HUNGARY
ÁKK – INVESTOR PRESENTATION

February 2023

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KEY FACTS AND FIGURES ON HUNGARY

Area: ~93,000 sq. kilometres

Capital: Budapest

Population: 9.7m (1 January 2023)

Life expectancy at birth: 74.1 years (2021)

Currency: Forint (HUF)

Exchange rate (2022): 391.33 HUF = 1.00 EUR[1]

Nominal GDP (2021*): HUF 55,126 billion

Real GDP growth (2022*): 4.6%

Public debt (2022*): HUF 45,562 billion

Public debt denominated in foreign currency (2022): HUF 11,397 billion (approximately EUR 28 billion)

Sovereign ratings: Fitch: BBB Moody's: Baa2 S&P: BBB- Stable outlook for S&P and Moody's, negative outlook for Fitch

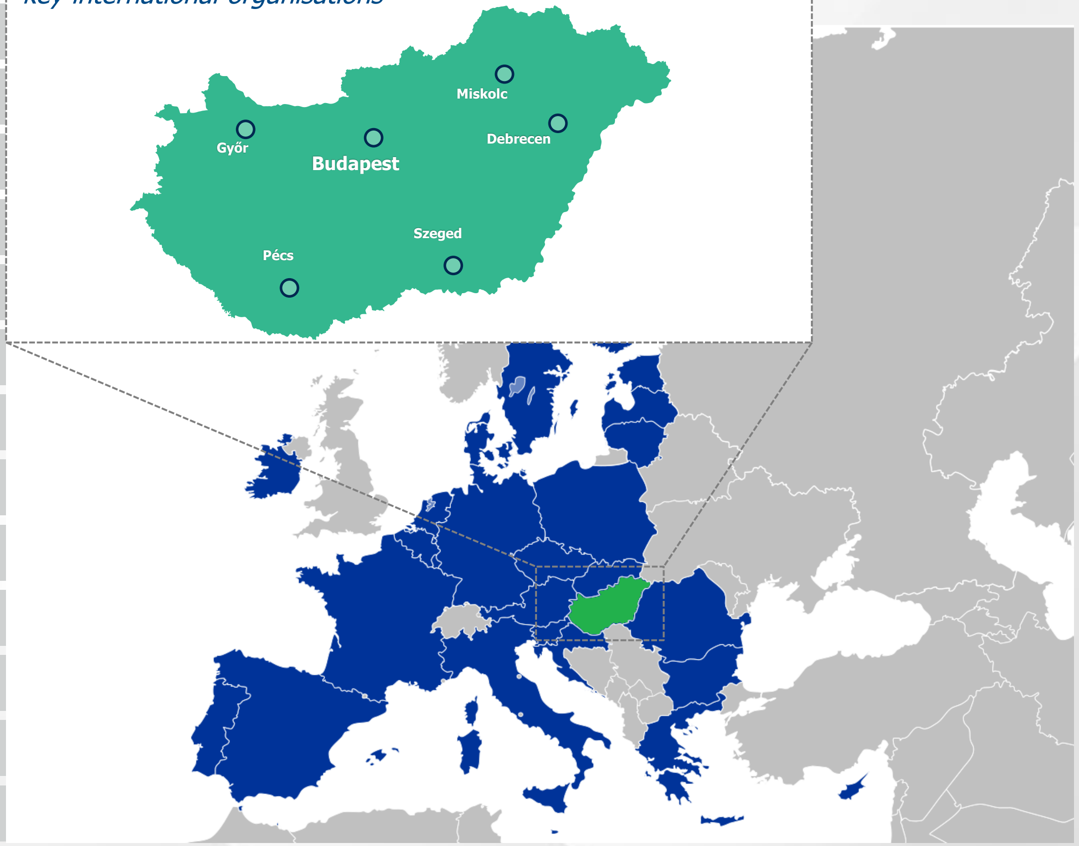
Government: parliamentary republic

EU member country since: 2004

Schengen area member since: 2007

Key economic sectors: manufacturing; wholesale and retail trade; automotive; education and health

A high income economy with a strategic location at the centre of Europe and memberships in key international organisations



*Note: 1. Average exchange rate in 2022. /*Preliminary data*

Sources: Government Debt Management Agency of Hungary (AKK), Hungarian Central Statistics Office (HCSO), HIPA, Magyar Nemzeti Bank (the central bank of Hungary) (NBH), World Bank, Bloomberg, European Commission

HUNGARY REMAINS IN STRONG POSITION TO FACE CURRENT CHALLENGES

Strong and resilient economy	▪ **GDP growth** of 4.6% in 2022 (vs. EU average of 3.6%)[1] ▪ Investments increased by 6.4% in the first three quarters of 2022 ▪ Unemployment amounted to 4.1% in 2021 and 3.9% in December 2022
Fiscal policies supporting growth and stability	▪ **Fiscal deficit was below the EU ceiling of 3% between 2012-2019** ▪ The ESA deficit of 7.5% of GDP in 2020 and 7.1% in 2021 in response to COVID-19 ▪ The deficit was 6.1% of GDP in 2022, showing fiscal consolidation in a difficult context ▪ **The deficit target for 2023 is 3.9% of GDP**, one of the highest fiscal consolidation efforts in the EU
Tightening monetary policy	▪ **NBH started an interest rate hike cycle in 2021** ▪ The liquidity enhancing measures has been terminated by the end of 2021 ▪ Since September 2022 the central bank base rate is 13.00% ▪ Further monetary tightening measures in October 2022 and January 2023
External position	▪ **The current account posted a deficit** of EUR 6.4 billion ▪ **FDI remained strong at EUR 2.8 billion in 2021 and covered the net financing need** ▪ International reserves reached EUR 40.3 billion on 31 January 2023
Sustainability at the core of Hungary's economy	▪ **1st EU member to ratify the Paris Agreement in 2016** ▪ Climate neutrality target of 2050, intermediate target: 90% of carbon-free electricity production by 2030 ▪ Hungary has issued green bonds on several markets ▪ **Allocation and Impact Reports published in 2021 and 2022**
Effective debt management	▪ **Hungary is an Investment Grade country[2]** ▪ Hungary is rated BBB by Fitch, Baa2 by Moody's and BBB- by S&P ▪ Outlook is stable except for Fitch

Note: 1. According HCSO (and Eurostat) first estimates
2. A security rating is not a recommendation to buy, sell or hold securities and may be subject to suspension, reduction, revision or withdrawal at any time

II. STRONG AND RESILIENT ECONOMY

GOVERNMENT DEBT MANAGEMENT AGENCY PTE LTD.
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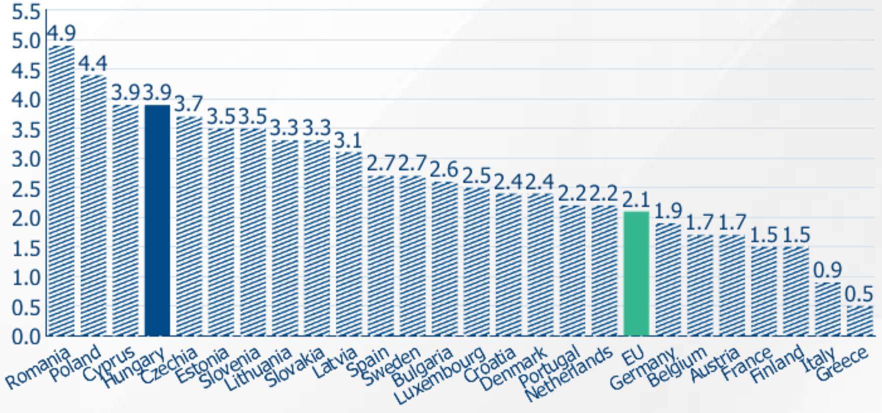
SOLID ECONOMIC GROWTH AFTER 2020

Key highlights

- **In 2021, real GDP grew by 7.1%,** exceeding the EU average of 5.4% and the decrease of 4.5% in 2020, consequently the economy has already recovered from the initial shock caused by COVID-19
    - Unemployment rate declined significantly to a record low of 3.3% in 2019 from a double-digit level in 2012
    - In spite of the pandemic, unemployment rate remained at a relatively low level reaching 4.1% in 2020 and remained close to this level in 2021 and 2022
- **Real GDP grew by 4.6% in 2022** compared to the previous year according to the flash estimate of HCSO
    - GDP grew by 1.4%, 0.6% in the first and second; decreased by 0.7%, 0.4% in the third and fourth quarter of 2022 relative to the previous quarter according to preliminary data adjusted for seasonal effects

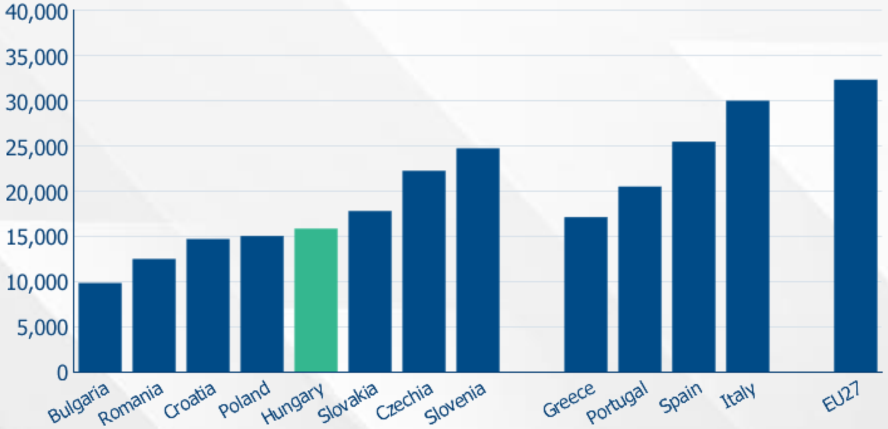
Fourth highest GDP growth among EU countries 2014-2018*



*Source: European Commission 2023 Winter Economic Forecast | *excluding Ireland and Malta*

GDP per capita compared to several EU member states

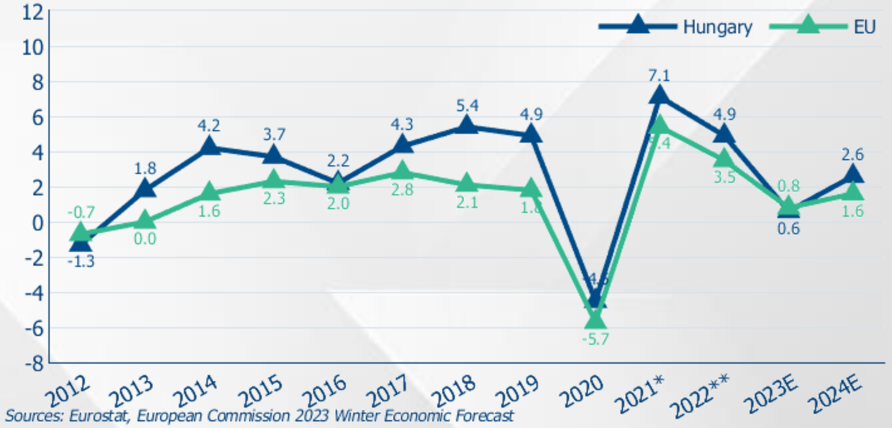
(EUR, 2021)



Source: Eurostat

Real GDP Growth - European Commission Forecast

(YoY, %)



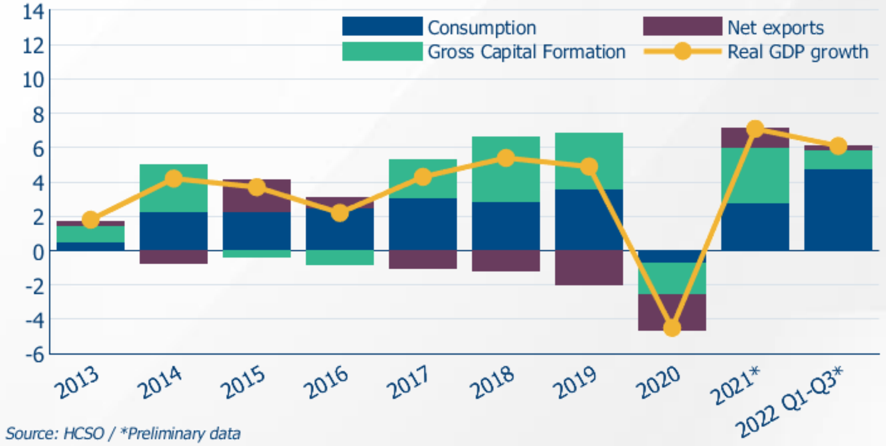
Sources: Eurostat, European Commission 2023 Winter Economic Forecast
*Note: Unadjusted data /*Preliminary data, **Flash estimate*

GROWTH DRIVEN BY BOTH CONSUMPTION AND INVESTMENT IN RECENT YEARS

Key highlights

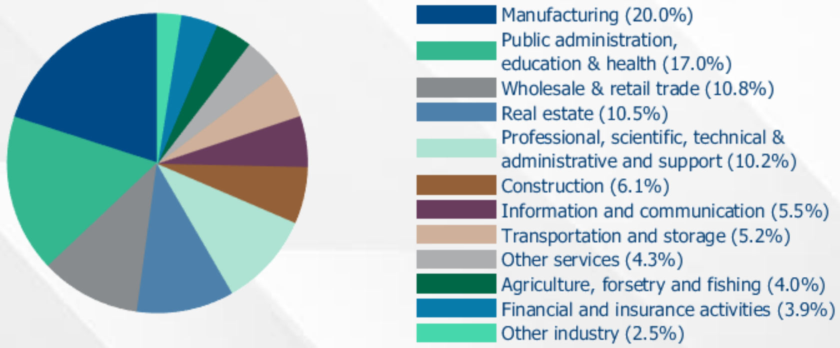
- Growth in Hungary has been consistently supported by strong household consumption prior to 2020
- Investment activity picked up significantly between 2017 and 2019
- **All major sectors and components of GDP contracted in 2020. The contraction in 2020 was mainly a result of COVID-19**
- **All major sectors (except agriculture) increased in 2021 and the first three quarters of 2022**
- In 2021 and the first three quarter of 2022, the growth contribution was positive in the case of consumption, investments and net exports

Contribution to GDP growth by expenditure
(percentage points)



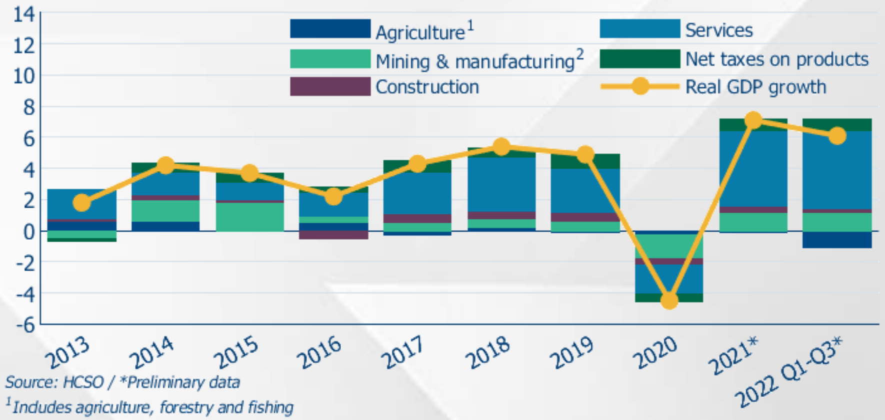
*Source: HCSO / *Preliminary data*

Nominal GDP breakdown by sector
(2021*, % of total GDP excluding taxes less subsidies on products)



*Source: HCSO / *Preliminary data*

Contribution to GDP growth by sector
(percentage points)



*Source: HCSO / *Preliminary data*

[1] *Includes agriculture, forestry and fishing*

[2] *Includes mining and quarrying; manufacturing; electricity, gas, steam and air conditioning supply*

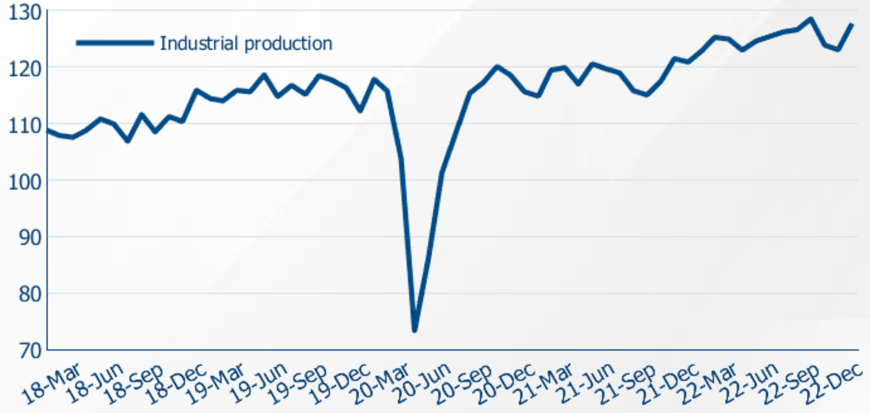
SHORT-TERM ECONOMIC INDICATORS

Key highlights

- **Industrial production resilient**
  - According to seasonally adjusted data, production increased by 3.8% in December 2022 (the latest data) relative to the previous month
- **Retail sales soften**
  - The volume of retail sales peaked in March 2022 mainly due to one-off factors including PIT refunds
  - The volume grew slightly in September and November but decreased in October and December 2022 compared to the previous month
- **Unemployment rate contained**
  - In 2022 the rate fluctuated between 3.3% and 4.2% reaching 3.9% in December 2022 (the latest data)

Industrial production

(seasonally and working-day adjusted volume indices, average month of 2015 = 100)



Source: HCSO

Unemployment rate

(%, population aged 15-74)

Source: HCSO

Retail sales

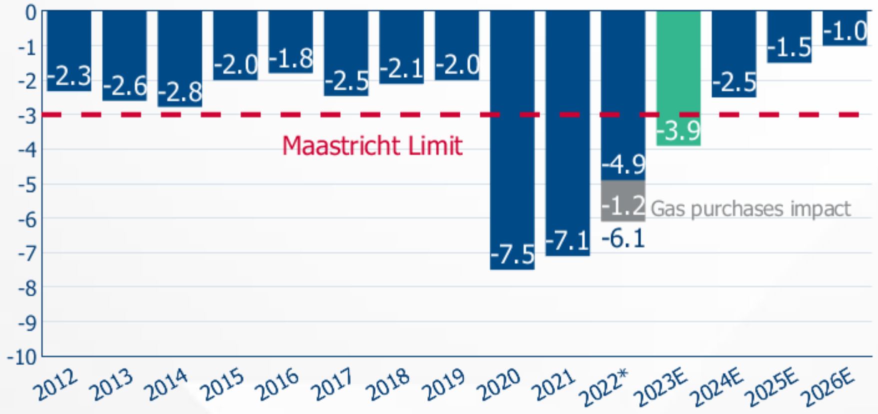
(volume indices adjusted for calendar and seasonal effects, average month of 2015 = 100)

Source: HCSO

III. FISCAL POLICIES SUPPORTING GROWTH AND STABILITY

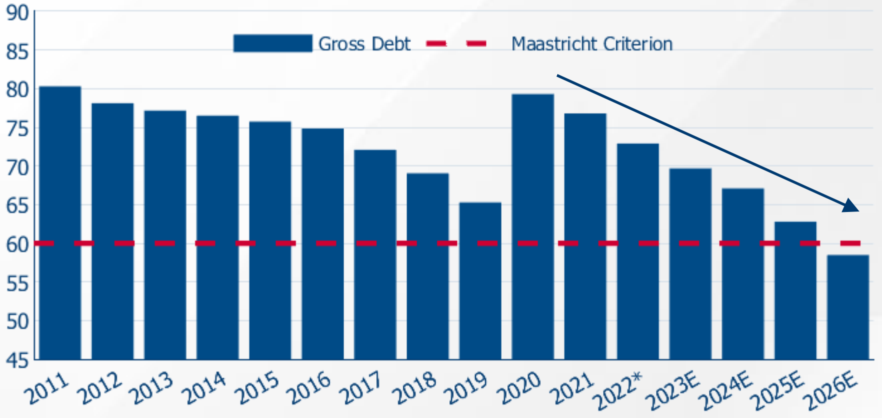
COMMITMENT TO FISCAL PRUDENCE SUPPORTS DEBT SUSTAINABILITY WITH DEBT-TO-GDP STEADILY DECLINING

Evolution of Hungary's fiscal deficit
(% of GDP)



Source: HCSO, MoF; Note: Latest (September 2022) forecast / *Estimate

Evolution of Hungary's general government debt
(% of GDP)



Source: NBH, MoF / *Preliminary data

Key highlights

- **Budget deficit remained below the 3% Maastricht threshold between 2012-2019,** demonstrating the authorities' commitment to fiscal consolidation
- **The government originally aimed to achieve fiscal balance by 2020**, with authorities originally setting the 2020 ESA budget deficit target to a historic low of 1.0% of GDP
- **However, due to the COVID-19 pandemic, the ESA deficit amounted to 7.5% of GDP in 2020 and 7.1% in 2021**, with public spending allowing for prompt recovery of the Hungarian economy as soon as 2021
- **The Government remains fully committed to fiscal consolidation:** notwithstanding HUF 790bn extraordinary spending linked to gas purchases, the headline fiscal deficit is projected to reach 4.9% in 2022 (6.1% including extraordinary spending)
- **The Government currently targets a deficit of 3.9% for 2023, 2.5% for 2024, 1.5% for 2025 and 1.0% for 2026**, which would stand to be one of the highest fiscal consolidation efforts within the EU over the period
- **Under Hungary's Fundamental Law, reducing state debt is one of the main objectives of the Government**
  - As long as the debt of the government exceeds 50% of GDP, only budgets which provide for a reduction of the government debt-to-GDP ratio can be adopted
- **Authorities strictly comply with this rule**
  - Fiscal consolidation and prudent debt management have supported a reduction in Hungary's debt-to-GDP ratio, with the country enjoying a rapid decrease in government debt-to-GDP ratio of 15.0 percentage points between 2011 and 2019
  - **In 2019, the debt rate declined to 65.3%**, but in 2020 the debt rate increased to 79.3% as a result of the pandemic. In a State of Danger, such as COVID-19 pandemic, a special rule allows for a temporary debt increase
  - **The debt rate declined to 76.8% in 2021 and to 72.9% in 2022**
  - **The Government targets a significant decrease of the debt rate in 2023 to 69.7%**

SUMMARY OF RECENT MEASURES ENHANCING HUNGARY'S BUDGETARY RESILIENCE TOWARDS FISCAL TARGETS

- In response to increasingly expensive costs of financing and broader economic risks driven by a number of factors, on 31 May 2022, the Government announced to implement a set of measures to **enhance budgetary resilience and strengthen the fiscal balance of Hungary**, aimed at restoring fiscal resilience and stabilizing the budget performance to meet the **fiscal targets in 2022 (4.9%*) and 2023 (3.9%)**
- Following this, **the Government has announced and launched a number of further measures** to enhance the budgetary resilience and fiscal balance

Summary of the Fiscal Consolidation Plan Balance Relief Measures	
Increasing revenues (1.34%)**	▪ Special taxes on windfall profits (1.14%**) ▪ Duties, taxes on company cars and public health taxes (0.15%**) ▪ Formal sector widening and employability simplifying measures (0.05%**)
Cutting expenditures (1.7%)**	▪ Savings and efficiency increase at ministries, budgetary authorities, and government programs (1.0%**) ▪ Rescheduling and preplanning of public investment projects (0.5%**) ▪ Utilisation of revenues from feed-in tariffs (KÁT) in universal services (0.2%**)
Summary of the Additional Further Measures Taken	
Saving energy and boosting energy security	▪ Special natural gas reserve a requirement at the Hungarian Hydrocarbon Stockpiling Association ▪ Hungary has formed a Utilities Protection Fund to support and protect the financial stability of Hungarian households ▪ Conversion of the household utility price reduction scheme (previous subsidized price only up to the level of average consumption) ▪ Cost of the 'Manufacturing SME Energy Cost and Investment Support Program', new 'Széchenyi card' scheme ▪ Residential firewood program (increasing output of forestry's)
Improving budget balance	▪ Conversion of the 'KATA' flat tax scheme ▪ Increasing the tax on surplus profit of energy suppliers ▪ Further increasing windfall tax paid by gas and oil sector and special tax on energy suppliers ▪ Raising excise duty on fuel back to previous (2021) level
Taming inflation and stimulating savings	▪ Extension of price ceilings for necessities ▪ Fuel price cap, introduced in November 2021 and phased out in early December 2022 ▪ More favourable interest rates on retail government papers

** Excluding the impact of outlay due to additional gas purchases, which is expected to amount to 790bn HUF, bringing the total budget deficit to 6.1% GDP in 2022.*
*** % of projected 2022 GDP.*

EU FUNDING AND CONDITIONALITY MECHANISM PROCEDURE – LATEST DEVELOPMENTS AND NEXT STEPS

Conditionality Procedure

12 December

The **Council of the European Union adopted the Hungarian RRP** and **lowered the rate of funding suspension** of three operative programmes **from 65% to 55%** in the conditionality procedure

22 December

The European Commission adopted the Partnership Agreement for EU cohesion funds with Hungary worth almost EUR 22bn for the period 2021-2027. For the implementation and release of the funds, Hungary has to comply with enabling conditions

H1 2023

Implementation of the super milestones

A total of 27 „super milestones" have been included in the recovery and resilience plan of Hungary which must be implemented to be eligible to submit the first Recovery and Resilience Fund („RRF") payment request

- 17 remedial measures undertaken by Hungary in the frame of the conditionality procedure
- An additional 10 measures introduced in relation to the strengthening of judicial independence and standard RRF audit and control measures
- At 55%, the **frozen commitments amount to EUR 6.3bn** (instead of the EUR 7.5bn previously proposed)

NEXT STEPS

- The implementation of the super milestones is due in the first half of 2023
- The submission of the first payment request will shortly follow
- Full implementation of the super milestones would enable the European Commission to re-assess its concerns identified in the conditionality procedure and – if implementation is assessed as adequate – to lift the suspension of funding and terminating the procedure

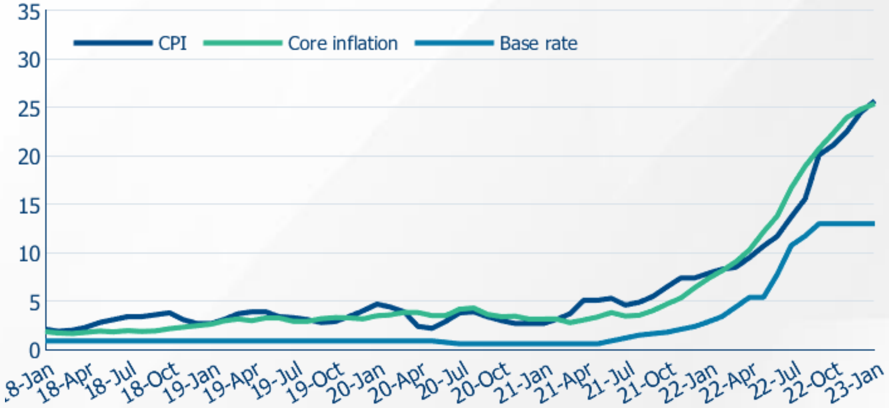
NBH IS TIGHTENING MONETARY POLICY CONDITIONS
THE BANKING SECTOR IS RESILIENT

Key highlights

- **The NBH's primary statutory objective is to maintain price stability**
  - The central bank base rate was increased to 13.00% in September 2022 and forint liquidity reducing measures were introduced
  - After 14 October 2022, the central bank announced overnight deposit quick tenders yielding 18%
  - On 24 January 2023, the NBH announced to increase the reserve ratio of banks to 10% further draining forint liquidity
- **The banking sector is well capitalized and the quality of loans has improved since the end of 2015.** The banking sector is prepared to cope with the consequences of an economic slowdown and a monetary tightening

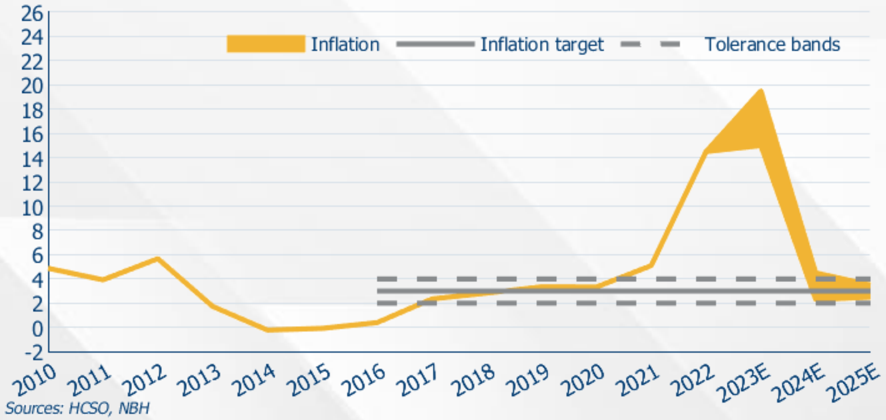
Source: HCSO, NBH

Central bank base rate and inflation rates
(core and headline, %)



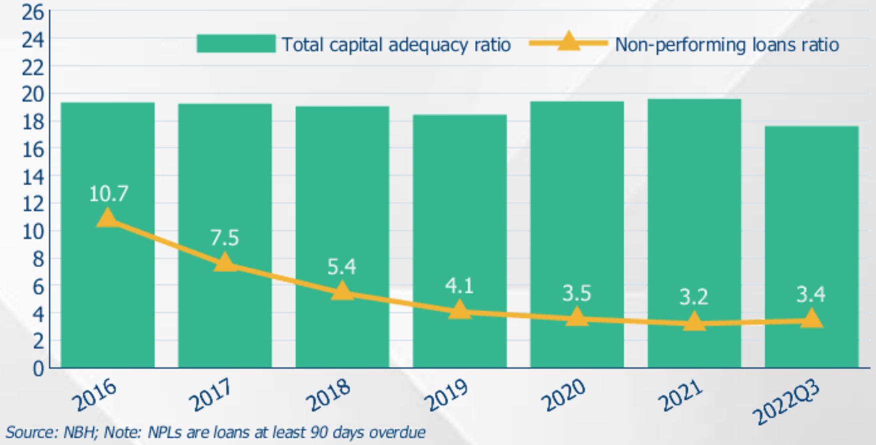
Source: NBH

Inflation vs inflation targets
(yearly average data, %)



Sources: HCSO, NBH
Note: Based on seasonally unadjusted data, compared to the corresponding period of the previous year; forecasts after 2022

Total capital adequacy and non-performing loans ratios
(%)



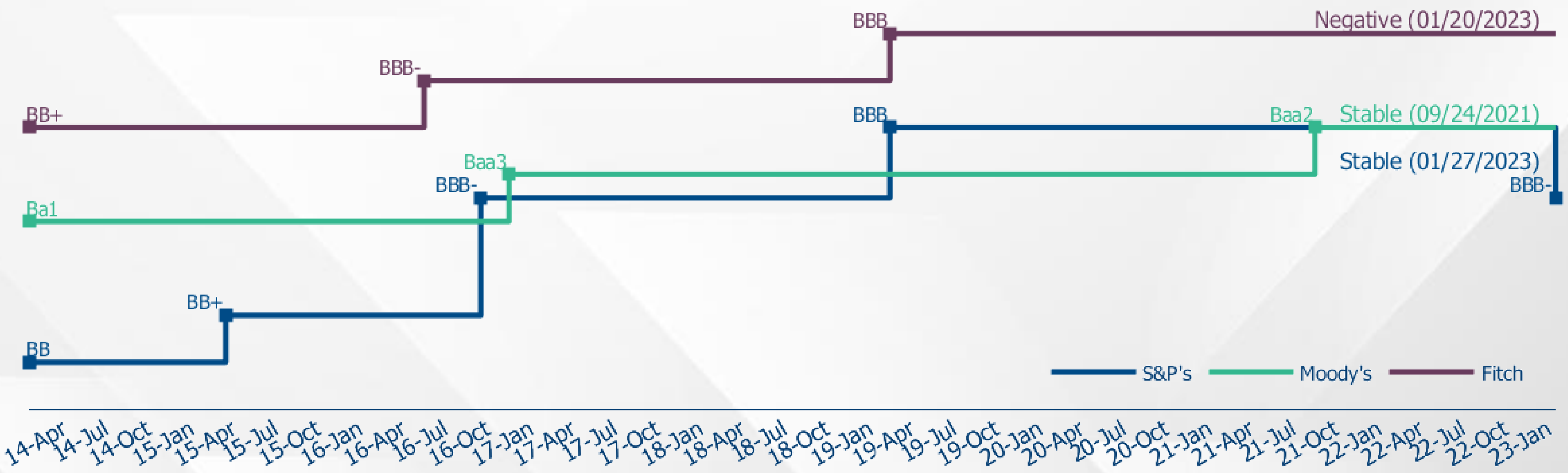
Source: NBH; Note: NPLs are loans at least 90 days overdue

STRONG FUNDAMENTALS HAVE ALLOWED HUNGARY TO NAVIGATE DIFFICULT PERIOD

ÁKK GOVERNMENT DEBT MANAGEMENT AGENCY PTE LTD.

Evolution of Hungary's ratings [1]

- **Hungary's credit ratings have improved overall relative to 2014 thanks to improving fundamentals,** evidenced by several rating upgrades across 3 agencies in the last 8 years
- **Those strong fundamentals have allowed Hungary to remain an investment grade country** throughout the Covid-19 crisis and current difficult macroeconomic conditions linked to the war between Russia and Ukraine
- Hungary is currently rated Baa2 (stable) by Moody's, BBB (negative) by Fitch and BBB- (stable) by S&P



Source: NBH

Note: 1. A rating is not a recommendation to buy, sell or hold securities and may be subject to revision, suspension or withdrawal at any time by the assigning rating organisation. Similar ratings for different types of issuers and on different types of securities do not necessarily mean the same thing. The significance of each rating should be analysed independently from any other rating.

IV. EXTERNAL POSITION

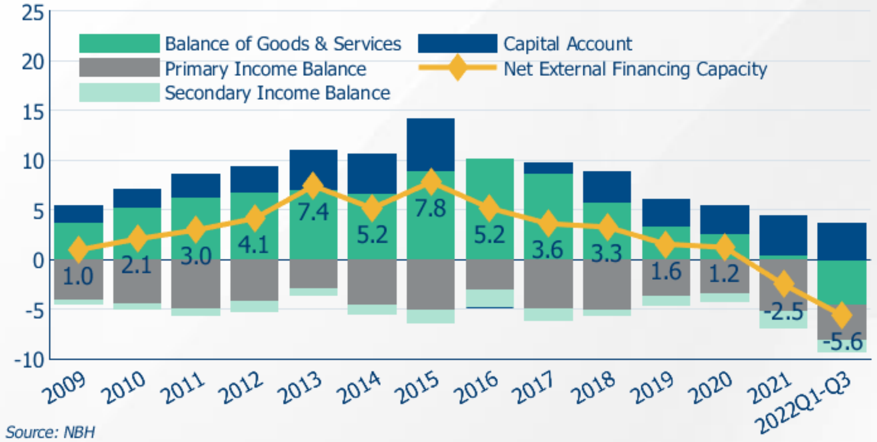
HUNGARY’S EXTERNAL ACCOUNTS – FDI REMAIN STRONG

Key highlights

- **Hungary’s net external lending position is manageable**
- **The current account posted a surplus** between 2009 and 2019
- **In 2019 and 2020, the current account balance turned into a deficit but the surplus of the capital account covered the shortfall**
    - Hungary’s net international lender position subsisted
- **In 2021 and the first three quarters of 2022, the current account deficit exceeded the surplus of capital account**
- **In 2021, net foreign direct investments amounted to EUR 2.8 billion covering the net financing need of the country**

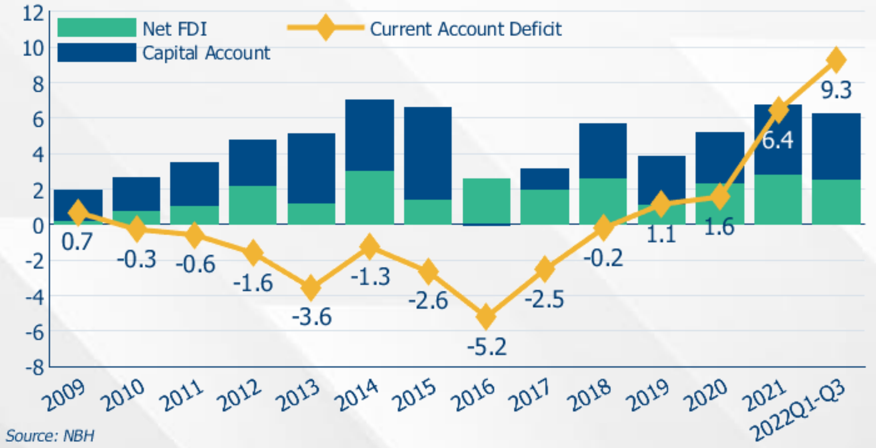
Source: NBH, HCSO

Net external lending components and position
(EUR billions)



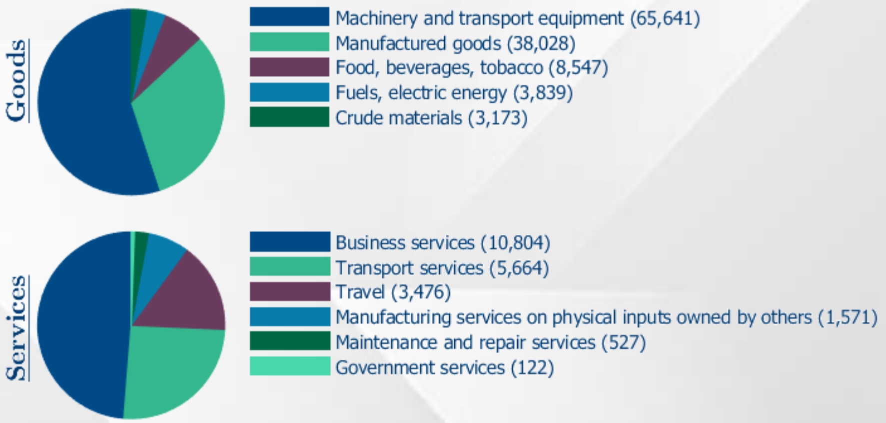
Source: NBH

Net external lending position
(EUR billions)



Source: NBH

2021 export - structural breakdown
(EUR millions)



Source: HCSO

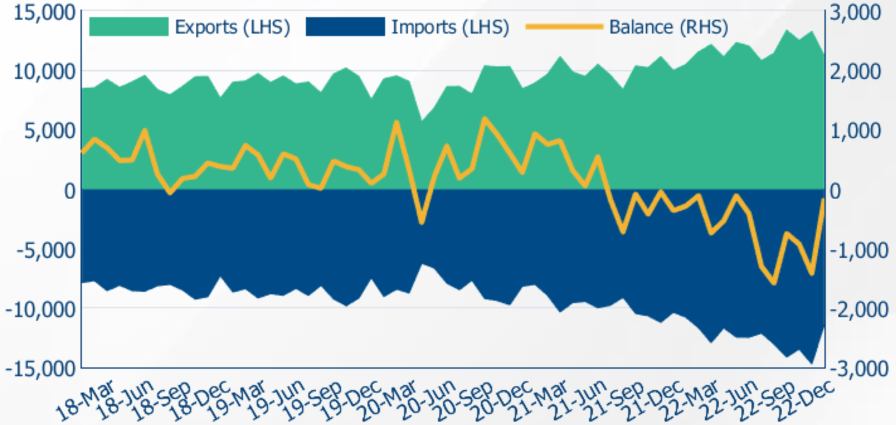
EXTERNAL TRADE IMPACTED BY EXCEPTIONAL SITUATION REGARDING ENERGY PRICES

Key highlights

- **Surplus in trade balance has turned into a deficit**
  - Exports and imports both exhibited strong momentum during the past twelve months. The growth of imports outpaced the growth of exports. Since the middle of the year 2021, external trade balance posted deficits
- **Deterioration of external trade balance is driven mainly by fuel and energy, which is to be mitigated by the announced measures to contain impact from energy prices**
  - Deficit in case of fuel and energy more than doubled between the middle of 2021 and the middle of 2022 according to quarterly data
- **According to the first estimate of HCSO, external trade deficit amounted to EUR 8.3 billion in 2023**
  - In December 2022 the deficit amounted to EUR 154 million, that is lower than the deficit of EUR 358 million in December 2021

External Trade Balance

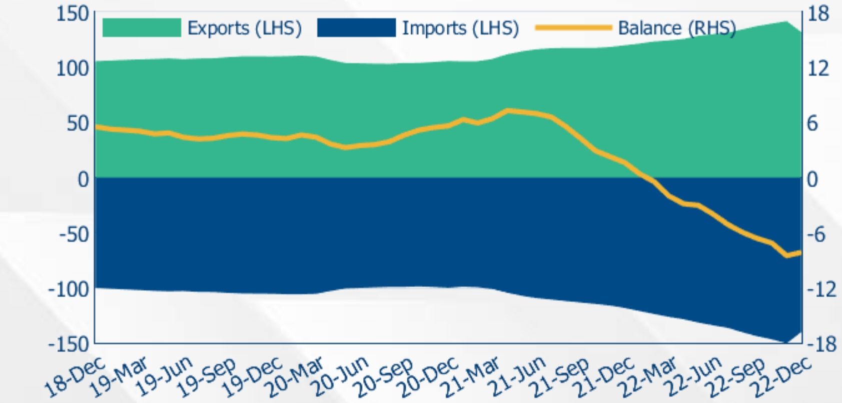
(Monthly data, EUR millions)



Source: HCSO

External Trade

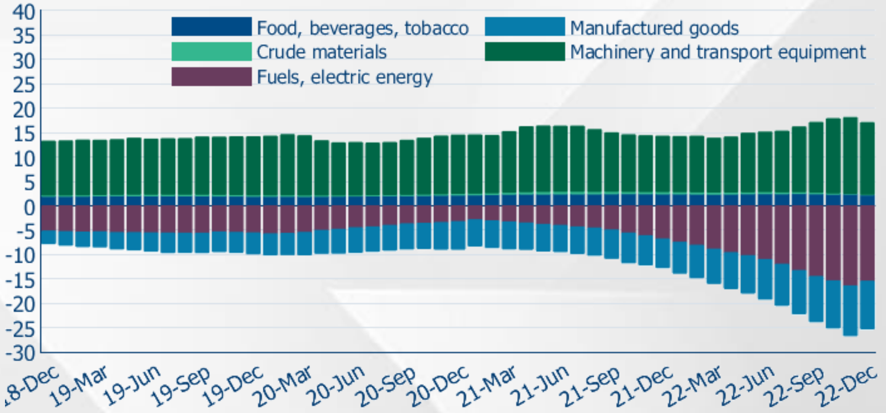
(Twelve-month rolling data, EUR billions)



Source: HCSO

External Trade Balance Breakdown

(Twelve-month rolling data, EUR billions)



Source: HCSO

EXTERNAL DEBT AND FX RESERVES

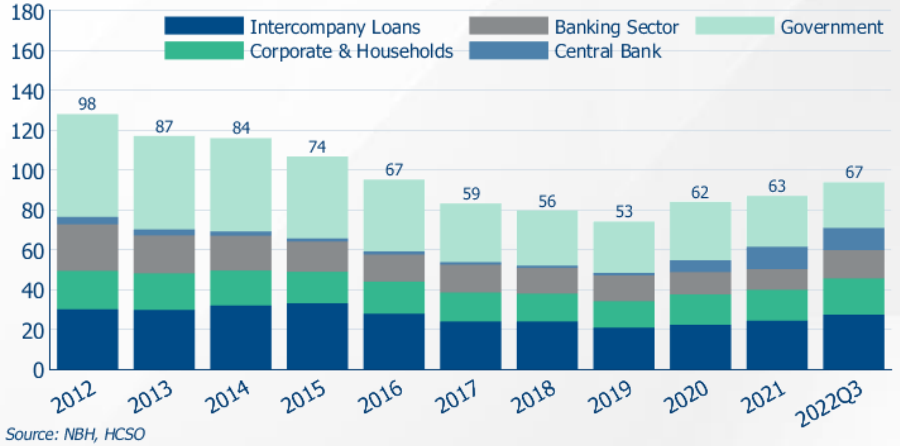
Key highlights

- **External debt indicators improved significantly compared to 2012**
  - Hungary's gross external debt decreased substantially between 2012 and 2019, notably on the back of active public debt management
  - The external debt has increased since 2019 mainly as a result of the pandemic
  - The net external debt of Hungary also improved between 2012 and 2019 and has deteriorated since then
- **International reserves remain high and continue to considerably exceed the level considered safe under the Guidotti-Greenspan rule***
  - Hungary's FX reserves to short-term debt ratio has been above 1.0x since 2012
  - FX reserves amounted to EUR 40.3 billion on 31 January 2023

Source: NBH

Gross external debt

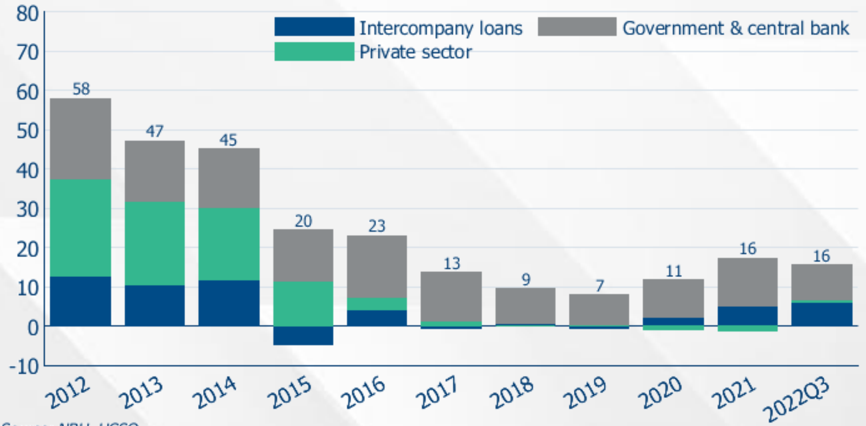
(% of GDP, excluding special purpose entities four quarter rolling data)



Source: NBH, HCSO

Net external debt

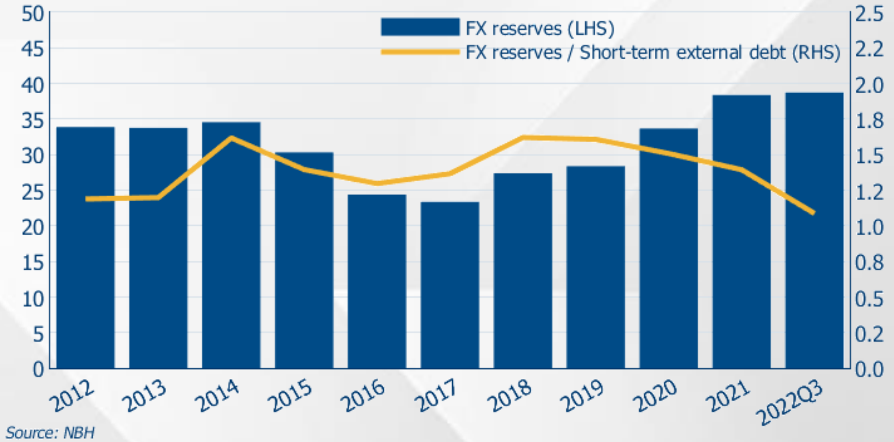
(% of GDP, excluding special purpose entities, four quarter rolling data)



Source: NBH, HCSO

International reserves level

(EUR billions)



Source: NBH

**Note: The Guidotti–Greenspan rule states that a country's reserves should equal short-term external debt (one-year or less maturity), implying a ratio of reserves-to-short term debt of 1*

V. ESG

HUNGARY'S ENVIRONMENTAL COMMITMENTS, INCEPTION OF GREEN FINANCE

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1994

UN Framework Convention on Climate Change

2002

Ratification of the Kyoto protocol

2007

Implementation of the UN Framework and the Kyoto Protocol in National Law

2015

UN 2030 SDG Agenda

Co-chairing of the Open Working Group on SDG's in 2013 and 2014

2016

Paris Agreement

First EU member to ratify the Paris Agreement

2019

EU Clean Energy Package

European Green Deal

- Recipient of the EU modernization fund for lower income countries[1]
- National Energy and Climate Plan

2020

- First Climate Action Plan
- **Green Bond issuance Framework and first Green Bond issuance**

- National Clean Development Strategy
- Long-term Renovation Strategy
- National Hydrogen Strategy

2021

COP 26 Conference in Glasgow

- **First Allocation Report publication**
- **First Impact Report publication**

2022

COP 27 Conference in Sharm El-Sheik

Second Climate Change Action Plan under Gov. approval

- **Integrated Report on the Allocation and Environmental Impact of Hungary's Green Bond Proceeds**

Notes: 1. c. €1bn over 2021 - 2030

Sources : *European Union; Government of Hungary; UN Treaties; UNFCCC*

NATIONAL STRATEGY TO ACHIEVE CLIMATE NEUTRALITY AND UN SUSTAINABLE DEVELOPMENT GOALS

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Hungary's strategies to mitigate climate change

Long term

National Clean Development Strategy

- This strategy aims to **achieve climate neutrality by 2050**
- To achieve this target, the additional annual investment need accounts for 4.8% of the GDP (early action scenario)

Short term

National Climate Change Strategy

- This strategy consists of a **comprehensive framework** of **targets and policies** on climate and green economy development
- Focuses on 4 pillars for the 2018 – 2030 period

Four key pillars	
Decarbonisation	▪ Replacement of fossil fuel energy carriers ▪ Increase in energy efficiency ▪ Reducing natural resources consumption
Analysis of climate vulnerability	▪ Development of vulnerability methodologies ▪ Promoting climate-related research projects
Adaptation	▪ Preservation of natural resources ▪ Adaptation of vulnerable regions and sectors
Partnership for climate	▪ Horizontal integration in public administration ▪ Awareness-raising in the Education

Milestones and achievements – Climate change

34% GHG reduction	Hungary reduced its greenhouse gas emissions by 30%[1] between 1990 and 2020
High share in solar electricity	Hungary achieved a share of 10.5% of solar PV in gross electricity output[2], 3rd highest in the EU (2021)
Low emissions per capita	CO_2 emission per capita is 4.74 tons that is lower than the EU average of 6.15 tons in 2021
Ambitious decarbonisation targets	The Government targets a share of 90% of carbon-free electricity production by 2030[3]

Achievements of the SDGs

Index Score 2022	79.01%[4]	79.01% of SDG achievement measuring progress towards the 17 SDGs
Index Rank 2022	21 / 193[4]	Country ranking relative to SDG achievements

Notes: *1. National Inventory Report 2022* ***2.*** *Eurostat (data code: NRG_IND_PEH)* ***3.*** *National Energy Strategy, 2030* ***4.*** *Sustainable Development Rankings, 2022*
Sources : *AKK; SDG rankings: https://dashboards.sdgindex.org/rankings;*

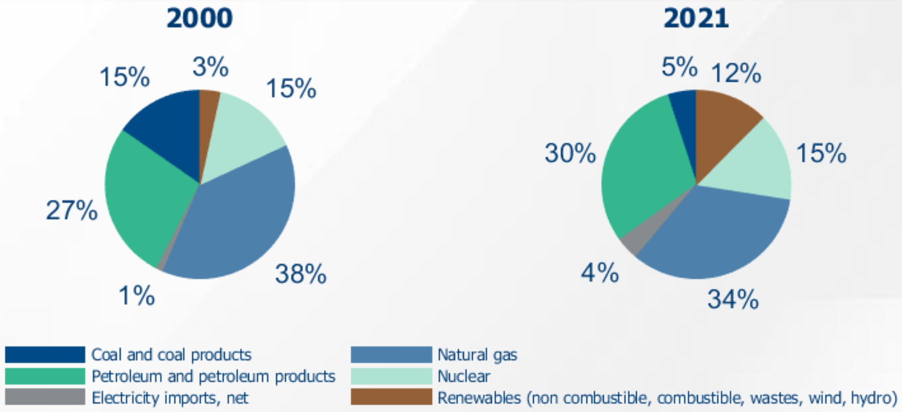
HUNGARY'S ENERGY SECTOR OVERVIEW – ENERGY TRANSITION TOWARDS NET ZERO

Key highlights

- Hungary was **among the first countries globally to turn its 2050 emissions target into a legal commitment** with the adoption of the Climate Protection Law in 2020
- The National Energy Strategy 2030 with an outlook to 2040 to reduce the importation of fossil energy. **Its primary objective is to strengthen Hungary's energy independency**
- **Hungary targets minimum 21% share of renewable energy in final energy consumption by 2030.**
- Final energy consumption should not exceed the level of 2005 (785 PJ, if it exceeds, it will be covered from zero-carbon energy sources)

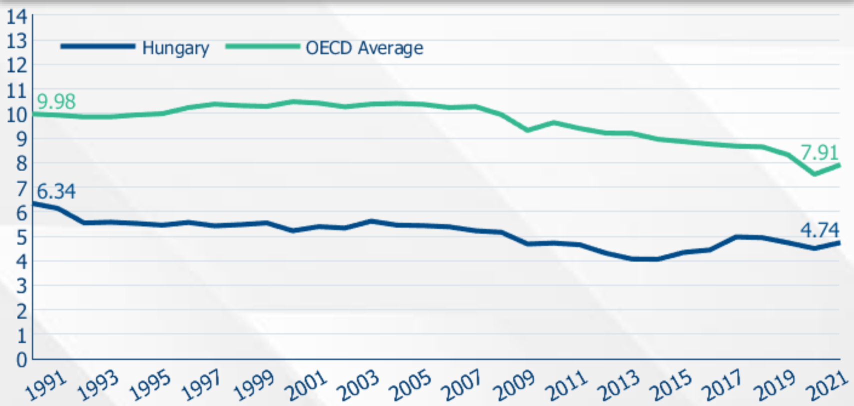
Source: National Energy and Climate Plan

Primary energy consumption structure (in %)



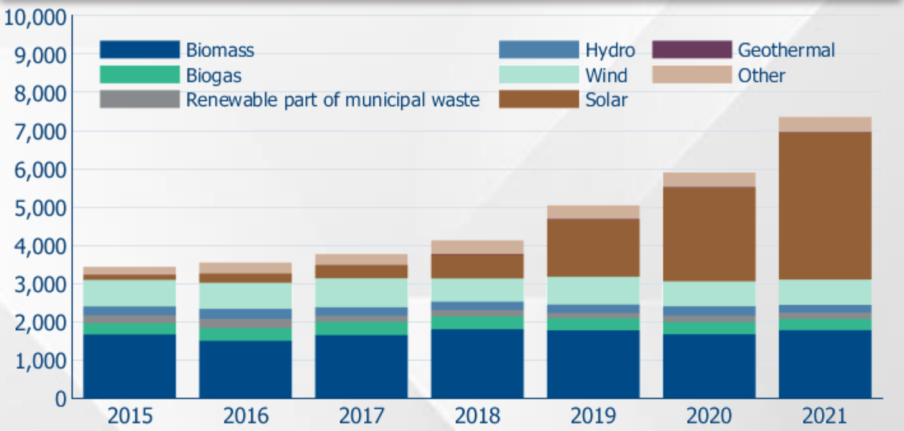
Source: HCSO

Historical carbon dioxide (CO2) emissions (t/capita)



Source: OECD

Gross renewable electricity production (gigawatt hours)



Source: HCSO / Note: Preliminary data for 2021

CARBON FOOTPRINT BY SECTORS IN HUNGARY – ENCOURAGING FURTHER MODAL SHIFT INTO RAILWAY

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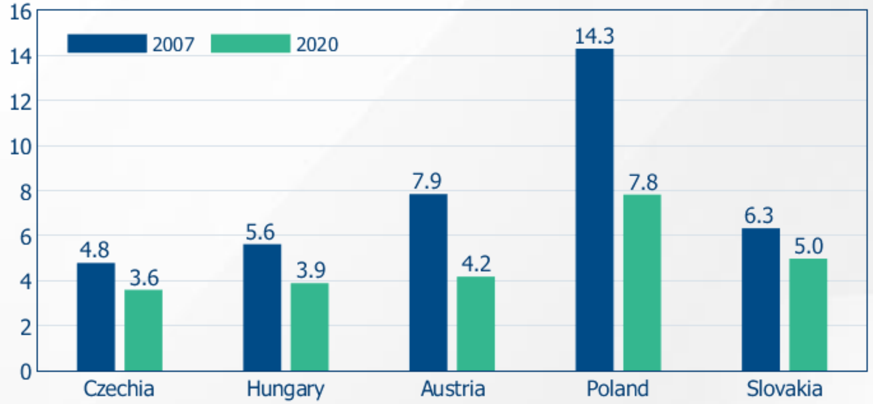
Key highlights

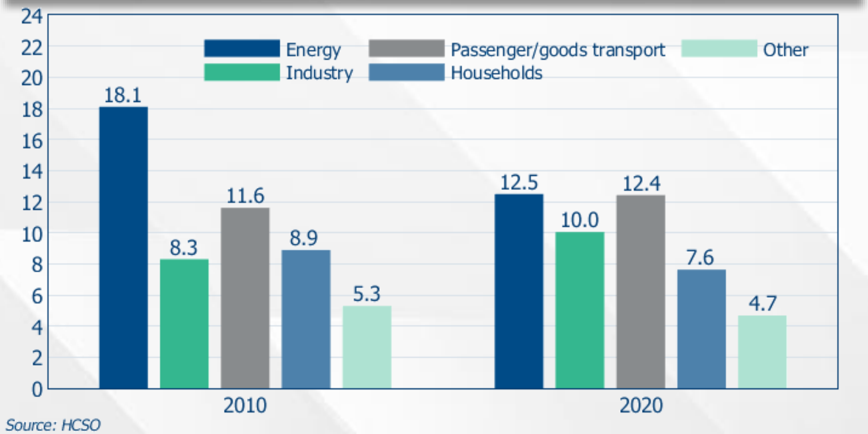
- **The CO2 intensity of rail transport is gradually decreasing,** albeit total CO2 emissions increased from transportation due to the growth in number of passenger cars and increasing freight transport
- **Electrification of the railway network has increased and is expected to continue to increase**, which should further help CO2 emission reduction
- Further **modal shift from passenger cars and freight transport to rail is encouraged**, which underpins high share of spending from proceeds obtained by issuing Green Bonds

GHG emissions per diesel train-kilometres
(tons of CO2e per thousand kilometres)



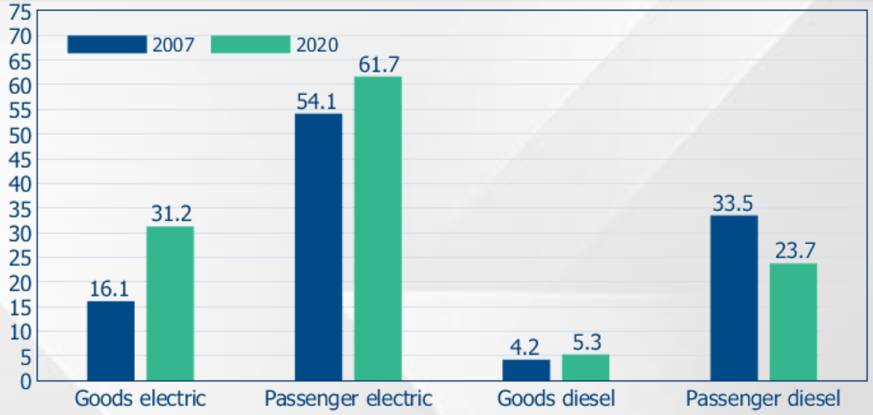
Source: Eurostat
Note: Total railway GHG emissions divided by the sum of movement of diesel-powered locomotives and railcars.

CO2 output in sectors (megatons)



Source: HCSO

Goods and passenger train-kilometres in Hungary (million kilometres)



Source: Eurostat / Note: Sum of movement of locomotives and railcars.

GREEN BOND ACHIEVEMENTS AND AREAS WHERE HUNGARY EXCELS IN GHG EMISSION REDUCTIONS

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GOVERNMENT DEBT MANAGEMENT AGENCY PTE LTD.

Awards

2022 Most **impressive CEE issuer** for low interest, long-term dollar, euro and green bonds

GlobalCapital

2021 Climate Bonds INITIATIVE

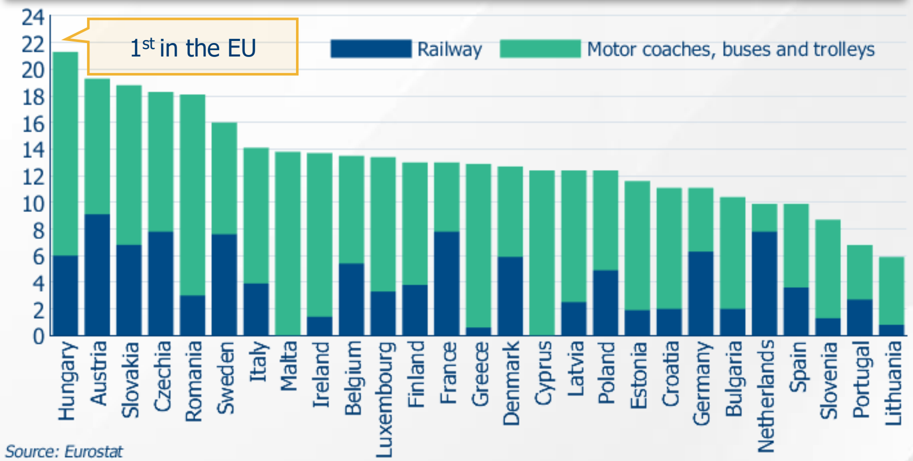
Sovereign **Green Market Pioneer Award**

Sustainable Finance Award

RIEF Sustainable Finance Awards

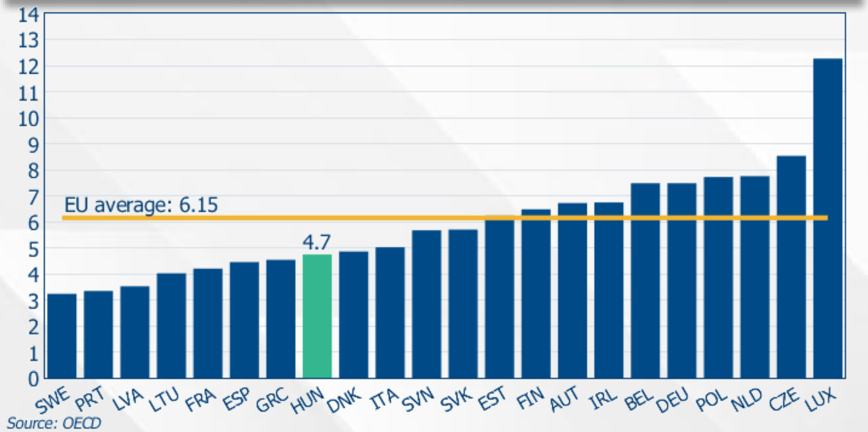
2020 1st foreign **Sovereign issuer on the JPY green bond market** (Special Award)

Modal split of passenger transport in 2020, percent



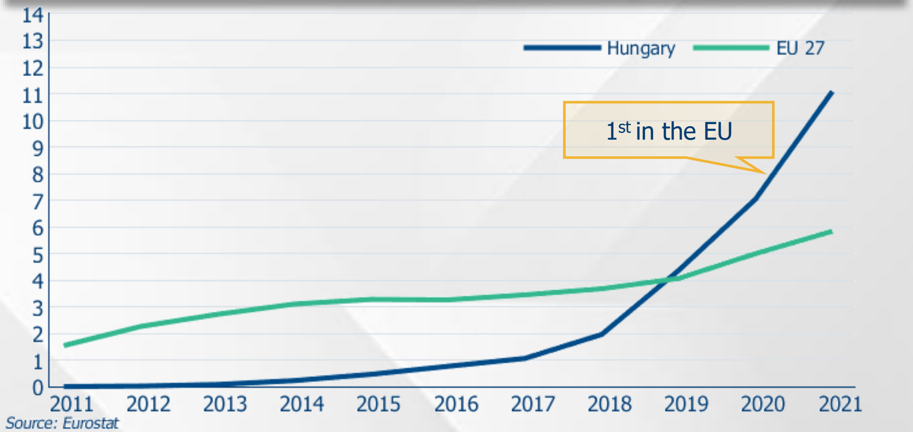
Source: Eurostat

Carbon dioxide (CO_2) emissions, Tonnes/capita, 2021



Source: OECD

Solar PV share in electricity output, percent, gross (2021: net)



Source: Eurostat

GREEN BOND FRAMEWORK

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Hungary's strategies to mitigate climate change		Related principles and organizations

Main features	• Hungary adopted a **green financing framework** in May 2020
	• Aligned with **ICMA Green Bond Principles**
	• Also taken into consideration:
	  • Japanese Ministry of Environment Green Bond Guidelines[1]
	  • Guidelines on Green Note of Non-Financial Enterprise published by the Chinese National Association of Financial Market Institutional Investors ("NAFMII")[2]
		The Green Bond Principles
		Ministry of the Environment
		NAFMII

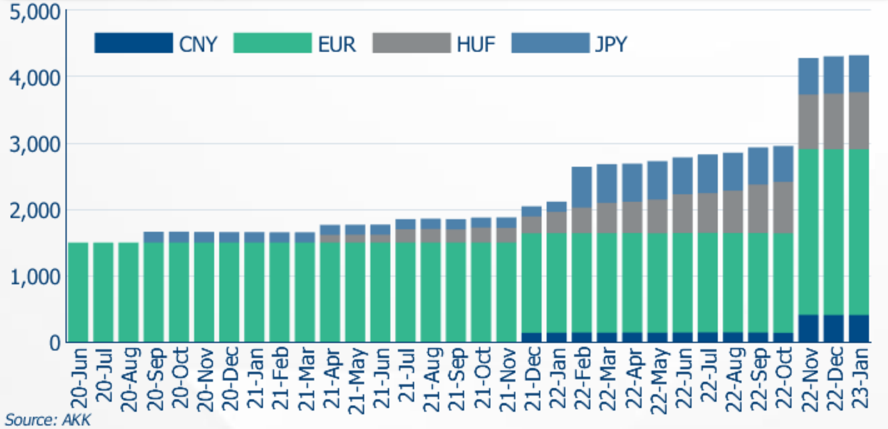
Green expenditures Categories	• **6 green expenditure categories:**
	  • Renewable Energy
	  • Energy Efficiency
	  • Land Use and Living Natural Resources
	  • Waste Water Management
	  • Clean Transportation
	  • Adaptation
	• **Excluded to be financed under the framework**
	  • Nuclear power
	  • Armament and defence
	  • Fossil fuel production and power generation
		6 CLEAN WATER AND SANITATION
		7 AFFORDABLE AND CLEAN ENERGY
		11 SUSTAINABLE CITIES AND COMMUNITIES
		13 CLIMATE ACTION
		15 LIFE ON LAND

Second party opinion[3]	• Hungary's Green Bond Framework is aligned with **Green Bond Principles** • **CICERO Shades of Green** finds the governance procedures in Hungary's framework to be Good • Framework is rated **CICERO Medium Green**	°C CICERO Shades of Green

Sources: *1: http://www.env.go.jp/policy/guidelines_bond_version.pdf*
2: http://www.nafmii.org.cn/english/lawsandregulations/selfregulatory_e/201801/t20180110_67080.html;
3: https://akk.hu/download?path=740f16c7-d9dd-4be7-8f3c-de41debb82bc.pdf

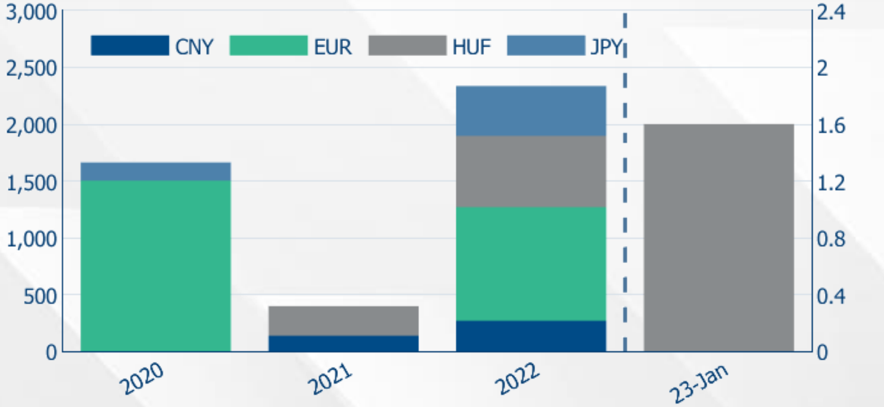
GREEN ISSUANCE SINCE 2020

Amount of green finance instruments of Hungary
(EUR million equivalent)



Source: AKK

Green bond issuances
(EUR million equivalent)



Source: AKK

Issuance history

Hungary has issued several green bonds in both local and foreign currencies since June 2020

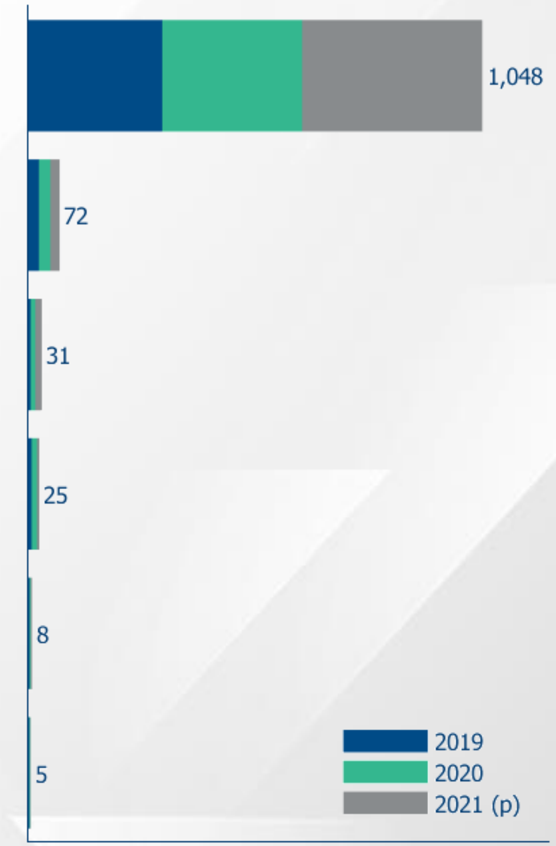
Date	Type of Bond	Currency	Total Issued Amount[1]	Tenor
November 2022	Green Panda Bond	CNY	2bn	3Y
November 2022	Green Eurobond	EUR	1bn	4.25Y
February 2022	Green Samurai Bond	JPY	59.3bn	5Y, 7Y, 10Y
January 2022[2]	Green Bond	HUF	204.5bn	10Y
December 2021	Green Panda Bond	CNY	1bn	3Y
April 2021[2]	Green Bond	HUF	132.1bn	30Y
September 2020	Green Samurai Bond	JPY	20bn	7Y, 10Y
June 2020	Green Eurobond	EUR	1.5bn	15Y

[1] As of 31 January 2023
[2] Date of first issuance

ALLOCATION AND IMPACT – NOTABLE SAVINGS IN GHG EMISSIONS, FOSTERING SUSTAINABILITY

UN SDGs		Positive impacts on the environment	
13 Climate Action; 11 Sustainable Cities and Communities	**Clean Transportation**	**393.7**	**Kilotons of CO_2** saved
15 Life on Land	**Land Use and Living Natural Resources**	**107k**	**Projects** supporting sustainable agricultural areas **covering 833,716 hectares**
7 Affordable and Clean Energy	**Energy Efficiency**	**46**	**Kilotons of CO_2** saved
6 Clean Water and Sanitation; 13 Climate Action	**Adaptation**	**11**	**Developments** supported the **implementation of the Water Framework Directive**
6 Clean Water and Sanitation; 11 Sustainable Cities and Communities	**Waste and Water Management**	**780**	**Meters per kilometres increase in length of sewage system** of drinking water system
7 Affordable and Clean Energy	**Renewable Energy**	**5.01**	**Kilotons of CO_2** saved

Eligible green expenditures (HUF billions)



Source: AKK

VI. EFFECTIVE DEBT MANAGEMENT

HUNGARY BENEFITS FROM A FAVOURABLE DEBT PROFILE

GOVERNMENT DEBT MANAGEMENT AGENCY PTE LTD.
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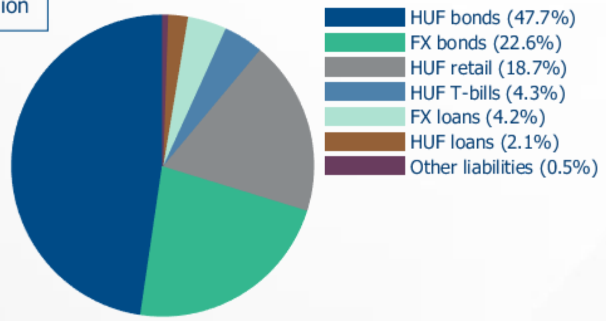
Hungary's central government debt breakdown
(31 January 2023, % of total)

Total debt:
HUF 46,508 billion

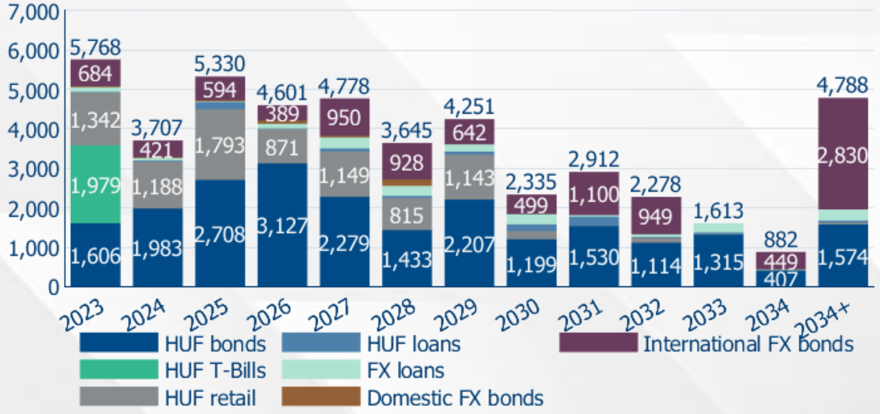


Key targets and characteristics of Hungary's government debt[1]

	2023 benchmark targets		31 January, 2023 figures[2]
Share of FX debt	Maximum 30%	✓	25.7%
Currency mix of the FX debt (after swaps)	100% in EUR (with a 5% deviation allowed)	✓	99.8%
Average time to maturity	Minimum 5.5 years	✓	6.2 years
Average time to re-fixing	Minimum 4 years	✓	5.2 years
Share of debt with a fixed coupon	Between 60% and 80%	✓	72.4%
Share of retail debt	Between 20% and 25%	✗	19.2%
Share of green bonds			3.6%

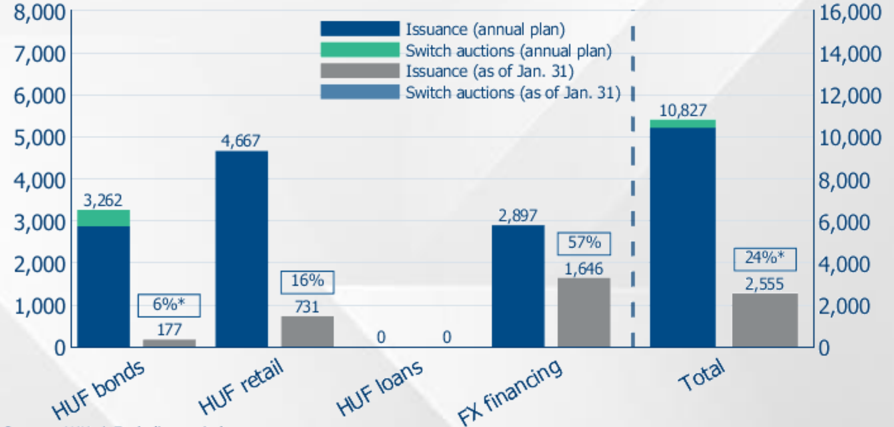
Source: AKK; Note: 1. Central government debt 2. 90-day moving average

Hungary's government debt redemption profile
(31 January 2023, HUF billion)



Source: AKK; Note: Central government debt, excluding MtM, swap and Repo deals

2023 issuance vs 2023 financing plan
(31 January 2023, HUF billion)



*Source: AKK * Excluding switches*

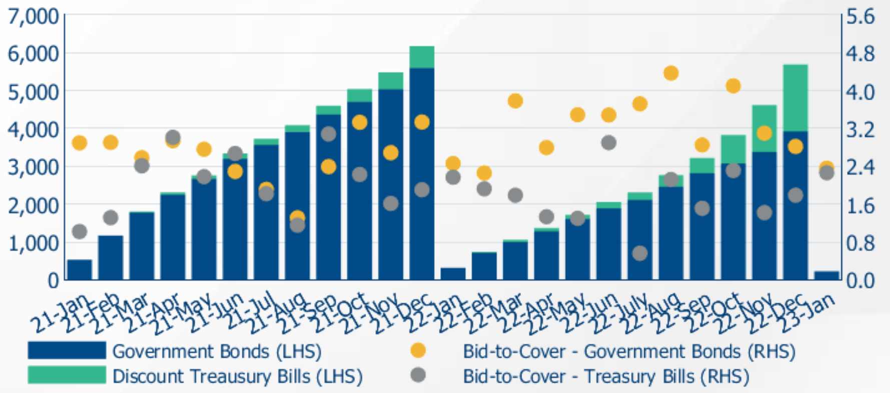
STRONG MARKET DEMAND AND INCREASING YIELDS ON THE LOCAL WHOLESALE MARKET

Key highlights

- **To ensure simplicity and transparency, AKK issues standard debt instruments according to a fixed annual calendar published in advance**
- **Primary auctions are implemented as well as switch and buyback operations** to support a balanced government bond issuance pattern, to manage the redemption profile and to reduce refinancing risk
- **Hungary's local yields decreased between 2014-2020**
- **Local yields increased significantly throughout 2022 due to monetary policy tightening of the NBH to fight inflation**
  - During 2022, short-term yields increased by 10.2-11.3 percentage points; long-term yields grew by 3.7-6.5 percentage points
- In 2023, short-term yields grew by 0.5-1.5 percentage points

Source: AKK, NBH

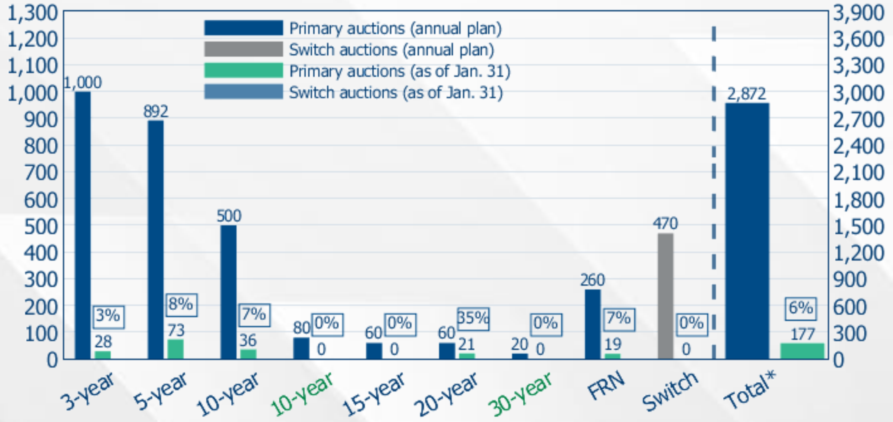
Cumulative monthly debt securities issuance and the ratio relative to the planned amount (HUF billion, %)



Source: AKK; Note: Government Bonds excluding repo transactions
Discount Treasury Bills according to OECD methodology

Government bond issuance on auctions by tenor

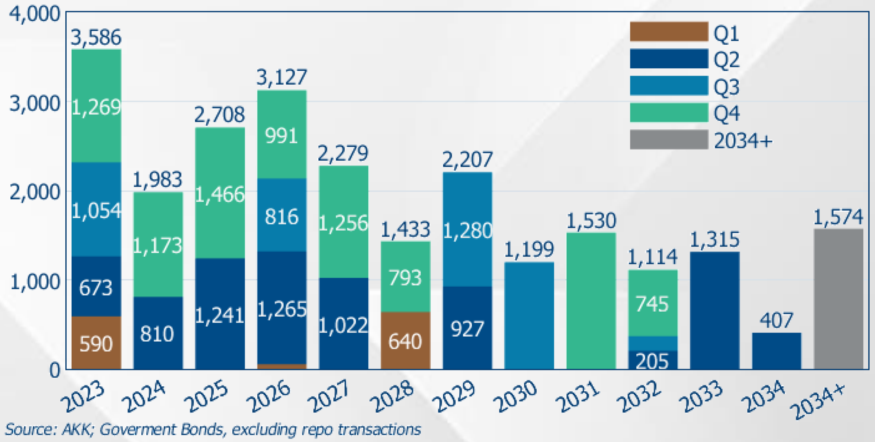
(2023 issuance vs 2023 financing plan excluding municipal bond sales, HUF billion)



*Source: AKK; *Total primary auction issuance*

Redemption profile of wholesale government securities

(as of 31 January 2023, HUF billion)



Source: AKK; Goverment Bonds, excluding repo transactions

LOCAL RETAIL MARKET IS AN IMPORTANT DIVERSIFICATION TOOL

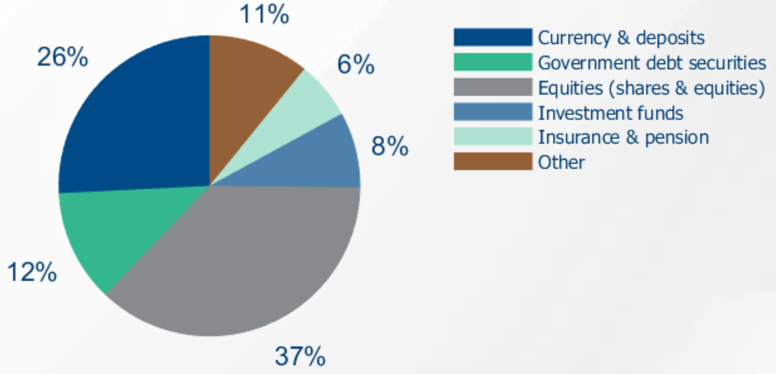
Key highlights

- **The retail debt programme constitutes an important financing channel for the Government**
- The outstanding amount of government retail securities represents HUF 8,710 billion as of 31 January 2023, 18.7% of the total debt
- Maturities range from 1 to 19 years, securities have step-up (MÁP Plus), fixed (1MÁP), inflation-linked coupon (PMÁP, Baby Bond) and coupon linked to T-Bill auction yields (BMÁP). Besides dematerialized securities there are also physical securities (Treasury Savings Bill)
- AKK is regularly buying back retail securities from market makers to provide liquidity
- **Main distribution channels for retail securities are the Hungarian State Treasury, post offices, banks and investment service providers**
- Using retail government bonds as collateral is not permitted in Hungary

Source: AKK

Households asset structure

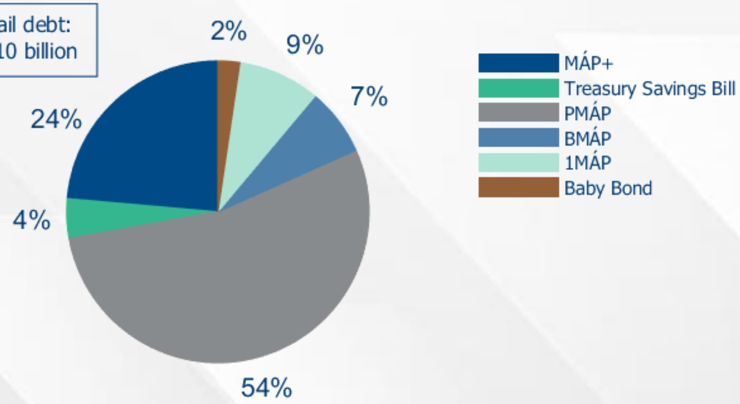
(Q4, 2022, % of total)



Source: NBH

HUF retail portfolio by instrument

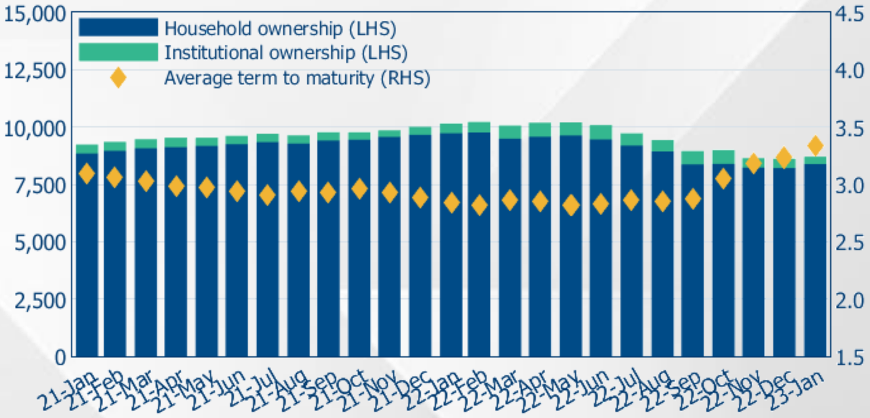
(31 January 2023, % of total)



Source: AKK

HUF retail securities

(HUF billion and years)



Source: AKK

HUNGARY'S EXPOSURE TO INTERNATIONAL MARKETS IS CAREFULLY MANAGED

GOVERNMENT DEBT MANAGEMENT AGENCY PTE LTD.
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Key highlights

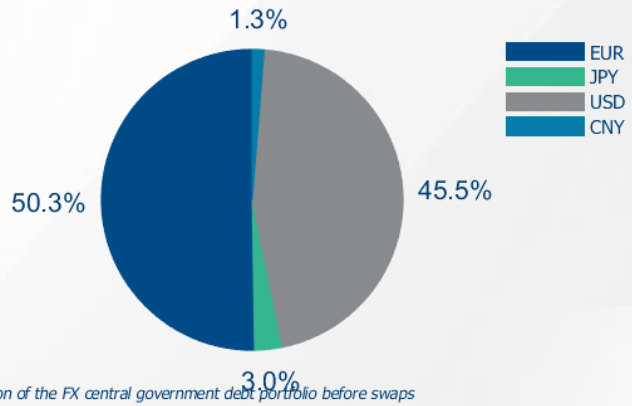
- **The share of Hungary's government debt in foreign currency is contained**
- Hungary strives to keep the share of FX exposure below 30% of total debt, but Hungary would also like to maintain its presence on the international capital markets to ensure diversification of funding sources
- **The FX debt is mainly denominated in EUR and USD, and is converted into EUR using cross-currency swaps**
  - 100% of FX debt is denominated in EUR after swaps as of 31 January 2023, in line with AKK debt management target to mitigate exchange rate risk
- **Hungary issued green bonds denominated in EUR** (in June 2020 and November 2022)**, in JPY** (in September 2020 and February 2022) **and in CNY** (in December 2021 and November 2022)
- **Hungary issued conventional bonds denominated in JPY** (in February 2022) **in EUR** (in June 2022) **and USD** (in June 2022 and January 2023)

Source: AKK

FX debt composition by currency before swaps

(31 January 2023, % of total)

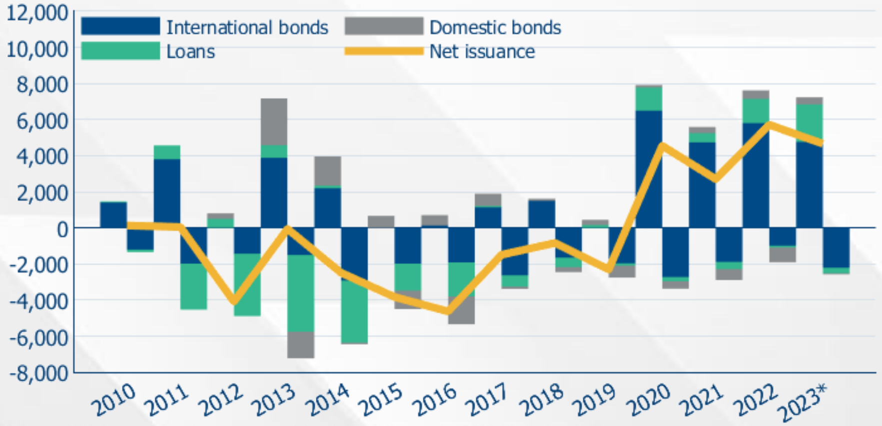
Total FX debt[1]:
EUR 32.7 billion



Source: AKK; Note: composition of the FX central government debt portfolio before swaps
[1] Excluding CCIR swaps; total FX debt including CCIR swaps amounted to EUR 31.9 billion

FX redemption, issuance & net issuance

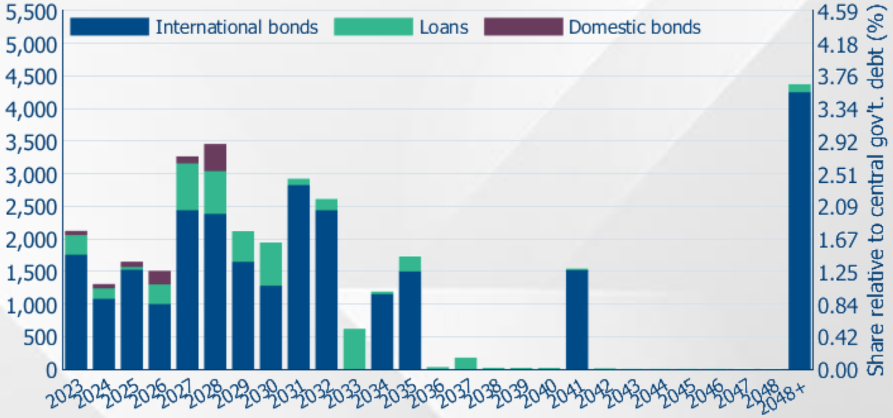
(EUR million)



*Source: AKK; Note: Central government debt; * According to the 2023 Financing Plan*

Maturity profile of FX debt

(31 January 2023, EUR million)



Source: AKK; Note: Central government debt

THANK YOU FOR YOUR ATTENTION!

GOVERNMENT DEBT MANAGEMENT AGENCY PTE LTD.

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