HUNGARY
ÁKK – INVESTOR PRESENTATION

November 2022

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KEY FACTS AND FIGURES ON HUNGARY

Area: ~93,000 sq. kilometres

Capital: Budapest

Population: 9.7m (2022)

Life expectancy at birth: 74.1 years (2021)

Currency: Forint (HUF)

Exchange rate (2021): 358.52 HUF = 1.00 EUR[1]

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

Real GDP growth (2021*): 7.1%

Public debt (2021): HUF 40,697 billion

Public debt denominated in foreign currency (2021):
HUF 8,395 billion (approximately EUR 23 billion)

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

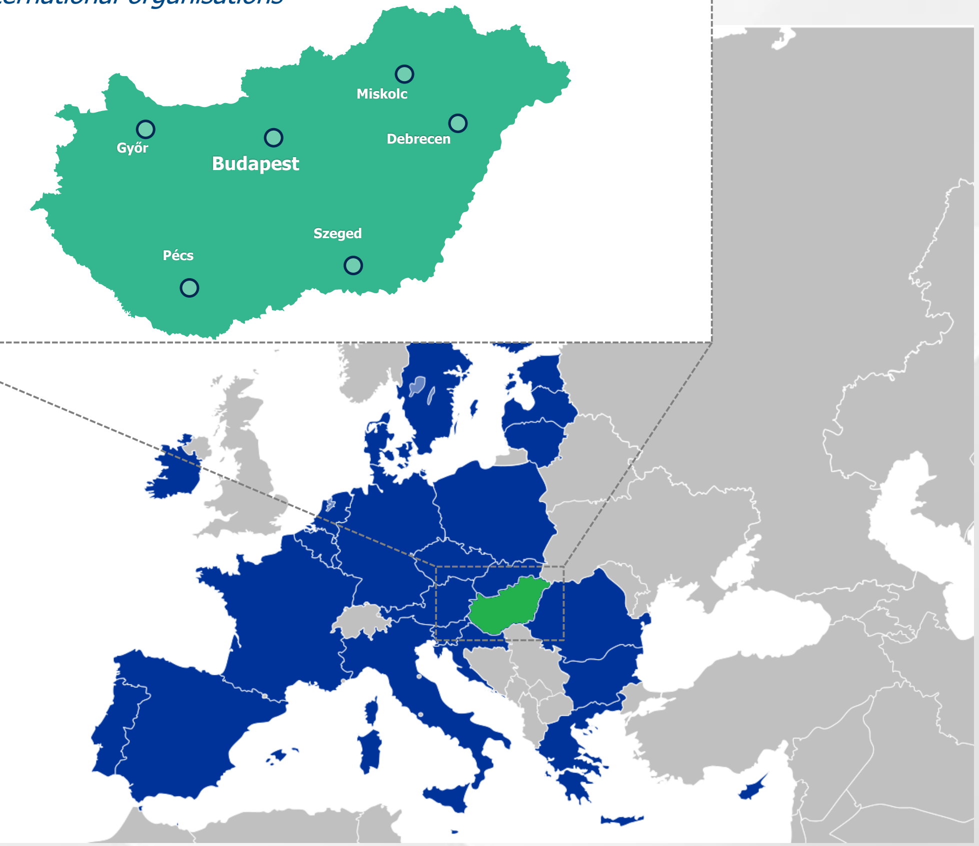
Government: parliamentary republic

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 2021. /*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 IS IN STRONG POSITION TO FACE CURRENT CHALLENGES

Strong and resilient economy	▪ **One of the fastest growth in Europe** with GDP growth of 4.9% in 2019 (vs. EU average of 1.8%). GDP fell by 4.5% in 2020 (vs. EU average of 5.7%), grew by 7.1% in 2021 (vs. EU average of 5.3%), by 8.2% in 1Q2022 and 6.5% in 2Q2022 ▪ The economy has benefited from **strong investment dynamics**, enjoying the highest investment rate in Europe in 2021 ▪ **Unemployment is low,** amounting to 4.1% in 2021 and 3.8% in September 2022
Fiscal policies supporting growth and stability	▪ **Fiscal deficit consistently below the EU ceiling of 3% between 2012-2019** ▪ The ESA deficit for 2020 was 7.5% of GDP (vs. original 1.0% target) and 7.1% of GDP in 2021 **in response to COVID-19** ▪ The deficit target has been 4.9% and the government sticks to this baseline target in 2022. However, on the top of that due to methodological reasons an extraordinary 1.2% of GDP (natural gas acquisition made by the Hungarian Hydrocarbon Stockpiling Association) must be accounted as government deficit. For the 1.2% of GDP purchase a specific earmarked financing was designed with the participation of domestic banks.
Tightening monetary policy	▪ In 2021, inflation increased above the upper bound of the central bank target band and the **Monetary Council started an interest rate hike cycle** to contain inflationary pressure ▪ By end-2021, NBH terminated the liquidity enhancing measures introduced previously to mitigate the effects of the pandemic ▪ During 2022, inflation reached double-digit territory and **the Monetary Council accelerated the interest rate hike cycle to subdue inflationary pressure** ▪ In September 2022, the central bank announced to significantly reduce forint liquidity from October 1, 2022 ▪ In October 2022, the central bank announced further monetary tightening measures
External position	▪ **External debt indicators close to historical lows observed before the pandemic** ▪ Hungary enjoyed a **positive net international lending** position between 2009 and 2020 ▪ The current account posted EUR 6.4 billion deficit and net lending turned negative in the amount of EUR 2.5 billion in 2021 ▪ Foreign direct investments amounted to EUR 2.8 billion in 2021 and covered the net financing need of the country ▪ **International reserves reached EUR 36.9 billion on 31 October 2022**
Sustainability at the core of Hungary's economy	▪ **1st EU member to ratify the Paris Agreement in 2016 and having co-chaired the Open Working Group on SDG's in 2013 and 2014,** Hungary has embedded Sustainability across the Government's major policies and activities ▪ Established National Clean Development Strategy with the goal to **achieve climate neutrality by 2050,** with an **intermediate target to reach 90% of carbon-free electricity production by 2030** ▪ Since establishing the **Green Bond Framework in 2020,** Hungary has accessed **various markets in Green format (EUR, HUF, JPY Samurai, Panda CNY)** with **Allocation and Impact Reports published in 2021**
Effective debt management	▪ **Hungary is an Investment Grade country** ▪ In spite of the pandemic**, Moody's upgraded Hungary in September 2021; the outlook is stable as assessed by all major rating agencies except for Standard&Poor's** ▪ **The structure of public debt is favourable** with a contained share of FX debt, increasing average term to maturity, tapping the green bond market on a regular basis and a highly diversified, deep and liquid domestic market ▪ **The development of the retail market has been a key driver of the expansion of the domestic investor base**

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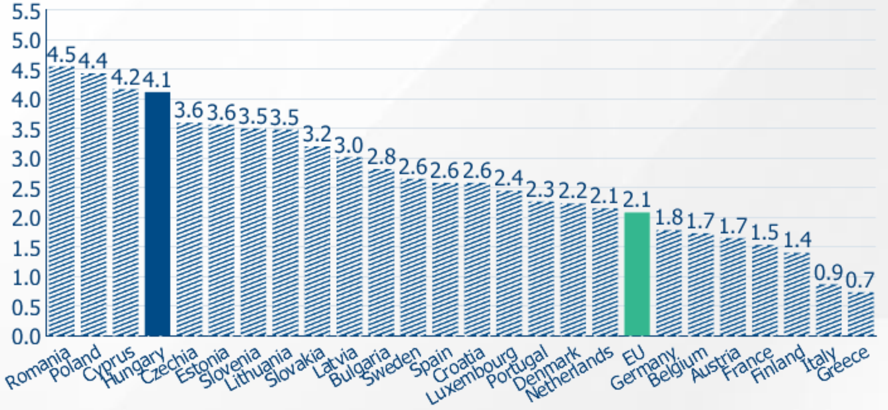
II. STRONG AND RESILIENT ECONOMY

SOLID ECONOMIC GROWTH AFTER 2020

Key highlights

- **In 2021, real GDP grew by 7.1%,** exceeding the EU average of 5.3% and the decrease of 4.5% in 2020, consequently the economy has already recovered from the shock caused by the 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 at this level in 2021
- **In the first quarter of 2022, real GDP grew by 8.2%**
- **In the second quarter of 2022, real GDP grew by 6.5%**
  - In spite of the ongoing war in Ukraine, GDP grew by 1.8% in the first and by 1.1% in the second quarter of 2022 relative to the previous quarter according to preliminary data adjusted for seasonal effects

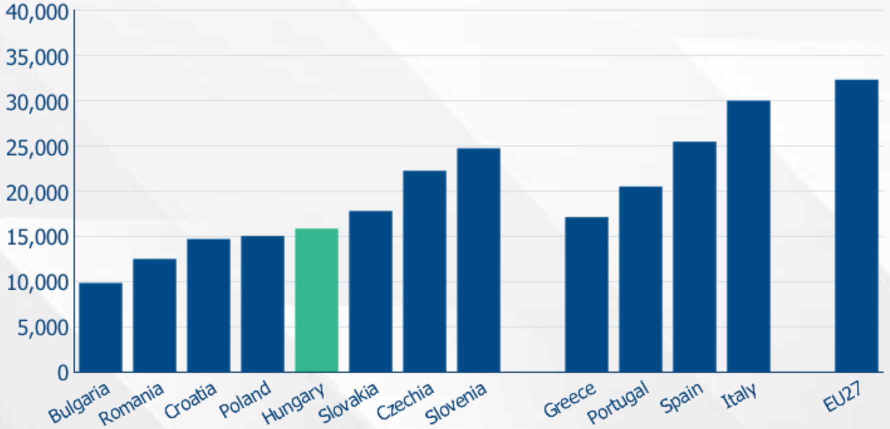
Fourth highest GDP growth among EU countries 2014-2019*



*Source: Eurostat | *excluding Ireland and Malta*

GDP per capita compared to several EU member states

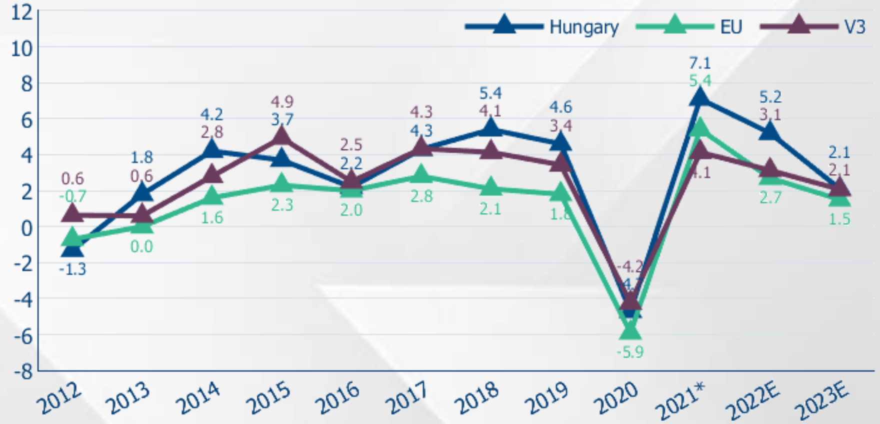
(EUR, 2021)



Source: Eurostat

Real GDP Growth - European Commission Forecast

(YoY, %)



*Sources: Eurostat, European Commission 2022 Summer Economic Forecast; Note: Unadjusted data /*Preliminary data*

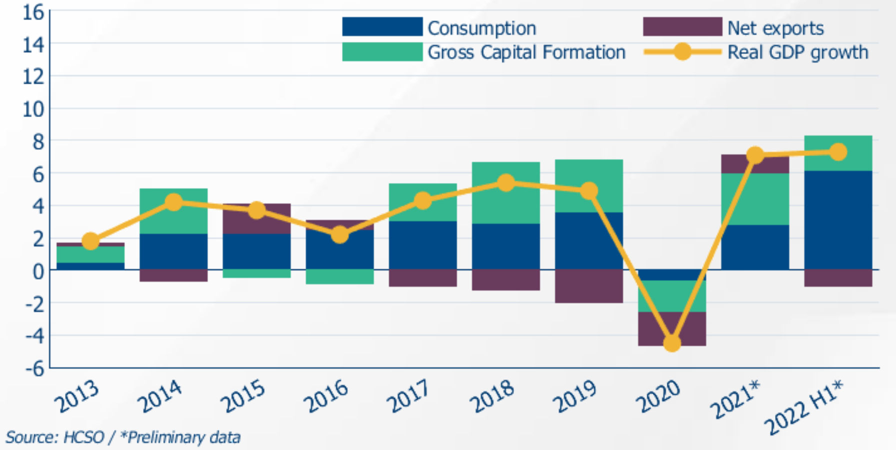
GROWTH DRIVEN BY BOTH CONSUMPTION AND INVESTMENT IN RECENT YEARS

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 the COVID-19**
- **All major sectors (except agriculture) increased in 2021 and the first half of 2022.**
- In 2021 and the first quarter of 2022, the growth contribution was positive in the case of consumption and investments, but the positive growth contribution of net exports in 2021 turned negative in the first half of 2022

Contribution to GDP growth by expenditure

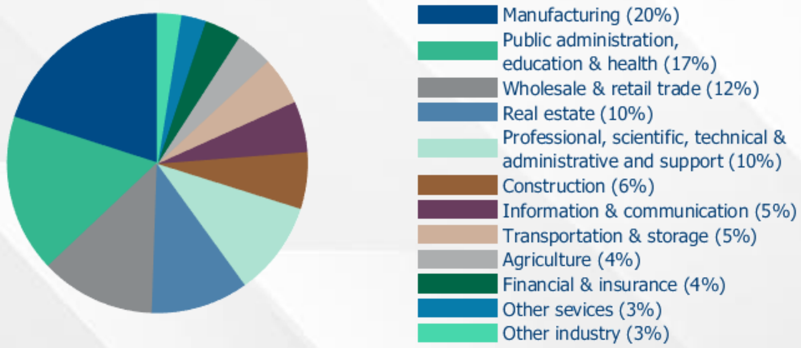
(percentage points)



Source: HCSO / *Preliminary data

Nominal GDP breakdown by sector

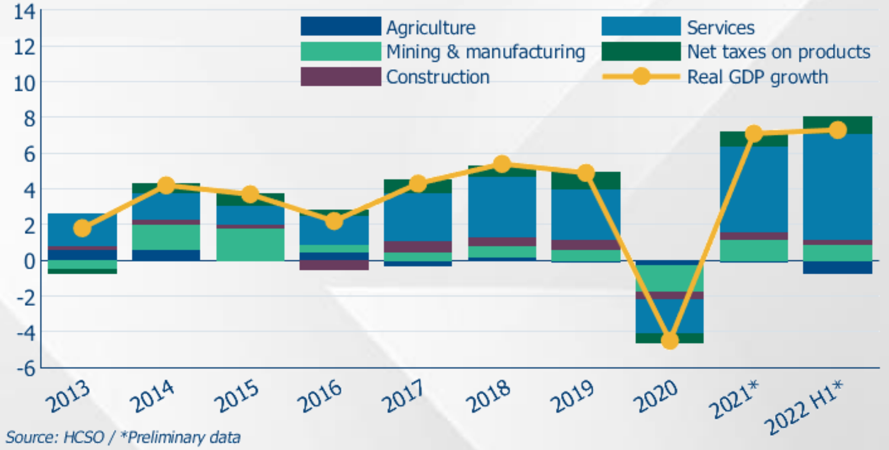
(2021*, % of total GDP excluding taxes less subsidies on products)



Source: HCSO / *Preliminary data

Contribution to GDP growth by sector

(percentage points)



Source: HCSO / *Preliminary data

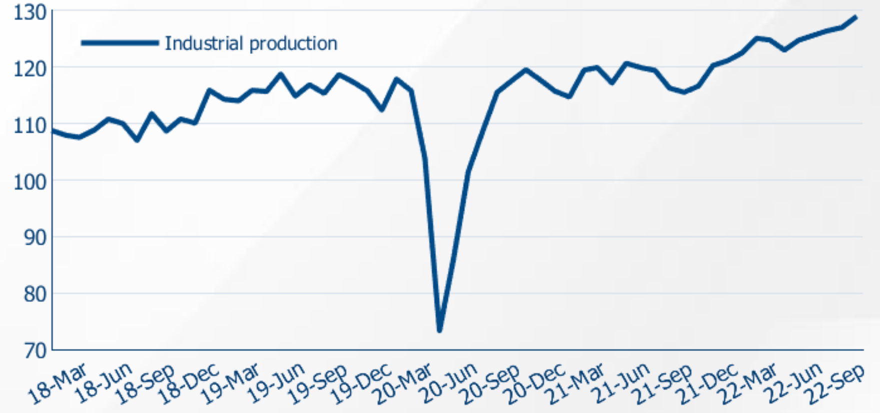
SHORT-TERM ECONOMIC INDICATORS

Key highlights

- **Industrial production is growing**
  - According to seasonally adjusted data, production dropped temporarily in March and April but resumed to growth afterwards and increased by 1.6% in September (the latest data) relative to the previous month
- **Retail sales soften**
  - Dynamic growth during 2021
  - The volume of retail sales peaked in March 2022 mainly due to one-off factors including PIT refunds but decreased in April, May and June
  - The volume grew by 0.5% in July, decreased slightly by 0.1% in August and increased by 0.3% in September compared to the previous month
- **Unemployment rate contained**
  - In January 2022 the rate jumped to 4.2% from 3.7% in December 2021, retreated to 3.3% in June, but increased to 3.8% in September

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

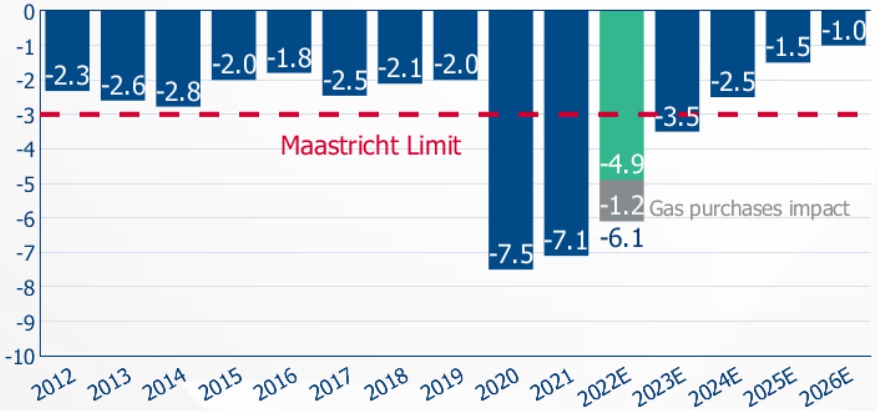
(volume indices adjusted for calendar and seasonal effects, average month of 2015 = 100)

Source: HCSO

III. FISCAL POLICIES SUPPORTING GROWTH AND STABILITY

PUBLIC FINANCES ARE STRONG AND SUPPORT DEBT SUSTAINABILITY WITH DEBT-TO-GDP STEADILY DECLINING

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



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

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

Source: NBH, MoF

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.** The authorities originally set 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
- The deficit in 2021 was 7.1% of GDP, exceeding the original planned deficit of 2.9%. The fiscal situation deteriorated due to the effects of the 2020 economic downturn and associated recovery measures; looking ahead, significant improvement is expected
- The Government is committed to achieving the **4.9% deficit target for 2022 without taking into account gas purchases. Due to the 790bn HUF outlay on gas purchases, the headline budget deficit for 2022 is expected to rise to 6.1%.**
- **The Government currently expects a deficit target of 6.1% for 2022,** and in **the coming years at 3.5% for 2023, 2.5% for 2024, 1.5% for 2025 and 1.0% for 2026**
- **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. The country has enjoyed a rapid decrease in government debt-to-GDP ratio of 14.8 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
  - **In 2021, the debt rate declined to 76.8%. The Government is committed to decrease debt rate in 2022, though in case of emergency an escape clause can be referred.**

HANDLING BUDGETARY RISKS WHILE MAINTAINING THE DEFICIT TARGETS BOTH IN 2022 AND IN 2023

In response to increasingly expensive costs of financing and broader economic risks driven by a number of factors, including but not limited to inflationary pressures, increasing energy prices and supply chain disruptions, on 31 May 2022, the Government announced 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 and 2023:

1) Of the fiscal balance enhancement measures, **expenditure cuts represent nearly 60%**, while **approximately 40% is attributed to higher revenues**
2) The **financing of the budget deficit predominantly relies on domestic sources** whilst maintaining investors' confidence to keep interest expenditures at a moderate level
3) The majority of the revenue-side fiscal consolidation measures aim to **tax unexpected windfall profits**, while expenditure-cutting measures are driven by the **postponement of certain public investment projects**
4) As a response to the current geopolitical instabilities in the region, **Hungary intends to further strengthen its defensive capabilities**. Total defence-related expenditures are expected to amount to 2% of GDP in 2023
5) In response to the continuously increasing energy and utilities costs, **Hungary has formed a Utilities Protection Fund** to support and protect the financial stability of Hungarian households

On July 13, 2022 the government decided to set a limit on the quantity of the subsidized household energy consumption, namely on gas and electricity. Above the fixed monthly preferential quantity all households should pay prevailing market prices. The limits are set on the average consumption of electricity and gas of an average household.

Budgetary risks	Handling risks	Outcome
Increasing energy prices Inflationary pressures Russian aggression on Ukraine	Fiscal adjustment measures across budget revenues and expenditures to manage risks	Reaffirming the baseline fiscal deficit target of 4.9%* for 2022 and 3.5% for 2023

**Excluding the impact of outlay due to additional gas purchases, which is expected to amount to 740bn HUF, bringing the total budget deficit to 6.1% GDP in 2022.*

NEARLY 60% OF THE TOTAL FISCAL ADJUSTMENTS ARE EXPENDITURE SIDE MEASURES

As per the announced Fiscal Consolidation Plan, a comprehensive package of fiscal adjustment measures is expected to be implemented, with majority of balancing expected to come from the budget expenditures recalibration.
The summarized list of the balancing relief measures, shown as estimated percentage of the projected GDP in 2022

Balance Relief Measures – Summary Breakdown	**2022** % of projected GDP
Revenue-side measures	**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%
Expenditure-decreasing measures	**1.7%**
• Economising 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%
Sum Total	**3.1%**

Note: Due to rounding, the summed data might differ from the sum of the detailed data. Link to the press release: https://abouthungary.hu/news-in-brief/government-remains-committed-to-enhancing-budgetary-resilience-and-strengthening-the-fiscal-balance

FISCAL ADJUSTMENT MEASURES IMPLEMENTED SINCE JUNE

After the announcement of the Fiscal Consolidation Plan in May, the Government has announced and launched a number of additional fiscal measures, increasing commitment to enhance budgetary resilience and strengthen the fiscal balance.

ADDITIONAL BALANCE RELIEF MEASURES – SUMMARY BREAKDOWN

Better targeting of the utility price reduction scheme for households, energy saving measures, energy security

- Special natural gas reserve a requirement at the Hungarian Hydrocarbon Stockpiling Association
- 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)

Reduction of informal economy, improvement of budget balance

- Conversion of the 'KATA' flat tax scheme
- Increasing the tax on surplus profit of energy suppliers

Reducing inflation, stimulating savings

- Extension of price caps on fuel, necessities
- More favourable interest rates on retail government papers

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

Ongoing procedure

27 April	The Commission **sent a written notification** to Hungary under the Conditionality Regulation
27 June	Hungary **replied to the written notification**
20 July	**Commission sent an intention letter** to inform Hungary of the measures the Commission envisaged to propose to the Council
July & August	Intensive dialogue between **the Commission and Hungary**
22 August	Hungary **submitted a reply** to the Intention Letter **describing remedial measures**
13 September	Hungary **complemented the reply** with **further commitments** and clarifications on the proposed remedial measures
18 September	The Commission proposed **to the Council** to adopt budgetary protection measures
26 September	Government announced that **two packages of bills** related to EU conditionality procedure were **submitted to the Parliament**
10 October	The two packages of bills related to EU conditionality procedure **entered into force**

Total of 17 Remedial measures proposed by Hungary

1. Establish a new and independent Integrity Authority with extensive powers
2. Establish an Anti-Corruption Task Force with safeguards for a representative involvement of civil society
3. Strengthen the Anti-corruption framework
4. Ensure transparency of the use of EU support by public interest asset management foundations
5. Modify the criminal code to allow judicial review of prosecutorial decisions
6. Strengthen audit and control mechanisms
7. Reduce share of tender procedures with single bids financed from national funds
8. Reduce share of tender procedures with single bids financed from EU funds
9. Develop a single-bid reporting tool
10. Develop an Electronic Public Procurement System
11. Develop a performance measurement framework for public procurements
12. Adopt an action plan to increase level of competition in public procurement
13. Provide training to SMEs and micro enterprises on public procurement practices
14. Set up a support scheme for compensating the costs related to participation in public procurement for SMEs and micro enterprises
15. Use systematically the Commission's datamining and risk scoring tool Arachne
16. Strengthen the cooperation with OLAF
17. Ensure the transparency of public spending

NEXT STEPS

- On the basis of the Commission's proposal on 18 September, the Council will have **one month to take, by a qualified majority, a decision**; this deadline was extendible by two months under exceptional circumstances
- The Justice and Home Affairs Council **extended this period by two months**
- The Commission will continue to **monitor the situation** in Hungary and act accordingly
- Hungary committed to **fully inform the Commission** about the implementation of the remedial measures by **19 November**
- The **Integrity Authority** is planned to be in operation by 19 November; subsequently, an **Anti-Corruption Task Force** will be established
- The Commission will **keep the Council informed** of any relevant element which may have an **effect on its present assessment**

NBH IS TIGHTENING MONETARY POLICY CONDITIONS THE BANKING SECTOR IS RESILIENT

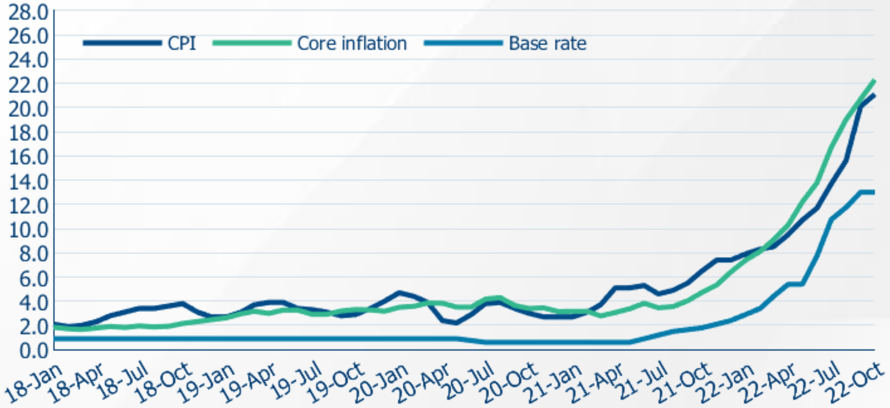
Key highlights

- **The NBH's primary statutory objective is to maintain price stability**
  - Policy rate has been increased to 2.40% during 2021; the quantitative easing programmes were terminated
  - Subsequently, the central bank base rate was increased to 13.00% in September 2022 to combat inflation that reached 21.1% in October
  - The NBH significantly reduced forint liquidity from October 1, 2022
  - On October 14, 2022, the central bank increased the overnight lending rate to 25%, committed to covering the FX liquidity needs related to energy imports in the coming months, increased the forint yield on daily FX swaps and announced overnight deposit quick tenders yielding 18%
- **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

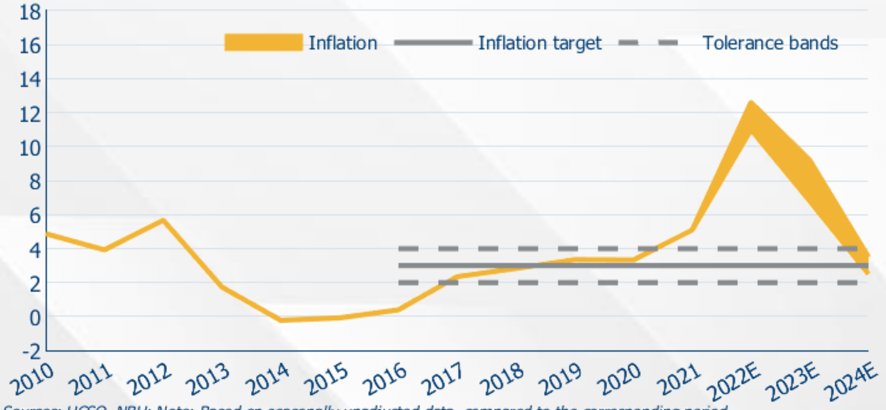
(core and headline, %)



Source: NBH

Inflation vs inflation targets

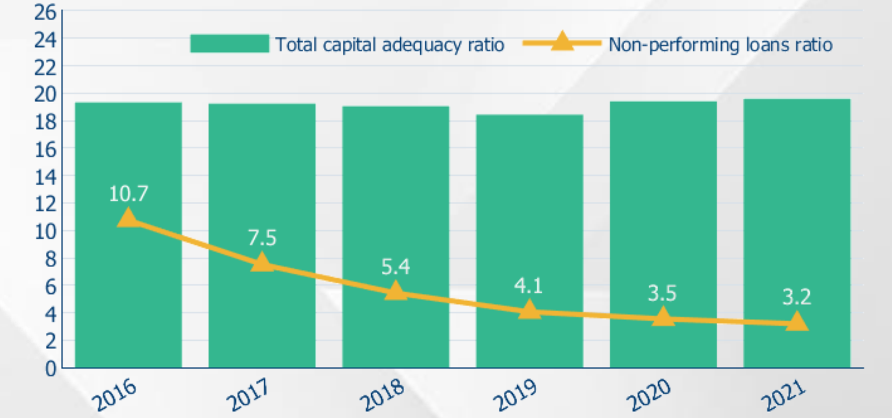
(yearly average data, %)



Sources: HCSO, NBH; Note: Based on seasonally unadjusted data, compared to the corresponding period of the previous year; forecasts after 2021

Total capital adequacy and non-performing loans ratios

(%)

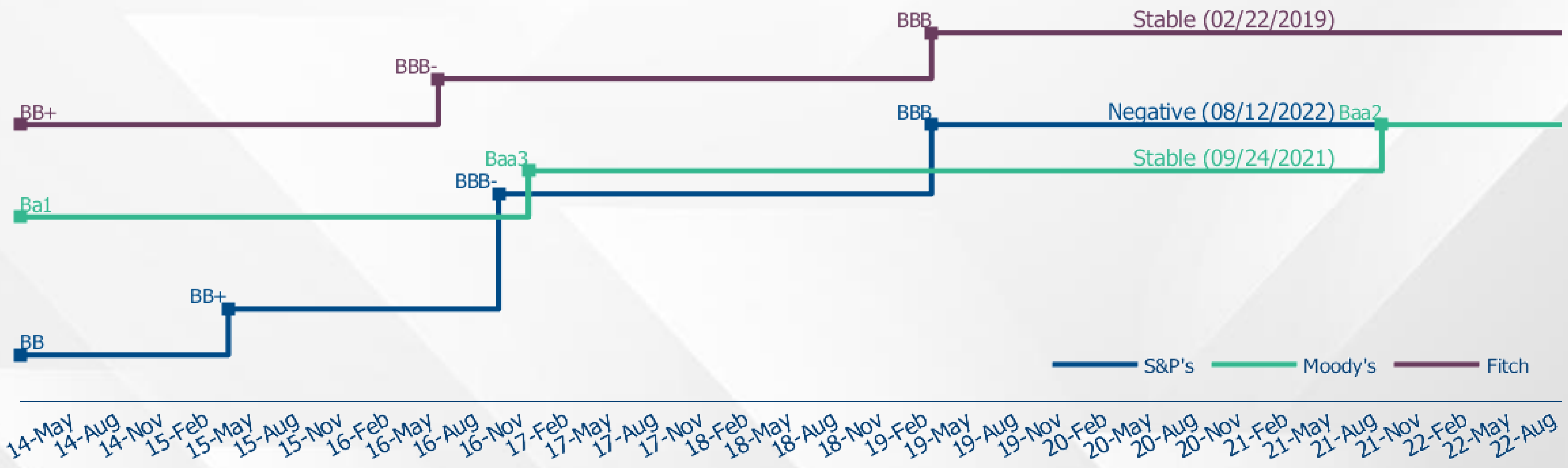


Source: NBH; Note: NPLs are loans at least 90 days overdue

IMPROVING FUNDAMENTALS LEADING TO REDUCED HUNGARY RISK PREMIUM AND LOWER COST OF FINANCING

Evolution of Hungary's ratings [1]

- **Hungary's credit ratings have improved since 2014,** in line with the improvement in the macro-economic fundamentals
  - Hungary has benefitted from multiple rating upgrades since 2014
  - It is currently rated Baa2 (stable) by Moody's, BBB (stable) by Fitch and BBB (negative) 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

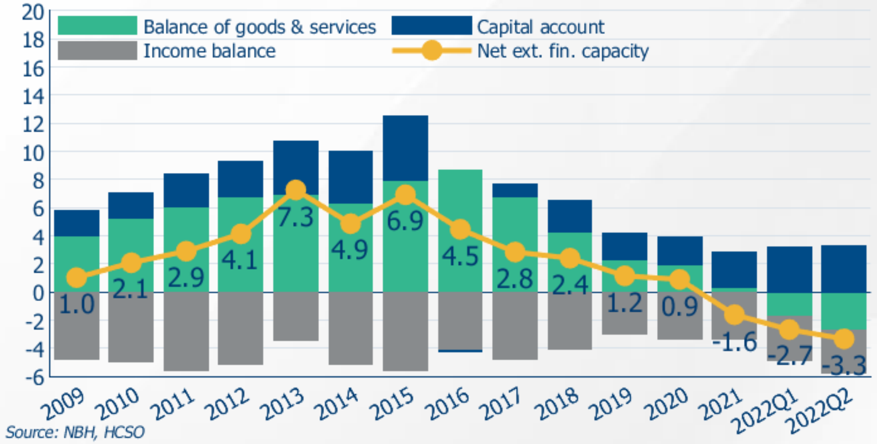
Key highlights

- **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 half of 2022, the current account deficit exceeded the surplus of capital account** in the amount of EUR 2.5 billion in 2021 and EUR 2.4 billion in the first half of 2022, respectively
- **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

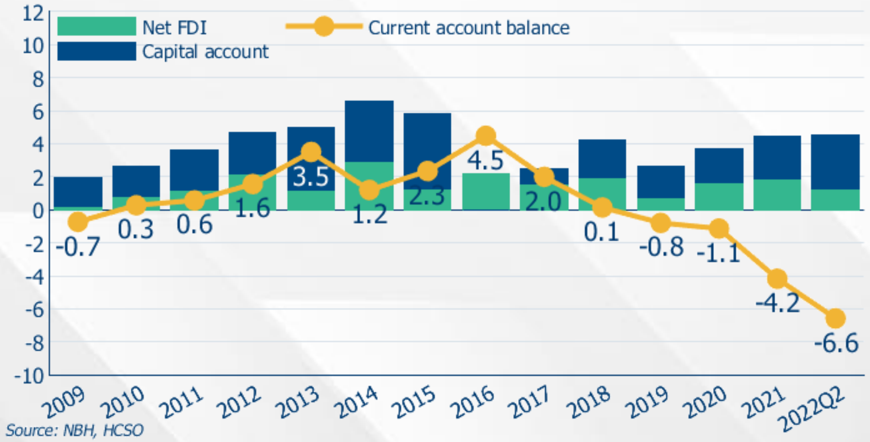
(% of GDP four quarter rolling data)



Source: NBH, HCSO

Net external lending position

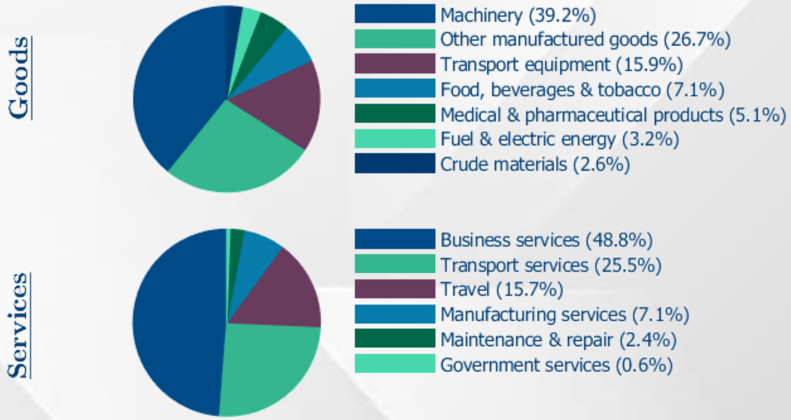
(% of GDP four quarter rolling data)



Source: NBH, HCSO

2021 export - structural breakdown

(%)



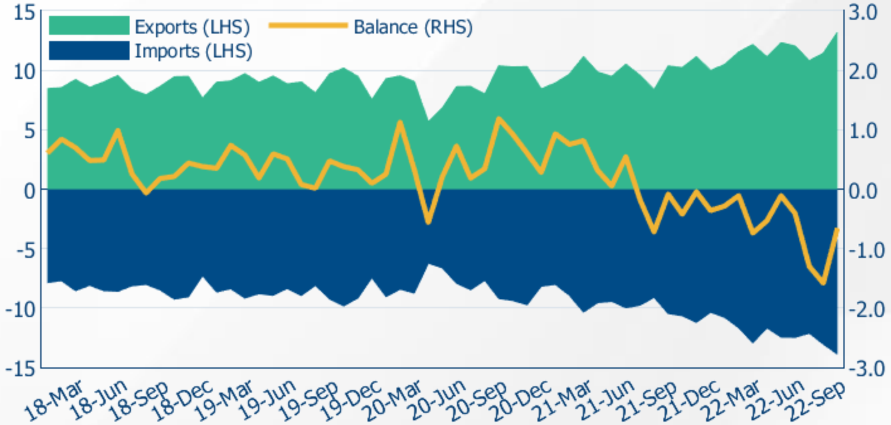
Source: HCSO

EXTERNAL TRADE
HIGH ENERGY PRICE LEVEL TAKES ITS TOLL

Key highlights

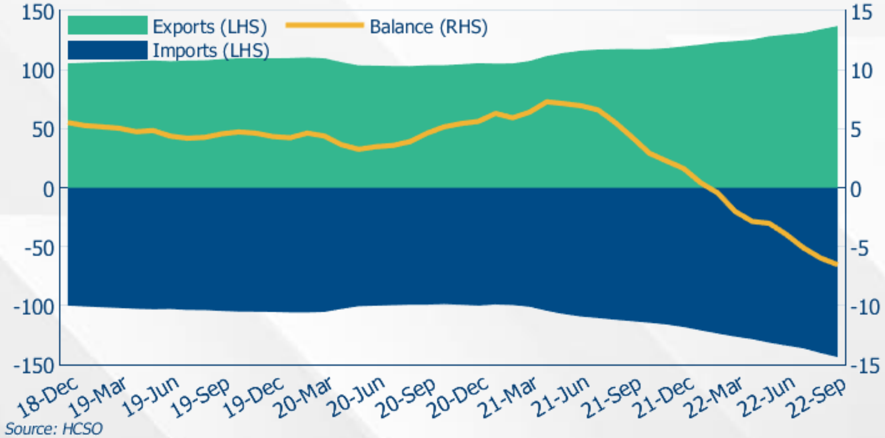
- **Surplus in trade balance has turned into a deficit**
  - Exports and imports both exhibited strong momentum during the past twelve months
  - The growth of imports outpaced the growth of exports
  - In spring 2022, the surplus turned into a deficit based on twelve-month rolling data
- **Deterioration 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 doubled between autumn 2021 and spring 2022 according to twelve-month rolling data

External Trade Balance
(Monthly data, EUR millions)



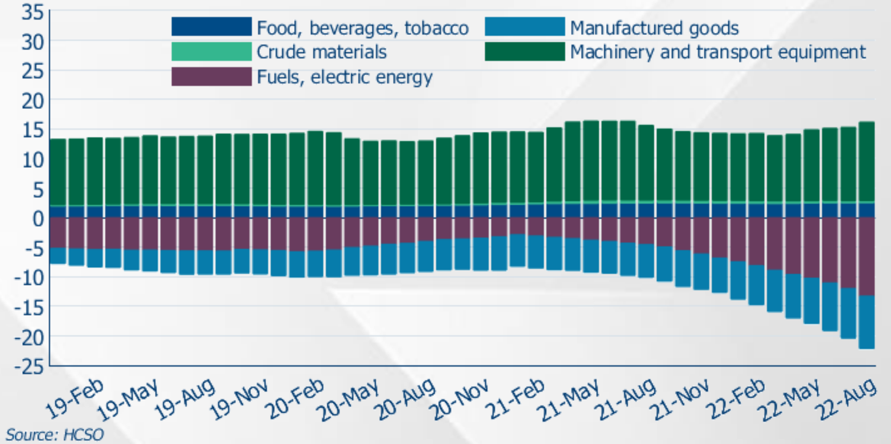
Source: HCSO

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

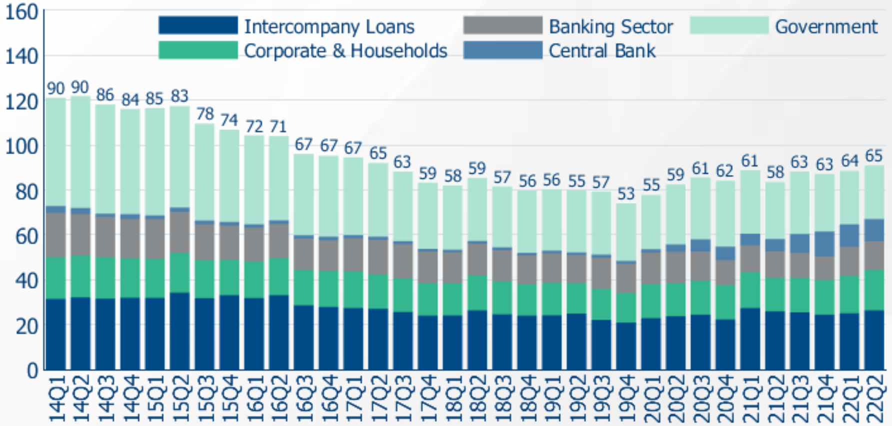
Key highlights

- **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 early 2020 mainly as a result of the pandemic
  - The net external debt of Hungary also improved between 2012 and 2019 and has deteriorated since early 2020
- **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 Q2 2012
  - FX reserves amounted to EUR 36.9 billion on 31 October 2022

Source: NBH

Gross external debt

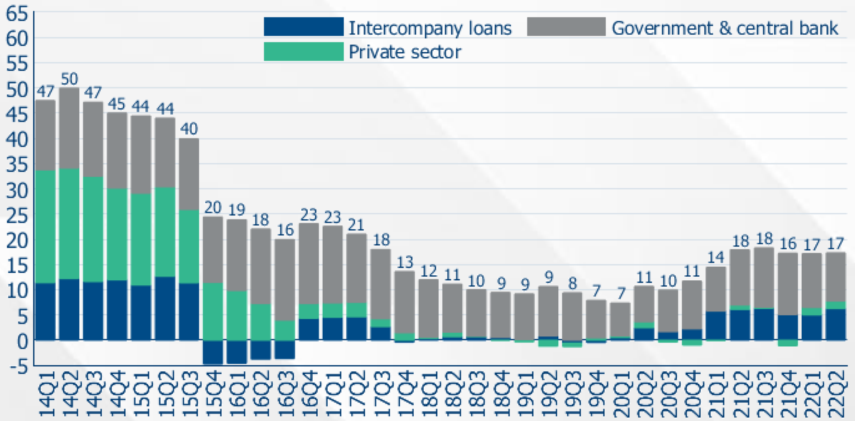
(% of GDP, excluding special purpose entities four quarter rolling data)



Source: NBH, HCSO

Net external debt

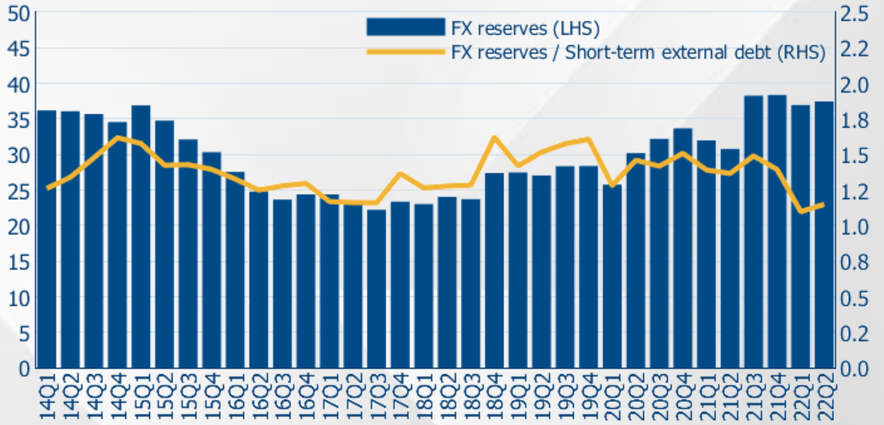
(% of GDP, excluding special purpose entities, four quarter rolling data)



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. ENERGY IMPORT DIVERSIFICATION, SECURITY OF SUPPLY, MEASURES TO MANAGE ENERGY COSTS

ENERGY IMPORT
CURRENT STATUS AND DIVERSIFICATION STRATEGY

Current Status – Energy Import Reliance

- **Hungary's economy has a high degree of reliance on energy imports**

GAS SUPPLY TO HUNGARY

- 86% of natural gas is supplied by Russia. Imported amount under the long-term purchase contract is 3.5bn cubic meters per year via the southern route (Turkey, Bulgaria and Serbia) and 1.0bn cubic meters per year via Austria.
- Hungary has optionality for natural gas to come from several directions, including from Slovakia, Austria, Croatia, Serbia, Romania and Ukraine.
- Hungary's supply of gas in uninterrupted and cross-border pipelines are operating at full capacity
- **Objective: Strategic goal to target diversification and decrease in gas imports, increase in domestic production. Reduce natural gas imports via demand reduction, energy efficiency and electrification measures**

OIL SUPPLY TO HUNGARY

- Crude oil is currently transported from Russia to Hungary via the Friendship ("Druzhba") Pipeline.
- In the event of supply disruption via the Friendship Pipeline, the Adria pipeline will be the main oil transportation route
- **Objective: Strategic goal to become independent from Russian crude oil supply. Target expansion of Adria pipeline capacity to increase supplies via alternative routes (financing planned under RRF energy investments)**

Strategic Goals Formulated To Ensure Security Of Energy Supply in Hungary

Reduce natural gas share in the energy mix

Reduce natural gas demand and dependence of Russian gas imports in Hungary through **demand reduction, energy efficiency and electrification** measures

Increase share of alternative energy sources

Exploit **alternative natural gas supplies** domestic production, LNG, other diversified sourcing routes (e.g. Neptun field), and utilization of **biogas, biomass, waste and hydrogen** in the energy mix

Ensure supply and flexibility of electricity market

Secure supply for the constantly increasing demand for electricity and flexibility (due to RES) by adapting new **market design and regulation,** developing **additional generation, storage capacities** and investing to the **infrastructure**

ONGOING DIVERSIFICATION OF GAS SUPPLY PATHWAYS

Strategic Steps to Diversify Gas Supply

NATURAL GAS NETWORK CAPACITY EXPANSION

- In recent years, Hungary has made significant progress in expanding its natural gas interconnections, bidirectionalisation and thereby increasing the volume of available markets
- The further expansion of interconnection capacities with neighbouring countries is a priority for security of supply, diversification of gas resources and reduction of Russian dependence

Potential Measures:
- Increasing interconnection capacity
- Romania-Hungary: + 1.55 bcm
- Slovakia-Hungary: + 1.75 bcm
- Croatia-Hungary: + 5.25 bcm (on the Hungarian side the capacity is already 7 bcm/year, but on the Croatian side only 1.75 bcm/year)
- Development/extension of alternative gas supply routes for further diversification

ALTERNATIVE GAS SOURCES EXPLOITATION

- Access to natural gas in Europe, especially in CEE, is quickly deteriorating and the global price of natural gas is rising steadily
- Maximum use of alternative sources of natural gas is of utmost importance for Hungary's security of supply until other alternative technologies (e.g. hydrogen) become mature
- Planned capacity expansion in the region will provide an opportunity for diversification

Potential Measures:
- Expanding LNG terminal capacity: reserving additional capacity at LNG terminals available to Hungary (e.g. Adria LNG, Swinoujscie LNG, Gdansk LNG, Alexandroupolis LNG) and supporting further capacity expansion (e.g. Krk, where the current annual capacity is 2.6 bcm, with the potential to expand to 6 bcm by 2030)
- Exploring the potential of the Neptun field in Romania as a resource (theoretical capacity of 4.4 bcm per year)
- Developing alternative sources of supply from southern regions (e.g. Azerbaijan)

Gas Import Diversification

- **Limited options due to geo constraints** in the short-term
- **Alternative sources could support diversification and significantly reduce Russian imports by 2030**
  - Krk extension
  - Neptun
  - Azerbaijan
  - Poland LNG
- **Import-share in the gas mix might reach ~40% by 2050, in line with the NES and the NEKT plans**

Alternative Gas Domestic Production

- **Accelerating biogas, biomethane and other alternatives** in short- to mid-term
- **Develop gas system towards hydrogen compatibility**
- Launch domestic carbon-free hydrogen production
- Leveraging all options to achieve a significant share in the gas mix in the long-term

Natural Gas Domestic Production

- **Increasing local production from 1.5 to 2 bcm/yr by 2023 in line with the current goals**
- Developments may receive regulatory priority

ENERGY PRICE INCREASE COMPENSATION MEASURES

The Government introduced the taxation of energy extra profit	We oblige certain actors of the energy industry: petroleum product producers, bioethanol producers to pay part of their extra profit into the utilities fund and a defence fund for a period of two years
In accordance with EU recommendations, a tax on inframarginal electricity producers was introduced	Extra profit tax of renewable producers that left the feed-in tariff system
The Government provides discounted gas and electricity tariffs up to average consumption	• All households will continue to pay reduced prices up to the average consumption • Average consumption rate for electricity: 2,523 kWh/year/measuring point (household) • Average consumption rate for natural gas: 1,729 m3 gas technical standard household • Due to the maintenance of the utility price reduction program, a family with average consumption will continue to save HUF 181,000 per month and HUF 2,175,000 annually.
The Government introduced a fuel price cap to protect consumers from inflation	• The Government set the retail price for both 95-octane gasoline and diesel at 480 forints ($1.20) a litre. • The Government has decided to extend the fuel price cap until December 31, 2022
Subsidies for Energy-Intensive SME Manufacturers	• Companies are eligible whose electricity and gas bills in 2021 accounted for more than 3% of sales. • Non-refundable State subsidy will cover 50% of the increase of their October-November-December 2022 electricity and gas bill compared to the same period in 2021. • These companies will also be provided with 0% interest loan (the Széchenyi Loan Program) to finance their energy saving investment implemented in the next 3 years.
Subsidies for Energy-Intensive Big Manufacturers	• Big manufacturers are eligible whose energy costs in 2021 exceeded 3% of sales • Non-refundable State subsidy could be used to finance energy efficiency and/or renewable energy investments • Aid intensity 30-40% of eligible costs
Firewood Programme	• Hardwood, softwood and pine firewood produced at state forestry farms can be purchased at a uniform maximum price, up to 10 forest cubic meters per household. It is also possible to purchase less than the maximum quantity or in instalments. Hardwood, softwood and pine firewood can be purchased at each state forest farm, according to the species composition typical for the given area. • In addition, the forest farms continue to provide the opportunity to collect wood, which can help families in need.
Container boiler program	A total of 400 container boilers were purchased, which will replace gas heating in public education and social institutions. The Government supports the development of domestic boiler production capacity with HUF 1 billion.

VI. ESG

HUNGARY'S ENVIRONMENTAL COMMITMENTS, INCEPTION OF GREEN FINANCE

GOVERNMENT DEBT MANAGEMENT AGENCY PTE LTD.
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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
- **1st Allocation Report publication**
- **1st Impact Report publication**

2022
- **COP 27** Conference in Sharm El-Sheik
- **Second Climate Change Action Plan under Gov. approval**

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

Hungary's strategies to mitigate climate change

Long term

National Clean Development Strategy
- This strategy aims to **achieve 40% reduction in GHG emissions by 2030 (compared to 1990)** and **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 in 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 Education

Milestones and achievements – Climate change

30% GHG reduction	Hungary reduced its greenhouse gas emissions by 30%[1] between 1990 and 2021
Highest share in solar electricity	Hungary achieved a share of 11% of solar PV in electricity output[2], the highest in the EU (2021)
Low emissions per capita	GHG emission per capita is 76% of the EU average[1]: the 8th lowest value in the EU (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]	% of SDG achievement measuring progress towards the 17 SDGs
Index Rank 2022	21 / 165[4]	Country ranking relative to SDG achievements

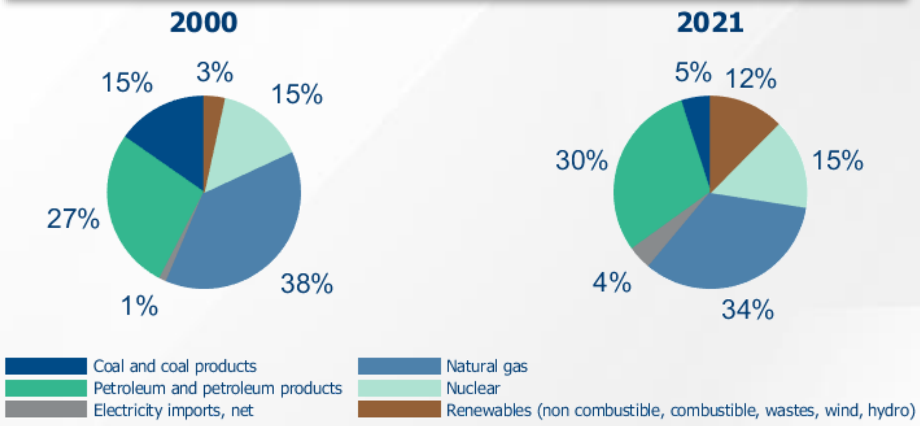
Notes: ***1.*** *OECD* ***2.*** *Hungarian Energy and Public Utility Regulatory Authority (MEKH), Annual Electricity Market Report (2021, Hungarian)* ***3.*** *National Energy Strategy, 2030* ***4.*** *Sustainable Development Rankings, 2022*
Sources : *AKK; SDG rankings: https://dashboards.sdgindex.org/rankings; Annual Electricity Report on MEKH webpage: http://mekh.hu/arampiac-eves-riport-2021*

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

Key highlights

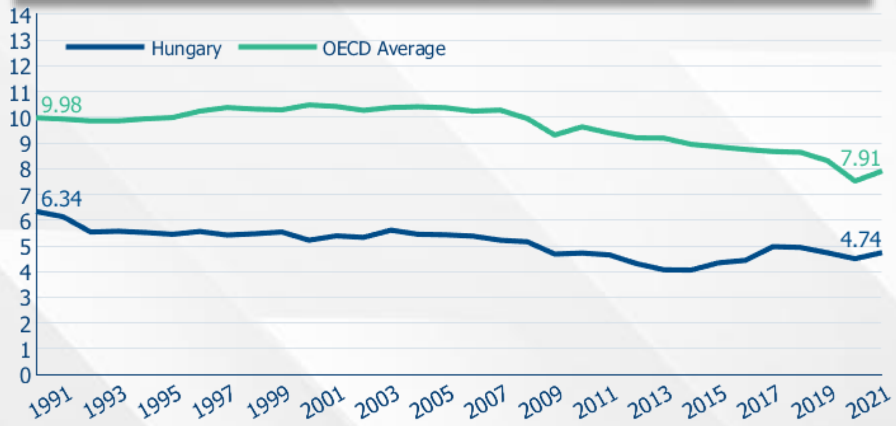
- Hungary was **among the first countries globally to turn its 2050 emissions target into a legal commitment** with the adoption of the Climate Protection Law in 2020.
- The National Energy Strategy 2030 with an outlook to 2040 to reduce the importation of fossil energy. **Its primary objective is to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

Primary energy consumption structure (in %)



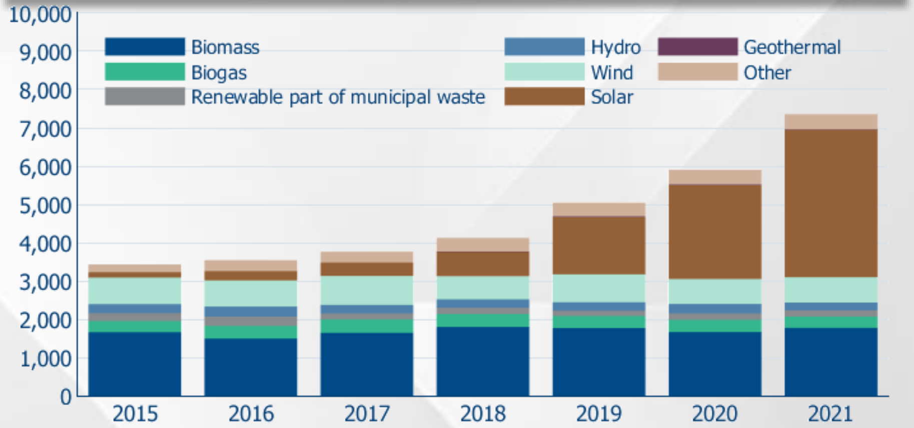
Source: HCSO

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



Source: OECD

Gross renewable electricity production (gigawatt hours)



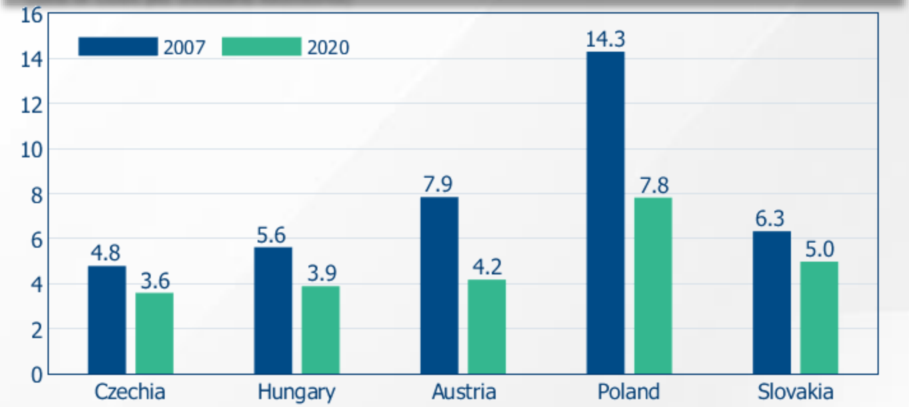
Source: HCSO / Note: Preliminary data for 2021

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

Key highlights

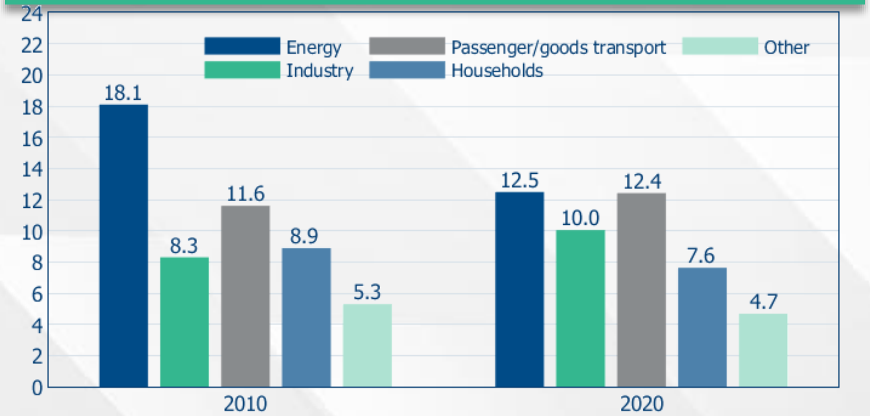
- **The CO2 intensity of rail transport is gradually decreasing,** albeit total CO2 emissions increased from transportation due to the growth in number of passenger cars and increasing freight transport
- **Electrification of the railway network has increased and is expected to continue to increase**, 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)



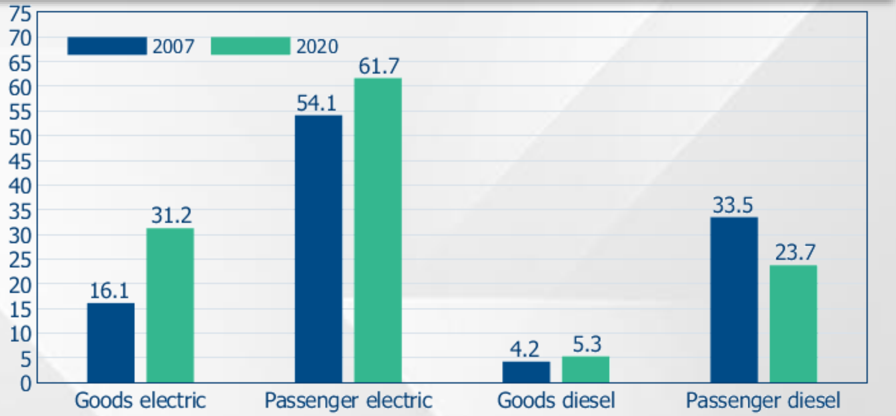
Source: Eurostat
Note: Total railway GHG emissions divided by the sum of movement of diesel-powered locomotives and railcars.

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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Awards

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

GlobalCapital

2021 Climate Bonds Initiative

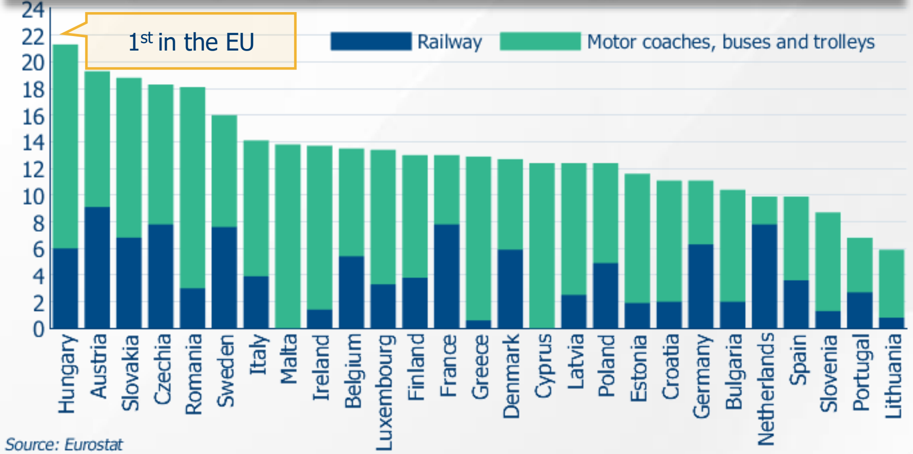
Sovereign **Green Market Pioneer Award**

Sustainable Finance Award

RIEF Sustainable Finance Awards

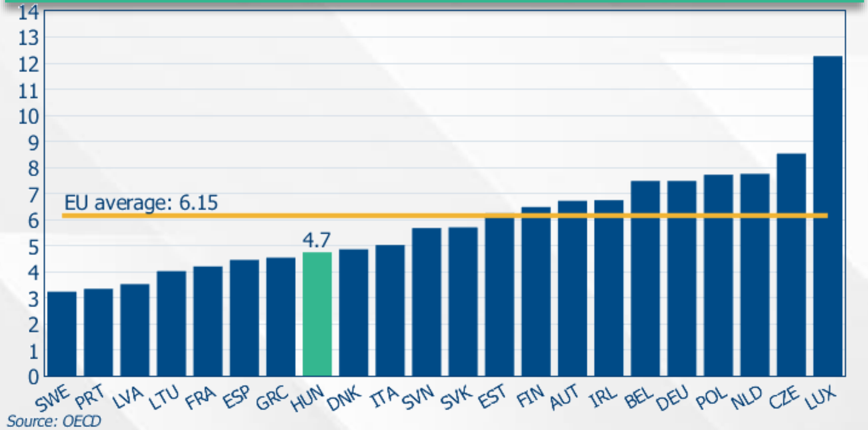
2020 1st foreign **Sovereign issuer on the JPY green bond market** (Special Award)

Modal split of passenger transport in 2020, percent



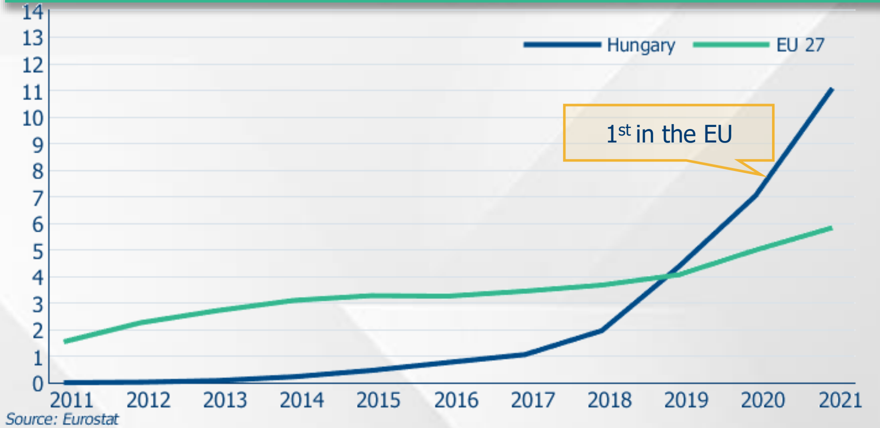
Source: Eurostat

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

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]

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

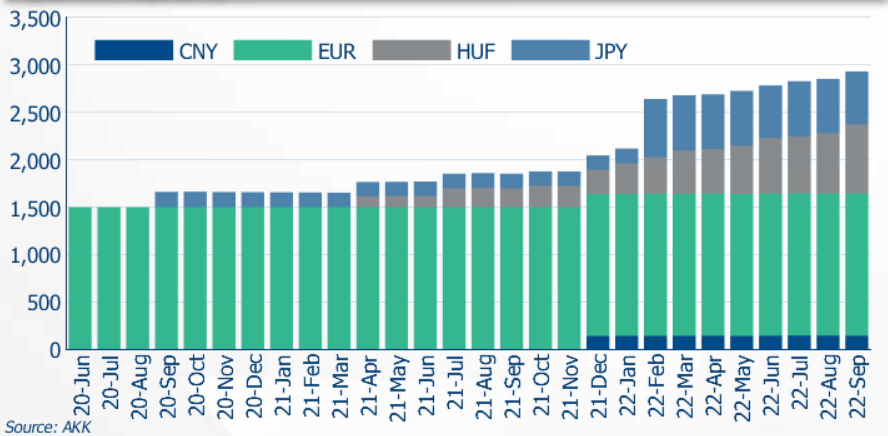
Second party opinion[3]

- 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**

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

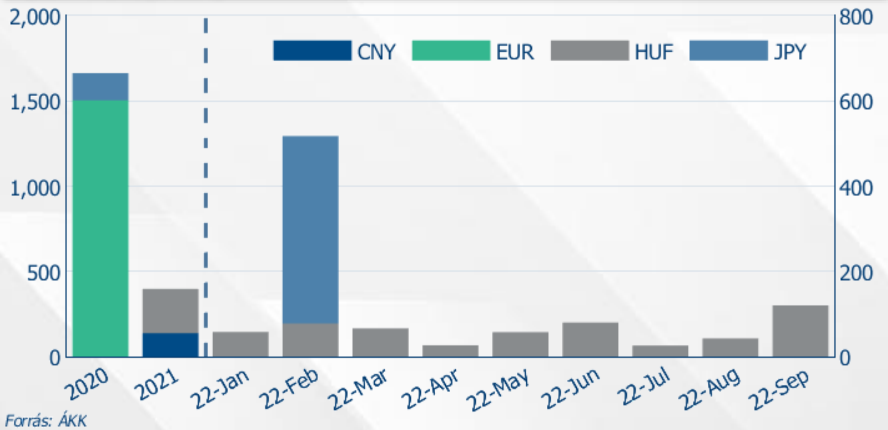
GREEN ISSUANCE SINCE 2020

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



Source: AKK

Green bond issuances
(EUR million equivalent)



Forrás: ÁKK

Issuance history

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

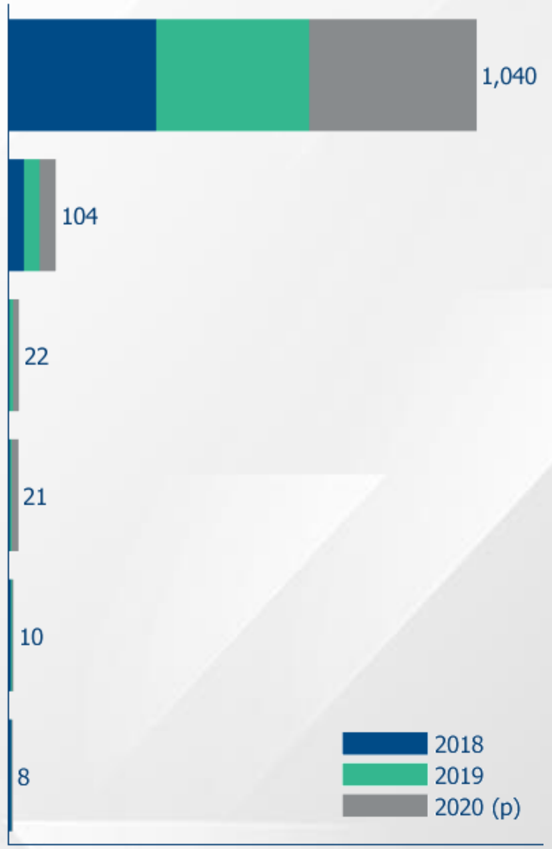
Date	Type of Bond	Currency	Total Issued Amount[1]	Tenor
February 2022	Green Samurai Bond	JPY	59.3bn	5Y, 7Y, 10Y
January 2022[2]	Green Bond	HUF	172.9bn	10Y
December 2021	Green Panda Bond	CNY	1bn	3Y
April 2021[2]	Green Bond	HUF	129.2bn	30Y
September 2020	Green Samurai Bond	JPY	20bn	7Y, 10Y
June 2020	Green Eurobond	EUR	1.5bn	15Y

[1] As of 30 September, 2022
[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	**Clean Transportation**	**1,106**	**Kilotons of CO_2** saved
15 Life on Land	**Land Use and Living Natural Resources**	**120k**	**Projects** supporting sustainable agricultural areas **covering 794,438 hectares**
6 Clean Water and Sanitation; 13 Climate Action	**Adaptation**	**1.8%**	**Decrease in air pollutant** particular matter (PM10) between 2018 and 2019
7 Affordable and Clean Energy	**Energy Efficiency**	**49.5**	**Kilotons of CO_2** saved
6 Clean Water and Sanitation; 11 Sustainable Cities and Communities	**Waste and Water Management**	**761**	**Meters per kilometres increase in length of sewage system** of drinking water system
7 Affordable and Clean Energy	**Renewable Energy**	**8.2**	**Kilotons of CO_2** saved

Eligible green expenditures (HUF billions)



Source: AKK

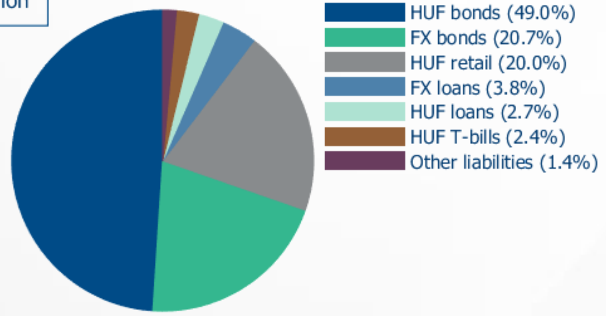
Sources: *2020 Green Bond Allocation Report : https://akk.hu/download?path=d8776dc8-62b1-4f60-8ae4-4a2727529d02.pdf*
2020 Green Bond Impact Report: https://akk.hu/download?path=53c5ef43-3d10-4a42-897a-c77bb21e5e89.pdf
The 2021 Allocation and Impact Report (integrated) will be released towards the end of 2022.

VII. EFFECTIVE DEBT MANAGEMENT

HUNGARY BENEFITS FROM A FAVOURABLE DEBT PROFILE

Hungary's central government debt breakdown
(30 September 2022, % of total)

Total debt:
HUF 44,758 billion

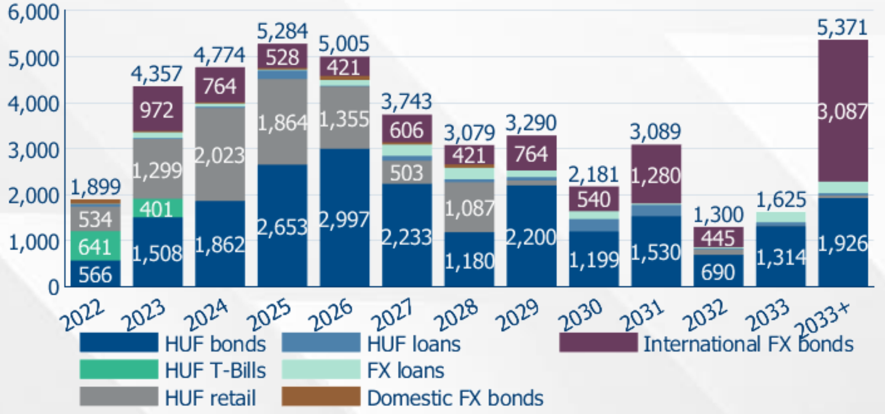


Key targets and characteristics of Hungary's government debt[1]

	2022 benchmark targets		30 September, 2022 figures[2]
Share of FX debt	Between 10% and 25%	✓	23.9%
Currency mix of the FX debt (after swaps)	100% in EUR (with a 5% deviation allowed)	✓	99.9%
Average time to maturity of domestic debt	Minimum 4.5 years	✓	5.0 years
Average time to re-fixing of domestic debt	Minimum 4 years	✓	4.2 years
Share of domestic and FX debt with a fixed coupon	Domestic: 70%-90% FX: 70%-90%	✓	73.1% 87.2%
Share of retail debt			19.9%
Share of green bonds			2.8%

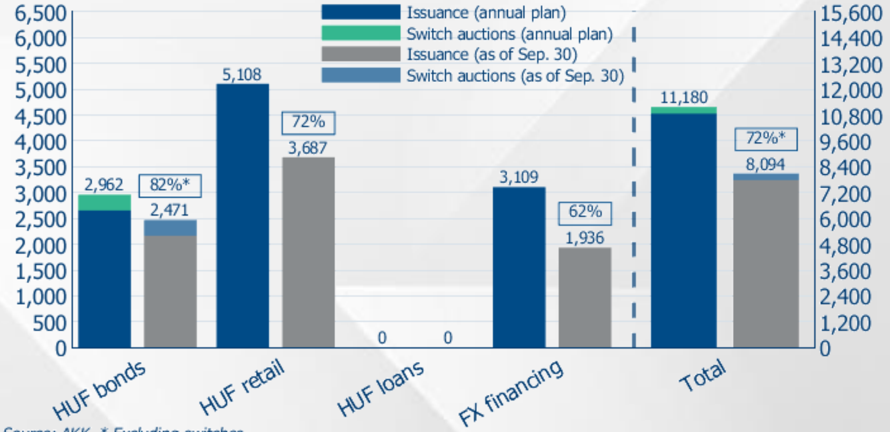
Source: AKK; Note: 1. Central government debt 2. 90-day moving average

Hungary's government debt redemption profile
(30 September 2022, HUF billion)



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

2022 issuance vs 2022 financing plan published in November
(30 September 2022, HUF billion)



*Source: AKK * Excluding switches*

HUNGARY'S EXPOSURE TO INTERNATIONAL MARKETS IS CAREFULLY MANAGED

Key highlights

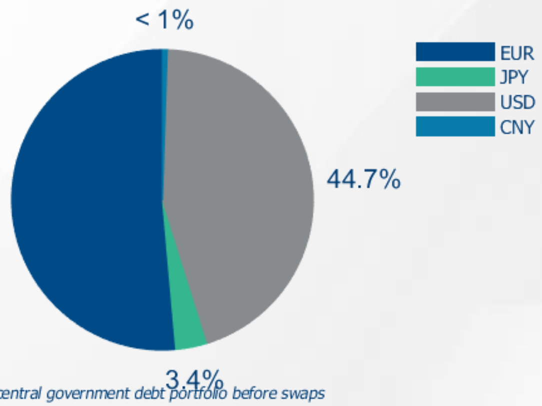
- **The share of Hungary's government debt in foreign currency is contained**
- Hungary strives to keep the share of FX exposure between 10% and 25% of total debt, but Hungary would also like to maintain its presence on the international capital markets to ensure diversification of funding sources
- **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 August 31, 2022, in line with AKK debt management target to mitigate exchange rate risk
- **Hungary issued green bonds denominated in EUR (in June 2020), in JPY (in September 2020 and February 2022) and in CNY (in December 2021)**
- **Hungary issued conventional bonds denominated in JPY (in February 2022) in EUR and USD (in June 2022)**

Source: AKK

FX debt composition by currency before swaps

(September 30, 2022, % of total)

Total FX debt[1]: EUR 28.3 billion

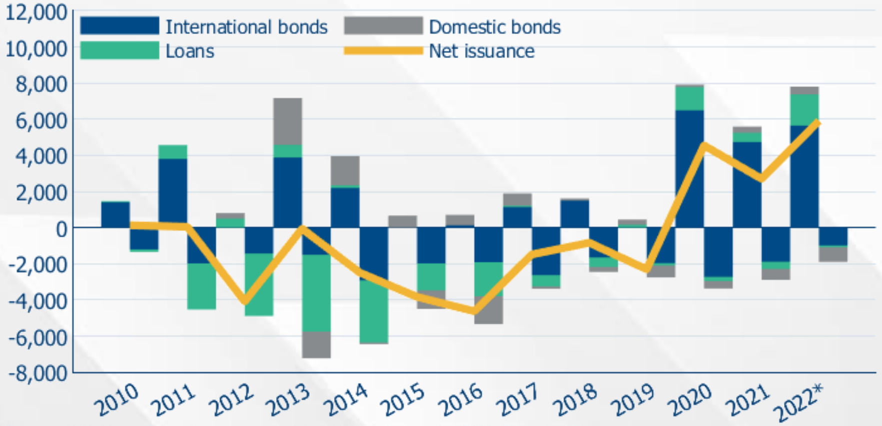


Source: AKK; Note: composition of the FX central government debt portfolio before swaps

[1] Excluding CCIR swaps; total FX debt including CCIR swaps amounted to EUR 26.0 billion

FX redemption, issuance & net issuance

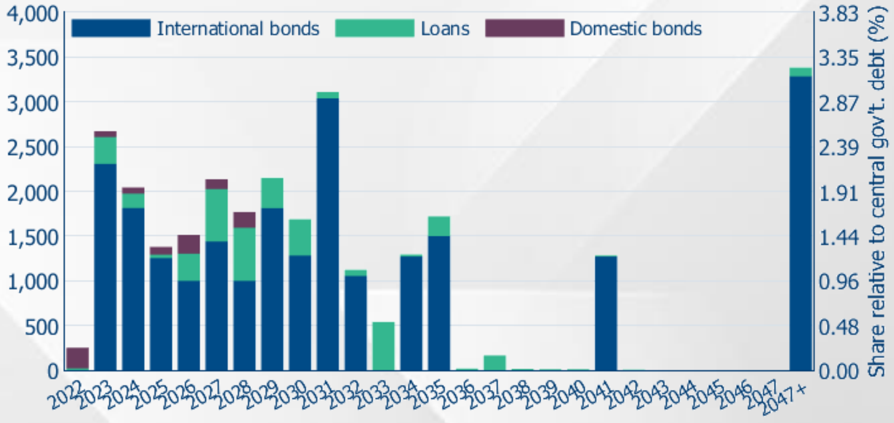
(EUR million)



*Source: AKK; Note: Central government debt; * According to the 2022 Financing Plan*

Maturity profile of FX debt

(September 30, 2022, EUR million)



Source: AKK; Note: Central government debt

STRONG MARKET DEMAND AND INCREASING YIELDS ON THE LOCAL WHOLESALE MARKET

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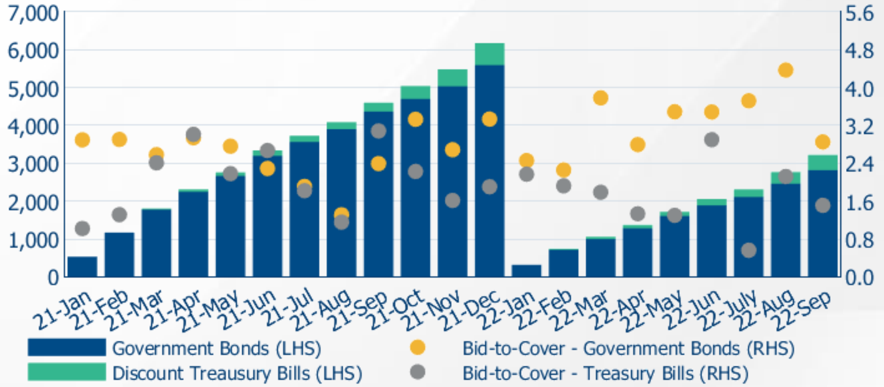
Key highlights

- **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, but increased significantly subsequently as a consequence of monetary policy tightening of the NBH to fight inflation**
  - During 2021, short-term yields increased by 1.9-3.2 percentage points; long-term yields grew by 2.3-3.5 percentage points
  - During the first nine months of 2022, the increase of yields accelerated; short-term yields increased by 9.4-9.7 percentage points; long-term yields grew by 4.7-7.6 percentage points

Source: AKK, NBH

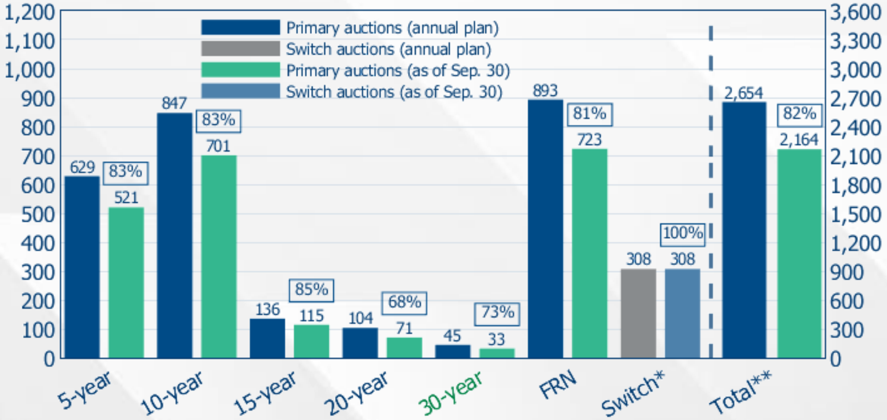
Cumulative monthly debt securities issuance and the ratio relative to the planned amount (HUF billion, %)



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

Government bond issuance on auctions by tenor

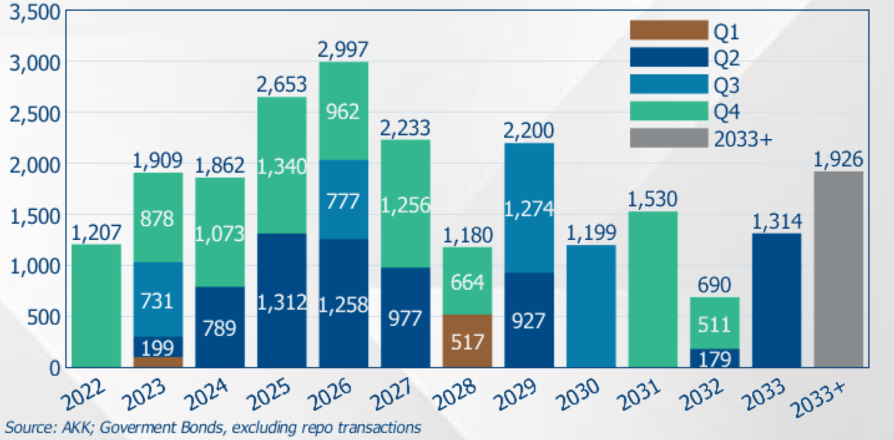
(2022 issuance vs 2022 financing plan published in November excluding municipal bond sales, HUF billion)



*Source: AKK; *Switch program suspended as of September 8 2022/ **Total primary auction issuance*

Redemption profile of wholesale government securities

(as of 30 September 2022, HUF billion)



Source: AKK; Goverment Bonds, excluding repo transactions

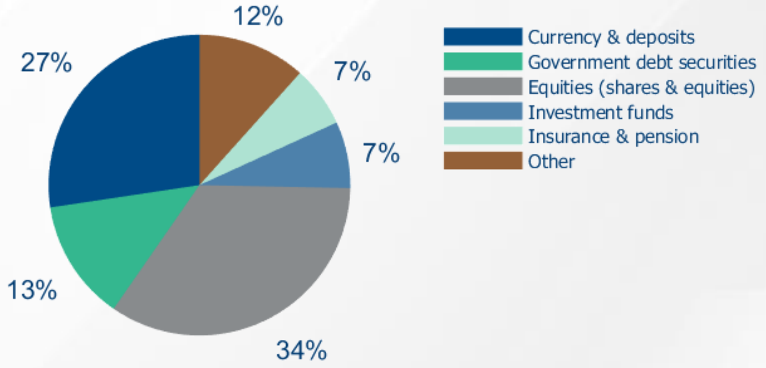
LOCAL RETAIL MARKET IS AN IMPORTANT DIVERSIFICATION TOOL

Key highlights

- **The retail debt programme constitutes an important financing channel for the Government**
- The outstanding amount of government retail securities represents HUF 8,955 billion as of 30 September 2022, 20% 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

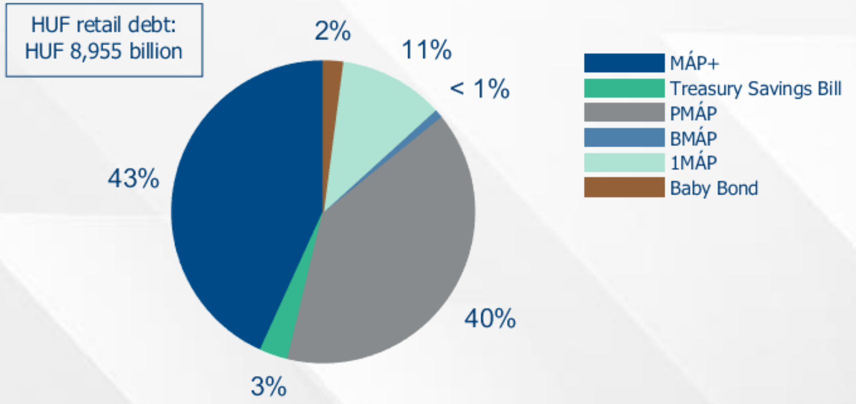
Source: AKK

Households asset structure
(Q2, 2022, % of total)



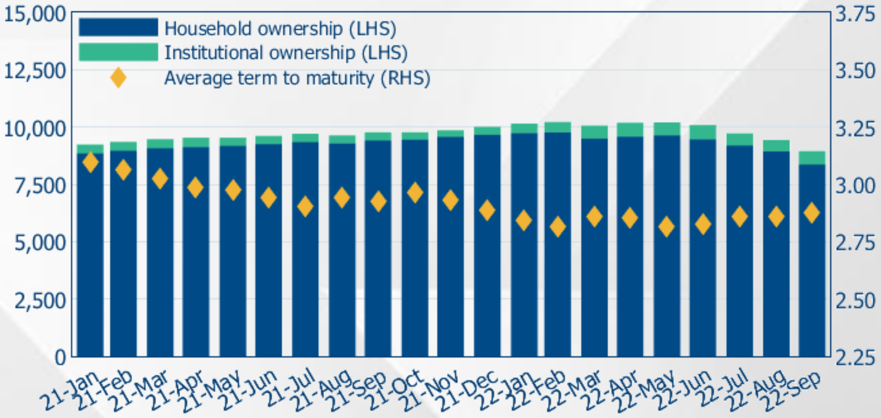
Source: NBH

HUF retail portfolio by instrument
(30 September 2022, % of total)



Source: AKK

HUF retail securities
(HUF billion and years)



Source: AKK

THANK YOU FOR YOUR ATTENTION!