



Demonstrating lower polluting solutions for sustainable airports across Europe

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Abstract

This report signifies the inaugural outcomes of Task 12.4 in Work Package 12 of the TULIPS project, offering a comprehensive perspective on standardisation endeavours. With a focus on exploiting project results, the task delineates five pivotal objectives, including creating a standards database, mapping applicable standards across Work Packages (WPs), identifying gaps, and proposing new or revised standards. The iterative approach, detailed in the project plan, underscores transparency and stakeholder engagement, dividing the project into three sub-tasks: initial mapping and review, gap identification, and standards proposals, supported by ongoing activities.

The initial mapping phase post the TULIPS General Assembly meeting in October 2023 serves as a foundational step, gathering information from WP leads to compile a standards database and visual mapping reports. Following this, the plan involves rigorous gap analysis, incorporating workshops, research, interviews, and collaboration with other EU Green Deal projects. Subsequently, the report outlines the forthcoming standards proposal sub-task, which includes collaborative workshops with WPs and communication with standardization authorities. These efforts are underpinned by ongoing activities, such as maintaining a standards database, a standards map, and collaborating with other EU Green Deal (EU GD) projects. The initial mapping findings, summarised in the report, will be circulated among TULIPS Work Packages, serving as a communication tool for the intended approach, with ongoing development and updates anticipated in the coming months.



Disclosure Statement:

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II. DOCUMENT HISTORY

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14/12/23	Draft v1	Egis	First draft



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VI. LIST OF ACRONYMS

Acronym	Meaning
AFTF	Alternative Fuels Task Force
AHM	Airport Handling Manual
ASTM	American Society for Testing and Materials
CSA	Canadian Standards Association
DIN	Deutsches Institut für Normung
EBC	European Biochar Certificat
EU GD	EU Green Deal
TGA	General Assembly
H2020	Horizon 2020
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IEC	International Electrotechnical Commission
IGOM	IATA Ground Operations Manual
ISO	International Organization for Standardisation
JIG	Joint Inspection Group
OTIF	Intergovernmental Organisation for International Carriage by Rail
PGS	Publicatiereeks Gevaarlijke Stoffen
SAE	Society of Automotive Engineers
TULIPS	Demonstrating lower polluting solutions for sustainable airports across Europe
WIP	Work In Progress
WP	Work Package



VII. TABLE OF DEFINITIONS

Terms	Definition
Best Practice	A working method or set of working methods that is officially accepted as being the best to use in a particular business or industry, usually described formally and in detail
Mapping	Refers to the process of matching standards with trends and/or patterns
Roadmap	The description of the approach taken to standardisation activities
Standard	An agreed way of doing something, distilled wisdom of people with expertise in their subject matter and who know the needs of the organizations they represent
Standardisation	The process of creating, issuing and implementing standards.



1 Executive Summary

This report forms the first deliverable of Task 12.4 in Work Package (WP) 12 of the TULIPS project. It introduces the topic (section 2), lays out our approach to the standardisation activities (section 3), presents an initial output of our standards mapping activity (section 4) and defines next steps (section 5).

The purpose of standardisation activities is outlined in the Grant Agreement, emphasising the exploitation of project results. The task will be carried out following five objectives which include creating and maintaining a standards database, mapping applicable standards within and across WPs, identifying gaps, and consolidating proposals for new or updated standards.

These will be achieved through an iterative approach, outlined in our project plan (see section 3) which highlights what deliverables and on-going activities will underpin the standardisation activities. The plan emphasises transparency and stakeholder engagement, splitting the project into three distinct sub-tasks: initial mapping and review, gap identification, and standards proposals and one continual on-going activity:

I. Initial Standards Mapping

This sub-task covers the initial steps taken, including information gathering post the TULIPS General Assembly meeting in October 2023. Initial versions of a database and visual mapping reports are to be delivered in Q2 2024 by compiling information from WP leads regarding applied standards per WP, recognising varying stages of demonstrators' development.

II. Gap Identification

Following the initial mapping, we plan to analyse the database and map to identify and validate gaps between existing standards and what standards are required for TULIPS demonstrators. This process would involve workshops, desktop research, interviews, and collaboration with other EU Green Deal (EU GD) projects. A gap analysis report is expected by Q3 2024, with the understanding that it will evolve through Q1 2025 (along with the mapping report).

III. Standards Proposals

Once gaps are identified, the subsequent sub-task involves working alongside WPs enabling them to propose new or revised standards. This collaborative process includes workshops and a consolidated output into a standards proposal report, due end of Q2 2025. Communication with standardisation authorities and technical committees will also happen in parallel to display and validate our findings.



Ongoing Activities

All of the above will be underpinned by three ongoing activities, including maintaining a standards database, maintaining a standards map, and collaborating with other EU GD projects (OLGA, STARGATE, and potentially ALIGHT).

The initial mapping presented in section 4 summarises responses received from WPs regarding their consideration of standards, collaborations with other projects, communication with standardisation bodies, and adherence to industry best practices. Five out of seven WPs are actively aware of applicable standards from various international, national, regional, and industrial bodies, one has not yet considered them, and one WP is yet to provide input.

This V1 Standardisation Roadmap report will now be circulated among all TULIPS WPs as a means to communicate the intended approach to standardisation and illustrate the initial mapping output. In the upcoming months we will continue to develop these and implement updates and changes as necessary.



2 Introduction

As part of Work Package 12 (WP12) Communication and Dissemination, Task 12.4 aims to build an active community of TULIPS stakeholders to influence existing, ongoing, and subsequently future regulation, standardisation, and industrial development efforts. This will be achieved by working in close collaboration in with TULIPS WPs and their demonstrators and potentially with other H2020 project and EU GD project initiatives (if and when possible).

As part of this Task 12.4, we are undertaking annual Standardisation Activities at M12, M24, M36 & M48 to:

- i. Map all relevant and applicant standards identified by TULIPS WPs 1 to 7.
- ii. Create and maintain a standardisation roadmap enabling our WPs to keep track of planned and submitted contributions to standardisation activities.
- iii. Identify and summarise possible gaps in existing standards and evaluate the need for revised or new standards altogether.
- iv. Coordinate and communicate consolidate technical proposals for new or revised standards based on demonstrator results/learnings with standardisation technical committees.
- v. Interface with Task 12.5 of WP12 to be aware of standardisation activities that might be ongoing within other EU initiatives.

This deliverable **D12.3 Standardisation Roadmap V1**, is the initial standardisation report that will enable WPs and demonstrators to understand the standardisation activities on-going and undertaken thus far. This report lays out the standardisation approach from the initial planning stages of the project through to its conclusion, sharing of results and learnings of research and coordination on the topic.



2.1 Purpose of standardisation activities

The purpose of the standardisation activities undertaken stems from the Grant Agreement, which states that “beneficiaries must take measures to ensure the ‘exploitation’ of results (either directly or indirectly, in particular through transfer or licensing; by:

- (a) using them in further research activities (outside the action),
- (b) developing, creating, or marketing a product or process,
- (c) creating and providing a service, or
- (d) using them in standardisation activities.”¹**

Standards and Certification Standards are expected to stem from TULIPS demonstrators in the following areas: public transport scheduled services, travel requests, zero waste airports, airport operations, data aggregation, air quality assessment, GHG emission and transport chain emissions for combined passenger and freight operations at the hubs and in airline operations.

Hence, we recognise our demonstrator results could contribute to European or international standards and if such results are incorporated into a standard, we must request standardisation bodies to include the following statement in (information related to) the standard: “Results incorporated in this standard received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 101036996”.

2.2 Objectives of standardisation

In order to effectively carry out the task, we have defined the following objectives to be achieved by the end of the task:

- **Create and maintain a database of standards:** establish and maintain a robust system for collecting and organising standards, ensuring regular updates and adherence to version control protocols.
- **Map applicable standards within and across WPs:** analyse and visually map relationships between standards within each WP and across different WPs to enhance project understanding and efficiency.
- **Identify clear gaps in the standards mapping:** deliver a thorough gap analysis, engaging stakeholders to identify and prioritise areas where existing standards may be incomplete or outdated.
- **Consolidate of proposals for new and/or updating existing standards:** facilitate a collaborative process to gather, evaluate, and prioritise proposals for new standards or amendments, ensuring transparency and stakeholder engagement.

¹ Article 28 of the Grant Agreement Number: 101036996 — TULIPS — H2020-LC-GD-2020 / H2020-LC-GD-2020-1



3 Standardisation activities approach

Below is our proposed iterative approach to standardisation activities, which is based on close collaboration with and active participation from TULIPS WPs and EU GD cluster partners. Based on the objectives laid out in the previous section, we have defined three ‘sub-tasks’ to be carried out, underpinned by on-going activities.

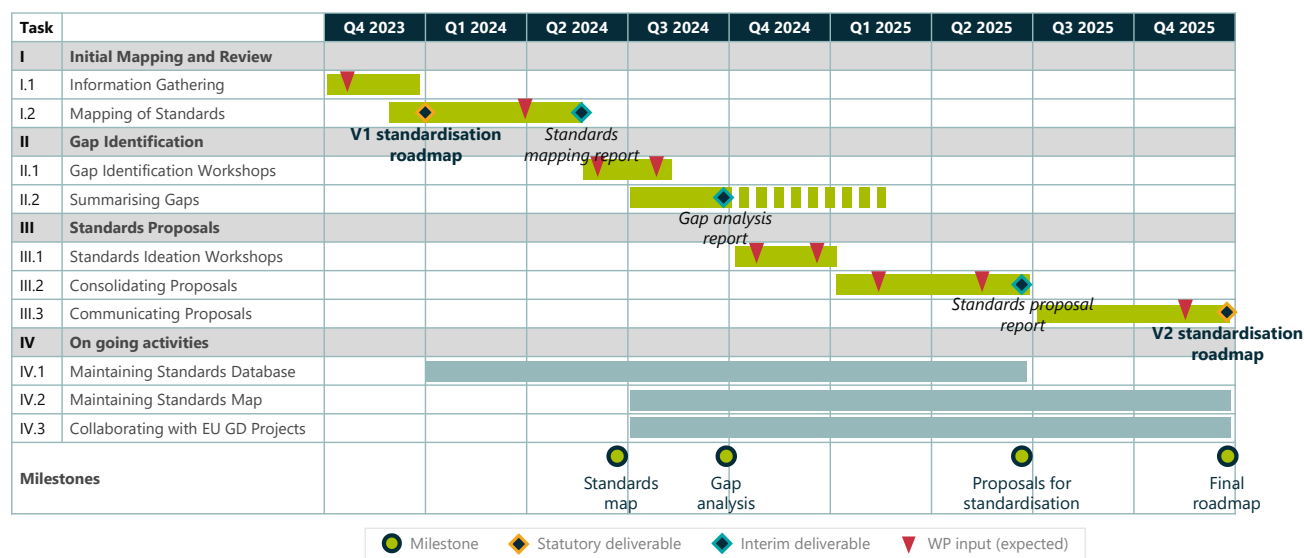


Figure 1 – Standardisation task plan

The above chart outlines the high-level plan to deliver the standardisation task. We have defined four key milestones which align with the delivery of each sub-task, and the final deliverable (v2 standardisation roadmap).

The Gantt chart also highlights when we expect to produce certain outputs (deliverables). These are categorised under two types of deliverables:

- Statutory deliverables, which are laid out in the Grant Agreement, to be delivered in Word format and reviewed by the programme manager (and any other relevant stakeholders) prior to delivery to the European Commission.
- Interim deliverables, which are not defined in the Grant Agreement and rather a purpose of internal TULIPS dissemination as crucial checkpoints, these may be either in Word or PowerPoint format.

We have also highlighted at which points we expect WP input will be required from the working groups.



3.1 Initial mapping and review

Post the TULIPS General Assembly (GA) meeting in Larnaca in October 2023, high-level information was requested and collected from WP leads on the standards they have applied, and best practices they have been following as part of their WPs and demonstrators. This information facilitated the creation of a database of relevant and applied standards, which will, going forward, enable us to keep track of planned and submitted contributions towards standardisation activities within and across TULIPS WPs.

The inputs received supported the preparation of this the V1 standardisation roadmap (current document) and detailed responses are available in the appendix of this report.

Identifier	Issuing Authority	Validity	Coverage	Category
The unique identifier of the standard	<i>The standard issuing body/institution</i>	<i>The validity of the standard – active, under review, withdrawn/replaced</i>	<i>The standards geographic jurisdiction – International, National, Regional</i>	<i>The category (type) of standard – Technical, Process, System, Protocol etc</i>

Table 1- Extract of standard categorisation

Based on the above, an initial mapping of standards applied amongst and across WPs was performed, enabling us to begin identifying the key themes and areas where standards may be missing/require further consideration. As this mapping matures, it will allow us to understand the relevance and applicability of standards given each WP’s demonstrator nature and maturity.

An initial learning from this exercise was that different WPs were at different stages of their demonstration’s developmental cycle at the time of writing this report, and hence, not all were able to provide information relating to standards relevance and application of their WPs. We expect to be able to refine the mapping over the upcoming months as demonstrators mature.

The initial mapping per WP can be found in section 4 of this report, pending further development and validation with the WPs. The final output of this task will be presented in a standard mapping report in Q2 2024.



3.2 Gap identification

Following the delivery of the standards mapping, we will begin analysing the database and map with WPs in order to identify and validate gaps between existing standards and/or we could observe that there arises a need for new standards altogether.

This would be an iterative process which would be carried out in close collaboration with WP leads (and other relevant members) throughout Q2 and Q3 2024 by the means of workshops, to be organised by Egis. Desktop research, interviews and discussions with subject matter experts, and coordination with other EU GD projects/initiatives would also complement the gap analysis.

By end of Q3 2024 we expect to deliver a gap analysis report highlighting the main findings of the exercise. However, we recognise that further learnings are likely to emerge through the project as demonstrators mature and evolve. Hence, we consider that this will be a living document through to Q1 2025.

Our discussions and research at this stage are likely to result in identifying areas where:

- New standards need to be developed.
- Emerging standards are under development.
- Existing standards need to be updated.



3.3 Standards proposals

Once gaps have been identified, we will begin working with the WPs in Q4 2024 and Q1 2025 to consider how gaps can be bridged. In this sub-task we expect the WPs to make proposals for standards (either new or revised/amended standards). However, Egis will support the activity through a series of workshops to stimulate the ideation process. We also plan to actively track such proposals as and when they emerge from the results of TULIPS demonstrations and consolidate the overall results into a standards proposal report by end of Q2 2025.

We anticipate that multiple WPs come to propose similar standards or that standards proposals made by one WP directly or indirectly relate to other WPs. Therefore, to avoid the duplication of effort, a high degree of coordination and joint workshops will be necessary. We also plan to carry out this task in close coordination with WP 9 (deployability, upscaling and exploitation) to align outputs.

As previously stated, TULIPS proposals for new standards and/or revisions/amendments for existing standards could contribute to new European or International ones. Therefore, in parallel to consolidating the proposals for new standards into the standards proposal report, we will begin communicating with the relevant standardisation authorities and technical committees throughout 2025. This step will involve two elements.

- Communicating on gaps (validating findings of the gap analysis, in parallel to the proposals consolidation phase).
- Communicating on technical proposals for new or revised standards, based on TULIPS results (validating the findings of the standards proposal report).



3.4 On-going activities

The delivery of the above sub-tasks will be underpinned by three on-going activities:

- Maintaining a standards database,
- Maintaining a standards map; and,
- Collaborating with other EU GD projects.

The first two items are directly related to sub tasks detailed in sections 3.1 and 3.2 above and consist in keeping the standards mapping report and gap analysis report up to date for the sake of transparency amongst WPs.

As for the third item, we anticipate that synergies can be realised through collaboration with other EU GD initiatives/projects in the context of as part of Task 12.5 in the Grant Agreement (collaboration with existing initiatives and clustering with other EU projects). We propose that collaboration and clustering exercise can be extended to include standardisation activities, as to explore the potential areas of overlap and complementarity. We estimate that considerable synergies can be leveraged between TULIPS, and:

- OLGA: also one of the Horizon 2020 Green Airport projects that aims to reduce the environmental impact of the aviation sector. It develops innovative and sustainable solutions to reduce CO2 emissions, optimise energy efficiency, preserve biodiversity, and improve air quality and waste management while involving the entire aviation value chain.
- STARGATE: the third Green Airport project from Horizon 2020, aiming to develop, test and deploy a set of innovative solutions making aviation and airports significantly greener and more sustainable through further decarbonisation, improving environmental quality, and the stimulating the modal shift.
- ALIGHT (potential): an EU-funded Smart Airport project, launched to develop a model of a sustainable airport of the future, focusing at Energy and SAF impacts from an airport's perspective. The 17 project partners are working hard towards a vision of zero-emission aviation to be showcased at Copenhagen Airport, with fellow airports in Rome, Vilnius and Warsaw looking to replicate best practice solutions.



4 Initial standards mapping

The first step in the mapping exercise was the creation of a single consolidated database to collect high-level information on the standards that are relevant to our different WPs and the standards that the WPs are applying or will apply to their demonstrators.

To do this, high-level information was sought from WP leads, which was then used as inputs in the preparation of this report. Active participation of the WPs was essential in the preparation of this report as their response to the following questions was sought through email.

1. Are you considering any Standards in the preparation of your work package demonstrators and/or deliverables?

- a) If yes, please enumerate all relevant and applicable Standards you have under consideration.
- b) If No, please mention all relevant Standards that could apply to your work package demonstrators in the future that you currently know about or could consider.

For each Standard mentioned, please provide the full Standard Designator (i.e., name/number) and Standard issuing body (international, national, regional, local)

2. If you have during the past 2 years collaborated or worked with other H2020 Projects/Initiatives on Standards (notably STARGATE and OLGA), please provide the nature of collaboration.

3. If you are in (or) have been in communication with standardisation bodies, please provide information about the same.

4. Alternatively, if you are following any industry/sector “best practices” or “benchmarks” in place of standards, please provide details of the same.

The summary of responses received are summarised below.² This is the first step in creating a centralised information source (which will be shared with WPs) to keep track of planned and submitted contributions to standardisation activities within and across WPs.

	Standards	Standards Body/Committee	Best Practise, Benchmarks	Collaboration with H2020
WP1	<i>Not yet</i>	<i>Not yet</i>	<i>Not yet</i>	<i>Not yet</i>
WP2	Yes	Yes	Yes	<i>Not yet</i>
WP3	Yes	<i>Not yet</i>	<i>Not yet</i>	<i>Not yet</i>
WP4	Yes	<i>Not yet</i>	<i>Not yet</i>	<i>Not yet</i>
WP5	Yes	Yes	<i>Not yet</i>	<i>Not yet</i>
WP6	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>
WP7	Yes	<i>Not yet</i>	<i>Not yet</i>	<i>Not yet</i>

Table 2- Summary of questionnaire responses

² Note that WP6 is yet to provide input to the standardisation activity.



From the seven TLUIPS WPs, six of them are actively applying standards as part of their demonstrator developments. These cover a variety of standards issued by:

- a) **International standardisation bodies** (e.g., International Organisation for Standardisation (ISO), International Electrotechnical Commission (IEC));
- b) **National/regional standardisation bodies** (e.g., PUBLICATIEREEKS GEVAARLIJKE STOFFEN (Netherlands), NEN Royal Netherlands Standardisation Institute (Netherlands), Deutsches Institut für Normung [din] (Germany), CSA Group (Canada));
- c) **International bodies** (e.g., Intergovernmental Organisation for International Carriage by Rail (OTIF), International Electrotechnical Commission (IEC));
- d) **Industrial bodies** (e.g., SAE International, ASTM International, Joint Inspection Group (JIG), The International Air Transport Association (IATA))
- e) **Governmental bodies** (e.g., the European Parliament and Council, through the issue of Regulation and Directives and the UK Ministry of Defence (UK MoD))
- f) **Independent 3rd party certifications** (e.g., European Biochar Certificat (EBC), Puro.earth, Verra).

A visual mapping representation of the identified standards is presented in the following sub-sections. This has been drafted using the standards issuer as common roots for grouping of each standard for each WP. At this stage, we have not observed any cross-cutting aspects of between WPs and demonstrations, though we expect more common themes to emerge as we progress along the project. Continued input from WPs will be necessary to further develop the mapping throughout the remainder of the task.

4.1 Work Package 1

No standards have yet been identified as relevant to WP1.



4.2 Work Package 2

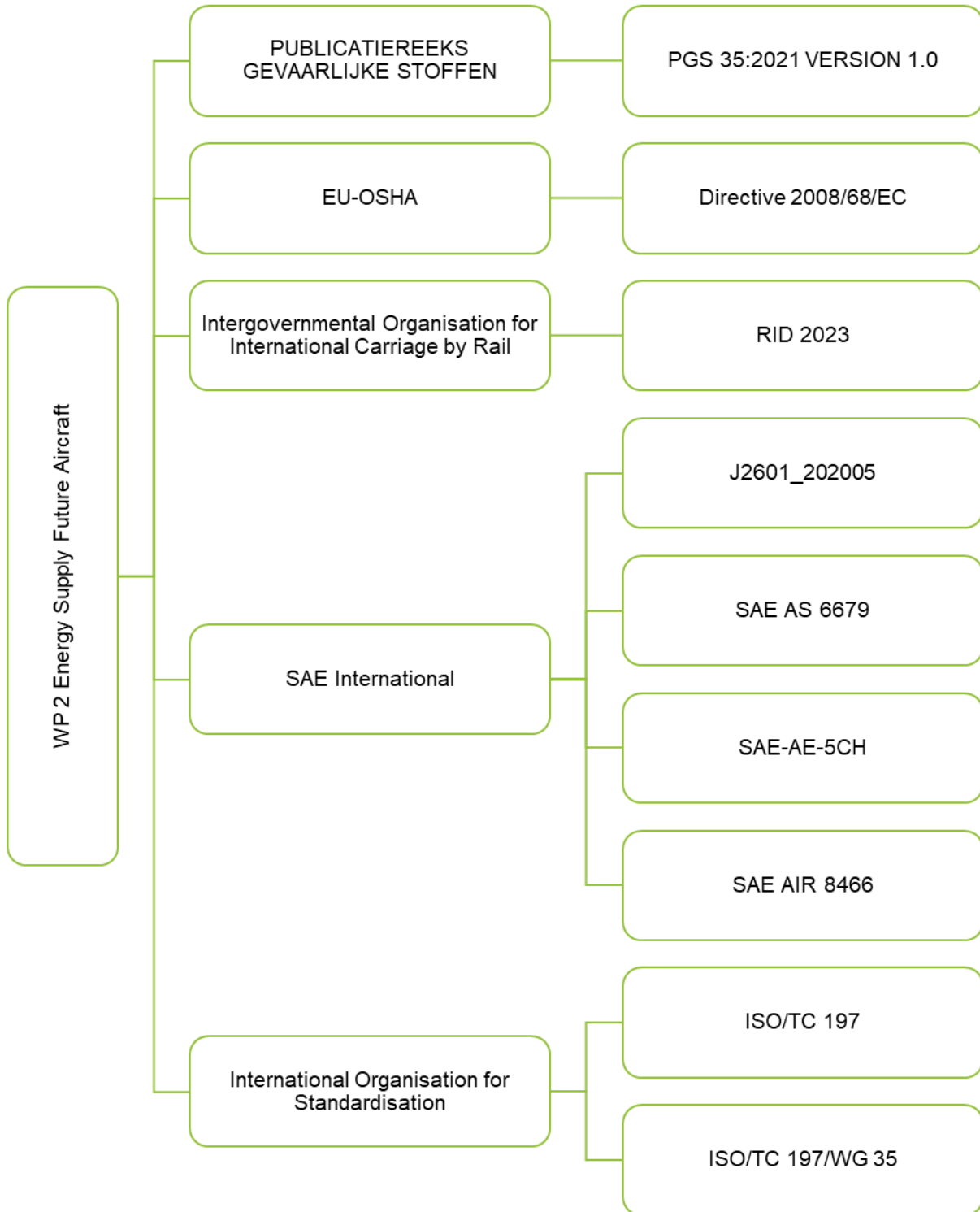


Figure 2 – WP2 initial standards mapping.



4.3 Work Package 3

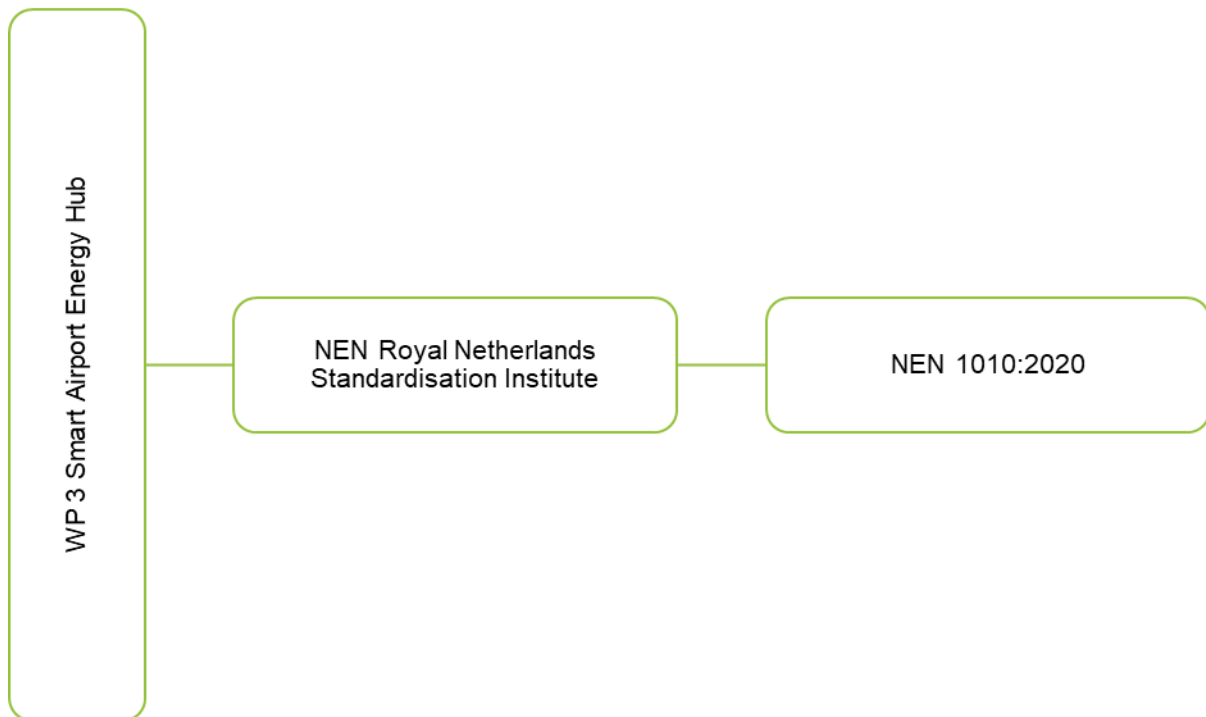


Figure 3 – WP3 initial standards mapping.



4.4 Work Package 4

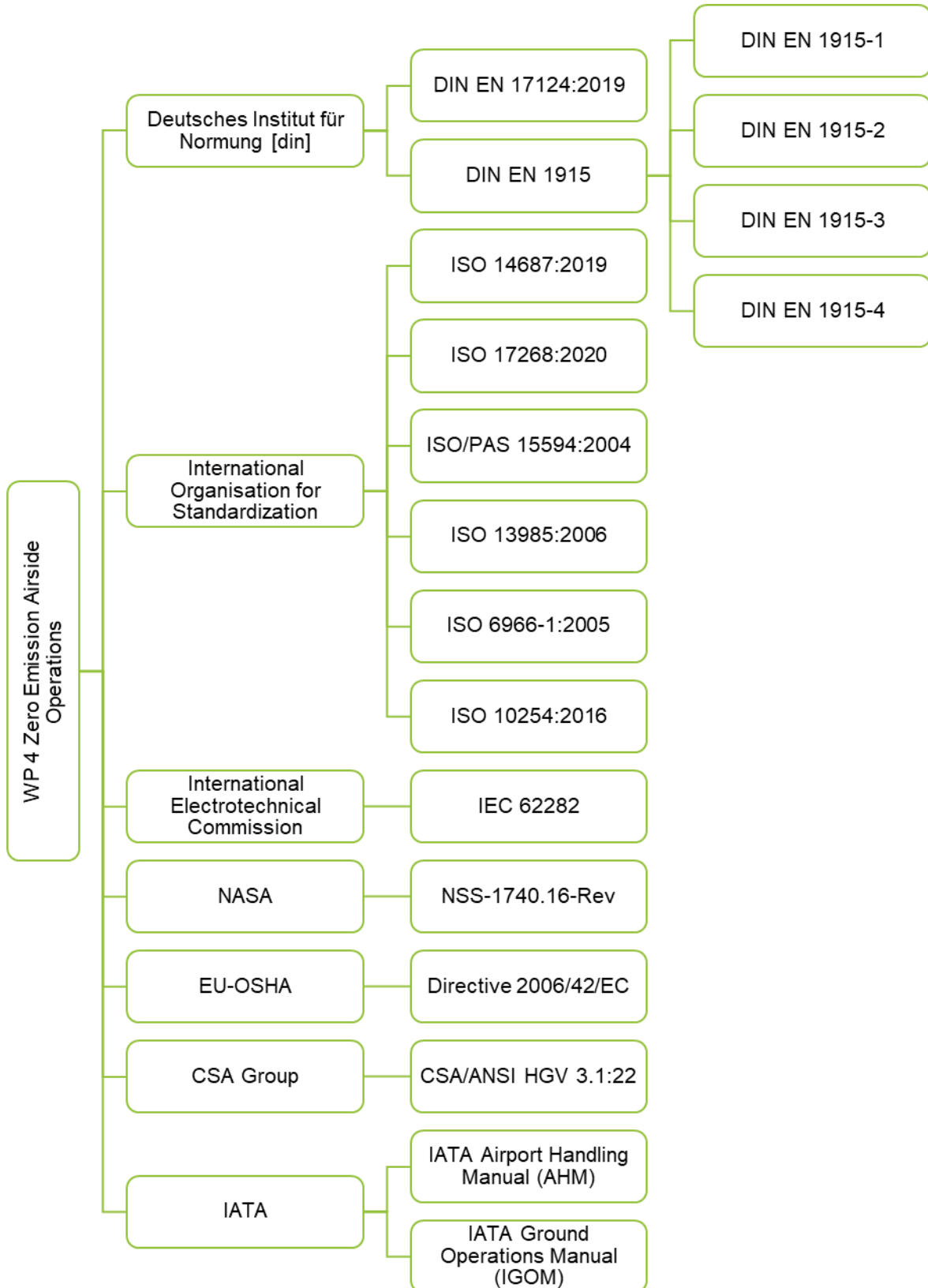


Figure 4 – WP4 initial standards mapping.



4.5 Work Package 5

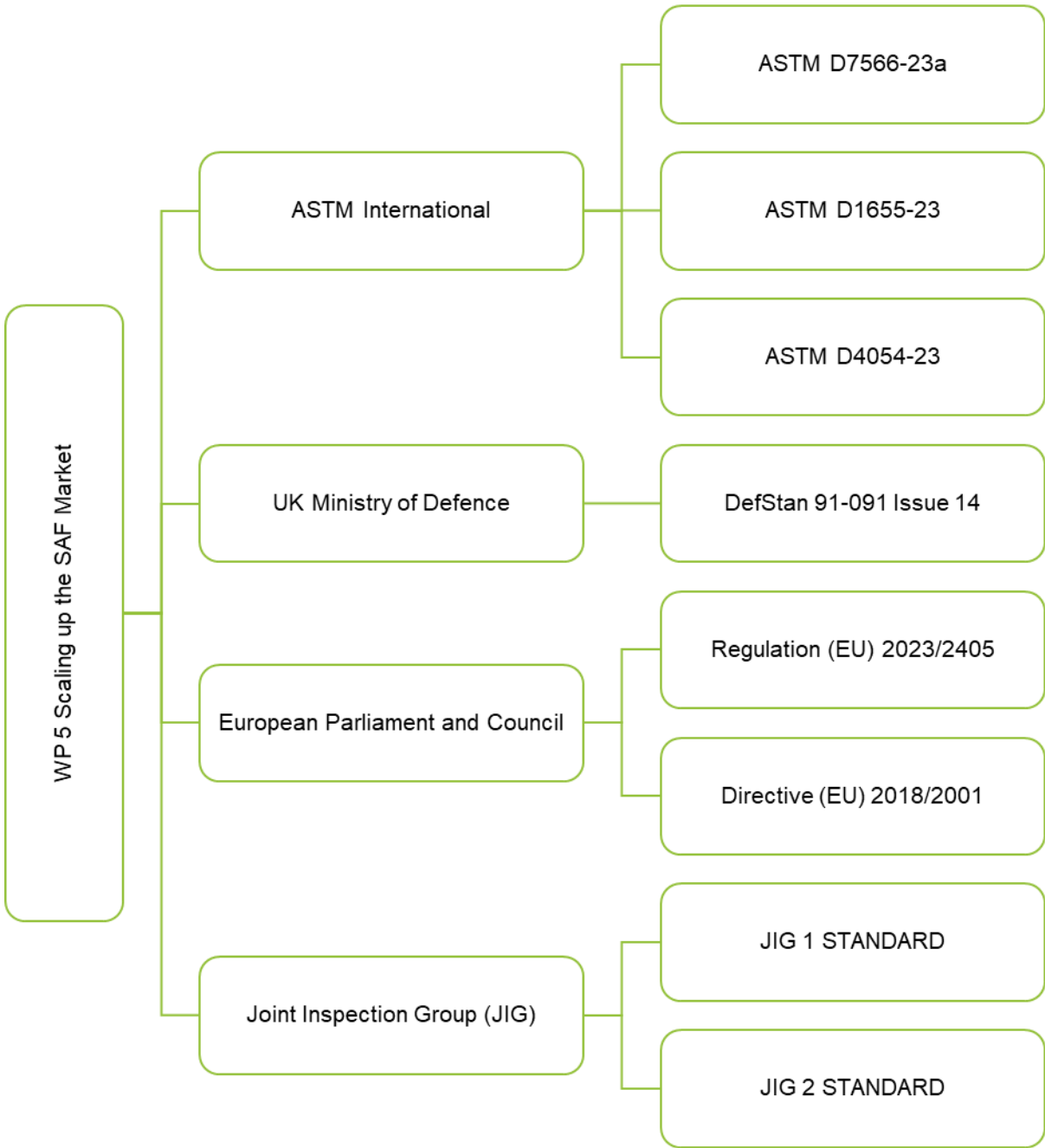


Figure 5 – WP5 initial standards mapping.



4.6 Work Package 6

Inputs awaited.



4.7 Work Package 7

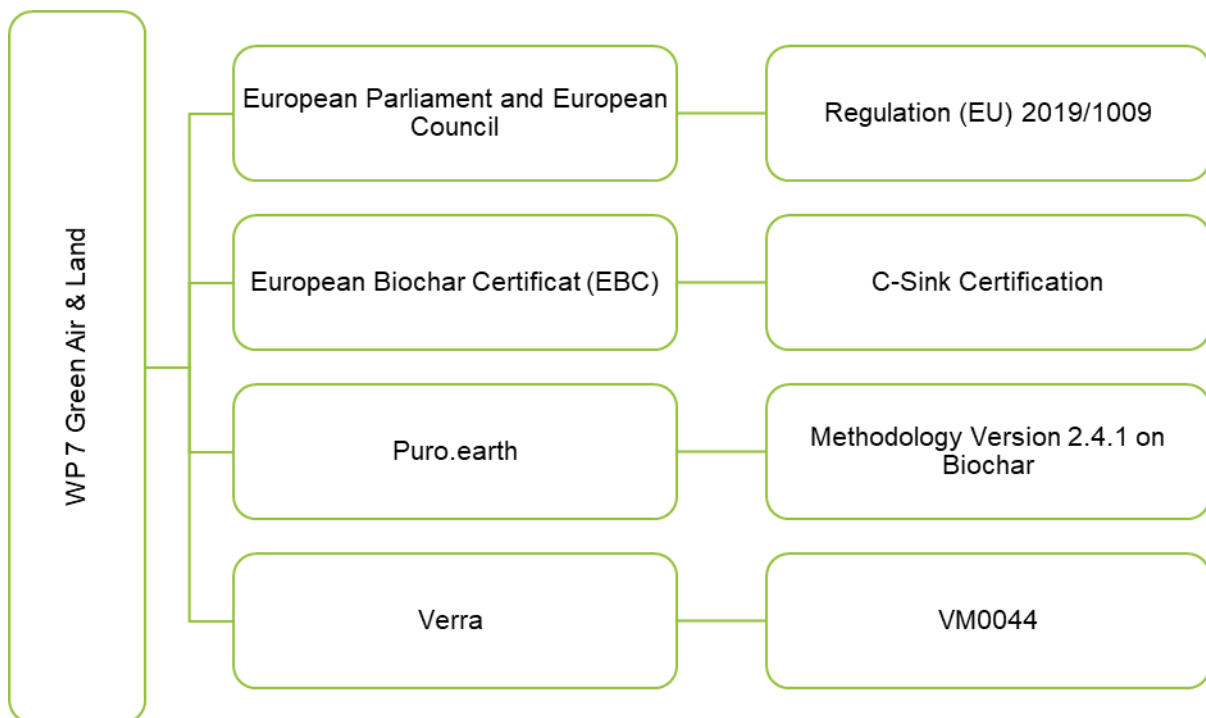


Figure 6 – WP7 initial standards mapping.



5 Next steps

This initial report will now be circulated among all TULIPS WPs as a means to communicate the intended approach to standardisation and illustrate the initial mapping.

In the upcoming months we will continue to develop these and implement updates and changes as necessary. Meetings with WP leads will be arranged to discuss views on the approach and initial mapping.

We expect to begin the gap identification sub-task mid Q2 2024 when workshops will be held with WPs, with the view of delivering the first iteration of the gap analysis report by end of Q3 2024, in time for the first 'Come and See Event' in Turin scheduled for Q4 2024. The continual maintenance of the database and map will continue to inform the gap analysis report which will remain a living document into Q1 2025.

In 2025, as the demonstrators begin to reach higher levels of maturity, we expect to begin the standards proposals sub-task, organising ideation workshops prompting WPs to initiate WPs work on proposals. As these proposals emerge and following the ideation phase, we will ensure that they are consolidated into the standards proposal report. In parallel, we will initiate communication with relevant standardisation bodies, authorities, regulators/legislators, industry bodies/working groups in a targeted and coordinated manner.

The degree of collaboration with other EU GD projects/initiatives is subject to the approach proposed and agreed as part of Clustering 2.0, which remains subject to approval at the time of writing.



Appendix A: WP RESPONSES TO QUESTIONNAIRE

The appendix comprises of responses received from WP leads in response to the questionnaire sent across through email. They are extracted from the standards excel worksheet uploaded in the TULIPS SharePoint.

5.1 Work Package 1

Identifier	Name	Publisher	Nature of Document
No Standards Yet – Standards Awaited			



5.2 Work Package 2

Identifier	Validity	Name	Publisher
PGS 35:2021 VERSION 1.0 (AUGUST 2021)	August 2021	Hydrogen installations for delivering hydrogen to vehicles and tools	PUBLICATIREEKS GEVAARLIJKE STOFFEN
		REST API Protocol	
Directive 2008/68/EC	04/10/2017	Directive 2008/68/EC on the inland transport of dangerous goods (UNECE ADR, OTIF RID, UNECE ADN)	EU-OSHA
RID 2023	1 January 2023	The Regulation concerning the International Carriage of Dangerous Goods by Rail (RID)	Intergovernmental Organisation for International Carriage by Rail
J2601_202005	2020-05-29	Fueling Protocols for Light Duty Gaseous Hydrogen Surface Vehicles	SAE International
ISO/TC 197		Hydrogen technologies	International Organization for Standardization
ISO/TC 197/WG 35		Liquid Hydrogen Land Vehicle Fueling Protocol	International Organization for Standardization



SAE AS 6679	WIP	LIQUID HYDROGEN STORAGE FOR AVIATION	SAE International
SAE-AE-5CH		AE-5CH Hydrogen Airport Task group	SAE International
SAE AIR 8466	WIP	Hydrogen Fueling Stations for Airports, in both gaseous and liquid form	SAE International

- A. If you are in (or) have been in communication with standardisation bodies, please provide information about the same.
- ASTM to present some of the current standardisation gaps for battery-electric and hydrogen aviation.
- B. Alternatively, if you are following any industry/sector “best practices” or “benchmarks” in place of standards, please provide details of the same.
- PGS-35 for hydrogen installations and standards for refueling heavy duty vehicles with gaseous hydrogen.



5.3 Work Package 3

Identifier	Validity	Name	Publisher
NEN 1010:2020	Apr 1, 2021	Electrical installations for low-voltage - Dutch implementation of the HD-IEC 60364 series	NEN Royal Netherlands Standardization Institute



5.4 Work Package 4

Identifier	Validity	Name	Publisher
DIN EN 17124:2019	Revised Available	Hydrogen Fuel - Product Specification and Quality Assurance - Proton Exchange Membrane (PEM) Fuel Cell Applications for Road Vehicles	Deutsches Institut für Normung [din]
ISO 14687:2019	Will be Revised	Hydrogen fuel quality - Product specification	International Organization for Standardization
IEC 62282	Multiple Available	Fuel cell technologies	International Electrotechnical Commission
ISO 17268:2020	Will be Revised	Gaseous hydrogen land vehicle refuelling connection devices	International Organization for Standardization
ISO/PAS 15594:2004	Withdrawn	Airport hydrogen fuelling facility operations	International Organization for Standardization
ISO 13985:2006	Will be Revised	Liquid hydrogen - Land vehicle fuel tanks	International Organization for Standardization
NSS-1740.16-Rev		Safety Standard for Hydrogen and Hydrogen Systems: Guidelines for Hydrogen System Design, Materials Selection, Operations, Storage and Transportation	NASA



DIN EN 1915-1	Current	Aircraft ground support equipment - General requirements - Part 1: Basic safety requirements	Deutsches Institut für Normung [din]
DIN EN 1915-2	Current	Aircraft ground support equipment - General requirements - Part 2: Stability and strength requirements, calculations, and test methods	Deutsches Institut für Normung [din]
DIN EN 1915-3	Current	Aircraft ground support equipment - General requirements - Part 3: Vibration measurement methods and reduction	Deutsches Institut für Normung [din]
DIN EN 1915-4	Current	Aircraft ground support equipment - General requirements - Part 4: Noise measurement methods and reduction	Deutsches Institut für Normung [din]
ISO 6966-1:2005	Under Review	Aircraft ground equipment - Basic requirements - Part 1: General design requirements	International Organization for Standardization
ISO 10254:2016	Will be Revised	Air cargo and ground equipment	International Organization for Standardization
Directive 2006/42/EC	repealed	Machinery Directive	EU-OSHA
CSA/ANSI HGV 3.1:22	2022	Fuel system components for compressed hydrogen gas powered vehicles	CSA Group



IATA Airport Handling Manual (AHM)	2023	2023 Airport Handling Manual (AHM)	IATA
IATA Ground Operations Manual (IGOM)	2023	2023 IATA Ground Operations Manual (IGOM)	IATA



5.5 Work Package 5

Identifier	Validity	Name	Publisher
ASTM D7566-23a	Historical	Standard Specification for Aviation Turbine Fuel Containing Synthesized Hydrocarbons	ASTM International
ASTM D1655-23	Historical	Standard Specification for Aviation Turbine Fuels	ASTM International
ASTM D4054-23	Active	Standard Practice for Evaluation of New Aviation Turbine Fuels and Fuel Additives	ASTM International
DefStan 91-091 Issue 14	superseded by Issue 15	DEFSTAN JET FUEL SPECIFICATION - Turbine Fuel, Kerosene Type, Jet A1; NATO Code: F-35; Joint Service Designation: AVTUR	UK Ministry of Defence
Regulation (EU) 2023/2405	In force	Regulation (EU) 2023/2405 of the European Parliament and of the Council of 18 October 2023 on ensuring a level playing field for sustainable air transport (ReFuelEU Aviation)	European Parliament and of the Council
Directive (EU) 2018/2001	In force: This act has been changed. Current consolidated version: 07/06/2022	Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources	European Parliament and of the Council
JIG 1 STANDARD	Issue 13 - September 2021	AVIATION FUEL QUALITY CONTROLS AND OPERATING STANDARDS FOR INTO-PLANE FUELLING SERVICES	Joint Inspection Group (JIG)



JIG 2 STANDARD	Issue 13 - September 2021	AVIATION FUEL QUALITY CONTROLS AND OPERATING STANDARDS FOR AIRPORT DEPOTS AND HYDRANTS	Joint Inspection Group (JIG)
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A. If you are in (or) have been in communication with standardisation bodies, please provide information about the same.

- SkyNRG (Eva van Mastbergen, Renco Beunis) are continuously involved in the relevant subcommittee for approval of new SAF pathways (Subcommittee D02.J0.06 on Synthetic Aviation Turbine Fuels)
- Politecnico di Torino (David Chiamonti, Matteo Prussi) have been in contact with ASTM members related to task 5.4.
- Politecnico di Torino (David Chiamonti, Matteo Prussi) are members of ICAO/CAEP Alternative Fuels Task Force (AFTF)
- MMU (Simon Christie) is a member of subcommittee D02.J0.06 and actively involved in the approval of relevant fuel standards



5.6 Work Package 6

<RESPONSE AWAITED>



5.7 Work Package 7

Identifier	Validity	Name	Publisher
Regulation (EU) 2019/1009	In force: This act has been changed. Current consolidated version: 16/03/2023	Regulation (EU) 2019/1009 of the European Parliament and of the Council of 5 June 2019 laying down rules on the making available on the market of EU fertilising products and amending Regulations (EC) No 1069/2009 and (EC) No 1107/2009 and repealing Regulation (EC) No 2003/2003 (Text with EEA relevance)	European Parliament and European Council
C-Sink Certification		EBC Carbon Sink Certification on Biochar	European Biochar Certificat (EBC)
		PURO Earth Biochar Methodology Version 2.4.1 on Biochar	Puro.earth
VM0044	Active since 05 July 2023	Methodology for Biochar Utilization in Soil and Non-Soil Applications	Verra