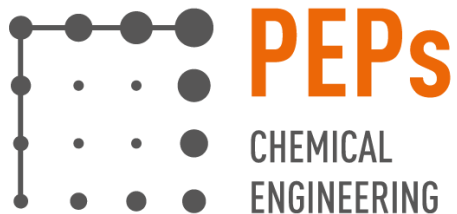


LIFE CYCLE IN PRACTICE

HOW TO HELP SME'S TO INTEGRATE LIFE CYCLE THINKING CONCEPTS?

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- ▶ Life Cycle in Practice: what is it?
- ▶ Case studies
- ▶ Life Cycle in Practice: and then?
- ▶ Conclusions

- ▶ Key objectives of the EU: integration of environmental sustainability with economic growth and welfare by decoupling environmental degradation from economic growth, and doing more with less.
- ▶ Business: facing increasing legal and market requirements to enhance resource efficiency and reduce the environmental impact of their products and services.
- ▶ Life Cycle Assessment (LCA): standardized tool that can play a central role in improving resource efficiency (ISO 14040/14044:2006).

- ▶ → **LCiP:** LIFE12 ENV/FR/001113 [2014-2016]
- ▶ **Aim:** to promote the uptake of Life Cycle (LC) approaches (LCA, ecodesign, environmental labelling)
 - ▶ particularly in SMEs
 - ▶ to help the implementation of LC approaches through a network of Life Cycle Champions, composed of experts and organizations



▶ 4 regions:

- ▶ Wallonia (Belgium): GreenWin
- ▶ Hauts de France (France): cd2e
- ▶ Portugal: Laboratório Nacional de Energia e Geologia, I.P.
- ▶ Basque Country (Spain): PROSPEKTIKER | European Institute for Future Studies and Strategic Planning



▶ 3 sectors:

- ▶ Buildings & Construction
- ▶ Waste Management
- ▶ Energy Equipment



▶ 32 SMEs

- ▶ Building sector:

- ▶ IsoHemp: hemp concrete blocks



- ▶ Recycling projects:

- ▶ Biowaste Recycling – EcoCleaner[®]: in-situ treatment of food waste in 24h
 - ▶ Acoustix Pan-terre: acoustic insulation panel (paper waste)



biowaste
RECYCLING



- ▶ SMEs already implied in environmental approach (ecodesign, recycling)
⇒ motivation, better contact, involvement,...
≠ constraining situation (rules, hierarchy,...)
- ▶ Direct contact with implied persons in SMEs
⇒ facilitation of data collection (inventory)
- ▶ Geographical proximity: site visit
⇒ better understanding of the process

IsoHemp – Hemp concrete blocks



- ▶ Natural products used in building renovation and construction
- ▶ Benefits in terms of thermal, hydraulic and acoustic regulation while remaining completely natural
- ▶ 80% hemp shives + 9% slaked lime ($\text{Ca}(\text{OH})_2$) + 11% natural hydraulic lime ($\text{Ca}(\text{OH})_2$ + clay) + water
- ▶ Carbon sequestration (hemp shives, limes) ($\sim 100 \text{ kg CO}_2 \text{ eq/m}^3$)
- ▶ Already ecodesigned \Rightarrow little possible improvements
- ▶ Replacement of galvanized steel corners (pallets) by cardboard corners (30% impact reduction in Abiotic depletion)

- ▶ Accelerated composting machine (aerobic)
 - ▶ Recovery and reuse of food waste (FW)
 - ▶ Humidity > → transport of water, storage: putrefaction, insects, rodents,...
 - ▶ On-site processing of organic food waste in 24 hours
- ▶ EcoCleaner[®] technology:
 - ▶ Special consortium of more than thirty thermophilic bacteria (patented)
 - ▶ Permanent control of the ratio of humidity and temperature to optimize fermentation rate of food waste
- ▶ Reduction of waste: 90% (1 tonne FW → 100 kg dry compost, 80% DM)
- ▶ Electricity for use >> : 339 kWh/UF (UF = 1 t) or 17 MWh/year for 50 t/y (motor 50% and heating 33%) (EC100)
- ▶ Possible improvements: refurbishing (92% metal (steel)), and electricity from on-site photovoltaic panels (PV) instead of grid mix

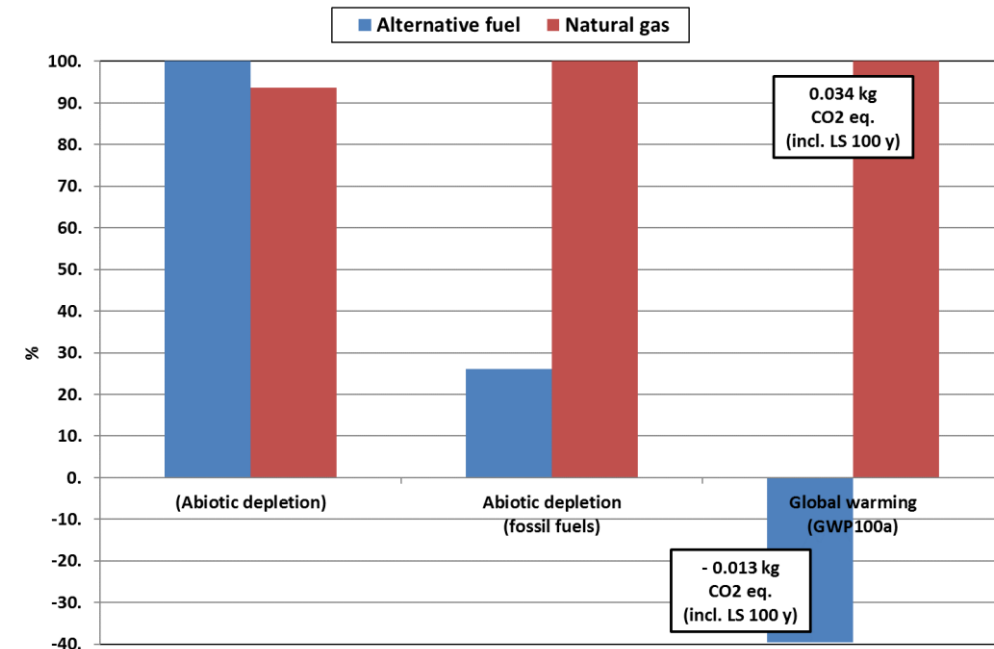


- ▶ The Groupe Terre develops socially oriented businesses that recover clothing and recyclables (paper, cardboard, food and drink containers and glass), for construction (acoustic insulation, scrap metal) and for international solidarity or cycle rental projects
- ▶ Acoustix panel: complete and effective acoustic insulation solutions (also available on gypsum boards)
- ▶ Paper waste (62.5%) + flax shives (37.5%) + water → pulp pressed in panel with a hydraulic press → drying in a gas oven → calibration (thickness adjustment) and cut-out (borders) to the right size → palletization with plastic foils
- ▶ 500 t paper/year, ~ 150 000 m²



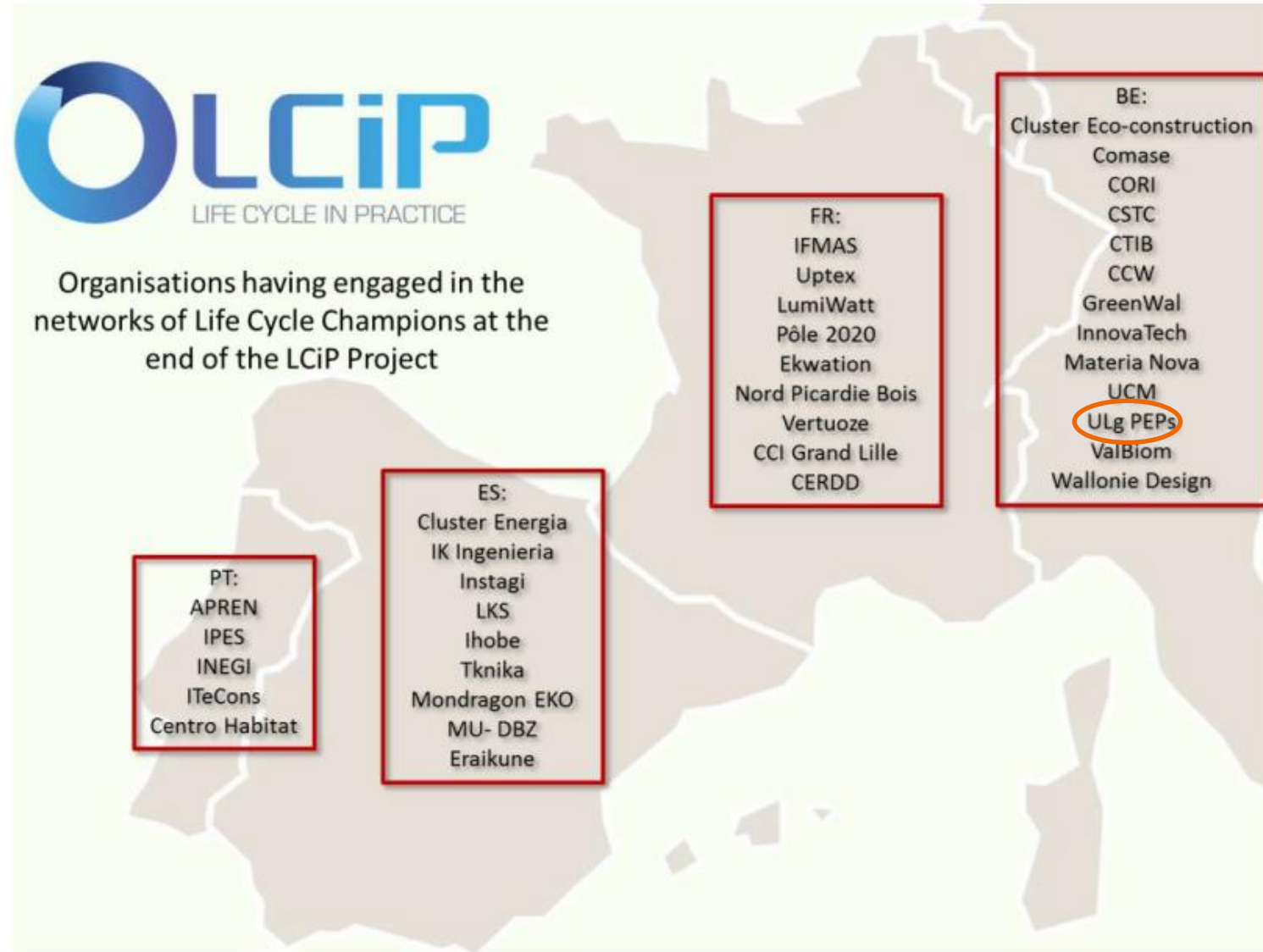
- ▶ Life cycle assessment:
 - ▶ The functional unit (FU) is 1 m² (x 16 mm) of Acoustix panel, ready for shipping (cradle to gate) (1 panel = 3 m²)
 - ▶ Life span: 100 years
 - ▶ SimaPro 8.1, EcolInvent 3.1, CML-IA
- ▶ Major impacts: **natural gas**
(2900 MWh/y – 19.6 kWh/UF for drying)
 - ▶ Global warming potential (GWP100)
 - ▶ Abiotic depletion – fossil fuels (AD-FF)
- ▶ Carbon sequestration by flax: “negative” impact in GWP100

- ▶ Alternative fuel for hot air generation: panel waste (\neq raw matter), **textile waste**
- ▶ 16 000t/y \rightarrow 4% in second hand stores, 82% recycled, 14% ultimate waste (municipal incineration)
- ▶ Gain:
 - ▶ 74% for AD-FF
 - ▶ negative result for GWP10 (NB : textiles wastes \equiv wood)



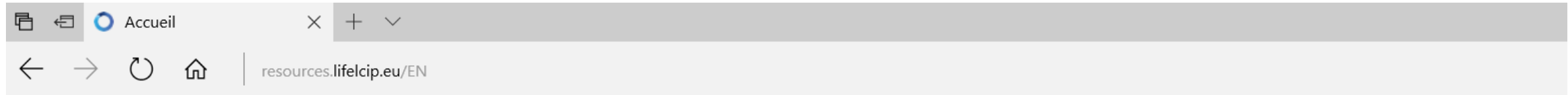
- ▶ Other possible improvements:
 - ▶ Optimization of the drying process (recovery of heat and water),
 - ▶ Replacement the present press by a more powerful and continuous one (leading respectively to less residual water in the panel to be dried, and less cut-outs).
- ▶ Process is 30 years old and needs to be renewed
- ▶ ⇒ Conclusions of this study can help the company to make the most sustainable - and economical - choice of their energy source when they design their new production line, on the basis of scientific evaluation of the environmental impacts.

LCiP ... and then? – LC Champions Network



LCiP ... and then? – Online Resource Center

<http://www.lifelcip.eu/>



ONLINE RESOURCE CENTER

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Training materials, products and methods are made available for key stakeholders of the **LCiP** project through an open-access module in the online resource centre, as well as through the physical resource centres of each region.

The four physical resource centres (one in each participating region) are the ""hub"" for SMEs seeking to integrate LC approaches into their businesses. Here they have access to selected LCA tools, reading material, expertise, training and advice.

The online resource centre brings together information on life cycle strategies (such as ecodesign, green purchasing, life cycle communication and life cycle management), available tools and information (including LCA software, LC related tools, guides, training modules, case studies, relevant sustainability information by sector, news related to LC related policies, other LC projects' results, expert centres and consultants).

[Join our community on LinkedIn](#)

LCiP ... and then? – Physical Resource Centers

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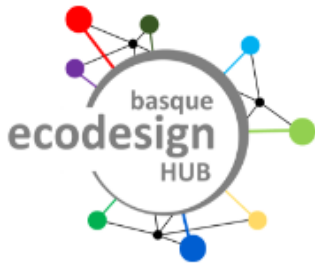
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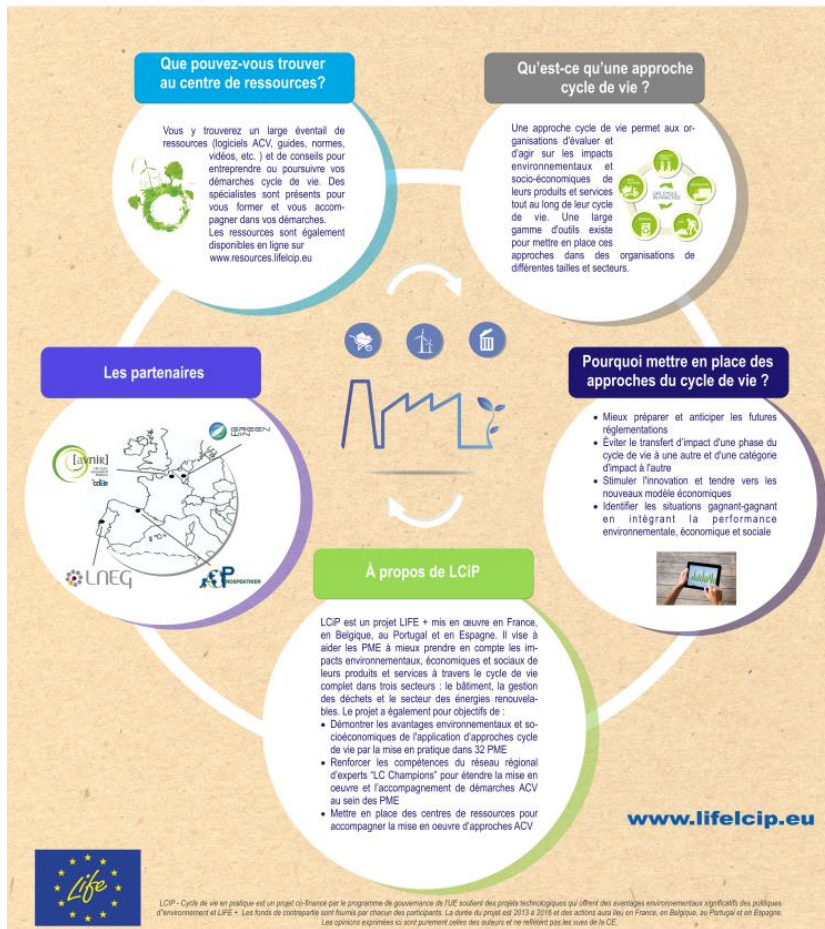
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LCiP ... and then? – Physical Resource Centers



BIENVENUE AU
CENTRE DE RESSOURCES



- ▶ **Life Cycle Assessment** = scientific tool to point out weaknesses of a process and estimate the environmental benefits that can be done by changing some parts of the manufacturing chain of a product
- ▶ **As a coach:** fruitful experience → scientific and human
- ▶ **SMEs:** better understanding of LC approach potential
- ▶ Long term implementation of
 - ▶ **LC experts network** (between and inside regions)
 - ▶ **Resource centers** to help SMEs in their life cycle approaches (on-line and physicals) → EPD (EN 15804) / FDES (NP P01-010) (FR)
- ▶ Funds !!! (?)

