ALIGHT
SUSTAINABLE AVIATION

D8.1 Exploitation plan (version M6)

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1. Background

The overall mission of the ALIGHT project is to enhance sustainable aviation. With Copenhagen Airport (CPH) as lighthouse the project will bring forward the necessary solutions, knowledge, guidelines and best practice handbooks supporting an efficient airport paradigm shift towards zero emission aviation and airport operation. Fellow airports will replicate the example set by Copenhagen Airport. Through effective communication, the mission is to ensure maximum impact throughout the European and international aviation industry both during and beyond the duration of the project.

2. Objective

The purpose of Deliverable D8.1 exploitation plan is to report on activities implemented so far and to present an update of the exploitation plan of the ALIGHT consortium after 6 months of ALIGHT project activities. It describes in detail the organization of future activities, WPs development and communication & dissemination plan in support of ALIGHT concept for future sustainable aviation. This deliverable is before all a refinement of the plan from the project proposal stage.

This deliverable D8.1 updates the draft exploitation plan of ALIGHT that was compiled in M6. It includes:

- ✓ List of ALIGHT deliverables (Chapter 4.2 and figure 4)
- ✓ Description of the exploitable deliverables of ALIGHT (Chapter 4.3 and figure 5)
- ✓ Consortium initial exploitation plan (all consortium partners) (Chapter 3)
- ✓ Updated consortium initial exploitation plan (all consortium partners) (Chapter 5)
- ✓ Individual exploitation plan (per Partner) (Chapter 6)

Target audience and stakeholders reporting, and updates are described in D10.1 deliverable from WP10 about communication and dissemination.

Metrics for transfer, including quality control, traceability, logistics, user survey feedback, involvement of national authorities and key economic indicators are described in D8.2 deliverable from WP8 about Exploitation and Replication Toolbox.

3. Initial Exploitation Plan

3.1 Purpose the Exploitation Plan

The Plan for the Exploitation is one of the measures to maximize the impacts of ALIGHT. It summarizes the beneficiaries' strategy and concrete actions related to the use, dissemination, protection and replication of the project results. The overall exploitation strategy will ensure that the partners

are free to benefit from their complementarity, roles and synergies, experience and capabilities, to utilize the project results with proficiency and exploit their market position with due consideration for IPR. The general purpose is to achieve the widest possible impact both in Europe and globally, and to facilitate the introduction and adoption of SAF (and other possible propellants) and smart energy in airports and their wider contexts. Below is outlined the Key Exploitable Results (KERs) as well as an exploitation plan outline for the ALIGHT partners.

The Exploitation Plan is a living document which will be updated on a continuous basis. The plans will thus be directly connected to the impact of the project, as well as on the replicability/scaling-up potential protection, replication and exploitation of the project results. Networking and stakeholder engagement activities will be included, to address needs and requirements beyond the project consortium and to receive valuable input for the optimization of ALIGHT.

3.2 Initial Plan from Project Proposal Stage

ALIGHT will contribute to the European regulatory, standardization, certification and technological progress by disseminating its results, throughout the whole project's duration, to a carefully defined target audience according to its specific interests and needs. Nevertheless, prior to exploitation and dissemination, an evaluation has been carried out, especially considering the provisions of the Grant Agreement (GA) and the Consortium Agreement (CA). This will ensure that confidentiality provisions are not jeopardized. To effectively disseminate and exploit the results of ALIGHT, an initial stakeholder analysis has been developed (see below 3.2.1). Relevant stakeholders will be continuously involved throughout the project.

3.2.1 Stakeholder analysis

Stakeholders	Interest
Technology providers	Growing market demand for technologies to manufacture, supply, introduce and integrate SAF and smart energy in airports, and to measure environmental impacts to meet national and international goals and requirements. Easy access to project results and achievements. Stakeholder events to gauge markets and provide relevant input to meet demand.
Industry, including SMEs	Growing need for strong value chains, feedstock suppliers, technologies, developers, including suppliers and service providers, to meet increasing demand for SAF and smart energy. Easy access to project results and achievements. Stakeholder events to provide input and build value chains.
Research community, including universities	Reference study cases and scientific journal publications. New research projects and conference presentations. Access to new knowledge, innovation, and assistance in preparing educational materials.
End users/consumers, including airlines, airport personnel and passengers	End user and consumer confidence in new and sustainable solutions, positive perceptions (including safety), safe and healthy work, travel, transport and airport environments, training activities, economic and sustainability assessments.
Fellow airports	Access to new knowledge and best practice guidelines, transfer opportunities, business models, sustainability assessments.
Airport surroundings, including infrastructure and neighborhood groups	Optimized integration, business model scenarios, reduced climate- and environmental impact (including air pollutants), societal impacts. Transfer opportunities.
Other project consortia	Knowledge exchange, best practices, access to new knowledge, cross countries, companies, institutions etc.
General public	Positive perception of SAF and smart energy, less impact on climate and the environment, good for the economy.
Standardization and certification bodies	Recommendations for new standards and revision of existing energy management related ones. Recommendation for specific airport context guidelines for standards implementation on Access to R&D results for SAF and smart energy developments.
Local/regional/national authorities & public bodies, including city planners	Recommendation for SAF and smart energy use and integration, vision of future airports/smart cities, access to new knowledge.
Investors	Business case scenarios, investment opportunities, economic impacts.
Policy makers	Recommendations for SAF/smart energy legislation/regulatory initiatives, solutions for national, European and international strategies regarding sustainability and climate change. Access to project achievements and economic impacts.

Networks and industry associations	Support for concept and technology roll-out
European Commission	Best practice and guidelines on using SAF and smart energy in the airports of the future. Recommendations and sustainability assessments to achieve international goals.

The general purpose of the exploitation plan is to achieve the widest possible impact both in Europe and globally, and to facilitate the introduction and adoption of SAF and smart energy in airports and their wider contexts. Below are outlined the Key Exploitable Results (KERs) as well as an exploitation plan outline for the ALIGHT partners.

3.2.2 Key Exploitable Results (KERs)

ALIGHT will create several overall Key Exploitable Results (KERs), all of which have numerous sub-components, as outlined below.

WP	KER	Partners
2	SAF supply line: • establishment of a SAF supply line to CPH, including alignment with possible local production, product type, delivery options, purchase agreements, arrival and storage conditions, compliance, standards, criteria (including sustainability) price and scalability. Potential IPR: Technology- and energy- system integration	NISA, BKL, AirBP, IATA, CPH, TUHH
2	SAF supply line transfer/replication model: • based on input from Fellow Airports regarding local conditions, considerations etc. Potential IPR: Blending, registration, controlling-capabilities	NISA, BKL, AirBP, IATA, CPH, TUHH
3	SAF integration, implementation and usage prototype: • including fuel logistics, infrastructure, sustainability data and field performance monitoring, e.g. Remote fuel quality control system -to ensure quality control of SAF supply line (potential patent/copyright)-, End users and price issues. *Note: SAF is the main task, but other sustainable related solutions will have to be considered, such as electrical aircraft, hydrogen.*	DLR, NISA, TUHH, BKL, AirBP, IATA, CPH
3	Software tools supporting sustainable fuel handling and logistics at airports, accounting & reporting (potential patent/copyright): • Results on LAQ and non-CO2 climate benefits of sustainable fuels (publication) • Update of sustainable fuel database (public access) • Input to guidelines for efficiency benefits of sustainable fuels (publication) • SAF implementation and usage replication model: including extrapolation of field performance data, adaptation of best practice and recommendation for local implementation challenges, e.g.: • Input to best practices for sustainable fuel handling and logistics at airports, quality control and accounting & reporting (publication). • Economic research results (publication)	BKL, AirBP, DLR, TUHH, IATA
4	Smart energy supply prototype: • Including concept design, mapping and characterization of energy consumption and resources, infrastructure, battery energy storage system (BESS), data interfaces, specifications and hybrid energy management system.	CPH, HG, DTI, ADR, LTOU, CPK, IATA, BMGI, UNIPR

4	Smart energy supply (fossil-free) roadmap input for replication: • Including optimal operating scenario, smart energy management software, best practice for integration and interoperability, baseline from energy use patterns.	CPH, HG, DTI, ADR, LTOU, CPK, IATA, BMGI, UNIPR
5	Smart energy usage prototype: • including energy mapping and efficiency measures, passenger transport planning and infrastructure, ground handling equipment infrastructure, feasibility demonstration and guidelines, smart energy buildings (heating, cooling, electricity), datalogging database	CPH, ADR, LTOU, CPK, DTI, SAS, IATA, HG, BMGI, UNIPR
5	Roadmap input for greening passenger transport and ground equipment: • Strategies and guidelines.	ALL
5	Designs for smart airports of the future: • Design, infrastructure, safety measures, optimized energy usage, digitalization etc. for aircraft stand of the future. (May involve topics around aircraft with new fuels, electric aircraft, hydrogen aircraft and hybrid. topics that will be of great importance for the creation of the stand of the future. To the extent it becomes relevant, it will be included in deliveries from WP2)	CPH, ADR, LTOU, CPK, DTI, SAS, IATA, HG, MBGI, UNIPR (NISA)
6	Sustainability best practice protocol and optimized greenhouse gas emission monitoring system: • Recommendations for optimized sustainability and design and implementation of improved greenhouse gas monitoring system.	ALL
7	Best practice input from cooperation activities: • including integration, input to bold vision for smart airports (as a part of 'smart cities'), knowledge exchange, transfer, workshops with stakeholders regarding state of the art, smart requirements, vision), co-creation and recommendations.	CPH, ADR, LTOU, CPK, DTI, NISA, IATA, DLR, BMGI
8	Sustainable commercial scenario/business models	ALL
8	Guidelines and metrics for transfer: • including quality control, traceability, logistics, user survey feedback, involvement of national authorities and key economic indicators.	ALL
8	Best practice handbooks and toolboxes (SAF and Smart Energy): • compilation of best practices and toolboxes inputs from WP2-7, including assessment, infrastructure, management, practical recommendations, performance monitoring, sustainability, benchmarking database, procurement procedures, planning requirements, regulatory/legal recommendations, data security/protection aspects, requirements for standardization development.	ALL
9	Input for transfer guidelines: • transfer support and input to best practice solutions from Fellow Airports.	CPH, ADR, LTOU, CPK

3.2.3 Initial consortium exploitation plan for ALIGHT

The initial exploitation plan will be updated through WP8. All partners will assess their exploitation activities on an ongoing basis and adjust to maximize the impact throughout and post-project.

Partner(s)	Initial exploitation plan
ALIGHT end users (CPH, ADR, LTOU, CPK)	The airports, namely CPH, ADR, LTOU and CPK, are the main end users of the ALIGHT concept. Initial activities include integration into operations and logistics (CPH), planning for transfer and replication (ADR, LTOU) and planning for concept integration into a new airport build (CPK).
Industry/for-profit partners/SMEs (BMGI, HG, BKL, SAS, AirBP)	BMGI will collect existing standardization initiatives and development from global standardization communities where Dr. Bernard GINDROZ has leadership responsibilities (ISO, IEC, ITU-T) and from EU ones (CEN, CENELEC and ETSI). BMGI will then feed the standardization communities with outcomes from the ALIGHT project for further consideration in the standardization development, to set a common reference for sustainable development and reinforce the capacity to boost innovation to market. HG, BKL, SAS and AirBP will exploit KERs in a manner consistent with their business approach (to be outlined in the exploitation plan).
RTOs (DTI, DLR)	DLR will apply the tools and learning from KER 3 and 4 to further develop SAF digital twin and smart sensors ensuring fuel quality, to support the deployment and utilization of SAF, to further identify the added values of SAF on aircraft performance and non-CO2 impacts. DTI will apply tools, learning from KER 4 and 5 to support validation, implementation and optimization of smart energy system, smart charging infrastructure, PV systems between runways, fleet management tools etc. DTI will secure IEA/AMF involvement.
Universities (UNIPR, TUHH)	The universities will engage in collaborations and knowledge sharing with other universities, such as University of Southern Denmark, Technical University of Denmark and Chalmers University of Technology (Sweden). TUHH will apply a formerly developed and novel methodology for reporting and accounting of SAF in the practical context of the ALIGHT project. Therefore, the SAF supply chain will be monitored according to the methodology and the transferability of the methodology into a real application will be investigated. Therefore, a PhD position will be established to investigate the transferability of the theoretical approach into the project and thereon into a globally applicable scheme. UNIPR will activate a PhD position to investigate further development of project results and their transferability to other sectors.

Associations/public bodies (RSB, NISA, IATA)	RSB will use the project to develop standard guidance for airports and the broader aviation sector for SAF procurement and use. While RSB has used its expertise in the past to advise on SAF sustainability, it has not developed a standardized approach for use by industry. RSB will also use the project to broaden its engagement with airports globally with a view to further promoting the RSB standard. RSB is engaged with ICAO in the development of CORSIA (providing technical advice on sustainability standards and certification systems). RSB be able to share relevant experience gained from this project at future ICAO meetings on CORSIA implementation. The ALIGHT will also help RSB to gain further experience on the practical use of its standard and certification system in an EU airport context which will inform the future development of the RSB standard and certification system and so support further implementation of global best practice. NISA will use the project to promote the development of sustainable aviation and, on behalf of its members, to push for solutions across organizations, national borders and with greater political awareness. NISA combines its participation with other involvement in analyzes, research and projects in sustainable aviation solutions. IATA will use the ALIGHT project to promote SAF and smart energy to their members.

4. Report on the progress of all WPs of ALIGHT activities between M01 and M06

During the first 6 months of activities, several major achievements have been met by in the different ALIGHT WPs. Despite COVID-19 restrictions, all planned actions have been implemented. To accommodate with COVID-19 context, workshops and meetings have been moved from physical to virtual mode, in a very successful and fruitful manner.

- Sub-chapter 4.1 below sum-ups the project Work Plan, its Work Packages.
- Sub-chapter 4.2 summarizes List of ALIGHT deliverables
- Sub-chapter 4.3 describes exploitable deliverables of ALIGHT
- Sub-chapter 4.4 details progress of activities and achievements from each WP in this first project implementation period (M01 – M06)

4.1 Work plan and Work Packages

ALIGHT is divided into two distinct aspects, Sustainable Aviation Fuels (SAF) and Smart and Sustainable Energy, with several cross-cutting WPs.

Figure 1 depicts ALIGHT Work Package structure, Figure 2 lists ALIGHT Work Packages, while Figure 3 maps ALIGHT Work Plan (Gantt Chart) and Figure 4 lists ALIGHT project's deliverables.

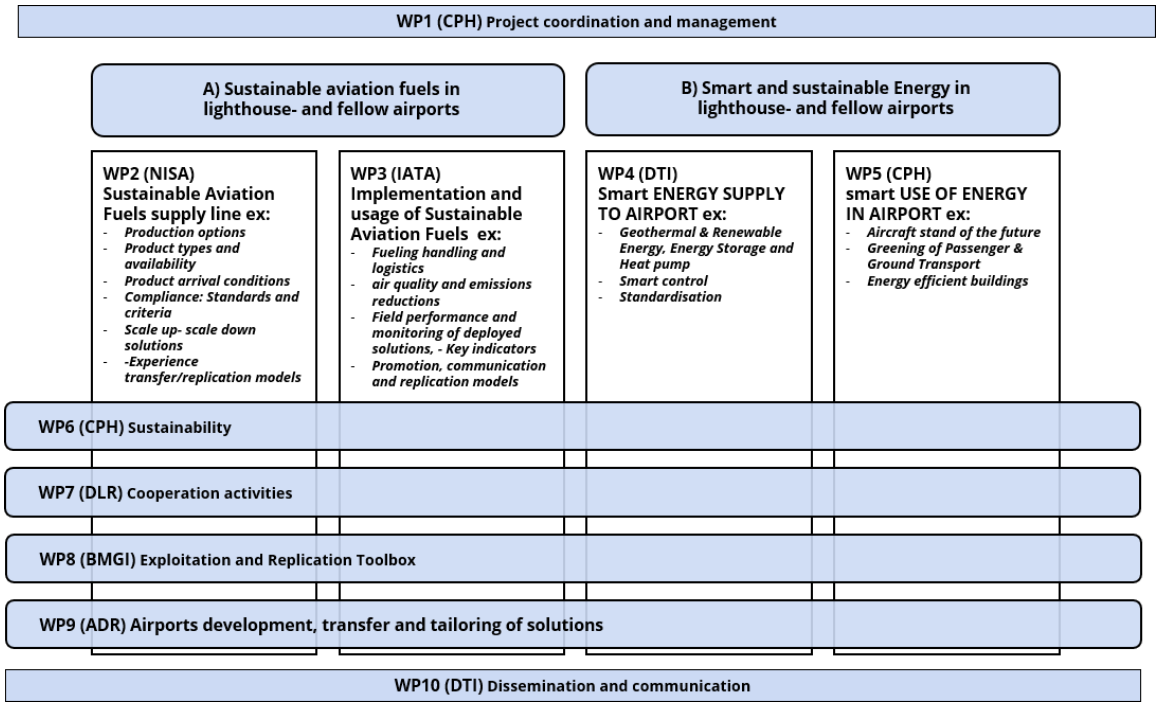

Figure 1: ALIGHT Work Package structure

Work package no.	Work package title	Lead participant short name	Start month	End month
1	Project coordination and Management	CPH	1	48
2	Sustainable Aviation Fuels supply line	NISA	3	48
3	Implementation and usage of Sustainable Aviation Fuels	IATA	1	48
4	Smart Energy Supply to Airport	DTI	1	48
5	Smart Use of Energy in Airport	CPH	1	46
6	Sustainability	CPH	1	48
7	Cooperation activities	DLR	1	48
8	Exploitation and Replication Toolbox	BMGI	1	48
9	Airports' development, transfer and tailoring of solutions	ADR	1	48
10	Dissemination and communication	DTI	1	48

Figure 2: ALIGHT Work Packages

Figure 3: ALIGHT Gantt Chart

4.2 List of ALIGHT deliverables

Deliverable (no)	Deliverable name	WP	Short name of lead participant	Delivery date (in months)
D1.1	Project Management Plan	WP1	CPH	M2
D1.2	Data Management Plan	WP1	CPH	M6
D1.3	Updated Data Management Plan	WP1	CPH	M18
D1.4	Periodic technical and financial reports	WP1	CPH	M18 M36 M48
D1.5	Final updated data management plan	WP1	CPH	M36
D2.1	Report on the decision process and other circumstances involved to establish a production facility and identification of possible alternative delivery options Map out available data for producers and suppliers, technologies, methods, feedstocks etc. Includes ongoing producers and upcoming/developers possible alternative delivery options	WP2	NISA	M20 M44
D2.2	Guidance on sustainability criteria and best practice framework – and secure contact to suppliers & producers of SAF	WP2	NISA	M22
D2.3	Platform and communication for airports integration and transfer of solutions	WP2	NISA	M26
D3.1	Detailed plan of field performance monitoring and parameters captured in SimFuel	WP3	DLR	M6
D3.2	Best practice handbook and tools for fuel logistics, quality monitoring and accounting	WP3	IATA	M46
D3.3	Report on broader environmental benefits	WP3	IATA	M24
D3.4	Definition of parameters and metrics for field performance monitoring	WP3	IATA	M6
D3.5	Report on field performance monitoring	WP3	CPH	M46
D3.6	Report on feasibility and added values of	WP3	DLR	M42

	Smart Sensors for the Smart Airport in 2050			
D3.7	Report on the digital platform for smart use of SAF	WP3	DLR	M46
D4.1	Fossil Free Airport Roadmap report – infrastructure, supply, use and flexibility	WP4 WP5	DTI	M6
D4.2	Smart Energy Management SAT and Software Functionality test descriptions	WP4	HG	M36
D4.3	Best practices for smart energy supply and management collected as guidelines, handbooks, case studies, business case tools	WP4	DTI	M42
D5.1	Best practice toolbox for Greening of Ground Equipment and Passenger Transport	WP5	CPH	M46
D5.2	Best practice toolbox on Airport Buildings ready for smart energy management	WP5	CPH	M44
D5.3	Design manual for Aircraft Stand of the future	WP5	CPH	M46
D6.1	Guidance on procurement of SAF for EU airports	WP6	CPH	M24
D6.2	Certification of SAF at lighthouse airports	WP6	CPH	M48
D6.3	GHG monitoring system	WP6	CPH	M48
D6.4	Sustainability report	WP6	CPH	M48
D7.1	Report on “state-of-the-art WS”	WP7	DTI	M12
D7.2	Report on “requirements for 2050 WS”	WP7	DLR	M30
D7.3	Report on “bold vision 2050 WS”	WP7	DLR	M42
D8.1	Exploitation plan (with updates)	WP8	BMGI	M6 M18 M36
D8.2	Table of metrics	WP8	BMGI	M6
D8.3	Recommendation for replication	WP8	BMGI	M24
D8.4	Replication Toolbox for SAF	WP8	BMGI	M44
D8.5	Replication Toolbox for Smart Energy	WP8	BMGI	M44
D8.6	Guidelines to a bold vision 2050	WP8	BMGI	M46
D9.1	Detailed scheme and report of the infrastructure tailored solution for delivering biofuels in fellow and other airports	WP9	ADR	M42

D9.2	Detailed scheme and description of the organization tailored solution for delivering biofuels in fellow and other airports	WP9	ADR	M46
D9.3	Detailed report of the data and quality control tailored solution for delivering biofuels in fellow and other airports	WP9	ADR	M46
D9.4	Detailed report of the local/national regulatory compliance for delivering biofuels in the fellow airports, and in other airports	WP9	ADR	M46
D9.5	Detailed report on smart energy solutions transferred and tailored in fellow and other airports	WP9	ADR	M46
D10.1	Communication and Dissemination Plan	WP10	DTI	M4
D10.2	Project website	WP10	DTI	M6
D10.3	Project video, social media	WP10	DTI	M10
D10.4	IPR inventory and IPR management strategy	WP10	DTI	M5
D10.5	Network development	WP10	CPH	M30 M48
D10.6	Report on final conference	WP10	CPH	M48

Figure 4: ALIGHT Deliverables

4.3 Exploitable deliverables of ALIGHT

Deliverable (no)	Deliverable name	Brief description	Delivery date (in months)
D2.2	Guidance on sustainability criteria and best practice framework	1.**Identification** - Map out SAF production- and delivery options **2.Consolidation, -** reduced list: a. short term supply options b. short/medium supply options c. medium term options	M22 M30

		Main elements in 1. and 2. : Feedstock, pathway, technology, price, amounts, availability, when able to deliver, continuous production/supply, GHG reduction/neat SAF, sustainability data/whole supply chain, certification, - compare SAF products on available and comparable parameters. Exp adv....	
D2.3	Platform and communication model for Airports' integration and transfer of solutions	Based on the identified production and supply options, as well as the decided criteria as mentioned in D2.2. a communication model for airport's integration and transfer of solutions	M26 M30 M46
D3.2	Best practice handbook and tools for fuel logistics, quality monitoring and accounting	The handbook will equip airports and other stakeholders (i.e.: fuel suppliers, airlines, etc.) with a detailed and practical best practices and recommended guidelines for the implementation and usage of SAF downstream the value chain; from blending and delivery to the airport right up to the wing of the plane. Best practices will be defined and described for processes, methods and tools for the SAF supply and usage for the following areas: ✓ Fuel handling and logistics at the airport ✓ Safety aspects ✓ Technical quality ✓ Accounting & Reporting	M46
D3.3	Report on broader environmental benefits	This report is about analysing the benefits of SAF beyond carbon reduction (Decarbonisation). That's why further variables are going to be analysed such as Local air quality, Non-CO2 climate impact, Fuel	M24

		efficiency and Economic benefits. The analysis will be based primarily on a literature review exercise and then complemented with the field performance monitoring and/or SimFuel database results.	
D4.3	Best practises for smart energy supply and management collected as guidelines, handbooks, case studies, business case tools	This deliverable relates to WP4 and will deliver best practices collected as guidelines, handbooks, case studies and business case tools. Input will support replication effort in WP8 where toolbox dedicated to Smart Energy will be developed based on the inputs from other WPs, mainly 4 and 5, in collaboration with WP6, 7 and 9. Input will be derived from smart energy supply and roadmap, sustainable energy supply, smart charging, energy storage and smart energy management. International practices will also be derived from partners, as relevant, and used for input.	M42
D5.1	Best practises toolbox for Greening of Ground Equipment and Passenger Transport	This deliverable relates to WP5, task 5.2 and 5.3. It will deliver a comprehensive best practice toolbox for greening of ground equipment and passenger transport. Input will support replication effort in WP8 where toolbox dedicated to workstream B of Smart Energy and use, will be developed based on the inputs from other WPs, mainly 4 and 5, in collaboration with WP6, 7 and 9. Input will be derived from smart energy supply and roadmap, sustainable energy supply, smart charging and infrastructure, energy storage, smart energy management and use-case based investigation using anthropological	M46

		methods. International practices will also be derived from partners, as relevant, and used for input. Indicator of success: Best practice toolbox developed and approved	
D5.2	Best practise toolbox on Airport Buildings ready for smart energy management	This deliverable relates to WP5, task 5.4. The Pilot-site demonstrate feasibility of smart and efficient energy management in several specific activities. Flexible data logging for heating, cooling and electricity will be established to a database (or datalake for unstructured data). It will also include remote control, heat capacity, EV-charge infrastructure and energy assessment of individual buildings. Input will support replication effort in WP8 where toolbox dedicated to workstream B of Smart Energy and use, will be developed based on the inputs from other WPs, mainly 4 and 5, in collaboration with WP6, 7 and 9. International practices will also be derived from partners, as relevant, and used for input. Best practice will be compiled in toolbox. Indicator of success: Best practices toolbox compiled and approved	M44
D5.3	Design manual for Aircraft Stand of the future	This deliverable relates to WP5, task 5.5 and will deliver a design manual for the aircraft stand of the future encompassing new aircraft design incl. suitable infrastructure and safety measures and contribute to the preparation for electrical aircraft and autonomous solutions. The 'aircraft stand of the	M46

		future' will cover all relevant sustainable mobility, technical, operational, economic, environmental and societal aspects to provide input to airports of the future. This deliverable is related to workstream B and will have input derived from smart energy supply and roadmap, sustainable energy supply, smart charging and infrastructure, energy storage and smart energy management. This deliverable also require collaboration with the workstream A for optimal success of the design manual. International practices will also be derived from partners, as relevant, and used for input. Indicator of success: Design manual developed and approved	
D6.1	Guidance on procurement of SAF for EU airports	The guidance will equip airports with a detailed and practical understanding of the sustainability aspects of SAF production, from feedstock right up to production and delivery to the airport. Equipping airports with the tools to recognize and possibly incentivize the most sustainable SAF supply will help airports manage their risks (internal and external) and influencing SAF supply decisions.	M24
D6.3	GHG monitoring system	This deliverable relates to T6.3. A system to monitor GHG emissions and savings will be developed and implemented. Input to best practice will be obtained. Indicator of success:	M48

		GHG monitoring system implemented.	
D8.2	Table of Metrics	The table of metrics is about key metrics (KPIs) to be used for following progress. News on this will include expected findings that can be replicable to other airports etc. Metrics for transfer, including quality control, traceability, logistics, user survey feedback, involvement of national authorities and key economic indicators will be developed based on the inputs from WPs mainly "vertical" WPs (WP2, WP3, WP4 and WP5), in collaboration with WP6, 7 and 9.	M6
D8.3	Recommendation for replication	Specific guidelines on how to move from planning through implementation to replication and scaling-up of the successful demonstrated solutions in two different contexts will be developed: 1. Existing airports, 2. New build airports.	M24
D8.4	Replication Toolbox for SAF	Toolbox dedicated to SAF will be developed, based on the inputs from WPs, mainly "vertical" WPs 2 and 3, in collaboration with WP6, 7 and 9. In addition to the SAF handbook(s), the outcomes from the SAF related workshops will feed the dedicated Toolbox, considering especially: ✓ The state-of-the-art and reliable sustainable solutions for aircraft fueling with SAF, including procurement, relation with suppliers and other stakeholders, ✓ assessment of its impact on the airport energy system, ✓ airport planning requirements and operational processes to support large-scale roll-out, ✓ availability of storage and blending facilities,	M44

		✓ assessment of existing infrastructure and specifications for new ones. ✓ Practical recommendations relating to regulatory, legal and data security/protection aspects, ✓ description of effective business models, ✓ needs expressed in workshops, ✓ requirements for standardization development.	
D8.5	Replication Toolbox for Smart Energy	Toolbox dedicated to Smart Energy will be developed based on the inputs from WPs, mainly "vertical" WPs 4 and 5, in collaboration with WP6, 7 and 9. In addition to the Smart Energy handbook(s), the outcomes from the Smart Energy related workshops will feed the dedicated Toolbox, considering especially: ✓ electro-mobility (including assessment of its impact on the energy system within the boundaries of the airport), ✓ infrastructure management and planning tools capable of combining data, ✓ best practice examples, ✓ recommendations about interactions with authorities and local communities, ✓ best practice examples of energy management, performance monitoring and benchmarking, ✓ other specific needs as expressed during workshops.	M44
D8.6	Guidelines to a bold vision 2050	A strengthened cooperation with WP7 (Cooperation activities) and WP9 (fellow airports and new Warsaw airport hub), as well as with the Advisory Board and from the outcomes from the bold vision dedicated workshop will be ensured, in	M46

		order to feed the development and organization of the guidelines. Guidelines will especially consider: ✓ relevant sustainable mobility, ✓ technical, operational, economic, environmental and social aspects that are expected to shape the airports of the future. ✓ Coherent consideration between the development of future airports and the surrounding urban/city sustainable development plans, to ensure common and complementary roadmaps, with optimization and alignment of work, infrastructures' development and costs.	
D10.2	Project website	An easy-to-use and intuitive project website has been built and launched in M6 after kickoff. The website aims to reach the target audience in the most effective way. The project website, digital newsletter and social media platform are linked together and forms the backbone of the communication gateway to stakeholders and others outside the project consortium. The website is up-dated at least every 3 months during the project and 2 years beyond with contribution from all project partners. Link to website: ALIGHT (alight-aviation.eu)	M6

Figure 5: Exploitable deliverables of ALIGHT

5. Updated consortium exploitation plan (by M6)

The initial consortium exploitation plan, as described in the project proposal phase, has been updated, considering the development from ALIGHT first 6 months of activity (M1 to M6). The following table represents the updated exploitation plan of the consortium.

Partner(s)	Consortium exploitation plan (updated M6)
ALIGHT end users (CPH, ADR, LTOU, CPK)	CPH together with ADR, LTOU and CPK, are the main end users of the ALIGHT concept. Initial activities at CPH include the state-of-the-art and reliable sustainable solutions for aircraft refueling with SAF, assessment of existing infrastructure and plan for integration into operations and logistics at CPH. The outcomes from the Smart Energy related workshops will feed the dedicated Toolbox. This aims to give concrete tools to assess the integrated BESS and V2G chargers at CPH. ADR is analysing the state of the art of the airports involved in order to have a complete view of the existing features (to make the use of the SAF applicable) and the energy situation (to make the airports increasingly green) On the subject of smart energy will share the solutions already implemented and those under study at the airports of FCO and CIA (e.g. photovoltaïc, storage, charging columns, platforms for the management of consumption). While as regards the use of the SAF, the applicability of what is integrated at CPH will be studied and verified. We will also try to highlight the critical issues that could make difficult the implementation but also those related to the regulations and availability of fuel.
Industry/for-profit partners/SMEs (BMGI, HG, BKL, SAS, AirBP)	BMGI has identified existing standardization structures where ALIGHT outcomes could be considered for inclusion in standardization work/development. So far, technical committees from ISO, ASTM and CEN have been identified in the field of SAF, while ISO, IEC and CEN/CENELEC in the field of Smart energy airports. From these inputs, Relevant Technical Committees will be approach to check opportunities for ALIGHT inputs towards consideration in revision of existing standards and development of new ones, including Workshop Agreements (IWA and CWA). A guide for implementation of EN ISO 50001 (already referred in the EE Directive – 2012/27/EU) dedicated to airport is already considered as a good opportunity by CEN/CENELEC Sector Forum Energy Management-Energy Transition (SFEM) and CEN/CENELEC JTC14, as well as by ISO TC 268 (Sustainable Development of Cities and Communities) for a dedicated guide to implementation of ISO 37101 (Sustainable cities and communities management system). BMGI will link with those structures for engaging a link with ALIGHT then feeding them with outcomes from the ALIGHT project in

	due time. The main objective is to set a common reference for sustainable development and to reinforce the capacity to boost innovation to market, with direct support to replication and scaling-up. HG, BKL, SAS and AirBP will exploit KERs in a manner consistent with their business approach). A Key exploitable result for HG is the successful validation of its Smart Energy Management System in Copenhagen Airport. The system will be tested in close cooperation with DTI and will allow to bring the product to market, offering it as a solution for a fee to the partners in the project and new potential customers. The results stemming from the validation will demonstrate the benefits and commercial value of Hybrid Greentech's Smart Energy Management system.
RTOs (DTI, DLR)	DLR will apply the tools and learning from KER 3 and 4 to further develop SAF digital twin and smart sensors ensuring fuel quality, to support the deployment and utilization of SAF, to further identify the added values of SAF on aircraft performance and non-CO2 impacts. DTI will apply tools, learning from KER 4 and 5 to support validation, implementation and optimization of smart energy system, supporting data setup, battery energy storage system, smart charging infrastructure, PV systems ex. between runways, fleet management tools etc. DTI will secure involvement with the International Energy Agency (IEA) and their technology collaboration programme on Advanced Motor Fuels (AMF). During the first 6 months of the project main focus has been on D4.1 Roadmap for workstream B and preparation of data infrastructure for workstream B activities incl. demo.
Universities (UNIPR, TUHH)	The universities will engage in collaborations and knowledge sharing with other universities, such as University of Southern Denmark, Technical University of Denmark and Chalmers University of Technology (Sweden). TUHH will apply a formerly developed and novel methodology for reporting and accounting of SAF in the practical context of the ALIGHT project. Therefore, the SAF supply chain will be monitored according to the methodology and the transferability of the methodology into a real application will be investigated. Therefore, a PhD position will be established to investigate the transferability of the theoretical approach into the project and thereon into a globally applicable scheme. In addition, TUHH provides support in questions and analyses related to the operational use of SAF as well as environmental and economic analyses and issues. UNIPR will exploit project results as a knowledge base for civil and mechanical engineer instruction and will activate a PhD position to investigate further development of project results and their transferability to other sectors.

Associations/public bodies (RSB, NISA, IATA)	RSB will use the project to develop standard guidance for airports and the broader aviation sector for the identification and procurement of sustainable SAF. RSB will also the project to broaden its engagement with airports globally with a view to capacitate airport companies to influence SAF procurement decisions in favour of SAF with the highest sustainability criteria, such as RSB certified SAF, and understand the impact these decisions may have on the overall sustainability performance and image of the airport. Moreover, RSB is engaged with ICAO in the development of CORSIA (providing technical advice on sustainability standards and certification systems). RSB will be able to share relevant experience gained from this project at future ICAO meetings on CORSIA implementation. Lastly, the ALIGHT project will help RSB to gain further experience on EU airports' sustainability needs, which will inform the future development of the RSB standard and sustainability solutions. NISA and IATA will use the ALIGHT project to promote SAF and smart energy to their members.

6. Updated Individual exploitation plan (per Partner)

Besides ALIGHT vision and mission as a project, each Partner of the consortium has its own, distinct exploitation opportunities and perspective.

The subchapters hereafter detail these individual exploitation plans.

6.1 Copenhagen Airport A/S (CPH)

CPH has set ambitious climate goals and we have met the first goal in 2019, being a carbon neutral airport (Airport Carbon Accreditation (ACA) level 3+, which at the time was the highest ACA level). The goal which we are pursuing goal in 2030 is to have emission free ground support operations, including transport to and from the airport. In that respect all Ground Support Equipment is undergoing a yearly audit to monitor progress in the phase out of fossil fuels. CPH is aiming in 2050 for the entire airport to be free from Climate harming emissions, as we have learned throughout the beginning of ALIGHT that also non-CO2 emissions can have a negative climate effect.

Introducing Sustainable Aviation Fuels (SAF) in the fuel supply is the big challenge for Copenhagen Airport in reaching the climate goals with about 90% of CO2-emissions being related to aircraft fuel consumption. CPH is partner in a consortium applying for funding to establish production of electro-fuels (PtX) based on 100% renewable energy sources - production in a scale where feasibel for use in aviation will most likely not happen before the end of ALIGHT. Nevertheless, all the work done in ALIGHT ensuring both availabilty and up handling for airport use of SAF will also be valid when PtX is available. We still consider bio-kerosene the most viable option throughout the duration of ALIGHT.

An important part of ALIGHT is the Smart Energy workstream and CPH is looking to very much foreward to further enhance the energy savings already applied. As support for this CPH has implemented the Energy Management System of ISO 50001.

CPH has intention of or already implemented the following initiatives to support the green transition of airport operations:

- Installation of solar power plants,
- Installation of electrical battery storage for solar power plant (BESS included i ALIGHT),
- Usage of CNG for vehicles (with a fraction of biogas),

- Replacement of fossil fueled vehicles by electric vehicles,
- Increased EV charging points both fast chargers and "standard" chargers,
- Planning for the VtG chargers as part of ALIGHT

6.2 Aeroporti di Roma (ADR)

Climate change is a very important issue for ADR.

For this reason, ADR has recently undertaken the commitment to become Net Zero Carbon at 2030 for its emissions, also using the help of the Energy Management System updated in 2020 to the latest version of the ISO 50001:2018, which includes important management, monitoring and control tools.

In addition to the airport's emissions, ADR is committed to also reducing the emissions of the entire aviation sector, airlines and passenger access, for this has obtained the highest level of existing ACA 4+ certification, as the first European airport.

ADR intends to provide his know-how and lessons learned from both the ACA 4+ certification and the commitment to Net Zero 2030.

ADR will also use the solutions that will emerge by trying to connect them in the most efficient way to the existing reality.

ADR intends to proceed with green investments including:

- installation of large photovoltaic power plants,
- use of biomethane,
- replacement of the vehicle fleet by electric vehicles,
- purchase of green energy from the market,
- installation of electrical and thermal storage,
- introduction of the SAF,
- involvement of all airport stakeholders,
- the gradual decarbonisation of airport access.

An important point is represented by the analysis of energy consumption. It is in the interest of ADR to try to improve what has been done so far, so we can use energy in the most intelligent way. In this context, the use of smart metering, the implementation of intelligent software, that allow predictive analyses and control on consumption, is fundamental. In the last ten years we reduced the energy consumption by 52%.

Another aspect on which ADR intend to invest is the creation of energy communities with the existing realities around the airport, in order to produce, store and use renewable energy with benefits for all participants.

6.3 Lithuanian Airports (LTOU)

Vilnius airport is constantly strenghtening its commitment to climate change. Vilnius airport started its sustainability journey by adopting its Environmental policy in 2015, however more sound commitment to the principles of the sustainable development was declared by LTOU on 31 of October 2016, by signing the Airport sustainability declaration. Following the sustainability goals by UN, Lithuanian airports has distinguished the main fields, where it can have a positive impact, in three areas: Environmental, Social, Economic and legal. One of the main fields of impact in the Environmental area is CO_2 emissions management. It was emphasized in the Environmental Strategy of Lithuanian airports, adopted in the beginning of 2018. Following the principle "monitor, comply, improve", established in LTOU Environmental strategy, Airport Council International Airport Carbon Accreditation scheme is used to follow the climate neutrality pathway. Vilnius airport started at level 1 (Mapping) of the Program in 2015 and was the first airport in Eastern Europe to be certified at Level 2, Reduction in 2019, aiming to upgrade to Level 3 Optimisation, by the end of 2022.

Annual and monthly accounting of our CO_2 emissions let us understand the main sources of CO2 and what direction our actions should be oriented. About 80 percent of our Scope 1 and 2 emissions are accounted to electricity use, therefore our main task is to reduce the CO2 emissions through energy efficiency and implementation of renewable energy sources and reduce overall emissions by incorporating CO2 reducing solutions in all the projects and processes of Vilnius airport.

Parallel to the implementation of solutions at Lighthouse airport, Vilnius airport (VNO) will be analysing all of them and choose the relevant ones considering their relevance based on the importance of the specific solution, the expected positive impact, the applicability and the need for additional investment.

Vilnius airport is planning to do following:

1. Analyze current VNO aviation fuel supply system, resulting in recommendations for improvements needed for inclusion of SAF. Include the SAF related requirements into the procurement documents and contract with the potential leaser of aviation fuel base of Vilnius airport (new agreement to be signed by the end of 2021).
2. Interact with National and local authorities to prepare or improve the regulatory framework for biofuels production, supply and use in aviation; interact and advocate with authorities to strenghten support for both legal and financial needs in the field of CO_2 management and reduction.
3. Analyze the ability of local biofuel production companies to produce and/or supply of SAF.
4. Align the measures, included in current VNO Carbon management plan, with the smart energy solutions, applied in the Lighthouse airport, prioritise and implement them (electric power generators at the aircraft stands; installation of solar power units; increased number of electric car charging stations; optimisation of energy consumption using BMS, LED lightning programme; electric vehicles; buying of renewable energy, etc.).

5. Prepare a detailed energy audit to set a baseline for the transfer and tailoring of the selected solutions (will be concluded by the end of 2021).
6. Prepare a Stakeholders engagement plan, involving all the main parties at the airport into the process of mapping and reduction of CO_2 emissions (by the end of 2021).
7. Will prepare annual detailed Carbon footprint reports, including forecasts for different scenarios (expected impact of planned solutions and different airport development scenarios).
8. Perform a detailed analysis of ground transportation (railway, taxis, buses, private vehicles) and prepare a detailed improvement plan.

By joining the ALIGHT consortium, Vilnius airport has a strong ambition to become the first airport in Eastern Europe with infrastructure, suitable for SAF. This way, by scaling and incorporating solutions from both ALIGHT works streams A and B, Vilnius airport is aiming to become an example to the airports of similar size and geographical location.

6.4 Solidarity Transport Hub Poland (New Warsaw Airport) (CPK)

As part of its commitment to sustainability and Net Zero Carbon airport objectives, STH has planned to include sustainable strategic and design solutions in the airport Master Plan concept, architectural & developed concept of the airport.

The objectives of STH are to consider sustainable solutions, through:

- Supply chain strategy and implementation of biofuels in the future CPK airport
- Planning and related infrastructure solutions (including charging and warehousing infrastructure)
- Collaboration with stakeholders to achieve STH's sustainability commitments (to provide open access to SAF and smart energy technology)
- Incorporating sustainable electrical and thermal solutions
- Incorporating digital tools for smart energy efficiency solutions (including digital twin)
- Regional and strategic sustainable investments

6.5 Danish Technological Institute (DTI)

No IPR, nor individual concerns and specific requests/needs regarding exploitation plan.

DTI will exploit KERs and other project results in a manner consistent with our ongoing business servicing Danish and international companies and public organizations with our technological services expanding in the area of business development support based on our data infrastructure and tools in the EnergyFlexLab. DTI expects to provide other Danish and international airports as well as other customers with similar infrastructures with an increasing amount of knowledge and lab-based

services within the areas of digitalization, smart energy solutions, alternative fuels, fleet optimization and emission monitoring.

6.6 Brændstoflageret Københavns Lufthavn I/S (BKL)

The objective for BKL in this project is to promote the use of SAF in Copenhagen Airport, and to understand how we can make the most efficient use of the limited availability of SAF in the - most likely long - transition period. By transition period, we mean the period from today with less than a 1 percent blend, to the date in the future where we achieve a 100 percent SAF based fuel.

Today SAF is simply blended with conventional fuel and distributed across the entire delivery of fuel in the airport. There are no special requirements to the operation of a SAF blend in an airport storage and hydrant operation today. Should this change, for varies reasons, BKL will contribute with practical knowledge and provide support to eventual test facilities.

6.7 Scandinavian Airlines System Denmark-Norway-Sweden (SAS)

Scandinavian Airlines has ambitious environmental sustainability targets where results from ALIGHT may contribute to broaden the potential areas of improvement, accelerate the development, and potentially achieve even further emission reductions. SAS 2025 target is to reduce absolute climate affecting CO2 emissions by 25% and SAS has identified the potential to reach 50% by 2030 if the prerequisites are in place. The usage of SAF is one of the key activities in order for the aviation industry to achieve the anticipated journey towards net zero emissions and increased efficiency at the airports are also important improvement areas supporting the transition. Scandinavian Airlines will seek opportunities to promote ALIGHT in order to raise further awareness about the project and its purpose.

6.8 Nordic Initiative for Sustainable Aviation (NISA)

NISA is a Nordic association working to promote and develop a more sustainable aviation industry, with a specific focus on alternative sustainable aviation fuels and the development of new propellants for the aviation sector. The goal of NISA is to accelerate the development and the commercialization of sustainable aviation fuels and electric- and hydrogen driven aircraft. This is achieved by organizing activities, initiate and participate in projects and analyses, strengthening the cooperation across the value chain and by focusing on oppor-tunities in the Nordic region. The actors behind the membership driven initiative are the Nordic airports, Nordic airlines and their organizations, and the aviation authorities. Also, the aircraft manufacturers Airbus and Boeing are members of NISA The initiative is also supported by aircraft manufacturers Airbus and Boeing.

6.9 International Air Transport Association (IATA)

Sustainability and the Environment are clear objectives for air transport and IATA, with Sustainable Aviation Fuels constituting one of the key solutions to achieve industry targets. For this reason, the

global trade association, through its organization or participation in industry events, as well as its Europe Region blog and other media channels, will ensure the promotion of ALIGHT to raise awareness on both Sustainability and the project itself, as part of the ambition to develop an even greener air transport industry.

6.10 German Aerospace Center (DLR)

DLR will use the results from the project to further identify the added values of SAF on aircraft performance and non-CO2 impacts. The developed tools will be used to support the smart use of SAF aiming at minimizing aviation climate impact. The SAF digital twin and smart sensors will be further developed ensuring fuel quality along the fuel life cycle. Insights from the project will be used to contribute to the further optimization of aviation fuel specifications.

6.11 AirBP

Air bp will use the ALIGHT project to demonstrate the safe, compliant, sustainable, scalable and repeatable implementation of SAF at a commercial airport. It is important to demonstrate the safe operations that are compliant with existing jet fuel handling requirements. The sustainable procedures that should be followed as industry best practice and following operational procedures that are scalable to much larger quantities at more airports without introducing operational constraints on the existing fuel supply infrastructure.

6.12 The Roundtable on Sustainable Biomaterials (RSB)

RSB will use the project to develop standard guidance for airports and the broader aviation sector for the identification and procurement of sustainable SAF. RSB will also the project to broaden its engagement with airports globally with a view to capacitate airport companies to influence SAF procurement decisions in favour of SAF with the highest sustainability criteria, such as RSB certified SAF, and understand the impact these decisions may have on the overall sustainability performance and image of the airport. Moreover, RSB is engaged with ICAO in the development of CORSIA (providing technical advice on sustainability standards and certification systems). RSB will be able to share relevant experience gained from this project at future ICAO meetings on CORSIA implementation. Lastly, the ALIGHT project will help RSB to gain further experience on EU airports' sustainability needs, which will inform the future development of the RSB standard and sustainability solutions.

6.13 Hybrid Greentech (HG)

Through the ALIGHT project, Hybrid Greentech will further develop and deploy its AI smart energy management system in Copenhagen Airport. Successful deployment of the platform will allow HG to validate its smart energy management system and bring it to market as a commercial solution. During the project, the solution will be deployed for free at Copenhagen Airport and tested in close

cooperation with DTI. Following the end of the project, the solution, available through HG's server, will be made available for a fee to all the partners in the project as well as to potential new clients.

The IP strategy is to keep innovations within HG and with trusted partners as long as possible. This will provide protection for a longer time, and at the same time keep potential patent costs low in the start-up phase. Some potentially patentable elements may result from WPs 4. It will be assessed during the project whether protection of any such elements is feasible, coupled with a freedom-to-operate analysis for HG. However, the knowledge gained during the ALIGHT project is a very important component for Hybrid Greentech and will increase the business value for its software solution. The results stemming from the validation will demonstrate the benefits and commercial value of Hybrid Greentech's Smart Energy Management system. Results from the validation will not only support sales and marketing figures but also provide accumulated results for further research within Hybrid Greentech.

6.14 BMGindroz Consulting (BMGI)

No IPR, nor individual concerns and specific requests/needs regarding exploitation plan. BMGI will feed the standardization communities, where further development will be made on a consensus basis, feeding the standardization communities in due time with inputs validated and agreed by the entire ALIGHT consortium.

6.15 University of Parma (UNIPR)

University of Parma will benefit from ALIGHT participation and its results as a teaching institution by including the lessons learnt in the instruction of future civil and mechanical engineers, in order to prepare them for the replication of the implemented solutions and for their further development.

As a research institution, University of Parma will promote further development based on project results by activating a PhD position with particular focus on the adaptation to other sectors of the solutions developed for aviation and airports.

6.16 Hamburg University of Technology (TUHH)

As part of the teaching obligations of the Hamburg University of Technology, insights as well as results of the up-to-date research conducted within the ALIGHT project will be included in lectures, seminars as well as curricula organized by the involved Institute of Environmental Technology and Energy Economics (IUE). By also addressing the research questions and implementing them into theses (such as bachelor and master theses) the ALIGHT project will directly be implemented in the education of mechanical, environmental as well as process engineers.

By developing and implementing suitable Chain-of-Custody concepts for SAF and their reporting and accounting (e.g. in environmental instruments like the EU-ETS or CORSIA) the projects results will also be implemented within the recent research activities of TUHH. The different properties of

SAF, e.g. sustainability properties, need to be tracked along the entire supply chain and between all actors involved, such as fuel producers, tank farm operators, airlines or national authorities, while SAF batches are mixed with (fossil) conventional aviation fuels in the common fuel supply infrastructure. By including all these stakeholders within the project, the results can also be provided back to the industry and implemented therein. With more regards to the scientific results, the exploitation is planned to be realized by planning future research projects based on the results as well as finishing a PhD thesis on the relevant topics.