



*Cost-effectiveness Analysis of Algae Energy  
Production in the EU*

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# Outline

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- **Methodology**
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- **Discussion and conclusions**
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# Introduction

- Fossil fuel based society
- Oil transition
- 1<sup>st</sup> generation bio-fuels
- High yielding algae
- Aquatic Species Program












# Methodology

- **Cost-effectiveness analysis**
- **EU biofuels target 10% by 2020**
- **Algae cultivation – open ponds (Benemann and Oswald, 1996)**
- **Biomass production**
  - 20 g/m<sup>2</sup>-day (15% lipid content)
  - 35 g/m<sup>2</sup>-day (30% lipid content)
- **Energy yield**
  - 392 GJ/ha**
  - 1,372 GJ/ha**
- + algal cake**

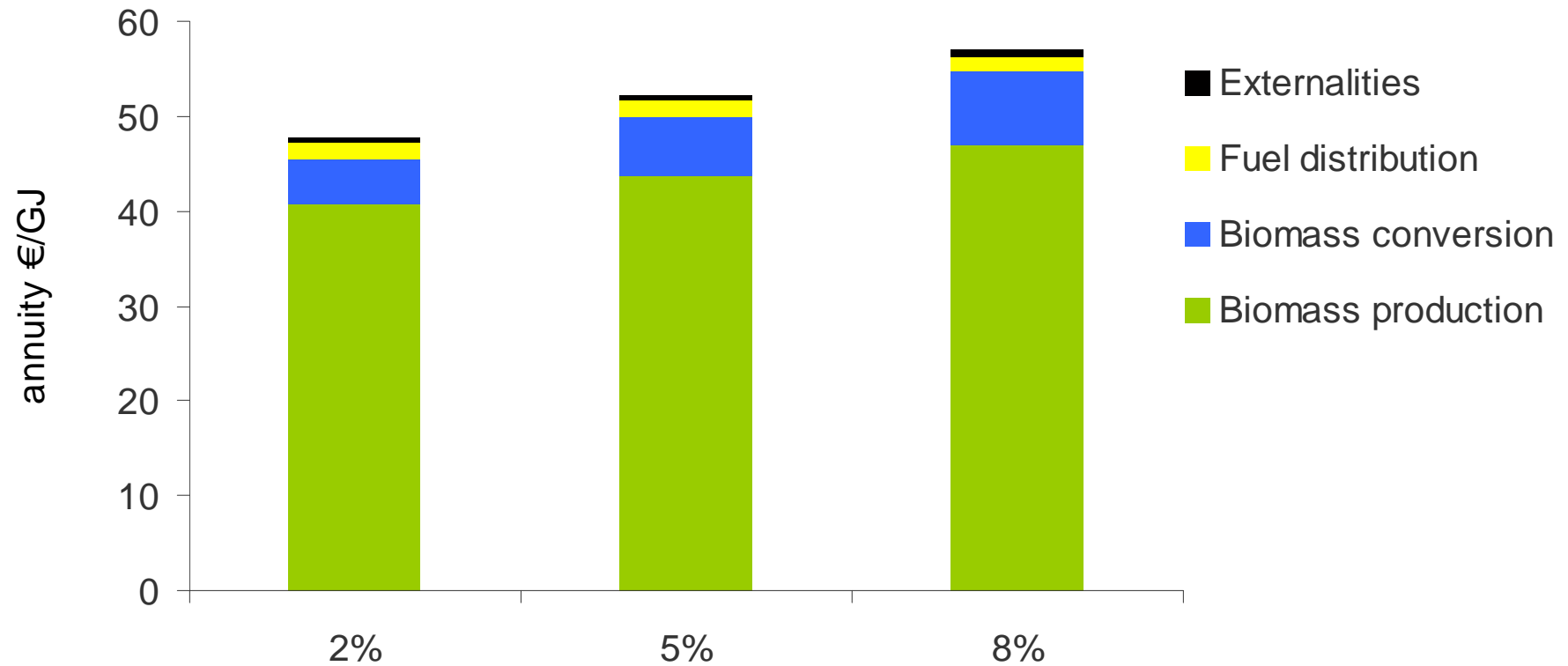


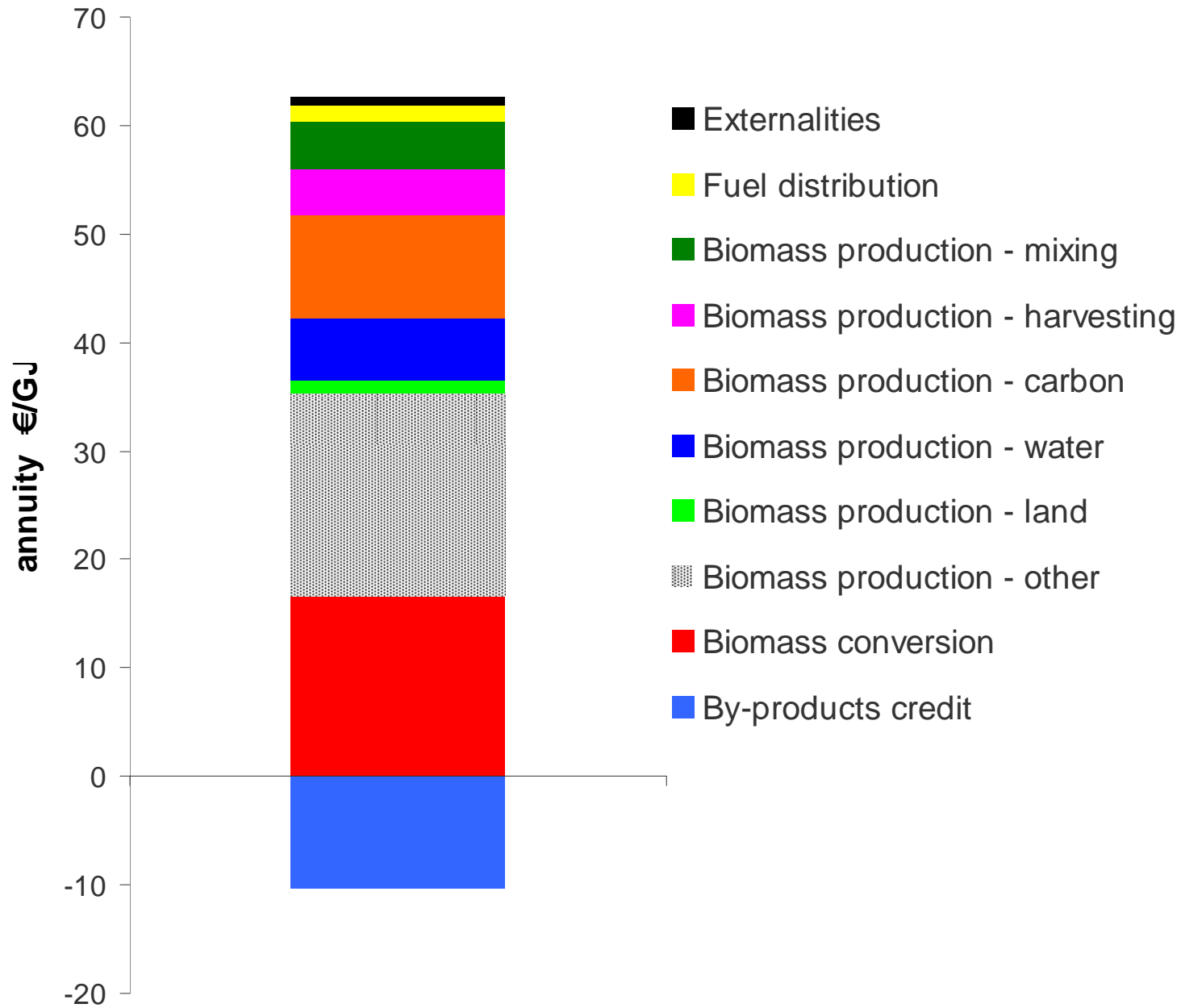
## External costs and benefits

	Algal biodiesel	Rapeseed biodiesel	Fossil fuels
GHG emissions			
Non-GHG emissions			
Food vs. fuel			
Fertilizers and pesticides			
Security of supply			

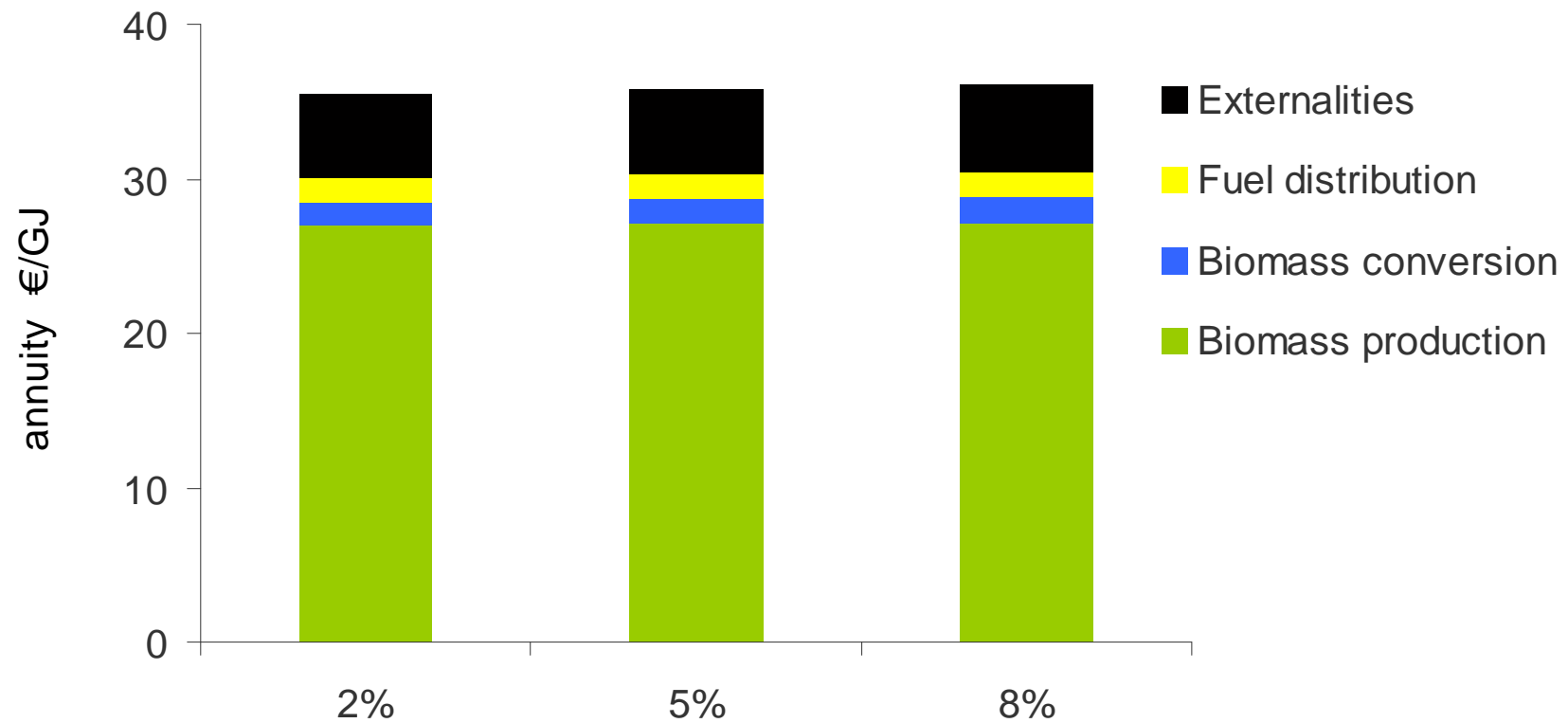
# Results

## Algal biodiesel

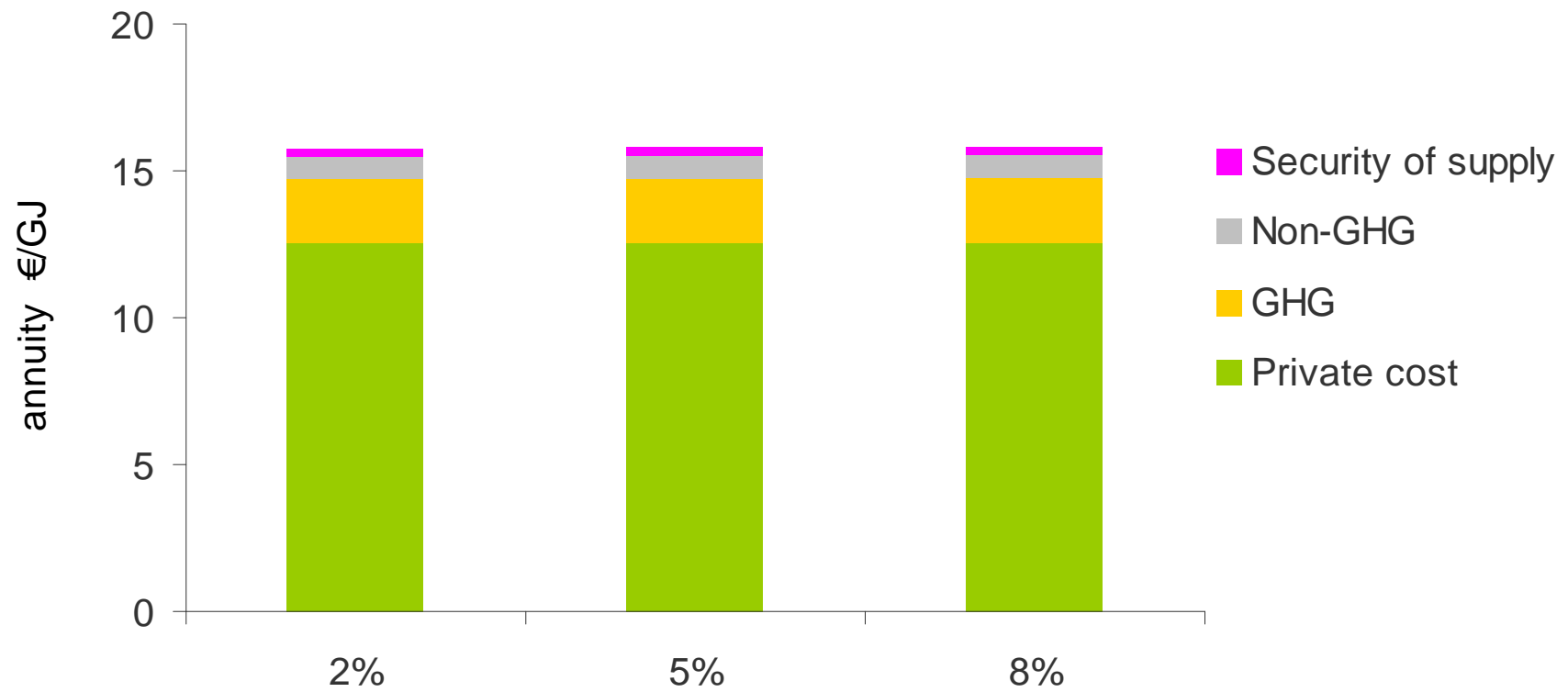




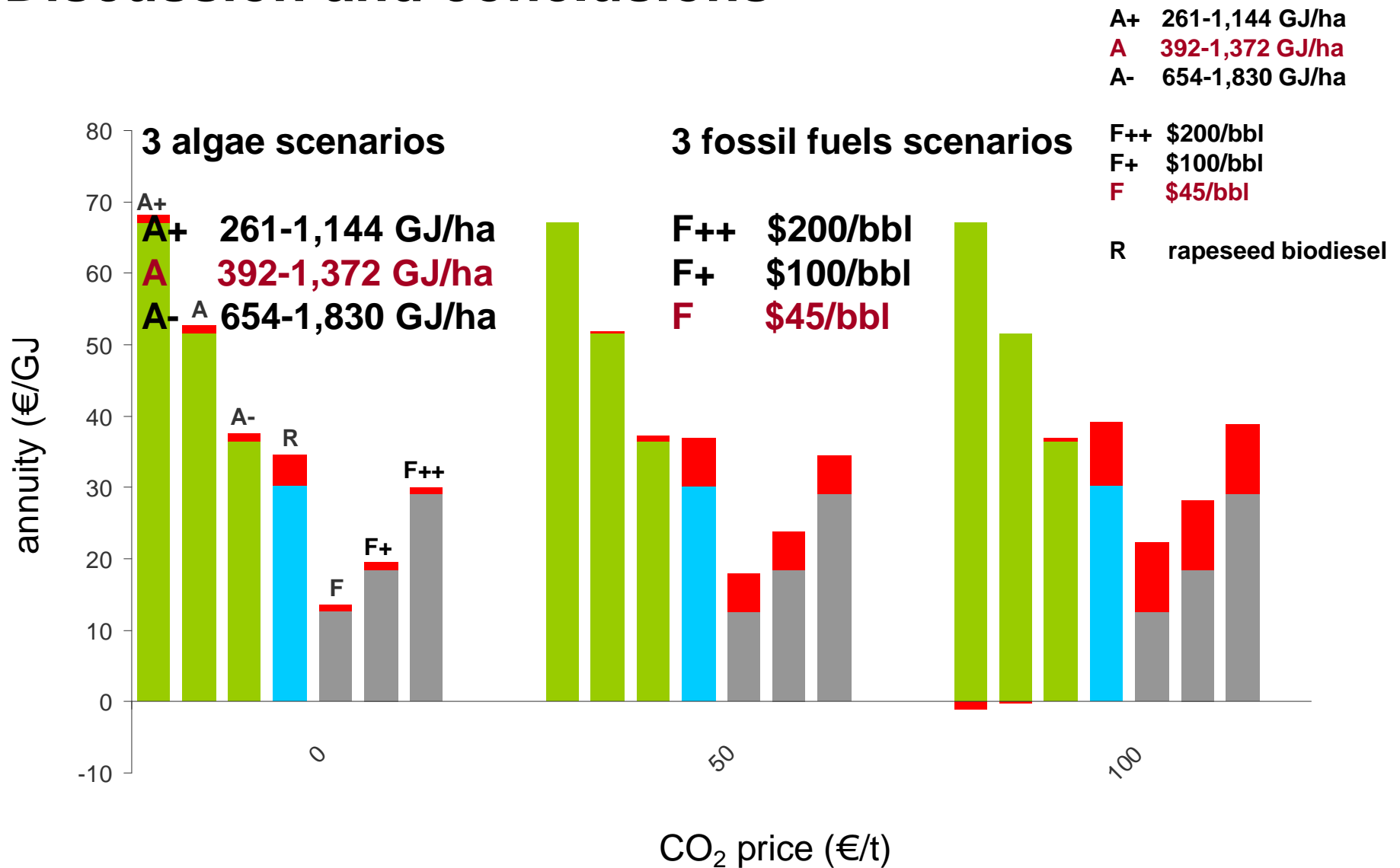
## Rapeseed biodiesel



## Fossil fuels



# Discussion and conclusions





**Thank you for your attention!**