INTERNATIONAL MONETARY FUND

IMF Country Report No. 24/176

BOSNIA AND HERZEGOVINA

SELECTED ISSUES

June 2024

This paper on Bosnia and Herzegovina was prepared by a staff team of the International Monetary Fund as background documentation for the periodic consultation with the member country. It is based on the information available at the time it was completed on May 28, 2024.

Copies of this report are available to the public from

International Monetary Fund • Publication Services
PO Box 92780 • Washington, D.C. 20090
Telephone: (202) 623-7430 • Fax: (202) 623-7201
E-mail: publications@imf.org Web: http://www.imf.org
Price: $18.00 per printed copy

International Monetary Fund
Washington, D.C.

INTERNATIONAL MONETARY FUND

BOSNIA AND HERZEGOVINA

SELECTED ISSUES

May 28, 2024

Approved By
European Department

Prepared By Carolina López-Quiles, Nabil Ben Ltaifa, Adrian Music, Bobana Cegar and Alpa Shah, with research assistance provided by Estefania Cohn Bech.

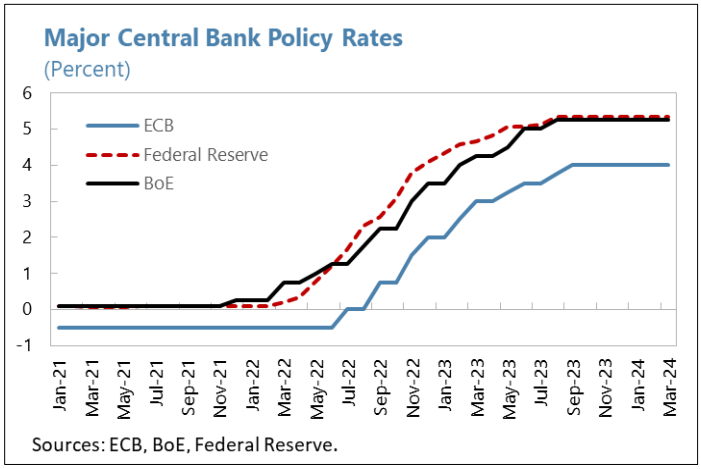
CONTENTS

INTEREST RATES AND CAPITAL ALLOCATION[1]

This paper provides an overview of interest rate dynamics in Bosnia and Herzegovina (BiH) in relation to global and euro area trends following the recent cycle of monetary tightening. It analyzes the impact of interest rate dynamics on capital allocation both domestically and externally, with a focus on capital outflows. It concludes that the wider spread between domestic interest rates and euro area short-term rates has been associated with capital outflows of around KM 1.7 billion since the ECB started tightening monetary policy in July 2022, mostly in the form of money market placements in the euro area. It also shows that the compression of local interest rates and the few alternative investment opportunities in a limited market appear to have resulted in households and firms placing most of their funds in short-term deposits, making bank funding less stable than under a longer maturity structure. It notes that this lack of investment opportunities may lead to crowding into the real estate sector, with possible implications for financial stability in the long term.

A. Global Developments on Interest Rates

1. In response to the surge in inflation, central banks around the world have been raising interest rates in recent years. Fueled by a combination of supply chain disruptions, rising commodity prices, and increased demand as economies recovered from the impacts of the COVID-19 pandemic, inflation rates surpassed central banks' target levels. To curb inflationary pressures and maintain price stability, central banks raised policy interest rates.



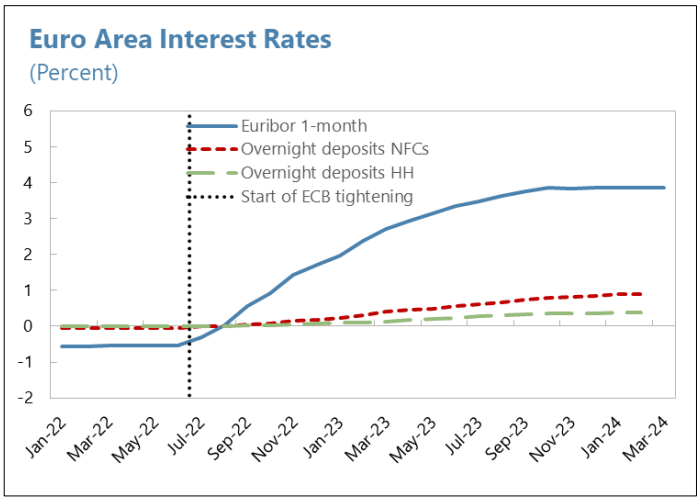
2. The transmission of hikes in policy rates to lending and deposit rates and the real economy has been sluggish globally. Central banks' reliance on unconventional monetary policies, such as quantitative easing, led to substantial excess liquidity and introduced new complexities, such as the management and calibration of different instruments.[2] Other factors could have contributed to slow pass-through, such as competition, regulation, financial market frictions, and the presence of fixed-rate lending contracts. Moreover, global interconnectedness and capital mobility make economies susceptible to external shocks, limiting the effectiveness of domestic monetary policy in influencing interest rates. These combined factors contribute to the observed slow and uneven interest rate pass-through across countries, posing

[1] Prepared by Carolina López-Quiles and Adrian Music, presented and discussed with counterparts during mission, and benefited from useful comments from Alina Iancu and Mark Horton.

[2] Including but not limited to open market operations, forward guidance, and term funding facilities.

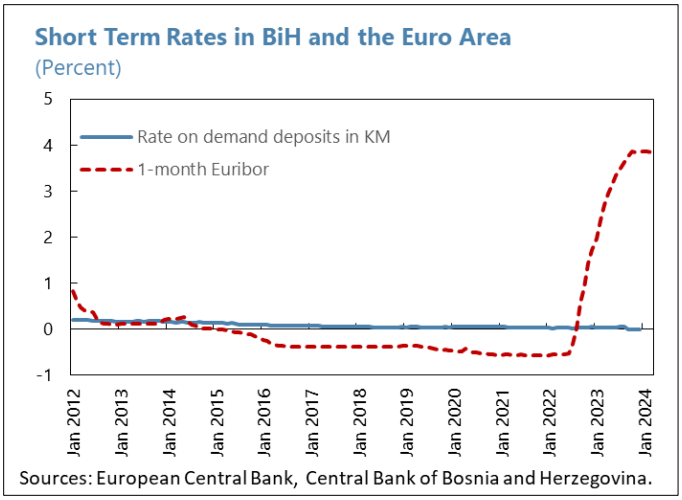
challenges for central banks in their efforts to steer economic conditions through monetary policy adjustments (Beyer et al., 2024).

3. In the euro area, deposit rates have increased only marginally despite short-term rates such as Euribor increasing considerably after the ECB's tightening of policy rates. In July 2022 the ECB started increasing its key policy rates in increments. The deposit facility rate, at -0.5 percent then, stands now at 4 percent. The 1-month Euribor progressively increased from -0.30 percent in July 2022 to 3.85 percent in December 2023 (monthly average). Meanwhile, remuneration of deposits has remained low, with rates on a vista deposits for households increasing from around zero to just 0.36 percent in the same period. One reason for this could be the ample excess liquidity still present in the system, which stood at €3,255 billion in April 2024 (ECB Economic Bulletin Issue 3/2024).



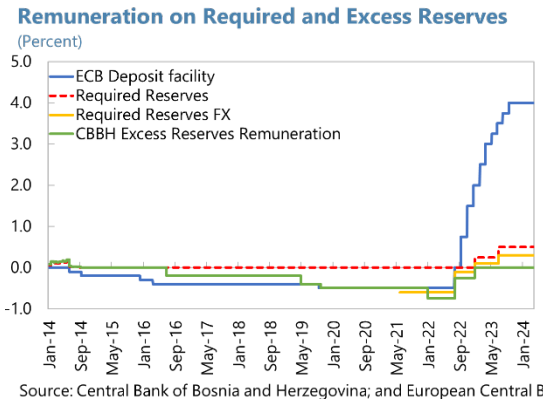
B. Interest Rate Differentials and Capital Flows

4. Following the ECB's recent tightening cycle, the gap between euro area and BiH interest rates has widened, and there have been signs of capital outflows. BiH operates under a currency board arrangement (CBA), pegging its currency, the convertible mark (KM), to the euro at a fixed exchange rate. This arrangement dictates that the Central Bank of Bosnia and Herzegovina (CBBH), holds euro reserves at least equal to the amount of KM in circulation. As a result, ECB rates have a significant effect on financial dynamics in BiH through, inter alia, their effect on relative prices. The widening gap between ECB rates and the remuneration offered by the CBBH on banks' required reserves has undermined the attractiveness of holding KM reserves, leading banks to seek higher returns elsewhere via capital outflows. Banks' foreign assets increased by close to KM 1.7 billion, while excess reserves in KM declined by close to KM 800 million since monetary tightening started in mid-2022. Foreign currency deposits in non-resident institutions account for most of the change in banks' foreign assets (Figure 1). This situation underscores the challenges faced by

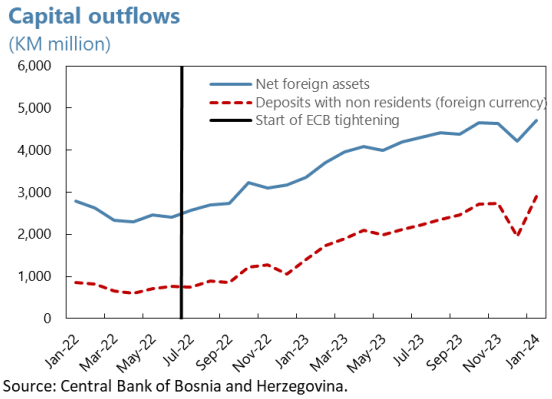


BiH in maintaining the stability of its CBA amid evolving global economic conditions and diverging interest rate dynamics.

Figure 1. Bosnia and Herzegovina: Remuneration Rates and Capital Outflows



Source: Central Bank of Bosnia and Herzegovina; and European Central B



Source: Central Bank of Bosnia and Herzegovina.

5. There is a significant relationship between the interest rate differential with respect to the ECB policy rate and BiH capital flows. Economic theory suggests that a positive difference between the CBBH policy rate and the ECB would be expected to attract inflows, whereas an unfavorable spread would be likely to encourage outflows. To quantify this effect, staff ran a regression with banks' net foreign assets (NFA) as the dependent variable and the spread in short-term rates between the euro area and BiH as the explanatory variable. Short-term rates are the 1-month Euribor and the weighted deposit rates of BiH households and NFCs with maturity up to 1 year.[3] Results show that this relationship is statistically significant, with a one percentage point increase in the spread being associated with an average of KM 630 million increase in bank net foreign assets. The euro area volatility index (VIX), total remittances to BiH, and the inflation differential with the euro area are added as control variables.[4]

Table 1. Bosnia and Herzegovina: The Effect of the Interest Rate Spread on Capital Flows

	(1)
VARIABLES	NFA
Spread	630.3***
	(86.82)
Euro area VIX	39.46***
	(10.97)
Remittances	4.626***
	(0.735)
Inflation differential	3,711
	(4,336)
Constant	-4,987***
	(1,033)
Observations	140
R-squared	0.743

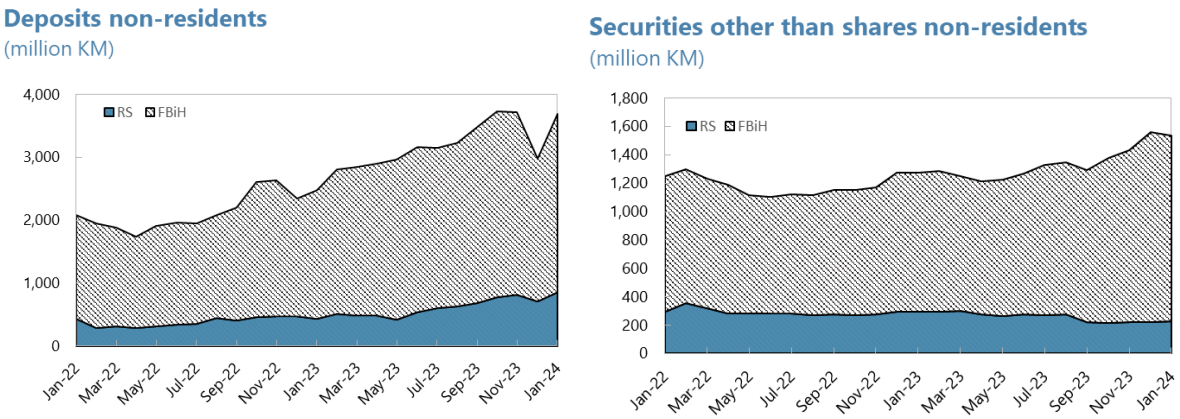
Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Sample: January 2012 to September 2023

[3] These rates were chosen over the ECB's deposit facility rate and the CBBH's remuneration rate on bank's required reserves due to the more infrequent changes of the latter.

[4] The coefficients of the control variables are relatively small compared to that of the main variable of interest, which, together with a high R^2, suggests that the spread explains most of the variability in NFA.

6. So far, most capital outflows have consisted of money market placements in the euro area, but securities holdings have picked up recently. Most of the increase in banks' foreign assets are related to their placements of callable deposits at euro area banks to benefit from the higher remuneration rates offered. However, monetary survey data show an uptick in the stock of non-resident securities other than shares in foreign currency, particularly in FBiH.

Figure 2. Bosnia and Herzegovina: Bank Claims on Non-Residents



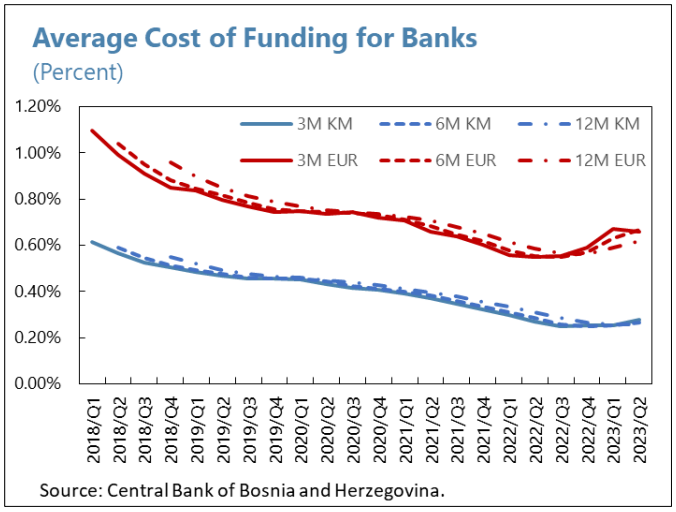
Source: Central Bank of Bosnia and Herzegovina.

7. Although capital outflows have been continuous, they have been gradual and there are no signs of significant acceleration, partially due to regulatory measures. Despite the increase in capital outflows, regulatory limits on residents' placements of deposits abroad, as well as on exposures to foreign sovereign bonds, have contained the level of outflows that could have been observed in the absence of frictions.[5] Although these measures may have helped prevent the full extent of capital outflows, it is important to note that restrictive measures could hamper market functioning and conceal underlying dynamics.

8. So far, capital outflows have not significantly affected local lending volumes. The CBBH Bank Lending Survey indicates strong demand for loans throughout the year, particularly from corporates. Credit conditions somewhat tightened on the back of higher cost of funds and perception of risk, and rejection rates for loans to households and enterprises has increased in the last four quarters. Despite this, the monetary survey shows that credit to the private sector grew by 7.4 percent y-o-y in 2023. This suggests that so far, banks have enough excess liquidity to absorb domestic demand for credit as well as search for high yields abroad.

[5] Private individuals must seek the approval from the entity's Ministry of Finance to open a bank account abroad, with laws specifying the permissible terms. Permission is also required for carrying cash exceeding €10,000 across the border. Banking agencies set the ceiling on banks' exposure to foreign sovereigns equal to the amount of regulatory capital, until end-2024.

9. Despite the interest rate spread between the euro area and BiH, funding costs in both currencies have stayed low in the BiH domestic market. With euro area rates considerably higher than domestic rates, banks could raise the remuneration of euro deposits to raise funds and place them abroad at a higher remuneration. This could lead to euroization of banks' funding base. However, remuneration of euro deposits in the local market has remained low, possibly because of high transaction costs for currency exchange in BiH, as well as a limited retail FX market. The CBBH publishes reference rates, which report the average cost of deposit funding for banks. Funding costs have stayed low in both KM and EUR (0.28 and 0.66 percent, respectively, for the 3-month tenor as of 2023Q2). As a result, the composition of deposits between the two currencies has remained stable.

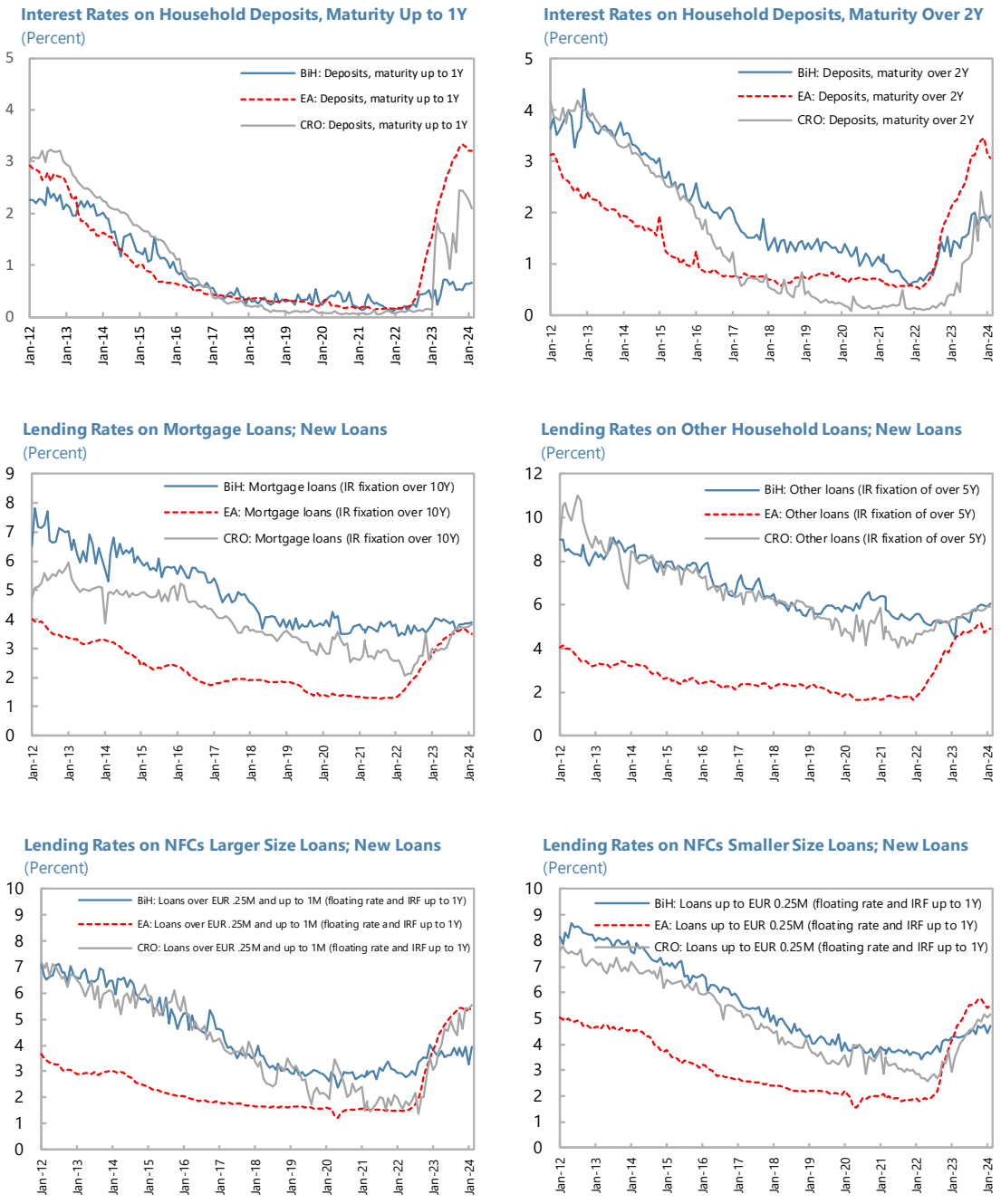


C. Domestic Interest Rates and Capital Allocation

10. The rise in interest rates in BiH is still lagging the much faster increase in the euro area, as well as in neighboring countries (Figure 3). Lending rates remain flat and close to historical lows, especially for mortgages. Despite some marginal increase, borrowing costs for companies are now lower in BiH than in the euro area. Rates on deposits have increased, primarily for longer-term maturities, without impairing banks' profits in 2023, which are likely to be record-high. The delayed adjustment could be partly due to a higher reliance on domestic funding and prevailing fixed interest rate loans (particularly to households).

11. Furthermore, the authorities have implemented measures to contain the possible increase in interest rates. In October 2022, BiH's banking agencies published a decision to effectively limit the increase of lending rates. This measure—initially until end-2023 and subsequently extended to June 2024—stated that for increases greater than 200 bps for any loan, banks would have to increase the amount of provisions made for such loan. This disincentivizes interest rate increases on lending because setting aside additional provisions means lower profitability and capital adequacy ratios, and idle funds. As a result, the increase in lending interest rates have been limited. Banks themselves have reportedly been reluctant to increase lending rates, mostly due to fears about asset quality, and anecdotal evidence, including staff discussions with banks, suggests that the measures are not strictly binding as banks would not have increased rates even in the absence of restrictions. However, with NPLs low at 3.8 percent as of end-2023, such fears about deteriorating asset quality following interest rate increases seem a second order consideration. Another factor keeping lending rates low is strong competition among the country's many banks.

Figure 3. Bosnia and Herzegovina: Deposit and Lending Interest Rate Dynamics



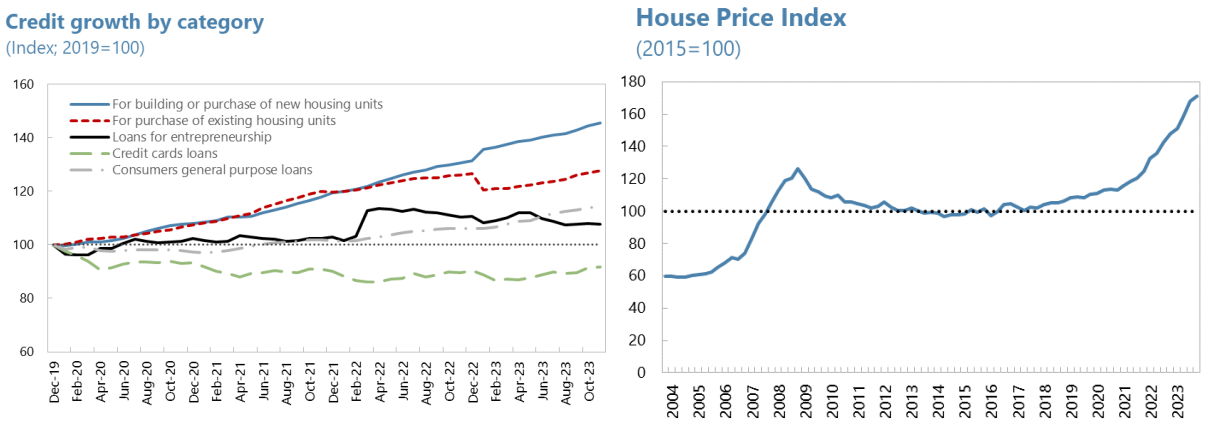
Source: European Central Bank, Central Bank of Bosnia and Herzegovina

12. Domestic financial markets are underdeveloped, leaving consumers with little alternatives for investment beyond deposits and real estate. Deposit rates are low, and the main alternative for investment for many households is real estate. This, paired with low interest rates for loans, could raise financial stability concerns if housing prices accelerated abruptly or households

borrowed excessively leading to over indebtedness.[6] Data to appropriately monitor real estate prices are scarce. On the other hand, if real estate cannot absorb excess savings, excess liquidity might remain in the system and further exacerbate downward pressures on interest rates.

13. Household lending for home purchase has led the increase in credit growth by category since 2019. Although most household loans are general purpose, there has been a significant pick-up in mortgage lending. In addition, lending for home purchase may be underestimated in the data because some portion of general-purpose lending ultimately is used to purchase new or existing homes. This implies that some portion of real estate related lending is not collateralized by the property. The banking agencies have issued regulation to limit the amount of such loans to 50,000 KM per person, and to a 10-year maximum maturity to limit the exposure of banks to this form of uncollateralized arrangements.[7]

Figure 4. Bosnia and Herzegovina: Developments in the Real Estate Market



Source: Central Bank of Bosnia and Herzegovina.

14. House prices have increased significantly since 2019 after a long period of subdued activity. House prices remained stable in the aftermath of the GFC, lifting off before the pandemic, and accelerating significantly since 2021. Low interest rates and limited investment opportunities have led to increased demand for real estate, putting upward pressure on prices.

15. As an alternative form of investment, the RS is considering issuing retail bonds for individuals to participate in the market for sovereign debt. Financial literacy is low and financial markets are shallow, so this option could help provide households with an alternative investment beyond deposits and real estate. In the medium term it is expected that volumes would be relatively low, but the presence of these bonds in the market could incentivize banks to raise their deposit

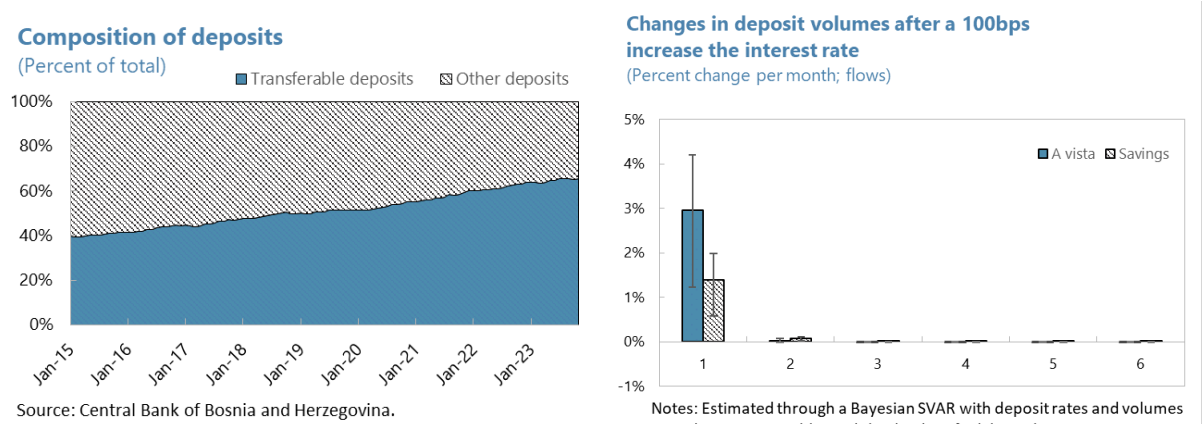
[6] See IMF Country Report No. 23/324 – Annex IV. The Implications of the Global Financial Tightening for Bosnia and Herzegovina.

[7] See decision of Banking Agency of Republika Srpska and decision of Banking Agency of Federation of BiH.

rates as a response. In fact, the announcement may have already had some effect as some banks reportedly offered promotional deposit rates in response to the news.

16. Estimates show that the relative elasticities of demand and savings deposits, together with the latest compression in their interest rates, has led to a switch from term to a vista deposits, with implications for bank funding. Elasticities are estimated using a Bayesian SVAR model with interest rates and volumes as endogenous variables and sign restrictions. Estimates show that savings deposits are generally stickier than a vista deposits. For a 100 bps increase in remuneration, savings deposit volumes grow by 1.4 percent in the month following the interest rate increase, with no significant further increases in the subsequent months. In contrast, a vista deposit volumes increase by 2.9 percent for the same change in remuneration (Figure 5). This is intuitive since, for the same increase in remuneration, households prefer to keep their deposits in a more liquid form with no early withdrawal penalties. Indeed, households and NFCs in BiH hold most of their funds in checking accounts and make little use of savings accounts. Although this is a long-term phenomenon, it may have been exacerbated due to the compression of interest rate differentials between a vista deposits and term deposits since the beginning of the previous monetary policy loosening cycle by the ECB. This trend has somewhat reversed in recent months, but the interest rate differential remains low. This affects bank funding by making it more short-term and can have financial stability implications as short-term funding is generally less stable than longer-term funding, and has implications for maturity transformation. To attract stable forms of funding, banks would need to increase remuneration comparatively more on savings deposits.

Figure 5. Bosnia and Herzegovina: Deposit Composition and Price Elasticities



Source: Central Bank of Bosnia and Herzegovina.

Notes: Estimated through a Bayesian SVAR with deposit rates and volumes as endogenous variables and shocks identified through sign restrictions.

D. Conclusions and Policy Recommendations

17. Interest rates have increased globally in response to inflation; however, pass-through of policy rates to lending and deposit rates has been sluggish and heterogeneous across countries. In response to the surge in inflation caused by the pandemic and spells of supply chain disruptions, many central banks around the world have increased their policy rates. However, in the

wake of unconventional monetary policy, excess liquidity is still abundant, dampening pass-through. In fact, many countries now face sluggish transmission of policy rates to lending and deposit rates.

18. With a CBA linked to the euro, BiH's economy is susceptible to changes in euro area monetary policy. A widening of the spread between local interest rates and the euro area changes relative prices, with potential effects on capital flows. This is particularly pronounced in BiH since the local currency is pegged to the euro so the exchange rate cannot adapt to close this gap.

19. The interest rate gap between BiH and the euro area has led to capital outflows. It is estimated that since July 2022, when the ECB started hiking interest rates, capital outflows have amounted to around KM 1.7 billion. The gap between the CBBH's remuneration of banks' required reserves and the ECB's deposit facility rate has widened to 350 bps, leading many BiH banks to place funds in the euro area, mostly in overnight deposits, in search for yield.

20. Domestically, the pass-through has been slow with possible effects on capital allocation. Low remuneration of deposits, together with an underdeveloped financial market, leaves households and firms with few investment alternatives beyond real estate. This could cause real estate overheating, which is difficult to assess due to limited data availability. In addition, the composition of bank funding in BiH has historically been tilted toward short-term deposits, with little savings deposits. This makes bank funding less stable. This issue could be exacerbated by the current compression of the spread between a vista and savings deposits, which incentivizes households and firms to hold their funds in the former.

21. The authorities should narrow the gap between CBBH remuneration of required reserves and the ECB's deposit facility rate to avoid further capital outflows. Given the significant relationship between the interest rate spread with the euro area and capital flows in BiH, narrowing this gap could prevent further capital outflows.

22. Domestically, the authorities should allow interest rates to adjust to global conditions. Interest rates should be free to adjust to market dynamics to avoid distortions, mispricing of risk, and capital misallocation.

23. The authorities should monitor developments in the real estate market. As the only investment alternative in the domestic market, real estate could run the risk of overheating if households and firms borrow at very low rates to invest in this market. The authorities should compute, monitor, and make available key indicators such as house price indices, credit growth in the mortgage sector, and measures of indebtedness.

References

Beyer et al. (2024). Monetary policy pass-through to interest rates: stylized facts from 30 European countries. IMF Working Paper WP/24/9.

ECB Economic Bulletin Issue 3/2024

IMF Country Report No. 23/324 – Annex IV. The Implications of the Global Financial Tightening for Bosnia and Herzegovina.

Central Bank of Bosnia and Herzegovina. Bank Lending Survey.

LABOR MARKET DEVELOPMENTS[1]

This paper provides an overview of recent employment and wage developments in Bosnia and Herzegovina (BiH), with comparisons to other countries in the Western Balkans. It reviews minimum wage (MW) policies and analyzes the impact of potential MW reforms on the labor market, including average wages and employment, competitiveness, and budgets. It recommends strengthening and harmonizing minimum wage legislation and policies across the two entities not to undermine employment and erode competitiveness, and disassociating social benefit adjustments from wage increases and linking them to relevant macroeconomic indicators.

A. Labor Market Trends and Indicators

1. BiH employment surpassed its pre-pandemic level in early-2022 (Figure 1). Following a decline by around 4 percent between March and August 2020, employment subsequently recovered to exceed the pre-pandemic level in January 2022. By end-2023, it had risen by 2.7 percent above the end-2019 level. Only private sector employment declined during the pandemic,[2] while public sector employment continued to grow largely in line with trend.

2. Job losses and recovery have been uneven across the private sector. Jobs in science and technology sectors, including information and communication, professional, scientific and technical activities, were little impacted, growing steadily and rising by 10 to 30 percent relative to 2019 levels by end-2023 (Figure 1). In contrast, jobs in traditional sectors such as agriculture, mining, hospitality, and real estate were hard hit: by December 2023, employment in real estate and mining had contracted by around 13 percent relative to end-2019, while agriculture and hospitality employment remained sluggish despite strong tourism in 2023. Real estate employment also declined despite the pickup in housing prices, whereas the decline in mining employment reflected weakening activity and financial operations (losses and payment arrears). However, although there are no detailed data on labor market shortages by sector, local employment portals are reporting more advertisements for job openings in IT, construction, and hospitality sectors.[3]

3. Public sector employment rose further, mainly in education and health. While employment in public administration, defense, and security services increased only marginally (by 1.6 percent), education and health sector employment rose by 4 and 10 percent, respectively. However, as a share of total employment, the public sector continues to employ around 25 percent

[1] Prepared By Nabil Ben Ltaifa and Bobana Cegar with research support by Estefania Cohn Bech, useful discussions during mission, and comments from Alina Iancu and Mark Horton. The paper's key findings and recommendations were presented to authorities and IFI representatives in Banja Luka and Sarajevo during the 2024 Article IV mission (March 6 -19, 2024).

[2] At the time, Republika Srpska (RS) government covered for all employers whose operations were prohibited during lockdown the gross salary cost for their workers in the amount of minimum wage, while the Federation of Bosnia and Herzegovina (FBiH) government covered only the social security contributions and tax calculated on minimum wage.

[3] Including "MojPosao.ba" (MojPosao.ba | Vodeći portal za zapošljavanje) and "BoljiPosao" (BoljiPosao.com - Portal za zaposlenje, kandidate, karijerno usmjerene pojedince, karijeru i kadrovanje. Svježa radna mjesta.).

versus 75 percent for the private sector (9 percent in public administration, defense, and security services, and 16 percent in education and health). This share would increase to over 35 percent, if public enterprises' employment is counted as part of the public sector (Cegar, 2020).

4. Women continue to substantially lag men in labor market outcomes (Figure 1). These gaps continued largely unchanged during the recent shocks and throughout the recovery. Female participation and employment stood at 37.0 percent and 31.0 percent, respectively, in 2023 Q4, much below 60.7 percent and 54.4 percent, respectively, for male. Further, female unemployment was also much higher, 16.2 percent compared with 10.4 percent for male.

5. The unemployment rate in BiH remains among the highest in Europe and above the average for the Western Balkans (Figure 1). The unemployment rate declined to 12.7 percent in 2023 Q4 from 15.4 percent in 2022 and 19.1 percent in 2021 Q1.[4] However, it remained among the highest in Europe. Relative to the Western Balkans, the higher unemployment rate can be explained by the higher female unemployment (19.8 percent in 2022) compared with an average of 12.5 percent for Western Balkans, while male unemployment rate is broadly in line with the average for the region. Youth unemployment (at 35 percent in 2022) is also much higher than the average for Western Balkans (slightly above North Macedonia and around 15 percentage points higher than Albania and Kosovo).[5]

6. High unemployment seems at odds with labor market shortages. However, a stronger increase in qualified labor employment in science and technology sectors in recent years and weaker employment growth for less qualified workers point to skill mismatches. Further, part of the unemployed work in the gray (informal) economy and are considered unemployed only because of the possible benefits they may receive (e.g., health insurance through the employment office in the FBiH, unemployment allowances, social benefits related to employment status). Unemployment allowances vary across the two entities: they range from 45 to 50 percent of the worker's previous three-month average salary and extend from 1 to 18 months in the RS and are set at 40 percent of the average salary in FBiH and extend from 3 to 24 months.

B. Wage Developments

7. Both FBiH and RS have relied extensively on wage increases in the last two years to mitigate the impact of inflation (Figure 2). Average nominal wages were 24.5 percent higher in December 2023 compared to end-2021. Real average wages increased by around 6 percent over the same period, declining through end-2022 and turning positive in early-2023. Average net wages increased more rapidly in RS than in FBiH, reversing a pre-pandemic trend where average net wages in FBiH grew faster.

[4] The methodology for calculating the BiH unemployment rate has changed since 2021, thus post-2021 unemployment rates are not comparable with 2020 and preceding years.

[5] Figure 1, panels 5 and 6 on gender and youth unemployment are showing data for 2022, as data for 2023 is not yet available for many of the countries in the region. Youth unemployment series is not available for Montenegro.

8. Wages in the private sector grew more than in the public sector but remain on average lower (Figure 2). Wages in the public sector were 18-25 percent higher in December 2023 compared to end-2021. Private sector wages were 20-40 percent higher, except in electricity and gas and financial activities, where the salaries increased by 14 and 5 percent, respectively. In December 2023, the ratio of private sector wages to total average net wages stood at around 89 percent, compared with 130 percent for public administration and defense and 112 percent for health and education.

9. The public wage bill in BiH remains among the highest in the region (Figure 2). This is even as public sector real wages in BiH increased less in recent years than in all other Western Balkan countries except Kosovo, while private sector wage growth was comparable to the average for Western Balkans.

10. Minimum wages (MW) were increased significantly in both entities, reaching close to 70 percent of average wages in the RS (Figure 3). The cumulative increase in MWs reached 52 and 100 percent in FBiH and RS, respectively, between December 2019 and January 2024. FBiH continues to have the lowest MW (in euros) in the Western Balkans, while the RS MW has exceeded Albania and North Macedonia but remains below those of Montenegro and Serbia (Figure 3). However, measured as a share of average net wages, the RS MW, at 69 percent (46 percent for FBiH), is the highest in the region, and around 10 percentage points higher than the Western Balkans average (61 percent).

11. Wages increased more than labor market productivity (Figure 3). From 2019 Q4 to 2023 Q4, average real net wages increased by 13 percent while productivity growth, uneven at times, was lower, at around 7.8 percent.

C. Legal Framework and Proposed Reforms

The Current Legal Framework for the MW

12. The MW has its legal basis in labor laws.[6] In both entities, these laws stipulate that a full-time worker cannot receive a salary that is lower than the prescribed MW. The entity governments determine the amount of the MW annually after consultation with their respective Economic and Social Councils (ESC). If there is no agreed position of ESC, the government makes the decision independently, and this should be made in the last quarter of the current year for the following year.

13. The ESC consists of representatives of the government, trade unions, and employers' associations. It is the highest tripartite body in both entities to improve social dialogue on issues important to workers and employers, comprising 18 members in FBiH, and 9 members in RS (6 or 3 members from each of the three partner groups, respectively). The ministry of labor participates in the preparation of data that is used for analysis by the ESC, which usually include relevant macroeconomic indicators such as trends in GDP, wages, prices, employment, and cost of living.

[6] FBiH labor law (Official Gazette, 26/16, 89/18, …, 44/22) and RS labor law (Official Gazette, 1/16, 66/18, …, 112/23).

However, an agreement within the ESC is almost never reached due to opposing views of representatives.

14. Employment allowances are common, but are not considered part of the (minimum) salary. These allowances include hot meals, transportation, vacation, premia for working at night and on holidays, and salary increases based on past work. The right to these benefits derives either from the labor law or the general collective agreement, branch agreements, or individual employment contracts. By-laws define more precisely who has the right to benefits, in what amount and under what conditions, and these rights cannot be lower than those defined by the labor law. These allowances are added to the employee's salary and thus are not included in the defined MW (Box 1). Exceptions are employees in the RS public sector, where hot meal and vacation allowances are included in the salary.[7]

15. There is a methodology for determining the MW in FBiH, but not in the RS. According to the FBiH decree, in force since 2022:

- The increase for a given year cannot be lower than the sum of 50 percent of the increase in consumer prices and 50 percent of the increase in GDP (not specified though if real or nominal) for January – September of the previous year.
- The increase of MW can be higher than the formula-based amount, but cannot be lower than the latest regulated MW.
- MW should be greater than or equal to 55 percent of average wage (not clear whether that applies to the MW at the time of adoption of the decree, or at any time).[8]

[7] This applies to employees in those areas where the government has regulated salary issues with special laws (employees in administrative bodies, public services, education and culture, justice, and public health and the Ministry of Interior). Those salaries include hot meals and vacation allowances, and together with these benefits must not be below the level of the MW defined by the government.

[8] When the decree was drafted, the intention was to define that the 2022 amount cannot be less than 55 percent of the average wage, and that adjust it according to a defined formula based on the inflation and GDP, but the provisions can also be interpreted that the MW at all times should be equal to or higher than 55 percent of the average salary.

Box 1. Bosnia and Herzegovina: Employment Allowances

According to the labor laws or collective and branch agreements, employees are entitled to receive allowances arising from employment. In both entities, the employer is obliged to increase the employee's income based on difficult working conditions, overtime work, night work, work during weekly rest, or work during holidays. This increase ranges from 15 percent (in case of work during a weekly holiday) to 50 percent (in case of work during a holiday) of the net hourly wage for each hour of work. For each year of work, the worker has the right to a salary increase of at least 0.3 percent (in the RS) or 0.4 percent (in the FBiH). Branch collective agreements can define these allowances in a larger amount. These allowances are taxed in both entities.

Table 1. An overview of allowances arising from employment

		Meal	Vacation	Transportation
Who is obliged to pay	FBiH	Employers who do not have organized meals at the workplace (in kind)	Not mandatory by the law; definded by the branch agreements	Not mandatory by the law; definded by the branch agreements
	RS			Employers who do not have organized transportation to and from working places
Prescribed (minimum) amount [1]	FBiH	From 0.5 to 1 percent of average net salary	Defined by individual brach collective agreements (usually up to non-taxable amount)	Defined by individual brach collective agreements (usually up to non-taxable amount)
	RS	In kind: 0.75 percent of average net salary; in cash: 0.85 percent of average gross salary	Defined by individual brach collective agreements (in most cases it is amount of minimum salary)	Ticket price in public transportation
Tax treatment	FBiH	Non-taxable up to 1 percent of average net salary	Non-taxable up to 50 percent of average net salary	Up to the price of the ticket in public transport, and in the case of using your own car from 15% of the price of 1 liter of gasoline per kilometer traveled, and at most up to the price of one and a half monthly tickets in public traffic
	RS	Taxable unless it is organized in kind up to 0.75 percent of net salary	Taxable	Up to the ticket price in public transportation
Monthly amount (2023)	FBiH	KM 245	KM 46	Around KM 66 in average
	RS	KM 197 + PIT + SSC	No data	No data
Annual net amount paid out	FBiH	KM 810.3 mn	KM 97.6 mn	KM 121.6 mn
	RS	No data	No data	No data

1) These allowances can be defined in larger amounts by individual branch agreements or individual labor contracts

Workers can also receive hot meal, vacation, and transportation allowances (Table 1). In FBiH, the obligation to pay these benefits arises from the collective labor agreement and branch agreements, while in RS, the payment for hot meals and transportation costs is an obligation under the labor law; the payment of vacation allowances is defined by branch agreements. Importantly, these allowances have different tax treatment within BiH. In FBiH they assume the role of salary to a certain extent and tax expenditures based on these three allowances are around KM 926 mn (2.9 percent of BiH GDP).[1] About 70 percent of workers in FBiH receive compensation for hot meals, and about 40 and 45 percent receive compensation for transportation and vacation, respectively. These three allowances are about 28 percent of average salary or 58 percent of MW in FBiH (40 percent of MW in RS).

Employers can also pay other benefits. Most often, it is severance pay upon termination of employment, per diem during official travel, compensation for use of one's own vehicle for official purposes, jubilee awards, one-off cash assistance for holidays, and assistance in the event of the death of an employee (to family), a family member, or in cases of serious illness. In both entities, these payments are tax-free up to a certain amount.

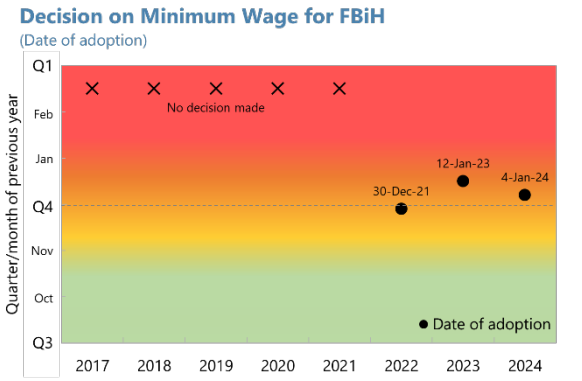
[1] For example, the employee and the employer agree on a KM 1,000 monthly income, comprising a salary of KM 700 and allowances of KM 300. Only the salary of KM 700 is taxed.

16. The authorities are generally late in determining the MW. Decisions are most often adopted late in the fourth quarter or in January (Text Figure 1). For certain years, the governments did not take decisions on the MW for the following year, and the last adopted decision continued to be applied. In some years, the MW was increased twice. Although the law stipulates that discussions

on the MW are to be conducted within the ESC, often there is no agreement between the social partners or discussions within the ESC are not conducted at all; in those cases, the government takes a decision. The MW was last determined based on the proposal of the ESC in 2018 in RS, and never in the last 20 years in the FBiH. Some by-laws that are specified in the labor law, such as the labor rulebook (in both entities) or the general collective labor agreement in the RS, have not been adopted or are no longer in force.

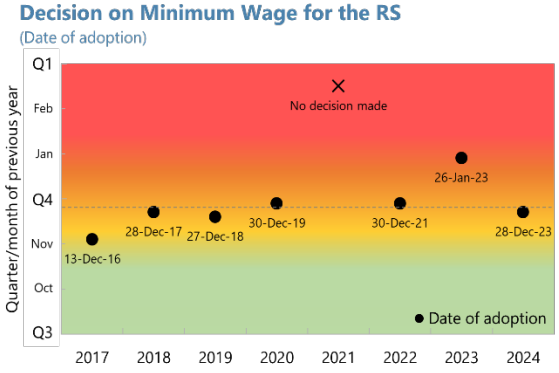
Text Figure 1. Dates of Making Decisions of the Minimum Salary

In FBiH, all decisions were made by the government.



Source: IMF staff research and illustration.
Note: The gradient background reflects the timing of the adoption in accordance to the law. Red means that the adoption of the new minimum wage was made closer to or outside of the cut-off date (not within the law).

In the RS, the decisions were made based on the ESC proposals only in 2017 and 2018.



Source: IMF staff research and illustration.
Note: The gradient background reflects the timing of the adoption in accordance to the law. Red means that the adoption of the new minimum wage was made closer to or outside of the cut-off date (not within the law). For some years, the Government increased the minimum wage during the year, except in Q4. In July 2018, the minimum wage increased starting on August 1, 2018. In May 2020, the minimum wage increased again starting June 1, 2020. In May 2022, the minimum wage increase starting on June 1, 2022.

Proposed Reforms in FBiH[9]

17. In FBiH, drafts of new laws on personal income tax (PIT) and social security contributions (SSC) have been in parliamentary procedure since 2018.[10] In the drafts adopted in the first reading, the SSC rate is reduced from 41.5 to 33 percent, while the income tax base is expanded so that the overall reform is budget neutral. Non-taxable benefits (hot meals, vacation) and dividend income are introduced in the tax base. Progressive income taxation, instead of the existing one rate, and an increase in the personal tax deduction from KM 300 to KM 700 per month, are also foreseen.[11]

[9] There are no reform proposals that are currently under consideration in the RS.

[10] Proposed together to ensure that the revenue loss from lower SSC rate is partially or fully compensated by the revenue gains from the expansion of the PIT base. The package had not received so far parliamentary majority.

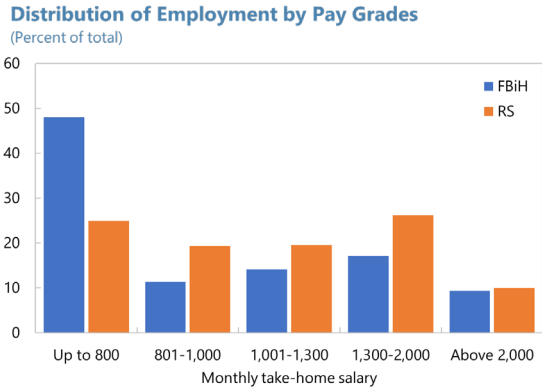
[11] Materijali (2022-2026) | Parlament Federacije Bosne i Hercegovine - Predstavnički dom (predstavnickidom-pfbih.gov.ba)

18. A proposed MW law has recently been added to the fiscal legislation package. The draft law, sent to the parliamentary procedure in 2021, proposed a MW of 75 percent of the average salary in 2022, 80 percent in 2023, and annual adjustments based on changes in inflation, gross salary, and employment after that. This proposal specified that the MW would not include benefits based on difficult working conditions, overtime and night work or work on Sundays and holidays, but did not specify the treatment of meal, transportation, and vacation allowances (estimated at about KM 350 monthly). According to government estimates, including these benefits could raise the minimum wage to about KM 1,000 (or 77 percent of the current average salary).

D. Potential Impact of Minimum Wage Reforms

19. Significant increases in MWs are likely to increase BiH wages overall. The impact depends on whether the minimum wage is binding, the share of minimum-wage earners in the economy, and the distribution of wages. In BiH, decisions on minimum wages are binding, and in 2022 about 22 percent of employees worked for minimum wage, and about 55 percent (59.4 percent in FBiH and 44.2 percent in RS) received a take home salary up to KM 1,000 per month (Text Figure 2). Based on our calculations, the 2024 increase in RS MW of 28.6 percent could raise the average wage by 4.3 percent assuming no change in other wages. However, if we assume that other wages will also increase by one fifth of the minimum wage increase (5.7 percent), the average wage will increase by 8.8 percent. In FBiH, a potential further increase of 67.8 percent in the minimum wage to KM 1,000, per ongoing public discussions, could lead to an increase of 17.5 percent in the average wage with no change in other wages, and of 26 percent with an increase in other salaries. These increases imply a passthrough ranging from 0.15 to 0.31 in the RS and 0.26 to 0.38 in the FBiH.[12] Prior pass-through estimate range from slight negative in Romania (Andreica et al, 2010) to 0.01-0.15 in CESEE countries (Raei et al, 2016) to 0.8 in US (Neumark et al, 2005).

Text Figure 2. Employees per Pay Grade



Source: IMF staff calculations based on authorities data.

20. Assessing the impact of higher MWs on BiH employment is difficult. Previous country experiences showed that the impact of MW growth on employment varied significantly across countries. Raei et al (2016), citing several studies in CESEE, found that higher MWs led to dis-employment (or loss of employment), while Lotti et al (2017) found, in a cross-country study, that higher MWs would increase informality. In BiH, it is difficult to disentangle the post-crisis recovery in employment from MW increases. However, there is a concern in the RS that the recent sizable

[12] This range is obtained based on the ratios of the percentage change in average wage to change in minimum wage, under assumptions (i) no change in other wages, and (ii) with change in other wages.

increase in the MW will pose challenges to utility companies and public enterprises, particularly those with regulated prices. One of the authorities' main arguments for increasing the minimum wage is to make employment more attractive and stem the ongoing domestic labor emigration. However, many, including in the private sector, expressed concern that large, ad hoc changes in MWs could lead to job losses, particularly at the time of low demand for exports from Europe. Informality, estimated at around 30 percent in 2018 in BiH (Efendic, 2018), could also rise.[13]

21. Significant MW increases may erode BiH companies' external competitiveness. Higher wage costs reduce firm profitability unless firms can raise sales prices or increase productivity (by reducing the number of employees or working hours, automating certain processes to reduce the need for labor, or saving in some other non-wage costs). Labor intensive export-oriented companies (such as wood-processing and textiles) are likely to be among the most affected by rises in minimum and overall wages. Unlike domestically-focused companies, they cannot easily change prices, especially in the short term, as they face competition, would have to renegotiate contracts, and are already facing depressed demand from Europe. The growth of real wages in BiH has already surpassed productivity since 2023.

22. However, depending on employment outcomes, significant MW increases may have a positive fiscal impact (Text Table 1). Increasing MWs by 28.6 percent in RS and 67 percent in FBiH could lead to an increase in PIT and SSC revenues by around 4 and 19 percent—KM 115 mn (0.7 percent of RS GDP) and KM 1.2 bn (3.6 percent of FBiH GDP), respectively—based on the direct impact on wages and assuming unchanged employment. In RS, close to 6 percent of general government employees receive MW and total allocations for wages would increase by 0.9 percent or 0.1 percent of RS GDP. In FBiH, there is no direct impact on the public sector wage bill since no employees at the budgetary beneficiary institutions receive MW.[14] However, there may be a significant indirect impact if average wages go up. Social spending would likely go up, as some social benefits, particularly in FBiH, are determined as a percent of the minimum or average wage. In RS, some social benefits are determined as a percent of MW, but the percent is defined every year by the government.

[13] Informality reportedly takes different forms in BiH, including using envelope payments (to top up declared wages), underreporting of hours worked, and fully operating in the shadow economy.

[14] The Law on Salaries and Remunerations in Public Authorities FBiH ("Official Gazette of the FBiH", No. 45/2010, 111/2012, 20/2017 and 22/2019 - decision of the Constitutional Court) prescribes that the MW in government sector cannot be lower than 70 percent of the AW in FBiH.

Table 1. Bosnia and Herzegovina: Annual Fiscal Impact of MW Increase

	MW increase	SSC and PIT revenues			Wage bill			Spending for social benefits		
	Percent change	Percent change	KM mn.	Percent of GDP	Percent change	KM mn.	Percent of GDP	Percent change	KM mn.	Percent of GDP
FBiH	67.8	18.8	1200	3.6	-	-	-	31.6	232	0.7
RS	28.6	4.4	115	0.7	0.9	12	0.1	-	-	-

Source: IMF staff calculations.
Note: MW increase represents actual increase in RS in 2024, and discussed increase in FBiH. Estimates are made by keeping other parameters constant. Data for social benefits refers to central government, while revenues and wage bill calculations are done for general government.

E. Recommendations

23. The authorities need to enhance labor market transparency and encourage more orderly wage negotiation, particularly by:

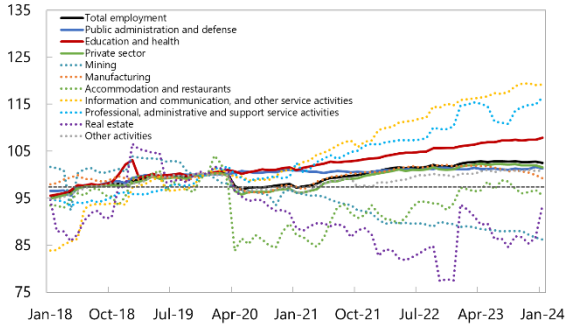
- Avoiding high or frequent MW adjustments or indexation that would undermine competitiveness and weaken labor market outcomes.
- Avoiding minimum wage increases above inflation without an agreed methodology linked to productivity.
- Delinking social benefits from MW/average wage increases and linking them to the movements of relevant macroeconomic indicators, such as backward-looking inflation.
- Harmonizing, strengthening, and enforcing labor market legislation across the two entities—including the methodology to set MW, and strengthening consultation with economic partners.
- Building capacity to closely monitor labor markets and poverty indicators and the impact of MW adjustments on labor market outcomes, including by enhancing the quality of Labor Force Survey data, and strengthening data collection and the technical capacity.

24. The authorities should also encourage broader reforms to enhance labor market participation and stem emigration, including by supporting flexible employment, expanding childcare to encourage higher female participation, and tackling skill mismatches and long-term unemployment.

Figure 1. Bosnia and Herzegovina: Labor Market Indicators

Employment has exceeded pre-pandemic level since January 2022, led by strong performance in science and IT sectors.

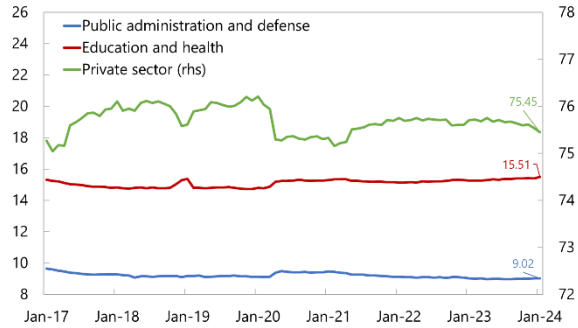
BiH: Employment by Sector
(Index, Dec 2019=100)



Sources: Bosnia and Herzegovina Agency for Statistics; Haver Analytics; and IMF staff calculations.
Note: All sectors (in bold lines) add up to total employment.

The share of public sector employment in total employment continues broadly unchanged.

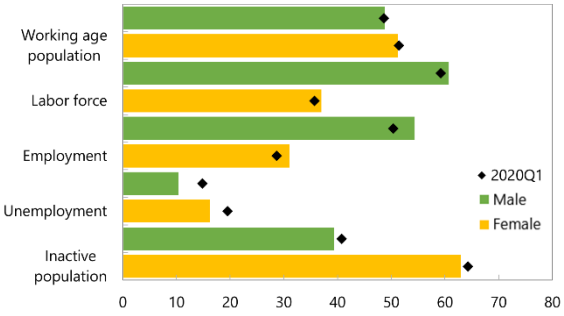
BiH: Share of Public vs Private Sector Employment
(Percent of total employment)



Sources: Bosnia and Herzegovina Agency for Statistics; Haver Analytics; and IMF staff calculations.
Note: All sectors add up to total employment.

Women continued to lag men substantially in labor market outcomes.

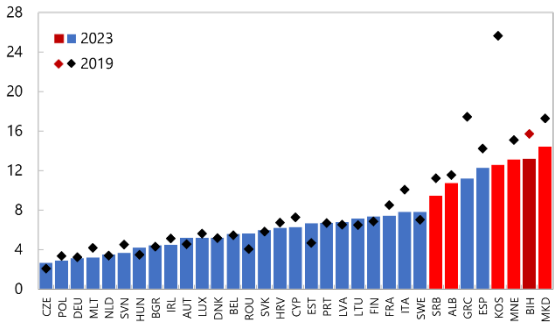
BiH: Labor Market Structure, 2023Q4
(Percent of total labor force by gender) 1/



Sources: Bosnia and Herzegovina Agency for Statistics; and Haver Analytics.
Note: 1/ Working age population and Inactive population by gender as percent of Total working age population.

BiH unemployment remains among the highest in Europe and the Western Balkans…

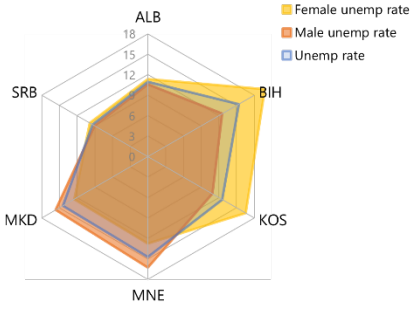
Unemployment Rate
(Percent)



Source: National statistical offices; Eurostat; IMF World Economic Outlook; and IMF staff calculations.
Note: Western Balkans in red. Kosovo and North Macedonia are showing value for 2022.

…driven largely by the higher female unemployment compared to most countries in the region.

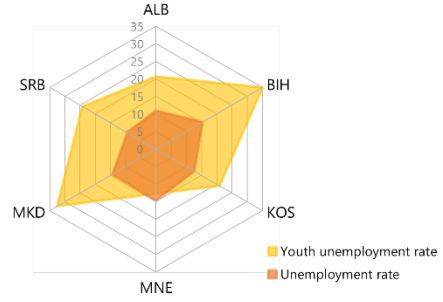
Western Balkans: Female and Male Unemployment Rate, 2022 average
(Percent)



Sources: National statistical offices; Haver Analytics; and IMF staff calculations.

Youth unemployment is also higher by more than 10 percentage points than the average for Western Balkans.

Western Balkans: Youth Unemployment Rate and Unemployment Rate, 2022 average
(Percent)

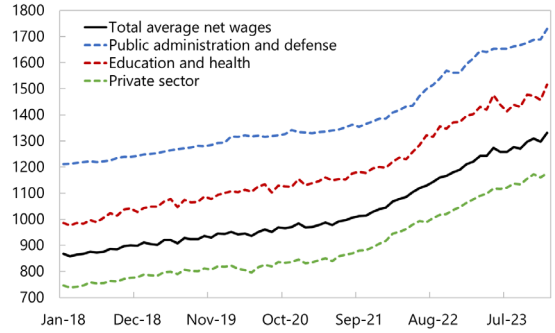


Sources: National statistical offices; Haver Analytics; and IMF staff calculations.
Note: Data on youth unemployment not available for Montenegro. Youth unemployment rate refers to unemployed persons aged 15-24, except for Albania for which the age range is 15-29.

Figure 2. Bosnia and Herzegovina: Wage Developments

Average net wages rose substantially in 2022-23.

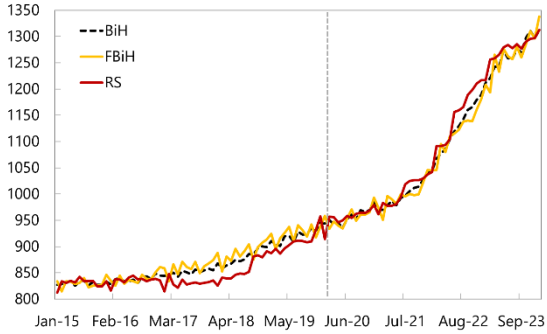
BiH: Average Net Wages by Sector
(KM; seasonally adjusted; weighted average by sector)



Sources: Bosnia and Herzegovina Agency for Statistics; Haver Analytics; and IMF staff calculations.
Note: Private sector doesn't include agriculture, forestry, and fishing sector.

Wages increased by more in the RS than in the FBiH.

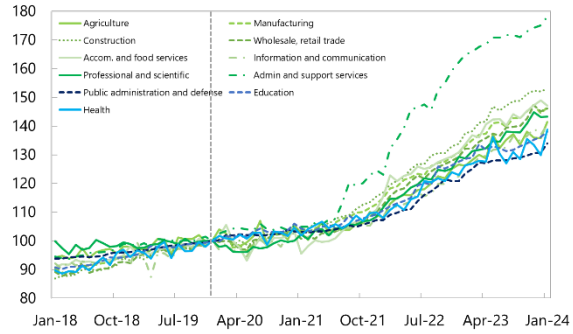
BiH: Nominal Average Net Wages
(KM)



Sources: Bosnia and Herzegovina Agency for Statistics; Haver Analytics; and IMF staff calculations.

Private sector wages grew much faster than public sector wages.

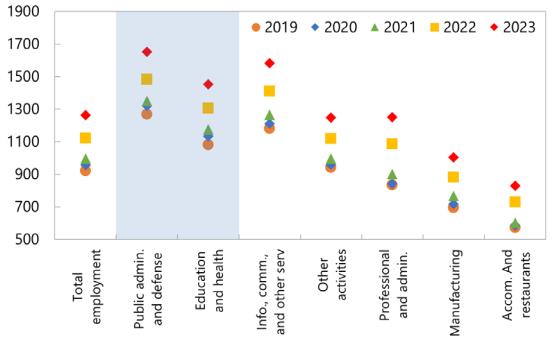
BiH: Average Net Wages by Sector
(Index, Dec 2019=100)



Sources: Bosnia and Herzegovina Agency for Statistics; Haver Analytics; and IMF staff calculations.

Public sector wages remain on average higher than wages in the private sector.

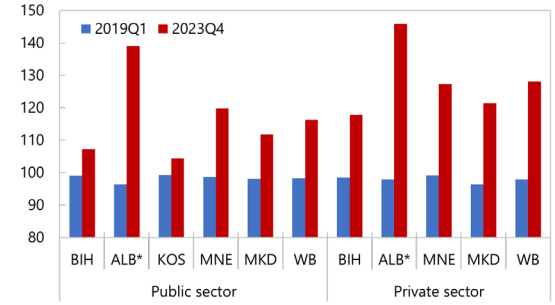
BiH: Average Net Wages by Sector
(KM)



Sources: Bosnia and Herzegovina Agency of Statistics; and IMF staff calculations.

Public sector wages grew by less than Western Balkans, while private sector wage growth was comparable.

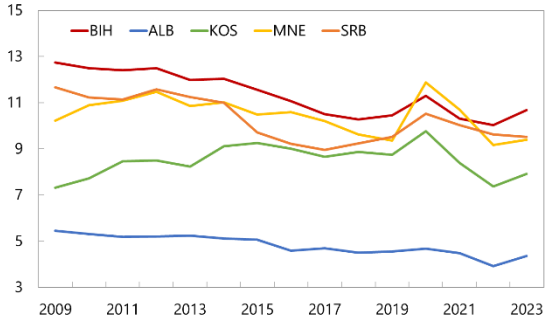
Western Balkans: Real Average Net Wages by Sector
(Index 2019=100)



Sources: National statistical offices; Haver Analytics; and IMF staff calculations.
Note: Western Balkans include Bosnia and Herzegovina, Kosovo, Montenegro, and North Macedonia. Albania shows real average gross wages by sector due to lack of average net wages data. Serbia is not included due to lack of employment data. Private sector aggregate doesn't include Kosovo, and the agriculture, forestry, and fishing sector.

BiH public sector wage bill as a share of GDP has continued however to be among the highest in the region.

Western Balkans: Compensation of Employees
(Percent of GDP)

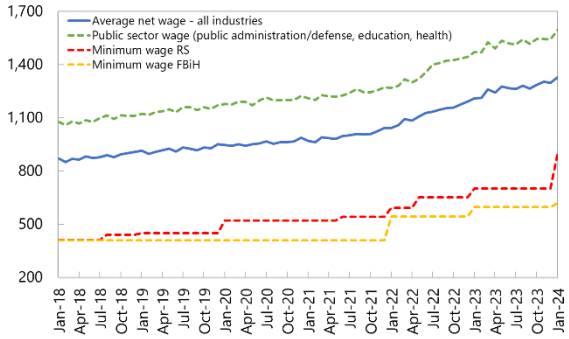


Sources: IMF World Economic Outlook; and IMF staff calculations.
Note: Data not available for North Macedonia.

Figure 3. Bosnia and Herzegovina: Minimum Wage Developments and Competitiveness

Minimum wages were increased in FBiH and RS by 52 and 100 percent, respectively, between end-2019 and January 2024.

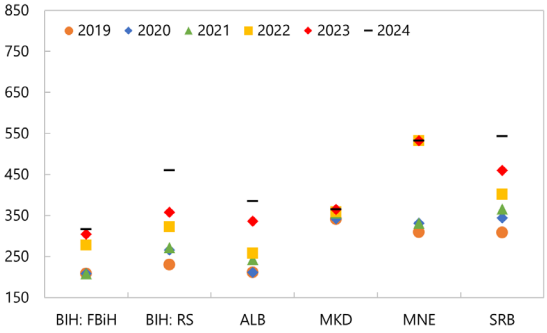
Average and Minimum Wages
(KM)



Sources: Bosnia and Herzegovina Agency for Statistics; and IMF staff calculations.

FBiH minimum wages (in Euros) remain the lowest in the region, while RS minimum wages rose to exceed those in at least 2 neighboring countries.

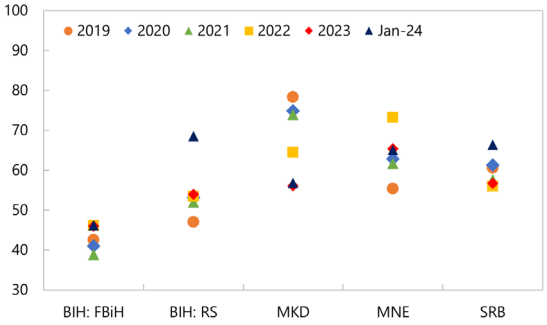
Western Balkans: Minimum Wages
(Average euros per month)



Sources: Eurostat; Central Banks; Haver Analytics; and IMF staff calculations.

The minimum wage-to-average wage ratio in RS is high compared to other Western Balkans countries…

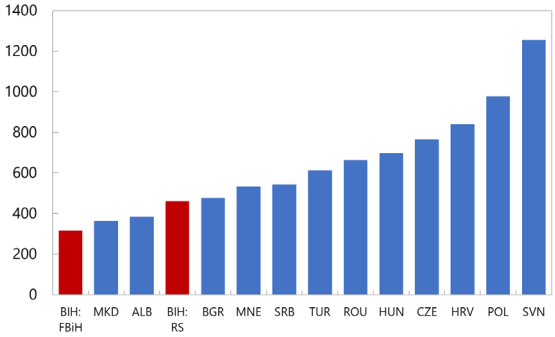
Western Balkans: Minimum Wages
(Percent of average net wages)



Sources: Eurostat; National statistical offices; Haver Analytics; and IMF staff calculations.
Note: Minimum wages are net of taxes and social security contributions (SSC) (take-home wage).

… but minimum wages remain, in Euro terms, below most other European countries.

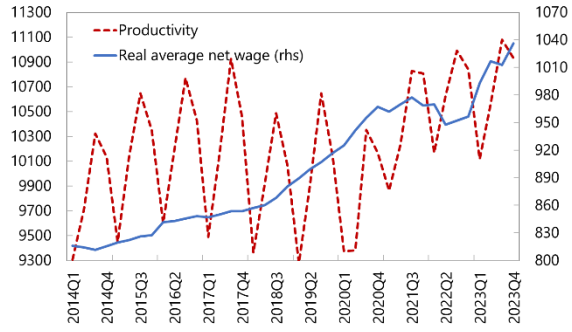
Minimum Wages in Selected European Economies
(Euros, as of March 2024)



Sources: Eurostat; and National authorities.

BiH real average net wages grew faster than productivity…

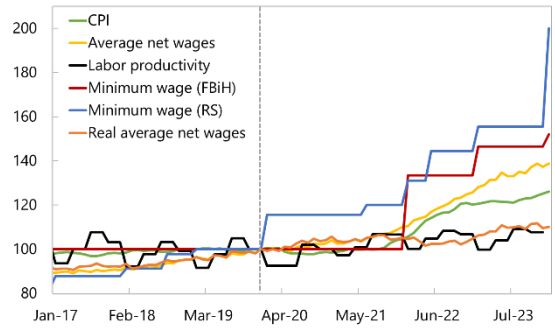
BiH: Labor Productivity and Real Average Net Wages
(KM)



Sources: Bosnia and Herzegovina Agency for Statistics; Haver Analytics; and IMF staff calculations.
Note: Labor productivity is estimated as Real GDP over employment.

…which, if sustained, could lead to a gradul erosion of external competitiveness.

BiH: Average Gross Wage, Minimum Wage, and CPI
(Index, Dec 2019=100)



Sources: Bosnia and Herzegovina Agency for Statistics; Haver Analytics; and IMF staff calculations.

References

Andreica, M., L. Aparaschivei, A. Cristescu, and N. Cataniciu, "Models of the Minimum Wage Impact upon Employment, Wages and Prices: The Romanian Case," Recent Advances in Mathematics and Computers in Business, Economics, Biology and Chemistry. Proceedings of the 11th WSEAS int. Conf. MCBE (2010).

Cegar, B., "Reforming Public Enterprises", Bosnia and Herzegovina: 2020 Article IV Consultation—Staff Report and Press Release. IMF Country Report No. 21/43 (2020).

Efendic, N., E. Pasovic, and A. Efendic, "Understanding the Informal Economy in Practice: Evidence from Bosnia and Herzegovina". Econstor.eu (2018).

Raei, F., P. Sodsriwiboon, and G. Srour, guided by C. Klingen and B. Kelmanson. "Cross-Country Report on Minimum Wages," Selected Issues Paper. IMF Report No. 16/151 (2016).

Lotti, G., J. Messina, and L. Nunziata. "Minimum Wages and Informal Employment in Developing Countries", Mimeo (2017).

Newmark, D., M. Schweitzer, and W. Wascher, "The Effects of Minimum Wages on the Distribution of Family Incomes: A non-Parametric Analysis", Journal of Human Resources, Vol. 40, No. 4 (Autum 2005).

ENERGY SECTOR AND DECARBONIZATION[1]

This paper provides an overview of the potential implications of introducing an emissions trading system (ETS) in Bosnia and Herzegovina (BiH). It provides analysis of emissions trends in BiH and highlights design considerations for an ETS, particularly in the context of the upcoming phase-in of the Carbon Border Adjustment Mechanism (CBAM) by the European Union, one of BiH's main trading partners. It then analyses the impact of electricity price liberalization and ETS implementation on overall emissions, GDP, government revenues, input and output prices across sectors, as well as on income distribution. It concludes that implementing an ETS would put BiH's emissions reductions targets within reach, would help improve local air pollution levels, primarily through a switching away from coal use, and could be a significant source of government revenue. However, the ETS is likely to lead to higher prices, which may be politically challenging and harm the competitiveness of energy-intensive trade-exposed industries. Such industries could be offered a more gradual transition period, and a portion of revenue recycled to provide targeted support to vulnerable households.

A. Emissions Trends

1. Bosnia and Herzegovina is a relatively small emitter globally but with severe local air pollution due to a heavy reliance on coal. In 2020, its emissions represented 0.05 percent of global emissions. However, its heavy reliance on coal has led to dangerously high air pollution.[2] The energy sector, highly dependent on coal, is the largest contributor to BiH's total emissions (Figure 1a). The energy sector contributed over 80 percent of CO_2 emissions, followed by industrial processes, agriculture, and waste. In 2020, close to 70 percent of BiH electricity was generated from coal plants. BiH's emissions per unit of GDP and per capita are high in comparison with regional peers, reflecting the carbon intensity of the economy and large potential for decarbonization (Figures 1b and 1c).

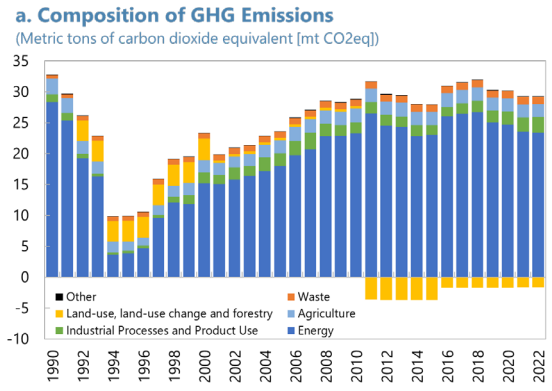
2. BiH's main mitigation target is a 33.2 percent reduction in greenhouse gas (GHG) emissions by 2030 relative to 1990 levels, and a net zero target by 2050. The 2030 target, stipulated in its nationally determined contribution (NDC), increases to a 36.8 percent reduction if

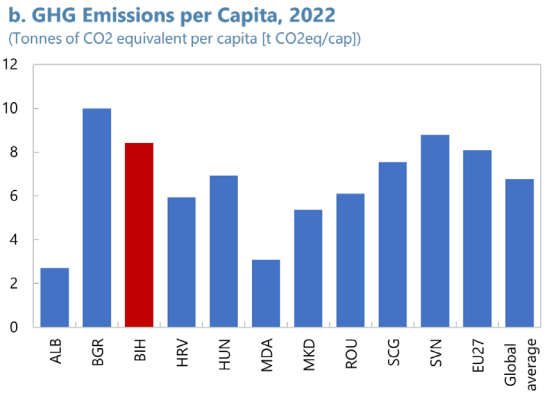
[1] Prepared by Alpa Shah following useful discussions with the Ministry of Industry, Energy and Mining and Ministry of Spatial Planning, Construction and Ecology in the Republic of Srpska, the Ministry of Energy, Mining and Industry and Ministry of Environment and Tourism, and Elektroprivreda BiH (EPBiH) in the Federation of Bosnia and Herzegovina, Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina, as well as the EU and World Bank. The analysis was presented to the authorities in both entities in March 2024.

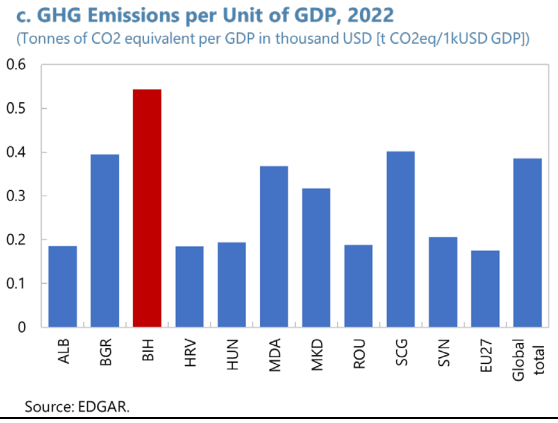
[2] In addition to CO_2, coal combustion results in emissions of air pollutants—namely sulfur dioxide, nitrogen oxide and particulate matter (PM2.5)—which contribute to respiratory illnesses. On December 19, 2023, the Swiss Air quality technology company IQAir, which compiles a real time list of global pollution levels, named Sarajevo as the world's most polluted city. The World Bank's 2019 Air Pollution Management report in BiH stated that, annual average ambient concentrations of PM2. 5 are often multiple times the World Health Organization (WHO) air quality guideline values, as well as BiH's own air quality standards. In addition to the coal dominated power sector, the burning of solid fuel (coal and wood) for residential home heating and cooking is a significant driver of local air pollution levels. The University of Chicago's Air Quality Life Index 2021 update shows that reducing PM2.5 air pollution to meet the WHO guideline would add 1.8 years to average life expectancy in BiH. Global data suggests that these figures go up significantly in more heavily polluted areas.

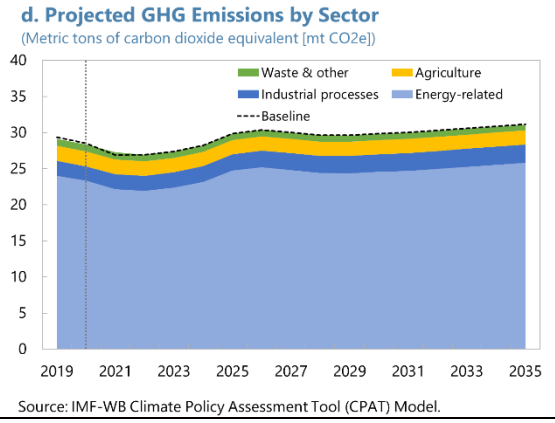
BiH receives international assistance. Data suggests that emissions in 2022 were 16 percent below 1990 levels. Under current policies, BiH is not projected to meet its NDC (Figure 1d).

Figure 1. Bosnia and Herzegovina: GHG Emissions Trends









B. Considerations for Policy Reform

3. Countries globally have been adopting carbon pricing instruments to meet their emission reductions targets. Carbon pricing can take the form of either a carbon tax or a cap-and-trade system, i.e., an ETS. A carbon tax is a tax on the carbon content of fossil fuel supply, while an ETS requires firms to have allowances to cover emissions, with the allowance cap set by the government and a market for trading of allowances across firms. The carbon tax provides certainty over the price, while the ETS provides certainty over the emissions level. Cap-and-trade systems may have elements of a carbon tax (i.e., a floor on the emissions price). As of November 2023, 73 carbon taxes and ETSs were in operation in 47 countries, covering 25 percent of global GHGs with a weighted average price of covered emissions of USD 22 per ton.[3,4] In the region, an ETS covering

[3] Black, Simon, Ian W. H. Parry, and Karlygash Zhunussova, 'Is the Paris Agreement Working? A Stocktake of Global Climate Mitigation' IMF Staff Climate Note 2023/002.

[4] When including uncovered emissions (i.e., those not covered by carbon pricing schemes), the global weighted average carbon price is USD5 per ton. Measures equivalent to a global carbon price of at least USD 85 per ton would be needed to achieve 2°C global climate goals.

power and industry was introduced in Montenegro in 2020[5], and one is under consideration in Serbia. BiH has stated its intention to adopt an ETS as part of its National Energy and Climate Plan.

4. BiH will face several specific considerations in establishing an ETS. Since it will be most practical to implement an ETS at the state level, both entities will need to agree to the centralization of competences. The ETS will require the administrative infrastructure to monitor and set up an allowance trading market, and enough market participants to ensure a sufficiently liquid market with a low risk of collusion. Since the power sector is currently largely dominated by two vertically-integrated entity SOEs, energy sector liberalization and private sector participation will be important.

5. Electricity price liberalization would allow for more effective carbon pricing. Currently electricity prices are regulated at below cost-recovery levels for households and small businesses, with each entity able to limit the scope of price increases.[6] In the FBiH, the energy SOE EPBiH reported a loss of KM 140 million in 2023 (€72 million), and recently proposed a new block tariff structure for approval by the regulator, which would imply an increase in average prices of 10 percent from June 2024, within the entity government's price increase cap of 20 percent. However, this proposal was rejected by the regulator in April 2024. Liberalization would allow for an ETS-inclusive price signal to be passed onto consumers (and therefore reduce emissions). Such a reform could be coupled with increased social protection to vulnerable households and small businesses if it leads to significantly higher end-user prices. Electricity market liberalization would also help to incentivize investment in low carbon electricity generation and more efficient electricity supply, which will in turn return reduce the impact of carbon pricing on electricity prices over the medium term.

6. The ETS could be gradually phased-in, with initial relief for energy intensive trade-exposed (EITE) firms. Allowances could be issued to maintain a price floor which increases over time at pre-determined increments to provide price certainty for firms considering investments in abatement technology. Allowances should be allocated by auction each year on a paid basis – initially, free allowances could be provided to EITE firms particularly vulnerable to competitiveness issues. However, the implementation of the EU Carbon Border Adjustment Mechanism (Box 1) (and associated phase-out of free allowances in the EU) will eventually offset any competitiveness advantage of free allowances.

[5] The minimum emissions price was set at €24 per ton of CO_2, with initial free allowances for energy intensive industries and coal plants, to be phased out gradually.

[6] In the FBiH, the average cost of supply is approximately €70/MWh, while the average price is €57/MWh, with household consumption (approximately 40 percent of total supply) paying the lowest price at approximately €38/MWh, leading to both energy inefficiency and wastage as well as fiscal losses. In the RS, the authorities reported the lowest household tariff (applied to over 50 percent of total consumption) as €33/MWh.

Box 1. Bosnia and Herzegovina: The EU ETS and CBAM

The existing EU ETS covers industry, power, and aviation within the European Economic Area. The EU ETS sets a cap on annual emissions allowances issued, with the cap decreasing by 4.3-4.4 percent per year from 2024 onward. The emissions price has been volatile, but has hovered around EUR 90 per ton since late-2021. EITE industries (e.g., metals, chemicals) have historically been granted free allowances to address competitiveness and leakage concerns, but these will be phased out starting in 2026 as the EU's CBAM is phased in. There is an inclusion threshold for participation by firms in the ETS, which is currently at emissions of 25,000 CO_2 tonnes.

The EU plans to introduce in 2027 a separate ETS covering buildings, transport, and small industry, currently not covered, with a price stabilization mechanism to keep allowance prices at EUR 45 per tonne and the allowance cap set to an annual, linear decline of 5 percent per year from 2024 emission levels. The agreement provides an exemption until 2031 for member states with a national-level carbon tax equal to or above the ETS allowance price. A portion of the ETS revenues will support vulnerable households and small businesses through a Social Climate Fund.

CBAM will levy a tax on the carbon content of imports to the EU. CBAM will initially apply to imports of iron and steel, cement, fertilizers, aluminum, electricity and hydrogen through 2030 and then potentially be expanded to all sectors covered by the EU ETS. The tax rate will be the effective EU ETS price less any carbon price paid in the producing country, meaning that imposing a carbon price in BiH would reduce the CBAM paid to the EU and, instead, lead to revenues collected domestically. Since CBAM payable is also a function of the emissions-intensity of production in BiH, an ETS which has the effect of reducing emissions in EITE sectors will also reduce CBAM liabilities.

The EU's CBAM regulations (Article 2(7)) allow third countries to secure an exemption for electricity exports to the EU subject to certain conditions, namely the conclusion of an agreement to apply EU law for electricity including on renewable energy and electricity market coupling with the EU, commitment to carbon neutrality by 2050, and creation of a roadmap and substantial progress towards implementation of an EU-aligned ETS by 2030.

7. While BiH is preparing to establish an ETS, the current fuel excise could be used as an interim carbon pricing tool. BiH's system of fuel excises is set at the state level, and comprises a fuel excise plus a 'toll' fee of KM 0.4 per liter, of which KM 0.15 goes to the budget, and KM 0.25 to the road and highways public enterprises. There is no excise applied to coal use or electricity consumption or gas consumption for heating purposes.

Table 1. Bosnia and Herzegovina: Fuel Excises and Implicit Carbon Prices

	KM per liter			tCO2/liter	KM/tCo2		KM per liter	
	Excise Rate	Toll	Total Excise	Emissions Factor	BiH Implicit Carbon Price	Additional Carbon Price (KM/tCo2)	Additional Carbon Price (KM per liter)	Combined Excise (KM per liter)
Diesel fuel and other gas oils	0.30	0.40	0.70	0.0027	259.3	30.0	0.08	0.78
Kerosene	0.30	0.00	0.30	0.0026	115.4	30.0	0.08	0.38
Motor gasoline – unleaded	0.35	0.40	0.75	0.0024	312.5	30.0	0.07	0.82
Motor gasoline	0.40	0.40	0.80	0.0024	333.3	30.0	0.07	0.87
Extra light and light special heating oil	0.45	0.00	0.45	0.0026	173.1	30.0	0.08	0.53
Liquefied petroleum gas - motor vehicles	0.00	0.00	0.00	0.0018	0.0	30.0	0.05	0.05
Bio-fuels and bio liquids	0.30	0.40	0.70	0.0026	269.2	30.0	0.08	0.78

Sources: Indirect Tax Authority; CPAT; and IMF staff calculations.

8. An additional carbon price can be calculated using the emissions factors for each fuel. The carbon price implicit in the current excise level is calculated using the emissions factor for each category of fuel. The current system of excises taxes diesel less than gasoline, despite its higher carbon emissions intensity (Table 1). Introducing an additional carbon price of KM 30 per ton (EUR 15 per ton) implies an additional excise of between KM 0.05-0.08 per liter of fuel.[7]

9. A carbon tax would need to be applied to coal use to mitigate the impact of CBAM on exporters. Currently there is no excise applied to coal use, and both energy SOEs cross subsidize loss-making coal mines, with arrears of approximately €6 million for Elektroprivreda Republike Srpske mines and €257 million for Elektroprivreda Bosne I Hercegovine.[8] A coal excise equivalent to 30KM/tCO_2 would amount to approximately 43KM/ton of coal.[9]

C. Quantitative Modeling of Carbon Pricing

10. An ETS scenario is modeled using the IMF and World Bank's Climate Policy Assessment Tool (CPAT). CPAT is a reduced-form model of several sub-sectors and fuels across the economy and regularly used to assess and support environmental tax and climate mitigation policy reform. Under a baseline scenario, no new policies are introduced. The illustrative reform scenario models (i) the removal of electricity price controls to align with market prices over 5 years, starting in 2025, and (ii) an ETS with an emissions cap which corresponds to an allowance price of €5 per ton from 2026, rapidly aligning with EU price levels (approximately €90 per ton by 2030) – i.e., the conditions of the CBAM exemption for electricity exports under EU regulation (Box 1). No free allowances are assumed in the analysis.

[7] Another consideration would be the alignment of current BiH excises with EU-set minimum energy excises per the Energy Taxation Directive. While BiH excises for gasoline and diesel are set at or above the EU minimum, the EU rates are also currently being revised in line with environmental impacts and energy content. This has implications for BiH's accession to the EU but could also imply that any additional excise as a carbon price to offset the CBAM would need to be in excess of the EU minimum excise tax rates.

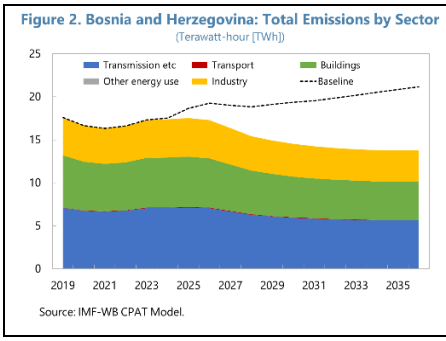
[8] World Bank Group, Country Economic Memorandum, Bosnia & Herzegovina, Macroeconomics, Trade and Investment, January 2024.

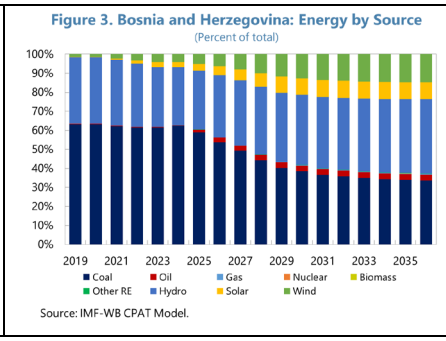
[9] Assuming an emissions factor of 0.096 tCO_2/GJ of coal, and 15 GJ per ton of lignite coal.

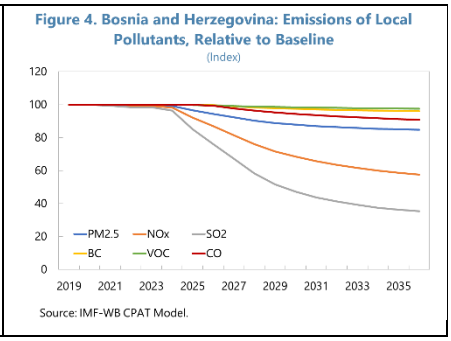
11. The analysis has several simplifying assumptions.[10] The ETS is assumed to cover all sectors, including those under the second EU ETS (Box 1) and all activities regardless of firm size (in practice there is an inclusion threshold under the current ETS). The impact of CBAM is not estimated; this will depend on (i) the export mix covered by CBAM, (ii) the proportion of BiH exports to the EU, (iii) the emissions-intensity of BiH covered exports relative to firms in the EU and other countries, and (iv) how the ETS price in BiH aligns with the CBAM phase-in trajectory. Timely introduction of an ETS at comparable allowance price levels to the EU will mitigate the impact of CBAM on BiH.

Emissions Analysis

12. Introducing an ETS in line with the reform scenario would put BiH's unconditional NDC target within reach (Figure 2). The model suggests an overall decrease in energy consumption across all sectors, most notably in the power and industrial sectors (Figure 2) – this assumes investment in abatement technology, as well as a rapid switch away from coal towards renewable sources in the medium term (Figure 3).[11] The introduction of the ETS also has a positive impact on local air pollution levels, due to the phase-down in coal use (Figure 4).







Fiscal and Macroeconomic Implications

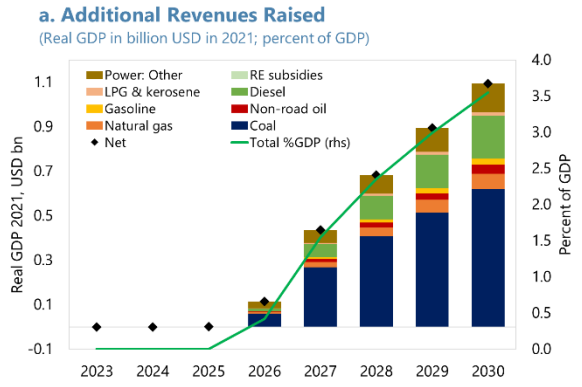
13. The ETS may be a valuable source of short to medium-term revenues, raising over 3 percent of GDP in 2030 (Figure 5a). The deregulation of electricity prices generates savings of about 0.5 percent of GDP in 2030 - this would largely benefit the two energy SOEs, which currently absorb the revenue loss from regulated electricity prices. The ETS would be a direct source of revenue to the government (through the auction of ETS allowances), generated primarily from coal use.

[10] As such, the modeling results should be read with some caveats. In most countries, ETSs do not cover all sectors and are being phased in with respect to sectoral coverage. Moreover, the ETS may take time to be established and implementation from 2026 would not be feasible for BiH. However, an equivalent carbon price can be implemented in the interim through the fuel excise system as noted Section B.

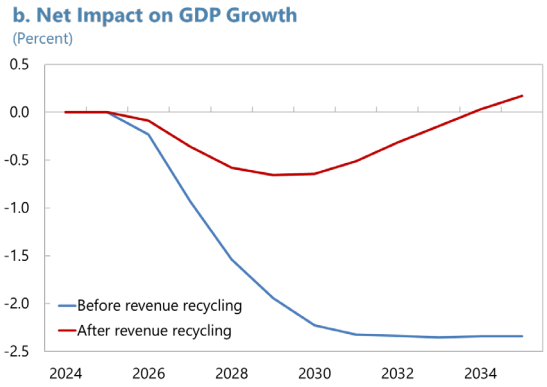
[11] This is predicated on a relatively rapid increase in renewable energy by 2030 – approximately USD 1.4 billion in renewable energy investment over the 2026-2030 period. In practice, it may take longer than modeled for the economy to respond to price signals. While there is significant renewable energy potential in BiH (particularly solar, hydro and wind), these sectors are currently under-developed, and it may take time and substantial cost to increase renewable energy generation capacity. Institutional and transmission infrastructure will also need to be upgraded rapidly to facilitate a significant increase in renewable energy production.

14. The ETS may have a negative impact on GDP growth, but this could be partly offset with effective revenue recycling measures (Figure 5b). The potential negative impact on GDP growth in 2030, in the absence of revenue recycling is sizeable, at 1.9 percentage points. However, in an illustrative scenario where 20 percent of revenues collected are recycled effectively through cash transfers, 50 percent through labor tax reductions, and the remaining 30 percent through public investment, the negative impact on GDP growth is offset (Figure 5b).[12]

Figure 5. Bosnia and Herzegovina: Revenue and GDP Impacts



Source: IMF-WB CPAT Model.



Source: IMF-WB CPAT Model

Pricing Impact

15. An ETS will also put upward pressure on energy prices, with the highest impact on coal (Table 2).[13] Introduction of an ETS may also increase input prices, especially in EITE industries (Figure 6). Prices increases occur via payment for emissions permits, abatement costs incurred by switching to cleaner technologies and fuels, and indirect payment for any carbon embodied in their input. A carbon price would increase production costs significantly for aviation, mining, cement, shipping, and iron and steel. However, if firms are price takers competing with foreign producers, they may not be able to increase output prices. While these industries represent a smaller share of economic output than the less-affected food, construction, and services industries (Figure 8d), the authorities may need to be mindful of the impact, and provide assistance or relief where needed, conditional upon investments in energy efficiency and decarbonization.

16. Energy-intensive trade-exposed industries could be offered a more gradual phase-in through initial free allowances. During the establishment of the EU ETS, free allowances were granted to certain industries to moderate the impact of carbon pricing on their competitiveness. As the CBAM is phased in, the EU plans to phase out free allowances for in-scope sectors over a nine-year period. To provide relief to trade exposed industries, BiH could grant them initial free

[12] The extent of the reversal of the negative impact will depend on the size of the fiscal multiplier of the policies chosen to recycle revenues.

[13] The CPAT analysis uses household and industry electricity prices as provided to Eurostat, which equate to higher levels than those quoted by the authorities during the Article IV consultation. Assuming a lower current average price level of approximately USD 0.06 per KWh, price liberalization would imply a higher price increase of USD 0.03 per KWh in 2030 relative to regulated levels.

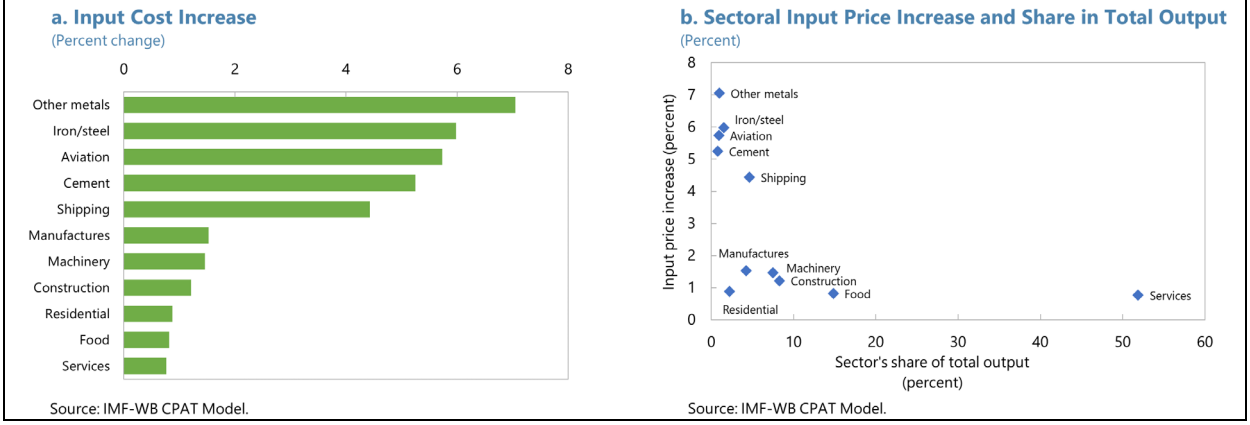
allowances, and phase them out at the same rate as the EU, to ensure that carbon pricing levels match those charged in the EU. Such relief can also be made contingent on firm-level investment in improving energy efficiency, which will in turn lead to a lower carbon pricing burden over the medium term.

Table 2. Bosnia and Herzegovina: Increases in Energy Prices by 2030

Fuel	Unit	Baseline	Price Liberalization	Percent change	Price Liberalization + ETS	Percent change
Gasoline	US$ per liter	1.4	1.4	0%	1.6	16%
Diesel	US$ per liter	1.2	1.2	0%	1.5	18%
LPG	US$ per liter	0.6	0.6	0%	0.8	23%
Kerosene	US$ per liter	1.0	1.0	0%	1.2	23%
Oil	US$ per barrel	65.4	65.4	0%	103.4	58%
Coal	US$ per gigajoule (GJ)	2.2	2.2	0%	10.0	358%
Natural gas	US$ per gigajoule (GJ)	14.2	16.8	18%	21.4	51%
Electricity	US$ per kwh	0.1	0.1	7%	0.2	29%

Source: IMF-WB CPAT Model.

Figure 6. Bosnia and Herzegovina: Pricing Impact in 2030



Source: IMF-WB CPAT Model.

Source: IMF-WB CPAT Model.

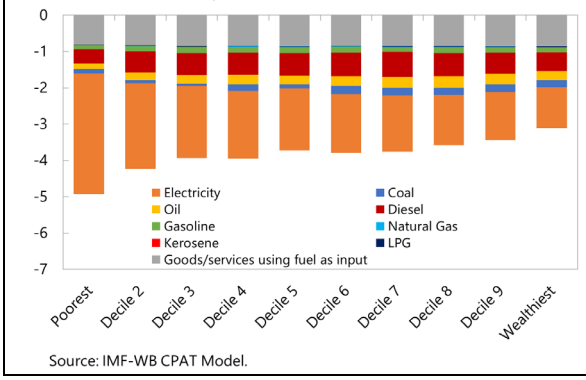
Distributional Impact

17. The ETS would have a negative impact on household consumption, although this could be offset by revenue recycling (Figure 7).[14] Households would see an average reduction in consumption of close to 3 percent relative to the baseline, with the largest effects on the bottom four deciles of the income distribution. This could be offset by revenue recycling measures. For example, using 20 percent of revenue for targeted cash transfers to the bottom four deciles, 50

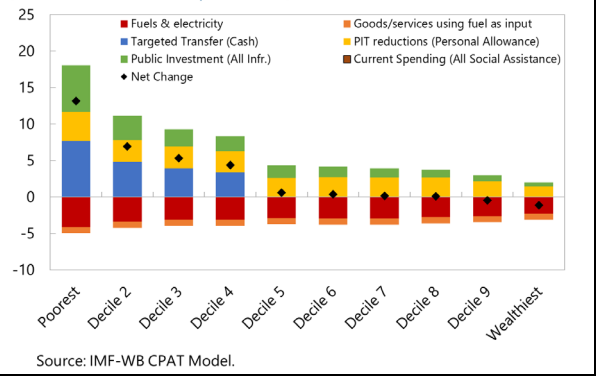
[14] The analysis is based on a two-step approach to assess the distributional impacts of the proposed reforms. First, the effect of carbon pricing on various categories of consumer goods is calculated using input-output tables. These price increases are then mapped to data on budget shares for different goods by household income group using household expenditure survey data.

percent to reduce the labor tax burden (through the tax-free allowance), and the remainder for public investment, would make the reform more progressive.[15] This underscores the urgent need to strengthen the social safety net to allow for targeted transfers to clearly identified and registered vulnerable households.

Figure 7. Bosnia and Herzegovina: Distributional Effects



Source: IMF-WB CPAT Model.



Source: IMF-WB CPAT Model.

D. Conclusions

18. BiH should gradually phase-in an economy-wide ETS to promote reductions in GHG emissions, possibly with offsetting support to households and firms. The analysis shows that deregulating electricity prices and introducing an ETS in 2026 that rapidly aligns with EU levels by 2030 would allow BiH to achieve its mitigation targets and reduce local air pollution by switching away from coal. However, this would require a rapid increase in ETS prices is likely to require high input and output prices, which may be politically challenging and harm competitiveness of energy-intensive industries, as well as having a negative distributional impact on households. Energy-intensive firms could be offered a more gradual transition period, and a portion of revenue should be recycled to provide targeted and adequate support to vulnerable households.

[15] The energy transition strategy would also warrant allocating some revenue to address loss of livelihoods of coal producing regions and communities. For further discussion, see the World Bank's 2023 Country Economic Memorandum 2023, chapter III.5 on Managing the Impacts: A Just Transition.