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Technology Collaboration Programme on
Advanced Motor Fuels

Task 64: Regulations and Standards

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Regulations and Standards

Overview

- Regulations and standards are being developed to promote the introduction of e-fuels
- The approach to how e-fuels are promoted and how their use is regulated in different countries varies.

Brazil

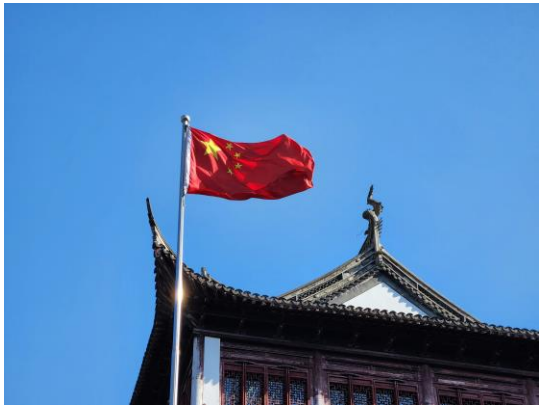
Project Law – Fuels of Future

- The Minister of Mines and Energy of Brazil has presented a Project Law to be approved to its Congress.
- The law will bring a set of initiatives to promote sustainable low-carbon mobility and it aims to help Brazil achieve international targets for reducing greenhouse gas (GHG) emissions.
- Synthetic fuels: the project establishes that ANP (regulation entity) will also regulate the production and distribution of e-Fuel, as well as their quality and use.

China

No existing specific regulations on e-fuels

- Separate regulations on various products contained in e-fuels:
  - ➢Existing standards are ready for methanol used as industrial materials, pure or blended fuels (M85).
  - ➢6 standards on gasoline fuel quality.
  - ➢Appendix B of Jet fuel Standard regulates the non-fossil based synthetic fuel as a portion of jet fuel blending.



European Union

- Delegated Act on a methodology for renewable fuels on non-biological origin
  - defines under which conditions hydrogen, hydrogen-based fuels, or other energy carriers can be considered as renewable fuels of non-biological origin (RFNBO).
  - Additional criteria to ensure that hydrogen is produced by renewable energy sources
- Renewable Energy Directive (RED) III
  - Goal to reach 42.5% renewable energy in energy mix by 2030, specific targets for different sectors
- ReFuelEU Aviation
  - quota for the market ramp-up of e-fuels ("RFNBOs") in the aviation sector, from 1.2% e-fuels in 2030 to 35% e-fuels in 2050.
  - 70% of aviation fuels must then be renewable in 2050.

Denmark

Binding political agreement of March 15th, 2022

- Goal of 4-6 GW electrolyser capacity by 2023
- 167 MEUR as fixed price subsidy for e-fuel produced during a period of 10 years
- Possibility of direct power lines to PtX-producers
- Lower rates for electricity in areas with generous supply
- Framework for a national hydrogen pipeline grid and other initiatives.

Germany

- Fuel suppliers must ensure a minimum share of sustainable aviation fuel produced as efuel/PTL: 0.5 % (2026), 1 % (2028) and 2 % (2030), due to the national implementation of RED II (GHG quota)

Japan

- Regulations on carbon management
- Digital platform for GHG tracking
- 10% of aviation fuel for international flights using Japanese airports be sustainable will be made mandatory

Switzerland

- Climate Protection Regulation
  - ➢financial aid until 2030 for measures for the application of novel technologies and processes in companies (application, transport and storage of CO_2)
- Hydrogen Strategy (to be published)
- Tax exemption for BEV and hydrogen-fuelled trucks

United States

- Industrial Reduction Act
  - ➢incentives to decarbonize transport sector
  - ➢maximum $3/kg tax credit for clean H_2 production
  - ➢Credit for SAF (supporting the production of SAF with $1.25 to $1.75 per gallon)

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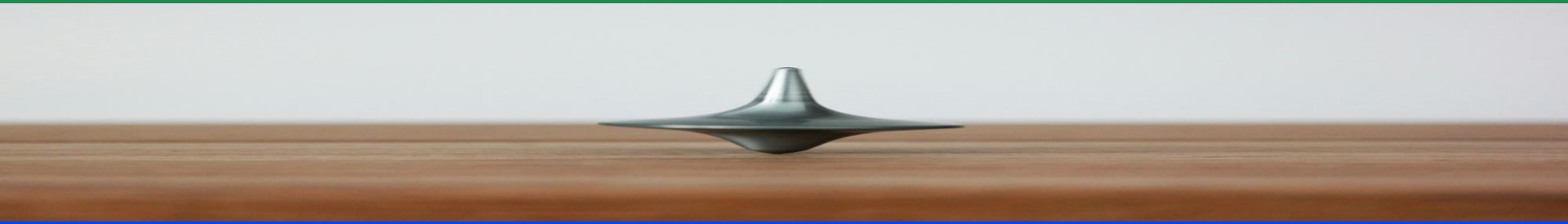
Similarities and differences in regulations and standards



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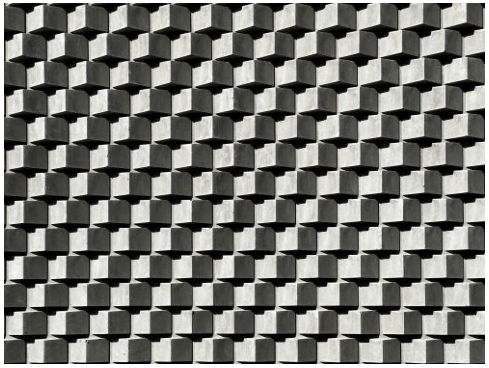
Similarities

- **Government Initiatives**
  - All the mentioned countries have introduced government initiatives or regulations aimed at promoting the use of sustainable fuels or reducing greenhouse gas emissions in the transportation sector.
  - Initiatives vary from setting targets for renewable energy adoption to providing subsidies and tax credits for the production and adoption of alternative fuels and clean vehicles.
  - interplay between electrification of transport, e-fuels and biofuels > different political priorities impact approaches in countries.
- **Regulation and Standards**
  - Several countries have introduced or plan to introduce regulations and standards to govern the production, distribution, and use of alternative fuels like e-fuels.
  - Ensuring quality control and safety standards in the adoption of these fuels.



Differences

Specific Targets and Policies

- Each country has its specific targets, policies, and approaches to achieve climate goals.
- E.g. Denmark focuses on electrolyser capacity and subsidies for e-fuels; the U.S. emphasizes tax credits and funding for clean vehicle manufacturing and infrastructure.

Regional Context

- Strategies of each country are influenced by their unique regional contexts, including available resources, infrastructure, and economic priorities.

Technological Focus

- Different technologies and fuels being prioritized by each country.
- E.g. Japan is focusing on e-methane and developing a digital platform for GHG tracking; the U.S. is supporting sustainable aviation fuel (SAF) production and clean vehicle manufacturing.

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Regulations and standards are main drivers for the development of e-fuels.