

Economic and Environmental Aspects of Intermediate Crops

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<https://www.becoolproject.eu/results/>

Economic and environmental aspects under RED II

GHG emission reduction of intercrops for biofuels

Value chain approach



Efficient GHG emission reduction as central target

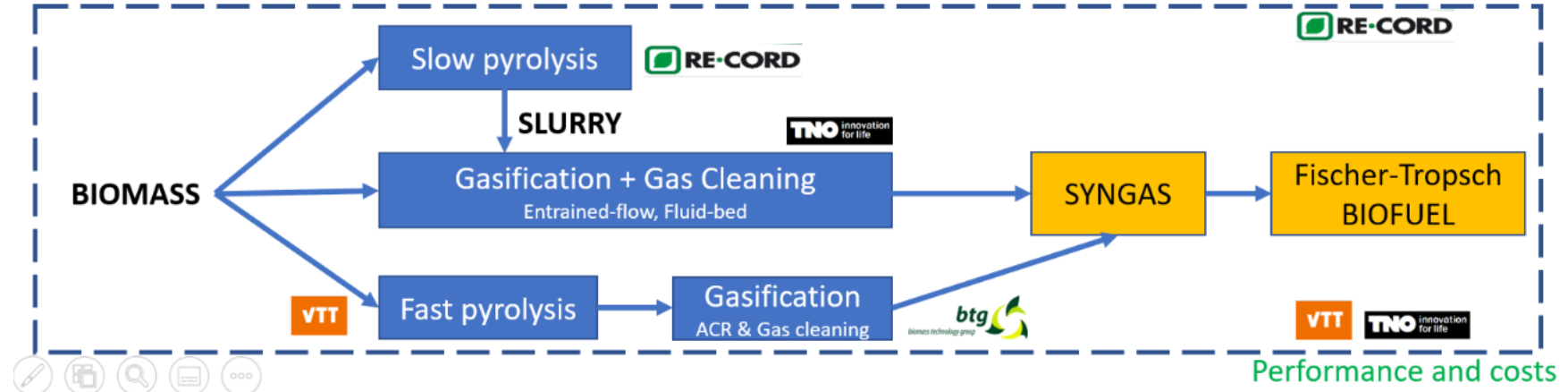
- GHG emission reduction
- Production costs
- GHG mitigation costs

What to compare with?

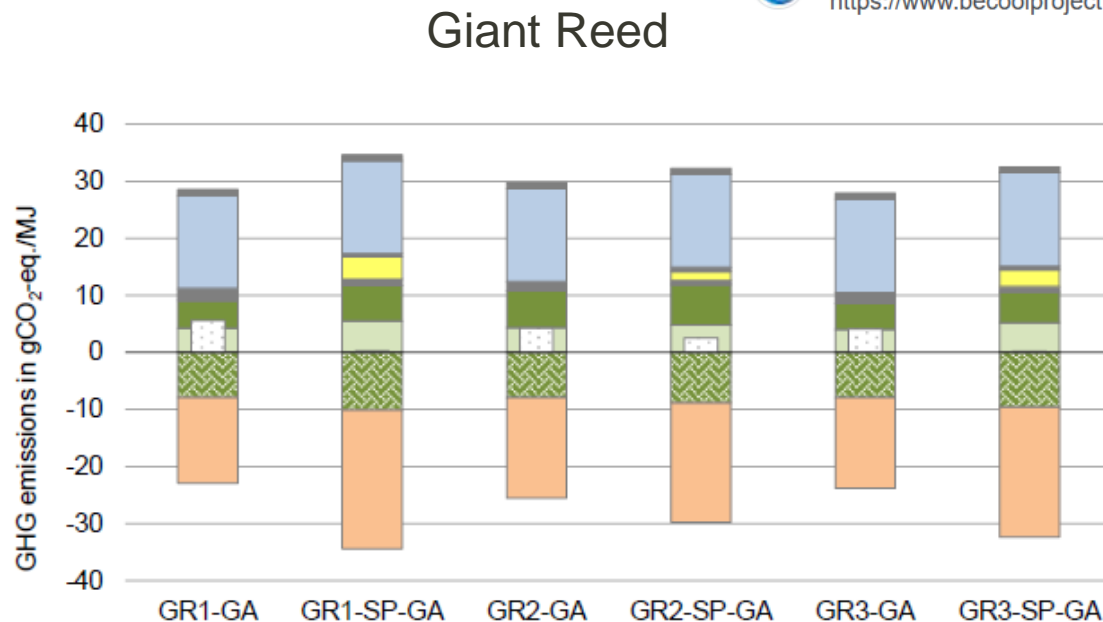
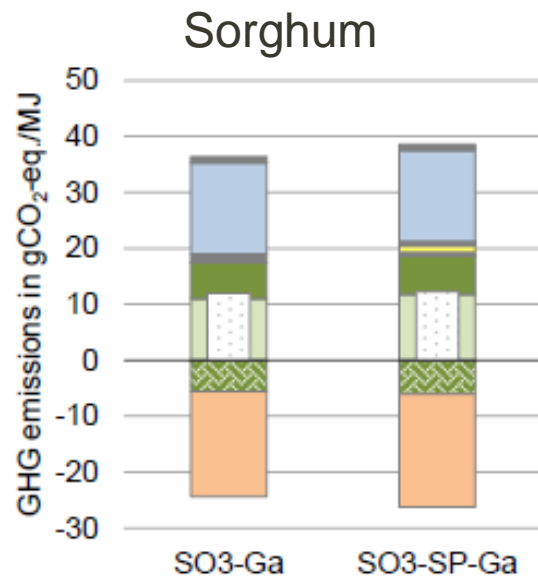
Value chain Sorghum to Fischer-Tropsch Fuel

- Sorghum as Intercrop
- Comparison with perennials from marginal land and other lignocellulosic biomass

Many more intercrops are in discussion in Europe
Worldwide intercrop concepts differ

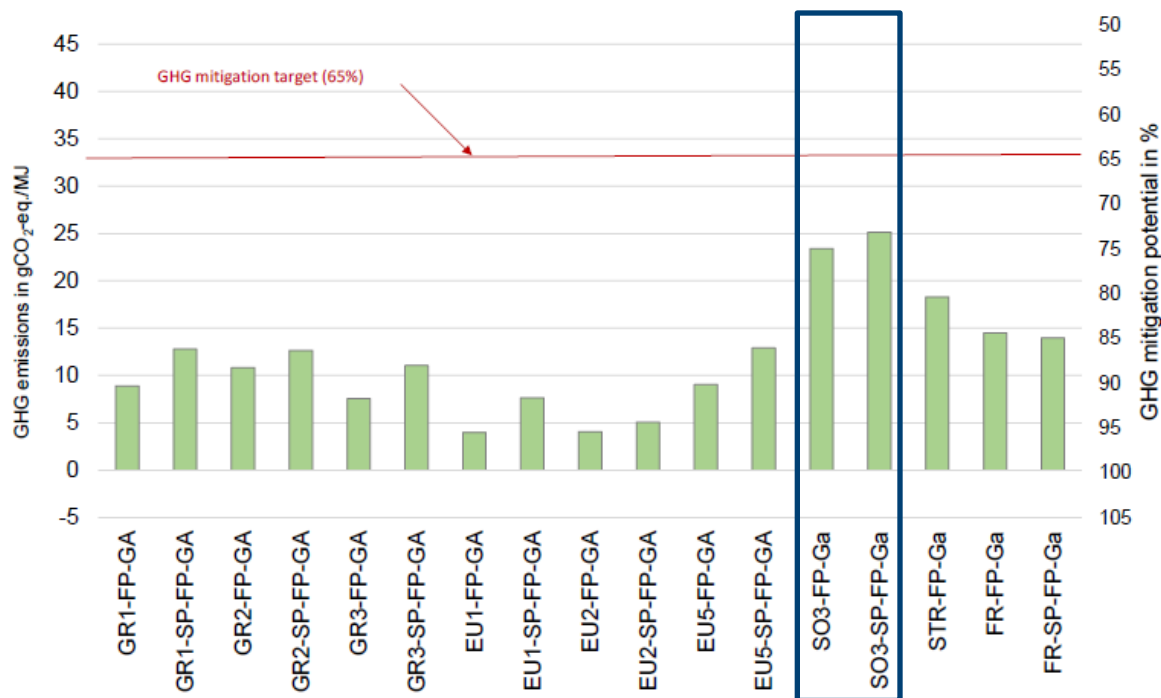


GHG emissions Biomass via (MILENA) gasification to Fischer-Tropsch Fuel



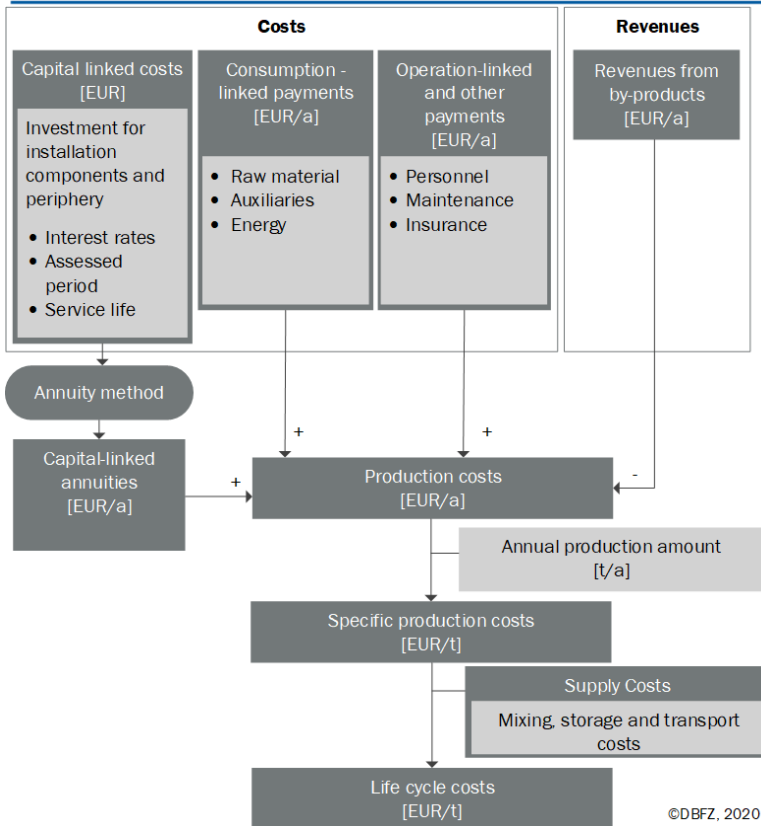
- Cultivation
- Harvesting
- Transport 1
- SP
- Transport/Distribution
- FT refinery
- Milena+Ft
- Credit LUC
- Credit Heat
- Summe

GHG emissions and GHG mitigation according RED II Biomass via (MILENA) gasification to Fischer-Tropsch Fuel

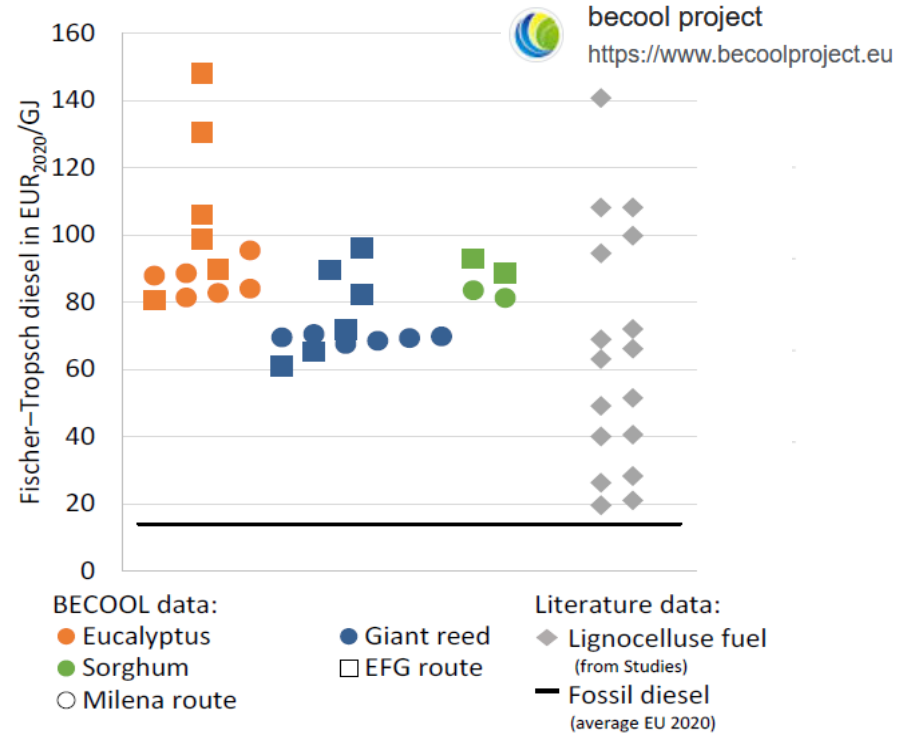


Costs of biofuels from intermediate crops

Biomass via gasification to Fischer-Tropsch Fuel

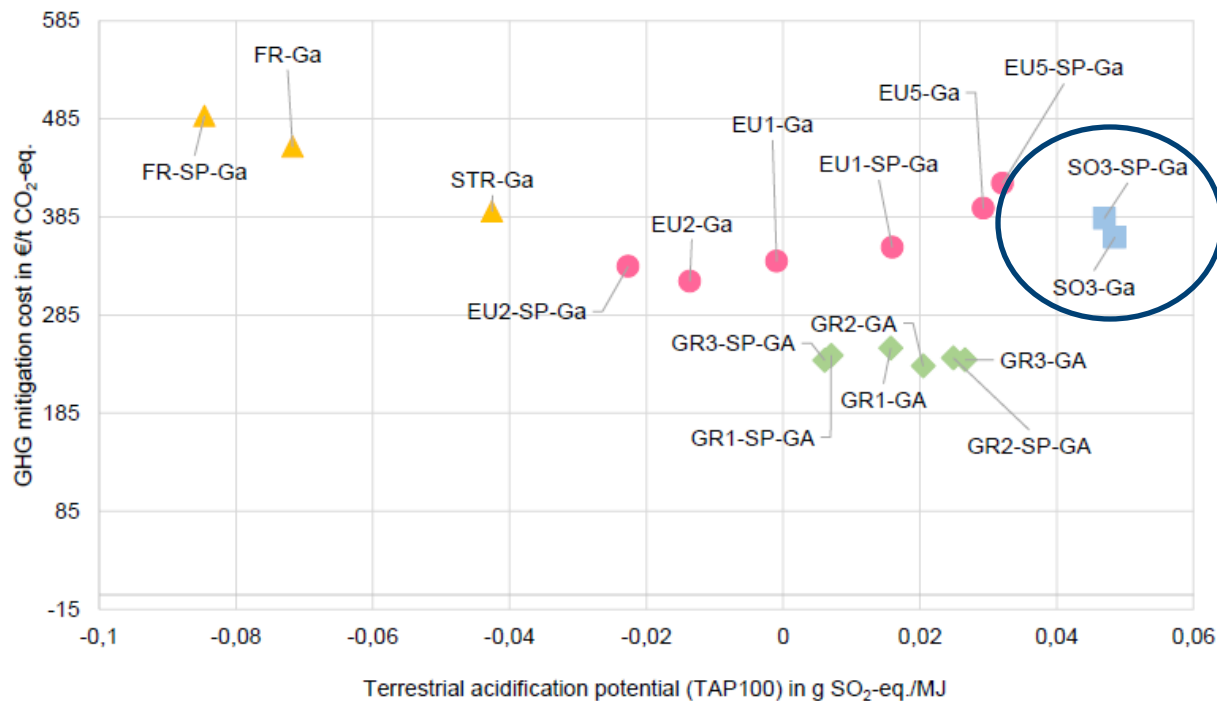


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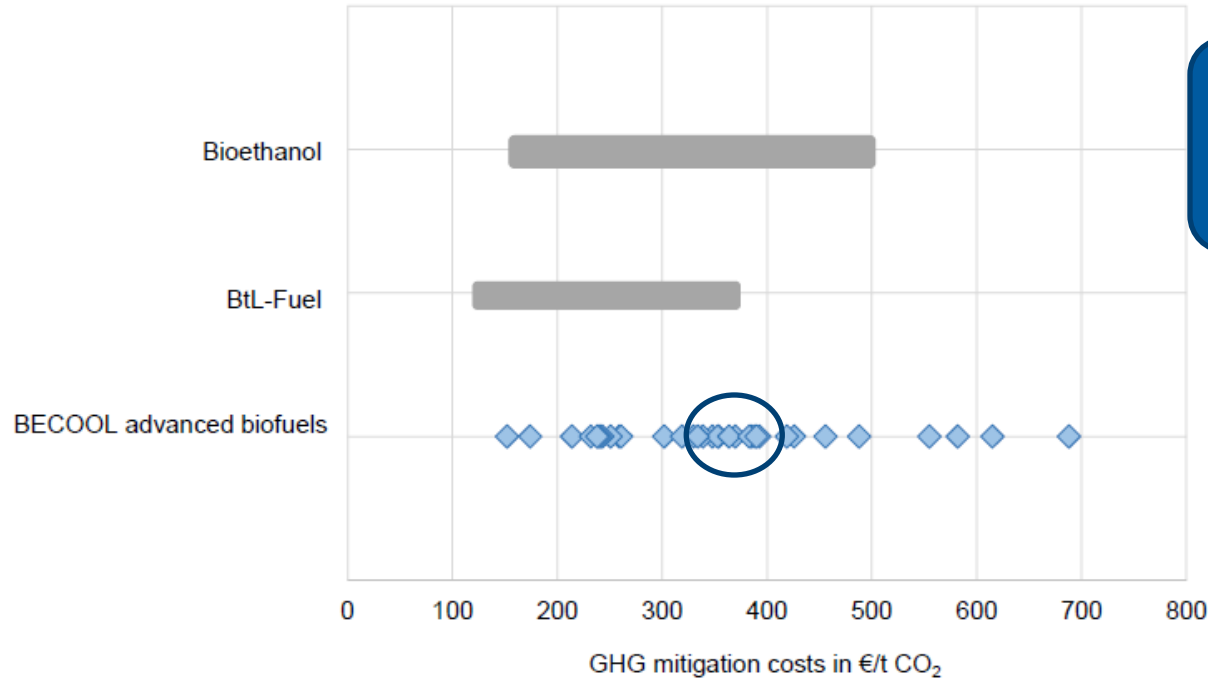


Oehmichen et al., 2022, BECOOL Project Del 5.5. report


GHG mitigation costs of biofuels from intermediate crops Biomass via (MILENA) gasification to Fischer-Tropsch Fuel



Comparison of GHG mitigation costs Biomass via gasification to Fischer-Tropsch Fuel

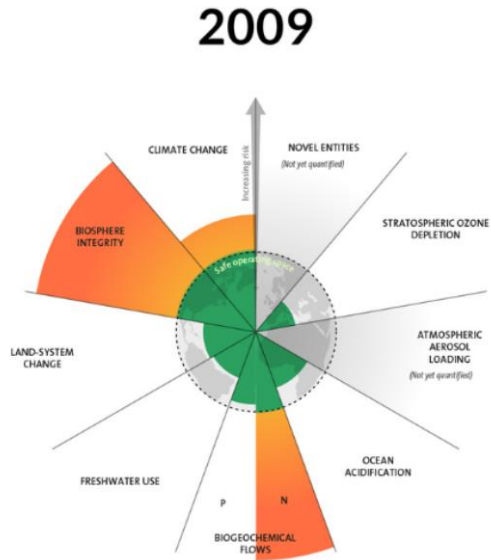


Many more intercrops are in discussion in Europe
Worldwide intercrop concepts differ

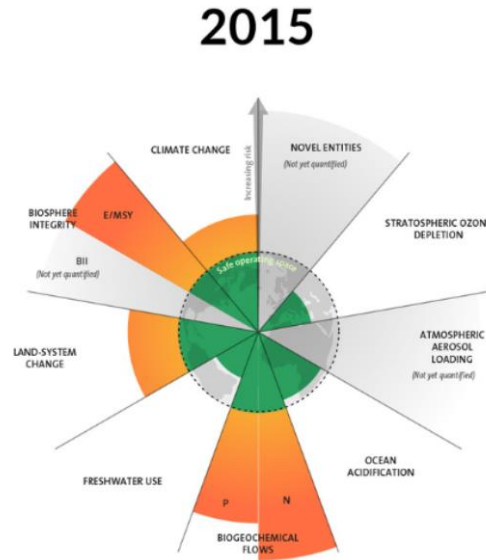
- The economic and environmental performance of intercroops for advanced biofuels need consideration of the whole process chain
- The BECOOL project results show GHG emissions, production costs and GHG mitigation costs from sorghum in a comparable range with other advanced biofuels
- For sustainability assessment more categories need to be taken into consideration
- More intercroops are in discussion and exploration in Europe. i.e.  <https://www.carina-project.eu/>
- **Worldwide intercrop concepts differ**
 - in the end the big question is, what will be scaled up!

Outlook

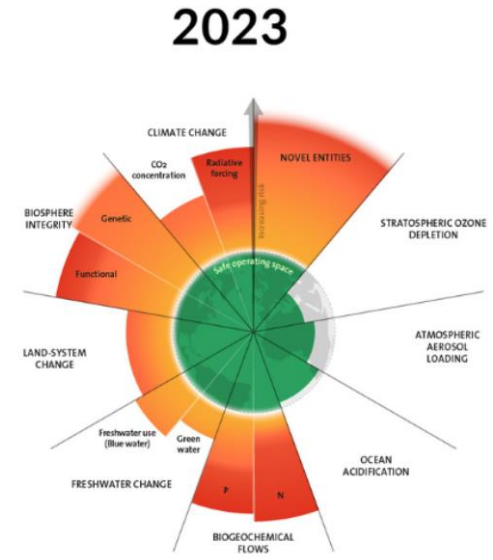
Increasing pressure on our planetary boundaries



7 boundaries assessed,
3 crossed



7 boundaries assessed,
4 crossed



9 boundaries assessed,
6 crossed

The evolution of the planetary boundaries framework. Licenced under CC BY-NC-ND 3.0 (Credit: Azote for Stockholm Resilience Centre, Stockholm University. Based on Richardson et al. 2023, Steffen et al. 2015, and Rockström et al. 2009)

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To read more:
Thrän, D.; Mösenfechtel, U.:
The bioeconomy system
Springer



<http://webapp.dbfz.de>

