

30 ASTARTA

produce • unite • develop

DECARBONIZATION STRATEGY

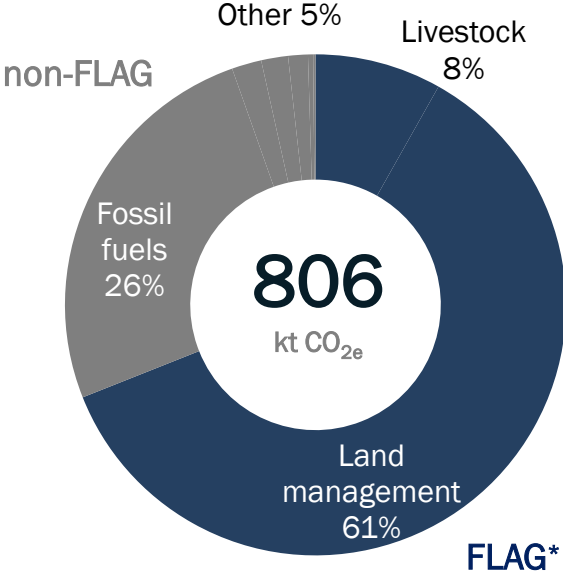
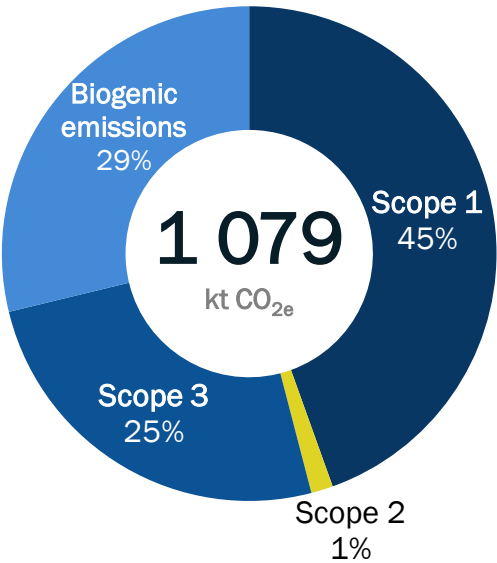


ASTARTA'S GHG EMISSIONS IN 2022

GHG emissions by key business segments, kt of CO_{2eq}

kt of CO _{2eq}	Biogenic emissions		N-fertilizers application		Fuel combustion		Enteric fermentation		Manure management		Total	
	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022
Agriculture	226	286	240	204	68	57					534	547
Sugar production	-	-	-	-	155	128					172	128
Cattle farming	-	-	-	-	6	6	51	53	11	13	70	74
Soybean processing	-	-	-	-	11	13					11	13

GHG emissions by categories in 2022, %



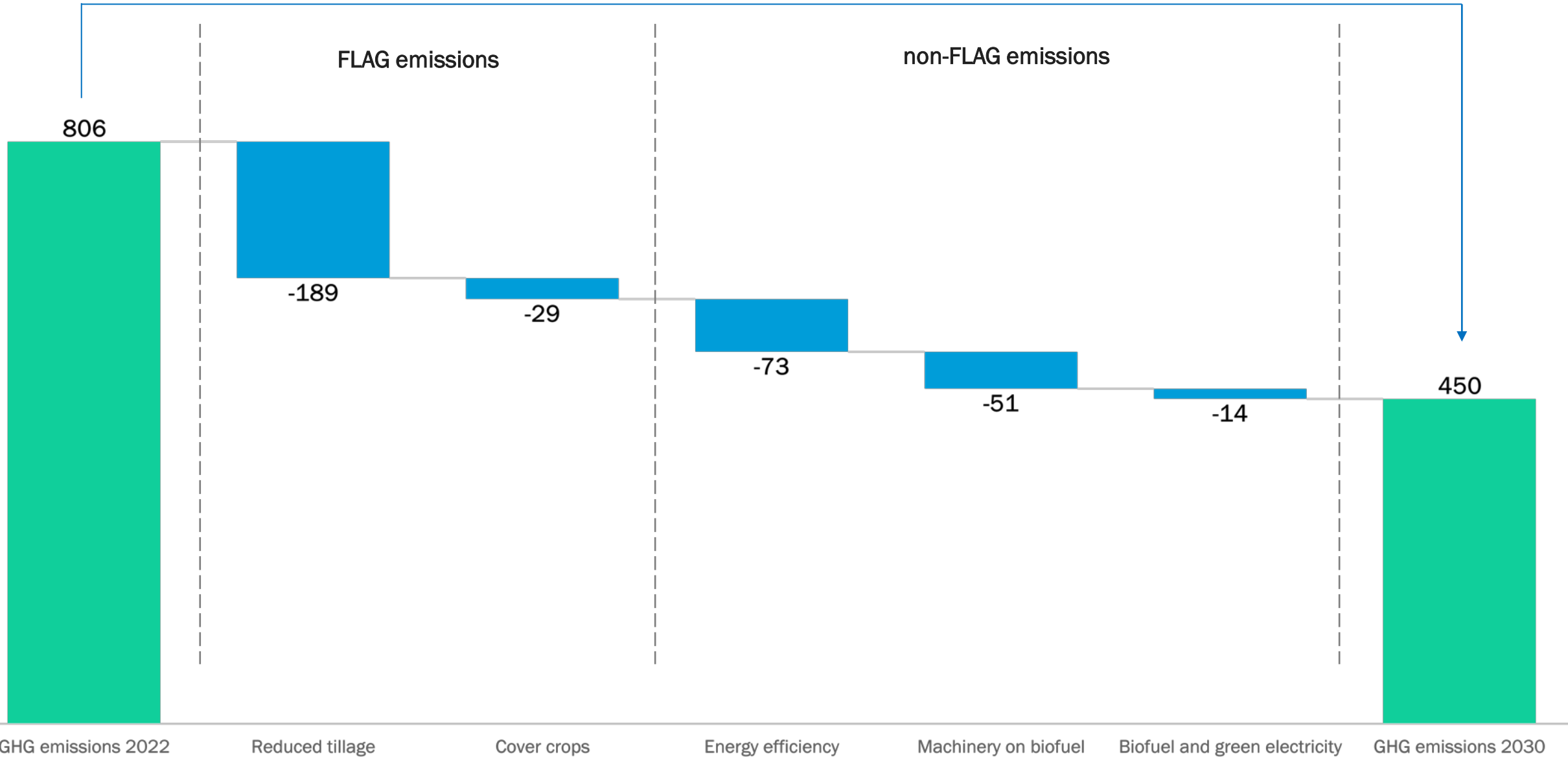
- Agriculture accounted 68% of all FLAG and non-FLAG emissions in 2022:
 - Biogenic emissions is the largest GHG source at 286kt of CO_{2eq} and a 36% share in FLAG and non-FLAG categories
 - Followed by GHG emissions from N-fertilizers application at 204kt of CO_{2eq} with a 25% share in FLAG and non-FLAG categories
- Sugar production responsible for 128kt of CO_{2eq} with a 16% share in FLAG and non-FLAG categories with natural gas and coal consumption as the most significant sources of GHG
- Cattle farming and Soybean processing accounted for 74kt CO_{2eq} and 13kt CO_{2eq}, correspondingly (9% and 2% of all emissions)
- Astarta's decarbonization strategy focuses on GHG sources in Agriculture and Sugar production as those activities cover 84% of total 2022 emissions**

*FLAG – Forest, Land & Agriculture


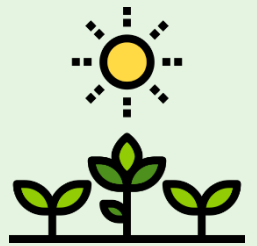

GHG REDUCTION TARGETS

Total GHG reduction - 44% until 2030

in thousand tonnes of CO2eq



KEY GHG REDUCTION METHODS AND BENEFITS

Reduction measures	Benefits
 <p>Reduced tillage</p>	<ul style="list-style-type: none">• Enhanced soil health via accumulation of carbon organic matter• Plant resilience to withstand different weather patterns• Retention of moisture in soil• Increase in crops yields• Estimated GHG reduction of 189kt CO_{2eq} ≈1.05t of CO_{2eq}/ha• Targeted area under reduced tillage – up to 180kha
 <p>Cover crops</p>	<ul style="list-style-type: none">• Enhanced soil health• Plant resilience to withstand different weather patterns• Reduced mineral fertilizers usage• Increase in crops yields• Estimated GHG reduction of 29kt CO_{2eq} ≈1.16t of CO_{2eq}/ha• Targeted area under cover crops – up to 25kha
 <p>Energy efficiency and renewable fuels</p>	<ul style="list-style-type: none">• Reduction in energy consumption• Lower production costs• Replacement of fossil fuels with renewable in upstream and downstream operations• Estimated GHG reduction ≈138kt of CO_{2eq}