Nemosine innovation impact assessment

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NEMOSINE has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 760801.

Project impact assessment

- **Fundamental moment in a project**

- It allows to evaluate the impacts of the project in the short, medium and long term from different points of view:
  1. **Environmental**: impacts on climate change, use of resources, human health
  2. **Economic**: cost effectiveness, economic sustainability of the product / service
  3. **Social**: product / process actual and potential positive as well as negative impacts along the life cycle

- In NEMOSINE project: impacts assessed from all points of view, with the aim of providing a complete picture of the **potential benefits** on Europe and Europeans

Life Cycle Assessment (LCA)

Environmental issues key drivers of the project

OBJECTIVE: determine whether the new package and technology used in the museum/film library facilities can lead to real environmental savings

Life cycle assessment (LCA) applied to calculate the environmental impacts of the packages/technologies developed within the NEMOSINE project

LCA

- methodology to evaluate the environmental burdens associated with a product or process by identifying and quantifying energy and materials used and wastes released to the environment
- assess the impact of those energy and material uses and releases to the environment
- identify and evaluate opportunities for environmental improvements

LCA - Methodology

- Step 1 – **Scope** definition
- Step 2 - **Life Cycle Inventory (LCI)** analysis aims at creating an inventory of data about water, energy and raw materials inputs, and releases to air, land and water, within the whole life cycle
- Step 3 - **Life Cycle Impact Assessment (LCIA)** is the evaluation of the potential impacts associated with the identified forms of resource use and environmental releases
- Step 4 - **Results interpretation** from the previous phases of the study, the identification of significant environmental issues, the evaluation of the analysis results, as well as conclusions and recommendations

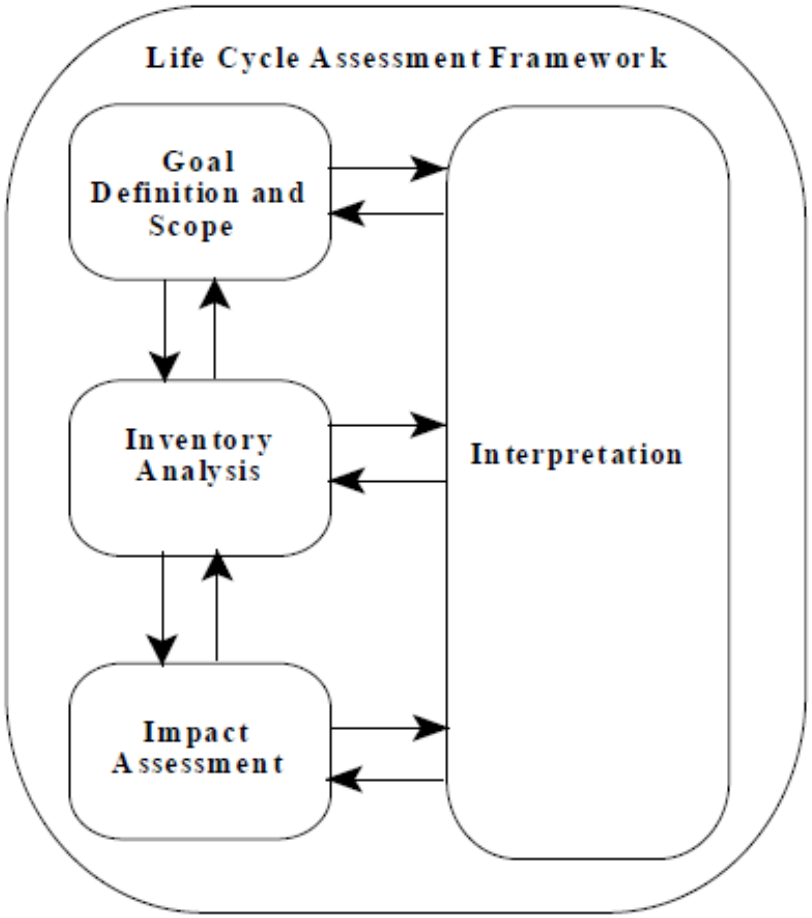
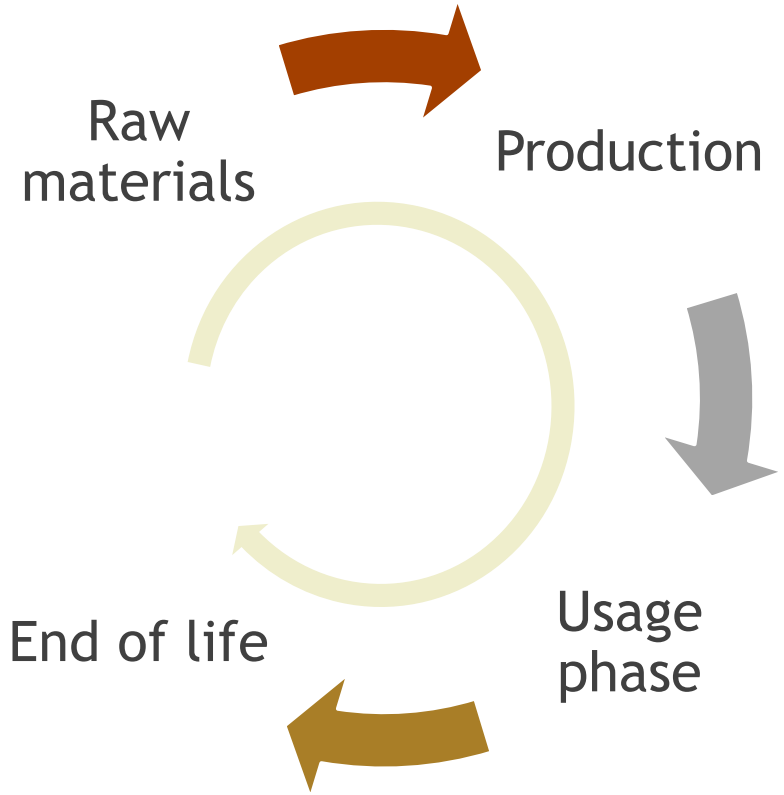


Exhibit 1-2. Phases of an LCA (Source: ISO, 1997)

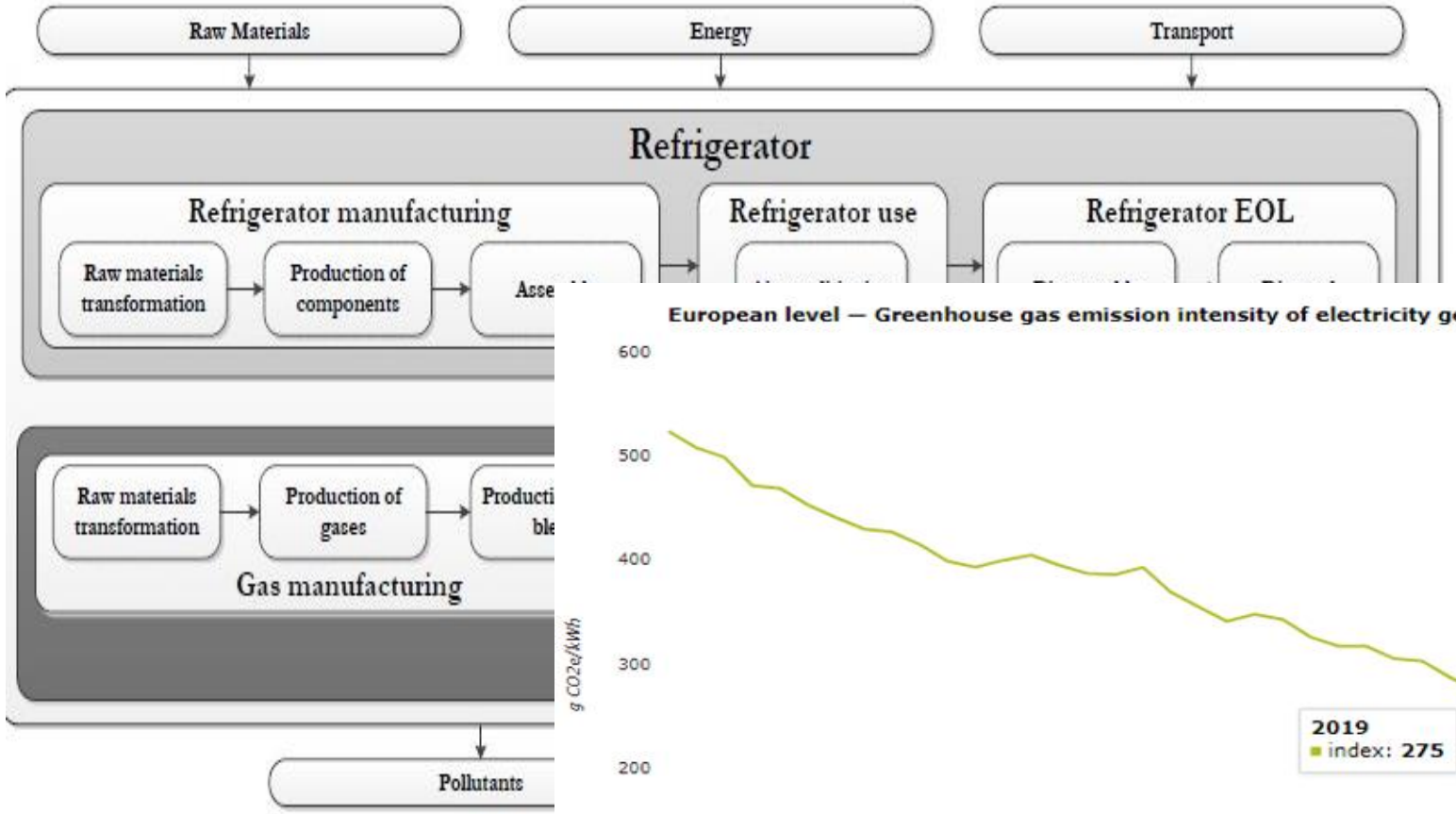
LCA - Approach

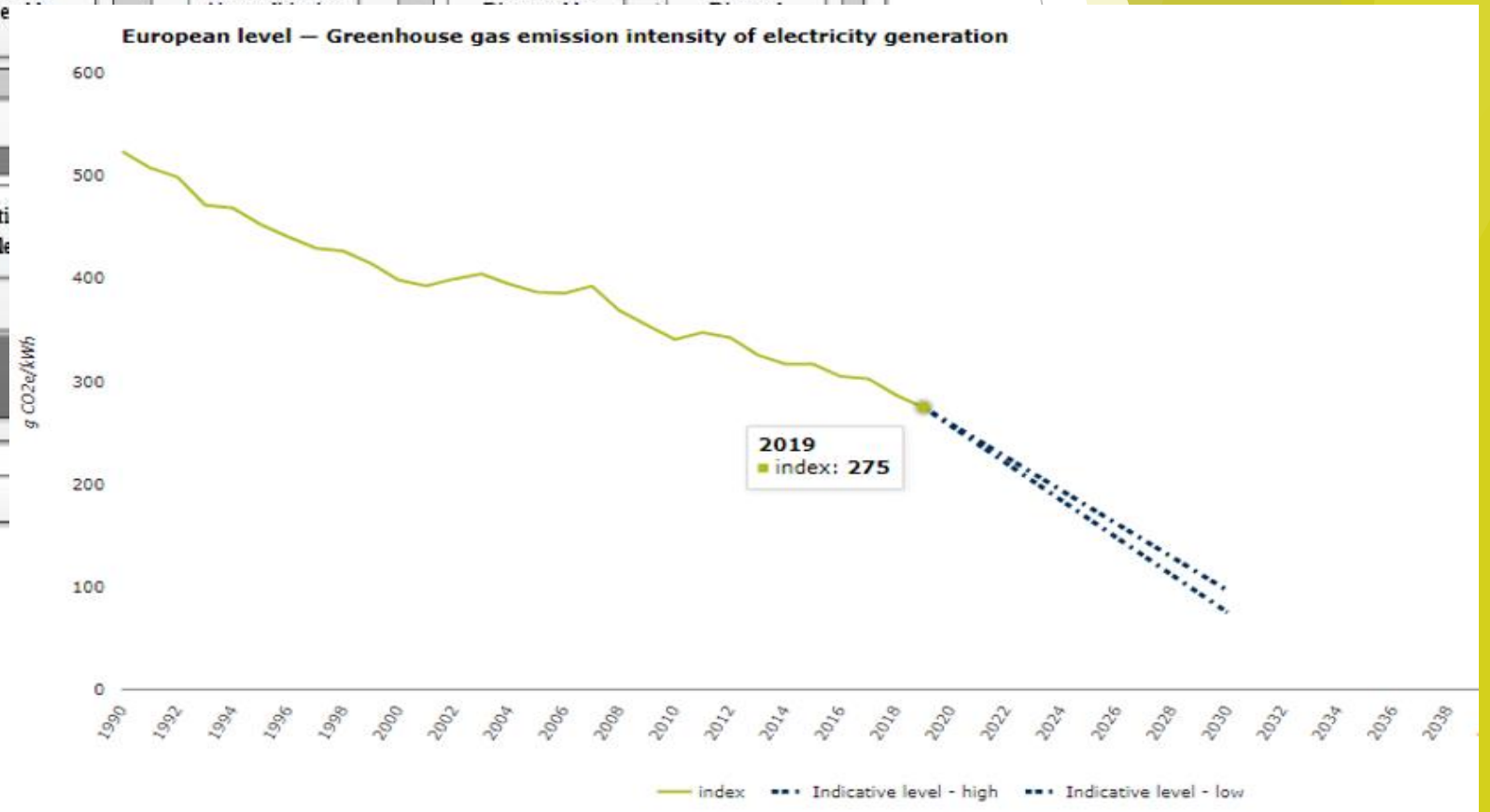
- **Comparative analysis:** Current scenario VS NEMOSINE's scenario
  - Current scenario: Cold rooms for storing films (in conventional package)



- **Entire Life Cycle**
  - Raw materials and production processes
  - Usage phase (energy consumption mainly)
  - End of life

LCA – Scope definition and impact assessment





Life Cycle Costing (LCC)

Economic aspects fundamental to guarantee project results exploitation

OBJECTIVE: systematic evaluation of the economic costs associated with a product or process, including not only direct costs but also external relevant costs and benefits

Life cycle costing (LCC) applied to calculate the economic impacts of the packages/technologies developed within the NEMOSINE project considering the entire life cycle

METHODOLOGY AND APPROACH

- **Entire life cycle**
- **Comparative:** economic costs of current scenarios - cold rooms for storing films (in conventional package) assessed and compared with the costs of NEMOSINE's scenarios

LCC - Steps of the process and costs

Definition & Design | Financing | Materials & Manufacturing | Installation & Assembly | Operation & Maintenance | Dismantling & Disposal

Costs incurred during the lifetime of the product or service:

- **Purchase price** and all associated costs (delivery, installation, insurance, etc.)
- **Operating costs**, including energy, fuel and water use, spares, and maintenance
- **End-of-life costs** (such as decommissioning or disposal) or residual value (i.e. revenue from sale of product)
- **Cost of externalities**, with particular reference to environmental impacts related to greenhouse gas emissions

Social Life Cycle Assessment (S-LCA)

Social impact fundamental in the NEMOSINE project dedicated to cultural heritage conservation

- A huge percentage of the recent European cultural heritage (CH) can be found in movies, photos, posters and slides produced between 1895 and 1970 were made using cellulose derivates
- More than 75 years of visual and audio memories are in serious danger to be lost due to the natural instability cellulose acetate

"Cultural heritage enriches the individual lives of citizens, is a driving force for the cultural and creative sectors, and plays a role in creating and enhancing Europe's social capital. It is also an important resource for economic growth, employment and social cohesion, offering the potential to revitalise urban and rural areas and promote sustainable tourism" (European Commission)

S-LCA methodology and approach

Social analysis necessary to determine whether the improved storage solutions developed in the project can also lead to other social benefits for local communities and related associations

S-LCA

- Performed in parallel to the environmental and economic analyses
  - Methodology to assess the **social and socio-economic aspects** of products or processes and their potential positive and negative impacts along their life cycle
  - Direct or indirect **impacts on stakeholders**, including workers, local community, consumers, value chain actors and society, e.g. working conditions, health and safety
- **Comparative analysis**

Conclusions and next steps

- Impact Assessment to be completed in the coming month, taking into consideration the latest technical developments of the proposed solution

- Evaluation of:
  1. **Impacts on the environment and human health** (energy savings)
  2. **Cost effectiveness** of the solution compared to state-of-the-art competitive solutions
  3. **Social benefits** thanks to extended conservation time

- Fundamental to guarantee the proper **exploitation** of project results

Thanks for your attention

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For more info

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