



Environmental reporting in airlines: An analysis of mandatory and voluntary KPIs in the EU

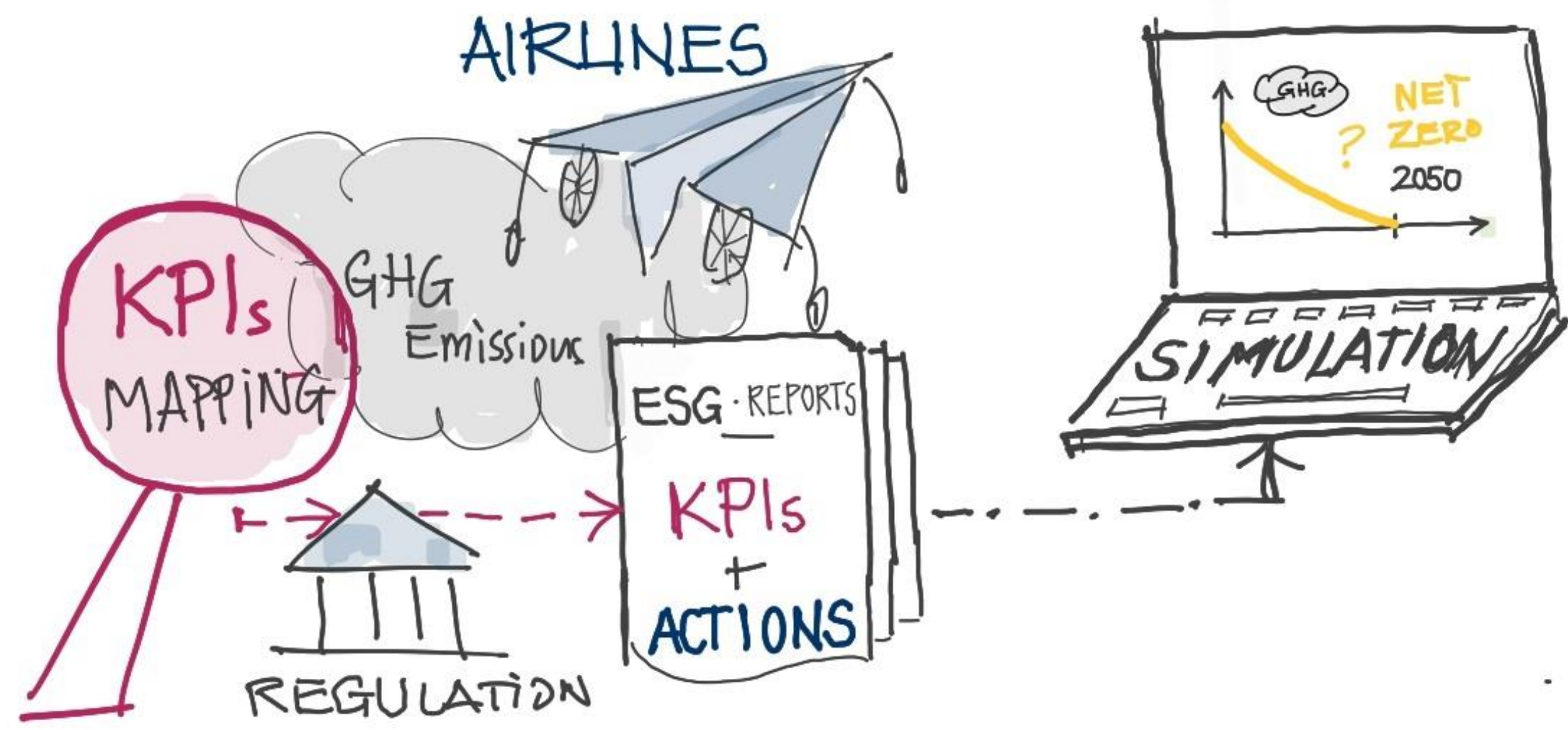


Luis Martín-Domingo^{1,2*}; Marina Efthymiou¹; and Miguel Mújica-Mota³



Azero2050.eu

¹ Dublin City University; ² Ozyegin University; ³ Amsterdam University of Applied Sciences

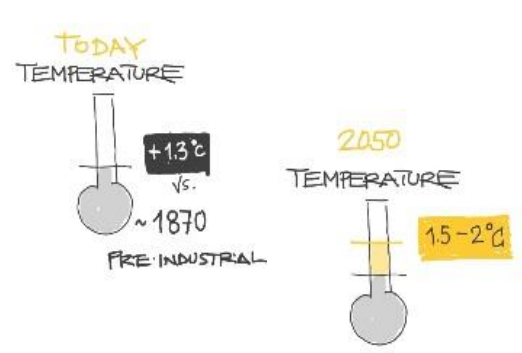


Marie Curie Fellowship Project 2024-2026: AZERO

Decarbonising aviation requires strict regulation to meet the EU Green Deal's goal of climate neutrality by 2050. EU rules shape the key performance indicators (KPIs) tracking this progress. Backed by the Marie Skłodowska-Curie Actions, the AZERO project assesses airlines' net-zero pledges, mapping greenhouse gas KPIs, evaluating actions, and simulating traffic scenarios for 2030, 2040, and 2050 using System Dynamics with real emission and ESG data.

This poster introduces the first steps (8 months i.e. 1/3) of the project

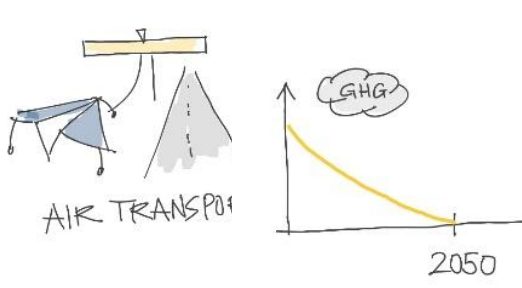
Climate & Aviation



Temperature increase during the last 120 years and suggested ceiling by science

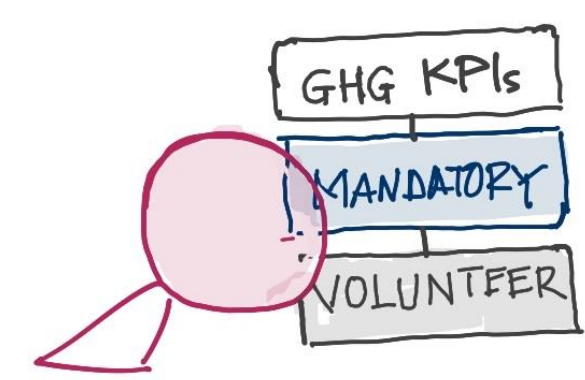


Paris Agreement 2015 and EU Green Deal in 2019 leading to Net Zero 2050



Air Transport commitment to Net Zero 2050, but researcher concerns (Klöwer et al., 2021)

Objectives



To map aviation mandatory and voluntary Greenhouse Gas (GHG) KPIs



To map and evaluate GHG KPI reporting practices

Literature Review II: Schemes



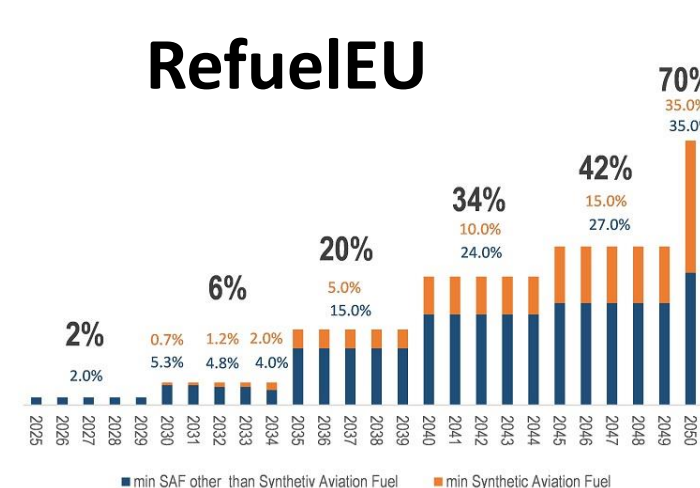
ESG ratings are central to investment, and can be used as a data source



Cap-and-trade system for flights within the EU

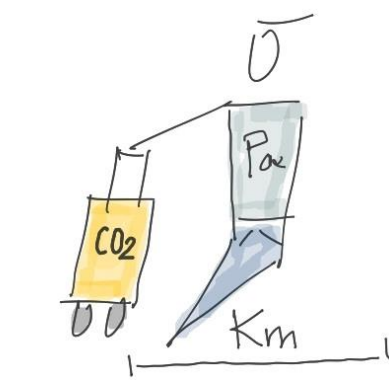


Global market-based offsetting for international flights outside the EU



Mandated blending of Sustainable Aviation Fuels (SAF)

CO2 per RPK



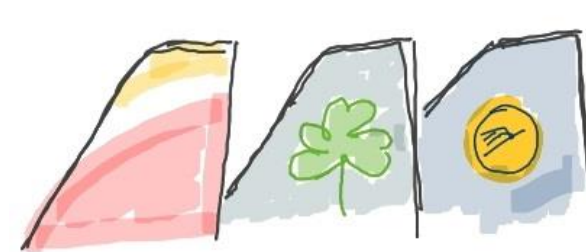
Widely used KPI in airline sustainability reporting

not reflecting total environmental impact

Methodology



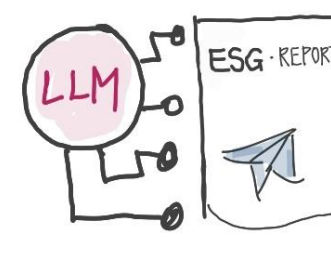
Documentary analysis of regulatory frameworks



Identification of the 16 European airline groups



Manual expert extraction and classification of environmental KPIs



Automated extraction using Large Language Models (LLMs)

Results



LLMs can streamline ESG data collection with proper guidance

Airline Group	Member	Country	SAF %	CO2 Intensity	ESG Score	Reporting
Ryanair	Ryanair	IE	0%	100g	65	Low
	Wizz Air	HU	0%	100g	65	Low
	Blue Air	RO	0%	100g	65	Low
	Wizz Air UK	GB	0%	100g	65	Low
easyJet	easyJet	GB	0%	100g	65	Low
	easyJet Europe	FR	0%	100g	65	Low
	easyJet UK	GB	0%	100g	65	Low
	easyJet Germany	DE	0%	100g	65	Low

LLM accuracy depends on prompt specificity and source data format

Report	SAF	CO2	ESG	Reporting
easyJet	0%	100g	65	Low
easyJet Europe	0%	100g	65	Low
easyJet UK	0%	100g	65	Low
easyJet Germany	0%	100g	65	Low

Progress in reporting core KPIs, but persistent gaps. Most airlines CO2 Scope 1 and Emission Intensity. But not others



Lack of standardization and comparability



Risks of greenwashing and greenhushing

Literature Review I



Lack of standardization and comparability in airline sustainability reporting



Risks of greenwashing and greenhushing in Airline environmental communication



Methodological and practical challenges in KPI extraction and reporting

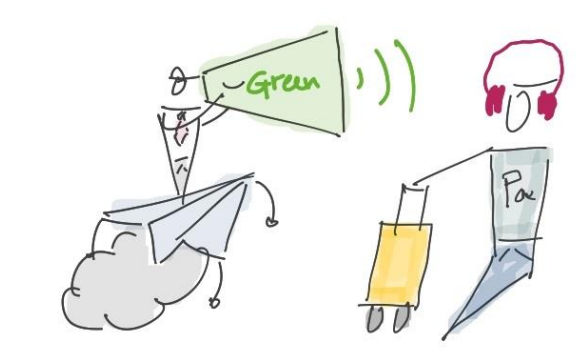
Conclusions



LLMs can improve KPI extraction but require structured guidance



Persistent Gaps and Inconsistencies in Airline Sustainability Reporting



Risks of Greenwashing and Greenhushing Undermine Credibility



Funded by the European Union

This project has received funding from the European Union's HORIZON-MSCA-2023-PF-01 research programme under the Marie Skłodowska-Curie (MSCA) grant agreement No 101151804

Note: OK to share on social media