1. **Introduction**
2. **Methodology**
   1. **Life cycle assessment (LCA)**
      1. Goal and scope definition

2.1.2. Data collection and inventory análisis

2.1.2.1. Bottle-to-bottle recycling

2.1.2.2. Bottle-to-fiber recycling.

2.1.2.3. Transportation.

2.1.2.4. Assumptions in this study

2.1.3. Life cycle impact assessment

2.1.4. Allocation methods

2.1.4.1. Substitution method (credit for end-of-life recycling)

2.1.4.2. Recycled content method

2.1.4.3. Economic allocation.

**2.2. Material Circularity Indicator (MCI)**

2.2.1. Data used for bottle-to-bottle recycling

2.2.2. Data used for bottle-to-fiber recycling

**3. Results and discussion**

**3.1. Life cycle assessment results**

3.1.1. Life cycle assessment results for recycled bottle-grade PET and polyester fiber production

3.1.2. Life cycle assessment results per unit of PET bottle produced

3.1.3. Life cycle assessment results based on three allocation methods

**3.2. Uncertainty análisis**

**3.3. Sensitivity análisis**

3.3.1. Energy and fuel dataset

3.3.2. Efficiency of recycled bottle-grade PET production análisis

3.3.3. Recycled content of PET bottle análisis

**3.4. Material Circularity Indicator results**

**4. Practical applications and future research prospects of this work**

**5. Conclusions**