

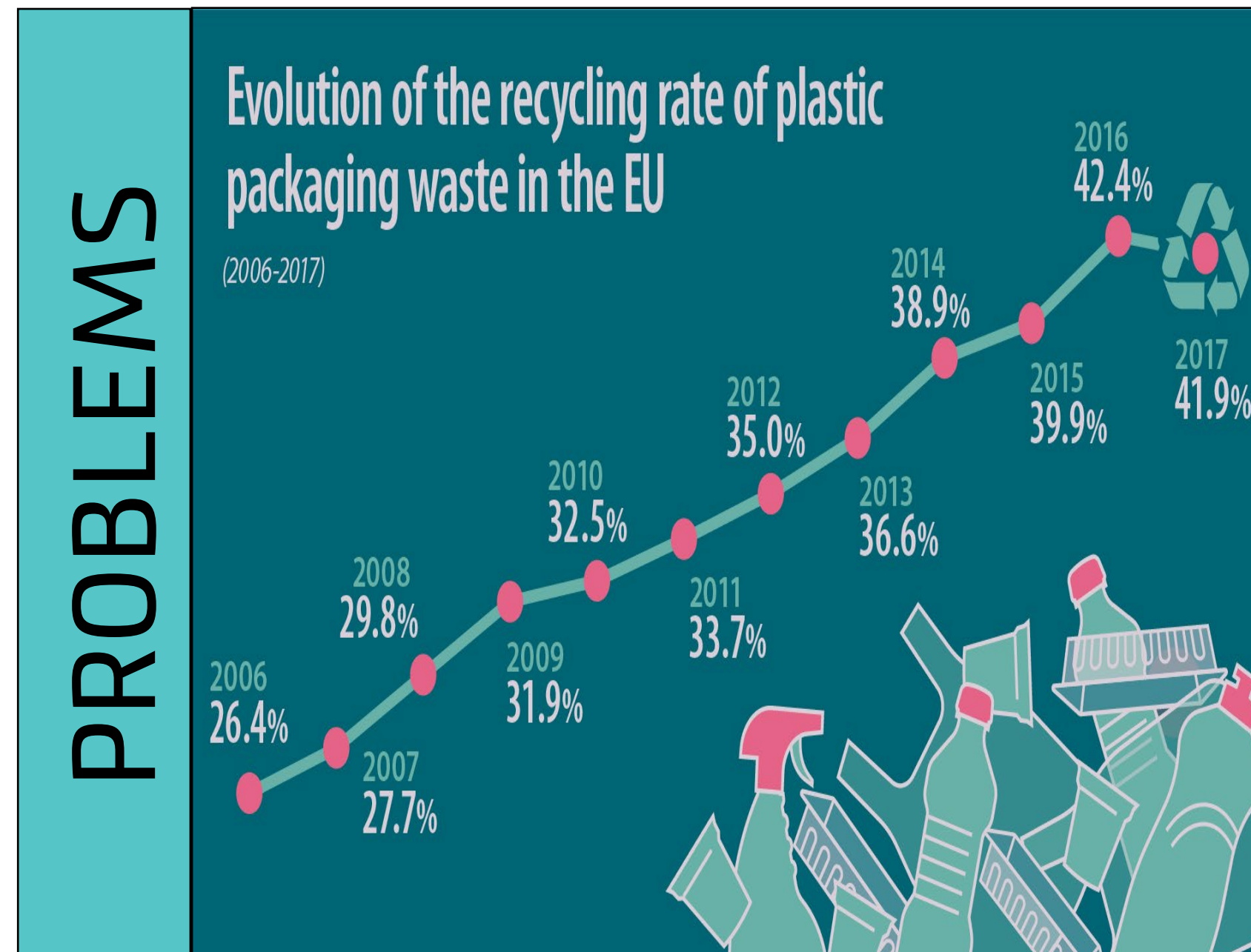
# Environmental Benefits of Reusable Food Packaging



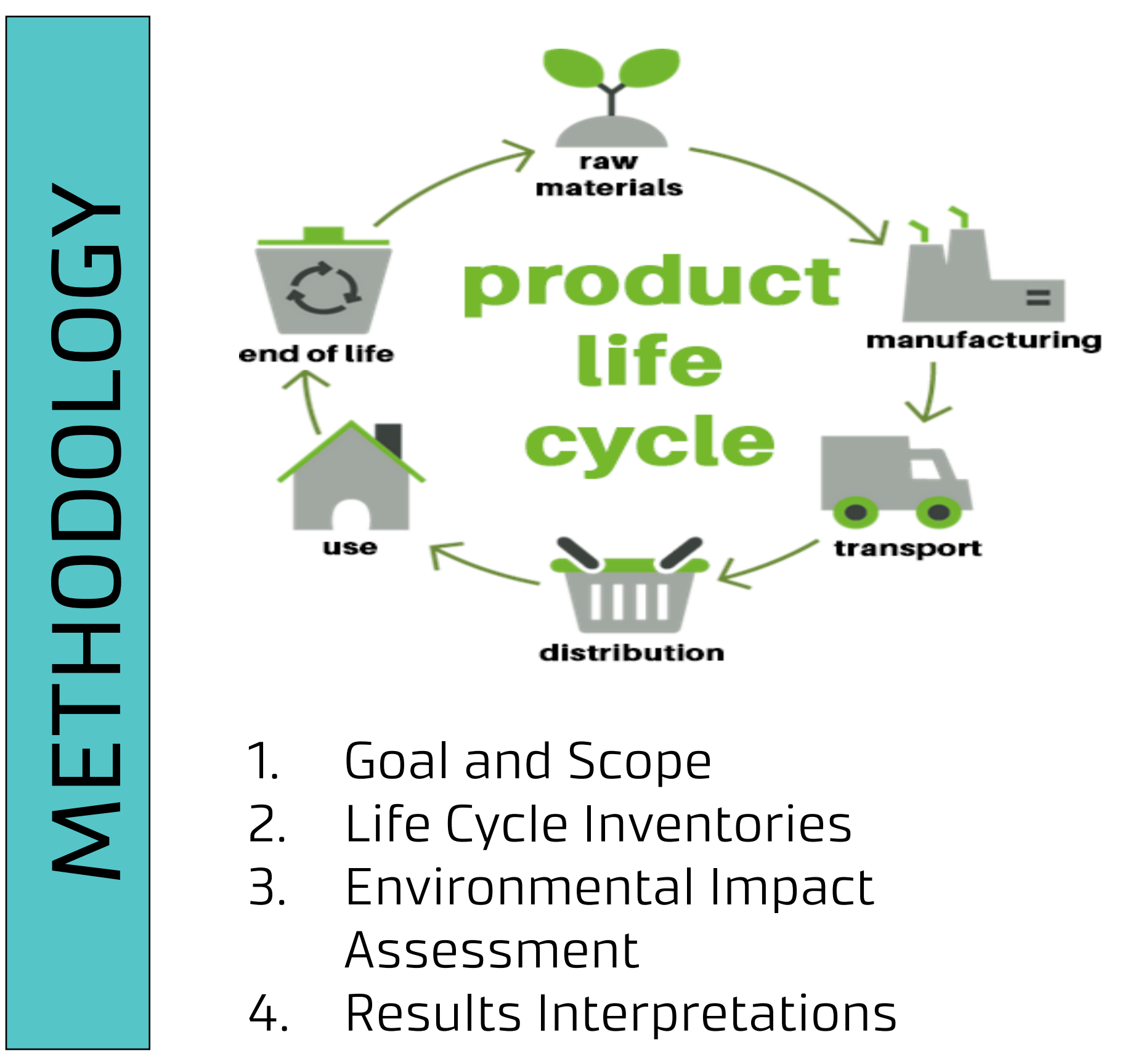
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**INTRODUCTION**

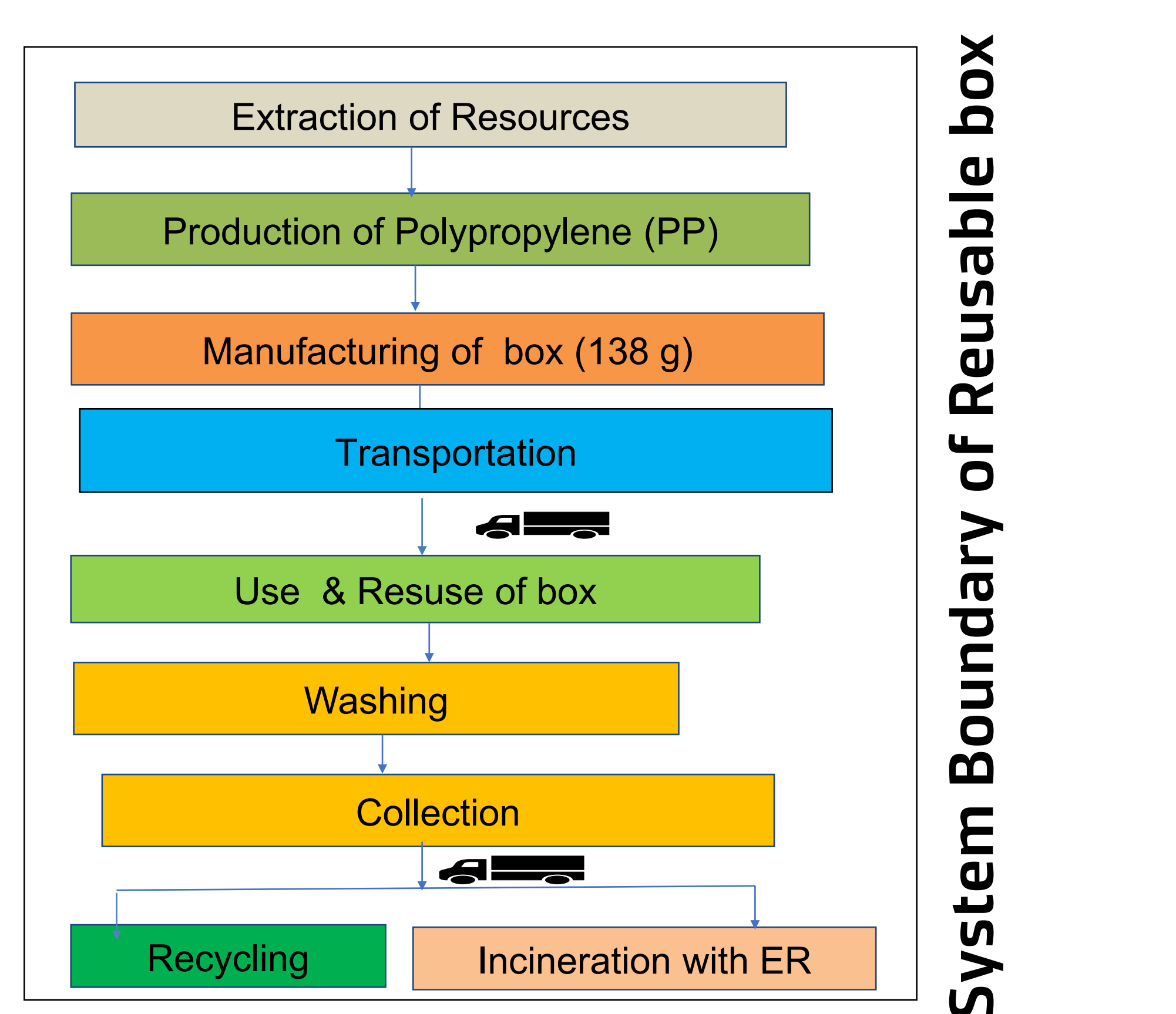
The global Market of takeaway food valued at \$89 billion in 2015, is expected to grow by 2.7% annually to over \$102 billion by 2020. The increasing importance of the takeaway food sector has given rise to various environmental sustainability concerns, including food safety.



1. Littering
2. Microplastic
3. Damage of Marine Biodiversity
4. Damage of Human Health
5. Threatens Food Safety and Quality
6. Climate Change



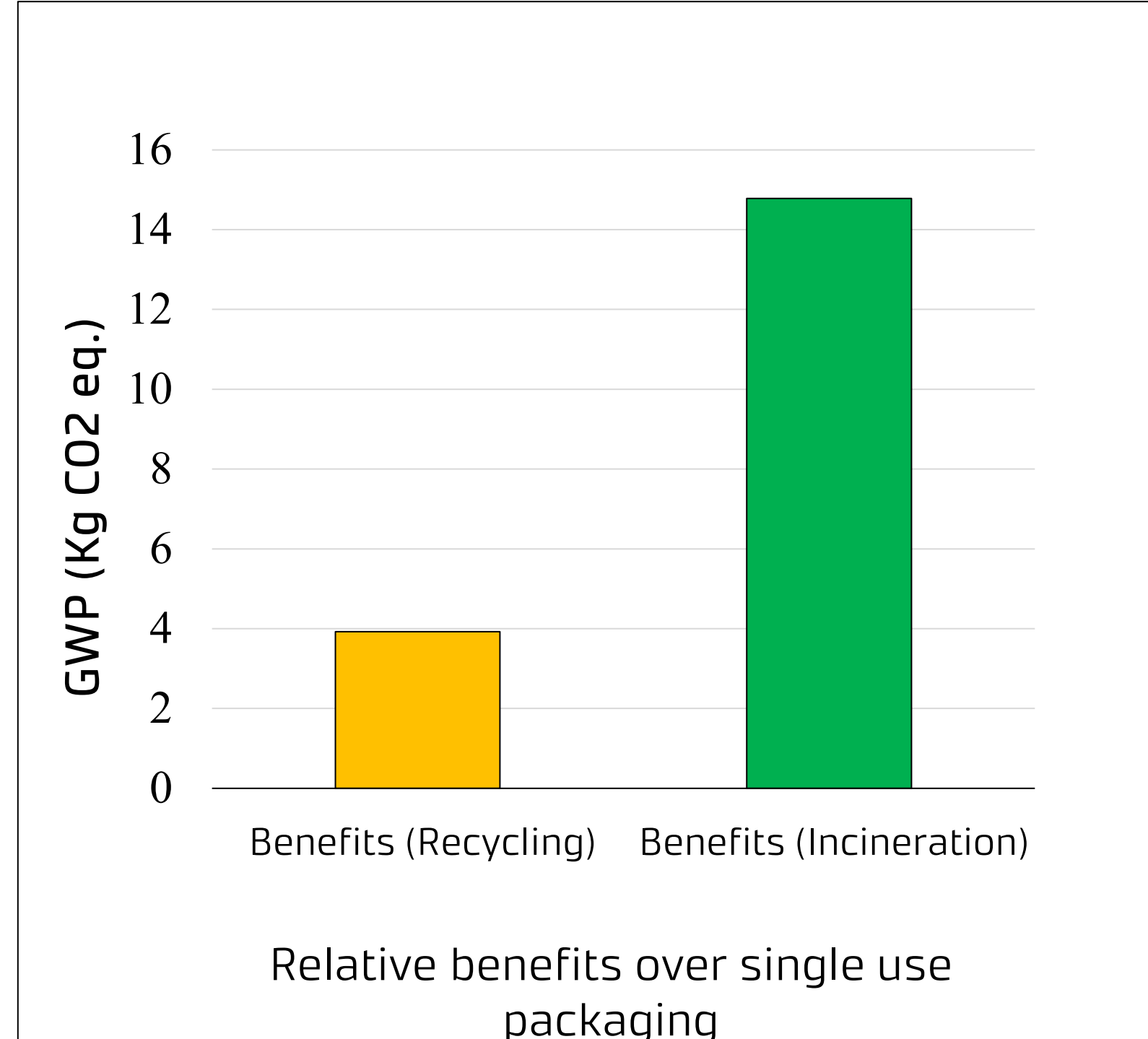
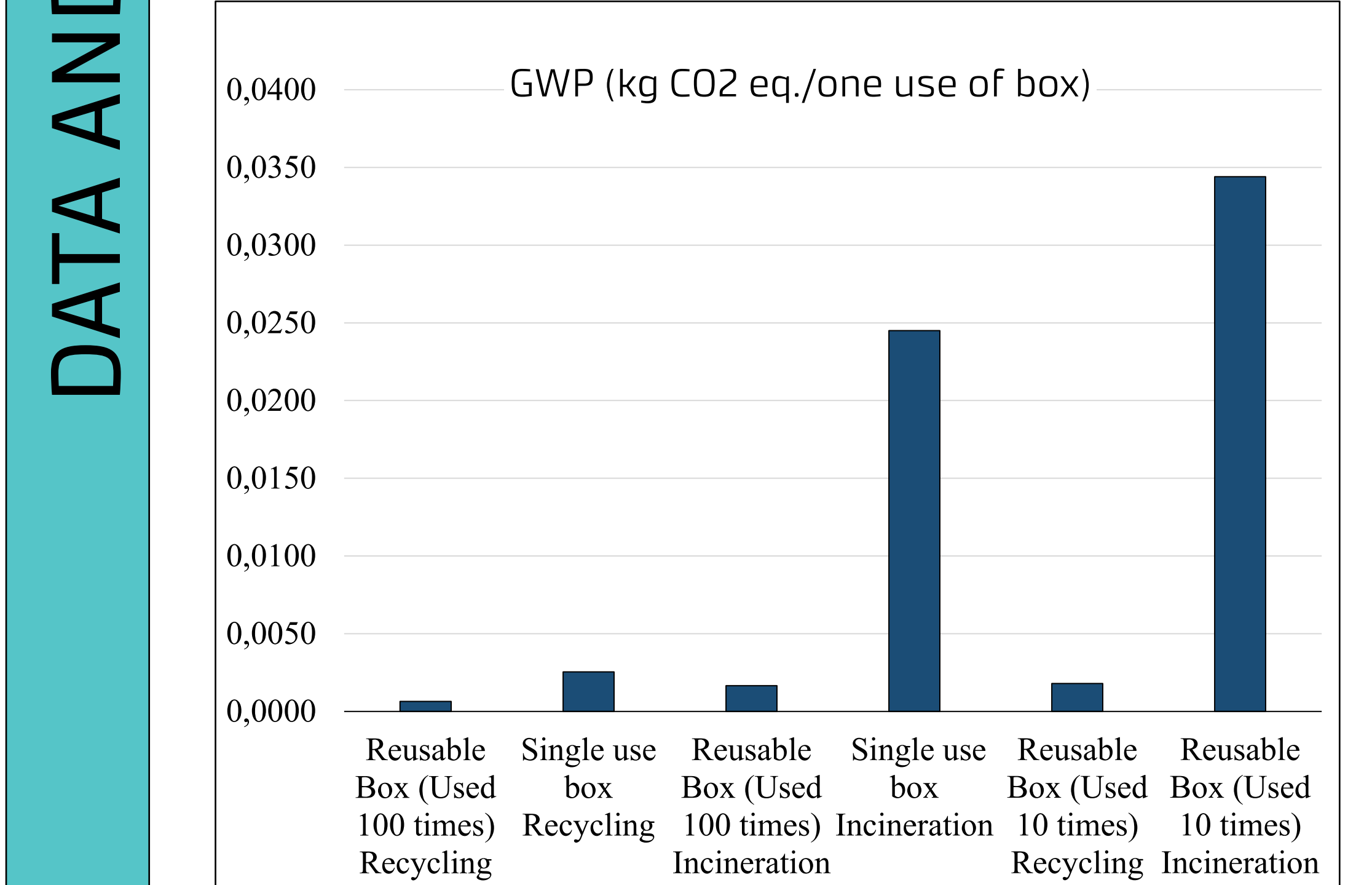
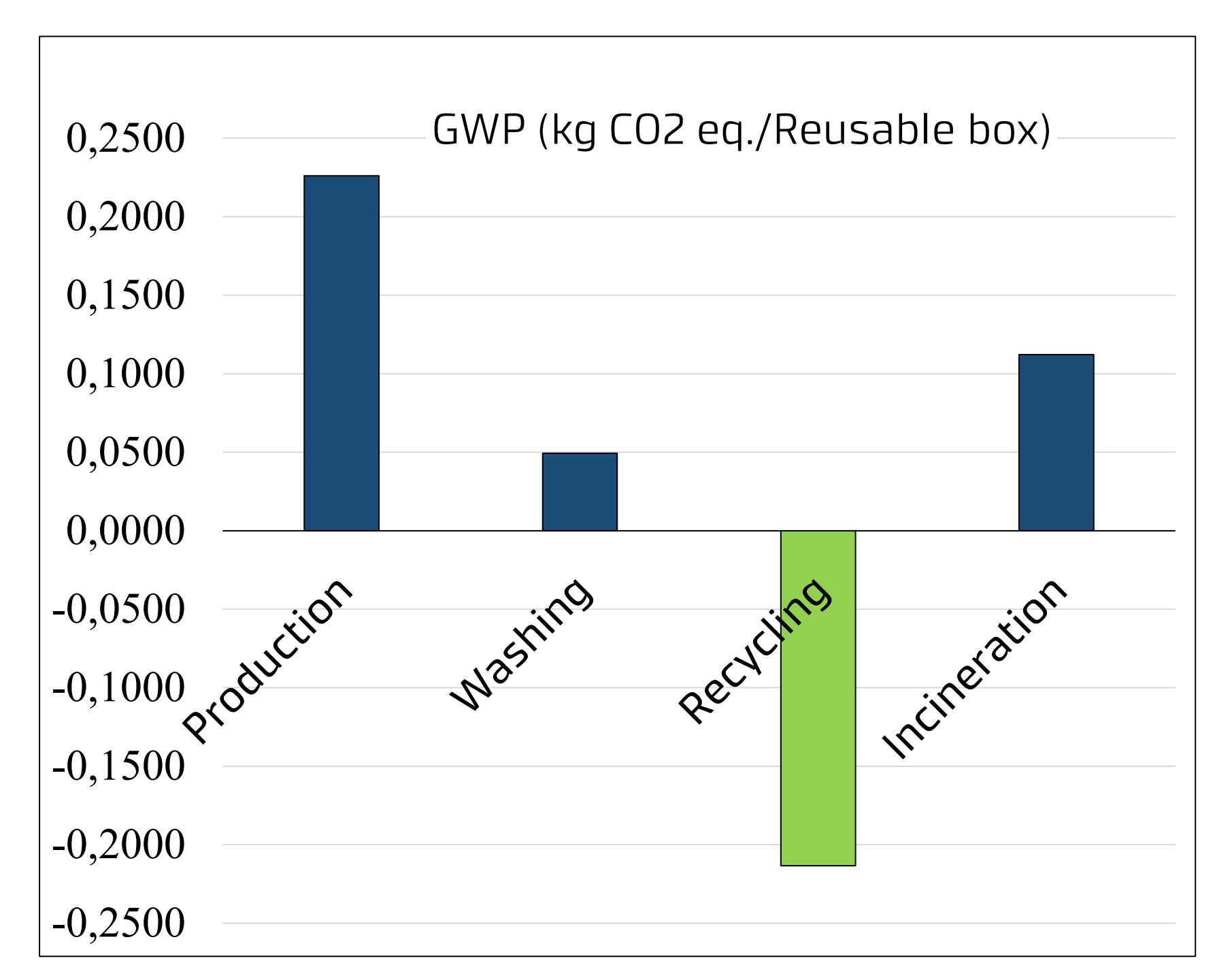
- Data and Assumptions**
1. Weight Reusable box: 138 g (PP)
  2. Single use box: 30 g (PP)
  3. Primary data source is industry and Secondary data source is an Ecoinvent 3.6 database (production of raw materials, detergent, water and Finnish mix electricity).
  4. Emissions of incineration based on the carbon contents of the materials.
  5. Recycling modelled assumed that recycled material replaced by virgin material & material losses considered.



- Proposed Scenario for Comparative Analysis**
1. Single use salad box and Incineration
  2. Single use salad and Recycling
  3. Salad box 10 times reused and Recycling
  4. Salad box 10 times reused and Incineration
  5. Salad box 100 times reused and Recycling
  6. Salad box 100 times reused and Incineration
- Functional unit:** One use of Box  
**System boundary:** Cradle to Grave

Table 1: Input data of Reusable Packaging Box

Material	Unit/box	Amount
Polypropylene (PP)	g	138
Electricity (PP production)	kWh	0.0213
Electricity (washing)	kWh	0.10563
Detergent (washing)	g	0.0675
Water (washing)	L	0.338
<b>End of life (Recycling)</b>		
Mass loss	%	20
Electricity consumption	kWh/kg	0.60
<b>End of life (Incineration)</b>		
Electricity recovery	kWh/kg	-2.26
Heat recovery	MJ/kg	-30.6



- CONCLUSIONS**
1. The sources of energy and the raw materials production process play an important role in the final results.
  2. Reusable packaging decreases CO2 emissions in over all life cycle.
  3. Recycling is much better end of life option than incineration for packaging material but 100% recycling is not possible in practical life.
  4. Assessment of Littering potential is future scope of this study.

