



## Objective

Ceva Santé Animale has developed a new type of plastic vials called CLAS<sup>®</sup> which is intended for its injectable products in replacement of the traditional glass vial. On the field, many users acknowledge the superiority of the CLAS vials because it is lighter, more resistant and ergonomic in comparison with glass vials. As the environmental impact of CLAS vials has not been previously assessed, a life-cycle assessment (LCA) was undertaken to determine the level of environmental impact of these new type of vials compared to the glass vials.



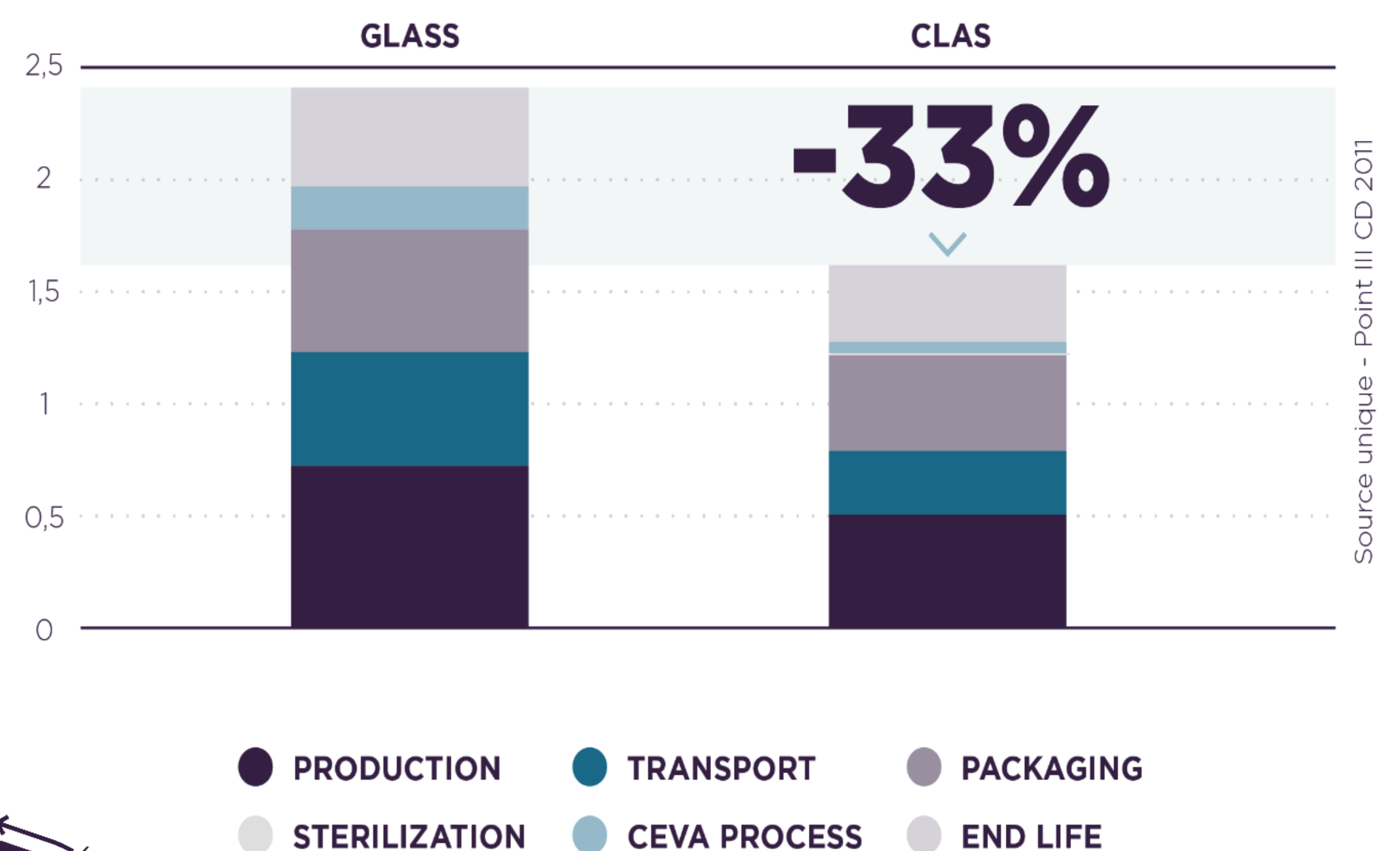
## Materials and methods

A complete life-cycle assessment (LCA) was conducted by an independent laboratory (APESA, Pau) to compare the environmental impacts of glass and CLAS vials. LCA is a methodology for assessing environmental impacts associated with all the stages of the life-cycle of a commercial product (from cradle to grave). Environmental impacts were assessed from raw material extraction and processing, through the product's manufacture, distribution and use, to the recycling or final disposal of the materials composing it. The following criteria were taken into account when calculating the environmental impacts: potential for climate change, freshwater eutrophication, fine particles emission, depletion of fossil-fuel resources, toxicity or carcinogenicity for humans, ecotoxicity, acidification, water depletion. In addition, the IMPACT 2002+ life cycle impact assessment methodology was used to estimate the overall environmental impact (Jolliet, 2003). The IMPACT 2002+ life cycle impact assessment methodology proposes a feasible implementation of a combined midpoint/ damage approach, linking all types of life cycle inventory results (elementary flows and other interventions) via 14 midpoint categories to four damage categories (human health, ecosystem quality, resources, climate change). Finally, an external expert reviewed the compliance of the LCA with the requirements of ISO 14040 standards.



## Results

- Following this LCA, CLAS vials were found to have a lesser environmental impact than traditional glass vials (-33%).
- In particular, CLAS vials were associated with a marked reduction in the potential consequences for human health and ecosystems (-50%), a significant reduction on the depletion of resources (-23%) mainly due to the reduction in electricity consumption and a small reduction in the potential for global warming, but of the same order than in the initial assessment of potential impacts (-14%).
- Methodology used in this LCA was found compliant with the requirements of ISO 14040 standards.



## Conclusions

- According to the results from this life-cycle assessment, CLAS vials have considerably less environmental impacts compared to traditional glass vials.