

Management Board Meeting of FCH JP

Time Thursday 26th of September 2024, 13:00 - 14:30 (CET)

Place Teams Meeting

Persons present: Jari Kiviaho (VTT), Chair
Jose Bellosta von Colbe (Hereon)
Alfredo Iranzo (US)
Marcello Baricco (Unito)
Josemaria Sanchez (CIEMAT)
Miguel Laguna (ICMA)
Jessica Vepsäläinen (VTT), Secretary

Present in parts of the meeting:

Josef Szuper (HUMDA)
Tekla Dessewffy-Téglásy (HUMDA)

1. Welcome and agenda approval (Jari Kiviaho)

The agenda was agreed on and the meeting proceeded accordingly.

2. Membership applications

Three new member applications to join the FCH JU but only one organization was present. **HUMDA** (Josef Szuper, Tekla Dessewffy-Téglásy)

Josef Szuper gave a short presentation of HUMDA organization. After the presentation the management board discussed if the application is accepted or not.

Decision:

- At this moment HUMDA is not accepted as a member of EERA FCH JP. Reason for this decision was that Humda itself is not doing fuel cell and hydrogen related research.
- When the HUMDA organization has more research activities, we urge to apply for EERA FCH JP membership again.
- Management board recommend Humda to join Hydrogen Europe (HE) organization instead of EERA FCH JP.

Action Point: Jari to inform the applicant and EERA of the decision.

3. Outcomes from EERA Policy Working Group (Vito Di Noto & Daria Vladikova)

- Daria & Vito were not in the meeting to give presentations. This topic will be discussed in the next meeting.

4. AOB

- Joint workshop with EERA e3s JP (Marcello)
 - The workshop is planned to be held in March - April 2025, preferably together with Steering Committee meeting to get more people to attend the workshop.
 - It was decided that the FCH representatives in the event Steering Committee are

Marcello Baricco, Jari Kiviaho, Jose Bellosta von Colbe and Alfredo Iranzo.

- A Steering Committee meeting on the topic will be held together with EERA e3s in October.
- KPI document
 - Jari suggested that the updating of the “Key Performance Indicators (KPIs) for FCH Research and Innovation” document would be postponed 1-2 years as the current one is written to be until 2030.
 - This was agreed on.
- EERA Flagship report
 - Thank you to those who commented on the report.
 - We have not yet received the final version of the document. When we get it we will share it with the members and on FCH website.

Action Point: Jari to give suggestions of suitable dates for the joint Workshop.

5. Next meeting

- Jari will arrange the next MB meeting and aim it for January.

6. End of the meeting

- The meeting ended at 14.30

Attachments

1. HUMDA presentation
2. Sustainability of Hydrogen Technologies Workshop

HUMDA Plc. Introduction

EERA Board meeting

2024. 09. 26.



HUMDA



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HUMDA



**HUMDA is committed
to see the Big Picture**

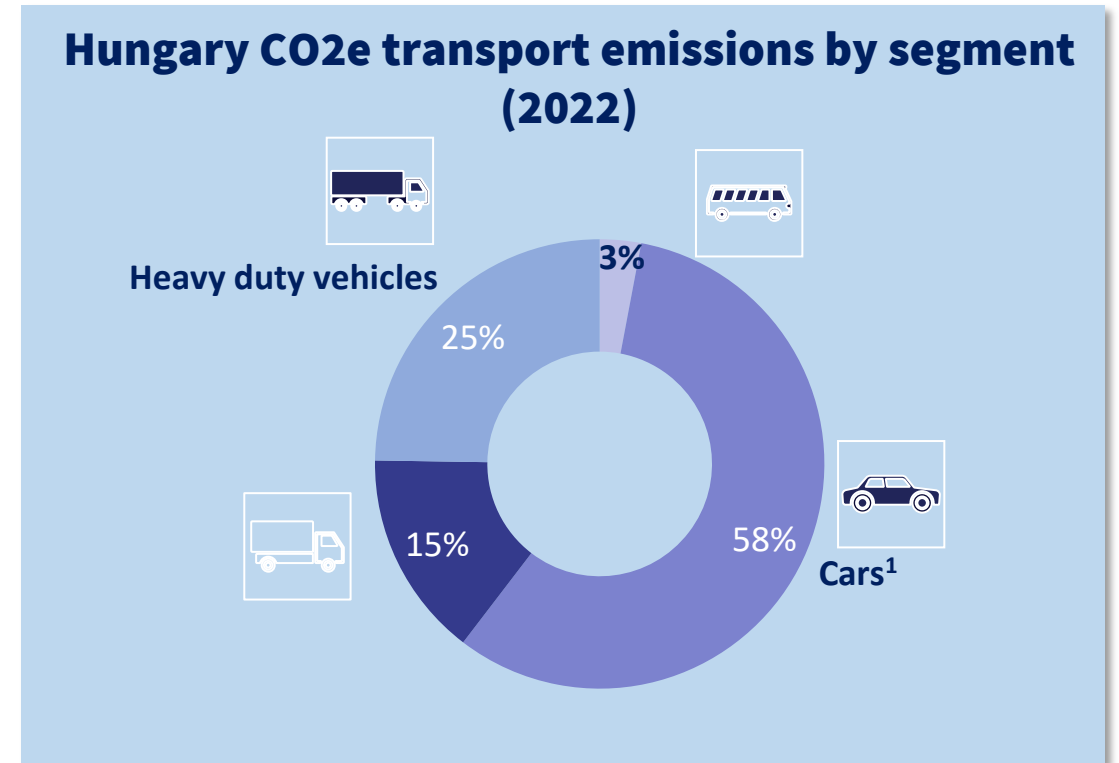
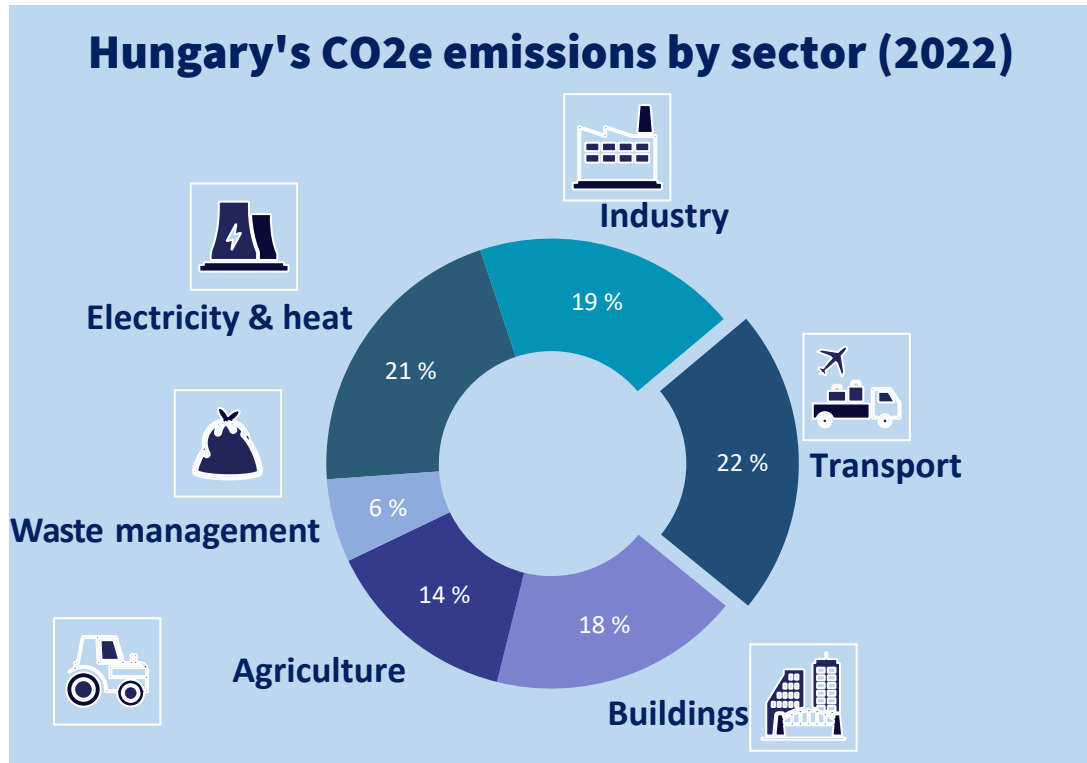


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CRITICAL ROLE OF TRANSPORT SECTOR

The share of domestic transport related GHG emissions is continuously increasing

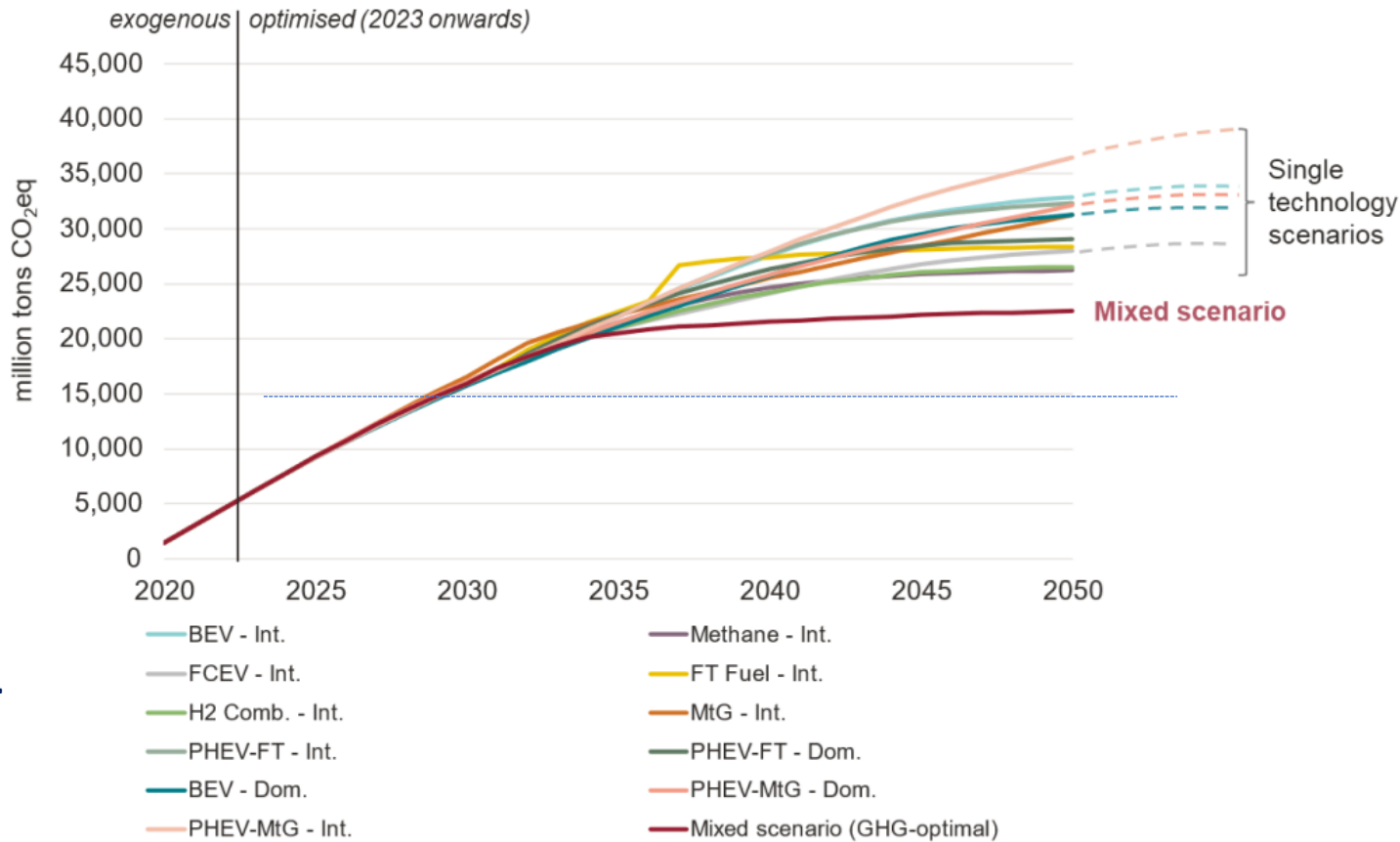


1. Includes emissions from motorcycles (<1%) Note: National emissions data have been determined according to the reporting requirements of the European Environment Agency, i.e. following the 2006 IPCC guidelines that emissions from international aviation, shipping and bunker fuels are not included in national totals but should be treated separately (UN FCCC/CP/2013/10/Add.3). As a function of emissions from national domestic road transport, domestic aviation accounts for <0.1% (~8 thousand tCO₂e) of the total, and international aviation for ~6% (~860 thousand tCO₂e). Source: European Environment Agency, BCG analysis

„Technological diversity is more carbon-neutral“



HYDROGEN IS MULTIFUNCTIONAL

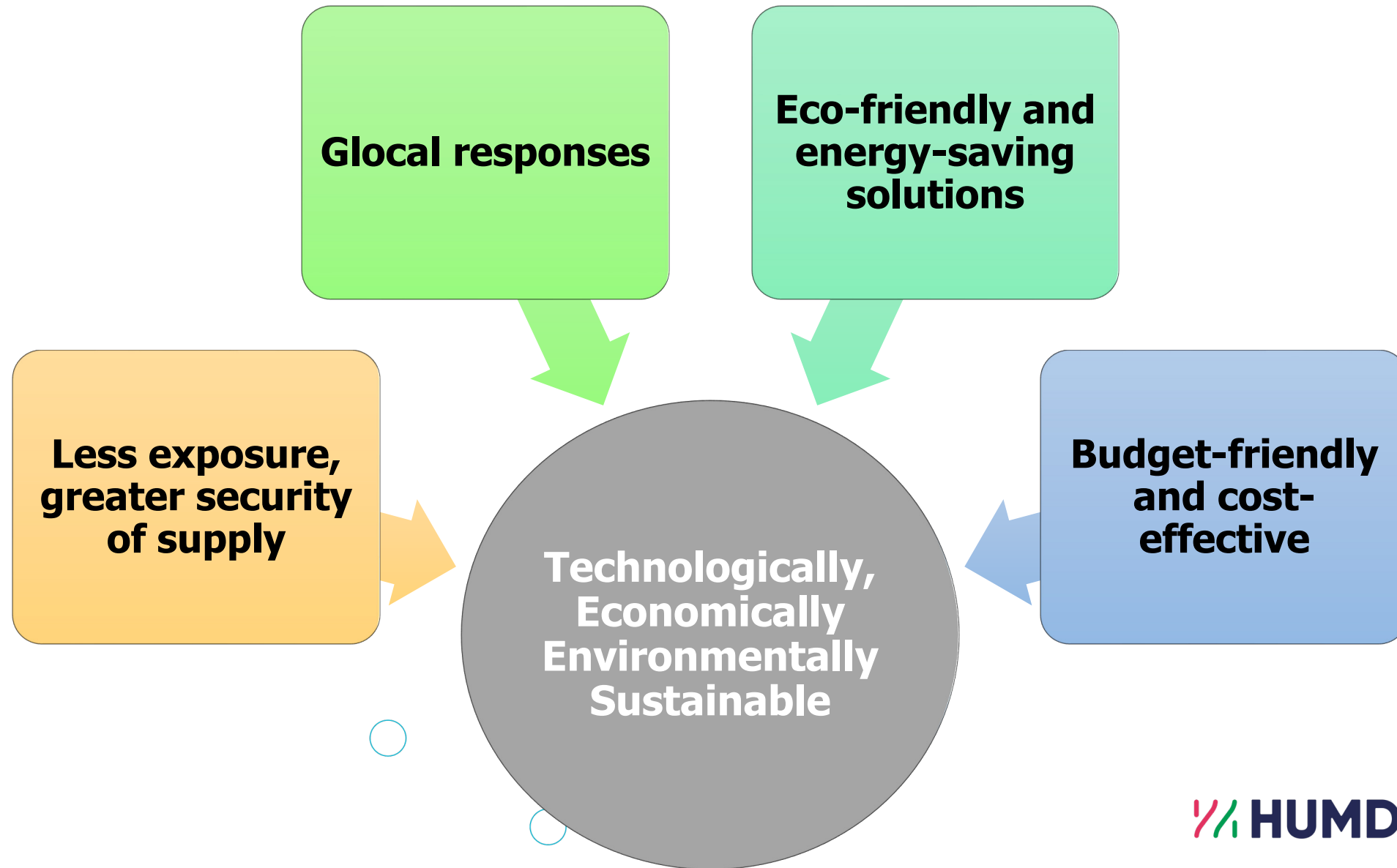


Minimizing / Optimizing GHG emissions

Single scenarios face bottlenecks limiting maximum deployment rate

Mix of carbon-neutral powertrains has accelerating effect

The importance of technological diversity





HUMDA

**HUMDA activities
serving the Big Picture**



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MOBILITY DEVELOPMENT AGENCY WITH A STRONG PRESENCE IN KEY MOBILITY AREAS



Motorsport development

- Training and **talent management**
- Building **market relations**, international events

Green Bus Program (EUR 95 million, 135 buses by 2023)



Traffic safety

- **Educational events** in line with the EU Vision Zero Directive
- Development of **driver training centres**

Green Waste Truck Program (3 municipalities)

Ányos Jedlik National Plan to promote electromobility



Green mobility development

- Building residential and business **electromobility**
- Supporting **clean public transport**

Infrastructure development (HRS deployment first at 3 locations)

H₂ Demonstration Project (renting 2 hydrogen buses)



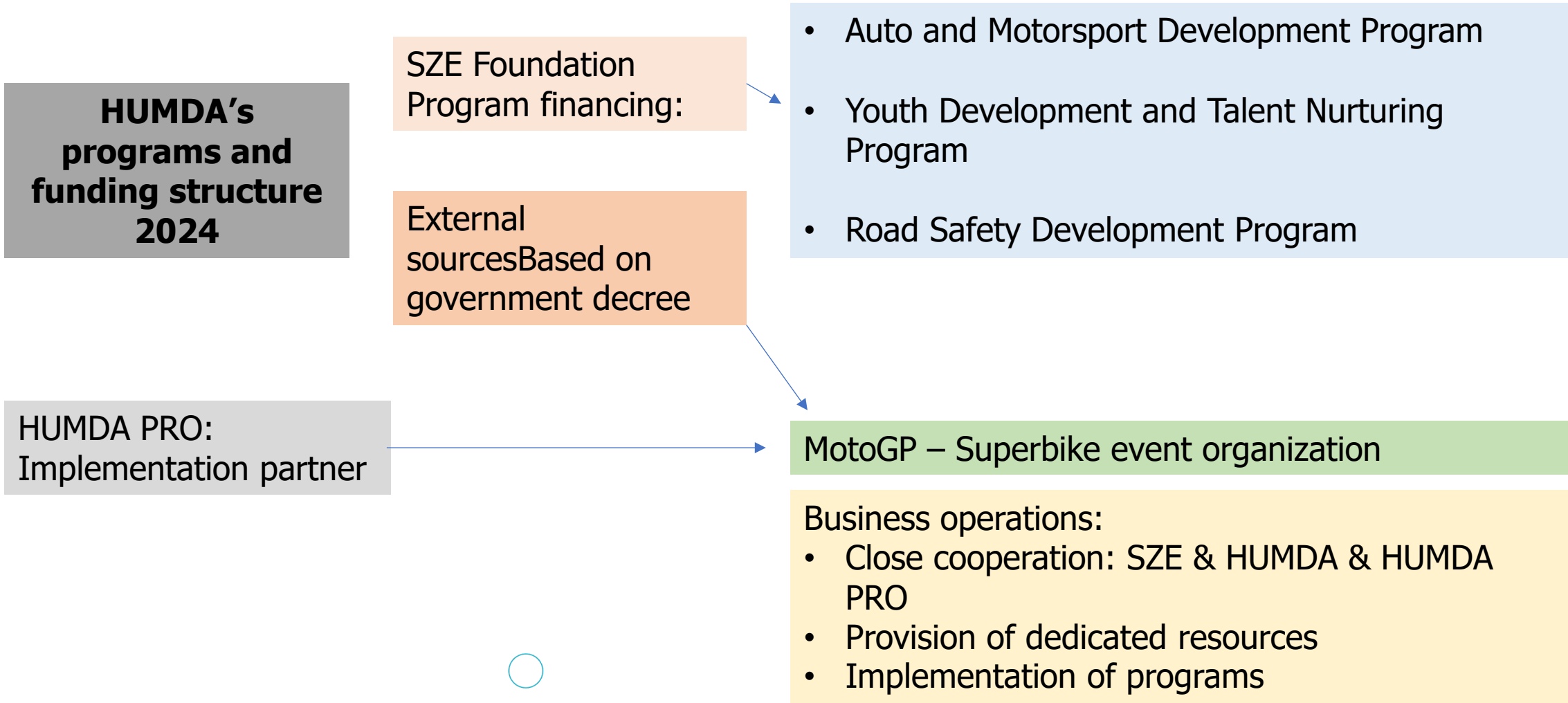
Hydrogen economy development

- Implementing the **National Hydrogen Strategy 2030**
- **Energy management system** development

H₂ Bus Roadshow Project (Budapest and 6 county towns)

Focus: training, skills and international relations

The characteristics of business operations – Sports and Road Safety



The characteristics of business operations – Green Mobility

Policy dimension

1641/2022. (XII. 19.)
Gov. Decision

ZÖLD BUSZ PROGRAM
powered by HUMDA
Tiszta energiában utazunk



- ✓ **Ányos Jedlik National Plan**
- ✓ **Green Bus Program**
- ✓ **National Hydrogen Strategy**
- ✓ **Battery strategy**



**Infrastructure-,
Education-,
EQF Business
Development**

**Policy objectives,
support for
national green
mobility
strategies.**

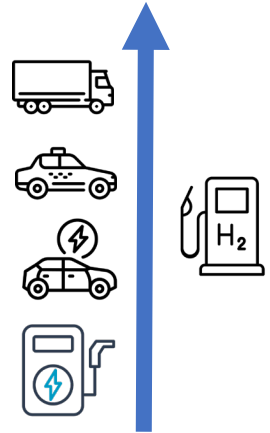
**Shaping and implementation of
projects,
GBP, H2 (system approach and
innovative focus)**

Implementation Dimension

**Infrastructure dev.
Market catalyst role.**

**Integrator
role in
green
mobility**

**Green mobility
innovations,
comprehensive energy
approach.**



Social dimension

**Attitude shaping, Education
Ktraining material dev.,
Knowledge repository**

**Increasing
awareness and
developing
related training
materials**

**Data, analyses – decision
support, dissemination**

Green Mobility Infrastructure Development

"Big Hydrogen Project" - Development of H2 Valley / ecosystem

- Hydrogen fuel cell bus pilot
- Green logistics
- HYDROBONA project (Győri Industrial Park – Uni, MVM, Höldmayer, VOLÁN, Waberer's)
- Kecskemét (KEKO, Municipality, MOHU, Duna- Tisza Interregional Waste Management NKFT.)

Advancement of Green Bus Program (GBP):



Support for the procurement of hydrogen fuel cell zero-emission vehicles (3 pcs)

RRF electric charging network development
Opportunities for refundable and non-refundable support for the development of electric vehicle charging networks

GMI Zrt.: Non-refundable grant for the development of green mobility charging infrastructure

Development of the H₂ network

Development of electric vehicle charging network

It is necessary to reconsider the Green Mobility Infrastructure Project - it is advisable to manage hydrogen infrastructure and vehicle capex support together in light of the current funding opportunities.

Partners and the company's sphere of interest

Electromobility



Hydrogen economy



International Relations



GREEN BUS PROGRAMME

Presentation of Applications



HUMDA



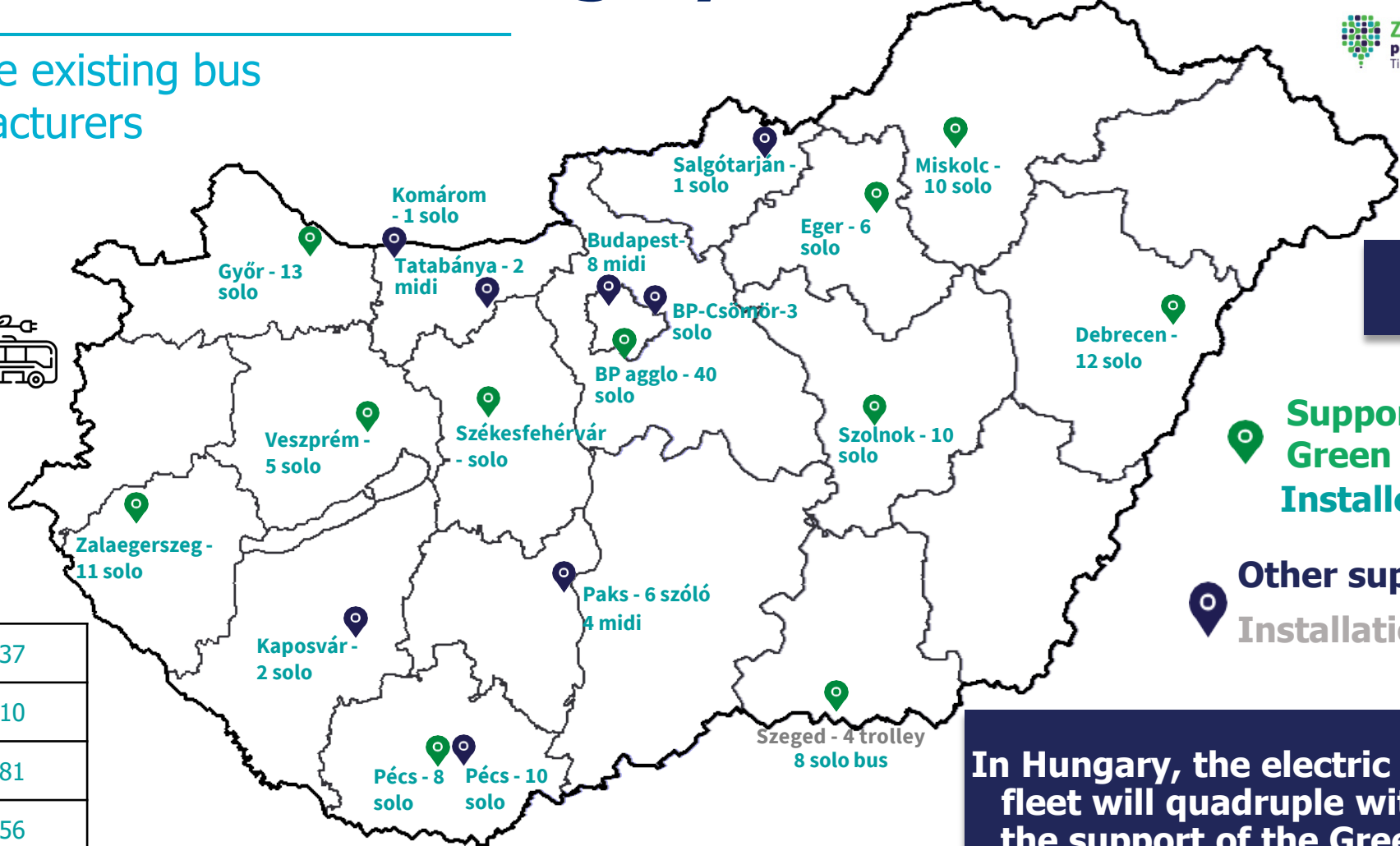
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Zero emission buses in Hungary



The distribution of the existing bus fleet by manufacturers

	72
	17
	5
	60
	8
	10



90 million EUR

Supported by the Green Bus Program Installed

Other support Installation in progress

Installed E-bus fleet by 2021	37
Installation of E-buses in 2021	10
Installation of E-buses in 2022	81
Installation of E-buses in 2023	56
Total bus fleet installed by 2023	172

In Hungary, the electric bus fleet will quadruple with the support of the Green Bus Program

9,000 tons of CO2 reduction per year



Continuation of the Green Bus Program - tasks

A comprehensive energy approach is emerging



Incorporating renewable energy generation as an alternative energy solution into the charging network's power supply

By storing the generated energy, charging can be scheduled, and flexibility can be provided to the charging infrastructure for vehicles, as well as enabling predictability of load on the electric grid due to charging

This complex system enables:

- Allocating only the network capacities that are needed for charging.
- Opening up the charging infrastructure for public use

Energy management: dynamic charging management and traffic organization enable the planned utilization of available network capacities.

Grid flexibility: Grid flexibility: considering the energy storage capacities of E-buses, the storage capacity of 1000 electric buses' batteries are approximately 350 MWh

Alternative funding source: flexibility and ETS credit sales

Further development of Green Bus Program (GBP):

- Procurement of hydrogen fuel cell-powered zero-emission vehicles (3 units)
- Continuation of the GBP program in domestic cities (including cities with populations below 25,000)
- Support for the implementation of a complex energy system related to the GBP (Green Bus Program)
- Launching a pilot project for the School Bus Program in rural areas

RESULTS OF SUBSIDY PROGRAMMES SO FAR

EV-
CHARGER

CAR

TAXI

MOTOR-
CYCLE

E-SCOOTER

PEDELEC

BUS

CARGO
BIKE

Green licence
plates and
benefits

171 EV chargers

~ 48.000 vehicles with green licence
plates

Subsidy
programmes

Electric taxi fleets

~ 7500 electric cars

Industrial
development
programme

~ 500 e-scooters, 6900 e-bikes, 170 cargo bikes

139 zero emission urban buses

Introduction of Bus Pilot Project



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Hydrogen fuel cell bus pilot project

ÉZFF/208/2022-TIM-SZERZ - „BIG HYDROGEN PROJECT”



Kick off the implementation of the National Hydrogen Strategy in public bus transport

DEMONSTRATION

- With two buses
- During one year (2024)
- In six county towns & in the surrounding suburbs of Budapest
- Installed and mobile (light) fuelling



OBJECTIVES

- Systematic data collection and analyses
- Operational experiences (vehicles, drivers, charging, PTO-s)
- Running a passenger survey for a year
- Flagship awareness raising campaign
- Promotion of hydrogen technology
- Preparing decisions for decisionmakers, input for future subsidy programmes



Fuel Cell Electric Buses

Solaris Urbino 12 electric H2 Prim-Vol Trade Ltd.



Ballard fuel cell –
60 kW
Length:
12 000 mm
Range (SORT1):
426 km
Passenger
capacity:
88



Toyota Caetano H2.City Truck-Trailer and Parts Ltd.



Toyota FC-Stack,
60 kW
Length:
11 995 mm
Range (SORT1):
660 km
Passenger
capacity:
73



INSTALLED H₂ REFUELLING STATION OPEN TO THE PUBLIC – Budapest, Linde's site



H2 refuelling directly into vehicles of end users

Registration is required for refuelling

Due to the pilot charging around 4000 kg of H₂ free of charge supported by HUMDA

LOOKING FOR OTHER DEMONSTRATIONS (trucks, other brands and types of buses)



Thank you for
your
attention!

 **HUMDA**



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JOINT WORKSHOP

Sustainability of Hydrogen Technologies

Marcello Baricco (JP FCH)

Alessandro Sciullo (JP e3s Coordinator)

University of Turin, Torino, Italy



Starting point

- Request from ExCO to promote connections among JPs
- Relevance of hydrogen technologies in the next future
- Need of evaluations of possible impacts of hydrogen technologies on the society



Welcome to EERA JP Fuel Cells & Hydrogen

The Joint Programme sustains research for European leadership in fuel cell, electrolyser and hydrogen technology

JP FCH SUB-PROGRAMMES

JP FCH MEMBERS

<https://www.eera-fch.eu/>



Welcome to EERA JP e3s

The Joint Programme “clean Energy tranSition for Sustainable Society” (e3s) aims to advance research and provide evidence, knowledge and tools to address the socio-economic challenges of the clean energy transition

ABOUT JP E3S

ABOUT EERA

<https://www.eera-e3s.eu/>

Contents



- Summary of Hydrogen Technologies (JP FCH)
- Summary of Sustainability (JP e3s)
- Possible impacts of Hydrogen Technologies (JPs FCH-e3s)
 - Environmental Impacts
 - Economic Impacts
 - Social Impacts
- Actions necessary to manage hydrogen in the energy transition
 - Technological aspects (JP FCH)
 - Socio-economic aspects (JP e3s)
- Level of talks: avoid too technical descriptions, linked to applications, case studies.

Scheme



- Joint workshop on “Sustainability of Hydrogen Technologies”- IMPHy.
- Keynote lecture from outside EERA (Policy maker/bank/Industry)
- Talks from each JP on “Impacts” and “Hydrogen Technologies” (30 min)
- Possible contributions from participants (15 min) – about 12 presentations
- Interactions tools
- Duration: one day - Date: March-April 2025
- Location: Torino – Campus Luigi Einaudi
- Free of charge. Call for interest open outside EERA.
- Streaming available (webinar style). Possibly a chat. Presentations only in presence.
- Possible publications (tbd)

Campus Luigi Einaudi - Turin



- Luigi Einaudi Campus
- “Olimpia” EDISU Student Residence





Side activities

- Possibly join the Workshop with an “in presence” Governing Board Meeting for FCH JP.
- Strategies to engage people from the JPs.
- External impacts: IEA, CHP, H2 working groups, etc.
- Communication – Social.



Next steps

Formation of a **small working group**.

Main contact person for each JP (Sciullo and Baricco)

A **couple of support** members.

1. Week October 21-25 for a web meeting. Doodle will follow.
 1. Scheme definition - Date fixed – List of speakers
2. By the end of 2024, call for abstracts, for contributions, internal to EERA and/or open externally
3. Event in March-April 2025