



D8.4: Successful Business Models

Grant Agreement number: 101036871

Project acronym: OLGA

Project title: hOListic & Green Airports

Funding scheme: Innovation Action (IA)

Start date of the project: 1st October 2021

Duration: 60 months

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OLGA project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement n° 101036871

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DOCUMENT INFORMATION

Document Name	Successful Business Models
Version	V2
Version date	26/08/2026
Author	ADP
Security	Public

APPROVALS

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DOCUMENT HISTORY

Version	Date	Modification	Authors
V01	26/01/2026	Initial version	Aurore CHARLES
V01	31/03/2026	Input included	Aurore CHARLES
V02	16/05/2026	Additional input included	Aurore CHARLES
V03	15/06/2026	Additional input included	Aurore CHARLES
V04	21/07/2026	Coordinator review	Yannael BILLARD
V1	28/07/2026	Quality review	Melike RIOLLET



V2	26/08/2026	WP3 Lead's comments integrated	Aurore CHARLES
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List of Abbreviations

BMC	Business Model Canvas	MaaS	Mobility as a Service
CBA	Cost-Benefit Analysis	MXP*	Malpensa Airport
CDG*	Paris-Charles de Gaulle Airport	NGV	Natural Gas for Vehicle
CLJ*	Cluj International Airport	OMS	Operation Management System
EC	European Commission	R&D	Research and Development
EU	European Union	SAF	Sustainable Aviation Fuel
GHG	Greenhouse Gas Emissions	SME	Small and Medium Enterprise
H2	Hydrogen	SWOT	Strengths, Weaknesses, Opportunities, and Threats
H2020	Horizon 2020	TRL	Technology Readiness Level
IP	Intellectual Property	WP	Work Package
IPR	Intellectual Property Rights	WPL	Work Package Leader
LH2	Liquid Hydrogen	ZAG*	Zagreb Airport



1 Executive summary

Deliverable 8.4 presents the work carried out under Task 8.2.1 "Business Models & Exploitation Route" within WP8. Its objective is to analyse how selected OLGA innovations can be structured into credible business models and exploitation pathways, with a view to supporting post-project deployment, replication and uptake across airport ecosystems.

The deliverable focuses on innovations developed across technical Work Packages (WP2 to WP6). These cover several airport environmental footprint improvement areas, including low-carbon mobility, energy efficiency, waste valorisation, Sustainable Aviation Fuels (SAF) traceability, hydrogen-related solutions, and air quality monitoring and modelling. However, the level of information available for each innovation varies significantly. Some Business Model Canvas templates were detailed and sufficiently mature to support an in-depth analysis, while others remained partial, preliminary or more focused on technical demonstration than on business model structuring.

For this reason, the deliverable does not aim to provide a full commercial assessment of all OLGA innovations. Rather, it analyses the quality, completeness and exploitation relevance of the business model information collected through the Business Model Canvas (BMC) templates. The assessment therefore focuses on the extent to which each BMC allows the identification of value creation, value delivery and value capture mechanisms, as well as concrete benefits, target users, costs, partnerships, deployment conditions and remaining gaps.

The methodology applied combines three complementary layers:

1. Each BMC was assessed block-by-block, using criteria such as clarity, consistency, originality and feasibility.
2. A cross-cutting evaluation was conducted to assess broader exploitation potential, including market relevance, scalability, strategic alignment, cost-benefit logic, time to market and sustainability impact.
3. SWOT analyses were used to contextualise the results, identify risks and limitations, and clarify the conditions under which each model could realistically move forward.

The analysis shows that OLGA innovations do not follow a single exploitation pathway. Three main categories emerge:

- 1) Market-oriented solutions with short to mid-term commercialisation potential
- 2) Hybrid or ecosystem-based solutions requiring coordinated deployment
- 3) Structuring or methodological solutions with high strategic value but limited direct revenue logic.

Indeed, some solutions, such as SAF traceability, display a relatively mature and structured market-oriented logic, with clear customer segments, revenue streams and regulatory relevance. Other solutions, such as APU substitution or innovative lighting systems, create value mainly through operational efficiency, cost reduction and environmental benefits, rather than through direct revenue



generation. Hydrogen-related solutions show strong strategic alignment with EU environmental transition objectives, but remain highly dependent on infrastructure investment, regulatory approvals, safety requirements and future demand. Other models, such as *BiodiversIT* or waste reduction initiatives, create value through methodological, institutional or behavioural change, even when their commercial logic remains limited or indirect.

This diversity demonstrates that "successful business models" in OLGA cannot be understood only through immediate commercialisation or revenue generation. In several cases, success also lies in improving operational efficiency, reducing emissions, supporting regulatory compliance, structuring new value chains, enabling replication, or preparing future markets. The notion of "benefits" is therefore central to the analysis. For each model, the deliverable seeks to clarify who benefits, what changes concretely, and why this matters from an operational, economic, environmental or strategic perspective.

The deliverable also highlights important limitations. The analysis is constrained by the heterogeneity of the BMC completed, the uneven maturity of innovations, and the fact that some solutions are still at feasibility, pilot or pre-commercial stages. In particular, hydrogen and waste-to-biofuel pathways remain highly relevant for airport environmental performance, but their exploitation potential must be interpreted cautiously due to regulatory uncertainty, high CAPEX requirements, infrastructure dependencies and still-evolving commercial conditions.

Overall, D8.4 contributes to the objectives of WP8 by moving beyond isolated technical demonstrations and providing a structured interpretation of exploitation potential across OLGA innovations. It supports the identification of promising models, the clarification of deployment barriers, and the preparation of differentiated post-OLGA exploitation pathways. It also provides inputs for WP8.4 training and capacity-building activities, particularly by helping partners and airport stakeholders better understand how technical results can be translated into usable, transferable and strategically relevant business models.

In this sense, the deliverable contributes to OLGA's broader ambition: ensuring that EU-funded airport sustainability innovations do not remain limited to project-level experimentation, but can inform future deployment, replication and decision-making across European airport ecosystems.

2 Strategic context and purpose

2.1 OLGA's contribution to airport environmental performance

Airports are complex ecosystems where multiple actors (airlines, ground handlers, mobility providers, fuel suppliers and infrastructure operators) interact daily. Decarbonising such environments therefore



requires not only technological innovation, but also structural transformations of energy systems, mobility patterns and operational processes.

Within this context, OLGA develops and demonstrates a portfolio of environmental performance solutions across its technical Work Packages 2 to 6. These include:

- Hydrogen-based applications and infrastructure
- Sustainable Aviation Fuel (SAF) traceability and integration
- Waste-to-biofuel valorisation pathways
- Low-carbon landside mobility solutions
- Operational decarbonisation measures such as APU substitution and low-carbon ground operations
- Energy-efficiency solutions, including terminal innovative lighting and smart energy management systems
- Air quality monitoring and emission reduction tools

These innovations aim to reduce greenhouse gas emissions at airport level while improving operational efficiency and environmental performance [5][1].

However, technological demonstration alone does not guarantee long-term impact. For OLGA results to contribute effectively to climate neutrality objectives [3][4], they must be structured into *viable and transferable business models*. This is precisely where WP8.2.1 plays a role.

2.2 Role of task 8.2.1 in supporting exploitation

Task 8.2.1 ("Business Models & Exploitation Route") bridges the gap between technological demonstration and real-scale deployment.

While technical WPs assess performance, feasibility and the technological readiness level (TRL) [2] progression, Task 8.2.1 focuses on exploitation logic:

- Who benefits from each innovation?
- What concrete value is created?
- Under which conditions can the solution be replicated?
- What barriers may hinder deployment?
- What type of business model supports long-term sustainability?

The objective is therefore not to re-evaluate technical performance, but to analyse the capacity of OLGA innovations to generate economic, environmental and/or strategic value, to attract investment or institutional support, to be transferred to other European/ worldwide airports, to contribute to scalable environmental performance pathways.

This task contributes directly to ensuring that OLGA outcomes do not remain isolated demonstrators, but evolve into structured exploitation trajectories.



2.3 Objective of deliverable 8.4: from demonstration to deployment

Deliverable 8.4 synthesises the analytical work carried out under Task 8.2.1. Its purpose is to illustrate and assess the most relevant business models developed within OLGA, covering innovations related to mobility optimisation, operational airport decarbonisation, energy efficiency, sustainable fuels (SAF and waste-to-biofuel), hydrogen deployment, and air quality management.

The deliverable aims to:

- Clarify how value is created, delivered and captured
- Identify the concrete benefits generated for different stakeholders
- Distinguish technological maturity from market relevance
- Categorise exploitation pathways
- Highlight enabling conditions and remaining barriers
- Demonstrate the added value of EU funding in structuring these models

D8.4 is therefore positioned as a strategic document that supports replication across European airports, alignment with EU climate and Green Deal objectives, informed decision-making for post-OLGA deployment, and capacity-building activities under WP8.4 on **Training to support the exploitation of OLGA results**.

In doing so, it contributes to strengthening the long-term impact of OLGA beyond the project's lifetime.

3 What "successful business models" means in OLGA

3.1 Beyond technological maturity: from TRL to exploitation logic

In innovation projects, technological maturity is commonly assessed through the Technology Readiness Level (TRL) scale. While TRL provides an essential indication of technical feasibility and demonstration progress, it does not in itself guarantee deployability, scalability, or economic sustainability.

A solution may reach a high TRL while still lacking a clear exploitation pathway. In particular, technical robustness does not automatically imply the existence of a defined customer segment, a viable revenue structure, a coherent partnership ecosystem, or an economically sustainable operating model. In other words, technological maturity does not equate to market relevance.



Within OLGA, the notion of a "successful business model" therefore goes beyond the level of technical readiness. It refers to the capacity of an innovation to articulate a coherent logic of value creation, delivery and capture [9], and to demonstrate credible conditions for deployment in real airport environments.

Task 8.2.1 attempts precisely to address this gap. Its purpose is not to reassess technical performance (which is covered by the technical work packages and WP8.3 on Technology Transfer), but to analyse whether and how OLGA innovations can transition from demonstrators to structured exploitation trajectories. The central analytical shift introduced by this task is therefore from the question "Can the technology function?" to the more strategic question: under what conditions can this innovation create sustained value and be implemented beyond the project?

This perspective is essential to ensure that OLGA outcomes contribute meaningfully to long-term airport environmental transition rather than remaining isolated pilot experiences.

3.2 Clarifying the concept of "benefits"

A core analytical concept in this deliverable is the notion of "benefits". The term is used deliberately to avoid a narrow focus on revenues or financial returns [7].

In the context of business models, benefits refer to the positive and measurable outcomes generated by an innovation for specific stakeholders. These outcomes may be economic, operational, environmental or strategic in nature.

It is important to distinguish clearly between features and benefits: a feature describes the technical characteristics or functionalities of a solution. A benefit, by contrast, describes the concrete change that occurs as a result of the solution's implementation.

For instance, installing hydrogen refuelling infrastructure is a feature. The associated benefits may include a reduction in direct fossil fuel consumption for ground operations, improved compliance with regulatory climate targets, enhanced environmental reputation through reduced emissions, or long-term operational cost optimization. The benefit therefore lies not in the infrastructure, or intervention itself, but in the change it produces.

In OLGA, benefits may concern multiple categories of actors, including owners and users of the solution, entities responsible for financing or purchasing it, strategic partners, the airport organisation itself, and society at large through environmental impact. A rigorous business model analysis must therefore clarify who benefits, what changes as a consequence of the innovation, and why this change matters in economic, social, environmental, or strategic terms.



Whenever possible, benefits should be expressed in operational or measurable terms. Statements such as "improves efficiency" remain too generic to support exploitation decisions. A more robust formulation would specify, for example, the magnitude of operational gains, emission reductions, cost savings or revenue enhancements. This degree of precision strengthens analytical credibility and supports decision-making regarding deployment and investment.

3.3 Scope and analytical boundaries

This deliverable provides a structured assessment of the business models developed within OLGA and evaluates their potential for exploitation and replication. It aims to clarify how value is created, delivered and potentially captured, and to identify enabling conditions and barriers to implementation.

It does not constitute a full Cost-Benefit Analysis, nor does it replace the technical performance assessments conducted within the relevant work packages. Similarly, it does not claim to predict or guarantee the commercial success of any specific innovation. Rather, D8.4 offers a **strategic and analytical framework** that supports informed prioritisation, identifies differentiated exploitation pathways, and provides guidance for post-OLGA implementation. It also contributes to broader project objectives, including alignment with WP8.4 capacity-building activities and the positioning of OLGA outcomes within the wider European environmental performance landscape.

By clarifying what constitutes a "successful" business model in this specific context, this section establishes the conceptual foundation for the **methodological framework** and detailed assessments that follow.

4 Methodological framework

4.1 Rationale for the analytical approach

Given the diversity of the solutions developed across WP2 to WP6 and the heterogeneity in the level of detail and maturity of BMCs inputs collected, a structured and comparable analytical approach was required.

The challenge was not only to describe individual business models, but to assess, in a consistent manner, the extent to which the available BMC information allows the identification of credible exploitation pathways.



The methodological approach adopted in this deliverable combines three complementary layers of analysis:

- 1 A structured assessment based on the Business Model Canvas
- 2 A set of cross-cutting evaluation criteria addressing market, strategic and operational dimensions
- 3 A complementary SWOT analysis to capture contextual risks and opportunities.

This layered approach allows the analysis to move beyond a purely descriptive presentation of business models and to provide a structured interpretation of their strengths, limitations and potential for deployment.

4.2 The Business Model Canvas as a structuring tool

The BMC [6] was selected as the primary analytical reference framework. Its relevance lies in its capacity to synthesise, on a single page, the core elements of value creation, delivery and capture.

The BMC enables the identification of:

- Customer segments
- Value propositions
- Channels and customer relationships
- Revenue streams
- Key resources, activities and partnerships
- Cost structure



Business Model Canvas

Designed for: Startup Name

Designed by: Name1,
Name2, ...

Date: DD/MM/YYYY

Version: X.Y

Key Partners	Key Activities	Value Propositions	Customer Relationships	Customer Segments
Who are our Key Partners? Who are our key suppliers? Which Key Resources are we acquiring from partners? Which Key Activities do partners perform? MOTIVATIONS FOR PARTNERSHIPS: Optimization and economy, Reduction of risk and uncertainty, Acquisition of particular resources and activities	What Key Activities do our Value Propositions require? Our Distribution Channels? Customer Relationships? Revenue streams? CATEGORIES: Production, Problem Solving, Platform/Network	What value do we deliver to the customer? Which one of our customer's problems are we helping to solve? What bundles of products and services are we offering to each Customer Segment? Which customer needs are we satisfying? CHARACTERISTICS: Newness, Performance, Customization, "Getting the Job Done", Design, Brand/Status, Price, Cost Reduction, Risk Reduction, Accessibility, Convenience/Usability	What type of relationship does each of our Customer Segments expect us to establish and maintain with them? Which ones have we established? How are they integrated with the rest of our business model? How costly are they?	For whom are we creating value? Who are our most important customers? Is our customer base a Mass Market, Niche Market, Segmented, Diversified, Multi-sided Platform
	Key Resources What Key Resources do our Value Propositions require? Our Distribution Channels? Customer Relationships Revenue Streams? TYPES OF RESOURCES: Physical, Intellectual (brand patents, copyrights, data), Human, Financial		Channels Through which Channels do our Customer Segments want to be reached? How are we reaching them now? How are our Channels integrated? Which ones work best? Which ones are most cost-efficient? How are we integrating them with customer routines?	
Cost Structure What are the most important costs inherent in our business model? Which Key Resources are most expensive? Which Key Activities are most expensive? IS YOUR BUSINESS MORE: Cost Driven (leanest cost structure, low price value proposition, maximum automation, extensive outsourcing), Value Driven (focused on value creation, premium value proposition). SAMPLE CHARACTERISTICS: Fixed Costs (salaries, rents, utilities), Variable costs, Economies of scale, Economies of scope		Revenue Streams For what value are our customers really willing to pay? For what do they currently pay? How are they currently paying? How would they prefer to pay? How much does each Revenue Stream contribute to overall revenues? TYPES: Asset sale, Usage fee, Subscription Fees, Lending/Renting/Leasing, Licensing, Brokerage fees, Advertising FIXED PRICING: List Price, Product feature dependent, Customer segment dependent, Volume dependent DYNAMIC PRICING: Negotiation (bargaining), Yield Management, Real-time-Market		

Designed by: The Business Model Foundry (www.businessmodelgeneration.com/canvas). PowerPoint implementation by: Neos Chronos Limited (<https://neoschronos.com>). License: CC-BY-SA 3.0

In the context of OLGA, the BMC serves two main purposes. Firstly, it provides a common language across Work Packages, facilitating comparison between innovations that differ significantly in technical scope and maturity. Secondly, it forces a systemic view of each innovation by linking operational logic with economic sustainability. This helps to reveal potential inconsistencies, gaps in revenue logic, overextended customer targeting, or unrealistic resource assumptions.

However, the BMC remains a simplified representation. It does not fully reflect regulatory constraints, institutional dynamics, investment risks or long-term infrastructure dependencies. For this reason, it was complemented by additional evaluation layers.



4.3 Data collection process

The data collection process constitutes a central component of the methodological framework, as the analysis carried out in this deliverable is directly based on the BMC templates provided by partners across the technical Work Packages.

TABLE 1. OVERVIEW OF BUSINESS MODEL CANVAS (BMC) TEMPLATES COLLECTED UNDER TASK 8.2.1

WP	TASK	INNOVATION
WP2	2.2	MULTIMODALITY AND TRAFFIC FLOW OPTIMISATION
WP3	3.1	BIODIESEL 100% FOR HEAVY-DUTY VEHICLES
WP3	3.2	LOW-CARBON AIRSIDE GSE
WP3	3.3	LOW-CARBON AIRSIDE MOBILITY INFRASTRUCTURE
WP3	3.6	APU SUBSTITUTION
WP4	4.1.1	DYNAMIC APRON LIGHTING
WP4	4.1.2	TERMINAL INNOVATIVE LIGHTING
WP4	4.1.3	PASSENGER PRE-BOARDING BRIDGE OPTIMISATION
WP4	4.3	BIODIVERSIT
WP4	4.4	WASTE REDUCTION



WP5	5.1	WASTE VALORISATION TOWARDS BIOFUELS
WP5	5.3	GREEN H ₂ PRODUCTION & USAGE
WP5	5.5	SAF TRACEABILITY
WP6	6.1.4	INTEGRATED AIRPORT AIR QUALITY EMISSION AND MODELLING TOOL
WP6	6.3.2	AIRPORT MARKETPLACE

In total, 15 BMC templates were collected across WP2 to WP6, covering mobility, operational decarbonisation, energy efficiency, sustainable fuels, hydrogen and air quality solutions.

The process was conducted in several stages, aligned with the overall timeline of the OLGA project and the progression of technical developments.

The first phase took place in Month 46 (July 2025), with the formal introduction of the methodology. During this stage, the objectives of Task 8.2.1, the expected outputs for Deliverable 8.4, and the rationale for using the BMC were presented to the relevant Work Package leaders and task contributors. A standardised BMC template was then distributed to the selected tasks across WP2 to WP6, following prior identification through Stage Gate Reviews conducted within WP8.3.1. This initial step aimed to ensure a shared understanding of the exercise and to allow partners sufficient time to familiarise themselves with the framework during the summer period.

A first progress check was conducted in Month 48 (September 2025), allowing the coordination team to assess the level of completion of the BMC templates and to identify initial gaps in terms of clarity, coherence or missing information.

Between Months 49 and 52, the data collection phase was actively supported through follow-up actions, including reminders, bilateral exchanges and dedicated discussions with partners. These interactions aimed to clarify expectations, support the completion of the templates, and progressively refine the level of detail provided in the BMCs.

A further consolidation phase took place between Months 53 and 55 (February to April 2026). During this period, the analytical framework was refined through exchanges with other Horizon 2020 airport environmental performance projects, namely with STARGATE (one of our sister projects), that also explored exploitation pathways, replication strategies and business model development for airport



sustainability solutions. These exchanges helped strengthen the assessment framework and ensure that the evaluation criteria remained both robust and accessible to the wider airport community. At the same time, the completeness and usability of the collected BMCs were reviewed in order to identify those suitable for more in-depth analysis.

Across these different stages, the data collection process resulted in a heterogeneous set of BMC templates. While some provided detailed and structured information on value proposition, stakeholders, cost structure and exploitation logic, others remained partial, with missing or insufficiently developed elements.

This heterogeneity was explicitly taken into account in the analytical approach. Rather than applying a uniform level of analysis to all inputs, the deliverable differentiates between:

- BMCs that are sufficiently complete to support a structured assessment, and
- Those that provide partial insights but require further development.

This approach ensures both analytical rigour and transparency, by grounding the assessment in the actual level of information available.

Finally, the data collection process also highlights an important methodological limitation: the quality and depth of the analysis are directly dependent on the information provided by partners. Where data remains incomplete, this is explicitly acknowledged in the deliverable and identified as a point for further development in the context of exploitation and replication activities.

4.4 Block-by-block assessment criteria

The block-by-block assessment was conducted after the main data collection phase, between M53 and M55.

Each BMC was analysed at the level of its internal coherence and clarity based on the information provided by Task Leaders.

The evaluation considered whether:

- The value proposition was clearly articulated and aligned with identified customer segments
- The revenue logic was plausible and consistent with the proposed benefits
- The required resources and partnerships were realistic
- The overall structure demonstrated internal consistency

To ensure comparability across innovations, four core criteria were applied:

- Clarity of information provided
- Coherence between the different building blocks
- Degree of disruption or originality
- Feasibility given the technological, organisational and regulatory context



4.5 Cross-cutting evaluation criteria

Following the block-by-block assessment, a second layer of analysis was applied between M53 and M55 to evaluate the broader exploitation potential of each innovation.

This cross-cutting assessment aimed to move beyond internal coherence and assess the positioning of each innovation in relation to market, strategic and operational dimensions.

The evaluation criteria included:

- Market potential and demand relevance
- Strategic alignment with EU climate and Green Deal objectives
- Scalability and replication potential across airports
- Cost-benefit logic and economic plausibility
- Time-to-market considerations
- Competitive positioning
- Environmental and societal impact.

This second analytical layer allowed for differentiation between technically robust solutions that may remain context-dependent, and those capable of broader deployment within European airport ecosystems.

4.6 Complementary SWOT analysis

A complementary SWOT analysis was conducted between M53 and M55 for the selected innovations.

The SWOT was used as a synthesis tool to support the interpretation of the Business Model Canvas and the cross-cutting assessment. More specifically, it helped explain why an innovation was assessed in a certain way, highlight where the analysis was robust or where gaps remained, and identify missing or uncertain information.

It also provided additional insight into the internal strengths and limitations of each business model, as well as external opportunities and threats that could influence future exploitation and replication. This step contributed to grounding the assessment in the actual information available and to ensuring a balanced interpretation of the selected business models.



4.7 Selection logic and analytical boundaries

Given the number of innovations analysed (15 BMCs), and the heterogeneity of available data, a selection process was necessary for detailed analysis.

The selection was conducted between M53 and M55 and resulted in a shortlist of 5 to 6 innovations for an in-depth analysis.

The selection criteria included:

- Completeness and coherence of the BMC
- Relevance to the energy value chain and project objectives
- Degree of technological and operational maturity
- Potential contribution to airport environmental performance
- Replication potential across European airports.

For example, innovations such as Sustainable aviation fuels traceability (WP5.5) and the Integrated Airport Air Quality Emission and Modelling Tool (WP6.1.4) provided relatively complete BMCs, with clearly identified stakeholders, value propositions and exploitation pathways, whereas other solutions, like Green H2 Production & Usage (WP5.3) relied on less mature exploitation assumptions or contained more limited information regarding customer segments, revenue mechanisms or deployment conditions. These innovations were not excluded from the portfolio assessment but were not prioritised for in-depth analysis. This approach ensured analytical robustness while maintaining transparency regarding limitations.

4.8 Methodological contributions to WP8 objectives

The methodological framework developed under Task 8.2.1 ensures that the deliverable goes beyond documentation. It supports exploitation-oriented analysis.

By combining structured BMC analysis, transversal criteria and SWOT evaluation, the approach enables:

- Identification of differentiated exploitation pathways
- Prioritisation of high-potential solutions
- Clarification of enabling conditions and barriers
- Preparation of inputs for WP8.4 capacity-building activities, focussed on training and developing an entrepreneurial mindset for SMEs and start-ups.

This methodological robustness underpins the strategic conclusions presented in the following sections.



5 Overview of OLGA innovations and selection rationale

5.1 Mapping of solutions across technical work packages (WP2 to WP6)

OLGA has developed a diverse portfolio of innovations across its technical work packages (WP2–WP6), addressing multiple dimensions of airport decarbonization. These include low-carbon landside mobility and multimodality, traffic flow optimisation and Mobility-as-a-Service approaches (WP2); low-carbon Ground Support Equipment, APU substitution and airside infrastructure (WP3); terminal lighting optimisation, biodiversity management tools and waste reduction measures (WP4); hydrogen production and usage, Sustainable Aviation Fuel (SAF) traceability and waste-to-biofuel valorisation pathways (WP5); and air quality monitoring systems, environmental modelling tools and digital platforms (WP6).

Given this diversity, the first step of Task 8.2.1 consisted in mapping all innovations for which a BMC was submitted, providing a structured overview of their thematic coverage, technological maturity, degree of operational testing, and completeness of business model documentation, thereby ensuring that the subsequent analysis was grounded in a comprehensive understanding of the project's innovation landscape. The information was also taken from WP8.3.1 on Stage-Gate reviews on several technologies.

5.2 Status of Business Model Canvas collection

The BMC collection process, conducted between M46 and M52, revealed a heterogeneous dataset in terms of completeness, level of detail and degree of exploitation maturity.

While all selected tasks contributed to the process, the level of structuration of the BMCs varied significantly depending on:

- The maturity of the innovation, including TRL
- The availability of exploitation-related information
- The extent to which business model thinking had already been integrated within each task.

In several cases, particularly for more advanced or application-oriented solutions, the BMCs provided a relatively structured view of the business model. For instance:

- SAF traceability (WP5.5) presents a clear value proposition aligned with regulatory developments and identifiable stakeholders
- Air quality platforms (WP6.1) demonstrate structured thinking in terms of deployment, partnerships, and potential users.



By contrast, other solutions exhibited a less developed business model logic at this stage. This is notably the case for:

- Green H2 production & usage (storage & distribution) (WP5.3), where deployment remains highly dependent on external infrastructure and regulatory evolution
- IT solution for multimodality and traffic flow optimization (WP2.2), where the operational value is clear (efficiency gains, reduced congestion), but where value capture mechanisms are embedded within airport operations rather than structured as standalone revenue models
- APU substitution (WP3.6), where environmental benefits are evident, but where economic incentives and cost-sharing mechanisms remain less clearly defined in the current analysis.

This heterogeneity does not reflect differences in the intrinsic value of the innovations, but rather the stage of development of their exploitation logic.

Recognising this variation was an important step in ensuring analytical rigour. A uniform evaluation of all innovations, regardless of data availability, would have risked producing superficial or misleading conclusions.

5.3 Selection criteria for detailed analysis

Given the total number of innovations (15) and the uneven level of BMC maturity, a prioritisation process was required to ensure a robust and meaningful in-depth analysis.

Conducted between M53 and M55, the selection relied on a combination of methodological and operational criteria, resulting in a shortlist of 6 innovations.

- Firstly, the completeness and internal coherence of the BMC was a key factor. Only innovations with sufficiently structured information, including a defined value proposition, identified stakeholders, and an initial exploitation logic, were retained for detailed analysis. Secondly, alignment with OLGA's strategic priorities, particularly the energy value chain, was considered.
- Thirdly, the level of exploitation maturity was assessed, prioritising innovations that had moved beyond purely technical validation and demonstrated initial reflection on deployment conditions.
- Finally, replication potential and operational relevance were taken into account.

In practice, this led to prioritising innovations such as:

- SAF traceability (WP5.5), which combines regulatory relevance and structured business logic
- Air quality platforms (WP6.1), which present strong operational applicability and scalability.



Conversely, certain innovations such as hydrogen deployment (WP5.3) or traffic flow optimisation (WP2.2) were not systematically prioritised for in-depth analysis. However, IT solution for multimodality and traffic flow optimization (WP2.2), although not complete in terms of information provided, presents a high potential for exploitation and replicability, particularly as it extends beyond the aviation sector.

In the case of hydrogen-related developments, the business model remains strongly dependent on external conditions, including regulatory frameworks and infrastructure deployment, which limits the level of structuration of key elements such as revenue logic or cost allocation at this stage.

Similarly, mobility-related solutions such as traffic flow optimisation demonstrate clear operational value, but the associated value capture mechanisms remain less explicit, as benefits are embedded within broader airport operations rather than structured as standalone business models.

As a result, while these innovations are highly relevant from a sustainability perspective, their current level of business model maturity limits the depth of analysis that can be conducted within this deliverable.

It is important to emphasize that this selection does not constitute a ranking of innovations, but reflects the level of availability and robustness of business model information currently collected within OLGA project.

➔ Given the 15 BMCs collected and the uneven level of maturity of the information provided, a selection process was required to support a meaningful in-depth analysis.

Conducted between M53 and M55, this process led to a shortlist of six innovations. The objective was not to identify the "best" innovations, but to select representative cases illustrating different exploitation pathways across the OLGA portfolio.

The selection was based on:

- The completeness and coherence of the BMC
- The clarity of the value proposition and stakeholder logic
- The relevance of the innovation for airport decarbonization
- The level of exploitation maturity
- The replication potential across airport contexts
- The representativeness of the case within the overall portfolio.

For example, SAF Traceability (WP5.5) and the Integrated Airport Air Quality Emission and Modelling Tool (WP6.1.4) were selected because they provided structured business model information, clearly identified stakeholders and credible exploitation perspectives.



Other innovations were retained because they illustrate important airport environmental performance challenges and offer strong replication potential. This is notably the case for Multimodality and Traffic Flow Optimisation (WP2.2), APU Substitution (WP3.6), Terminal Innovative Lighting (WP4.1.2) and Waste Reduction (WP4.4).

The selected cases therefore combine methodological robustness, operational relevance and portfolio representativeness, providing a balanced basis for the detailed assessment presented in the following sections.

5.4 Justification of selected case studies

The selection ensures consistency between the level of available data and the depth of analysis. Only sufficiently structured BMCs were analysed in detail, while others were considered more descriptively.

This approach avoids overinterpretation and ensures that conclusions remain evidence-based.

The selected cases are analysed in detail in the following section, using a consistent framework.

5.5 Framework for the analysis of selected business model Purpose and reading guide

This section introduces the analytical framework used to assess the six selected business models. Its purpose is not to describe the technical solutions in detail, but to explain how the information contained in each BMC is interpreted from an exploitation perspective.

Each selected case is therefore analysed through the same reading grid, in order to ensure consistency across innovations while acknowledging differences in maturity, stakeholders and deployment pathways.

The assessment focuses on 3 dimensions:

- 1) The internal logic of value creation, delivery and capture, as reflected in the BMC
- 2) The concrete benefits generated for users, partners, airport operators or wider stakeholders
- 3) The feasibility of exploitation and replication, including strengths, risks, gaps and external dependencies.



5.6 Analytical structure applied to each selected innovation

- 1) Innovation overview and context
- 2) Business Model Canvas synthesis
- 3) Benefit analysis: who benefits, what changes, and why it matters
- 4) Key strengths, risks and gaps
- 5) Exploitation and replication potential

5.7 Ensuring consistency across cases

This structure provides a common basis for comparing selected innovations without reducing them to the same exploitation logic. It also ensures that the discussion remains grounded in the BMC information collected, while making visible the specific contribution, limitations and replication potential of each case.

However, it is important to note that this assessment is based on the information available through the collected BMCs and project documentation at the time of drafting. Where information remains incomplete, the deliverable makes this explicit and identifies it as a follow-up requirement for partners.

This common structure also supports the discussion developed in Section 8, where the selected BMCs are interpreted in terms of exploitation and replication potential.

6. Typology of exploitation pathways

6.1 Rationale for developing a typology

The assessment of OLGA business models reveals that innovations do not converge toward a single exploitation trajectory. While all solutions contribute to airport environmental transition, their pathways to deployment, replication and value capture differ significantly.

Developing a typology serves two main purposes. First, it allows the portfolio of innovations to be interpreted in a structured manner, rather than as a collection of independent cases. Second, it supports strategic prioritisation by clarifying which solutions are ready for near-term deployment, which require ecosystem coordination, and which primarily generate long-term structural value.

The typology presented below is not a ranking. It reflects differentiated exploitation logics emerging from the analysis conducted under Task 8.2.1.



6.2 Category 1: Market oriented and deployment-ready models

The first category includes innovations that demonstrate a relatively clear value proposition, identifiable beneficiaries, and a plausible economic logic.

These models are characterised by:

- Clearly defined customer or user segments
- A coherent revenue or financing mechanism
- Operational feasibility within an airport environment
- Limited dependency on systemic regulatory transformation

In these cases, the pathway from demonstration to deployment is relatively direct. Further steps may include scaling, contractual consolidation, or minor regulatory alignment, but the business model logic is already sufficiently articulated to support market positioning.

Such models are particularly relevant for short to medium term replication across European airports. However, even within this category, deployment may still depend on investment decisions, procurement processes or operational alignment at airport level. Examples from the 15 selected BMCs include SAF Traceability (WP5.5), the Integrated Airport Air Quality Emission and Modelling Tool (WP6.1.4) and Terminal Innovative Lighting (WP4.1.2). SAF Traceability illustrates a model driven by regulatory alignment and traceability needs; the air quality tool reflects a service-oriented model with potential users among airports and public authorities; and terminal lighting illustrates a more operational model, where value is mainly created through energy savings, improved passenger experience and reduced operational costs.

6.3 Category 2: Hybrid and ecosystem-dependent models

The second category includes innovations whose success depends not only on their internal business logic, but also on coordinated action among multiple stakeholders.

These models are characterised by:

- Coordination between airports, airlines, public authorities, service providers or infrastructure operators
- Shared costs and distributed benefits
- Operational integration across existing airport processes
- Enabling conditions such as regulatory support, contractual arrangements or incentive mechanisms.



In such cases, value creation is distributed across several actors, and no single entity fully captures the benefit. Their exploitation therefore depends on stakeholder alignment, governance arrangements and cost-sharing mechanisms, rather than on purely market-driven dynamics.

This category is particularly well illustrated by Multimodality and Traffic Flow Optimisation (WP2.2), APU Substitution (WP3.6) and Waste Reduction (WP4.4). Although these innovations generate clear environmental and operational benefits, their implementation depends on the coordinated involvement of several actors. Multimodality relies on collaboration between airport operators, local authorities and mobility providers. APU substitution requires alignment between airports, airlines and ground service operators. Waste reduction depends on behavioural and organisational changes involving retailers, service providers, passengers and airport management.

These innovations may present high decarbonisation potential, but technical feasibility alone is not sufficient to ensure rapid deployment. Their success depends on the capacity of the airport ecosystem to organise cooperation, distribute responsibilities and align incentives across stakeholders.

6.4 Category 3: Strategic and structuring models

The third category encompasses innovations that may not generate direct or immediate revenue streams, but which create significant strategic, methodological or institutional value.

These models often:

- Improve monitoring, certification or governance mechanisms
- Enhance transparency or traceability
- Structure data flows
- Support regulatory compliance
- Enable future infrastructure development.

Their contribution lies less in direct revenue generation and more in enabling broader environmental transition frameworks.

Examples from the OLGA BMC portfolio include Green H2 Production & Usage (WP5.3), Waste Valorisation towards Biofuels (WP5.1), BiodiversIT (WP4.3) and the Airport Marketplace (WP6.3.2). Green hydrogen and waste-to-biofuel pathways are strategically important for long-term environmental performance but remain dependent on infrastructure, regulatory and market developments. BiodiversIT and the Airport Marketplace illustrate more structuring approaches, where value is created through data, knowledge sharing, environmental management and future replication potential.



Although these models may appear less commercially oriented, their long-term impact can be substantial. They may reduce risk for future investments, increase system efficiency, strengthen environmental credibility, or prepare airports for future regulatory requirements. Recognising this category is essential to avoid equating “success” exclusively with immediate revenue generation.

6.5 Strategic interpretation of the typology

The typology highlights that OLGA contributes to airport environmental performance through a diversified portfolio of exploitation logics.

Some innovations are positioned for relatively near-term deployment. Others require coordinated ecosystem transformation. Still others build the institutional and operational foundations necessary for long-term climate neutrality.

This diversity should be interpreted as a strength rather than a limitation. It reflects the complexity of airport sustainability and the need for multi-layered intervention strategies.

From a strategic perspective, the typology supports:

- Prioritizing high-impact deployment cases
- Identifying solutions requiring further policy support
- Articulating differentiated post-OLGA exploitation strategies

It also provides a structured basis for the assessment of the added value of EU funding, addressed in the following section.

7. Added value of EU funding

EU funding enabled OLGA to move beyond isolated technical demonstrations by structuring a shared exploitation approach across airports and work packages. Through WP8.2.1, the project does not only document innovations, but clarifies how they can create, deliver and capture value in real airport settings.

Firstly, the EU framework made it possible to test and discuss solutions in operational contexts (lighthouse and fellow airports), which strengthens replication readiness and highlights what is transferable versus context dependent.



Secondly, by supporting early-stage validation and by making key business assumptions explicit (beneficiaries, costs, governance needs, adoption conditions) the EU funding contributes to de-risking. The BMC analysis, complemented by transversal criteria and SWOT analysis, helps reduce uncertainty for future adopters by identifying gaps and enabling conditions.

Finally, OLGA provides a structured link between innovation outcomes and EU climate objectives [3][4] by focusing on major airport environmental performance levers (energy value chain, low-carbon mobility, air quality) and by translating technical results into actionable exploitation pathways. This work also feeds WP8.4 capacity-building activities, supporting uptake beyond the project lifetime.

8. Discussion on BMC, cross-cutting exploitation & replication perspectives

8.1 Discussion on selected BMCs

8.1.1 WP2.2 - IT solution for multimodality and traffic flow optimization

While the D8.4 illustrates the data of 15 BMC illustrated in Annex A, there is a need to understand the relevance of this information to D8.4. Thus, the BMC related to WP2.2 is discussed below, to better understand the relevance of all 9 blocks. The selection of this example explains the airport-city decarbonization potential, so such a BMC is highly replicable.

In general terms for an IT Solution for Multimodality and Traffic Flow Optimization, the Business Model Canvas (BMC) focuses on a digital platform that integrates different transport modes (public transport, ride-sharing, micro-mobility, airport shuttles, rail, taxis, EV charging) while optimizing traffic flows through data analytics, AI, and real-time decision support.

For OLGA, the example is related to the Zagreb case study – airport city link through multimodality, and it has fewer input, but essential to shape the BMC.

1. Value proposition

The platform delivers a seamless multimodal journey planning with a single interface.

real-time traffic and transport optimization, while reducing travel time and congestion. This type of mobility is known as lower transport-related emissions through efficient routing. The Zagreb case study shows a data-driven decision support for transport operators and city authorities, while improving airport-city connectivity.



Additionally, it enhances passenger experience and accessibility. It also supports airport operations based on transport demand prediction.

2. Customer Segments

Primary customers are airport operators, Municipal transport authorities, public transport agencies, traffic management centers, Mobility-as-a-Service providers and logistics and freight operators, parking operators.

End users are represented by air passengers, daily commuters, airport employees. As well as tourists and visitors.

Strategic Customers represent smart city initiatives, regional governments and infrastructure developers. It is worth mentioning that Zagreb is one of the 100 Carbon Neutral Smart City, so this BMC is useful for the city itself, and other cities members of this climate network. OLGA partners InfraPlan, University of Zagreb and Zagreb airport, worked together to gather relevant information for this BMC.

3. Channels

Several opportunities may channel the related information: from B2B discussion to mobile applications web-based journey planners and airport digital platforms.

Public transport apps are more and more present in European cities, while smart kiosks at transport hubs, combined with corporate mobility portals may also support this block.

Although the information provided by the Croatian partners in the BMC is few on this block, since we are developing a discussion which aims to be useful, the additional information is gathered from existing public sources and experience from other partners (ADP, COMO).

4. Customer Relationships

Constant improvement of customers operations by utilisation of applicable use-cases on IT solutions (developed in WP2.2) is part of customer relationships block.

Self-service digital platform, subscription-based services, dedicated support for institutional clients are also part of such relationships.

Additionally, real-time notifications and travel alerts, as well as stakeholder co-creation workshops may be added to this block.

5. Revenue Streams

Here, the template filled in by WP2.2 partners indicates reduced environmental impact; increased in the number of airport users (passengers) and replicable solutions.



However, we consider revenue streams as direct and indirect revenue. Thus, Software-as-a-Service (SaaS) subscriptions, *licensing fees* for transport authorities, *enterprise contracts* with airports and API access fees (charged by booking platforms) are direct revenue streams.

Indirect revenue streams refer to data analytics services, mobility marketplace commissions, advertising and location-based services and white-label platform deployment. None of these are part of OLGA's input, but, Public Funding, representing smart city grants, green mobility funds, innovation and digitalization programs are part of revenue streams this BMC partners can benefit from. All 4 airports in OLGA are part of cities engaged with Mission City and decarbonisation, so the aspects described above are of critical importance.

6. Key Resources

Digital assets, data sources, and human resources are the main key resources.

Thus, IT solutions like mobility data platform. AI optimization algorithms, cloud infrastructure and digital twins of transport networks are the main key resources.

Additionally, data sources will include traffic sensors, GPS data, public transport schedules, airport operational data and weather and event information.

Human Resources involve software developers, data scientists, transport planners and cybersecurity specialists

7. Key Activities

The key activities will involve the implementation of *IT solutions for multimodal traffic optimisation*, as well as the establishment of a value chain: data owners, data processors, system integrators, users.

Additionally, real-time data collection and processing, traffic prediction and congestion management, multimodal route optimization, software development and maintenance, integration of transport providers, as well as the user experience improvements will add to the key activities. However, the entire set of activities will need a carbon footprint monitoring, an activity the Fellow airports in OLGA have understood to be important.

8. Key Partnerships

Some analysts consider Key partnership as the first block. However, the order does not impact on understanding how BMC functions.

Airport authorities, data owners, public transport operators, mobility providers, technology companies, telecom operators, local governments, universities and research institutions as well as EV charging operators are key partners for the IT solutions on multimodality.

Examples include collaboration with Google, Microsoft, or Siemens for technology integration, as system integrators and data processors are essential.

9. Cost Structure



Capital Costs and operational cost will define the cost structure.

IT Platform development and implementation, data streams related costs (acquisition, conversion, integration) represent cost structure, cloud infrastructure setup and system integration represent capital costs

Operating Costs are illustrated by software maintenance, data acquisition, cybersecurity, customer support and marketing and stakeholder engagement

The 9th block concludes the structure of a BMC. The illustration above aims to link the information in Annex on data collected in the 15 templates and perception of how to understand it, how to use this information, and how to benefit of such structure as a BMC.

8.1.2 WP3.6 – APU substitution

While the previous example focused on multimodality and traffic flow optimisation, WP3.6 addresses a different aspect of airport decarbonisation: the reduction of emissions generated during aircraft ground operations through the substitution of Auxiliary Power Units (APUs) with fixed electrical infrastructure.

The BMC developed under WP3.6 illustrates how a relatively mature and operational solution can be translated into a structured business model. The example is based on the collaboration between Groupe ADP, Air France and SAS Airport Systems, which worked together to assess the operational, environmental and economic implications of reducing APU usage at airport gates.

1. Value Proposition

The value proposition of the APU substitution solution is centered on the reduction of fuel consumption, CO₂ emissions and noise generated by aircraft during turnaround operations. By replacing APU use with fixed electrical ground power and Pre-Conditioned Air (PCA) systems, airports and airlines can significantly improve their environmental performance while maintaining operational efficiency.

In addition to environmental benefits, the solution contributes to improved working conditions on the apron through reduced noise exposure and emissions. As airports increasingly seek practical environmental performance measures that can be implemented in the short term, APU substitution represents a mature and immediately applicable solution.

2. Customer Segments

The primary customer segments identified in the BMC include airport operators, airlines, PCA service providers and ground handling companies.



Airports benefit from reduced emissions and improved environmental performance, while airlines benefit from lower fuel consumption and operational efficiencies. Ground handling companies and infrastructure providers play an essential role in the implementation and operation of the solution. The involvement of both airport and airline partners within OLGA demonstrates the relevance of this solution across different categories of stakeholders and supports its replication potential.

3. Channels

The channels identified in the BMC are mainly operational and collaborative. Working groups, technical coordination meetings and implementation programmes constitute the primary channels through which the solution is deployed.

For wider exploitation, dissemination may also occur through airport associations, sustainability initiatives, environmental certification programmes and operational best-practice exchanges between airports. Such channels can facilitate knowledge transfer and support the replication of the solution beyond the OLGA project.

4. Customer Relationships

Customer relationships rely on continuous collaboration between airports, airlines and service providers. The successful implementation of APU substitution requires coordinated operational procedures and clear communication between all actors involved in aircraft turnaround operations.

Training activities, operational monitoring and performance reporting also contribute to maintaining stakeholder engagement and ensuring the long-term effectiveness of the solution.

5. Revenue Streams

The BMC identifies customers paying for the solution as the main revenue source. However, the value generated by APU substitution extends beyond direct revenues.

Fuel savings, reduced emissions and lower environmental impacts generate measurable benefits for both airports and airlines. In addition, the solution supports corporate sustainability objectives and may contribute to compliance with increasingly ambitious environmental targets. These elements strengthen the overall business case for implementation.

6. Key Resources

The key resources required for the implementation of APU substitution include PCA systems, fixed electrical infrastructure, operational expertise and maintenance capabilities.

The availability and reliability of this infrastructure are essential for ensuring the successful deployment of the solution. Human resources, including trained operational personnel and maintenance teams, also represent a critical component of the business model.

7. Key Activities



The key activities associated with the solution include the deployment and operation of PCA systems, testing and validation activities, operational monitoring and the continuous optimisation of ground procedures.

Within OLGA, these activities also involved assessing the influence of operational and weather conditions on the effectiveness of APU substitution. Such activities contribute to transforming a technically proven concept into a scalable operational practice.

8. Key Partnerships

Partnerships constitute a central element of this business model. The collaboration between Groupe ADP, Air France and SAS Airport Systems illustrates the need for close coordination between airport operators, airlines and technology providers.

Additional partnerships may involve infrastructure suppliers, airport associations and other stakeholders supporting airports' sustainability efforts. The effectiveness of the solution depends largely on the ability of these actors to align operational objectives and implementation strategies.

9. Cost Structure

The cost structure is mainly associated with infrastructure investments, including PCA systems, fixed electrical equipment, installation works and maintenance activities.

Additional costs may arise from staff training, operational integration and system monitoring. Nevertheless, these investments can be partially offset through fuel savings, environmental benefits and improved operational efficiency over time.

The BMC developed for WP3.6 demonstrates that APU substitution is not only an environmental solution but also an operationally feasible approach that can support airport decarbonisation strategies. Its maturity, clear value proposition and strong alignment with airport sustainability objectives make it a relevant candidate for replication across airports equipped with the necessary ground infrastructure.

8.1.3 WP4.1.2 – Terminal Innovative Lighting

WP4.1.2 focuses on the deployment of innovative lighting solutions within airport terminals. Unlike operational decarbonisation measures targeting aircraft or ground operations, this innovation addresses energy efficiency within airport infrastructure while simultaneously improving passenger experience and terminal attractiveness.

The BMC developed for this task illustrates how a relatively simple technological solution can generate environmental, operational and economic benefits. The OLGA demonstration explores the integration of innovative lighting systems capable of reducing energy consumption while contributing to terminal comfort and architectural enhancement.



1. Value Proposition

The value proposition of the innovative lighting solution is based on the reduction of energy consumption, lower maintenance requirements and improved passenger experience.

According to the BMC, energy savings may reach between 30% and 50% compared to conventional lighting systems. In addition to environmental benefits, the solution contributes to creating more attractive and comfortable terminal environments through improved lighting quality and architectural integration. This combination of sustainability and passenger experience strengthens the attractiveness of the solution for airport operators.

2. Customer Segments

The primary customer segment consists of airport operators and infrastructure owners seeking to improve the environmental performance of terminal buildings.

Additional beneficiaries include passengers, who benefit from enhanced comfort and visual experience, as well as facility management teams responsible for the operation and maintenance of terminal infrastructure. The solution is particularly relevant for airports planning terminal renovation projects or the development of new infrastructure.

3. Channels

The deployment of innovative lighting systems is mainly achieved through infrastructure development projects, renovation programmes and procurement procedures.

In addition, dissemination may occur through airport sustainability initiatives, industry events and exchanges of best practices among airport operators. As many airports are currently pursuing energy efficiency strategies, these channels provide opportunities for wider replication beyond OLGA.

4. Customer Relationships

Customer relationships are primarily based on long-term collaboration between airport operators, lighting designers, technology providers and maintenance teams.

Given the lifespan of lighting infrastructure, relationships are generally characterised by continuous support, performance monitoring and maintenance services. The successful deployment of such systems therefore relies on close cooperation throughout the entire project lifecycle.

5. Revenue Streams

The BMC identifies energy savings and reduced maintenance costs as the main sources of economic value.

Rather than generating direct revenues, the solution creates value through operational cost reductions and improved resource efficiency. These savings contribute to strengthening the business case for implementation and may facilitate investment decisions for airport operators.



6. Key Resources

The key resources required for the implementation of the solution include lighting equipment, technical expertise, design capabilities and project management resources.

Specialised knowledge in lighting engineering and architectural integration is particularly important to ensure that energy performance objectives are achieved while maintaining passenger comfort and operational requirements.

7. Key Activities

Key activities include the design, installation, testing and optimisation of innovative lighting systems within terminal environments.

Additional activities involve monitoring energy performance, evaluating user experience and ensuring compliance with operational requirements. These activities support the long-term effectiveness of the solution and contribute to the generation of measurable environmental benefits.

8. Key Partnerships

The BMC identifies several important partners, including lighting manufacturers, engineering companies and airport infrastructure teams.

Within the OLGA project, collaboration with specialised lighting providers supported the development and validation of the solution. Such partnerships are essential to ensure the technical reliability of the system and facilitate future deployment in other airport environments.

9. Cost Structure

The cost structure is primarily associated with equipment acquisition, installation works, design activities and project implementation.

Additional costs may arise from maintenance and performance monitoring activities. However, these investments are expected to be compensated over time through reduced energy consumption and lower maintenance requirements, supporting the long-term economic viability of the solution.

The BMC developed for WP4.1.2 demonstrates that innovative lighting systems can contribute to airport environmental performance through relatively mature and easily deployable technologies. The combination of energy efficiency, operational savings and passenger experience improvements supports the exploitation potential of the solution and facilitates its replication across a wide range of airport infrastructures.

8.1.4 WP4.4 – Waste Reduction

WP4.4 focuses on waste reduction within the airport environment. Unlike purely technological innovations, this solution combines operational processes, behavioural changes and stakeholder engagement to reduce waste generation and improve resource efficiency across airport activities.



The BMC developed for this task illustrates how environmental objectives can be translated into a structured business approach involving airport operators, service providers, retailers and passengers. Although waste reduction may not always generate direct revenues, it can contribute significantly to operational efficiency, environmental performance and long-term sustainability objectives.

1. Value Proposition

The value proposition is centred on reducing waste generation while improving resource efficiency across airport operations.

Beyond the environmental benefits associated with lower waste production and improved recycling practices, the solution contributes to reducing disposal costs and supporting airport sustainability strategies. The BMC also highlights the opportunity to transform waste from a cost burden into a resource that can generate additional value through improved management practices.

As airports face increasing expectations regarding environmental performance, waste reduction represents a practical and visible step toward becoming more sustainable.

2. Customer Segments

The primary customer segment consists of airport operators seeking to improve environmental performance and reduce operational costs.

However, the benefits extend to a broader range of stakeholders, including retailers, restaurants, service providers and waste management companies operating within the airport ecosystem. Passengers also represent indirect beneficiaries, as improved waste management contributes to a cleaner and more sustainable airport environment.

The diversity of beneficiaries illustrates the transversal nature of the solution.

3. Channels

Implementation relies primarily on operational procedures, awareness campaigns and coordination mechanisms established within the airport environment.

Additional channels may include sustainability programmes, environmental reporting frameworks and airport certification schemes. The dissemination of best practices through airport networks may further support replication in other airport contexts.

4. Customer Relationships

Customer relationships are based on continuous engagement with airport stakeholders involved in waste generation and waste management activities.

Successful implementation requires regular communication, awareness raising and monitoring activities. In contrast to infrastructure-based innovations, behavioural change plays an important role



in achieving long-term results. Maintaining stakeholder commitment is therefore essential for the effectiveness of the solution.

5. Revenue Streams

The main economic benefits identified in the BMC are associated with cost savings resulting from reduced waste treatment and disposal requirements.

Additional value may be generated through improved recycling practices and the recovery of materials. While direct revenues are not necessarily the primary objective, the reduction of operational costs strengthens the economic rationale for implementation.

The solution therefore combines environmental benefits with operational efficiency gains.

6. Key Resources

The key resources required include waste collection infrastructure, monitoring systems, operational expertise and stakeholder engagement mechanisms.

Human resources are particularly important, as successful implementation depends on the active participation of airport personnel, service providers and commercial operators. Data collection and monitoring capabilities also support performance assessment and continuous improvement.

7. Key Activities

Key activities include waste prevention measures, waste sorting, monitoring, reporting and awareness-raising actions.

Additional efforts focus on improving operational procedures and identifying opportunities to increase resource recovery. These activities contribute to reducing environmental impacts while strengthening the overall sustainability performance of airport operations.

8. Key Partnerships

Partnerships play a central role in this business model. The BMC highlights the importance of collaboration between airport operators, retailers, restaurants, waste management companies and service providers.

Unlike some other OLGA innovations, the success of waste reduction depends on the participation of a large number of actors across the airport ecosystem. The alignment of objectives and practices among these stakeholders is therefore a key condition for successful implementation and replication.

9. Cost Structure

The cost structure is mainly associated with waste collection systems, monitoring activities, communication campaigns and operational management.



Additional costs may arise from staff training and the implementation of new waste management procedures. However, these investments can be compensated over time through reduced disposal costs and improved resource efficiency.

The BMC developed for WP4.4 demonstrates that waste reduction is not only an environmental objective but also an operational management approach capable of generating long-term benefits for airport stakeholders. Its relevance for virtually all airport environments and its relatively low technological complexity make it a particularly attractive solution for replication across European airports.

8.1.5 WP5.5 – SAF Traceability

WP5.5 addresses the traceability of Sustainable Aviation Fuels (SAF) across the aviation value chain. While SAF production itself falls largely outside the scope of airport operations, the ability to monitor, verify and document SAF uptake is becoming increasingly important as the sector seeks to meet ambitious decarbonisation targets.

The BMC developed under this task illustrates how digital traceability mechanisms can support the deployment of SAF by improving visibility, accountability and coordination among the various actors involved. Within OLGA, the focus is therefore less on fuel production itself than on the systems required to ensure that sustainability claims can be reliably tracked and verified.

1. Value Proposition

The main value proposition lies in providing a reliable framework for tracking SAF use and associated environmental benefits throughout the supply chain.

By improving the visibility of fuel flows and sustainability attributes, the solution facilitates reporting, supports compliance with emerging regulatory requirements and strengthens confidence among stakeholders. As SAF deployment expands across Europe, robust monitoring and verification mechanisms are becoming essential to ensure credibility and avoid inconsistencies in sustainability reporting.

2. Customer Segments

The primary beneficiaries include airlines, fuel suppliers, airport operators and public authorities involved in environmental oversight.

Additional users may include certification bodies, auditors and organisations responsible for sustainability reporting. The variety of actors involved reflects the complexity of SAF deployment and



underlines the need for a common approach to information management across the aviation ecosystem.

3. Channels

The solution relies mainly on digital platforms and data-sharing interfaces enabling information to circulate between different actors in the SAF value chain.

These channels support the collection, validation and exchange of information required for monitoring fuel usage and associated environmental claims, while facilitating integration with existing reporting and certification processes.

4. Customer Relationships

Relationships are built around data reliability, transparency and long-term collaboration.

Because the quality of the system depends on information provided by multiple organisations, maintaining confidence in the accuracy and consistency of the data is essential. Continuous interaction between stakeholders therefore represents a key component of the business model.

5. Revenue Streams

The business model creates value through services associated with monitoring, reporting and verification activities.

Potential revenue streams may stem from platform access, data management services or certification support. More broadly, the solution generates value by helping organisations meet regulatory obligations and demonstrate the sustainability performance of their operations.

6. Key Resources

The main resources include digital infrastructure, data management systems and specialised expertise in sustainability reporting and traceability mechanisms.

Reliable databases, secure information exchange protocols and verification procedures are particularly important to ensure the robustness and credibility of the platform.

7. Key Activities

The core activities involve collecting, processing and validating SAF-related information, as well as maintaining the integrity and consistency of the underlying datasets.

Additional efforts focus on supporting interoperability between systems and ensuring that reporting requirements can be met efficiently across different organisations.

8. Key Partnerships

The effectiveness of the solution depends on collaboration between airlines, fuel suppliers, airport operators, certification bodies and public authorities.



Since information is generated and used by multiple actors throughout the SAF value chain, coordinated participation is required to ensure consistency and reliability. The business model therefore relies on ecosystem-wide cooperation rather than on a single operational stakeholder.

9. Cost Structure

The main costs relate to software development, platform maintenance, data management and verification activities.

Additional resources may be required for certification processes, stakeholder coordination and system upgrades. Although these investments do not directly reduce emissions, they provide the transparency and accountability needed to support the large-scale deployment of SAF.

The BMC developed for WP5.5 highlights the growing importance of digital governance tools within aviation decarbonisation strategies. Rather than delivering emissions reductions directly, the solution enables the monitoring and verification mechanisms required to support credible SAF deployment, making it a highly transferable and strategically relevant model for the wider aviation sector.

8.1.6 WP6.1.4 – Integrated Airport Air Quality Emission and Modelling Tool

WP6.1.4 focuses on the development of an integrated airport air quality emission and modelling platform. Unlike many decarbonisation solutions implemented within OLGA, this innovation does not directly reduce emissions. Instead, it provides the knowledge, monitoring and decision-support capabilities necessary to better understand, manage and ultimately reduce the environmental impact of airport activities.

The BMC developed for this task therefore differs from more operational solutions such as APU substitution or innovative lighting. Its value lies not in a single technological component, but in its ability to bring together data, modelling capabilities and stakeholder needs within a common framework. In doing so, it contributes to transforming fragmented environmental information into actionable knowledge that can support both operational and strategic decision-making.

1. Value Proposition

The core value proposition of the platform is the ability to provide a comprehensive understanding of air quality around airport environments.

By combining emissions inventories, modelling capabilities and monitoring data, the platform allows airport stakeholders to better identify pollution sources, assess environmental impacts and evaluate the effectiveness of mitigation measures. Beyond regulatory compliance, such a tool supports more informed decision-making and strengthens the capacity of airports to anticipate future environmental requirements.



The BMC highlights that the platform creates value not only through data collection, but through the interpretation and operational use of that data.

2. Customer Segments

The customer base extends beyond airport operators alone.

Airports represent the primary users, as they are directly responsible for monitoring and managing environmental impacts within their infrastructure. However, local authorities, environmental agencies, research institutions and surrounding communities may also benefit from the information generated by the platform.

This diversity of stakeholders reflects the fact that air quality is not solely an airport issue. It sits at the intersection of transport policy, public health, environmental protection and territorial planning. Consequently, the platform has the potential to support a broad range of decision-making processes.

3. Channels

The platform relies primarily on digital channels for the collection, visualisation and dissemination of information.

Interactive dashboards, reporting tools and data-sharing interfaces constitute the main mechanisms through which users can access and interpret the results. The integration of monitoring data into a single platform facilitates communication between technical experts, operational managers and public authorities.

In this regard, the platform functions not only as a monitoring tool but also as a communication and coordination instrument.

4. Customer Relationships

Customer relationships are based on long-term engagement and continuous use of the platform.

Unlike infrastructure projects that may require limited interaction once deployed, air quality monitoring requires ongoing data collection, updates and interpretation. Maintaining confidence in the quality and reliability of the information therefore becomes a critical element of the business model.

The relationship is consequently built around transparency, credibility and the capacity to provide decision-makers with relevant environmental intelligence.

5. Revenue Streams

The BMC identifies several potential sources of value associated with the platform.

These may include licensing arrangements, consultancy services, environmental assessments and data-driven decision-support activities. However, the economic value generated by the platform extends beyond direct revenues.



By supporting regulatory compliance, reducing environmental risks and improving strategic planning capabilities, the platform can help airports avoid future costs while strengthening their environmental performance. The business case is therefore linked as much to risk reduction and informed decision-making as to direct commercial opportunities.

6. Key Resources

The platform depends on a combination of technological, scientific and organisational resources.

Key resources include monitoring equipment, modelling software, environmental databases and technical expertise in air quality assessment. Equally important are the data management capabilities required to ensure consistency, accuracy and usability of the information collected.

The BMC demonstrates that the quality of the platform ultimately depends on the robustness of the data and the expertise used to interpret it.

7. Key Activities

The main activities involve collecting, integrating and analysing environmental data from a variety of airport-related sources.

Additional efforts focus on emissions modelling, scenario analysis, reporting and the continuous improvement of the platform. These activities ensure that the information generated remains relevant and useful for operational and strategic decision-making.

More broadly, the platform contributes to creating a shared understanding of environmental performance among stakeholders.

8. Key Partnerships

Partnerships play a particularly important role in this business model.

The platform relies on cooperation between airports, environmental experts, technology providers, public authorities and research organisations. No single actor possesses all the information required to develop a comprehensive picture of airport-related air quality.

As a result, value creation emerges from the ability to combine multiple sources of expertise and data within a common framework. This collaborative dimension represents one of the key strengths of the innovation.

9. Cost Structure

The cost structure is mainly associated with platform development, data management, monitoring activities and system maintenance.

Additional costs may arise from modelling activities, software updates and stakeholder coordination. While these investments can be significant, they support a capability that is increasingly necessary for airports operating in a context of growing environmental scrutiny.



The BMC developed for WP6.1.4 illustrates how environmental monitoring tools can evolve from a compliance-oriented function into a strategic asset. By improving knowledge, transparency and decision-making, the platform creates the conditions necessary for more effective environmental management and supports the long-term transition towards more sustainable airport operations.

8.2 From project results to operational deployment

The discussion of the selected BMCs shows that moving from OLGA project results to operational deployment requires more than technical validation. The BMC approach helps identify whether the conditions for exploitation are already in place, or whether further clarification is needed regarding stakeholders, value capture and implementation mechanisms.

Across the analysed cases, 3 main deployment pathways emerge:

- Firstly, solutions such as APU Substitution (WP3.6) and Terminal Innovative Lighting (WP4.1.2) appear closer to operational deployment, as they rely on mature technologies and generate direct benefits, such as fuel savings, energy savings, reduced emissions or lower maintenance costs.
- Secondly, innovations such as Multimodality and Traffic Flow Optimisation (WP2.2) and Waste Reduction (WP4.4) require stronger coordination among multiple actors. Their deployment depends not only on the solution itself, but also on the alignment of responsibilities, incentives and behaviours across the airport ecosystem.
- Finally, tools such as SAF Traceability (WP5.5) and the Integrated Airport Air Quality Emission and Modelling Tool (WP6.1.4) support deployment more indirectly, by improving transparency, monitoring, reporting and decision-making.

This confirms that post-OLGA exploitation will follow differentiated pathways depending on the type of innovation considered.

8.3 Conditions for exploitation

Across the analysed BMCs, several enabling conditions appear decisive for successful exploitation.

- 1) Economic viability must be clear enough to justify deployment. This may take the form of direct revenues, as in SAF Traceability (WP5.5) or the Air Quality Emission and Modelling Tool (WP6.1.4), or indirect benefits such as fuel savings, energy savings or reduced maintenance costs, as illustrated by APU Substitution (WP3.6) and Terminal Innovative Lighting (WP4.1.2).



- 2) Exploitation requires operational integration. Even mature solutions must fit into existing airport processes, equipment, safety procedures and daily practices. This is particularly visible for APU Substitution (WP3.6), which depends on the availability and use of ground infrastructure, and for Waste Reduction (WP4.4), which requires continuous coordination with retailers, service providers and passengers.
- 3) Several innovations depend on stakeholder alignment. Multimodality, waste reduction, SAF traceability and air quality monitoring all involve multiple actors whose responsibilities, incentives and data-sharing practices must be clearly organised.
- 4) Finally, regulatory and strategic alignment remains important, especially for solutions linked to environmental reporting, SAF, air quality or broader decarbonisation objectives.

These conditions confirm that exploitation is not automatic. It depends on the capacity to transform a project result into a usable, financed and coordinated deployment pathway [5].

8.4 Replication potential across European airports

Replication is a central objective of OLGA, but the analysed BMCs show that transferability varies significantly across innovations.

Solutions such as APU Substitution (WP3.6) and Terminal Innovative Lighting (WP4.1.2) can be replicated through relatively direct operational transfer. By contrast, Multimodality and Traffic Flow Optimisation (WP2.2) and Waste Reduction (WP4.4) require broader stakeholder coordination. Finally, tools such as SAF Traceability (WP5.5) and the Integrated Airport Air Quality Emission and Modelling Tool (WP6.1.4) may replicate through knowledge transfer, digital platforms and reporting frameworks.

Replication therefore depends not only on technical feasibility, but also on the ability to adapt solutions to different airport, regulatory and stakeholder contexts.

8.5 Barriers, limitations and gaps identified

The analysis of the selected BMCs identified five recurring barriers to exploitation and replication:

- Limited economic incentives and uncertain return on investment
- Misalignment between value creation and value capture across stakeholders
- Dependence on external infrastructure and ecosystem readiness
- Governance complexity and stakeholder coordination
- Limited information available for analysing long-term exploitation in some BMCs



While these barriers recur across the analysed BMCs, they affect the different innovations to varying degrees. The following examples illustrate how these challenges materialize across the OLGA portfolio.

Investment requirements remain a significant constraint for several innovations. Low-carbon Airside GSE (WP3.2), APU Substitution (WP3.6) and Terminal Innovative Lighting (WP4.1.2) demonstrate clear environmental and operational benefits, yet their deployment still depends on investment decisions and expected returns.

A second recurring challenge concerns the alignment between value creation and value capture. This is particularly visible in Multimodality and Traffic Flow Optimisation (WP2.2) and Waste Reduction (WP4.4), where benefits are shared across multiple stakeholders while implementation efforts remain concentrated on only a few actors.

Several innovations also remain highly dependent on external conditions. Low-carbon Airside Mobility Infrastructure (WP3.3), Green H2 Production & Usage (WP5.3) and Waste Valorisation towards Biofuels (WP5.1) illustrate how infrastructure availability, regulatory developments and market conditions can strongly influence exploitation prospects.

Finally, the assessment itself highlighted differences in business model maturity. Several BMCs provided only limited information on revenue streams, cost structures or long-term exploitation strategies, reducing the level of confidence that could be attached to the analysis.

8.6 Outlook

The OLGA portfolio demonstrates that airport environmental performance cannot rely on a single solution type. Instead, it requires a combination of commercially viable technologies, coordinated ecosystem transformation, and strategic structuring tools. The exploitation pathway is therefore multi-layered.

The work conducted under Task 8.2.1 provides a structured interpretation of these pathways and supports informed decision-making for post-project continuation.

Ultimately, the success of OLGA's business models will depend on the ability of stakeholders to translate demonstration achievements into sustained operational commitments aligned with European climate objectives.

8.7 Discussion and key insights



Drawing on the analysis of the individual BMCs, this section highlights the main cross-cutting lessons emerging from the OLGA portfolio and discusses their implications for exploitation and replication. It combines broader observations on business model development with findings specific to the OLGA innovations analysed in this deliverable.

Key lessons from the OLGA business model analysis

The table below summarises the main cross-cutting findings identified across the analysed BMCs.

KEY FINDING FROM THE OLGA PORTFOLIO	ILLUSTRATIVE OLGA CASES	IMPLICATION FOR EXPLOITATION & REPLICATION
TECHNICAL MATURITY IS NOT THE MAIN CHALLENGE Across the analysed BMCs, technological maturity rarely appears as the main barrier to exploitation. Instead, organisational, financial and governance - related conditions determine whether innovations can move beyond demonstration.	WP3.6 APU substitution WP5.3 Green Hydrogen WP4.4 Waste reduction	→ Exploitation strategies should address deployment conditions alongside technical readiness, with particular attention to governance, investment planning and stakeholder coordination.
DEPLOYMENT DEPENDS ON THE ECOSYSTEM Successful deployment depends less on the technology itself than on the ability of multiple stakeholders to coordinate their action and align their objectives.	WP2.2 Multimodality WP4.4 Waste reduction WP5.3 Green Hydrogen	→ Governance arrangements, clearly defined responsibilities and long-term partnerships are essential conditions for implementation.
VALUE CREATION & COST SHARING Several innovations generate value at ecosystem level, while investment costs are often borne by only one or a few actors.	WP2.2 Multimodality WP3.6 APU substitution WP4.4 Waste reduction	→ Business models should include mechanisms for sharing costs, risks and benefits across the airport ecosystem.



KEY FINDING FROM THE OLGA PORTFOLIO	ILLUSTRATIVE OLGA CASES	IMPLICATION FOR EXPLOITATION & REPLICATION
CIRCULARITY REQUIRES BUSINESS MODEL INNOVATION Circular economy initiatives demonstrate that successful exploitation depends as much on organisational innovation and collaboration as on technical solutions.	WP4.4 <i>Waste reduction</i> WP6.3.2 <i>Airport Equipment Reuse</i>	→ <i>Replication requires adapting organisational processes, governance arrangements and local partnerships in addition to transferring technical solutions.</i>
DIGITAL TOOLS & DATA CREATE DECISION VALUE Digital solutions primarily support environmental management by improving monitoring, modelling and decision-making rather than creating stand-alone commercial products.	WP6.1.4 <i>Emissions & Air Quality Modelling Engine</i> WP4.3 <i>BiodiversIT</i>	→ <i>Their long-term value depends on data quality, interoperability, user adoption and integration into airport operations.</i>
REPLICATION & TRANSFER Replication across European airports requires adapting innovations to local infrastructure, governance and operational contexts rather than replicating them identically.	Findings across the six analysed BMCs	→ <i>Transferability depends on identifying which elements of a business model are universal and which require local adaptation.</i>

1. Airport environmental performance is constrained more by implementation conditions than by technology

Across the analysed cases, technological feasibility is generally not the primary limiting factor. Most solutions demonstrate a credible level of technical maturity, supported by testing or demonstration activities within the project.

However, their transition towards operational deployment is conditional upon a set of external factors, including governance frameworks, financing mechanisms, regulatory clarity and stakeholder alignment.



This finding suggests that the main challenge of airport decarbonization is not only technological, but systemic. Addressing implementation conditions is therefore as critical as advancing technical performance.

2. Business models remain the key interface between innovation and real-world impact

The analysis confirms that the articulation of business models is not yet systematically integrated into the development of innovations.

While technical functionalities are generally well defined, several solutions still lack:

- Clearly identified beneficiaries or user segments
- A structured value proposition
- A coherent revenue or financing logic

This is particularly observed in certain infrastructure or system-level solutions, where technical performance is prioritised over market positioning.

As a result, some innovations remain positioned at demonstration stage, without a clearly defined pathway towards exploitation. This is particularly visible for Green H2 Production & Usage (WP5.3) where technical feasibility has been demonstrated but the business model remains strongly dependent on external infrastructure, regulatory developments and market conditions.

This highlights the importance of integrating business model structuring at an early stage of innovation processes [8], in order to ensure that technical developments can effectively translate into operational solutions.

3. A structural misalignment persists between value creation and value capture

A recurring insight concerns the disconnect between the distribution of benefits and the allocation of costs. Many OLGA innovations generate significant environmental, operational or societal value. However, these benefits are often distributed across multiple actors, while investment costs are concentrated on a limited number of stakeholders.

This is particularly visible in Low-carbon Airside GSE (WP3.2), Waste Reduction (WP4.4) and Green H2 Production & Usage (WP5.3). In all three cases, the environmental benefits extend beyond the organisations making the investment. While airports, airlines, service providers and local communities may collectively benefit from reduced emissions and improved environmental performance, implementation costs and responsibilities are often borne by a more limited number of actors.

This misalignment represents a major barrier to deployment [9]. It implies that exploitation will often depend on enabling mechanisms such as:



- Regulatory incentives
- Public support schemes
- Coordinated governance and cost-sharing arrangements

4. Airport environmental performance requires a portfolio of complementary solutions

The diversity of business models identified in this deliverable confirms that OLGA innovations do not converge towards a single exploitation pathway. Instead, they reflect a combination of:

- Market-oriented solutions with relatively direct deployment potential
- Ecosystem-dependent innovations requiring coordination among multiple actors
- Strategic or structuring tools that support long-term system transformation

The OLGA portfolio illustrates all 3 categories, from operational solutions such as APU Substitution (WP3.6) and Terminal Innovative Lighting (WP4.1.2), to ecosystem-dependent innovations such as Multimodality and Traffic Flow Optimisation (WP2.2), and strategic tools such as BiodiversIT (WP4.3) and the Integrated Airport Air Quality Emission and Modelling Tool (WP6.1.4).

This diversity should be interpreted as an inherent characteristic of airport sustainability, rather than as a limitation.

From an operational perspective, this implies that airport stakeholders should adopt a portfolio-based approach, combining different types of solutions depending on their maturity, impact and implementation conditions.

5. The robustness of the analysis depends on the quality and structuring of input data

The analysis also highlights the importance of structured and consistent data collection. When BMCs are complete and clearly articulated, the assessment is more:

- Robust
- Comparable across cases
- Actionable for decision-making

Conversely, incomplete or fragmented data limits the ability to assess exploitation potential. For example, several BMCs lacked sufficient detail on revenue streams or cost structures, which constrained the depth of the analysis.

This underlines the need for early and standardised data collection processes in collaborative innovation projects, particularly when multiple partners and work packages are involved.

6. From innovation analysis to decision-support: the contribution of Deliverable D8.4



Beyond the assessment of individual business models, this deliverable provides a structured framework to support:

- Prioritisation of solutions
- Identification of key barriers and enabling conditions
- Informed decision-making for post-project deployment

By combining BMC analysis, cross-cutting evaluation criteria and an exploitation pathways typology, D8.4 contributes to translating OLGA innovations into actionable insights for airport stakeholders. Its added value therefore lies not only in documenting innovation, but in supporting its operationalisation and replication beyond the project context.

9 Conclusion

The work carried out under Task 8.2.1 has provided a structured assessment of the business models emerging from OLGA's airport environmental performance innovations. Beyond technical validation, this analysis aimed to clarify how value is created, delivered and captured, and under which conditions exploitation can realistically occur.

The results confirm that airport environmental transition does not follow a single commercial trajectory. Instead, OLGA has generated a diversified portfolio of solutions, ranging from market-oriented models with relatively direct deployment pathways, to ecosystem-dependent innovations requiring coordinated governance frameworks, and strategic structuring tools that enable long-term transformation.

This diversity reflects the operational reality of airport ecosystems, where solutions such as hydrogen deployment, SAF integration or air quality platforms face distinct but complementary implementation challenges.

Technical maturity alone is therefore not sufficient to guarantee commercial relevance or replicability. Exploitation depends on a combination of financial viability, regulatory clarity, stakeholder alignment and operational integration. [8]

Through the Business Model Canvas analysis, the transversal evaluation framework and the typology developed in this deliverable, OLGA has moved from isolated pilots to a structured understanding of exploitation pathways. This approach strengthens transparency, reduces uncertainty and supports more informed decision-making for post-project continuation.

Importantly, the added value of EU funding extends beyond experimentation. It has enabled risk-sharing, cross-airport validation, systemic coordination and capacity building. All of which are essential to transform innovation into scalable climate action.



Looking forward, the success of OLGA's business models will depend on the ability of stakeholders to operationalize the identified pathways, address remaining structural barriers and align investments with long-term environmental performance strategies.

By articulating both opportunities and constraints in a structured manner, Deliverable 8.4 contributes to the broader objective of ensuring that European-funded innovation translates into tangible, durable and replicable impact.

Recommendations for policymakers and industry stakeholders

Based on the analysis conducted under Task 8.2.1, several cross-cutting recommendations emerge:

For policy makers

1. Strengthen financial and regulatory predictability.

Long-term investment decisions in hydrogen, SAF and waste-to-fuel pathways require stable regulatory frameworks and clear incentive mechanisms. Policy predictability significantly reduces investment risk.

2. Align environmental benefits with economic incentives.

In several cases, decarbonisation benefits accrue at system level (society, climate objectives), while costs are borne locally by airports or operators. Mechanisms that better internalise environmental value would accelerate deployment.

3. Support ecosystem-based innovation models.

Hybrid solutions involving multiple stakeholders require structured coordination platforms. Continued EU support for collaborative frameworks can help overcome governance fragmentation.

4. Promote standardisation and knowledge transfer.

For instance, methodological innovations (like certification pathways) can have significant long-term impact if integrated into European standards and best practices.

For industry stakeholders

1. Integrate exploitation thinking early in innovation processes.

Business model structuring should not be an afterthought but a parallel process to technical development.

2. Clarify value capture mechanisms.



Where value creation is distributed across actors, explicit agreements on cost-sharing and benefit allocation are essential.

3. Prioritise operational integration.

Even mature technologies require alignment with airport processes, IT systems and safety frameworks to move beyond pilot phase.

4. Adopt a portfolio approach to airport environmental transition.

Airport climate neutrality will likely depend on a combination of commercially viable technologies, ecosystem coordination and strategic structuring tools.

These recommendations underline that the success of airports' environmental transition is not solely a technological challenge. It is a comprehensive challenge that also involves a process of transformation in governance, finance, and organization.

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11 Annexes

11.1 Annexe A – BMC grids

Task 2.2 : Multimodality and traffic flow optimisation

Confidentiality Class: Open

Business Model Canvas

OLGA deliverable: D2.2

Involved partners: ENT IP

Date: DD/MM/YYYY

Version: X.Y



IT SOLUTION FOR MULTIMODALITY AND TRAFFIC FLOW OPTIMIZATION

Key Partners 	Key Activities 	Value Propositions 	Customer Relationships 	Customer Segments 
○ Data owners: ○ Airports, ○ Airlines ○ Mobile network operators, ○ Parking operators, ○ Public transport service providers, ○ National Access Points, ○ Municipalities/Cities ○ System integrators and Data Processors (assuring data integration, fusion, processing, analytics, reporting)	○ Implementation of „IT solution for multimodal traffic optimization“ ○ Establishment of value chain (data owners, data processors, system integrators, users)	○ Increase of airport gravitational areas ○ Optimization of existing public transport lines ○ Airport operations support (based on transport demand prediction) ○ Less polluting transport ○ Optimized landside transport operations ○ Improvement of access and multimodal connections to the airport and from the airport terminal to the aircraft and at the airport landside	○ Constant improvement of customers operations by utilisation of applicable use cases on IT solution resulting in more environmentally friendly solution.	○ Airports; Airlines; Parking operators; Public transport service providers; Municipalities/Cities
	Key Resources  ○ IT environment (IT solution) ○ Data streams		Channels  ○ BtoB collaboration	
Cost Structure 		Revenue Streams 		
○ IT platform implementation ○ IT platform operational costs ○ Data streams related costs (acquisition, conversion, integration...)		○ Reduce environmental impact ○ Increase in the number of airport users (passengers) ○ Replicable solution		



OLGA project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement n° 101036871



Task 3.6 : APU substitution

Business Model Canvas

OLGA deliverable: WP3.6

Involved partners:

Airport ADP
AF Airline
SAS

Date: DD/MM/YYYY

Version: X.Y



Key Partners	Key Activities	Value Propositions	Customer Relationships	Customer Segments
- ADP Airport - AF Airline - SAS Smart Airport Systems (ACU provider)	- Demonstrate and validate APU off modes - Equip gates with PCA to substitute for APU functions - Test impact of APU off modes in busy operations - Test the effect of changing weather conditions within operations - Develop processes for standardization	- Reduce environmental impact - Save fuel by APU operating reduction - Reduce CO2 emissions - Reduce noise in working areas (improve working conditions)	- Permanent communication and coordination between stakeholders (pilots, ramp, service provider) - Highly structured processes - Ground staff training	- Airports - Airlines - Handlers - PCA providers
Key Resources		Channels		
- Gate electrification – electrical plugs in passenger boarding bridges 400 HZ converter equipment or Ground power units (GPU) - Mobile ACU units and position allocations - Preventive maintenance and resources spare parts		- Stakeholders involved in a working group: - preparing and monitoring the trial - evaluating results and mitigating any occurrence - The Airline set up an internal structure involving the concerned ground and flight departments		
Cost Structure		Revenue Streams		
(Fixed) costs : 400HZ converters - ACU units - Electrical consumption "Proportional" costs - Ground staff training with process implementation		Customers pay solution - to reduce environmental impact with CO2 reduction and fuel saving - to get a positive brand image ➤ Replicable solution in any airport		



OLGA project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement n° 101036871



Task 4.1.2 : Terminal innovative lighting

Business Model Canvas

OLGA deliverable:

WP4.1.2 Smart
Innovative Lighting
Prototypes

Involved partners:

Ingelux

Date: 05/09/2025

Version: X.Y



Key Partners 	Key Activities 	Value Propositions 	Customer Relationships 	Customer Segments 	
R&D partnership to be continued with the lighting design office "Ingelux." Technical partnership to be continued with manufacturers OPTELMA and SFEL to improve prototypes.	Technical validation is underway by the operations and maintenance teams at Paris Charles de Gaulle Airport. Then, deployment in the MN module for the first project.	The solution enables: - a 30% to 50% reduction in lighting energy consumption, - adaptation of lighting to all architectural contexts, - reinforcement of the architectural identity of ADP airports, - simplification of maintenance operations with a total cost-benefit analysis - Improvement of the artificial light quality and the passenger experience.	The clients will be the Group's airports. Maintenance and operations teams participated in the development of the innovation and are currently being trained to use the luminaire.	Airport managers, first Group ADP's airport (maybe others later, and other project owners).	
	Key Resources  We need the architecture department and the design office, integrated into ADP, to ensure the deployment of lighting fixtures in projects and continue improvements.		Channels  Market launch for new construction or renovation projects, via calls for tender.		
Cost Structure 		Revenue Streams 			
No data to provide a precise answer. Most of the R&D costs have already been incurred; there's no need to incur major new costs.		The customers are the ADP Group's airports, which pay manufacturers who produce the luminaires based on ADP's design. They reduce their operating costs through energy savings and reduced maintenance operations.			



OLGA project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement n° 101036871



Task 4.4 : Waste reduction

Business Model Canvas

OLGA deliverable: 4.4

Involved partners:

ADP – UZAJE
– EXTIME F&B

Date: DD/MM/YYYY

Version: 1



Key Partners	Key Activities	Value Propositions	Customer Relationships	Customer Segments
➤ Airport services to ensure on site communication and an efficient process to collect and identify the used products to be reused ➤ Food service companies (restaurants, cafés...) to participate actively ➤ Third party to wash the reuse cups and glasses if on-site washing is not possible	➤ Sizing of the reuse loop project (volume to be taken into account) ➤ Management of the different steps of the reuse loop with 3 key topics :collecting used cups - washing – stock management ➤ Onboarding of the stakeholders mainly sales teams as it changes processes	➤ First of all , the reuse of glasses and cups for takeaway sales is a process to reduce environmental impact and offer economic benefits for both consumers and businesses. • Waste & pollution reduction significantly reduces the amount of waste generated • Resource conservation : single –use products requires raw materials & energy • Savings : could reduce the cost linked to cup's purchased • Environmental awareness & responsibility promotion : raise the importance of reuse and recycling and encourage all to adopt responsible behaviors	➤ A voluntary re-use initiative involving takeaway sales initiative is an opportunity to encourage businesses and consumers to change and adopt more sustainable habits ➤ It participates moreover in enriching the experience for everyone ➤ Could be a source of added value with adapted gameplay	➤ Food service companies (cafés, restaurants) that offer takeaway service by limiting single use products and differentiation. ➤ Airport services responsible for waste management by limiting single-use products ➤ Consumers (mostly passengers) by offering them access to more responsible options
Key Resources		Channels		
➤ At the very beginning , investments to ensure the availability of reuse cups + collecting and washing processes (on site if possible or otherwise externally) ➤ Engagement of sales teams by adapted formation / incentives		➤ This project was developed in collaboration with restaurant brands & teams and airport services (waste management) ➤ An on-site communication campaign was deployed for consumers		
Cost Structure		Revenue Streams		
(Fixed) costs : ➤ Washing machines (on-site loop) ➤ Cups & glasses collectors ➤ Communication items ➤ Formation costs "Proportional" costs => after income ➤ Re-used cups & glasses ➤ Washing process linked to the volume to be cleaned and reused		➤ No additional cost to consumers unless a deposit is requested ➤ The cost of the re-use cups (and the loop) could be partly absorbed if the loop is efficient (no loss, return rate > 90%) and by considering the « cost » of paper-disposable cup.		



OLGA project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement n° 101036871



Task 5.5 : SAF traceability

Business Model Canvas

OLGA deliverable: WP5.5 - Traceability and sustainability of SAF

Involved partners: Air France
Attributes

Date: 16/09/2025

Version: 1.0



Key Partners 8	Key Activities 7	Value Propositions 2	Customer Relationships 4	Customer Segments 1
Key Clients & Partners - SAF producers - Airlines * - Certification bodies (e.g., RSB, ISCC)* Key Suppliers - Blockchain or digital registry technology providers* Secondary partners & supplier targets - Airports - Fuel logistics providers - Regulators and policy makers (e.g., ICAO, EU ETS administrators) - Industry associations (e.g., IATA, CORSIA) - Corporate SAF buyers - Carbon offset market-place owners MOTIVATIONS FOR PARTNERSHIPS: - Trust: Reduction of risk of double counting and non-compliance - Time saved: through automation capabilities - Cost sharing: SAF costs shared between value chain participations	- Critical Action: Design and operation of the digital book-and-claim registry - Key activities: - Verification and issuance of SAF certificates - Tracking and allocation of SAF - Compliance with international sustainability standards - Data integration with airline emission reporting systems - Stakeholder onboarding and training - Security, audit, & transparency assurance Key Resources 6 - Physical/Digital - Digital registry platform (possibly blockchain-based) - Database of certified SAF producers and transaction - Certification frameworks and verification protocols - Financial: financial resources to support cost centers (?) - Human - Blockchain and developers and engineers - Technical and compliance teams - Legal and regulatory expertise - Partner network for data exchange and verification	Making SAF sustainability attributes easily traceable and transferable Concrete benefits for customers according to their specific needs: - Enables users to meet sustainability and regulatory commitments (e.g., CORSIA, EU ETS) - Reduces complexity in SAF allocation - Creates positive demand signal for SAF producers - Ensure data security and integrity creating more trust for producers, airlines, investors... - Facilitate carbon accounting and ESG reporting Innovation: - Blockchain-based solution - Transparent and auditable SAF traceability with recording of all actions of the system - User-friendly digital allocation of SAF batch including sustainable attributes and volume to any counterpart type (flights, corporate clients...) Scalability of the solution: - Can be easily adopted by different airlines, different SAF producers - Can be scaled to trace e-SAFs	- Dedicated account management for customers* - Consulting and assistance in project set-up* - Customer Onboarding and Training* - Automated digital interfaces (APIs) for integration* - Community forums and knowledge-sharing events* - Customer support & maintenance* Channels 3 - Direct B2B sales - Online market-place - Online platform/dashboard - API integrations with customer systems - Industry events and conferences - Partnerships with sustainability certification bodies	- Aviation (commercial, army, cargo) - SAF producers - Carbon offset marketplaces - Sustainability-focused corporate buyers (Scope 3 reporting) - Airports
Cost Structure 9	Business orientation: Value Driven : focused on security, trust, transparency, and regulatory compliance as premium differentiators.		Revenue Streams 5	
Cost centers(Starting from most expensive) Staff & expertise Blockchain and developers and engineers, Sustainability/regulatory compliance experts business reps, client support Blockchain Infrastructure & Security: Platform development hosting and maintenance Marketing and business development (client acquisition) Regulatory Certification and audit costs Data storage and cybersecurity infrastructure	Cost Structure: - Fixed costs: Staff Salaries, blockchain infrastructure, certification partnerships. - Variable costs: transaction scaling, marketing and business development. - Economies of scale: Low marginal cost per additional batch of SAF; platform extendable to e-fuels, hydrogen.		Type: Consulting and onboarding packages (fixed price) for product set up phase until go-live At go live : Usage fee Customer are charged per-transaction fees for SAF digital issuance, transfer and claiming Additional revenues Client-Specific features development with fixed pricing calculated in man/days required for feature development	



OLGA project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement n° 101036871

* Key partners and relationship already in place for the OLGA project WP5.5



Task 6.1.4 : Integrated airport quality emission & modelling tool



Business Model Canvas

OLGA deliverable: WP6.1.4

Involved partners: Envisa, ADP

Date: 26/05/2026

Version: 2

Key Partners	Key Activities	Value Propositions	Customer Relationships	Customer Segments
➤ Partnership: Airport authorities, local municipal governments, and environmental regulatory bodies ➤ Suppliers & Modellers: Emissions and Dispersion Modellers ➤ Data Providers: Weather services and flight tracking (ADSB) for model inputs, or other sources (Third-party sensor providers for monitoring integration, cloud infrastructure providers...).	➤ Core Function: High-fidelity air quality impact estimation and simulation. ➤ Integration: Syncing real-time monitoring data to validate models ➤ Testing and Certification: Aligning models testing scenarios with EU AQ standards or validation of environmental benefits.	➤ Predictive Insights: Beyond "what is," the platform shows "what if" scenarios for airport innovations (i.e. APU reduction, electrification etc.) but also expansion type of scenarios. ➤ Regulatory Compliance: Automated reporting for CAEP/ICAO standards. ➤ Cost Reduction: Identifies pollution hotspots to optimize ground operations.	➤ Support and Assistance: Dedicated support for complex modelling setups. ➤ Co-creation: Working with airports to develop site-specific dispersion parameters and scenarios. ➤ Training: Expert workshops on interpreting model outputs	1) Airport Operators: Planning and environmental departments. 2) Airlines: Assessing the impact of fleet renewal on local air quality, or operational changes (APU, taxiing, GSE, CDO etc..). 3) Authorities: For regional environmental impact assessments that include airports.
Key Resources	Channels	Cost Structure	Revenue Streams	
➤ Intellectual: Envisa's, Janicke's, IFPEN's proprietary modelling algorithms and emission databases. ➤ Human: Expert atmospheric modellers and aviation data scientists. ➤ Technological: Data Exchange Platform, and Cloud-based high-performance computing (HPC) for simulations.	➤ Direct Sales: Targeted outreach to OLGA member airports. And other airports within our network (ACI Europe etc..) ➤ SaaS Platform: (to be developed TRL7 > TRL8-9) Web-based dashboard for accessing model results. ➤ Consulting: Deep-dive environmental impact studies	➤ R&D & Human Capital: Salaries for Envisa modellers and software developers (Highest cost). ➤ Computing Power: Infrastructure costs for running heavy simulation workloads. ➤ Maintenance: Infrastructure maintenance fees for dashboard ➤ Data Acquisition: Licensing fees (when needed for meteorological and flight trajectory data, such as ADSB data).	➤ Service Fees: Project-based fees for specific Environmental Impact Assessments (Current model) ➤ Subscription (SaaS): Tiered access to the modelling platform based on airport size/complexity. ➤ Integration Fees: One-time setup for connecting existing physical sensors to the model for validation (for AQ monitoring part)	



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11.2 Annexe B – Detailed cross-cutting assessment grids

Task 2.2 : Multimodality and traffic flow optimisation

BMC Block	Clarity (1-5)	Coherence (1-5)	Originality (1-5)	Feasible (1-5)	Comments
1- Customer Segments	3	3	2	4	Broad and heterogeneous (airports, cities, operators) : roles and priorities could be clarified
2- Value Proposition	3	4	3	4	Clear operational advantages = optimization, accessibility. But the value remains fairly generic for an IT solution (hence the score of 3 for "Originality").
3- Channels	2	3	2	4	B2B collaboration mentioned, but concrete go-to-market channels are not detailed
4- Customer Relationships	3	3	2	4	We understand the intention to work in a continuous improvement logic, but how the relationship with customers would work in practice is not really explained
5- Revenue Streams	2	2	1	3	No explicit revenue logic. Value mostly framed in environmental and usage benefits.
6- Key Resources	3	4	2	4	Clearly identified but the lack of detail on data governance, operational constraints and long-term resource requirements justifies a mid-level score
7- Key Activities	3	4	3	4	Consistent with the value proposition and technical scope.
8- Key Partnerships	4	4	3	4	Strong ecosystem approach but governance between data owners is not specified.
9- Cost Structure	3	3	2	4	The main cost factors have been identified, but the scale and structure of the costs remain approximate.
Evaluation Scale: 1 = Poor, 2 = Fair, 3 = Good, 4 = Very Good, 5 = Excellent					



Evaluation Criteria	Description	Score (1 to 5)	Comments
Originality / Novelty	Is the idea truly new or disruptive?	3	Multimodal optimization solutions already exist --> novelty lies in integration at airport scale
User Need Addressed	Does it solve a real and clearly identified user need?	4	Clearly addresses congestion, accessibility, and operational efficiency issues
Feasibility	Is the idea technically and operationally feasible?	4	Technically feasible with existing IT and data infrastructures
Market Potential	Is there strong demand or a commercial opportunity?	3	Potential demand exists, but competition from existing smart mobility platforms is high
Strategic Fit	Does the idea align with the organization's mission or strategy?	5	Strong alignment with EU mobility, decarbonisation, and smart city objectives
Scalability	Can the solution be scaled effectively and sustainably?	4	Reproducible in airports and urban settings, provided that data access agreements are in place
Cost vs. Benefit	Is the expected benefit worth the investment and resources required?	3	Benefits are clear, but economic return is not explicitly demonstrated.
Time to Market	Can it be implemented and launched quickly?	4	Could be deployed relatively quickly once data-sharing and integration issues are solved
Competitive Advantage	Does it provide a clear edge over existing alternatives?	3	Relies on integration capacity rather than unique proprietary technology
Sustainability / Impact	Does it have a lasting positive social or environmental impact?	4	Positive environmental impact through reduced congestion and emissions
Scoring Scale			
1 = Poor			
2 = Fair			
3 = Good			
4 = Very Good			
5 = Excellent			



Task 3.6 : APU substitution

BMC Block	Clarity (1-5)	Coherence (1-5)	Originality (1-5)	Feasible (1-5)	Comments
1- Customer Segments	4	4	2	5	Clear and relevant.
2- Value Proposition	4	4	3	5	Significant environmental, operational and working conditions with emissions and noise reduction benefits. Clear justification for adoption.
3- Channels	4	4	2	5	Channels described by working groups involving all operational key stakeholders to design, structure, prepare and monitor the PoC. All defined in the deliverable for replication, best practice exchanges can be shared to facilitate future replication.
4- Customer Relationships	4	4	2	4	Structured coordination
5- Revenue Streams	3	3	2	4	Requires clarification on pricing/ ROI
6- Key Resources	4	4	2	5	Clear and very realistic.
7- Key Activities	4	4	3	4	Solid
8- Key Partnerships	4	4	3	5	Strong and appropriate. Perhaps could include equipment certifiers.
9- Cost Structure	4	4	3	5	Clearly described

Evaluation Scale: 1 = Poor, 2 = Fair, 3 = Good, 4 = Very Good, 5 = Excellent

Evaluation Criteria	Description	Score (1 to 5)	Comments
Originality / Novelty	Is the idea truly new or disruptive?	3	APU-off is not new, but structured operational testing is valuable
User Need Addressed	Does it solve a real and clearly identified user need?	5	Strong need to reduce APUs (CO2, noise, compliance, ESG)
Feasibility	Is the idea technically and operationally feasible?	5	Highly feasible using existing equipment
Market Potential	Is there strong demand or a commercial opportunity?	5	reduction solutions to meet the imperative of reducing greenhouse gas
Strategic Fit	Does the idea align with the organization's mission or strategy?	5	Fully aligned with international regulations (ICAO, CORSIA)
Scalability	Can the solution be scaled effectively and sustainably?	4	Easily scalable to all airports equipped with electrified gates
Cost vs. Benefit	Is the expected benefit worth the investment and resources required?	4	Fuel savings and emissions reduction. Cost/ benefit ratio positive.
Time to Market	Can it be implemented and launched quickly?	4	Short implementation cycle once equipment is available.
Competitive Advantage	Does it provide a clear edge over existing alternatives?	3	Although PCA/GPU are widely deployed, this approach provides a competitive advantage through its structured methodology with multi-condition testing
Sustainability / Impact	Does it have a lasting positive social or environmental impact?	5	Major environmental and operational benefits
Scoring Scale			
1 = Poor			
2 = Fair			
3 = Good			
4 = Very Good			
5 = Excellent			



11.2.1 Task 4.1.2 : Terminal innovative lighting

BMC Block	Clarity (1-5)	Coherence (1-5)	Originality (1-5)	Feasible (1-5)	Comments
1- Customer Segments	3	4	2	5	highly realistic. Narrow, mostly internal.
2- Value Proposition	4	4	3	5	Incremental innovation. Clear and quantified energy savings (30–50%), + architectural & maintenance benefits.
3- Channels	3	3	2	4	Rely mainly on tenders and renovation/ construction projects. Coherent but not really diversified.
4- Customer Relationships	4	4	2	4	Significant involvement of maintenance and operations teams. The relational model is operational rather than commercial.
5- Revenue Streams	3	4	2	4	Indirect revenue model: savings for ADP through reduced energy and maintenance costs
6- Key Resources	3	4	2	5	Relies on internal design, architecture and engineering expertise already embedded within ADP.
7- Key Activities	4	4	3	4	Well-defined : validation, deployment, integration
8- Key Partnerships	4	4	2	5	Stable R&D partnerships with manufacturers support continuous improvement
9- Cost Structure	2	3	1	5	Not very detailed; the justification is mainly based on R&D costs already incurred.

Evaluation Scale: 1 = Poor, 2 = Fair, 3 = Good, 4 = Very Good, 5 = Excellent

Evaluation Criteria	Description	Score (1 to 5)	Comments
Originality / Novelty	Is the idea truly new or disruptive?	3	Incremental innovation combining lighting design and optimisation
User Need Addressed	Does it solve a real and clearly identified user need?	4	Demand for energy efficiency + reduces maintenance.
Feasibility	Is the idea technically and operationally feasible?	5	Based on mature, well-established technologies and existing internal expertise
Market Potential	Is there strong demand or a commercial opportunity?	3	Primarily internal to ADP, limited external market at this stage.
Strategic Fit	Does the idea align with the organization's mission or strategy?	5	Fully aligned with airport energy and decarbonation strategies
Scalability	Can the solution be scaled effectively and sustainably?	4	Easily replicable across ADP sites and similar airports.
Cost vs. Benefit	Is the expected benefit worth the investment and resources required?	4	Energy and maintenance savings should offset the costs incurred over time.
Time to Market	Can it be implemented and launched quickly?	4	Yes. It deployable within renovation or new construction timelines;
Competitive Advantage	Does it provide a clear edge over existing alternatives?	2	Competitive edge based on integrated design and ADP's know-how rather than on patented technology.
Sustainability / Impact	Does it have a lasting positive social or environmental impact?	4	Significant and measurable reductions in energy consumption.
Scoring Scale			
1 = Poor			
2 = Fair			
3 = Good			
4 = Very Good			
5 = Excellent			



Task 4.4 : Waste reduction

BMC Block	Clarity (1-5)	Coherence (1-5)	Originality (1-5)	Feasible (1-5)	Comments
1- Customer Segments	4	4	3	4	Clearly identified segments (restaurants, airport, passengers). But no volume figures.
2- Value Proposition	5	5	4	4	Clear proposal, strong ecological and regulatory value. No quantified economic gains. For the airport environment, a relatively original proposal.
3- Channels	3	3	3	3	Onsite communication + restaurants. Limited, lack of digital channels. Lack of understanding of the subject matter among end customers.
4- Customer Relationships	3	3	3	3	Voluntary initiative. Depends on buy-in => fragile
5- Revenue Streams	2	3	3	2	No clear model. Depends on >90% return. No return on investment presented
6- Key Resources	4	4	3	3	Resources identified (machines, cups, HR). No consolidated overall costs.
7- Key Activities	4	4	3	2	Collection, washing, training. Feasible but logistically cumbersome.
8- Key Partnerships	5	5	3	2	Well-targeted partners but heavy dependence on their commitment. Real obstacle.
9- Cost Structure	3	3	3	3	Fixed/variable costs listed. No budget or projections provided.

Evaluation Scale: 1 = Poor, 2 = Fair, 3 = Good, 4 = Very Good, 5 = Excellent

Evaluation Criteria	Description	Score (1 to 5)	Comments
Originality / Novelty	Is the idea truly new or disruptive?	3	Incremental (already tested elsewhere), but original in the airport context.
User Need Addressed	Does it solve a real and clearly identified user need?	5	Meets a clear need (environmental, EU compliance).
Feasibility	Is the idea technically and operationally feasible?	2	Technically feasible, highly dependent on logistics (e.g. washing) and stakeholders, understanding of the subject/need by users (complex awareness-raising in a transient environment).
Market Potential	Is there strong demand or a commercial opportunity?	3	Strong theoretical interest, but no market figures or return on investment
Strategic Fit	Does the idea align with the organization's mission or strategy?	5	Fully aligned with Green Deal, Fit for 55, SUP Directive
Scalability	Can the solution be scaled effectively and sustainably?	4	Replicable in other airports, under certain conditions
Cost vs. Benefit	Is the expected benefit worth the investment and resources required?	3	Obvious environmental benefits, unclear financial benefits (still to be developed)
Time to Market	Can it be implemented and launched quickly?	4	Rapid deployment possible (little R&D)
Competitive Advantage	Does it provide a clear edge over existing alternatives?	3	Not a differentiating factor (biodegradable, compostable competition)
Sustainability / Impact	Does it have a lasting positive social or environmental impact?	5	Very strong environmental impact
Scoring Scale			
1 = Poor			
2 = Fair			
3 = Good			
4 = Very Good			
5 = Excellent			



Task 5.5 : SAF traceability

BMC Block	Clarity (1-5)	Coherence (1-5)	Originality (1-5)	Feasible (1-5)	Comments
1- Customer Segments	5	5	4	4	Clearly identified segments: SAF producers, airlines, corporate buyers (scope 3), airports. Large and growing market
2- Value Proposition	5	5	4	4	Transparency, traceability and simplification of SAF trading via digital registry. Clear regulatory alignment (CORSIA, ETS)
3- Channels	4	4	3	3	B2B, online platform/API systems. > Correct but depends on mass adoption.
4- Customer Relationships	4	4	3	4	Dedicated support, onboarding, automated API systems. Good level but costly to maintain.
5- Revenue Streams	5	4	3	4	Diversified model (consulting, transaction fees, specific developments). Credible but heavily dependent on the volume of SAF generated.
6- Key Resources	4	4	4	4	Digital platform, blockchain, certified database. > Resources identified, high IT infrastructure costs.
7- Key Activities	4	4	4	3	Certification, tracking, allocation, training > consistent but expertise-intensive activities.
8- Key Partnerships	5	5	4	4	Strong legitimacy through partnerships (IATA, ICAO, EU ETS, certification).
9- Cost Structure	4	4	3	3	Detailed but no financial projections.

Evaluation Scale: 1 = Poor, 2 = Fair, 3 = Good, 4 = Very Good, 5 = Excellent

Evaluation Criteria	Description	Score (1 to 5)	Comments
Originality / Novelty	Is the idea truly new or disruptive?	4	Digital registry applied to SAF = innovative in this sector but inspired by other registries (carbon, energy)
User Need Addressed	Does it solve a real and clearly identified user need?	5	Meets traceability and compliance requirements (CORSIA, EU ETS)
Feasibility	Is the idea technically and operationally feasible?	4	Technically feasible but depends on collective adoption and shared governance
Market Potential	Is there strong demand or a commercial opportunity?	5	Very strong. SAFs are a strategic, regulated market with growing demand.
Strategic Fit	Does the idea align with the organization's mission or strategy?	5	Fully aligned with the EU Green Deal, Fit for 55, EU SAF strategy
Scalability	Can the solution be scaled effectively and sustainably?	5	Easily replicable
Cost vs. Benefit	Is the expected benefit worth the investment and resources required?	4	Customer loyalty, guarantee of transparency/trust, ethics & compliance
Time to Market	Can it be implemented and launched quickly?	4	While implementation can be rapid, adoption is gradual.
Competitive Advantage	Does it provide a clear edge over existing alternatives?	4	First mover > sustainable and significant differentiation if institutional credibility is strengthened.
Sustainability / Impact	Does it have a lasting positive social or environmental impact?	5	Indirect but important: lends credibility and accelerates SAF adoption.
Scoring Scale			
1 = Poor			
2 = Fair			
3 = Good			
4 = Very Good			
5 = Excellent			



Task 6.1.4 : Integrated airport quality emission & modelling tool

BMC Block	Clarity (1-5)	Coherence (1-5)	Originality (1-5)	Feasible (1-5)	Comments
1- Customer Segments	5	5	4	4	Clearly identified segments: airports, airlines, public authorities. Strong alignment with environmental management and regulatory needs
2- Value Proposition	5	5	4	4	Strong value proposition combining predictive modelling, regulatory compliance support and operational optimisation
3- Channels	4	4	3	4	Appropriate mix of direct sales, consulting services and future SaaS deployment. Commercialisation pathway is credible
4- Customer Relationships	4	4	3	4	Dedicated support, co-creation and training are consistent with the complexity of environmental modelling services
5- Revenue Streams	4	4	4	4	Diversified model combining consulting services, SaaS subscriptions and integration fees. Strong long-term revenue potential.
6- Key Resources	5	5	4	4	Valuable proprietary models, databases, HPC infrastructure and expert knowledge create a strong competitive foundation
7- Key Activities	5	5	4	4	Activities are clearly linked to value creation through modelling, validation, integration and environmental assessment
8- Key Partnerships	5	5	3	4	Strong ecosystem involving airports, regulators, modelling experts and data providers. Essential for deployment and credibility
9- Cost Structure	4	4	3	3	Realistic cost structure. However, long-term platform maintenance and cloud computing costs remain significant
Evaluation Scale: 1 = Poor, 2 = Fair, 3 = Good, 4 = Very Good, 5 = Excellent					



Evaluation Criteria	Description	Score (1 to 5)	Comments
Originality / Novelty	Is the idea truly new or disruptive?	4	Combines air quality modelling, monitoring, predictive scenarios and compliance reporting within a single integrated platform
User Need Addressed	Does it solve a real and clearly identified user need?	5	Directly addresses increasing environmental monitoring, reporting and compliance requirements for airports and authorities
Feasibility	Is the idea technically and operationally feasible?	4	Based on mature modelling capabilities and existing expertise. Industrialisation efforts remain necessary
Market Potential	Is there strong demand or a commercial opportunity?	4	Growing demand driven by environmental regulations, ESG requirements and airport sustainability strategies
Strategic Fit	Does the idea align with the organization's mission or strategy?	5	Fully aligned with EU Green Deal objectives, air quality directives and airport decarbonisation goals
Scalability	Can the solution be scaled effectively and sustainably?	5	Software-based platform with strong replication potential across airports and potentially other territories
Cost vs. Benefit	Is the expected benefit worth the investment and resources required?	4	High environmental and operational value. Benefits likely outweigh implementation costs
Time to Market	Can it be implemented and launched quickly?	4	Existing consulting services already operational. SaaS platform could accelerate deployment once developed
Competitive Advantage	Does it provide a clear edge over existing alternatives?	4	Airport-specific focus, integration of modelling and monitoring, and strong regulatory orientation provide differentiation
Sustainability / Impact	Does it have a lasting positive social or environmental impact?	5	Strong potential to improve air quality management, support public health objectives and inform environmental decision-making.
Scoring Scale			
1 = Poor			
2 = Fair			
3 = Good			
4 = Very Good			
5 = Excellent			



11.3 Annexe C – SWOT analyses

Task 2.2 : Multimodality and traffic flow optimisation

SWOT ANALYSIS

Project

WP2.2 : IT Multimodality and traffic flow optimization

S

W

O

T

Strengths

- Strong strategic relevance for airports and cities
- Clear operational and environmental benefits
- High replication potential across multimodal hubs

Weaknesses

- No clear commercial or revenue model defined
- Value proposition remains generic compared to existing IT mobility solutions
- Governance and data ownership issues not addressed

Opportunities

- Growing EU focus on smart mobility and multimodality
- Potential integration with smart city and MaaS platforms
- Increasing pressure on airports to reduce congestion and emissions

Threats

- Strong competition from established traffic and mobility IT providers
- Dependency on data availability and interoperability
- Risk of remaining a demonstrator without a clear exploitation pathway

Missing data



Task 3.6 : APU substitution

SWOT ANALYSIS

Project

WP3.6 : APU substitution

S

Strengths

Strong environmental impact (fuel, CO₂, noise reduction). Uses mature and available technologies (PCA/GPU). Operational feasibility highly validated through testing. Very strong strategic alignment with regulatory pressures.

W

Weaknesses

Limited commercial model (revenue streams block not fully defined). Channels are operational rather than commercial. Requires gate electrification → Could it be limited in older terminals. Standardisation processes are not yet fully mature.

O

Opportunities

High scalability across airports with electrified infrastructure. Increasing regulatory pressure to reduce APU time everywhere. Airlines seeking “quick wins” for ESG reporting. Potential to standard operating procedures and digital monitoring.

T

Threats

Infrastructure constraints (non-electrified gates). Competing solutions (battery GPUs, hybrid systems). Weather constraints may limit full substitution in extreme conditions.

Missing data



Task 4.1.2 : Terminal innovative lighting

SWOT ANALYSIS

Project

WP4.1.2 : Terminal innovative lighting

S

Strengths

Significant energy savings (30–50%).
Improves maintenance efficiency and passenger experience.
Very low implementation risk.

W

Weaknesses

Limited originality → optimisation rather than disruption.
Weakly detailed cost structure. Mostly internal market (ADP-focused).
Indirect revenue model based on cost savings only.

O

Opportunities

Replication across ADP's international airport portfolio.
Growing pressure on airports to improve energy efficiency.
Integration into "smart airport" and digital building strategies.
Transferable methodology to other airport operators.

T

Threats

Competing lighting optimisations offering similar savings.
Budget constraints in renovation projects.
Dependence on manufacturer performance and supply chains

Missing data



Task 4.4 : Waste reduction

SWOT ANALYSIS

Project

WP4.4 : Waste reduction

S**Strengths**

High environmental value > strong and visible ecological impact = plastic reduction, good regulatory alignment (CSR, sustainability), well-targeted segments, possible deployment in the short term

W**Weaknesses**

No precise financial data (CAPEX/OPEX, ROI), dependence on cup return rates (>90%), fragile voluntary adoption by customers/restaurateurs (strong awareness-raising and communication essential), complex washing logistics (on-site vs. outsourced).

O**Opportunities**

Highly replicable in other European airports, can serve as a “quick win” showcase for OLGA and the EC, growing consumer interest in sustainability, potential partnerships with catering operators

T**Threats**

Complex washing logistics, high start-up/operating costs (= obstacle to widespread replication), low adoption rate. Requires commitment from all stakeholders.

Missing data



Task 5.5 : SAF traceability

SWOT ANALYSIS

Project

WP5.5 : SAF Traceability

S

Strengths
Regulatory alignment (quasi-mandatory adoption), legitimacy (IATA, certifiers), real market needs, diversified model (stable revenues via consulting and transaction fees)

W

Weaknesses
High IT-organizational-coordination costs, dependence on widespread adoption, technical complexity, unclear value sharing

O

Opportunities
Strong growth in the SAF market (driven by Fit for 55 and SAF requirements). Potential for standardization at EU level first, then internationally. Institutional and political support.

T

Threats
Risks related to cybersecurity, limited growth if alternative fuel production remains low, and financial constraints on businesses may constitute an obstacle. Market in competition and competitiveness.

Missing data



Task 6.1.4 : Integrated airport quality emission & modelling tool

SWOT ANALYSIS

Project

WP6.1.4 : Integrated airport quality emission
& modelling tool**S****Strengths**

Strong scientific and technical expertise in air quality modelling ; clear value proposition combining monitoring, prediction and compliance support ; high alignment with EU environmental and airport sustainability objectives ; strong replication potential across airports and other territories

W**Weaknesses**

Dependence on specialised expertise and high-quality data inputs ; SaaS business model still under development ; significant maintenance and computing resource requirements ; revenue growth depends on customer adoption of the platform

O**Opportunities**

Growing demand for environmental monitoring and ESG reporting ; increasing regulatory requirements on air quality management ; expansion potential beyond airports (cities, industry, transport) ; integration with wider airport digitalisation initiatives.

T**Threats**

Competition from established air quality and environmental software providers ; budget constraints affecting airport investment decisions ; rapid technological evolution requiring continuous updates ; dependence on evolving regulatory frameworks and markets priorities

Missing data