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La economía circular de los RCD *como estrategia sostenible en la construcción*

JORNADA DE CIERRE

Economía circular RCdiGREEN

Huarte, a 24 de mayo de 2022

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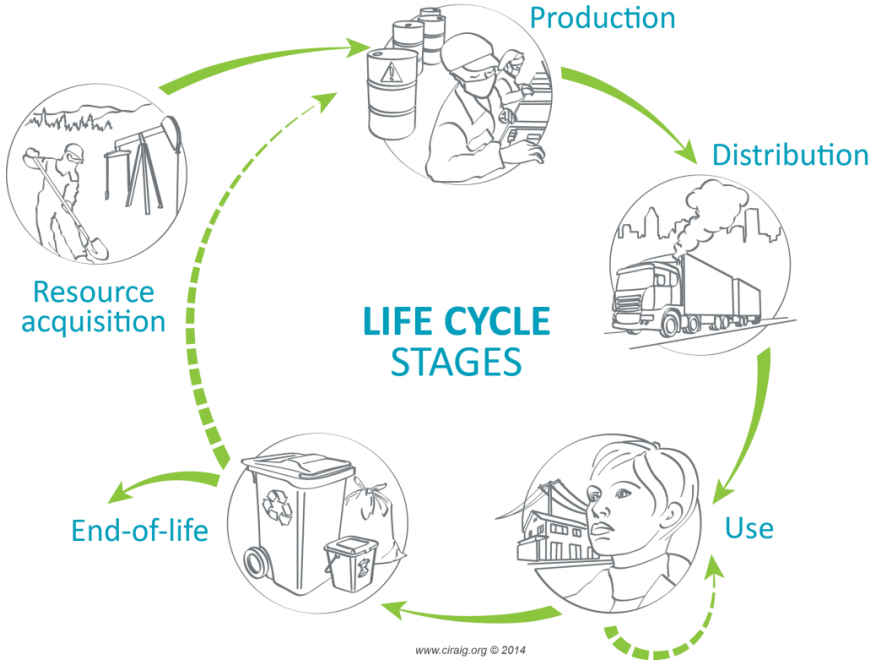
Life cycle assessment

Assessing the impact…

- Over the product life cycle
- With respect to several environmental indicators

- **Climate change**
- Ozone depletion
- Acidification
- Eutrophication
- **Resource use**, minerals and metals
- **Resource use, fossils**
- **Water use**
- **Total non renewable primary energy**
- Hazardous waste disposed
- **Non hazardous waste disposed**
- Radioactive waste disposed
- …



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Recycled aggregate production

TRANSPORT OF RCD Waste

- Calculation of total « mass.distance » of waste from demolition site to REAM Plant

PRODUCTION OF RECYCLED AGGREGATES

- Machaqueo, cribado, limpieza
  Molino con cribas y sistema de electroimán incorporado)
- Carga
  Retroexcavadora + pala cargadora

} Gasoleo

Road Construction

Fase 0_
Transporte a obra (road side)

290,6 TM transportadas

CONSTRUCCIÓN DEL VIAL/CAMINO - ROAD CONSTRUCTION

Fase 1:
Producción capa 1 - SUBBASE_CONTRUCCIÓN EXPLANADA MEJORADA

Descarga directa a camino → Extendido → Perfilado → Riego a humedad óptima → Compactación

Gasoleo = 150 L
Agua = 12 m^3

Fase 2:
Producción capa 2 - BASE_CAPA DE RODADURA_ZAHORRA ARTIFICIAL

Descarga/acopio en obra → Extendido → Perfilado → Riego a humedad óptima → Compactación

Gasoleo = 165 L
Agua = 6 m^3

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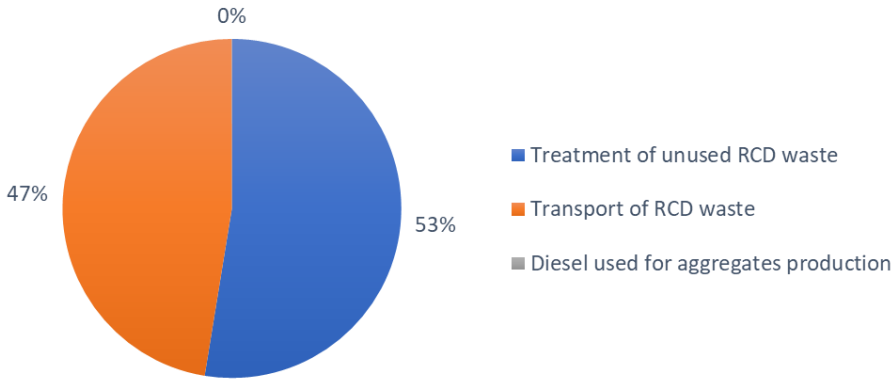
Impact on climate change

Aggregates production
Impact on climate change

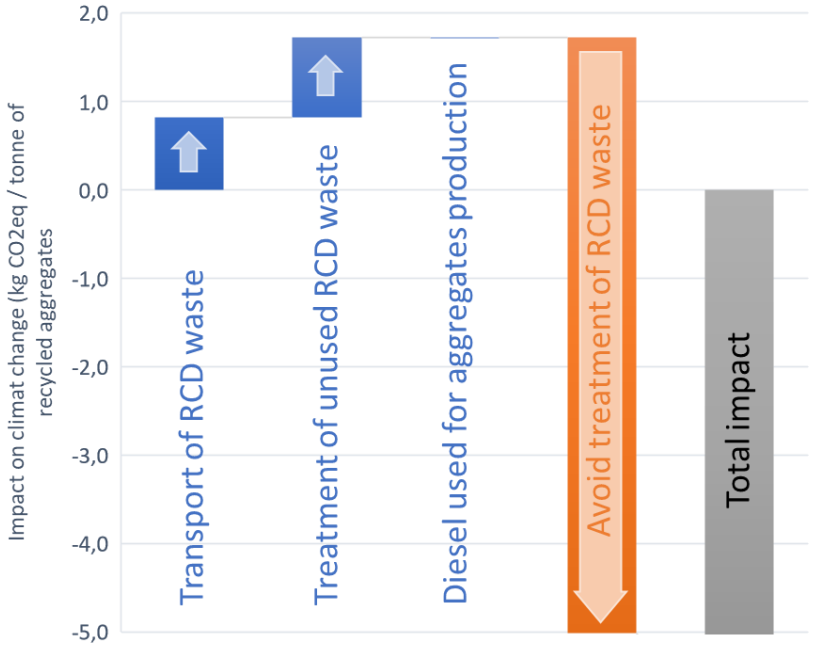


1.7 kg CO_2eq / tonne of recycled aggregates

The main contributors are :

- The transport of RCD waste to REAM production site
- The end of life treatment of unused RCD waste

Aggregates production
Impact on climate change
(with avoided impacts)



Total impact with avoid treatment of RCD waste
- 5 kg CO_2eq / tonne of recycled aggregates

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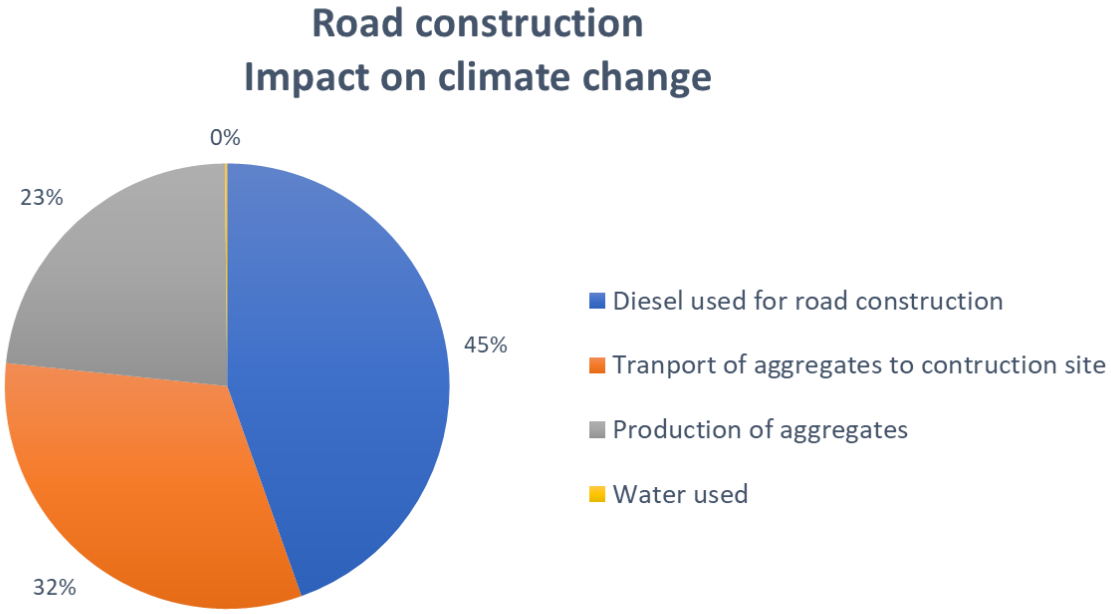
Impact on climate change



The main contributors are :

- The energy used for the road construction
- The transport of recycled aggregates to construction site
- The production of aggregate

Impact of the road construction

3.6 kg CO_2eq / m² of road

0.33 kg CO_2eq / m² of road (With avoided impacts)

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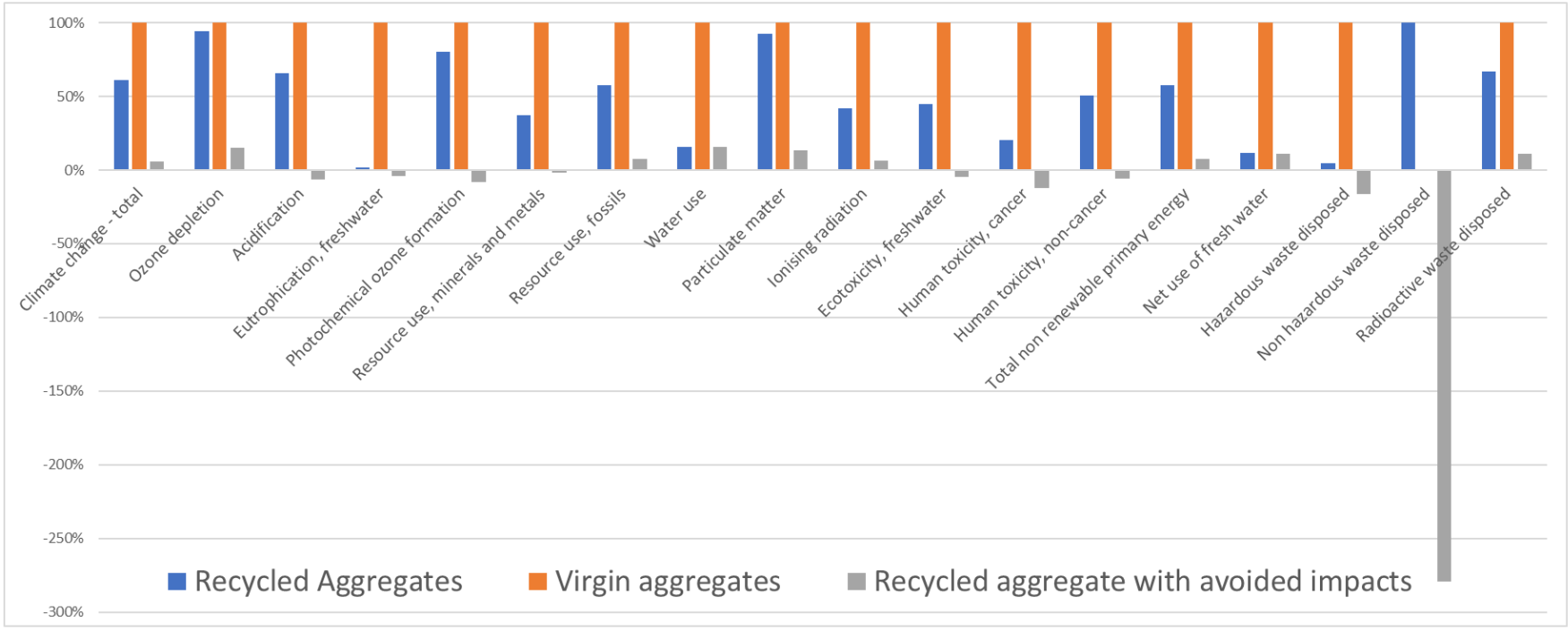
Road construction LCA results

Functional Unit : Construction of 1 m² of road



When considering the avoided impact of RCD waste, the road with recycled aggregates allows > 84% reduction of all indicators

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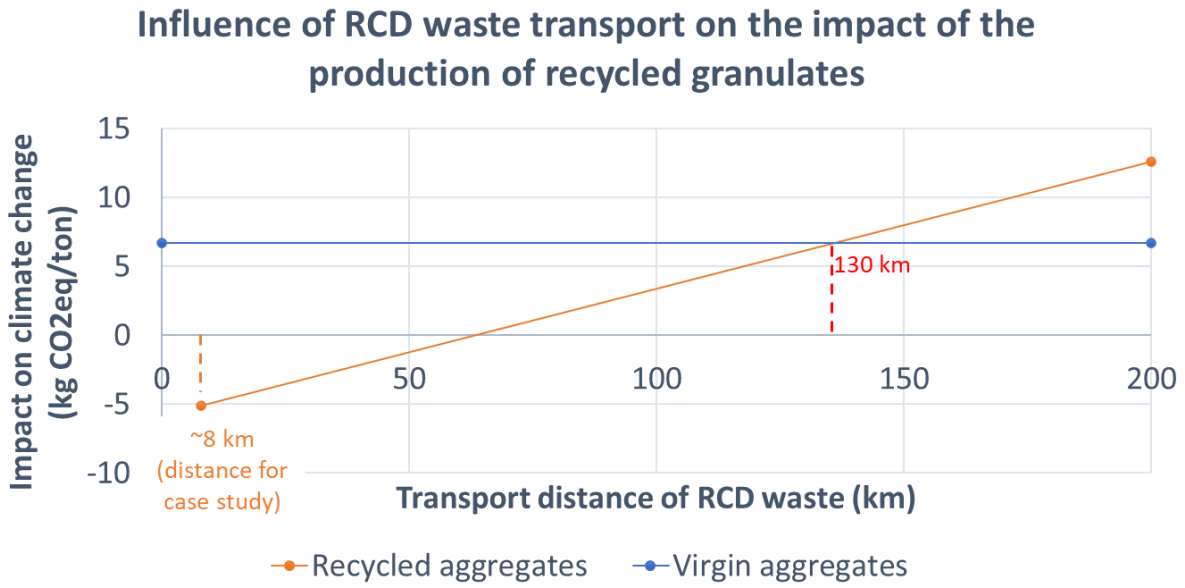
Sensitivity analysis



Recycled aggregates have lower impact on climate change than virgin aggregates

Only if the RCD waste site are < 130 km from aggregate production site

NB :
- the impact of recycled aggregates takes into account the avoided impact (impact of the treatment of inert waste, landfilled) ;
- Impacts for both type of aggregates are calculated only for production (without transport to construction site)

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Muchas gracias

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