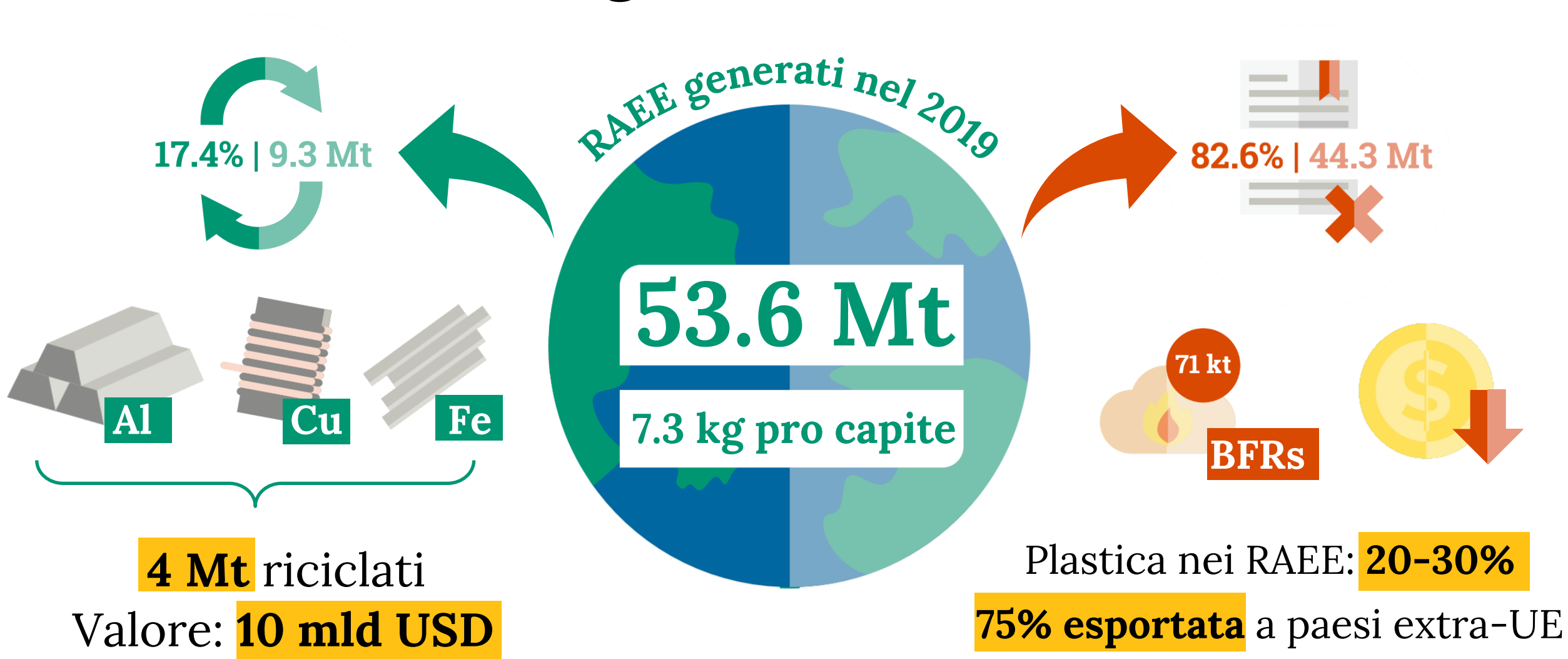


Performance ambientali dei trattamenti di fine vita di materiali polimerici da rifiuti elettronici: analisi comparativa

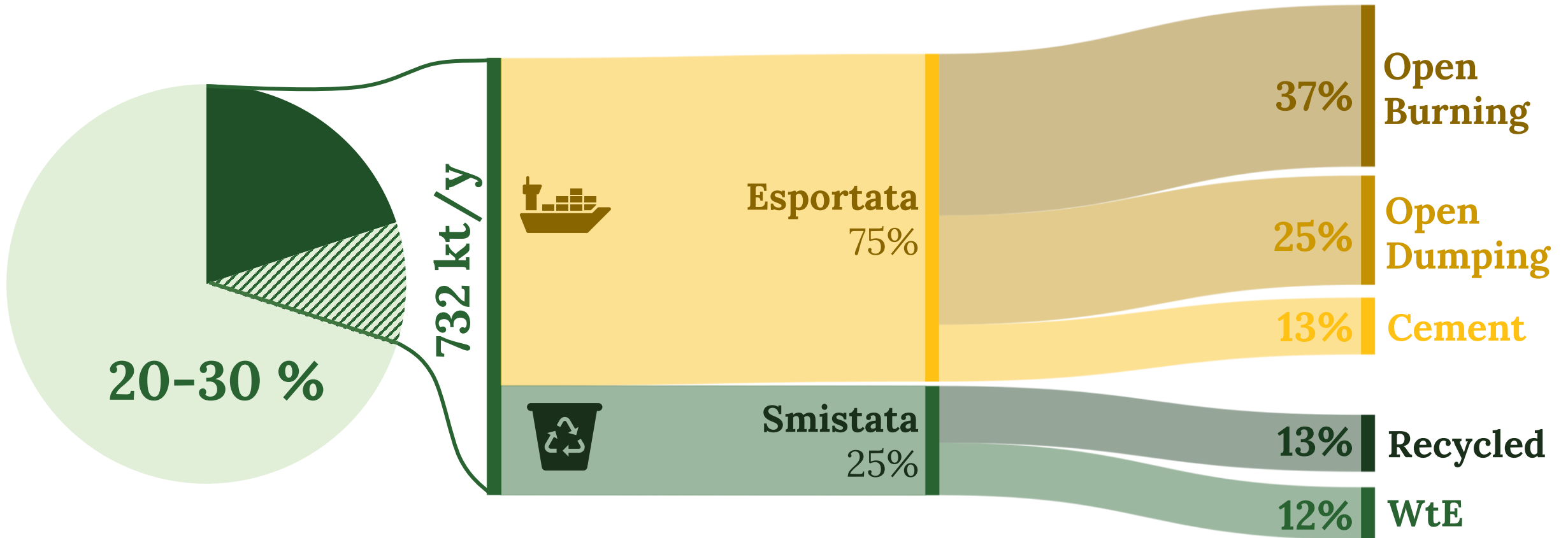
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RAEE: situazione globale



Plastica da RAEE: trattamento in UE



Solo **un quarto** della plastica viene correttamente trattata

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VI Giornata di Studio Rifiuti e Life Cycle Thinking

3



POLITECNICO
MILANO 1863

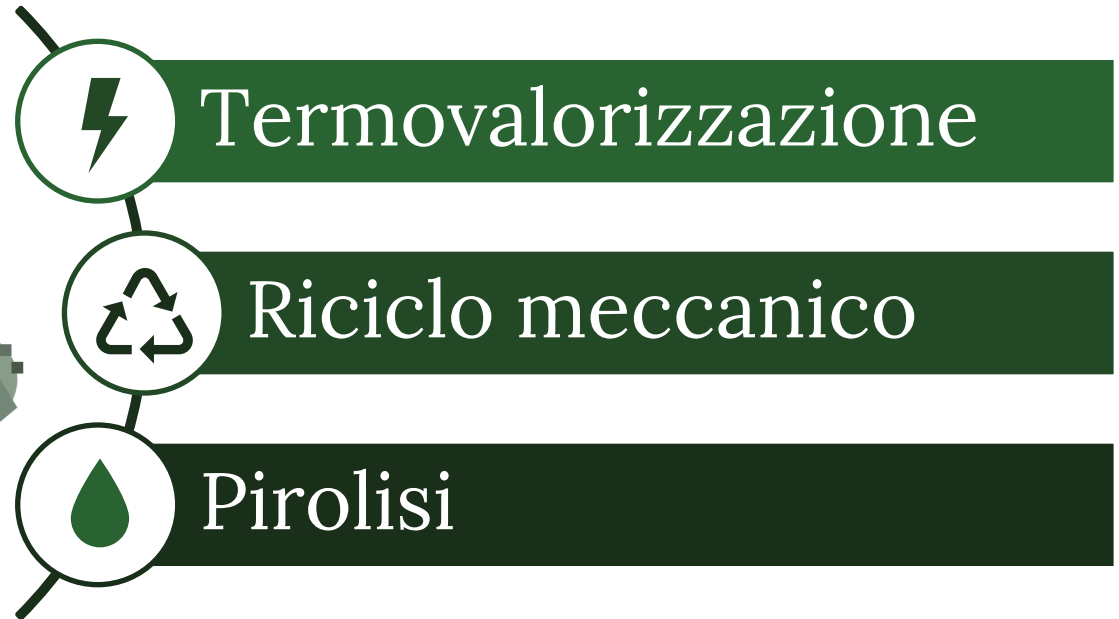
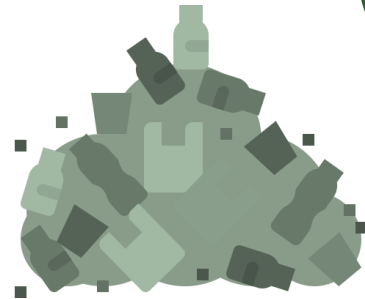
Caso di studio

LCA - obiettivo e applicazione

Comparare diversi **scenari di fine vita** per la **frazione plastica** da rifiuti di **interruttori** aperti di bassa tensione.

Unità Funzionale

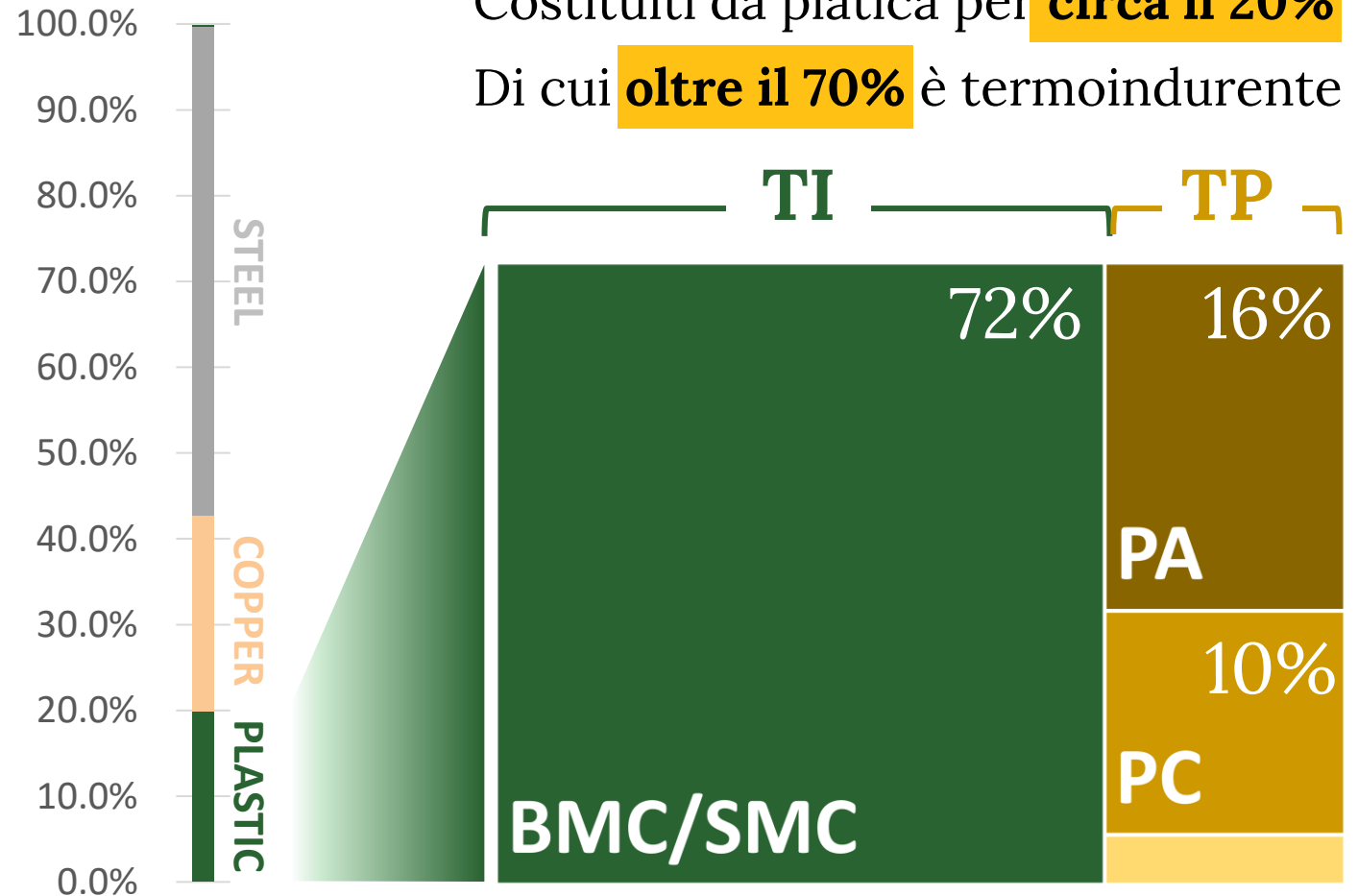
Trattamento di
1 ton di WEEP



*WEEP = WEE *Plastics*

ABB Emax 2

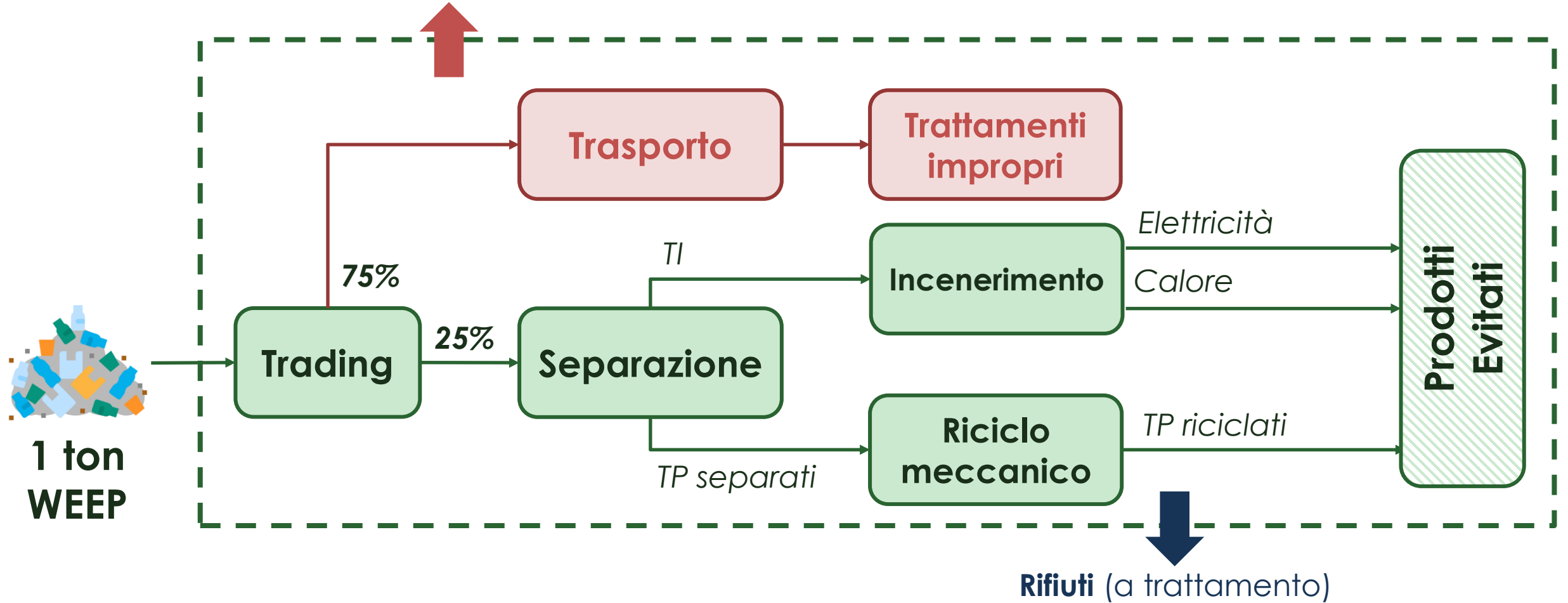
Interruttori aperti a bassa tensione



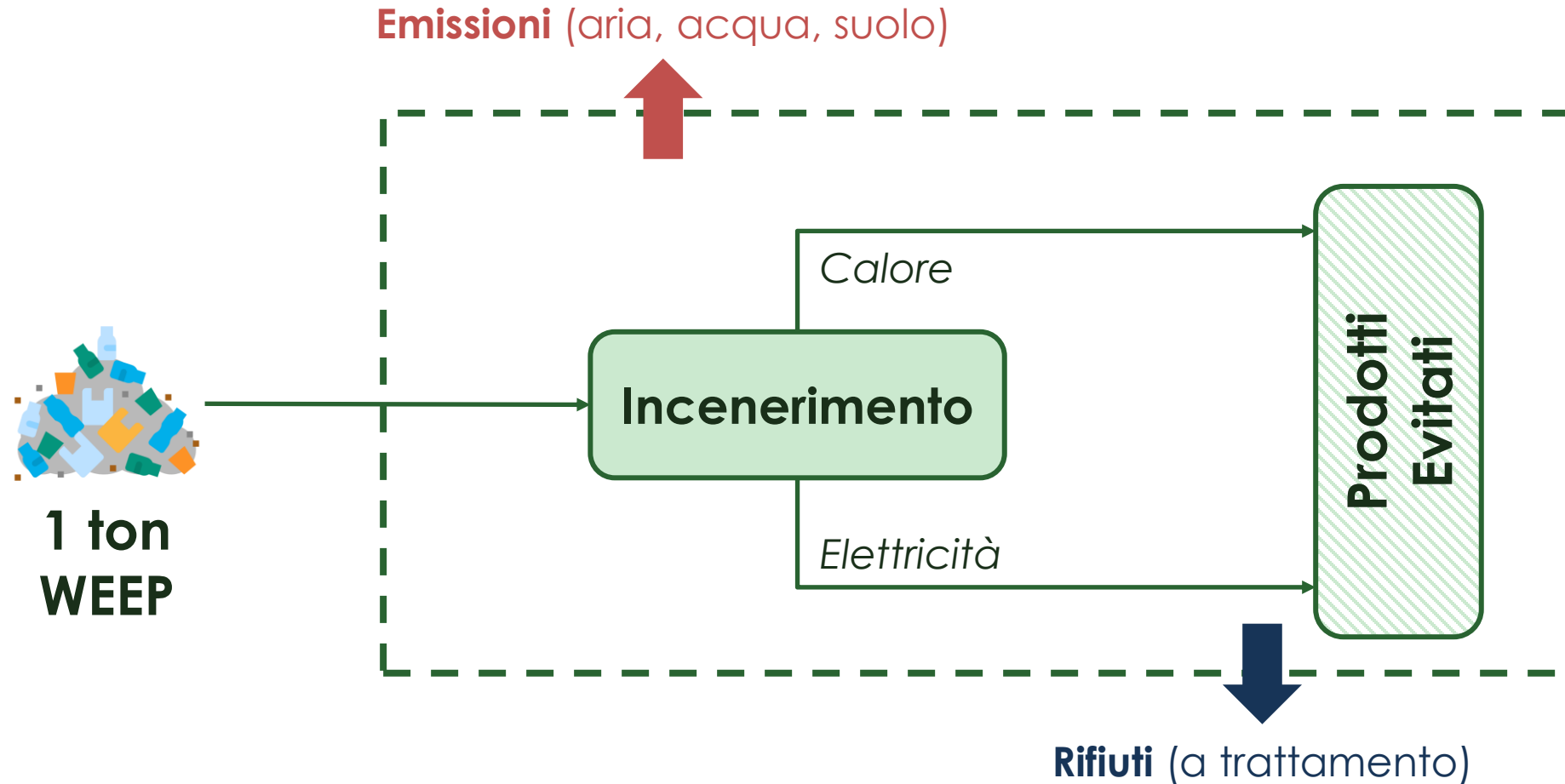
Scenari e confini di sistema

Stato attuale

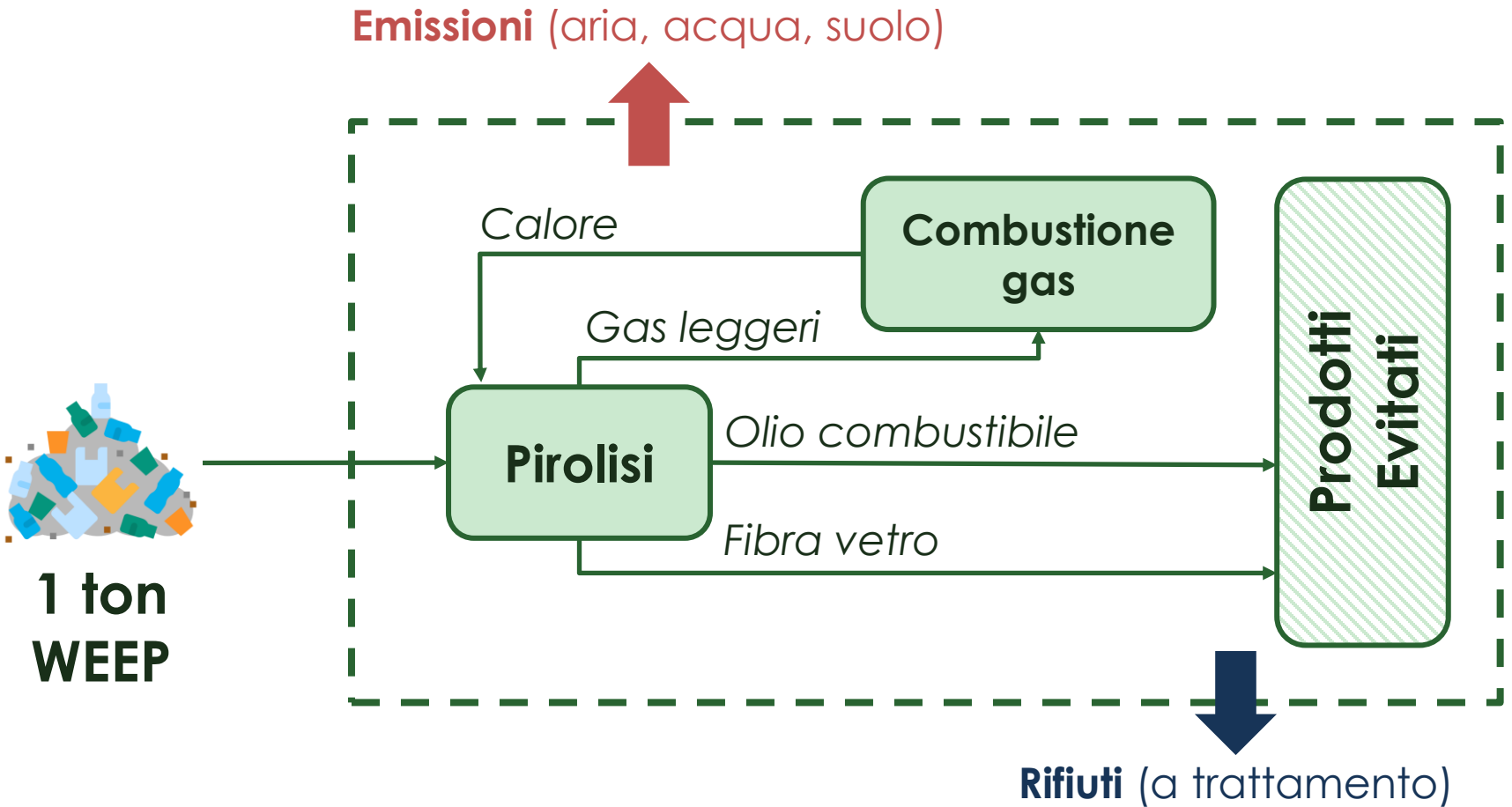
Emissioni (aria, acqua, suolo)



Termovalorizzazione

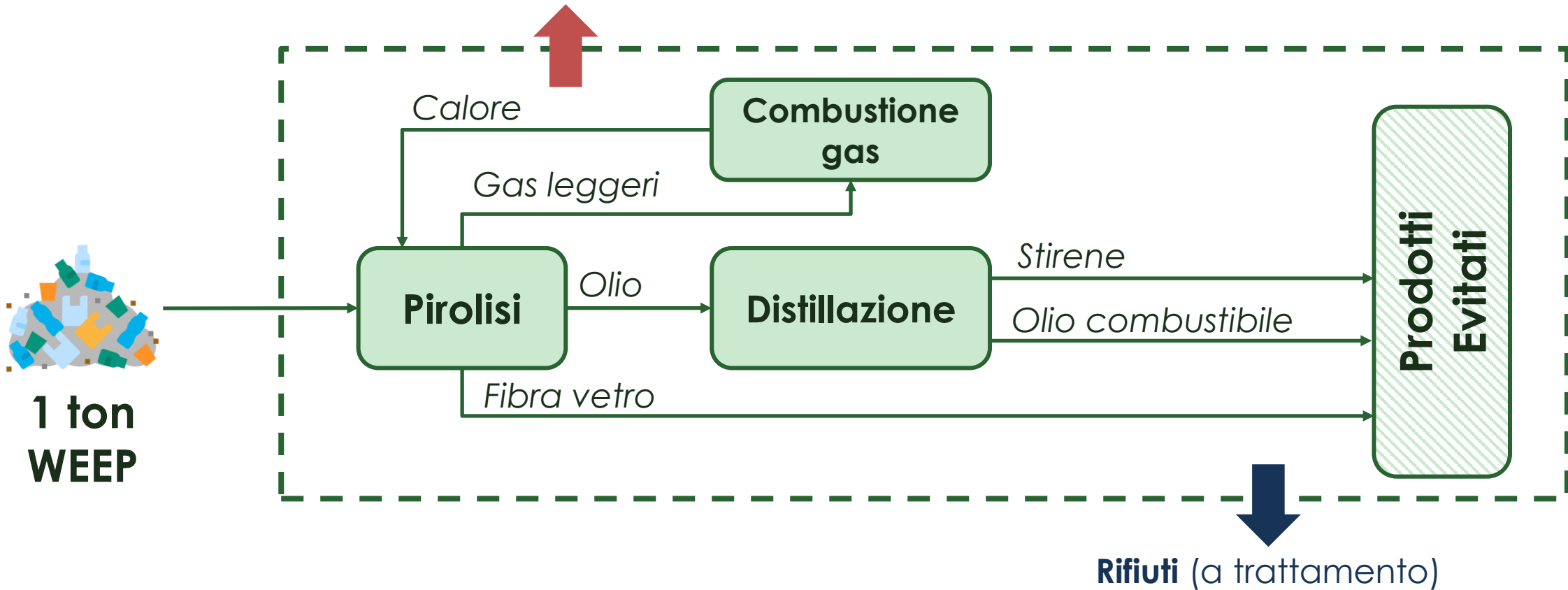


Pirolisi - Waste to fuel



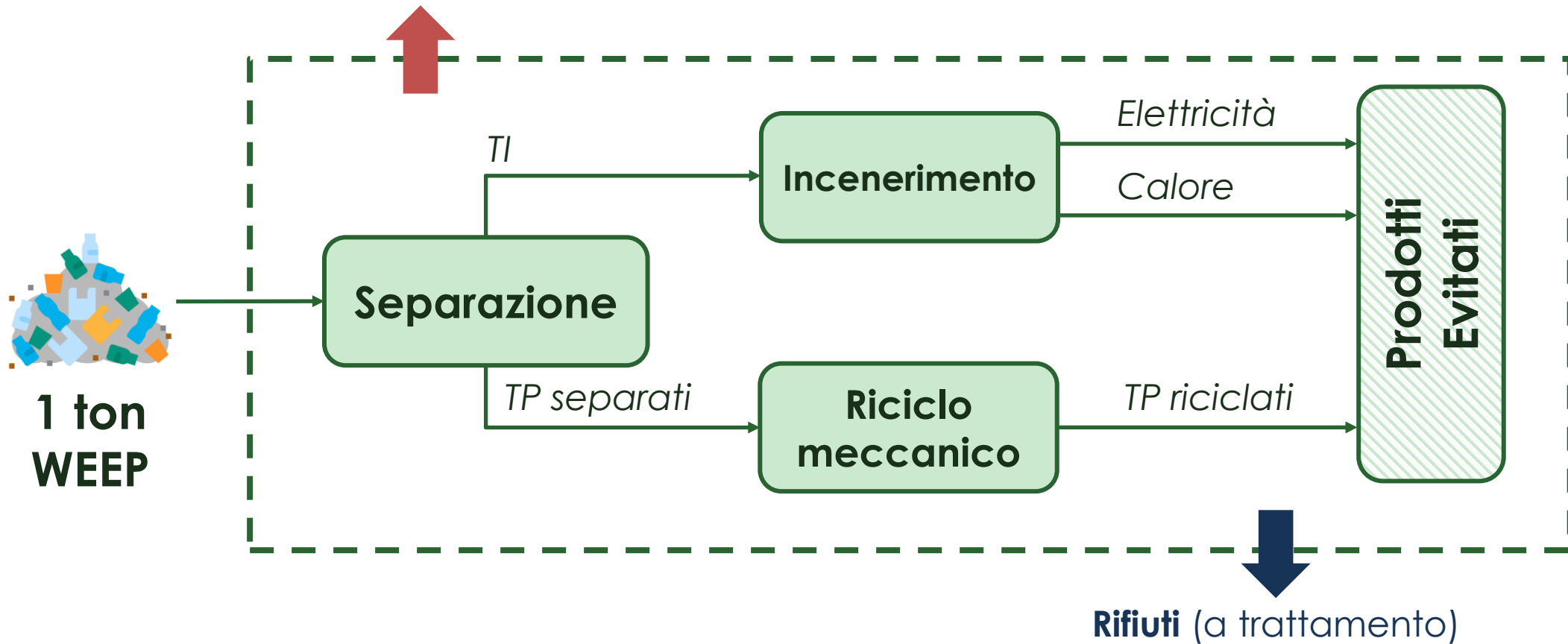
Pirolisi - Waste to feedstock

Emissioni (aria, acqua, suolo)



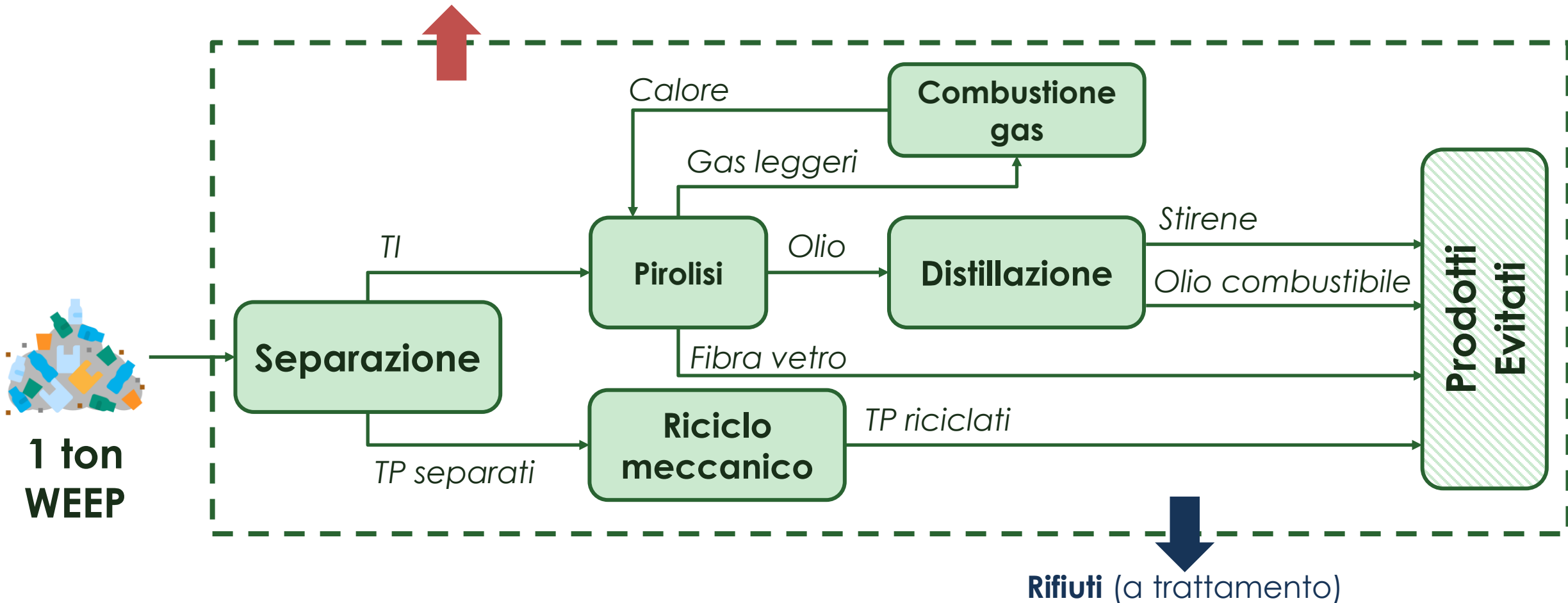
Riciclo meccanico TP + Incenerimento TS

Emissioni (aria, acqua, suolo)



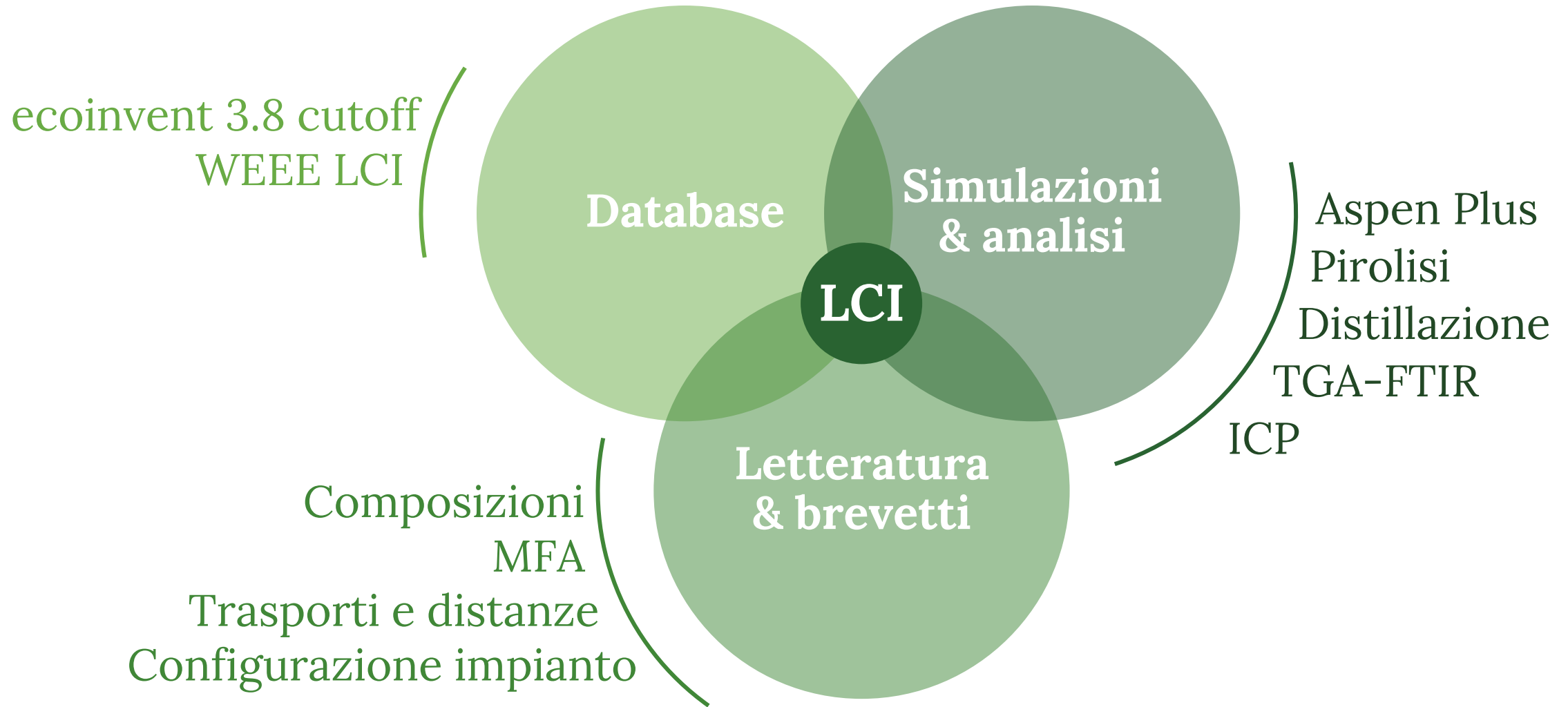
Riciclo meccanico TP + pirolisi TS

Emissioni (aria, acqua, suolo)

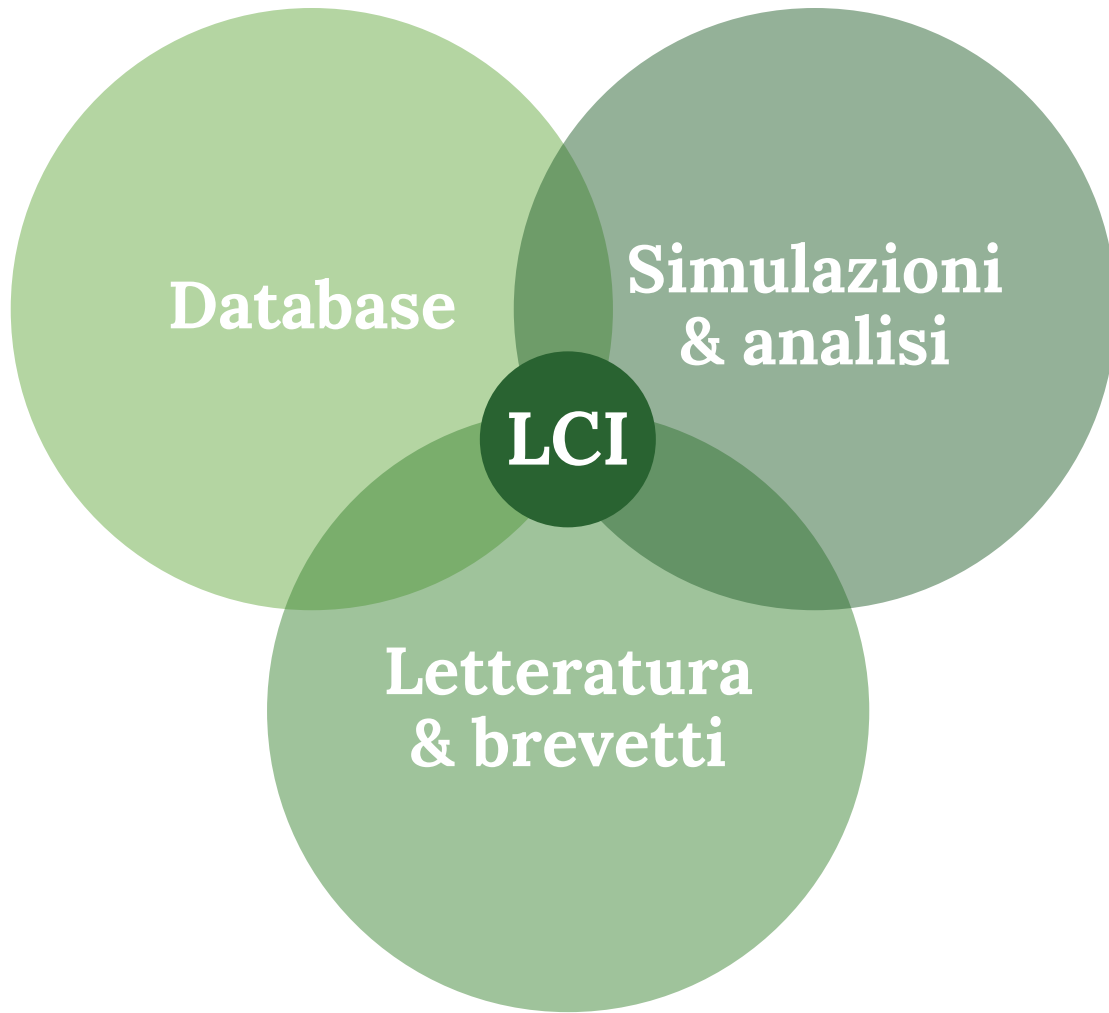


Inventario

Inventario



Analisi di impatto (LCIA)

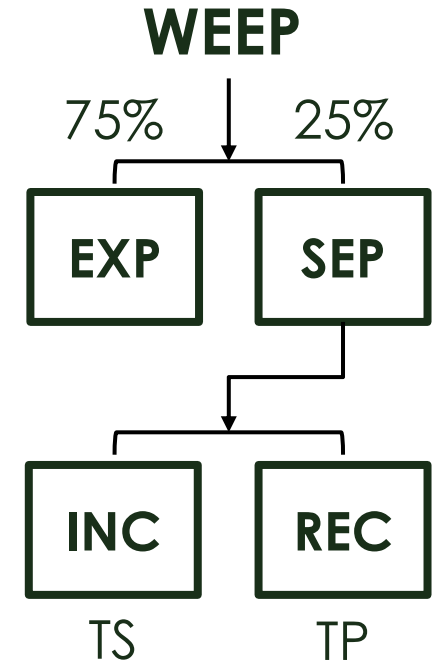
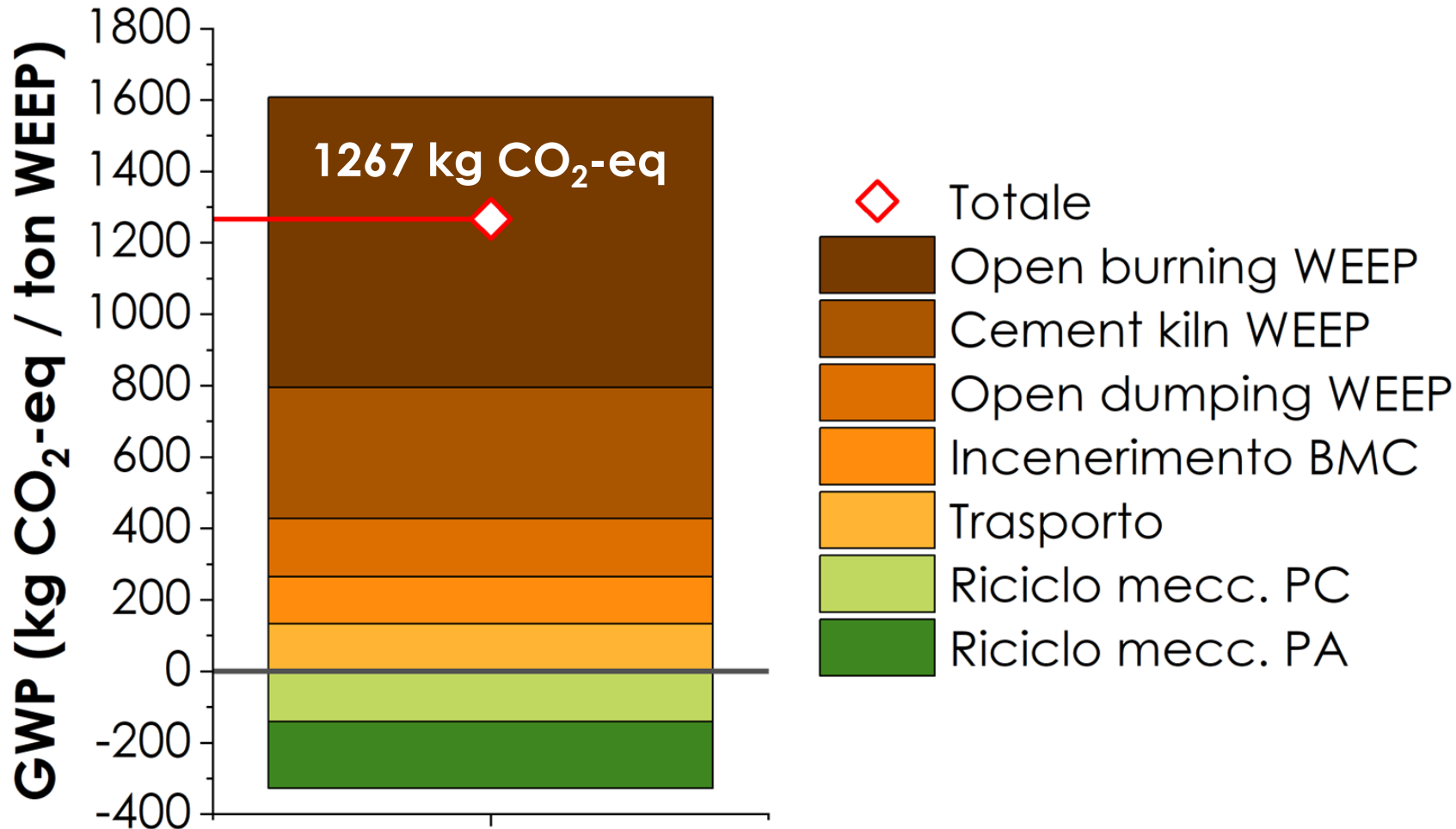


Metodo LCIA

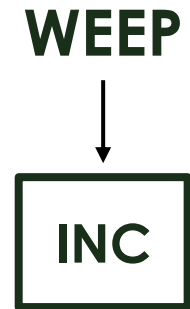
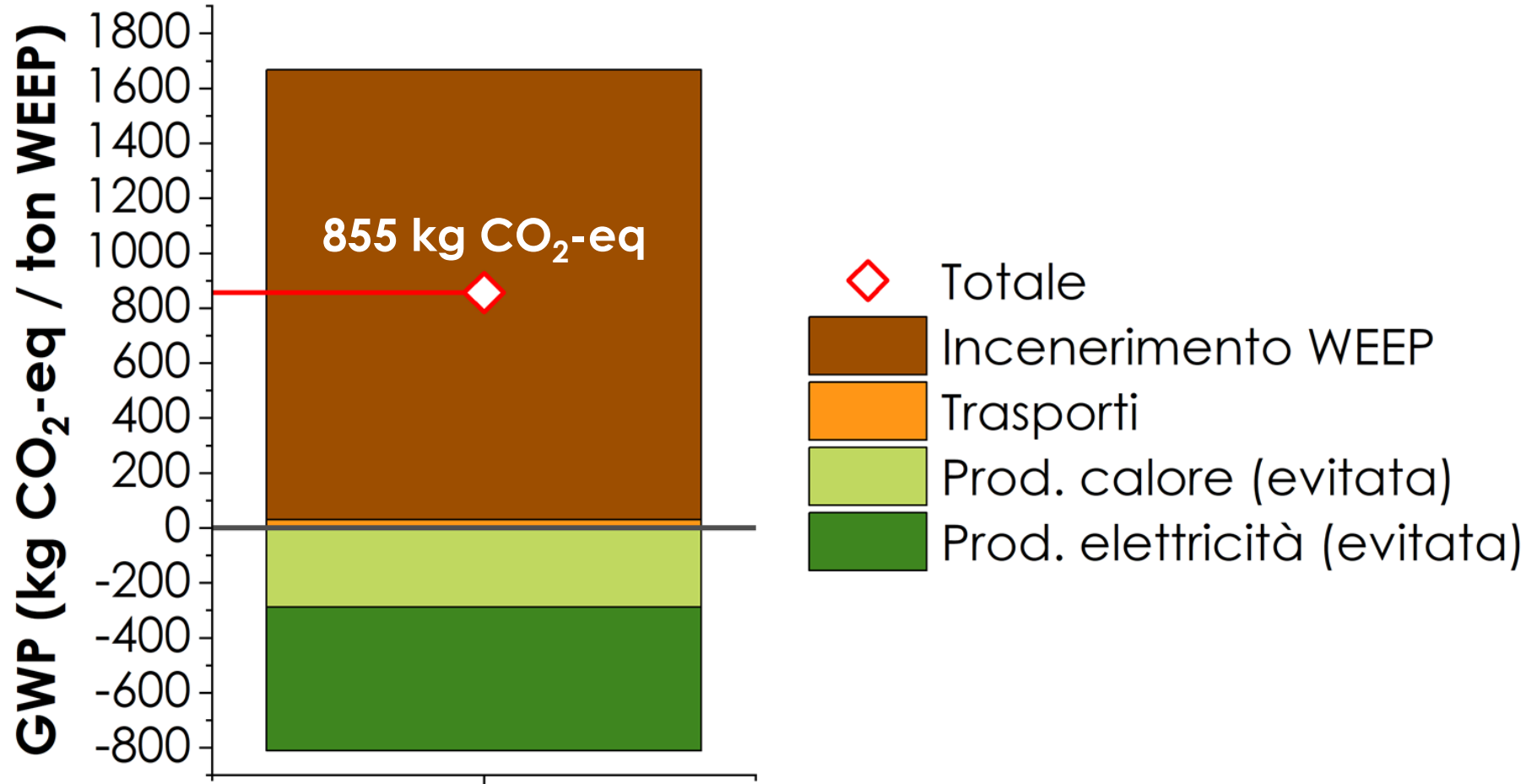
Environmental
Footprint 3.0

Risultati

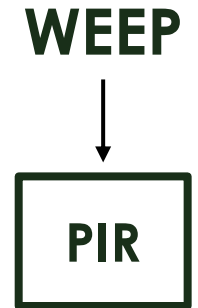
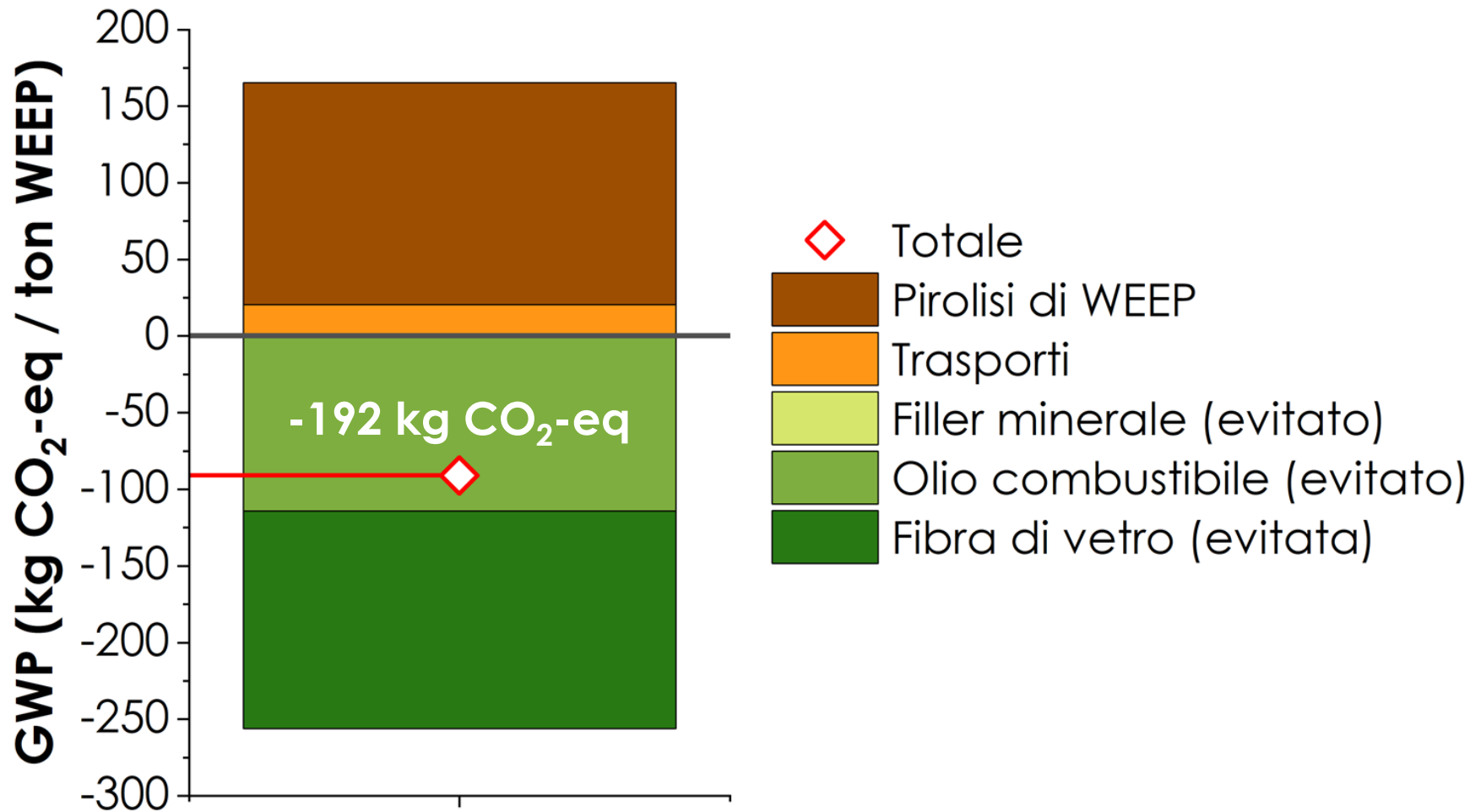
Climate change - Scenario 1 (attuale)



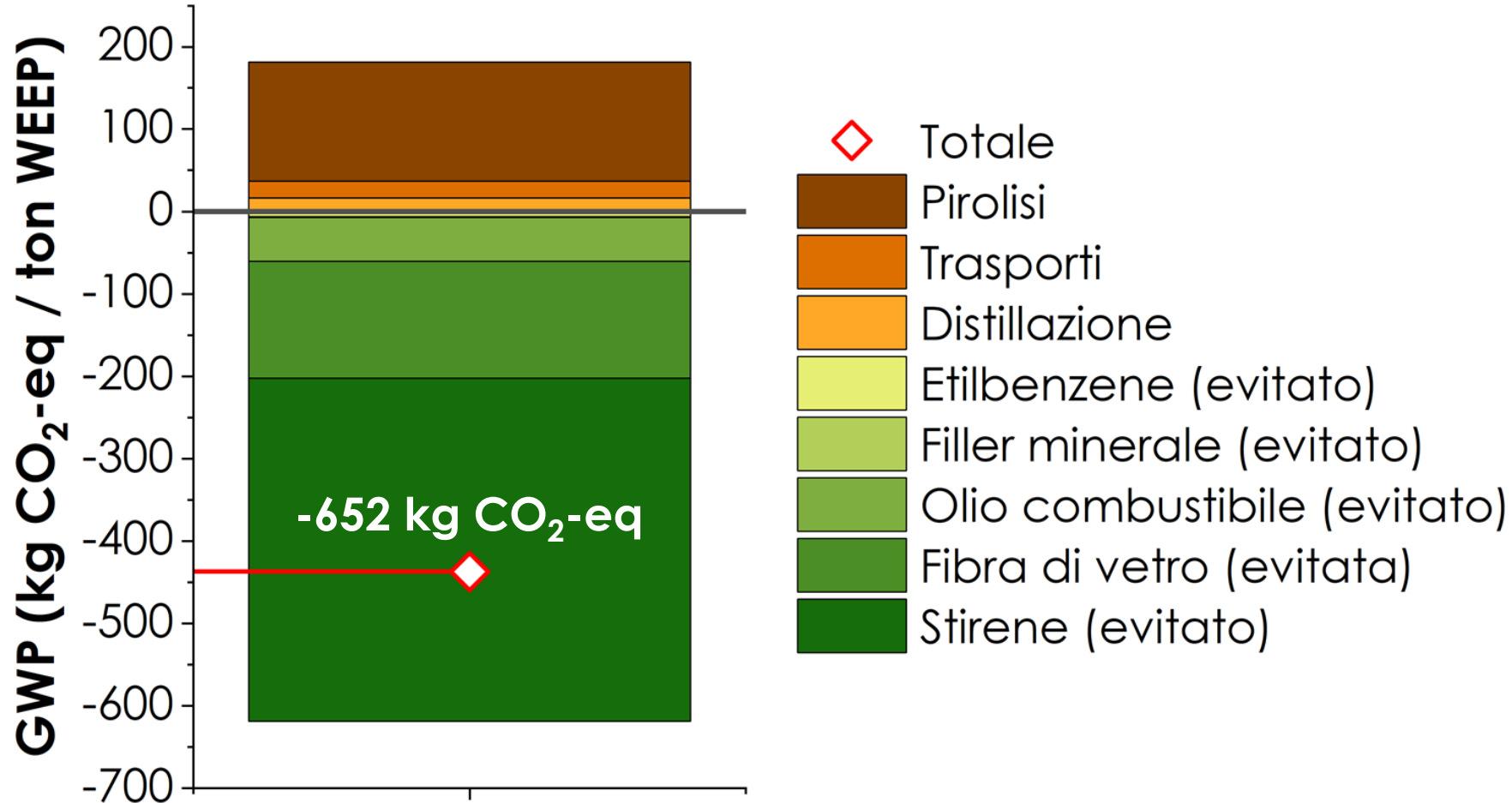
Climate change - Scenario 2



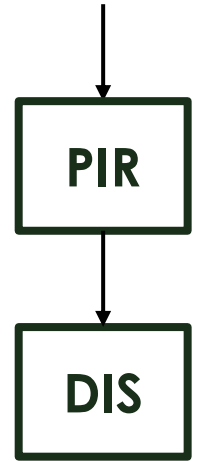
Climate change - Scenario 3



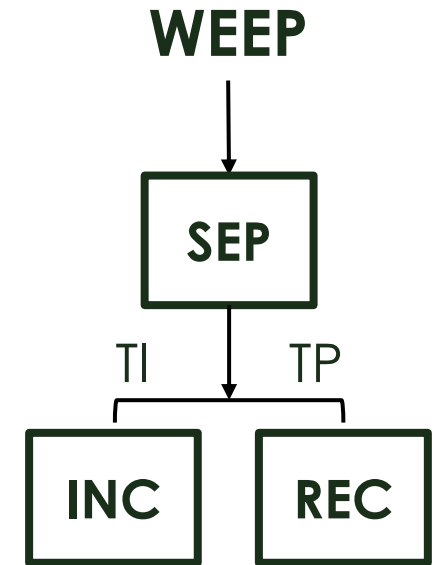
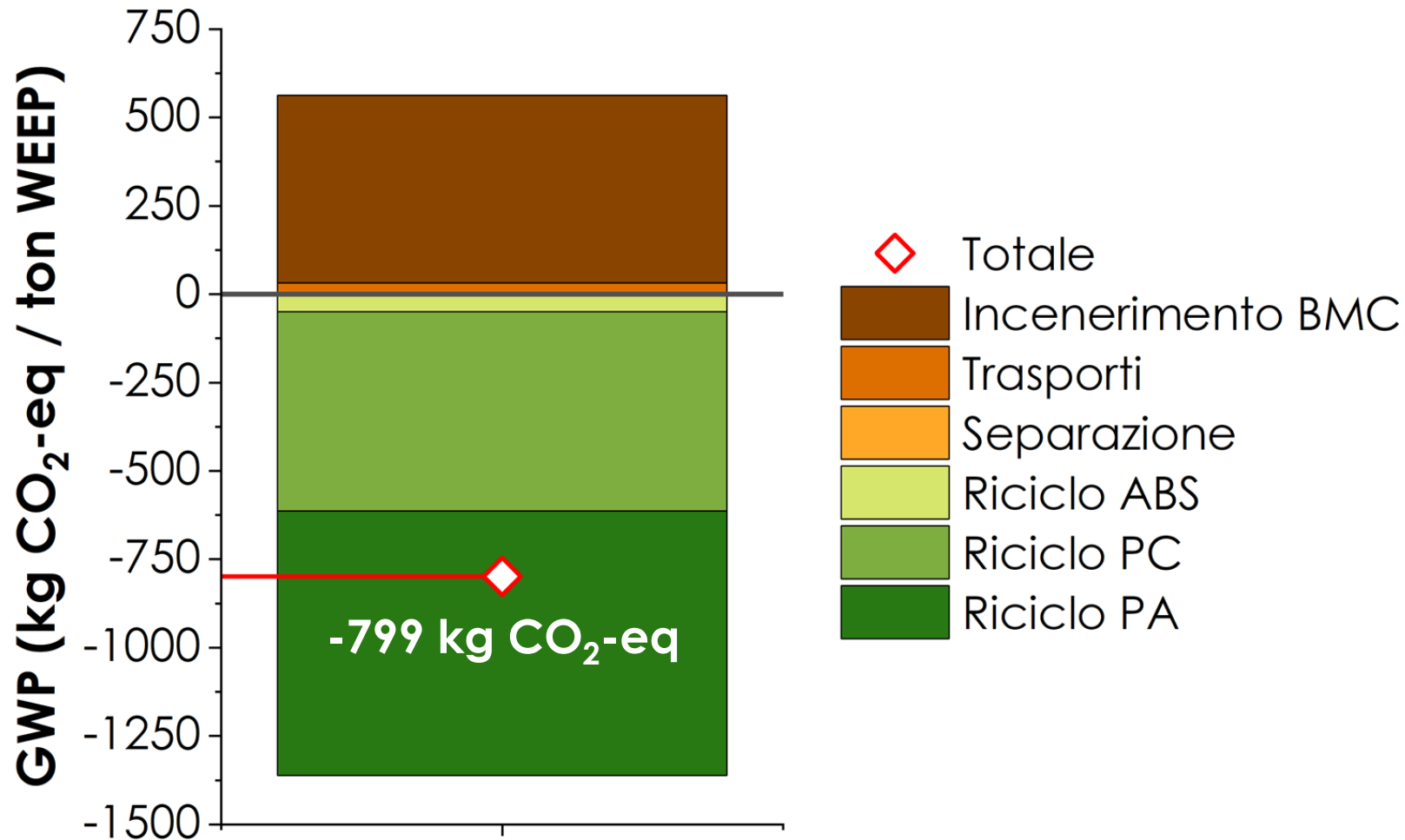
Climate change - Scenario 4



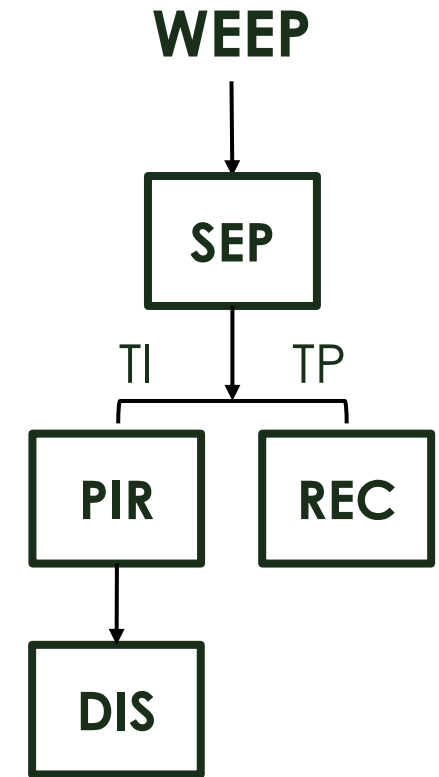
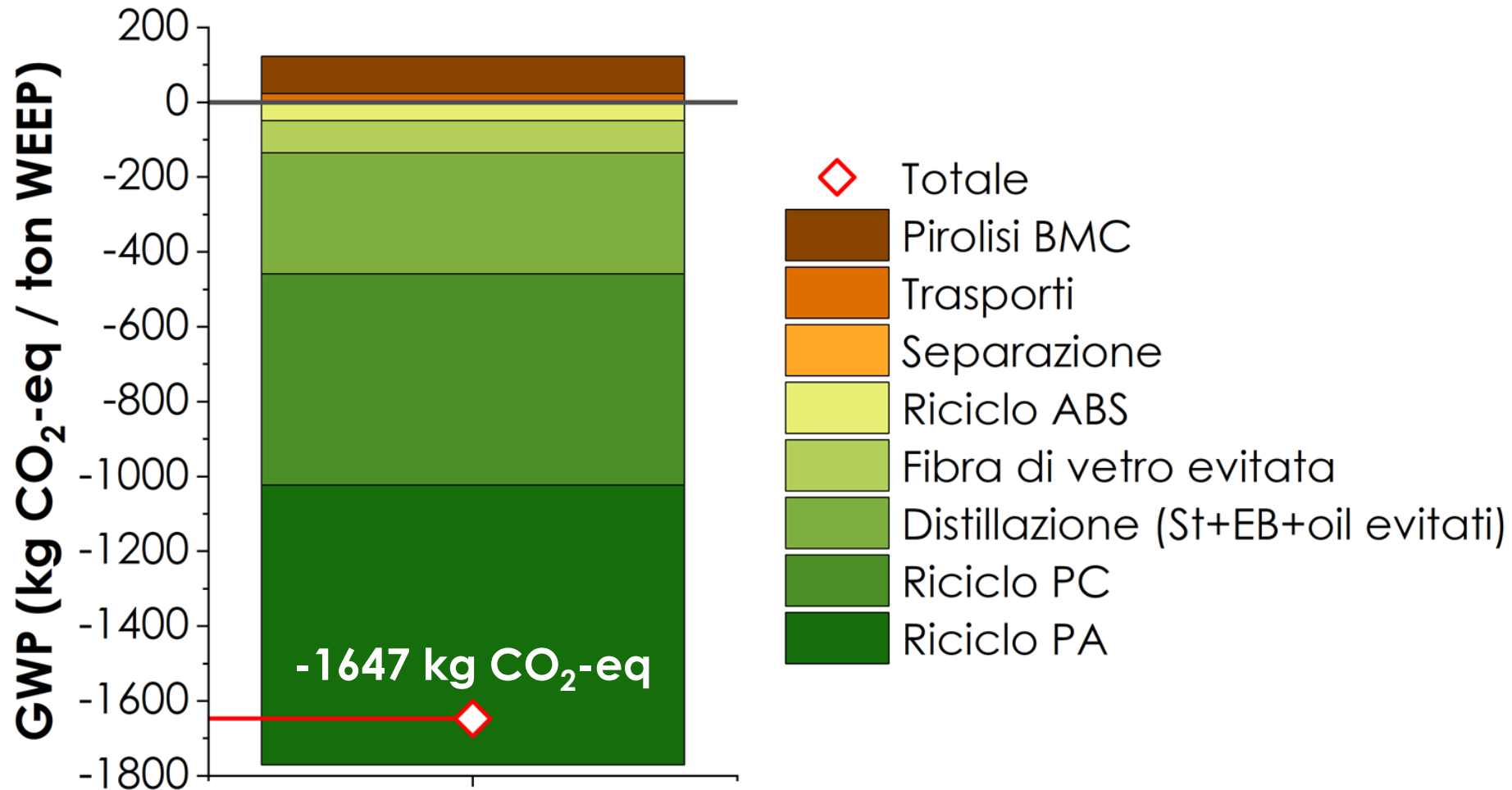
WEEP



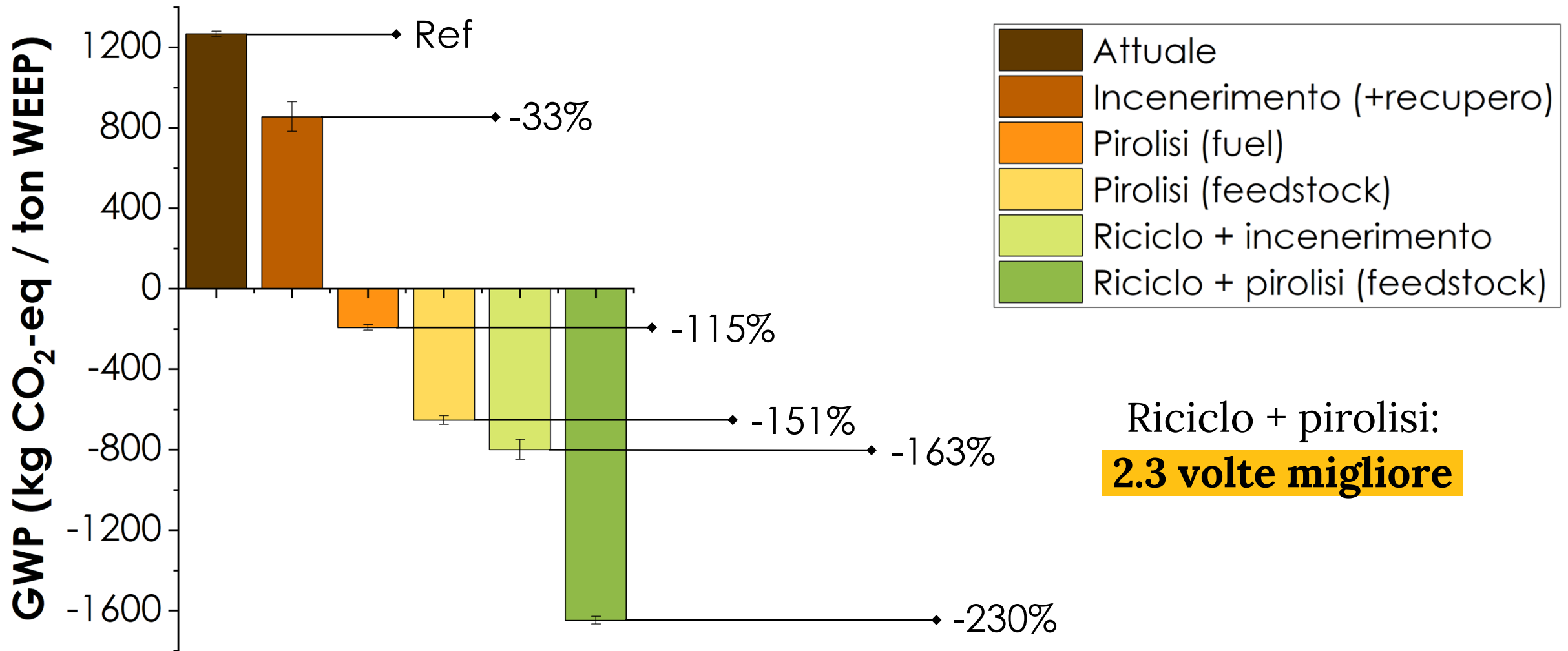
Climate change - Scenario 5



Climate change - Scenario 6

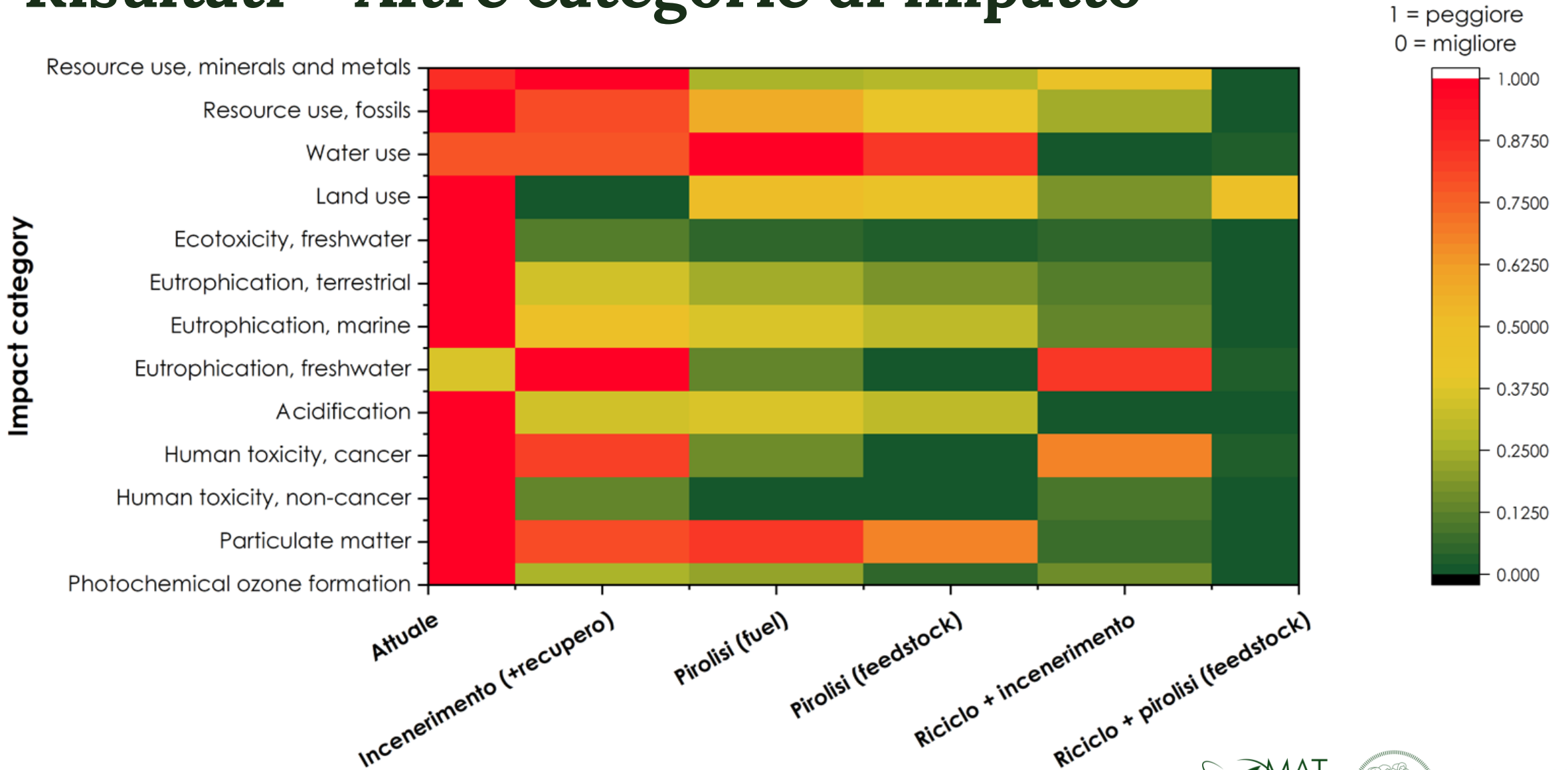


Climate change - Confronto

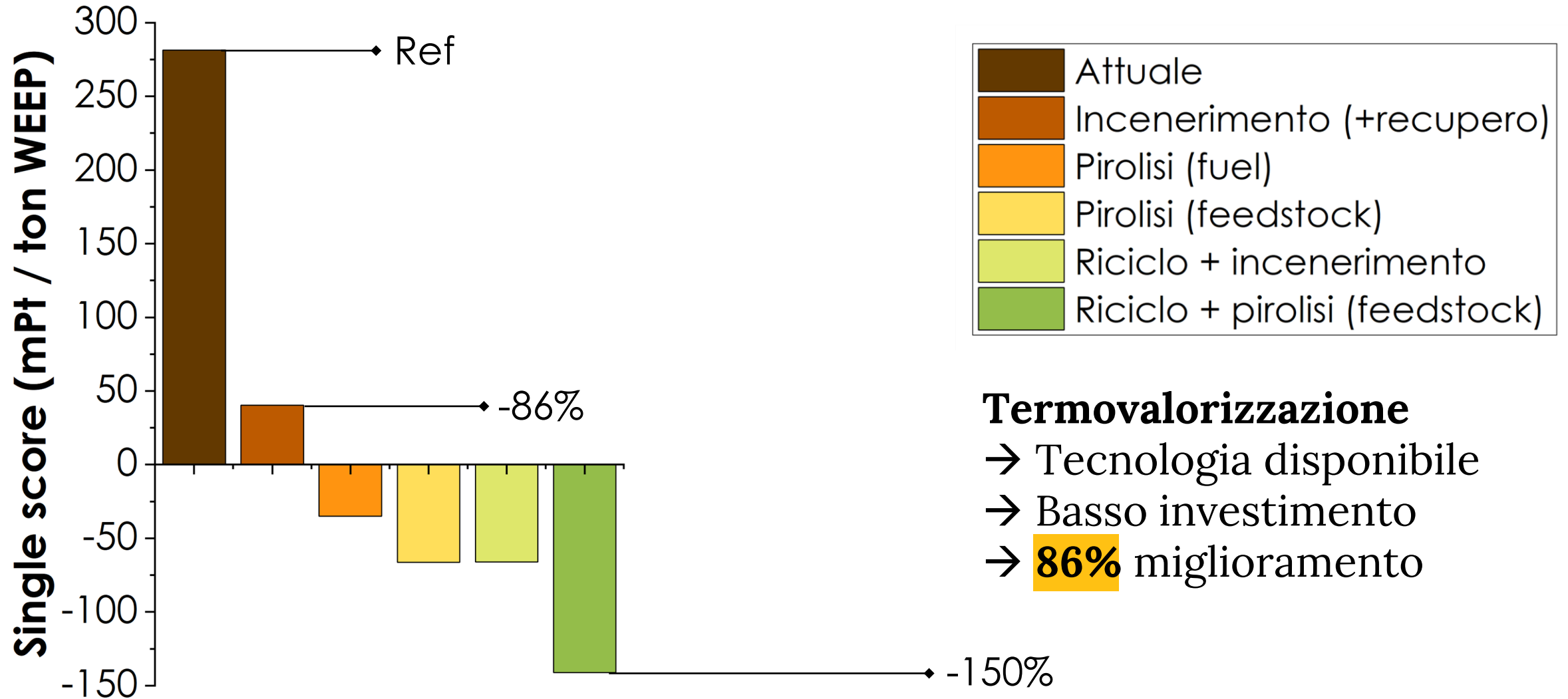


Riciclo + pirolisi:
2.3 volte migliore

Risultati - Altre categorie di impatto



Risultati - Single score



Termovalorizzazione

- Tecnologia disponibile
- Basso investimento
- **86%** miglioramento

Conclusioni

Conclusioni



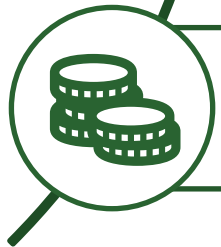
Riciclo meccanico + pirolisi → miglior opzione, ma è necessario un avanzamento tecnologico.



Termovalorizzazione → efficace nel breve termine, tecnologia disponibile.



Eco-design → necessario: l'elevato numero di plastiche e composizioni rende la separazione inefficace



Analisi tecno-economica → imprescindibile per valutare la fattibilità degli scenari presentati.

Alessandro Salvi

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e Life Cycle Thinking

7 Marzo 2023

Milano

Dipartimento di Chimica,
Materiali e Ingegneria
Chimica "Giulio Natta"

Politecnico di Milano

Performance ambientali dei trattamenti di fine vita di materiali polimerici da rifiuti elettronici: analisi comparativa



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