Assessing the human health effects of recycling and reusing plastic packaging in the food system: A systematic review and meta-analysis of life-cycle assessments.

**Preliminary Findings**

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### METHODS.

Systematic search strategy using scientific databases and grey literature websites

Life cycle assessments (LCAs) of plastic primary food packaging, service-ware, drinks bottles or grocery bags, comparing recycled content, recycling and reuse to virgin content, incineration and landfill and single-use packaging

### BACKGROUND.

- **16% Food Packaging**
- **12 billion** metric tonnes of landfill and pollution by 2050

Circular Economies encourage recycling and reuse to reduce waste and pollution

Are there risks and opportunities for other Sustainable Development Goals?

What are the potential effects on human health?

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### RESULTS.

42 peer-reviewed LCAs

Most since 2010

4 Thailand, 38 Europe and United States of America

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### REUSE

- Reusable packaging is *more damaging* than single-use products *if only used once*

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### CONCLUSIONS.

Circular economy actions to reduce waste and environmental pollution from plastic food packaging could align with, and present small co-benefits for, other SDG goals on population health

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### RECYCLED CONTENT VS. VIRGIN PLASTIC

Per tonne packaging: average reduction of 152 kg CO₂ equivalents for every 10pp increase in recycled content and 0.000263 Disability-Adjusted Life Years across health-related indicators

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### RECYCLING VS. INCINERATION AND LANDFILL

Per tonne packaging: average reduction of 224 kg CO₂ equivalents for every 10pp increase in recycling and 0.00021 Disability-Adjusted Life Years across health-related indicators

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### RAW MATERIAL EXTRACTION

### DESIGN AND PROCESSING

### MANUFACTURING

### CONSUMER USE

### TRANSPORT AND RETAIL

### END-OF-LIFE RECYCLING

### REUSE