Case Study: Scope 3 Emissions from Aircraft Repossession

Abstract

This case study evaluates the emissions generated during the repossession of an aircraft from a defaulting airline. The process involves complex logistical, technical, and legal steps, each carrying a carbon footprint. Using DEFRA emission factors and aircraft lifecycle analysis, the study calculates Scope 3 emissions across travel, inspections, maintenance, ferry flights, painting, storage, and component movements. Results highlight the hidden carbon costs of lease enforcement and offer a framework for sustainable repossession strategies in line with the GHG Protocol.

Introduction

Aircraft repossessions are high-stakes events in aviation leasing, typically triggered by lessee default. Beyond legal and financial complexities, repossession events generate notable emissions, yet these are rarely tracked or reported. This case study outlines the full emissions impact of repossessing a single narrowbody aircraft - drawing attention to an under-reported but highly material Scope 3 emissions category for lessors.

Scope and Objectives

The study's objective was to:

- 1. Identify all emissions-generating activities during the repossession of an aircraft.
- 2. Quantify Scope 3 emissions across multiple categories under the GHG Protocol.
- 3. Convert emissions into tree-based carbon offset equivalents.
- 4. Offer guidance on emissions reduction and reporting strategy for lessors.

Methodology

Data Collection:

Operational data was gathered across key repossession events, including:

- Deployment of physical representatives to the lessee location.
- Retrieval and scanning of technical records.
- Component removal, packaging, and shipping.
- CAMO oversight, aircraft inspections, and airworthiness restoration.
- Ferry flight to a designated storage or maintenance location.
- Paint events to remove airline branding.
- Aircraft storage (short- to medium-term).
- Replacement of components to prepare for re-marketing.

Emissions Calculation:

- Emissions were calculated using DEFRA 2023 factors for:
- Flights (short-, medium-, and long-haul)
- Road freight (Artic Lorry)
- Air freight (dedicated cargo flight, average load)
- Hotel accommodation (region-specific)
- Ferry flight fuel burn estimates (based on aircraft type and range)
- Electricity usage in storage (if applicable)

Offset Metric:

- Each 25 kg CO2e equated to one tree's annual carbon absorption, per EcoLab.

Key Findings

- 1. Emissions Breakdown (per repossession event):
- Travel (2-3 lessor reps): 800-1,200 kg CO2e
- Hotel accommodation (5-7 days): 300-500 kg CO2e
- Records retrieval + digital scanning: 50-100 kg CO2e
- Component packaging and transport: 400-700 kg CO2e
- CAMO and airworthiness services: 200-350 kg CO2e
- Ferry flight (e.g., A320 ~2,000 NM): 3,000-5,000 kg CO2e
- Paint event: 250-400 kg CO2e
- Aircraft storage (1-3 months): 100-250 kg CO2e

Total estimated emissions per repossession: ~5,100 to 8,500 kg CO2e Equivalent to 204 to 340 trees to offset.

- 2. Scope 3 Category Attribution:
- Rep travel + hotel: Scope 3, Category 6 (Business Travel)
- Component shipping: Scope 3, Category 4 (Upstream Transport)
- CAMO & ferry flight: Scope 3, Category 9 (Downstream Transport)
- Storage electricity (if indirect): Scope 3, Category 8 (Leased Assets)

Discussion

Repossessions are rare but operationally intense. They create concentrated emissions across multiple processes that are typically unmeasured in ESG reporting. This case study shows that a single repossession can exceed the annual emissions from several routine inspections or component transactions.

For lessors pursuing net-zero goals, tracking these events is critical - not only for compliance, but for setting internal carbon budgets and negotiating greener handback and remarketing processes.

Conclusion

Aircraft repossessions represent an untracked emissions hotspot in aviation leasing. From staff travel to ferry flights and rebranding, these events generate thousands of kilograms of CO2e. This case study provides a structured emissions breakdown that can be used to inform Scope 3 reporting and sustainability strategies.

Oak Tree ESG encourages aviation lessors to integrate emissions monitoring into their repossession playbooks - aligning lease enforcement with climate accountability.