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**Bioeconomy
in Transition
Research Group**

The pursuit of an ethical, circular, and sustainable fashion sector: the Cartiera case study

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Introduction

Fashion Industry



Fast Fashion: The demand for disposable clothing at low prices

Sustainable Fashion: The change in the fashion system towards greater ecological integrity and social justice

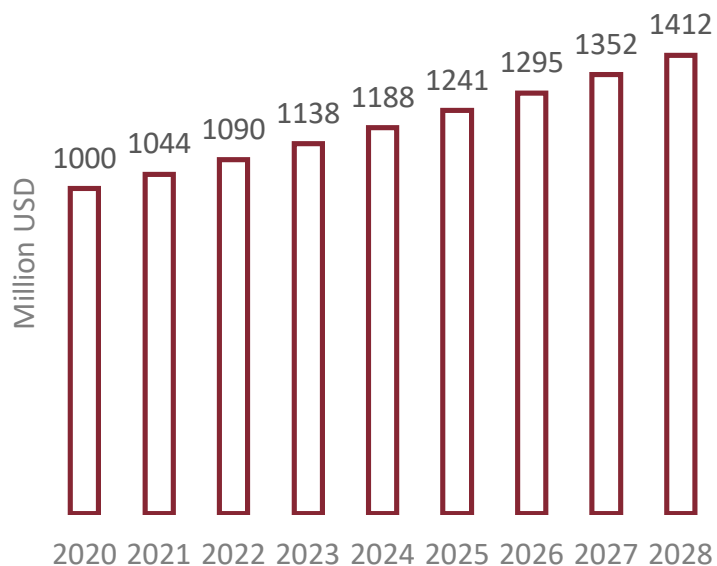


Introduction

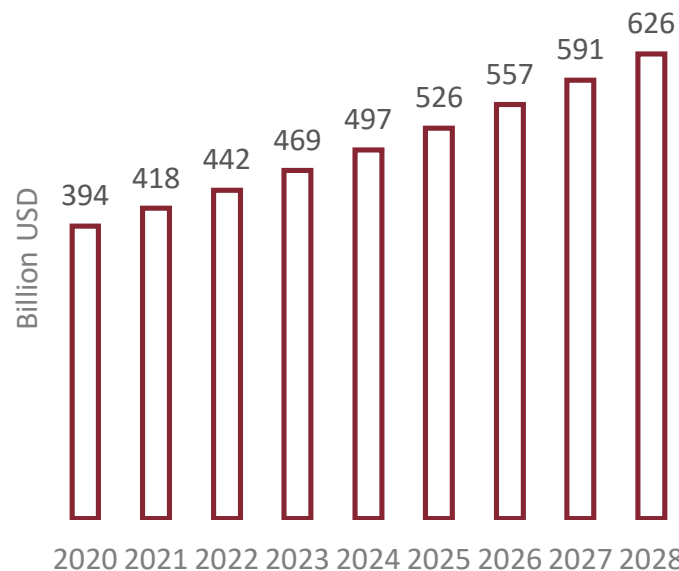
Global Market



The Fast Fashion Market size was valued at USD 1000.3 Million in 2020 and is projected to grow at a CAGR of 4.4% from 2021 to 2028.



The global leather goods market size was valued at USD 394.12 billion in 2020 and is expected to grow at a CAGR of 5.9% from 2021 to 2028.

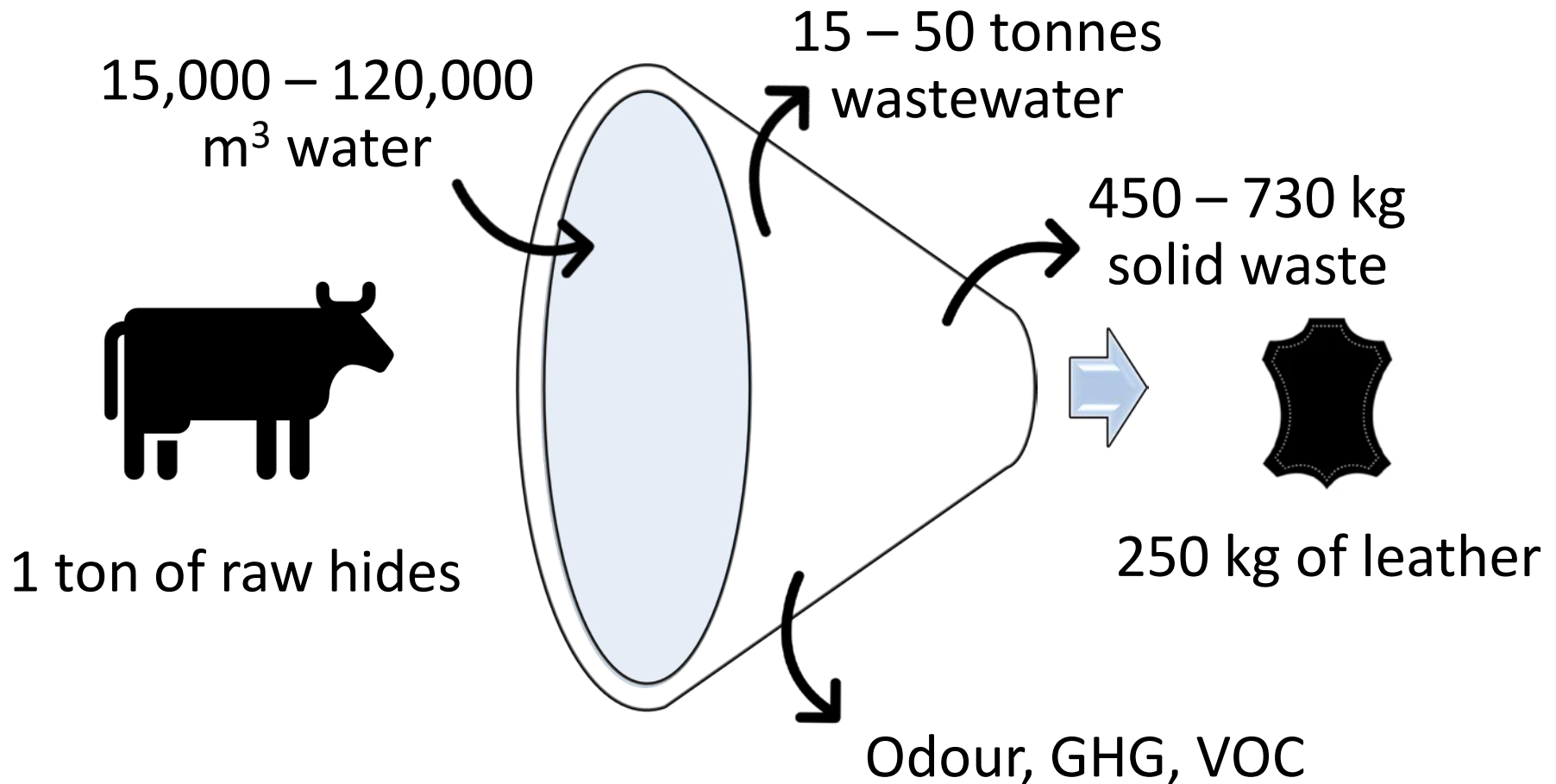


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Introduction

Leather Processing



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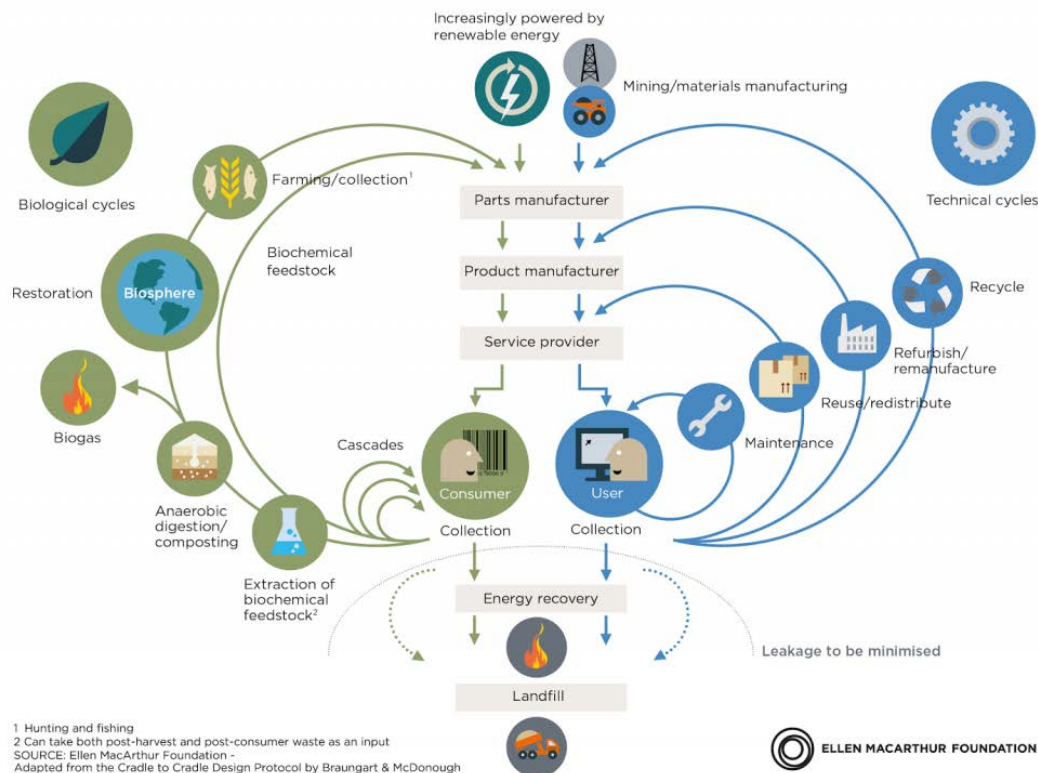
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Circular Economy



CIRCULAR ECONOMY - *an industrial system that is restorative by design*



➤ Preserve the value of materials either by extending the life of products or by reintegrating them into the system for their reuse.

➤ Optimize resource yields by circulating products and materials at the highest utility at all times.

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Case Study



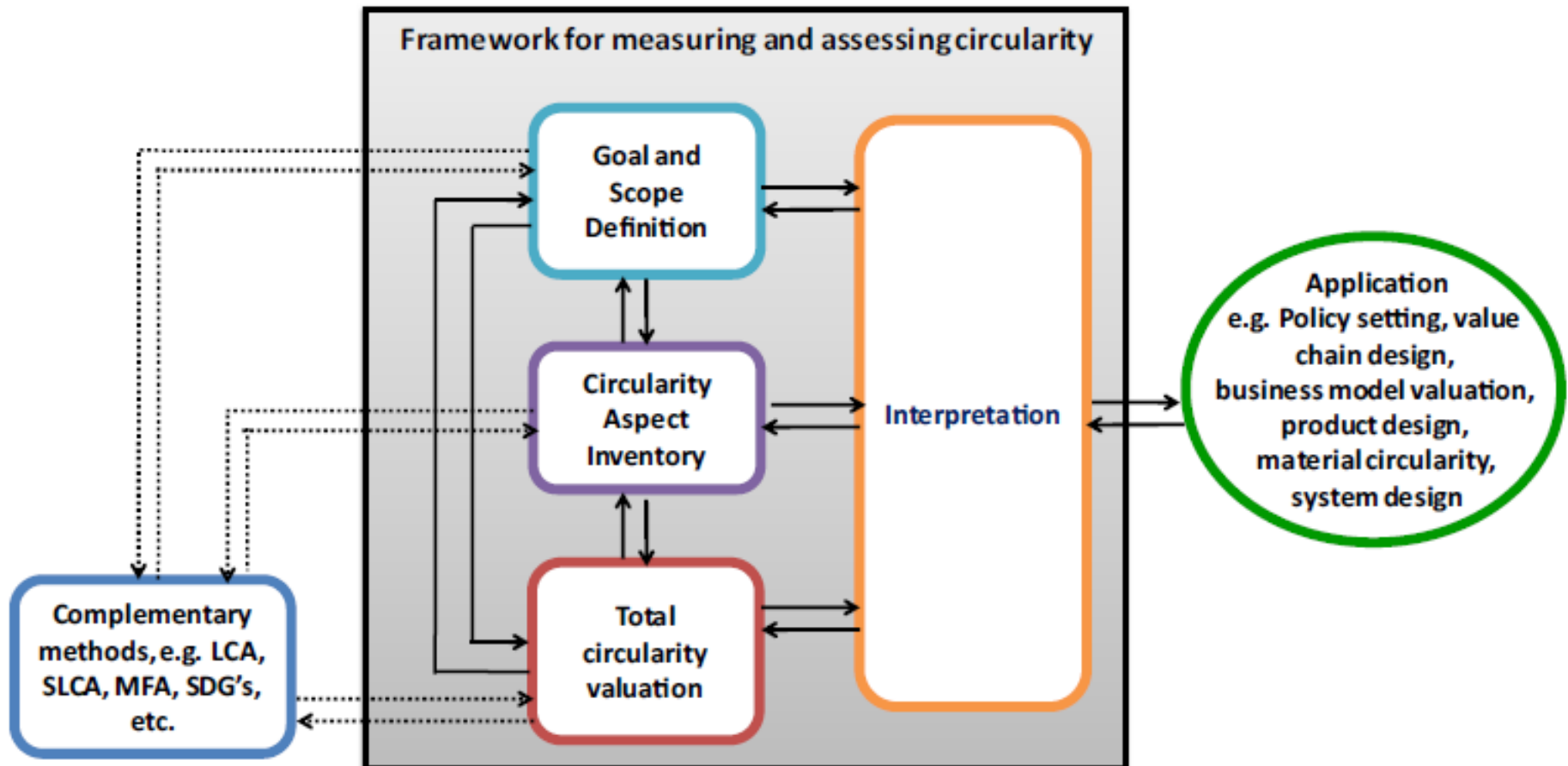
Lai-momo is a sustainable and ethical fashion enterprise, producing leather accessories using leftovers from fashion companies' production chains.

Cartiera pursues the integration of migrants and asylum seekers in the recovery of primary materials otherwise destined for disposal.



Methodology

Life Cycle Assessment (LCA)



*ISO Standard 14040/44 for Life Cycle Assessment

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Results and discussion

Goal and Scope Definition



- **Aim:** to compare the environmental impacts associated with three main types of bags produced from leather leftovers.



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Results and discussion

Goal and Scope Definition



- **Gate-to-gate System boundary:** from the transportation of leather leftovers to the production of valorised bags including the packaging
- **Functional unit:** 1 kg leather bag produced

Results and discussion

Inventory Analysis

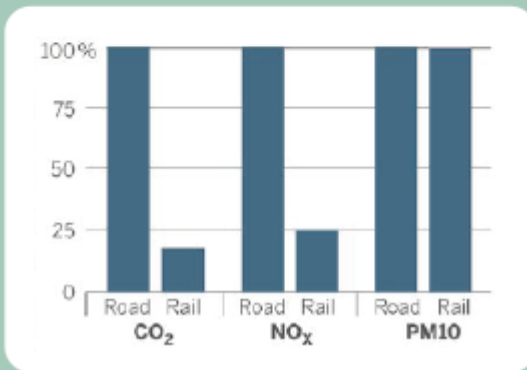


2. Inventory analysis

Technical inputs and outputs of all processes

Emissions (to air, water and soil)

Resource use (land, water, fossiles, metals)



- Foreground data was gathered from on-site measurements and calculations.
- Background data was obtained from the ecoinvent (v3.01) and agri footprint databases and also previously published papers.

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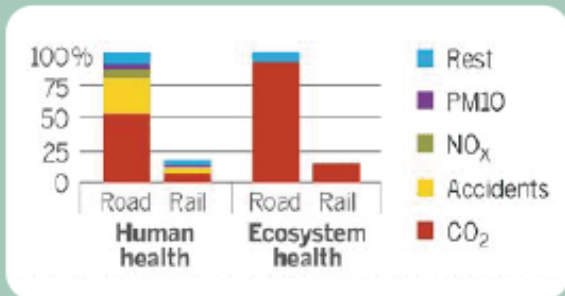
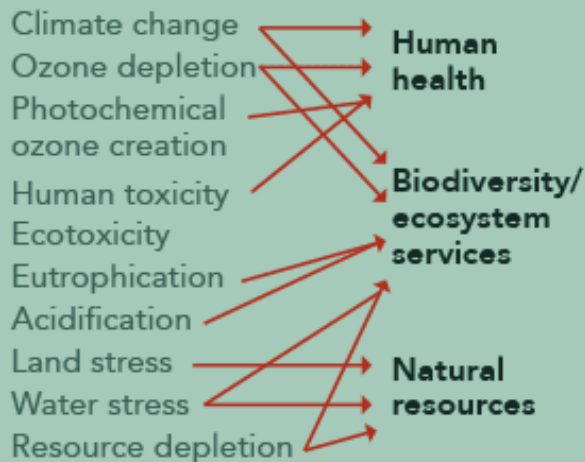
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Results and discussion

Impact Assessment



3. Life-cycle impact assessment



- The **ReCiPe** impact assessment method [hierarchical (H) perspective] (v1.12)
- Climate Change (Global Warming Potential, GWP), Human Health, Ecosystems, and Resources
- The **Simapro 8.2.0.0** PhD software package

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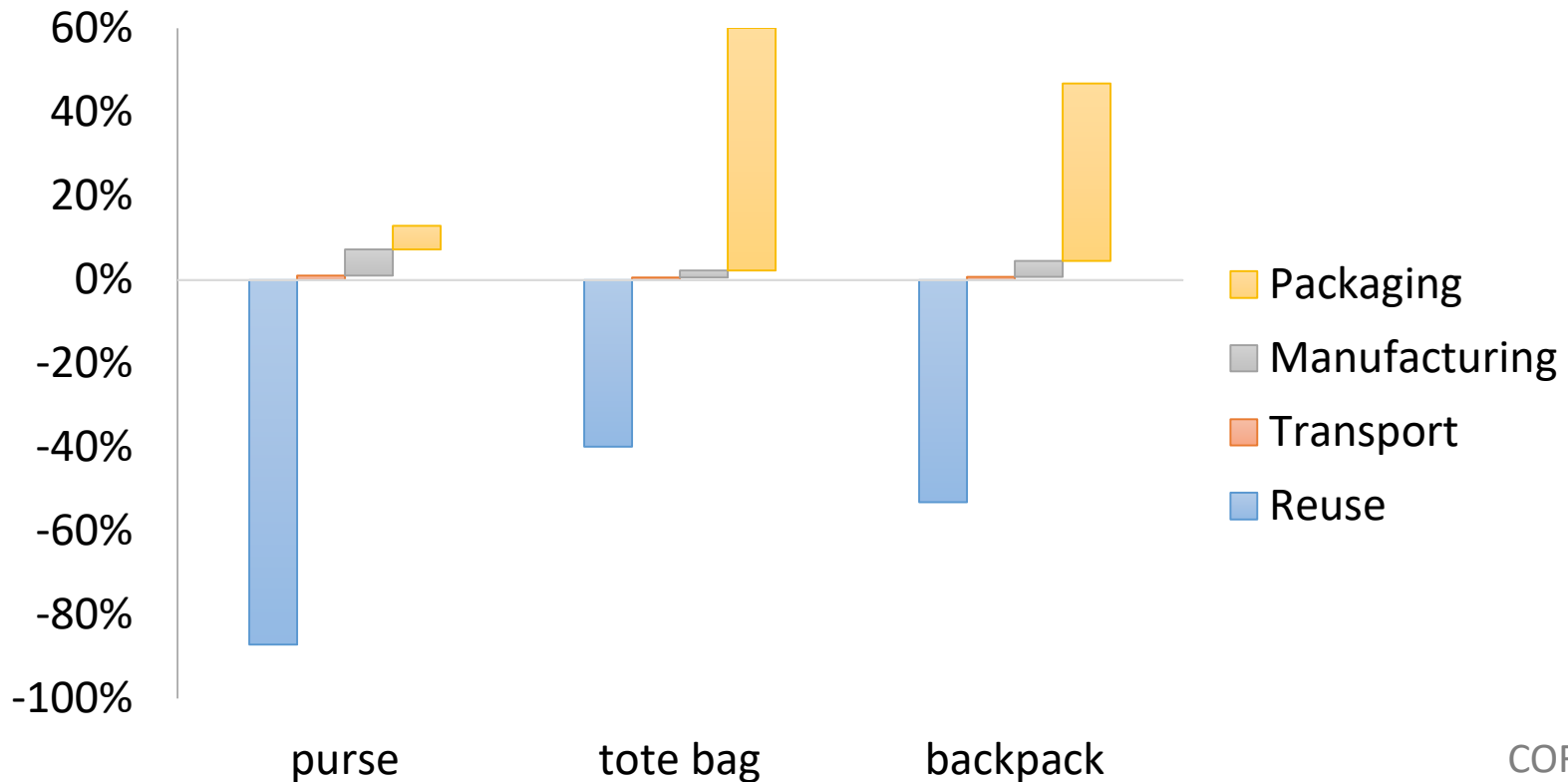
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Results and discussion

Impact Assessment



Global Warming Potential Scores



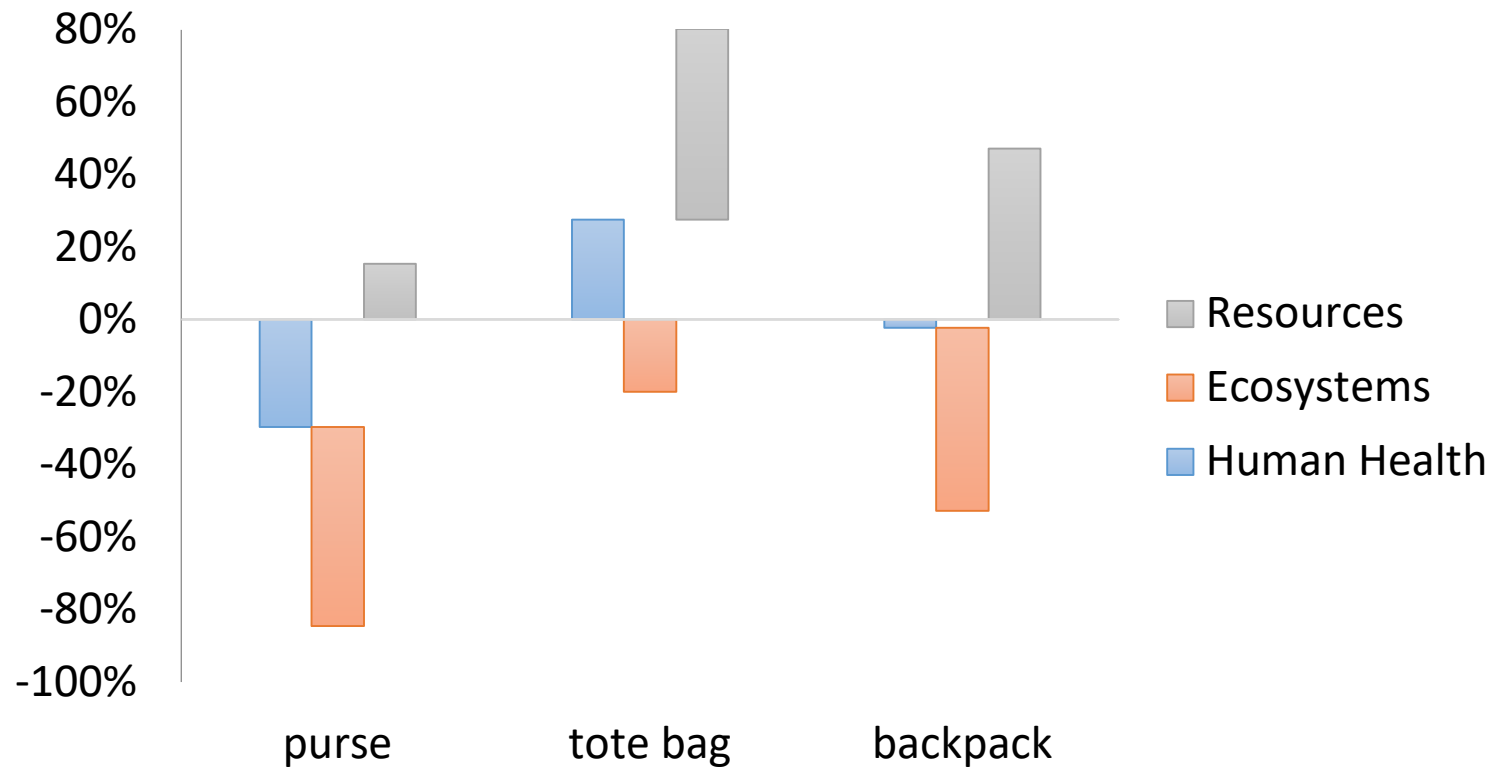
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Results and discussion

Impact Assessment



Damage Category Scores



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Conclusions



- The reuse of leather leftovers is an important aspect of improving the environmental impacts and steering the fashion sector toward more circular and sustainable practices.
- Nevertheless, the contribution of each life cycle stage should be carefully examined to ensure the positive impact generated by one stage is not shadowed by the others.
- We anticipate this study to be the initial point for more sophisticated analyses of the full life cycle stages of leather leftover valorization among other potential sectors.



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Q&A

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