Deliverable A1.1

"Overview of the past and on-going experiences dealing with PEF and LCA application"

The aim of Action A1 is to collect previous studies, database, and other relevant technical documents, which can support the next actions and provide useful inputs (e.g.: secondary data, industry-specific emission factors, etc.) for the Product Environmental Footprint (PEF) development in the involved sectors. As the sectors involved in this project are not in the scope of the PEF Pilot Studies, we relied on information from other life cycle assessment methodologies in the sectors involved in the LIFE EFFIGE project, namely furniture, foundry, agro-food, and catering services.

Action A1 is divided in two sub actions. In Action 1.1, or Good practices collection, we conduct desk research with the fundamental aim of devising a list of organizations that have previously undertaken a study for one or more of their products based on a life cycle logic, or LCA. The output of sub action A1.1 is an Excel file containing a list of fifty organizations that we, together with our partners, refer to as 'The Observatory'. These organizations belong to the four industrial sectors already mentioned. Furthermore, this list will be uploaded on our [website](#) together with an interactive map which displays where these organizations are located.

Action A1.2, Case studies analysis, is composed by desk as well as in-field research, as we selected five organizations from the afore described list, that after conducting one or more LCA have adopted a life cycle logic in their processes and strategies. In order to capture how this organizational change has happened, what factors promoted it, and which obstacles, if any, the organizations had encountered in this endeavor, we conducted a multiple case study. The selected research methodology, the case study, is described as particularly useful for assessing 'real world' (McCutcheon and Meredith, 1993) and in-depth analysis of contemporary phenomena (Corley and Gioia, 2004). The outcome of sub action A1.2 are case reports for each of the five organizations considered from our list. These case reports will be also uploaded on our website.

Finally, this desk and in-field analysis will also investigate the operational aspects of the LCA application, such as the estimation techniques, the adopted proxies, the data sources and the validation processes used, etc., as well as the way in which other encountered problems have been solved in these previous experiences, even if they were not totally PEF-compliant. This information can be very important to take into account the lesson learnt from previous experience and better design the next operational steps of the project.

The Sant'Anna School of Advanced Studies (SSSUP) and the National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA) in vest of technical partners will play a primary role in this research activity. SSSUP is in charge of identifying studies and organizations from the furniture and foundry sectors, whereas ENEA deals with the agri-food and catering services sectors. The sectoral partners (FLAE, CAM, Assofond, CAMST and AGRICA) will suggest prominent experiences to be analyzed in the search for good practices, will support in the data collection and with validate the draft of good practices description.

SSSUP and ENEA defined and shared the criteria to fill the observatory of good practices. In order to be selected as a good practice, an organization has to have implemented at least one the following after conducting an LCA study:
- Introduction of eco design principles in the product design in order to reduce its environmental impacts

- Adoption of new technologies for reducing the environmental impacts in the identified hotspots
 - Adoption of a marketing strategy based on the results of the LCA study.

Descriptive Overview of Good Practices
In our Excel list we categorized the identified practices according to the scheme or methodology used, the industrial sector they belong to, and their geographic location. We further added all the information we deemed useful for our purposes.
In tables from 1 to 4 we report the different schemes used according to the four sectors.

Agri-food Sector			
Scheme/Methodology	**Organizations Involved**	**Location**	**Typology of Product**
International EPD system	14	Italy	Beer (1) Apple (6) Pear Nectar (1) Tomato, Borlotti Beans (1) Sugar (1) Oil (1) Water (1) Meat (1) Transport of food products and meals (1)
PEF	50	Europe Italy	Beer (11) Tomato (38) Bacon (1)
PEFCR		Europe	Wine (5) Water (9) Oil (27) Dairy (18)
Carbon footprint Italian Ministry of the environment	1	Italy	Jam
VIVA project Italian Ministry of the Environment	38	Italy	Wine
Carbon Footprint PAS 2050	133	United Kingodm and Ireland	Beef meat
LCA	3	Belgium Italy	Pork meat Raspberry
ISO 14040 and 14044	Nd	Spain Italy	Fish and Seafood Ice Cream

Table 1 Agri-food Sector

Catering Services Sector		
Scheme/Methodology	**Organizations Involved**	**Location**
Green Seal Standard for Food Services GS-55	6	USA
LCA	3	Italy
Organizational LCA	240	Switzerland

Table 2 Catering Services Sector

Foundry Sector			
Scheme/Methodology	**Organizations Involved**	**Location**	**Typology of Product**
PEF	18	Europe	Metal (13) Copper Production (5)
14040:2006 and ISO 14044:2006	11	USA Italy	Foundry (10) Steel (1)
ISO 14040:2006 and ISO 14044:2007	1	United Kingdom	Foundry for Automotive
EDIP	Secondary Data	International	Metal
International EPD system	1	Italy	Steel
ISO 14040:2006 and ISO 14044:2008	Nd	Italy	Oil
ISO14040	1	Italy	Foundry

Table 3 Foundry Sector

Furniture Sector		
Scheme/Methodology	**Organizations Involved**	**Location**
Carbon footprint ISO 14067	3	Spain United Kingdom Italy
ISO 14040:2006 and ISO 14044:2006	2	Europe Norway
Carbon footprint	3	Finland
Eco-Indicator 99 impact assessment method	1	Spain
International EPD system	3	Sweden Lithuania Spain
ISO 14040:2006 and ISO 14044:2007	Nd	Italy

Table 4 Furniture Sector

The emerged good practices were 27 in the agri-food sector, 10 in the furniture sector, 10 in the foundry sector, 3 in the catering sector. These best practices described the following schemes:
- 7 carbon footprint
- 13 EPD
- 13 LCA
- 8 PEF (pilot EC and PREFER experiences)
- 9 sectoral schemes

Further information can be found in the Excel file.

Starting from this collection of good practices, we have chosen five organizations, the 'leaders', that after conducting an LCA, implemented a life cycle logic in their operations and strategy. Within the scope of Action A1.2, we investigated how this process evolved by conducing desk and in-field research as previously discussed. The output will be also available on the EFFIGE website.

SCHEME	Sector	Involved organization	Country
PEF	Metal	13	Europe
PEF	Copper Production	5	Europe
Carbon footprint ISO 14067	Furniture	>1 for 1 study	Spain
ISO 14040:2006 and ISO 14044:2006	Furniture	>1	Europe
Carbon footprint ISO 14067	Foundry	1	United Kingdom
ISO 14040:2006 and ISO 14044:2006	Furniture	1	Norway
ISO 14040:2006 and ISO 14044:2006	Foundry	10	USA
ISO 14040:2006 and ISO 14044:2007	Foundry for automotive	1	United Kingdom
Environmental Design of Industrial Products (EDIP). This method provides the basis for ISO 14040:2006 and ISO 14044:2007 implementation.	Metal	Secondary data	International
Carbon footprint	Furniture	3	Finland
Eco-Indicator 99 impact assessment method	Furniture	1	Spain
International EPD system	Agri-food (Beer)	1	Italy
PEF	Agri-food (Beer)	11	Europe
International EPD system	Furniture	1	Sweden
International EPD system	Furniture	1	Lithuania
Carbon footprint ISO 14067	Furniture	1	Italy
International EPD system	Furniture	1	Spain
PEF	Agri-food (Tomato)	38	Italy
International EPD system	Metal (Steel)	1	Italy
ISO 14040:2006 and ISO 14044:2006	Steel	1	Italy
ISO 14040:2006 and ISO 14044:2007	Wood Furniture	Nd	Italy
ISO 14040:2006 and ISO 14044:2008	Oil	nd	Italy
International EPD system	Agri-food (Apple)	6	Italy

Carbon footprint Italian Ministry of the environment	Agri-food (Jam)	1	Italy
VIVA project Italian Ministry of the Environment	Agri-food (Wine)	38	Italy
PEFCR	Agri-food (Wine)	5	EU
International EPD system	Agri-food (Pear nectar)	1	Italy
International EPD system	Agri-food (Tomato, Borlotti Beans)	1	Italy
International EPD system	Agri-food (Sugar)	1	Italy
International EPD system	Agri-food (Oil)	1	Italy
PEFCR	Agri-food (Oil)	27	EU
International EPD system	Agri-food (Water)	1	Italy
PEFCR	Agri-food (Water)	9	EU
International EPD system	Agri-food (Meat)	1	Italy
Green Seal Standard for Food Services GS-55	Meal Service	6	USA
International EPD system	Transport of food products and meals	1	Italy
LCA (to calculate Carbon Footprint)	Meal Service	1	Italy
LCA (to identify improvement potentials)	Meal Service	2	Italy
CF (to support company imrovements) PAS 2050	Agri-food (Beef Meat)	133	United Kingdom and Ireland
Organizational LCA (to identify improvement potentials)	Meal service	240	Switzerland
PEF declaration	Agri-food (Bacon)	1	Italy
PEFCR	Agri-food (Dairy)	18	EU
LCA in line with PEF guidelines	Agri-food (Pork Meat)	2	Belgium
ISO 14040 and 14044 standards for LCA studies (ISO 2006a, b)	Agri-food	nd	Spain
Mixed	Agri-food	Nd	Italy
LCA	Agri-food (Raspberry)	1	Italy

ISO 14040 and 14044 standards for LCA studies (ISO 2006a, b)	Agri-food (Fish and seafood)	Nd	Spain
Mixed	Agrifood (Beef meat, dairy, orange juice, salmon)	Nd	Europe
ISO 14040 and 14044 standards for LCA studies (ISO 2006a, b)	Agri-food (Ice cream)	1	Italy
ISO14040	Foundry	1	Italy

Annex I: List of selected best practices