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NAVIGATING THE TRANSITION



Standards Powering the Journey of Alternative Fuel Infrastructure

Highlights from CEN and CENELEC's Stakeholder Workshop –
18 April 2024



CEN (the European Committee for Standardization) and CENELEC (the European Committee for Electrotechnical Standardization) are two of the official European Standardization Organizations (ESOs). Together, they develop European standards on a variety of sectors key for the European Economy and the Single Market.

On 18 April 2024, CEN and CENELEC held the workshop 'Navigating the Transition: Standards Powering the Journey of Alternative Fuel Infrastructure' in Brussels. The event gathered a wide and varied group of stakeholders to discuss how standardization can help achieve a fully sustainable transport infrastructure for Europe. This report aims to present the outcome of the event.



Introduction: A European Path to Sustainable Transport

In recent years, the European Commission has passed important pieces of legislation as part of the Green Deal to make transports more sustainable across Europe. One crucial trio of regulations focuses on the need to invest heavily in alternative fuels:

European standards play a vital role in making these regulations work. They act as a guide, helping countries transition smoothly to using alternative fuels in various modes of transportation.

- **Alternative Fuels Infrastructure Regulation** (2023/1804), which pushes for the widespread availability of charging and refuelling stations for alternative fuels;
- **ReFuelEU Aviation** (2023/2405), which aims to cut down on carbon emissions from air travel;
- **FuelEU Maritime** (2023/1805), focused on reducing carbon emissions from ships.

To explore these opportunities and challenges, on 18 April 2024, CEN and CENELEC organized the high-level workshop 'Navigating the Transition: Standards Powering the Journey of Alternative Fuel Infrastructure' in Brussels.

The full-day event was opened by **Riccardo Lama**, CENELEC President-Elect. **Maja Bakran**, Deputy Director-General of DG MOVE (European Commission), then delivered a keynote speech on the EU Vision for an Alternative Fuels infrastructure (AFI).

Ms Bakran highlighted the crucial role of technical specifications and standards for the implementation for recharging and fuelling infrastructure. As the production of clean fuels needs to increase, standards help



shape the common market and maintain the EU competitive advantage globally – also in view of the upcoming elements of the AFIR framework, such as heavy-duty vehicles, megawatt charging systems, and communication systems.

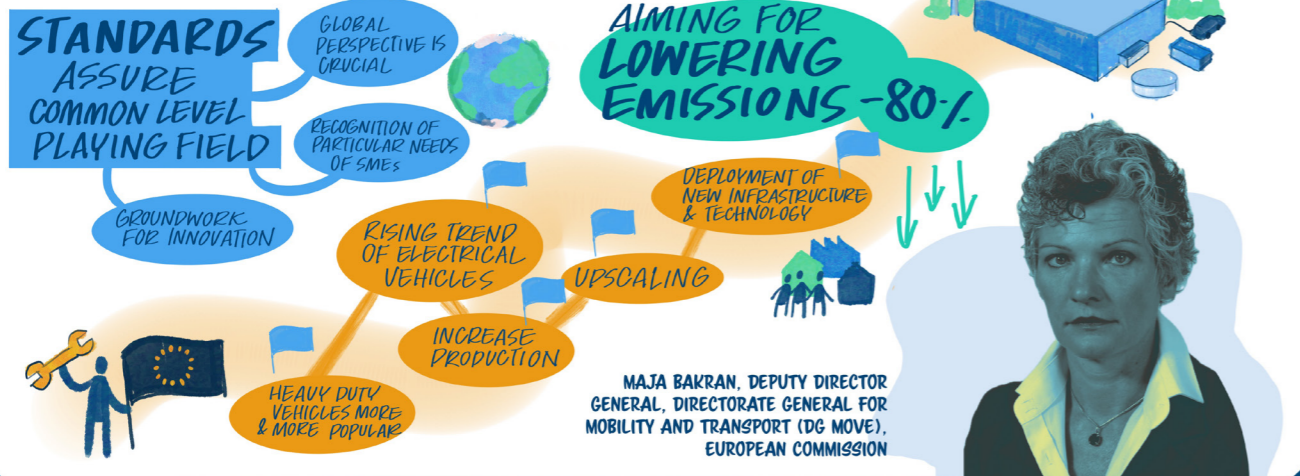
Ms Bakran also pledged for the European influence at the international level to be increased. In parallel, it is paramount is to consider compliance cost for SMEs and small authorities.



NAVIGATING THE TRANSITION STANDARDS POWERING THE JOURNEY OF ALTERNATIVE FUEL INFRASTRUCTURE

KEYNOTE SPEECH

THE PATH TO SUSTAINABLE TRANSPORT: THE EU VISION OF ALTERNATIVE FUELS INFRASTRUCTURE (AFI)



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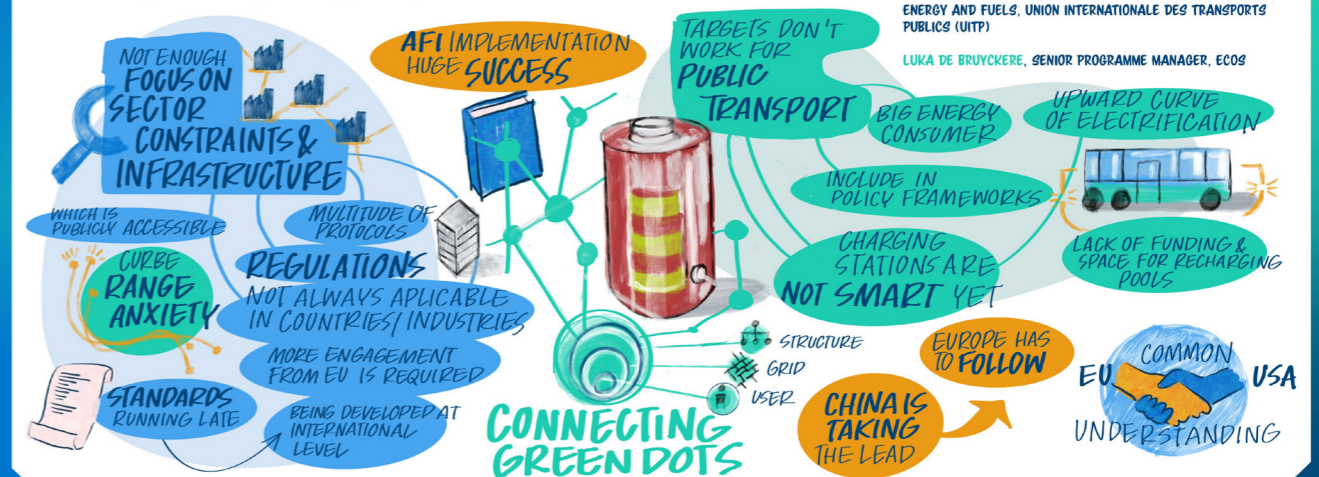
Panel debate:

How the new EU AFI Legislation will shape the transition to Alternative Fuels Deployment

NAVIGATING THE TRANSITION STANDARDS POWERING THE JOURNEY OF ALTERNATIVE FUEL INFRASTRUCTURE

HIGH-LEVEL PANEL DEBATE

HOW THE NEW EU AFI LEGISLATION WILL SHAPE THE TRANSITION TO ALTERNATIVE FUELS DEPLOYMENT



YANN FROMONT, DEPUTY PRESIDENT, T&D EUROPE; CHAIR, CEN AND CENELEC INDUSTRY ADVISORY FORUM

AXEL VOLKERY, ACTING HEAD OF UNIT SUSTAINABLE & INTELLIGENT TRANSPORT SYSTEMS, DG MOVE, EUROPEAN COMMISSION

LUCIE PETERSEN, SENIOR POLICY EXPERT FOR ROAD TRANSPORT, ENERGY AND FUELS, UNION INTERNATIONALE DES TRANSPORTS PUBLICS (UITP)

LUKA DE BRUYCKERE, SENIOR PROGRAMME MANAGER, ECOS

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Speakers

- **Yann Fromont**, Deputy President, T&D Europe; Chair of the CEN and CENELEC Industry Advisory Forum;
- **Lucie Petersen**, Senior Policy Expert for Road Transport, Energy and Fuels, Union Internationale des Transports Publics (UITP);
- **Axel Volkery**, Acting Head of Unit Sustainable & Intelligent Transport Systems, DG MOVE, European Commission;
- **Luka De Bruyckere**, Senior Programme Manager, ECOS.



Main highlights

Panellists discussed the rationale behind the new AFI Regulation (AFIR). They welcomed the Regulation's holistic focus on a sector instead of separate products as a good first step. All modes of transport are tackled, with standardization underpinning all of them. Another advantage is the way it forces Member States to accomplish the targets, with minimum deployment targets a big part of the Regulation. Still, there is a need for the dynamic interplay of user-friendly solutions.

Panellists also discussed the challenges to evolve from AFID (the Directive) to AFIR (the Regulation). The reasoning behind the transition is to roll out charging infrastructure in a way that is directly applicable to Member States and operators, leading to a major gain of time.

In their conclusions, speakers highlighted the importance of an effective coordination mechanism which can ensure a correct articulation between the legislation, its implementation, the technical constraints of industry, and local/regional realities.

Challenges to the successful roll-out of the Regulation:

- The missing implementation at the national level impacts industry in front of the high number of regulations;
- The specificity of public transport;
- Need for more engagement of EU stakeholders at international level;
- Deployment of recharging points for heavy-duty vehicles;
- Lack of appropriate training;
- Need for increased cooperation with grid operators.



Four parallel sessions

The event continued with four parallel breakout sessions on specific modes of transport.

1. Road vehicles

Speakers

- **Glenn Cezanne**, Head of EU Public Affairs, CharIN;
- **Ingo Diefenbach**, Chair of CLC/TC 69X 'Electrical systems for electric road vehicles';
- **Nadège Leclercq**, Senior Director Government Relations and Market Development, Westport Fuel Systems;
- **Erik Büthker**, Specialist gaseous fuels at TotalEnergies, Chair of CEN/TC 326 'Natural gas vehicles' and CEN/TC 408 'Natural gas and biomethane for use in transport and biomethane for injection in the natural gas grid'.



Main highlights

This session was centred on the standardization opportunities to develop an interoperable charging and refuelling infrastructure in Europe for **road vehicles**.

Thanks to its binding character, AFIR will help deploy new technologies like hydrogen and support the shift to electrification. At the same time, the Regulation's level of technical details is excessive for the needs of the European industry.

On **electric vehicles**, standards for vehicle-to-grid are a success; but more investments in the infrastructure are needed to deploy smart charging. A grid perspective is fundamental to assess the energy demand of fleets of electric vehicles.

The discussion also tackled **gaseous fuels**. With an already well-established network of refuelling points for biomethane, the focus of AFIR is now on developing a hydrogen infrastructure and market. Furthermore, while legislation focuses on the reduction of CO₂ emissions, gaseous fuels could help manage emissions of other key pollutants such as NO_x and UFP. In any case, the good work already done on standards on natural gas refuelling could serve as a best practice for the development of standards on hydrogen.

On **standardization for charging points**, it is important to build a full ecosystem. A lot has been covered in previous and current standardization requests, but there is still some work to do. Luckily, the fast pace on current standardization requests shows high ambition from regulators.



Challenges

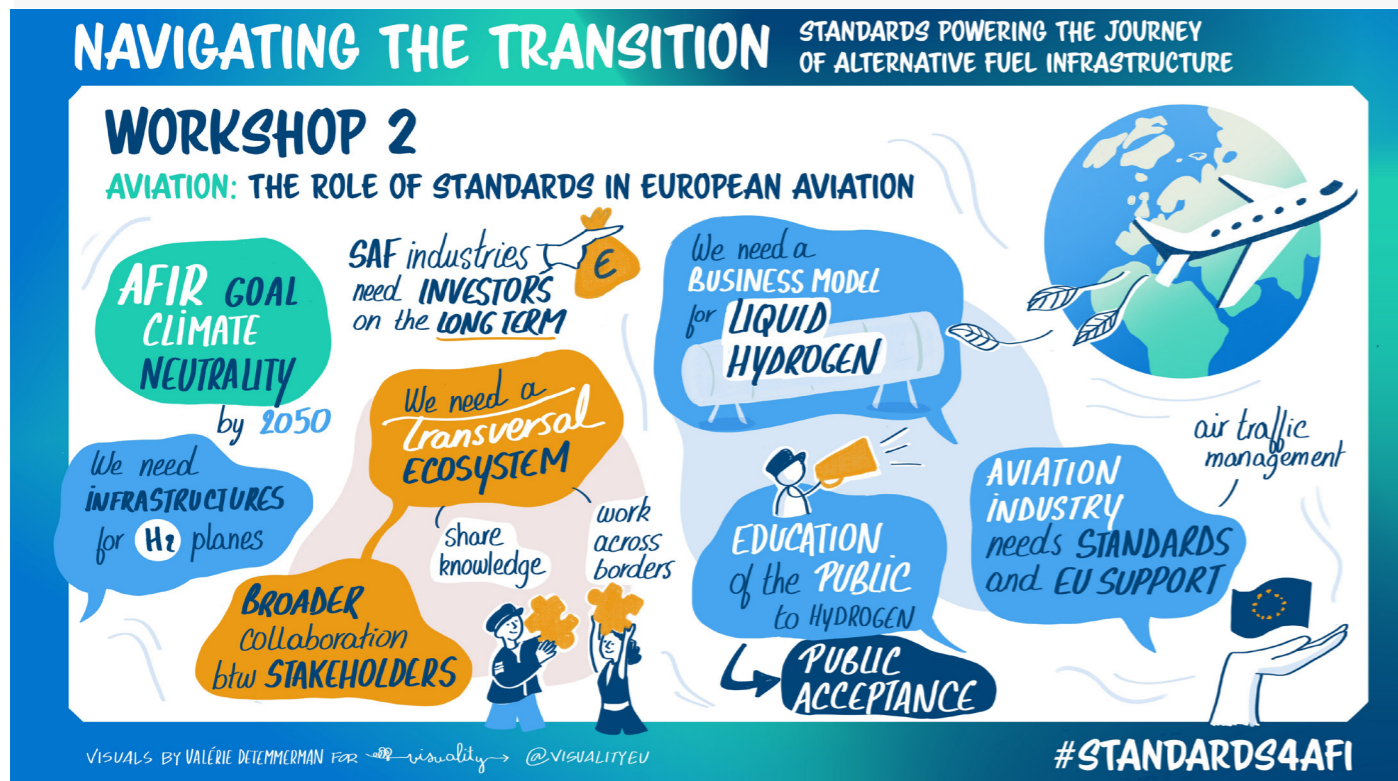
- **Cross-development of standards for electric vehicles (EV) and Natural Gas:** standards are developed separately based on the category of fuels. This affects the integration and development of multifuel station.
- **Electric mobility:** need to provide the necessary grid power system with higher power and develop the associated skills.
- **Gaseous fuels:** in front of the massive focus on the electrification, gaseous fuels could lead the transition period until a mature EV ecosystem is effectively ready.
- **Hydrogen:** lack of financial framework to face the cost to deploy affordable infrastructure.

The last topic discussed by the panellists was the question of the competitiveness of the **EU's automotive sector**. The EU is a 'regulatory champion', but what is happening in different parts of the world has an impact. For gaseous fuels vehicles, European companies still have some advance and can lead the international standardization work. But developing standards has a cost, and other parts of the world enjoy huge advantages against Europe when it comes to developing products based on those standards.





2. Aviation



Speakers

- **Bernard Gindroz**, Chair of CEN-CLC/ JTC 6 'Hydrogen';
- **Dominik Piotrowski**, Deputy Head of Aviation Policy Unit, DG MOVE; Antoine Toulemont, European & International Affairs Adviser, AURA-AERO;
- **Antoine Toulemont**, European & International Affairs Adviser, AURA-AERO;
- **Stephen Hands**, Senior Associate at Unified International;
- **Peter Laybourn**, Fuel storage Manager, Copenhagen Airport.

Main highlights

Sustainable Aviation Fuel (SAF) is key to decarbonizing aviation: it has the potential to significantly reduce greenhouse gas emissions compared to conventional jet fuels. Importantly, SAF is compatible with existing aircraft and infrastructure, and can be seamlessly integrated into current airport infrastructure. Furthermore, it can be produced from various feedstocks, including waste oils, agricultural residues, and even carbon capture technologies, thus ensuring a diverse and resilient supply chain.

SAF also serves as a catalyst for innovation and investment in renewable energy technologies. As demand grows, more efficient production methods and alternative feedstocks are explored, driving down production costs and creating economic opportunities in agriculture, waste management, and renewable energy sectors.

All this makes SAF a valuable tool for airlines seeking to demonstrate their commitment to environmental sustainability and meet increasing consumer demands for eco-friendly travel options.

Nevertheless, transitioning from fossil fuels presents challenges in business adaptation, infrastructure development, and the emergence of new business models, requiring collaborative efforts, innovative strategies, and the necessary education and training.

Standards are vital to support this transition. They ensure consistency and safety, and facilitate the integration of new technologies, uniformity in aircraft design and operation, and the harmonization of airspace procedures.



Recommendations

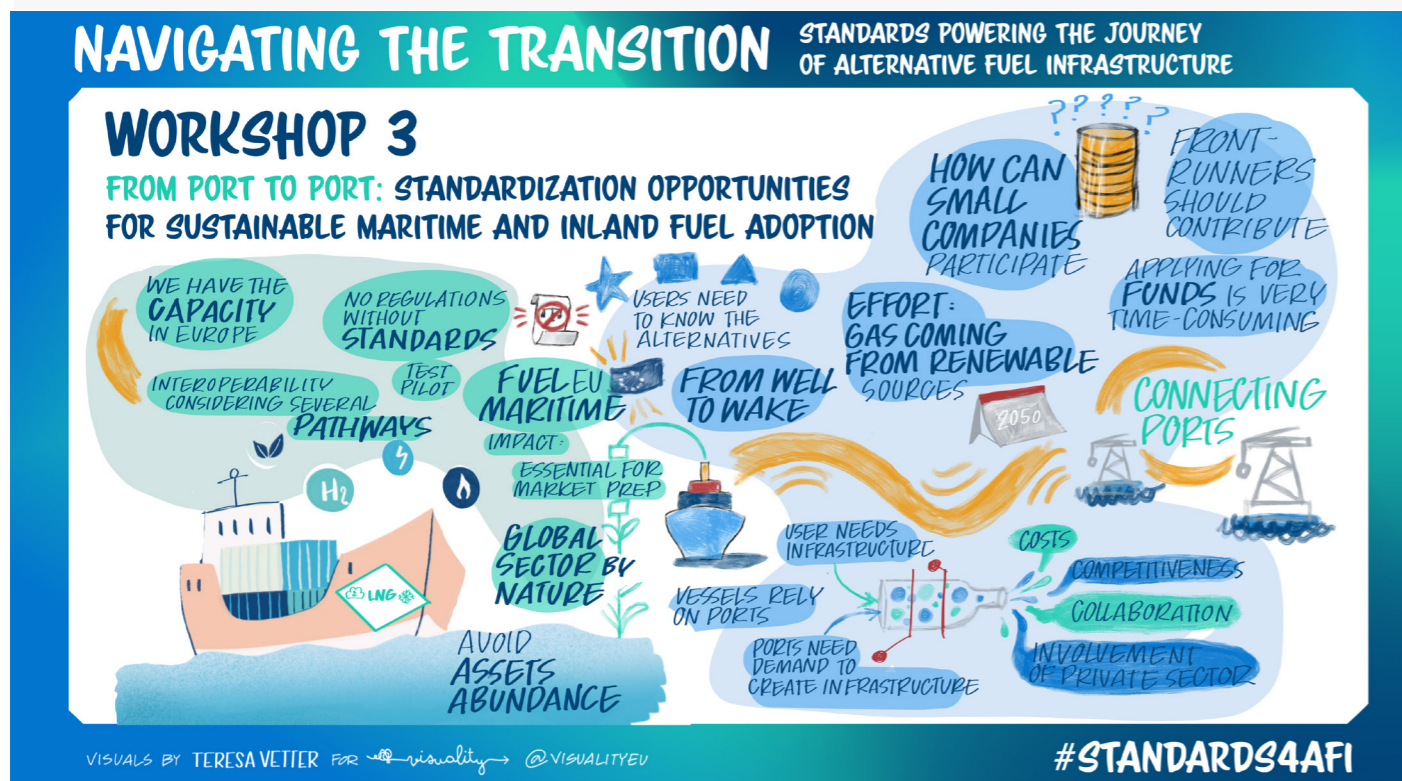
- **Incentivize SAF Adoption:** provide financial incentives, support policies, and regulatory frameworks to incentivize airlines and fuel suppliers to adopt SAF. This can include tax credits, subsidies, and mandates for SAF blending in jet fuel.
- **Educate and train aviation professionals:** implement education and training programs to equip aviation professionals with the necessary skills to transition to sustainable fuels and technologies. Address public perceptions and raise awareness about the benefits of SAF to garner support.
- **Facilitate international cooperation:** collaborate with international partners to address challenges and harmonize regulations for the adoption of sustainable fuels and technologies. Share best practices and technological advancements to accelerate the global transition to zero-emission aviation.
- **Ensure supply chain resilience:** develop a structured supply chain scheme for SAF production, distribution, and use to maximize efficiency during the transition period. Diversify feedstock sources and production methods to enhance supply chain resilience.
- **Support business adaptation:** assist businesses in the transition from fossil fuels by providing support for infrastructure development, innovation, and the emergence of new business models. Foster a collaborative environment that encourages experimentation and adaptation to new market dynamics.
- **Address environmental, social, and economic concerns:** balance environmental, social, and economic considerations in decarbonization efforts to ensure a sustainable transition. Consider the potential impacts on communities, workforce displacement, and economic stability, and develop mitigation strategies.

- **Enhance air purity measures:** incorporate measures to improve air purity alongside decarbonization efforts. Implement technologies and policies aimed at reducing other pollutants emitted by aircraft, such as nitrogen oxides (NOx) and particulate matter (PM). Additionally, explore opportunities for synergies between decarbonization initiatives and air quality improvement efforts.





3. Maritime and inland navigation



Speakers

- **Ratna Nataliani**, Sustainability Manager, Hapag-Lloyd AG;
- **Nikos Xydas**, Technical Director, World Liquid Gas Association (WLGA);
- **Steven Lua**, Director, Unitrove and CEN/TC 326 & CEN/TC 268 expert;
- **Benjamin Boyer**, Administrator for Inland Vessel Technical Regulations at the Central Commission for the Navigation of the Rhine (CCNR);
- **Ricardo Batista**, Policy Officer, DG MOVE D1 – Maritime Transport and Logistics, European Commission

Main highlights

Maritime and inland navigation is advancing rapidly due to evolving technologies, but the journey towards sustainability poses significant challenges. Harmonizing regulations internationally is essential to ensure smooth operations and facilitate the flow of maritime traffic all around the world. Standardization and regulation play a pivotal role in ensuring compliance, safety, and efficiency in maritime operations while also exploring solutions to reduce environmental impact. However, aligning European legislation with global standards may present hurdles.

A critical element to ensure a successful transition is **infrastructure development**, especially in ports. Improvements such as electrification and short power supply for container ships can significantly reduce environmental impact. Collaboration among stakeholders is essential to address challenges effectively and develop sustainable solutions that benefit all parties.

Also **adopting various alternative fuels**, such as methanol, liquefied natural gas (LNG), hydrogen, and electric propulsion systems, is key for deploying decarbonization to all types of vessels. Investments in electrification infrastructure allow vessels to connect to the grid and operate on clean electricity while docked. Governments and port authorities can incentivize electrification through financial and regulatory support.

A further element that can help promote sustainable transportation is **Enhanced Port Connectivity (EPC)** for Green Connection. Strengthening green connections between ports and inland navigation routes can significantly reduce environmental impact. Flexibility in regulatory frameworks accommodates the different needs and facilitates innovation.

The green transition also requires the development of **innovative business models**. These new business models can entail setting up partnerships to invest in renewables or exploring alternative financing mechanisms.



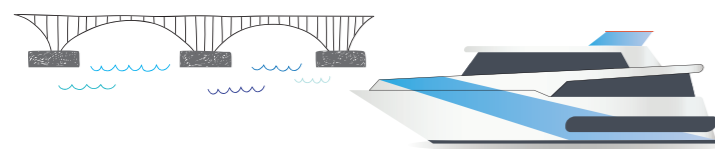
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Along these lines, ensuring **adequate funding** for research, development, and implementation of sustainable technologies and practices is essential to drive innovation and progress. Additionally important is encouraging stakeholders to participate in sustainability efforts.

Recommendations

INTERNATIONAL STANDARDS:

- **Advocate for more substantial alignment** with international regulations to ensure seamless integration of systems and technologies;
- **Identify and address gaps** in existing international standards to harmonize regulations effectively.



EUROPEAN LEGISLATION:

- **Foster collaboration with international bodies** like the International Maritime Organization (IMO) to align regulations;
- **Provide policy stability and capacity building** to facilitate the transition towards sustainable maritime transportation.

STAKEHOLDERS:

- **Encourage collaboration** among ship owners, fuel suppliers, ports, and government authorities;
- **Ensure certainty in demand and investment** for fuel suppliers by establishing stable policies and fostering partnerships.

INFRASTRUCTURE DEVELOPMENT:

- **Prioritize infrastructure improvements** such as electrification and short power supply for container ships;

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- **Foster collaboration efforts** to overcome bottlenecks and minimize environmental impact.

EMISSION CALCULATION:

- **Standardize emission calculation methods** to accurately assess environmental impact and ensure compliance;
- **Collaborate with stakeholders** to address cost-related bottlenecks associated with compliance and interoperability.

FUEL DIVERSIFICATION:

- **Support the development of alternative fuels**, including sustainable aviation fuels, LNG, hydrogen, and electric propulsion systems;
- **Establish fuel supply contracts** between ports, ships, and suppliers to ensure predictability in delivering renewable fuels.

ELECTRIFICATION:

- **Invest in electrification infrastructure** to enable vessels to operate on clean electricity while docked;
- **Provide financial support and regulatory incentives** for electrification projects to encourage adoption.

ENHANCED PORT CONNECTIVITY (EPC) FOR GREEN CONNECTION:

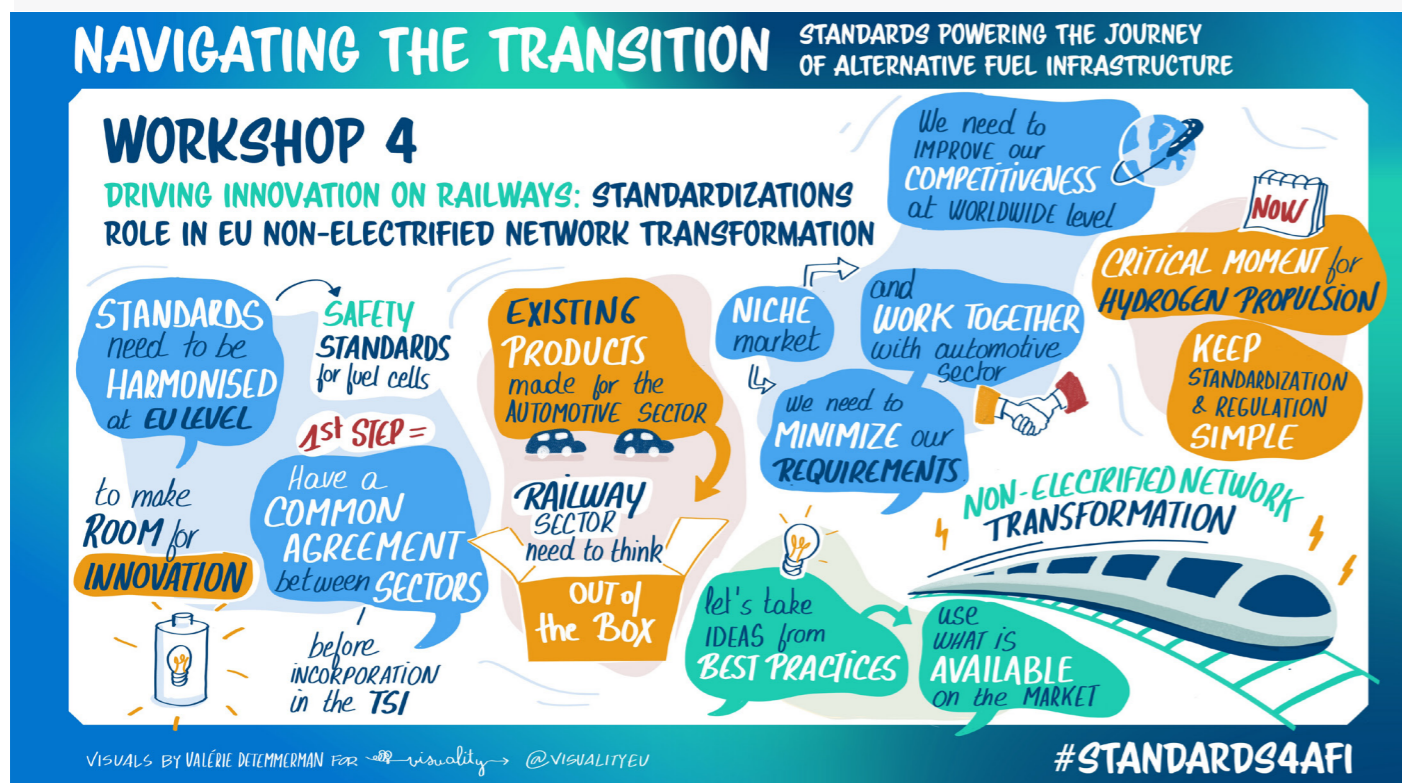
- **Strengthen EPC capacity** and develop green connections between ports and inland navigation routes;
- **Facilitate collaboration** among port authorities, vessel operators, and other stakeholders to optimise port-vessel interactions.

REGULATORY FLEXIBILITY:

- **Ensure regulatory flexibility** to accommodate diverse needs and challenges in maritime and inland navigation.



4. Railways



Speakers

- **Laurent Schmitt**, SNCF, and Chair of CEN-CLC-ETSI Sector Forum Rail
- **De-Niang Maria Peymandar**, Technical Manager for Hydrogen Trains, Siemens;
- **Esteban Coito Gonzalez**, Project Officer, European Union Agency for Railways (ERA);
- **Bardo Schettini**, Director Operations, European Rail Infrastructure Managers Association (EIM);
- **Nicolas Furio**, Head of Unit Technical Affairs, European Rail Supply Industry (UNIFE);
- **Enno Wiebe**, Director, Community of European Railway and Infrastructure Companies (CER).

Main highlights

The **railway sector** is particular, with its own distinct challenges. The main reason is that it is a niche market, so it lacks scale: other sectors have higher volumes, while rail depends too much on the public to be able to create incentives. Furthermore, railways have a long lifecycle (around 30 years).

Therefore, concerns of scale and efficiency must be taken into consideration when planning the transformation of a non-electrified railway network. In this context, **European standards** are needed: it is important for operators to guarantee interoperability, and for interfaces to be harmonized. Standardization can also support the integration of different systems. So, even if business cases may diverge, common European standards are important.

On this regard, developing new standards can be expensive for operators. Traditionally, standards in the sector have been adopted by the automotive industry. Instead of reinventing the wheel and going alone, the railway sector should first analyse what is already on the market and, where possible, work together with the automotive industry.

Regarding energy sources, **hydrogen and batteries** are the two main means to shift from diesel to alternative fuels in the railway sector.

Among them, the limitations identified above are particularly evident for hydrogen: it is a niche market, which makes it difficult for the rail sector to go alone. For this reason, it is more efficient to first check what is on the market and take ideas from existing best practices.

Cooperation is key. But there is a need of better self-organization: the CEN and CENELEC Sector Forum Rail needs to become more inclusive. Public joint undertakings have system and innovation pillars. New standards should be discussed there, together with new regulations.

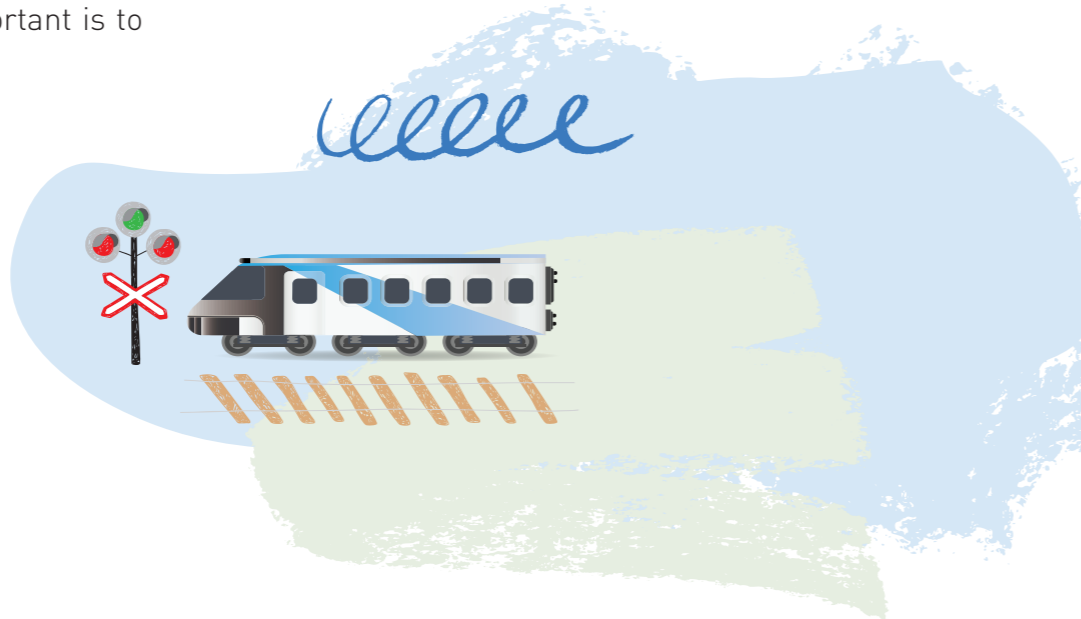
On the topic of **regulation**, the rail sector is already very regulated, and would benefit from some simplification. Implementation needs a concerted approach: regulation and standards must be simple, or they will be too expensive.



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This concerted approach also calls for a **good governance** of the players involved. For instance, 60% of railways are electrified, and 80% of traffic is on those lines. Is it economical to electrify the other lines? Are hydrogen and batteries the right solutions? Hydrogen infrastructure is not there yet, battery trains have limited reach, and decommissioning or closing lines is expensive. Investments and impact are huge and AFIR is mostly about road transport. Member States must take a strategic decision and make their own plans about rails, to make it a priority. Then, operators can decide about the alternatives; but first a political decision is needed.

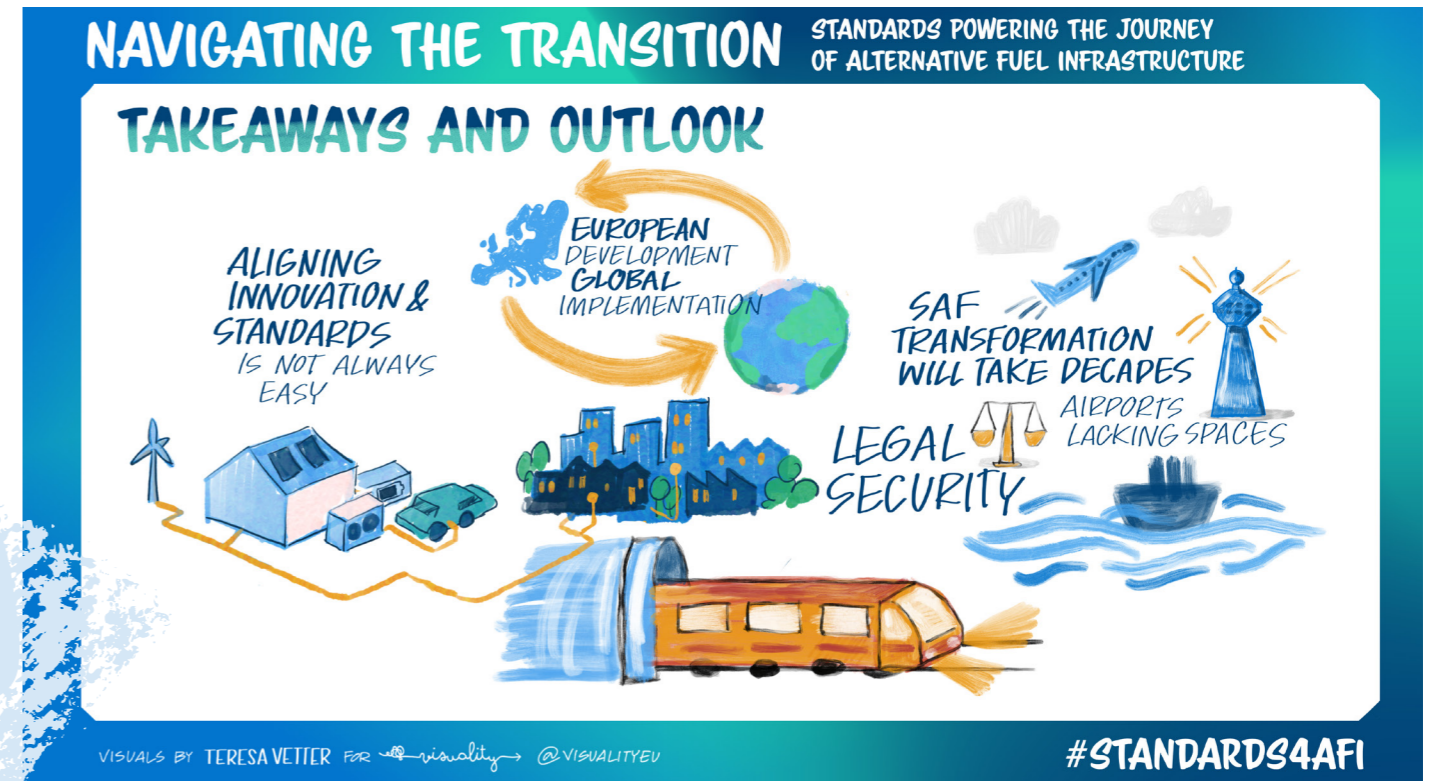
Finally, Europe should improve its **international competitiveness**: in a competitive global environment, standards are important, but even more important is to develop them quickly.



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In conclusion

In the event conclusions, **Marc-Antoine Carreira da Cruz**, Project Manager Mobility at CEN and CENELEC, underlined that the workshop demonstrated how much standardization is a fundamental matrix to allow the coherent applications of recent legislative moves. To be effective, though, it must operate coherently, through an ecosystem perspective which includes all stakeholders - the standardization community, the industry, and regulators - and ensures a constant open dialogue among them.





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About us

CEN (European Committee for Standardization) and CENELEC (European Committee for Electrotechnical Standardization) are recognized by the European Union (EU) and the European Free Trade Association (EFTA) as European Standardization Organizations responsible for developing standards at European level, as per the EU Regulation 1025/2012. The members of CEN and CENELEC are the National Standardization Bodies and National Electrotechnical Committees of 34 European countries.

European Standards (ENs) adopted by CEN and CENELEC are accepted and recognized in all these countries. European Standards (ENs) contribute to enhancing safety, improving quality, facilitating cross-border trade and strengthening the European Single Market. They are developed through a process of collaboration among experts nominated by business and industry, research institutes, consumer and environmental organizations, trade unions and other stakeholders.

To know more: www.cencenelec.eu

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