



e-Bussed
Interreg Europe



***What happened since the eBussed
kick-off meeting and where are we
going?***



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Phase 1 final event | Hamburg | 18 May 2022

Status Quo South Transdanubian Region

The status quo situation of e-buses in South Transdanubian Region, 2021

eBussed supports regions in the transition towards low-carbon mobility and more efficient public transport in Europe by promoting the use of e-buses. interreurope.eu/ebussed



Data on the Region



South Transdanubia Region Public Transport area

Population density (inhabitants per km ²)	62
Rural	1
Average	62
Urban	871

Policy Objectives

2030 Sustainable Energy and Climate Action Plan 2020-2030 SECAP.

2030 National Framework Strategy on Sustainable Development by 2030 NFSSD



Modal Split

motorised vehicles

28%



walking

28%



bicycle

3%



public transport

40%



other

1%



PÉCS, pilot city of e-buses, regional capital



Source: <https://s73.hu/pecs-varoskozpont>

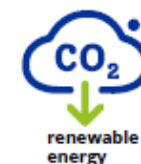
Bus Fleet and Operations



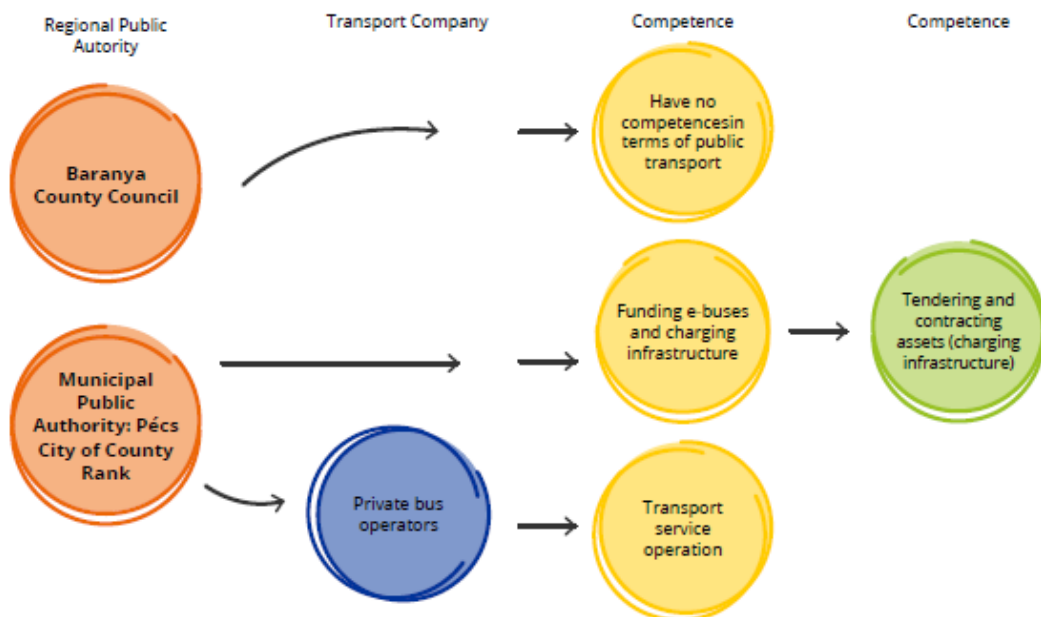
First year of operation of e-buses in the region	2020
Total number of e-buses in operation	20
Total number of buses	180
Number of passenger kilometers per year	248 M

No. busses: 20

Bus Manufacturer	Model	Length (m)	Seat capacity	Size of battery (kWh)	Type of charging (kW)	Range (km)
BYD Europe B.V.	Solo (10 pcs)	12,2	26 + 1 and 59 standing	348	depot AC 80	300



Organisation Public Transport - Pécs City of County Rank (Baranya County, Hungary)



Explanatory notes:

1. During the tendering and contracting assets another 100% Pécs City of County Rank Municipality subsidiary, the Pécs City Development Plc. (public) assists the process.
2. Tüke Busz Zrt. (Zrt. means Plc.): subsidiary of Pécs City of County Rank Municipality, with 100% ownership rights of the local authority. It is a local public transport company.

The Pécs e-buses – Project background, project aims

Pécs is the **centre** of Baranya County and the South-Transdanubian Region, and - with **more than 142 thousands residents** - is the fifth largest city in Hungary.

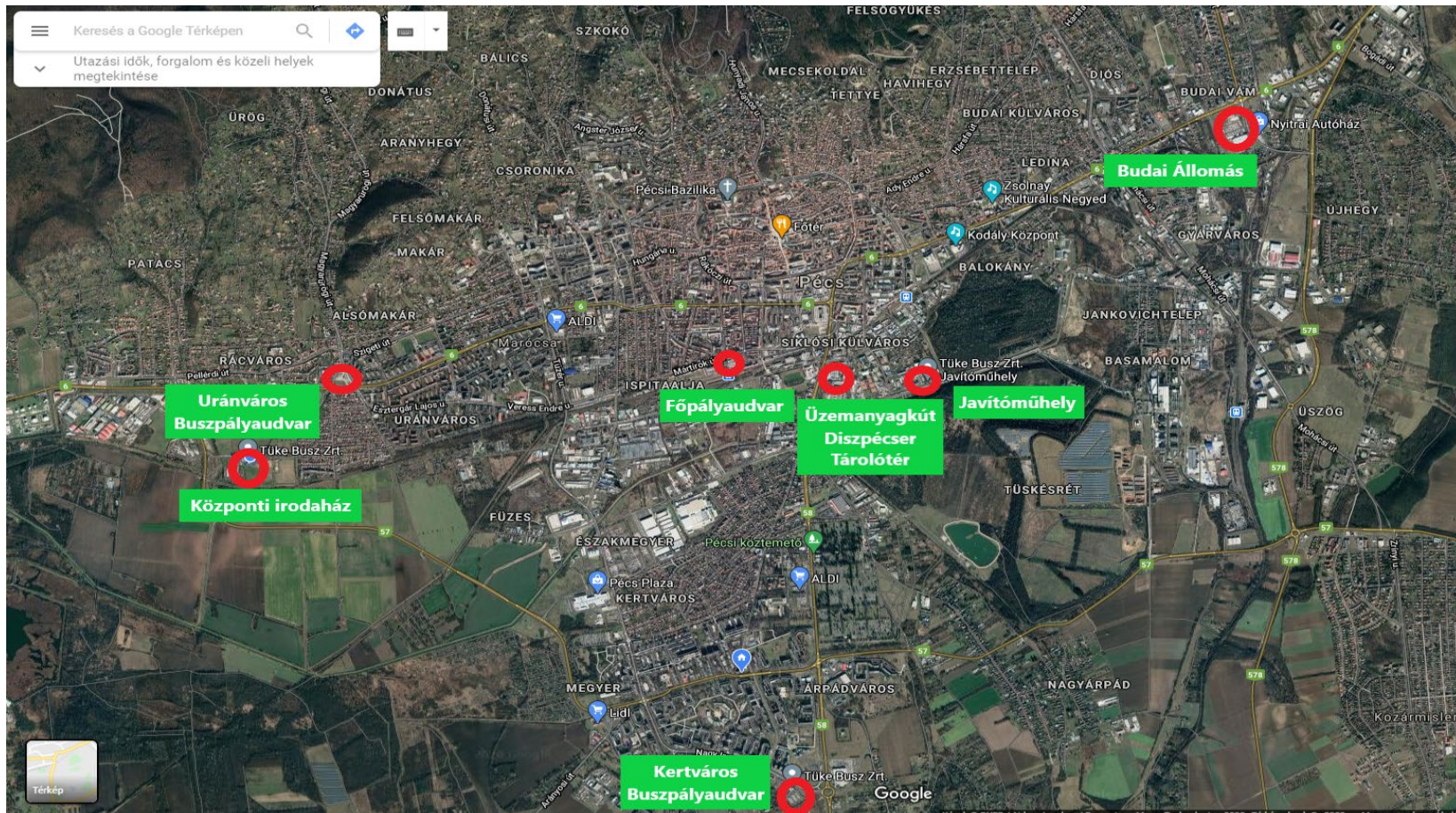
One of the main goal of the Europe 2020 strategy is to reduce the greenhouse gas emission with at least 20%. To contribute to fulfill this aim, **Pécs set the undermentioned objectives:**

- 1. Increasing of public transport's attraction**
- 2. Reduction of emission**
- 3. Prevention of deterioration of air quality.**



The electric buses have no local emission, so a such procurement helps to achieve the above-mentioned aims. This new infrastructure contributes to establish a more sustainable city and raise the chance to win the „European Green Capital” award in the near future.

City of Pécs and the location of Tüke Busz Plc. premises within the city (headquarter, bus stations, maintenance unit)



Current bus fleet

Manufacturer and type	Verison	Number of buses
Mercedes-Benz O345G Connecto	Articulated	24
Volvo 7700A	Articulated	38
Volvo 7900 A	Articulated	5
Credo Citadell 12	Solo	20
Credo Econell City	Solo	5
Volvo 7700	Solo	72
BYD K9UB	Solo	10
Total number of buses		174

Main traffic data

Number of bus lines: 91 (+ 8 night lines)

Number of bus services per working day: 2,284

Useful kilometres per working day: 23,549 kms

Number of passengers transported (2019): 40,103.1 thousand people/year

Rate of bus services successfully completed (2019): 99,81%

7 million kilometres driven per year

The Green Strategy of Tüke Busz Plc. (2016)



Milestones

Application submission:	10 May, 2017
Requested and awarded grant:	1.7 billion HUF
Subsidy contract:	13 September, 2017
Sales contract:	29 August, 2019
Ceremonial bus takeover:	31 July, 2020
Beginning of test period:	3 August, 2020
Entry into service of vehicles:	18 September, 2020



Project elements

- Procurement of **10 urban low-floored solo buses** with exclusively electric drive through a public procurement procedure; the selected subcontractor was the BYD Europe B.V.
 - The public procurement procedure contained the **installation of the related charging infrastructure.**
 - Site development, which contained the **construction of a 600 m² industrial hall (e-bus depot);**
- Unit prices: a bus with the related charging infrastructure costed 145,1 million HUF.



Questions of the future

What would happen if the whole fleet is replaced by electric buses?

How to manage charging?

What is the solutions to runaway energy prices?

Hydrogen buses?



Novelties that are taking place

Within the Green Bus Programme in the 4th quarter of 2022 8 new electric buses are purchased with DC chargers

Deployment of decentralised charging network

Electric bus lines are introduced that fit the special city needs



PAKS, town of vertical integration in public transport development



Source: <https://www.termalfurdo.hu/telepules/paks-1112>

Bus Fleet and Operations

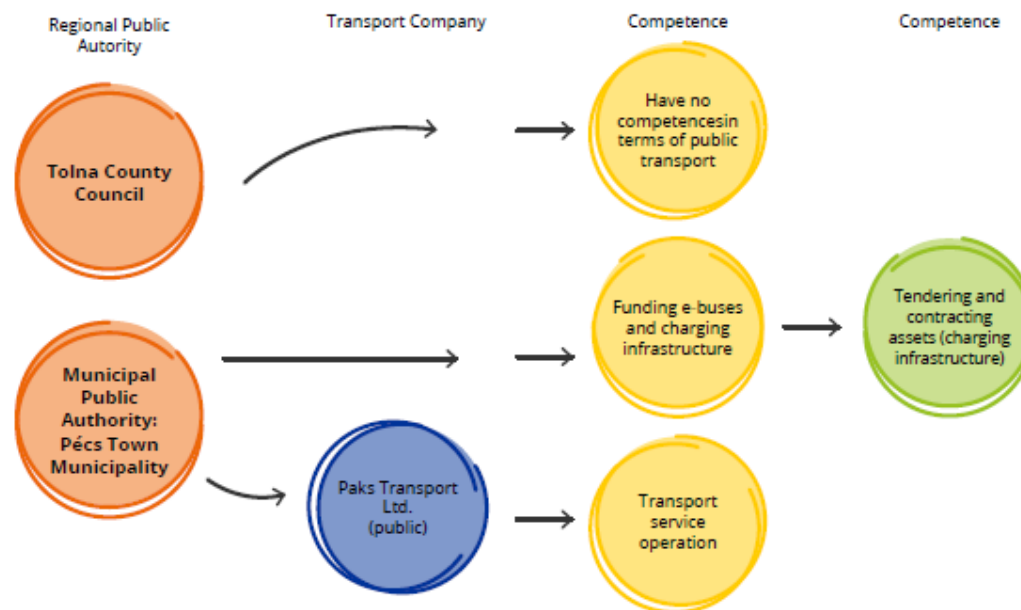


Bus Manufacturer	Model	Length (m)	Seat capacity	Size of battery (kWh)	Type of charging (kW)	Range (km)
Solaris Bus & Coach S.A.	Solo (6 pcs)	12	28+1 and 35 standing	250	depot	279,94
Solaris Bus & Coach S.A.	Midi (4 pcs)	8,8	24+1 and 16 standing	200	depot	266,48



renewable energy

Organisation Public Transport - Paks Town Municipality (Tolna County, Hungary)



Explanatory notes:

1. During the tendering and contracting assets another 100% Paks Town Municipality subsidiary, the Protheus Holding Plc. (public) assists the process.

2. Paks Transport Ltd.: subsidiary of Paks Town Municipality, with 100% ownership rights of the local authority. It is a local public transport company..

Definition: **Vertical integration** occurs when a company assumes control over several of the production steps involved in the creation of its product or service in a particular market.

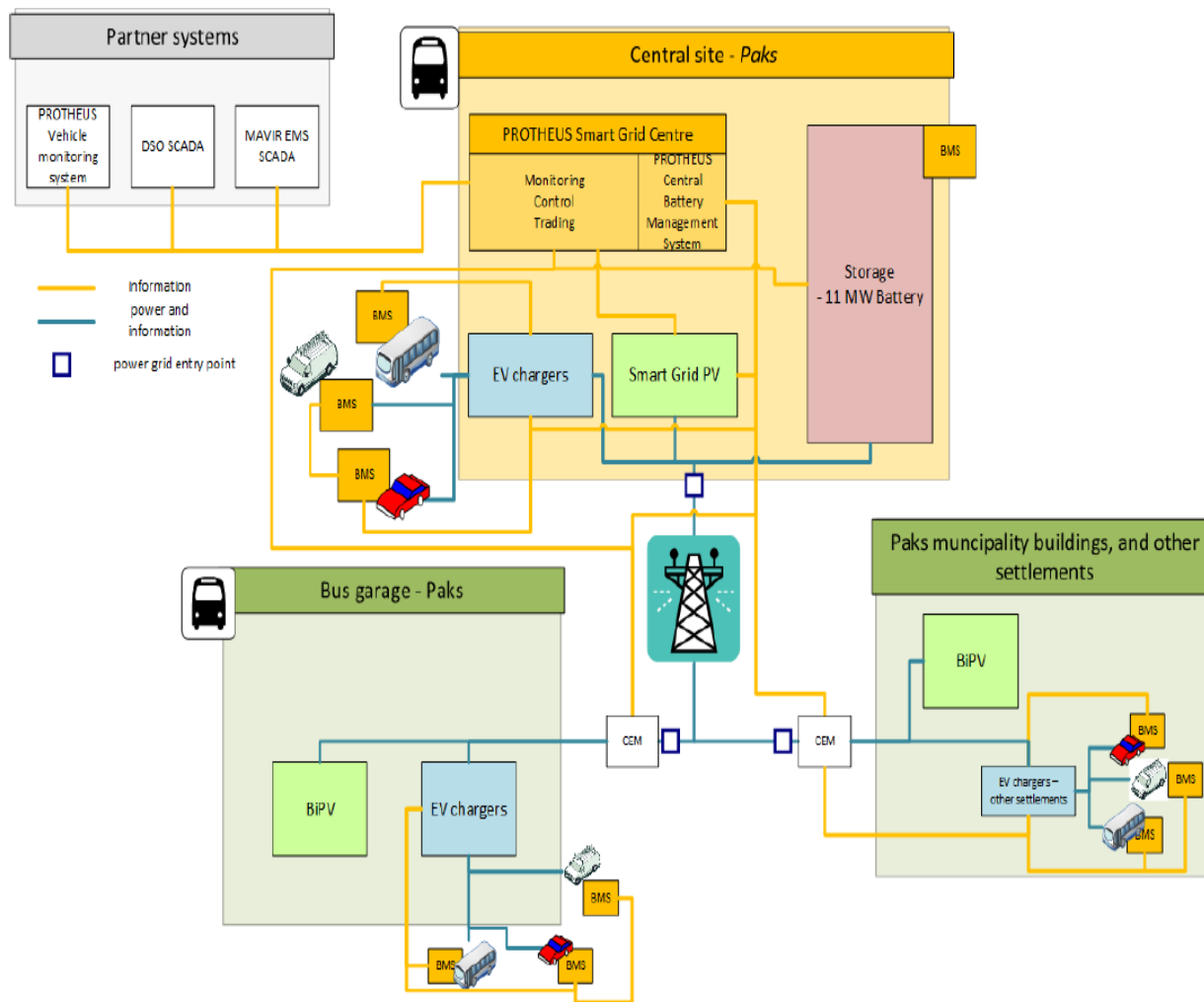
Smart Grid - Smart City – E-mobility

Financial basis:

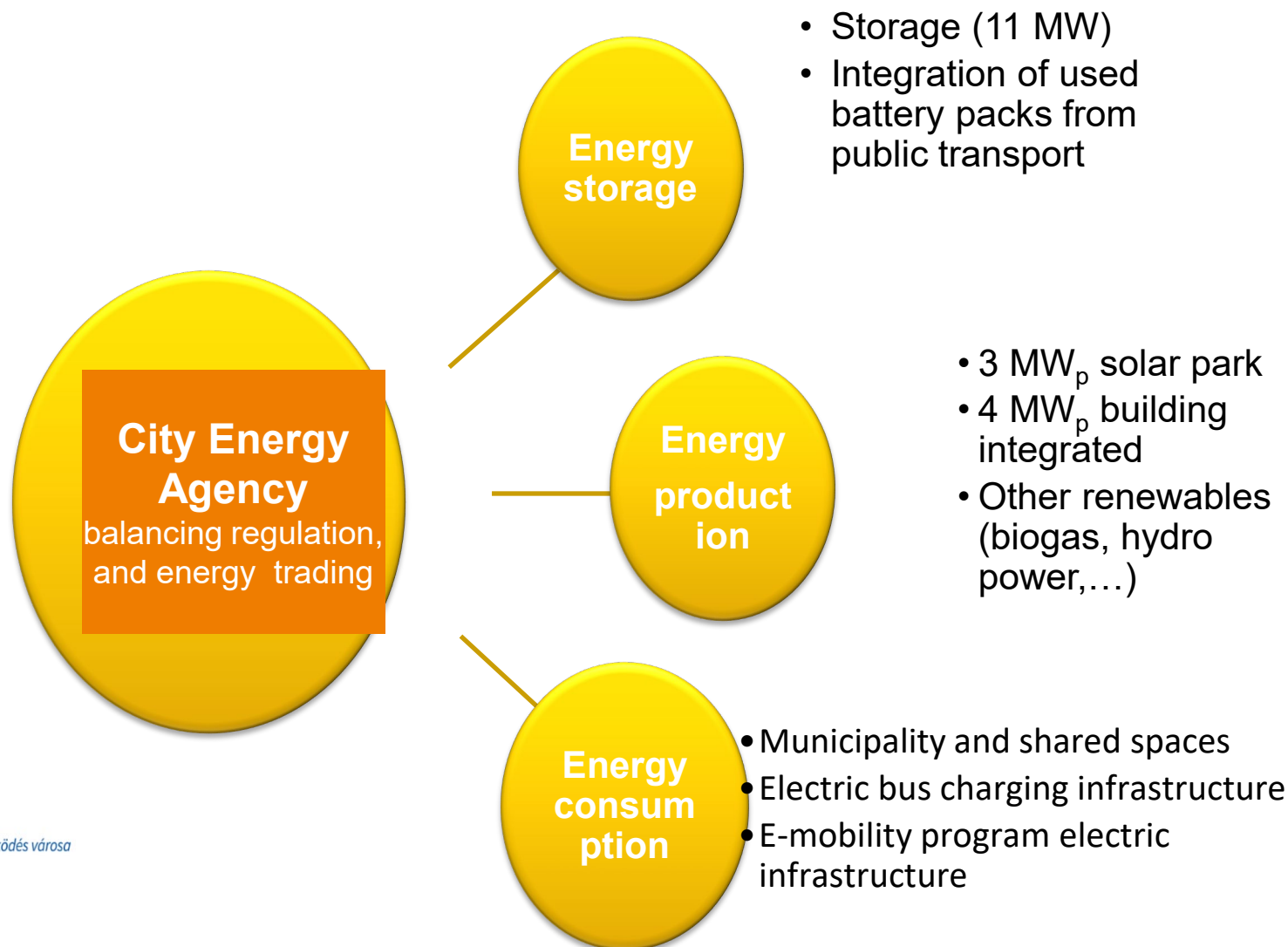
ELENA-2015-063 Protheus SMART-GRID
project supported by EIB

IKOP-3.2.0-15-2016-00020 public transport
development project

Paks Protheus project – physical infrastructure



Paks Smart Grid system – logical set-up



E-mobility program

E-bus system

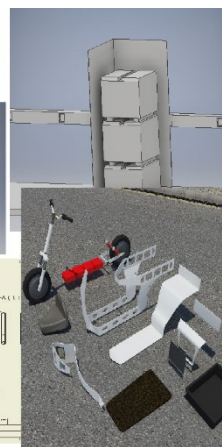
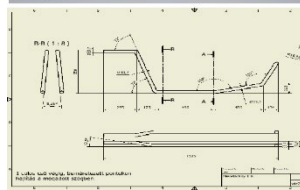
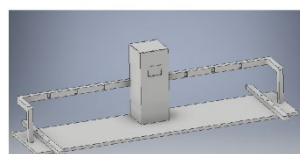
E-TAXI – Virtual bus system

Electric bicycle sharing system

E-ferry project

AC and DC charger infrastructure development

„fuel production” Solar farm, and virtual solar balancing group



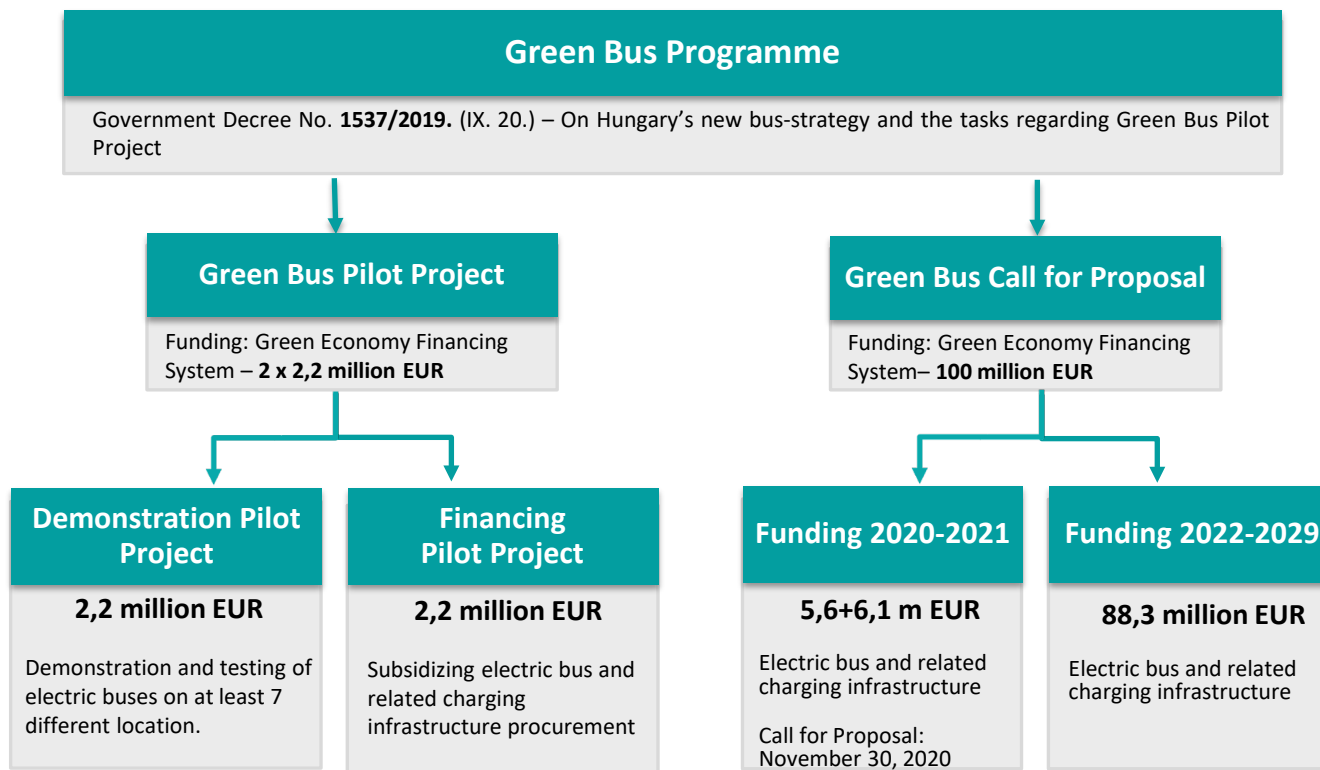


GREEN BUS PROGRAMME

Ride on clean energy

Future:
local
commitment
and
funding

Framework of the Green Bus Programme

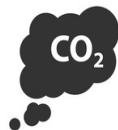


Objectives of the Green Bus Programme

Busfleet
replacement



Emission
reduction



Noise pollution
reduction



Increase domestic
bus manufacturing
capabilities



Reduction of
average bus age



Reduction of
operation
expenses



Improvement of
travel quality



Key objectives of the Green Bus Pilot Project

Informing citizens, service providers, local professionals and decision-makers about the possibilities of e-mobility and the latest technology

Promoting electromobility by demonstrating its benefits

Increasing the citizens' climate awareness

Providing opportunities to the bus manufacturers to showcase their vehicles to potential customers



Certified Partners

e-bus manufacturers / distributors



In
consortium:



e-bus charging system suppliers

- ABB Mérnöki, Kereskedelmi és Szolgáltató Kft.
- CS-PROCESS Mérnöki Kft.
- Elektromotive Hungaria Kft.
- EXTOR Elektronikai Kft.
- Fabricom Electrical-PVV Kft.
- Greenetik Retail Kft.
- GTKB Ganz Transelektro Közlekedési Berendezéseket Gyártó Kft.
- MOL Nyrt.
- MVM OVIT Országos Villamostávvezeték Zrt.
- Pandant TMSZ Kft.
- Prim-Vol Trade Kft. / Ekoenergetyka Polska S.A.
- Siemens Zrt.
- Solar FM Kft.
- Swarco Traffic Hungaria Kft.
- Tech-Mobile Kft.
- T-Systems Magyarország Zrt.
- ZTS Hungária Kft.

The Integrated Transport Operational Programmes „two generations”

2014-2020

ITDOP

2021-2027

ITDOP Plus

Priority axis 3 “Development of sustainable urban transport and suburban railway accessibility” – financed from the ERDF and the Cohesion Fund

Priority axis 1 „Strengthening clean urban-suburban transport”

1.1 Measure: Strengthen biodiversity in the urban environment, green infrastructure and reduce pollution



and the local commitment of towns and cities...

The screenshot shows a web browser window with the URL zoldbusz.hu/videok/. The browser's address bar and tabs are visible at the top. Below the browser window, four video thumbnails are displayed in a 2x2 grid:

- Top-left:** A side view of a blue and green bus with a play button overlay.
- Top-right:** An aerial view of a black and green bus with a play button overlay. Below the video is a caption in Hungarian: "a Zöld Busz Program itt megkezdődik Debrecenben, a cég közreműködésével és kooperációjában fog ez megvalósulni." (The Green Bus Program starts here in Debrecen, with the company's cooperation and cooperation it will be implemented.)
- Bottom-left:** A green bus with a play button overlay. The text "Zöld Busz Összefoglaló" (Green Bus Summary) is at the top left, and "NYÍRENY HÁZA" is written across the front of the bus.
- Bottom-right:** A white and green bus driving on a street with a play button overlay. The text "Elektromos busz forgalomban Sopronban" (Electric bus in operation in Sopron) is at the top.

At the bottom of the screenshot, the Windows taskbar is visible, showing the search bar with the text "Írjon ide a kereséshez" (Type here to search), several application icons, and the system tray with the date "2022. 05. 16." and time "18:03".



E-bussED

Interreg Europe



European Union
European Regional
Development Fund

Thank You for the attention!