2020 cannot be representative of a normal service. Data collection concerning 2018-2019 has shown a decrease of the consumption of water, electricity and natural gas, if compared to 2017-2018, because the innovative equipment introduced allowed a lower use of resources (ANNEX 3). However, the improvement actions identified in the LIFE EFFIGE Action Plan could not be concluded. In particular, the effect of the training oriented at reducing food waste at the school canteen could not be monitored and the use of electricity from renewable sources has not been implemented yet, even if the results of the simulations encourage to adopt it for all Camst's centralized kitchens in a next future. The use of reusable meal sets has been partially introduced and the effect on the environmental impact seems slightly positive.

Camst has also involved in EFFIGE three suppliers to test the PEF method and strengthen the relationships along the supply chain. Only one has followed the activities until the end of the project, another had difficulties for data collection because it is a Consortium with a high number of producers, and the third decided not to invest for the implementation of the improvement action identified.

The LIFE EFFIGE experience has been the starting point for the development of a new project dedicated to inter-company catering, in which Camst will be able to define raw materials and menus, contrary to school catering. A set of indicators will be used (global warming - CO₂, water consumption, land use/transformation, human toxicity, particulate matter formation) to provide the impact of each individual menu in order to guide customers towards more sustainable choices.