INTERNATIONAL MONETARY FUND

ROMANIA

SELECTED ISSUES

December 2023

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INTERNATIONAL MONETARY FUND

ROMANIA

SELECTED ISSUES

November 16, 2023

Approved By	Prepared By Romania Team
Helge Berger	

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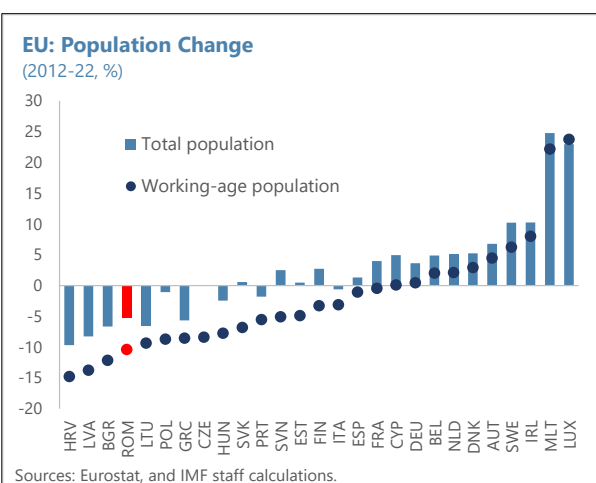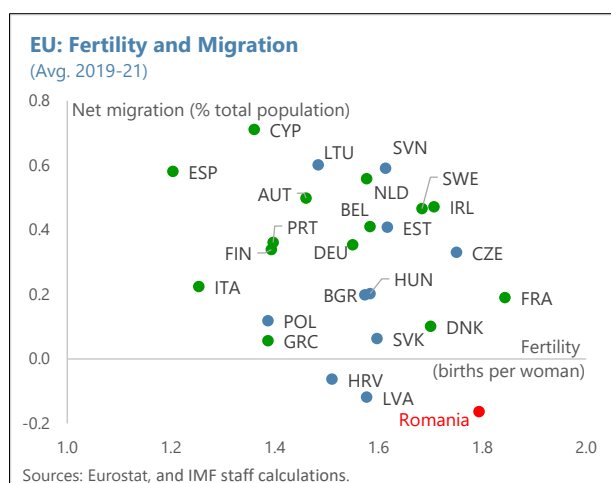# LABOR FORCE PARTICIPATION IN ROMANIA[1]

A.   Introduction

1.   **Romania is facing demographic challenges.** The size of the working-age population is falling, while the dependency ratio (working-age persons to young and old persons) is rising. This undermines potential output growth, thereby prolonging the convergence to Western European income levels. Labor force participation therefore plays a central role in determining the prospective path of Romania's economy and living standards.

2.   **Romania's labor force participation (LFP) is relatively low.** The overall LFP in 2022 was 66.8 percent, the second lowest in the EU, and 9½ percentage points lower than the average of EU countries (excluding Romania). LFP is lower in Romania than the EU average across almost all demographic groups, as defined by gender, education levels, and age. This suggests that measures to boost LFP could be a natural way to at least partially offset the effects of demographic decline.

3.   **This paper analyzes the reasons for Romania's low LFP, and outlines policy options to raise it.** Section B provides an overview over Romania's demographic challenges. Section C analyzes LFP across demographic groups and identifies possible causes. Section D outlines policy options that could help raise LFP of specific population groups and presents simple simulations of the impact on overall LFP and potential GDP if LFP of particular groups were to increase.

B.   Background: Demographic Challenges[2]

4.   **Romania's population is falling.** The birth rate (live births per woman), while among the highest in the EU, is below the replacement level of 2.1, and net outmigration (mostly of people in working age) continues, albeit at a slower pace than in years past. As a result, the total and working-age population are falling.

EU: Fertility and Migration
(Avg. 2019-21)
Sources: Eurostat, and IMF staff calculations.

EU: Population Change
(2012-22, %)
Sources: Eurostat, and IMF staff calculations.

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[1] Prepared by Florian Misch and Alexander Pitt.

[2] Data in this analysis are from Eurostat.

5.   Net outmigration has abated but continues. Emigration was particularly strong during the Global Financial Crisis after EU accession in 2007 which facilitated immigration to other EU member states—but has since then gradually diminished as employment prospects and living standards in Romania have risen. Nonetheless, net migration remains negative, at a time when net migration in almost all other EU countries has turned positive.

Romania: Net Migration
(%)

Sources: Eurostat, and IMF staff calculations.
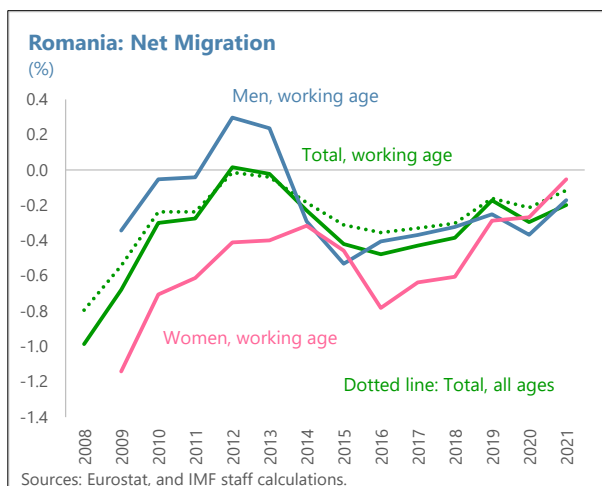
6.   In 2022, the population has increased, the first time in 30 years. While more recent migration data are not yet available, the increase in population in 2022 is likely to be the result of positive net migration due an influx of around 80,000–100,000 Ukrainian refugees who stayed in Romania and migrants from non-European countries.[3] The authorities have also begun to issue work visas to non-EU nationals to alleviate labor shortages, especially in the construction and hospitality sectors. The number of work visas has increased significantly, from 3,000 in 2017 to 100,000 in 2022 (The Economist 2023a).

**7.   The working-age population is falling and is becoming older.** In 2007, the working-age population stood at 14.5 million, of which 21 percent were aged 15 to 24, while only 16 percent were aged 55–64. By 2019, the working-age population had declined to 12.2 million, with 16 percent aged 15 to 24 and 18 percent aged 55–64. A similar development is taking place for employment, but with older persons' participation in the labor force relatively low (see below), the increase in the share of 55–64 year-olds has been less pronounced than for the working-age

Romania: Average Age
(2022, years)

Sources: Eurostat, and IMF staff calculations.

population overall. An ageing labor force could lead to lower productivity growth (IMF 2019 and The Economist 2023b) and hence output growth. In Romania, this effect could reduce total factor productivity (TFP) growth by 0.4 percentage points annually between 2020 and 2050 (IMF 2019).
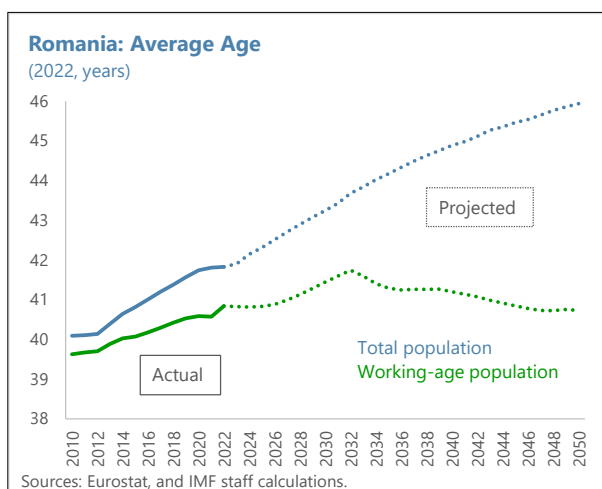
8.   The dependency ratio is rising. At the same time, life expectancy is increasing, reinforcing the rise of the old-age dependency ratio that occurs in a shrinking population.[4] In 2022, for each

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[3] Since the beginning of the invasion, more than 1 million refugees have crossed the Romanian border with Ukraine, but most went on to other countries.
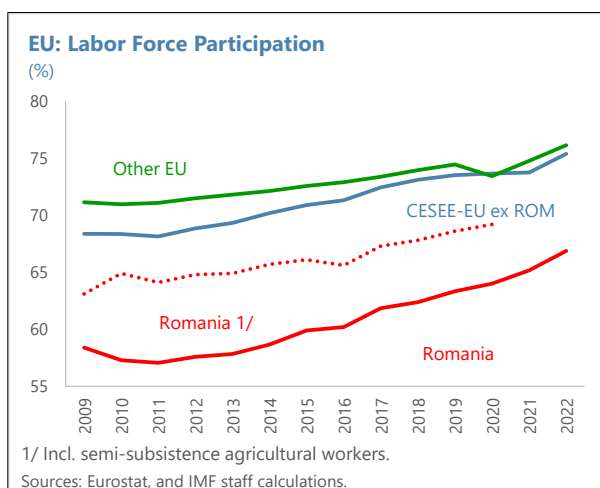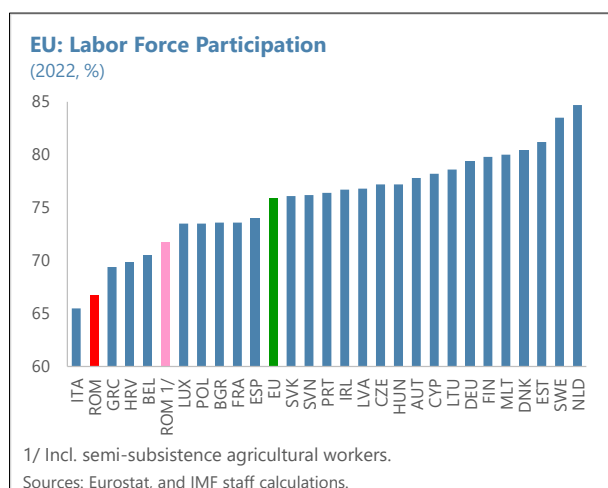
[4] Calculated as persons aged 65 and over as a percentage of people aged 15–64.

person aged 65 and over, there were 3.3 working-age persons, down from 4.6 in 2007. For 2050, the ratio is projected to reach 2.0. Rapid economic growth has so far contained spending on pensions as a percentage of GDP, but as the economy converges toward higher per-capita incomes and growth slows over the longer term, fiscal pressures will increase. IMF (2019) estimates that the deficit-to-GDP ratio will increase by 3¾ percentage points by 2050. This is at the lower end of estimates for CESEE countries,

EU: Dependency Ratio
(2022, %)

Sources: Eurostat, and IMF staff calculations.

largely due to relatively low pensions in Romania. Fiscal pressures could further increase if the replacement rate of pensions (currently about 33 percent) were to increase.
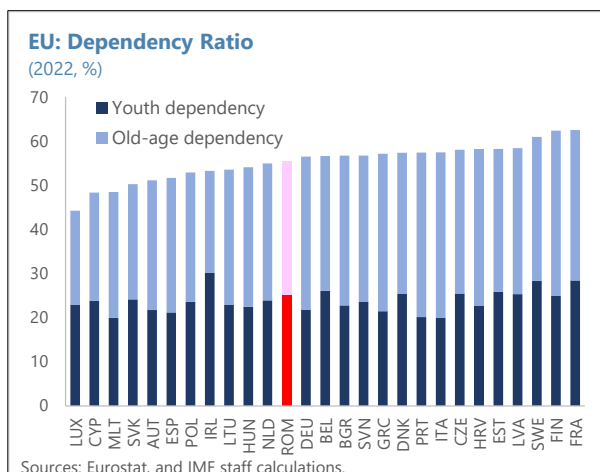
C. Labor Force Participation

9.   Romania's LFP is well below peers'. To some extent, this is because semi-subsistence agricultural workers are, by Eurostat's methodology, not counted in the labor force, and the share of employment in the agricultural sector, at 21 percent, is much higher in Romania than in other EU member states.[5] Nonetheless, even adjusting for this factor by including such workers, Romania's LFP rate is, at around 72 percent, still well below most peers. This is somewhat mitigated by longer hours worked: total hours worked by the working-age population are close to the EU average. However, the hours worked are still relatively low compared to EU CESEE peers (people in poorer countries tend to work longer hours than those in richer ones as the latter use some of their higher productivity to 'purchase' more free time; see Bick et al., 2018). This suggests a significant

EU: Labor Force Participation
(2022, %)

1/ Incl. semi-subsistence agricultural workers.
Sources: Eurostat, and IMF staff calculations.

EU: Labor Force Participation
(%)

1/ Incl. semi-subsistence agricultural workers.
Sources: Eurostat, and IMF staff calculations.

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[5] This methodology was introduced in 2021. Comparing retroactively revised data using the old methodology whereby semi-subsistence agricultural workers were counted as part of the labor force, with the revised data suggests a difference in LFP of between 9 (in 2009) and 5 (in 2020) percentage points in Romania. The difference in other EU countries is much smaller—typically less than 1 percentage point.

opportunity for mobilizing additional labor supply to continue to drive Romania's convergence with advanced European economies (Section D).

10.   Cross-border commuting for work complicates the assessment. People who work in other countries but maintain their residence in Romania are not counted as part of Romania's labor force but still count towards its population, lowering the LFP rate. Estimates suggest that 3–5 million Romanians—21 percent of the population, and the highest absolute number of any EU country—may work abroad (Paul, 2020), but ho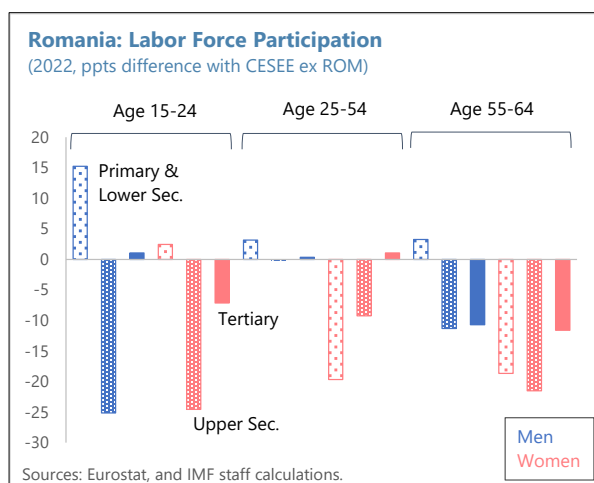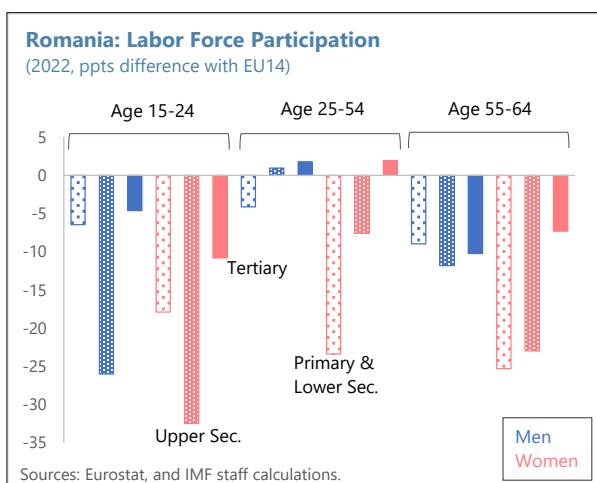w many of them are cross-border commuters is unknown. That said, other countries with a significant number of workers abroad, such as Poland and Bulgaria, report higher LFP rates than Romania, though also below the EU average. The closest comparator to Romania is Bulgaria, where agricultural sector employment (17 percent) is almost as large as in Romania, and a similar share of the population is estimated to work abroad (about 23 percent). Bulgaria's LFP rate, however, is 74 percent, significantly higher than Romania's (67 percent).

EU: Hours Worked
(1,000 hours per working-age person, 2020)
CESEE
Other EU
1/ Luxembourg is likely biased due to commuters. EU: Unweighted avg.
Source: Eurostat, and staff calculations.
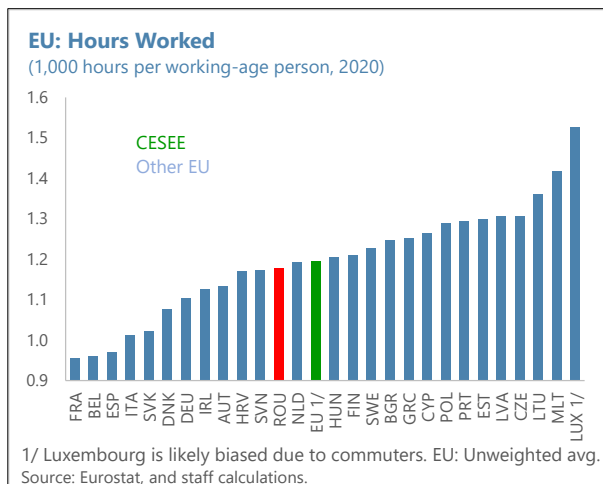
11.   Romania's LFP is relatively low across almost all population groups, with some parts of the population showing extremely low LFP. Women of all ages and education levels (except prime-age tertiary-educated women), older men with secondary education and younger working-age men have a significantly lower LFP than in the EU14 and to a lesser extent CESEE countries. Only prime-aged men (ages 25–54) of all education levels and middle-aged women with tertiary education have LFP rates comparable to EU14 levels.

Romania: Labor Force Participation
(2022, ppts difference with EU14)
Sources: Eurostat, and IMF staff calculations.

Romania: Labor Force Participation
(2022, ppts difference with CESEE ex ROM)
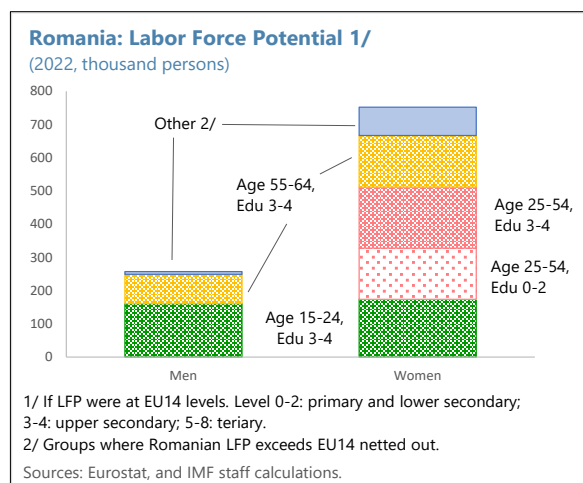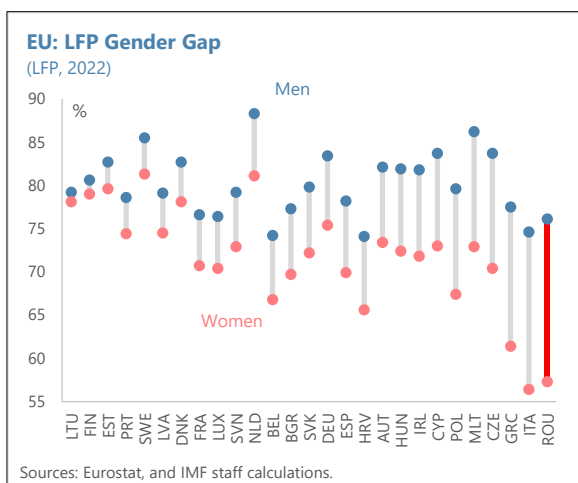Sources: Eurostat, and IMF staff calculations.

12. **A simple simulation analysis suggests that attaining EU LFP levels would significantly boost Romania's labor force.** In a scenario where the LFP of all gender/age/education groups is at par with EU14 levels, Romania's labor force would be higher than the current level by 1 million. The increase in LFP of women accounts for the bulk of this increase.

Women's LFP

13. **Romania's LFP gender gap is the largest in the EU.** The literature identifies a range of factors affecting women's LFP including the structure of the economy, technology in the workplace and in the household, health care, discrimination, divorce law, prevalence of flexible working-time, and the availability of childcare (Fernandez, 2013). Some of these factors

Romania: Potential Labor Force Gain 1/			
	Women	Men	Total
	(Thousand persons)		
By gender	752	257	1,010
By education			
Primary and lower sec (0-2)	240	13	252
Upper secondary (3-4)	513	242	754
Tertiary (5-8)	0	3	3
By age			
15-24 years	208	155	363
25-54 years	323	-3	320
55-64 years	221	105	326
	(Percent)		
By gender	74.5	25.5	100.0
By education			
Primary and lower sec. (0-2)	23.7	1.3	25.0
Upper secondary (3-4)	50.8	23.9	74.7
Tertiary (5-8)	0.0	0.3	0.3
By age			
15-24 years	20.6	15.3	36.0
25-54 years	32.0	-0.3	31.7
55-64 years	21.9	10.4	32.3
1/ If LFP were at EU14 levels.			

are very similar across EU member states (e.g., the level of technology or divorce law), and cannot, therefore, explain differences in female LFP.

EU: LFP Gender Gap
(LFP, 2022)
Sources: Eurostat, and IMF staff calculations.

Romania: Labor Force Potential 1/
(2022, thousand persons)
1/ If LFP were at EU14 levels. Level 0-2: primary and lower secondary; 3-4: upper secondary; 5-8: teriary.
2/ Groups where Romanian LFP exceeds EU14 netted out.
Sources: Eurostat, and IMF staff calculations.

14. **Financial (dis)incentives appear to play a limited role in explaining low female LFP in Romania.** The income tax rate is flat, and there is no joint filing of spouses that could impose a high marginal tax rate on women's labor income. While a large gender pay gap can also disincentivize women to work, Romania's (unadjusted) gender pay gap across all education levels is the second-lowest in the EU, suggesting that the contribution of this factor is small.[6] However, the statutory

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[6] The reliability of data (not only in Romania), however, is limited. The gender pay gap for all education levels in Romania in 2018 was 2.1 percent, while the pay gaps for each education segment (primary and lower secondary, upper secondary, and tertiary) were higher (though still at the low end in the EU).

retirement age for women is lower than for men (61¾ vs. 65 years), which may explain low LFP for women in the age group 55–64 (see below).

15.   The availability of childcare could be a major factor contributing to Romania's low LFP of women. The percentage of children from age 3 to school entry in formal childcare is low in Romania. Lokshin and Fong (2006) argue that the relative cost of staying at home for women declines with the number of children, as income from work might not increase but the benefit from taking care of children would rise. The adverse effects of insufficient childcare could hence be magnified by Romania's relatively high fertility rate. Chevalier and Viitanen (2002) argue that childcare facilities are a determinant of female LFP. While private provision of (formal) childcare services can be expected to respond to rising demand, their higher price— when compared to public services—would alter the cost-benefit calculation of working for mothers. Women with higher education—and hence higher earnings potential—may still opt to work, while the net ben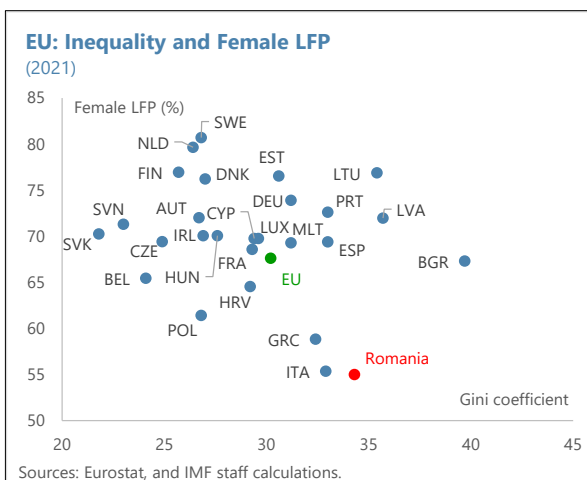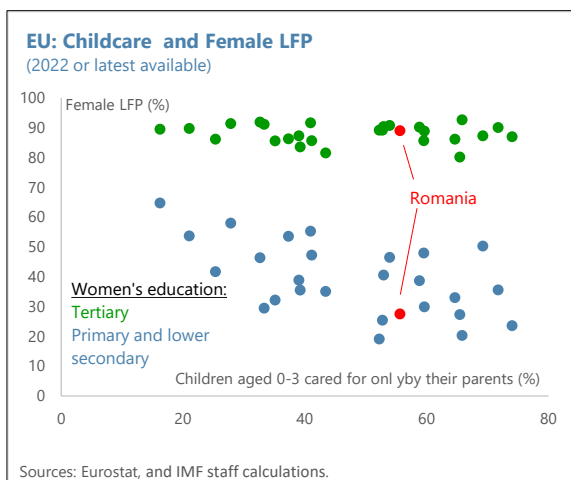efit of working for women with lower earnings potential is reduced. Indeed, there is some evidence that suggests that the LFP of women with tertiary education is not correlated with the proportion of young children cared for only at home, while that of women with lower education levels is.

16.   Women also tend to perform the bulk of old-age care. While there does not appear to be a significant link between the old-age dependency ratio and LFP across EU countries, this burden is likely to increase in an ageing society and could adversely affect female LFP when formal care for the elderly is insufficient.

EU: Gender Pay Gap 1/
(2018, all education levels, %)

1/ Based on mean hourly earnings. Companies with 10+ employees.
Sources: Eurostat, and IMF staff calculations.

EU: Childcare Supply and Female LFP 1/
(2021)

1/ 2021 or latest avilable. Finland n/a.
Sources: Eurostat, and IMF staff calculations.

EU: Children in Formal Childcare
(Age 3 to compulsory school age, 2022, %)

Source:s Eurostat, and IMF staff calculations.

EU: Childcare and Female LFP
(2022 or latest available)

Female LFP (%)

Romania

Women's education:
Tertiary
Primary and lower
secondary

Children aged 0-3 cared for only by their parents (%)

Sources: Eurostat, and IMF staff calculations.

EU: Inequality and Female LFP
(2021)

Female LFP (%)

SWE
NLD
FIN   DNK   EST
SVN   AUT   CYP   DEU   LTU
SVK   IRL   LUX MLT   PRT   LVA
CZE   FRA   ESP
BEL   HUN   EU   BGR
HRV
POL
GRC
ITA   Romania

Gini coefficient

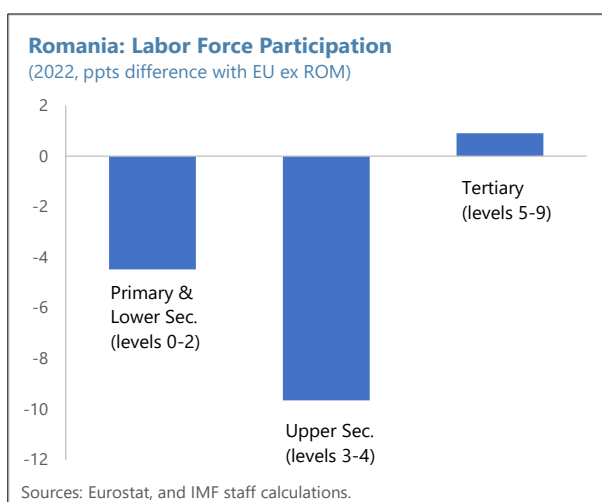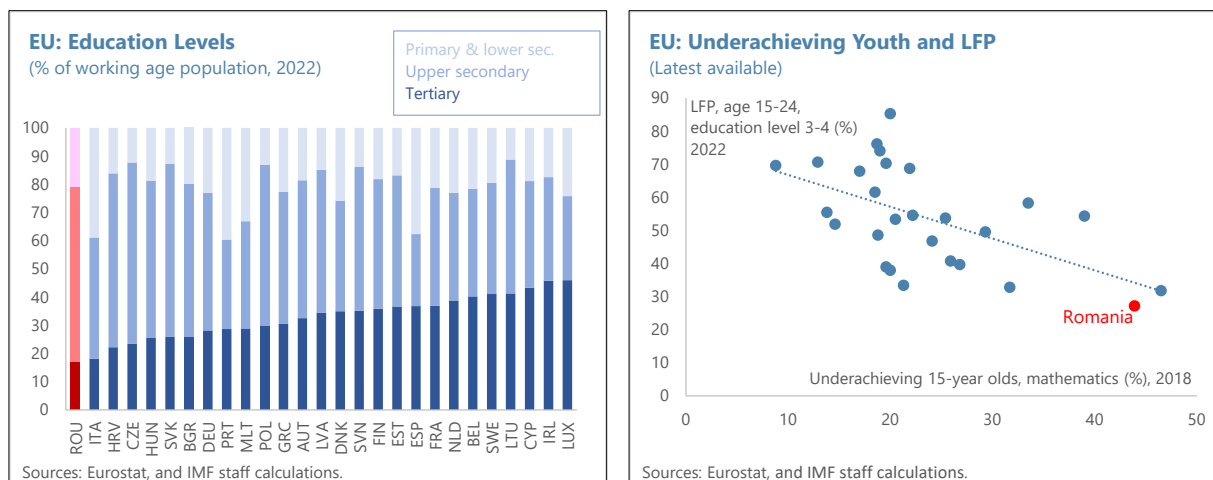Sources: Eurostat, and IMF staff calculations.

17.   Inequality is also related to female LFP. Semyonov (1980) argues that in more economically unequal societies, the incentive to protect lucrative positions against 'newcomers' (in this case, women who want to enter the workforce) is higher. There is indeed a correlation between income inequality and women's LFP, and Romania's relatively high inequality may be a factor in explaining its low female LFP. Also, the gender wage gap is generally larger for women with tertiary education, supporting the argument that protection of incumbents is stronger in higher-paid jobs. On the other hand, the LFP of women with tertiary education, is similar to that of men and slightly above the EU average, which suggests that women do not face discrimination of entry into higher-paid jobs (though they do face pay discrimination). However, the causality may also be inverted: higher female LFP, especially of lower-educated women, tends to reduce inequality because poverty risks are reduced. Thereby it also promotes intergenerational mobility—provided external childcare is available and of adequate quality (Esping-Andersen, 2007).

Education

18.   Education is an important determinant of LFP. People with higher levels of education generally have a higher earning potential, and their opportunity cost of not working is hence higher. Correspondingly, LFP rises with education (Marois et al, 2019). Indeed, in Romania the LFP of people with tertiary education is similar to levels in other EU countries. However, the share of people with higher education in Romania is lower than in other EU countries, which explains about 2 percentage points of the overall LFP gap.
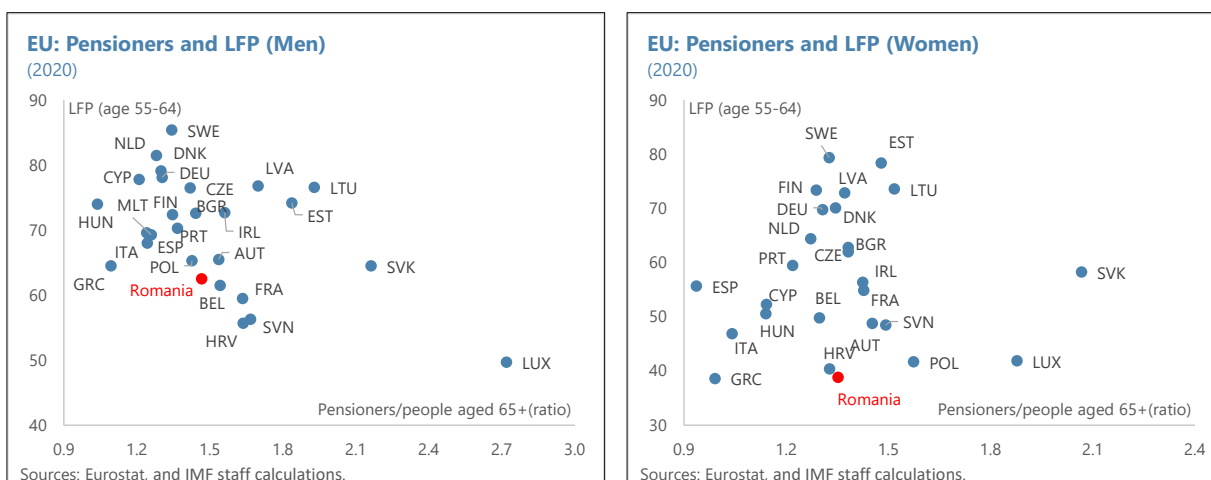
Romania: Labor Force Participation
(2022, ppts difference with EU ex ROM)

Primary &
Lower Sec.
(levels 0-2)

Upper Sec.
(levels 3-4)

Tertiary
(levels 5-9)

Sources: Eurostat, and IMF staff calculations.

EU: Education Levels
(% of working age population, 2022)

Primary & lower sec.
Upper secondary
Tertiary

Sources: Eurostat, and IMF staff calculations.

EU: Underachieving Youth and LFP
(Latest available)

LFP, age 15-24, education level 3-4 (%) 2022

Romania

Underachieving 15-year olds, mathematics (%), 2018

Sources: Eurostat, and IMF staff calculations.

19.   The lower quality of education in Romania may also contribute to low LFP. The low LFP of young workers with upper secondary education (level 3–4 education) may be related to the quality of education. Romania has one of the highest rates of low achievers at age 15 in mathematics, science, and reading in the EU (irrespective of the ultimate level of education), and the gap with other countries is large. This is correlated with low LFP for level 3–4 education (i.e., education levels generally achieved after the age of 15), but not with LFP for those with up to level 2 education (which is generally completed by age 15).[7] This is likely to contribute to limited employability and higher unemployment among this group, which may discourage potential workers from even joining the workforce. In addition, less qualified workers may also be more likely to work abroad on a seasonal basis and not work in Romania (and thus reducing LFP) which is consistent with the increasing shortage of low-skilled labor in Romania that the authorities are trying to alleviate through a work visa program for people from outside of the EU.

Older Workers

20.   Age appears to more adversely affect LFP in Romania compared to peers, but the reasons are unclear. LFP of people aged 55–64 is lower than in peers, especially of women. One explanation could be that women's retirement age is lower than men's (61¾ years, rising to 63 years by 2030 vs. 65 years for men). However, the total number of pensioners relative to those aged 65 and over—an indication of the prevalence of early retirement (or, in the case of Romanian women, a lower retirement age) or disability pensions—is not particularly high in Romania when compared to other EU countries. This implies that eligibility for pensions before the age of 65 does not seem to be the key driver for low LFP among older people.

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[7] Österholm (2010) and Jamie (2011) find a robust inverse relationship between overall unemployment rates and LFP. However, their analysis looks at the total unemployment rate in individual countries over time. In a cross-country analysis, the impact of total unemployment on total LFP is low but remains strong for the young.

EU: Pensioners and LFP (Men)
(2020)

Sources: Eurostat, and IMF staff calculations.

EU: Pensioners and LFP (Women)
(2020)

Sources: Eurostat, and IMF staff calculations.

21.   Other possible factors to explain low LFP of older men or women are difficult to ascertain. Disability and life expectancy irrespective of the exact metric used does not seem to be correlated with LFP, not least because number of disability pensioners in Romania is low.

D.   Conclusions and Policy Implications

22.   Romania's low overall LFP mainly reflects a large gender gap, relatively low levels of education, and perhaps statistical issues. The statistical methodology to (not) account for some workers in the large agricultural sector reduces measured LFP since semi-subsistence workers are already working but are just not counted in the labor force. Moreover, the seasonal employment abroad of a significant number of workers is also likely to contribute to an underestimation of LFP.

23.   Boosting Romania's low LFP opens opportunities to mitigate the impact of an ageing society and to support Romania's convergence to Western European peers. Closing the LFP rate gap of 9½ percentage points to the EU average would increase the labor force by about 14½ percent, and GDP by about 6½ percent. Even taking into account that part of this increase would reflect a move of labor from the informal sector and/or semi-subsistence agriculture to the formal and/or non-agricultural sector, the shift of workers from relatively low-productivity to higher-productivity activities would imply a significant boost in aggregate productivity. Such an increase in the labor force would have to be gradual to avoid rising unemployment. However, the declining working-age population should minimize labor market friction from new entrants.

24.   Higher LFP could also help mitigate the fiscal impact of an ageing society. Closing the LFP gap could improve the fiscal deficit by around 2 percentage points of GDP, even taking into account the increase in GDP due to higher LFP. Revenues from income and social security taxes would rise by close to 1 percentage point of GDP, while higher GDP would reduce total spending as a share of GDP by around 1¼ percentage points. However, while pensions are set to increase based on a formula based on inflation and wages, rising GDP per capita is likely to lead to pressures to raise pensions—which are, compared to other European countries, already very low.
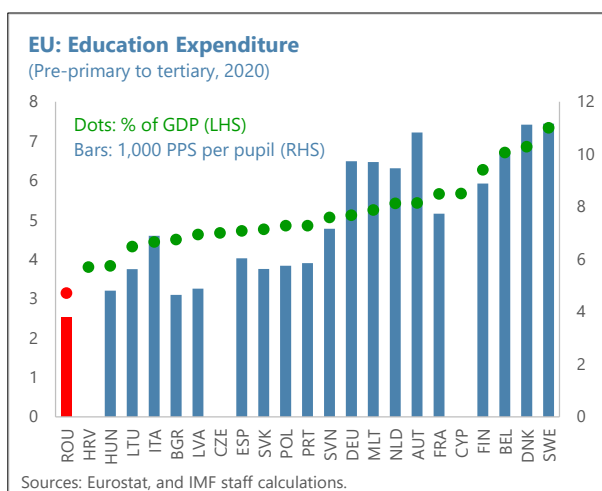
25.   Boosting women's LFP would have the largest effect on overall LFP and could also reduce inequality. Women account for three-quarters of the difference in LFP with other EU countries, hence raising their opportunities and improving incentives/reducing disincentives to participate in the labor force could potentially bring the largest numbers into the workforce. Moreover, women's labor force participation would likely contribute to reducing poverty.

26.   Policy measures to facilitate female LFP should concentrate on providing affordable high-quality childcare. This would help in particular women with lower levels of education for whom the opportunity cost of staying at home is lower than for women with tertiary education. High-quality childcare can also increase intergenerational mobility as it can improve opportunities of poorer children, and/or of children of poorer and less educated parents. Greater availability of flexible working-time arrangements including part-time work can also help boost female LFP.

27.   The quality of education at all levels needs to be increased. Romania's share of low achievers in mathematics, science, and reading is among the highest in the EU, and it scored well below the OECD and EU averages in the most recent PISA study (OECD 2018). Differences in performance across socio-economic groups were above the OECD average and have widened since the previous assessment. Both low- and high-performing students were, respectively, clustered in certain schools.

28.   The reasons for the Romania's underperformance in education are difficult to pinpoint, but public education expenditure is by far the lowest in the EU. Romania invests significantly less that other EU member states in education, both as a percentage of GDP and per pupil. School principals in Romania reported fewer staff and more material shortages than the OECD average. Results from the OECD's Teaching and Learning International Survey suggest that Romania is not an outlier in terms of teacher education, motivation, and other indicators of quality, but education outcomes still suggest that there is significant room for improvement.

EU: Education Expenditure
(Pre-primary to tertiary, 2020)

Dots: % of GDP (LHS)
Bars: 1,000 PPS per pupil (RHS)

Sources: Eurostat, and IMF staff calculations.

29.   Raising education spending would constitute a significant investment and would need to be coupled with targeted reforms in the education system (World Bank 2023). Additional expenditure of almost 2 percent of GDP would be required to bring education spending to the EU average of 5 percent of GDP. In the current fiscal situation, however, there is very limited room for additional expenditure. This implies that higher spending would require higher revenues—above those needed to reduce the deficit with current spending allocations.
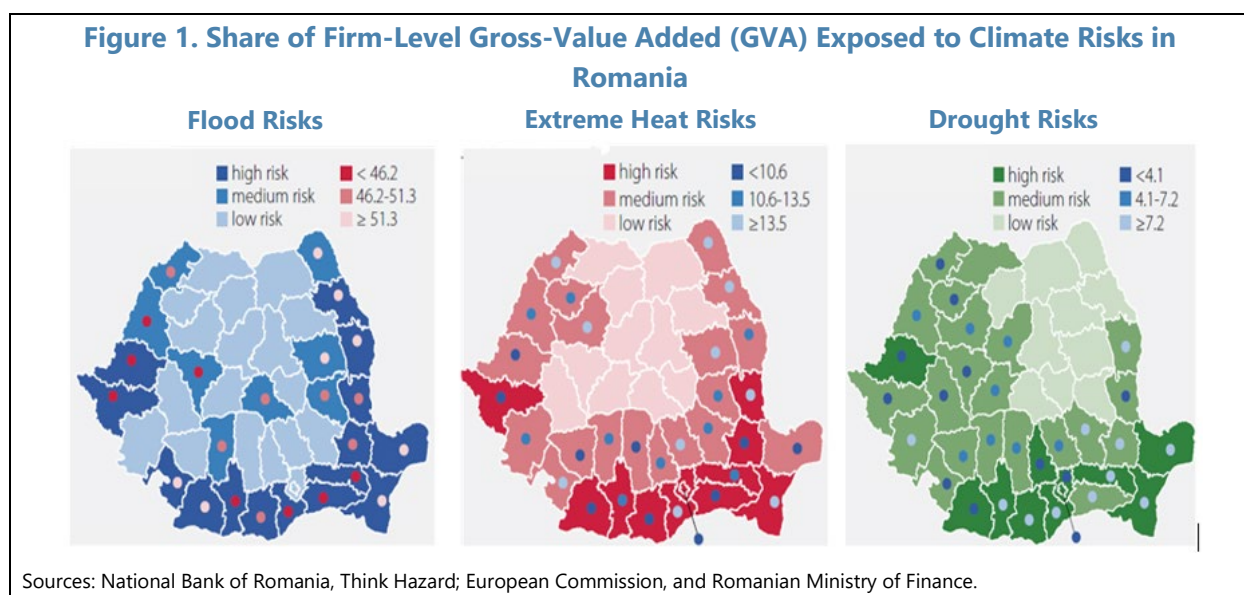
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MAKING ROMANIA FIT AND RESILIENT FOR THE NET-ZERO TRANSITION[1]

A. Introduction

1.   **Climate change is macro-critical for Romania.** As a member of the European Union (EU), Romania is committed to the union's ambitious new Green Deal which requires all member states to cut their absolute greenhouse gas (GHG) emissions by 55 percent (relative to 1990) by 2030 and achieve carbon neutrality by 2050. Achieving such decarbonization targets in a timely and orderly manner could unlock Romania's enormous green potential, including in the green hydrogen and wind energy value chains. However, the transition to a low-carbon economy entails significant costs and challenges for Romania. For example, decarbonizing crucial sectors like transport, electricity, and buildings requires enormous investments—amounting to at least 3.2 percent of cumulative GDP by 2050 (World Bank, 2023). Furthermore, a sizable portion of Romania's non-financial corporate sector—accounting for over 40 percent of gross value added and 48 percent of total assets—remains highly exposed to the phasing out of activity in the country's large fossil fuel sector (National Bank of Romania, 2022). There is also the added challenge of addressing costly climate adaptation risks—notably floods, heatwaves, and droughts to which Romania is highly vulnerable[2] (Figure 1). With relatively modest public support for climate mitigation[3], these challenges complicate Romania's transition to carbon neutrality in a socially inclusive manner.

Figure 1. Share of Firm-Level Gross-Value Added (GVA) Exposed to Climate Risks in Romania

Sources: National Bank of Romania, Think Hazard; European Commission, and Romanian Ministry of Finance.

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[1] Prepared by Augustus Panton.

[2] In 2021, Romanian firms in flood-vulnerable sectors contributed 15 percent of gross value added (GVA) and held 13.7 percent of total assets, while firms impacted by extreme heat risk contributed 9 percent of total GVA and held 9.2 percent of total assets (National Bank of Romania, 2022).

[3] According to the 2023 EU Climate Action *Citizens Survey on Climate Attitudes,* a minority (just over 40 percent) of Romanians indicate willingness to pay for climate action. Research on climate change perception in Romania (see Cheval and others, 2022) shows that awareness and public support for climate mitigation differs across regions, with areas highly vulnerable to climate disasters more in support of stringent policy effort.

2.   Romania's structural challenges may amplify the effects of climate change. Existing structural challenges, when interacted with Romania's high climate risk exposure, may amplify the costs of climate change and the stringency of attendant policies for achieving carbon neutrality. Of particular concern is the country's fast aging infrastructure stock, which on the one hand diverts resources toward costly reconstruction amid climate extremes (e.g., flooding) while on the other hand it drives inefficient energy demand and consumption. This is particularly concerning given that Romania has one of the highest energy poverty rates[4] in the EU (EU, 2023).

3.   Climate mitigation efforts are well underway in Romania, with room for further policy action. Romania's absolute and per capita emissions are low and continue to fall, partly due to the structural transformation that began with the transition to a market-based economy in the post-communist era. In recent years, Romania has complemented the EU Emissions Trading System (EU ETS) with a suite of national measures, as outlined in the *Integrated National Energy and Climate Plan* (INECP)[5] and the *Long-Term Strategy* (LTS), in promoting the national decarbonization agenda. But the Romanian economy remains highly emission- and energy-intensive amid the country's strong dependence on fossil fuels. Notably, the high fossil-fuel intensity (especially in the transport sector) and low energy efficiency (particularly in the building sector) require urgent policy action.

4.   This analysis proposes complementary policies for strengthening Romania's transition to carbon neutrality while ensuring energy security and enhancing green resilience and competitiveness. According to the EU Environmental Agency's (EEA) projection[6], Romania appears to be on track to cut its absolute emissions by 55 percent (relative to 1990) by 2030, consistent with the EU's ambitious Fit-for-55 climate mitigation package. However, achieving carbon-neutrality by 2050 in an economically resilient and competitive fashion would require an accelerated decarbonization path (World Bank, 2023). In such context, this paper aims at identifying policy options—notably tax-based measures—that would strengthen Romania's resilience and competitiveness in a growth-friendly (Schoder 2023) and fiscally sustainable manner (IMF, 2023) in the transition to a low-carbon economy.

5.   The remainder of the paper is organized as follows. The next section reviews the recent trends and drivers of GHG emissions in Romania. Section C summarizes the key policy instruments underpinning the decarbonization process in Romania, while section D examines the decarbonization challenges facing Romania. Section E outlines and quantifies the effects of the proposed complementary policy options. Finally, section F sums up the paper and provides policy recommendations.
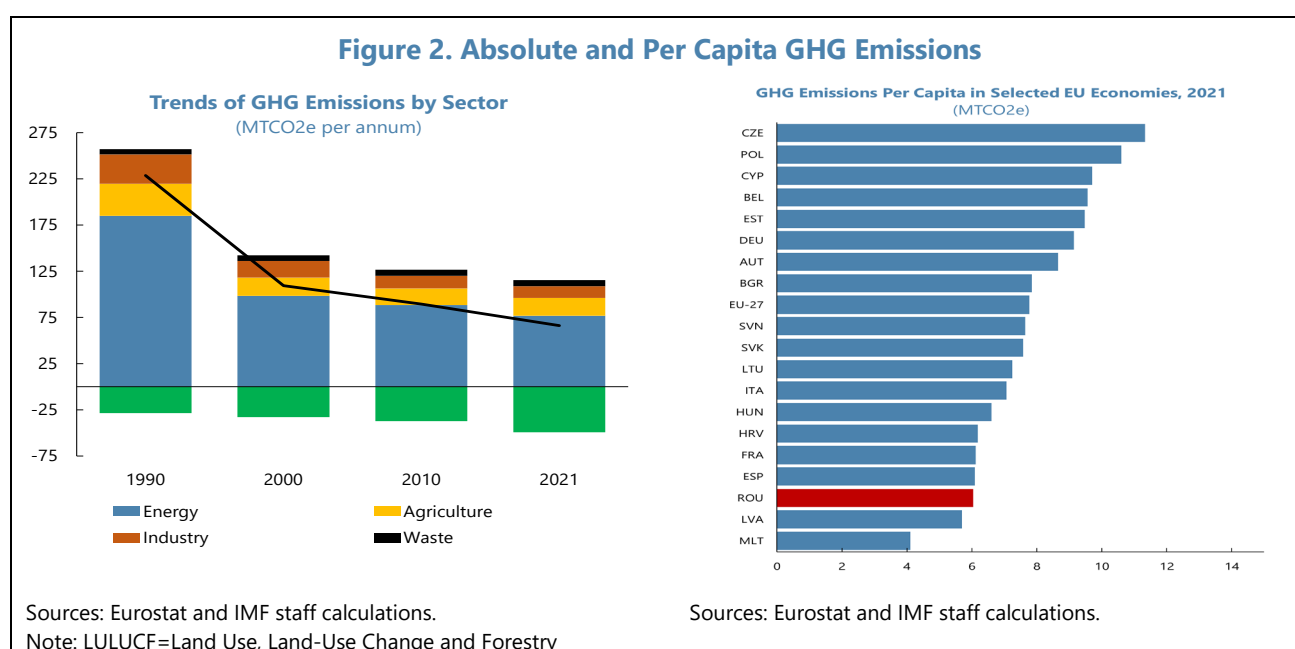
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[4] [According to the EU, over 15 percent of households in Romania could not afford to keep their home adequately warm in 2022](#)

[5] On the climate adaptation front, Romania has strengthened its institutional frameworks for disaster response over the past decade, with the National Adaptation Strategy aimed at promoting climate resilience and ensuring a just transition. Yet, the climate adaption effort remains inadequate, notably in sectors like agriculture where a large share of activity and workers are exposed (World Bank, 2022).

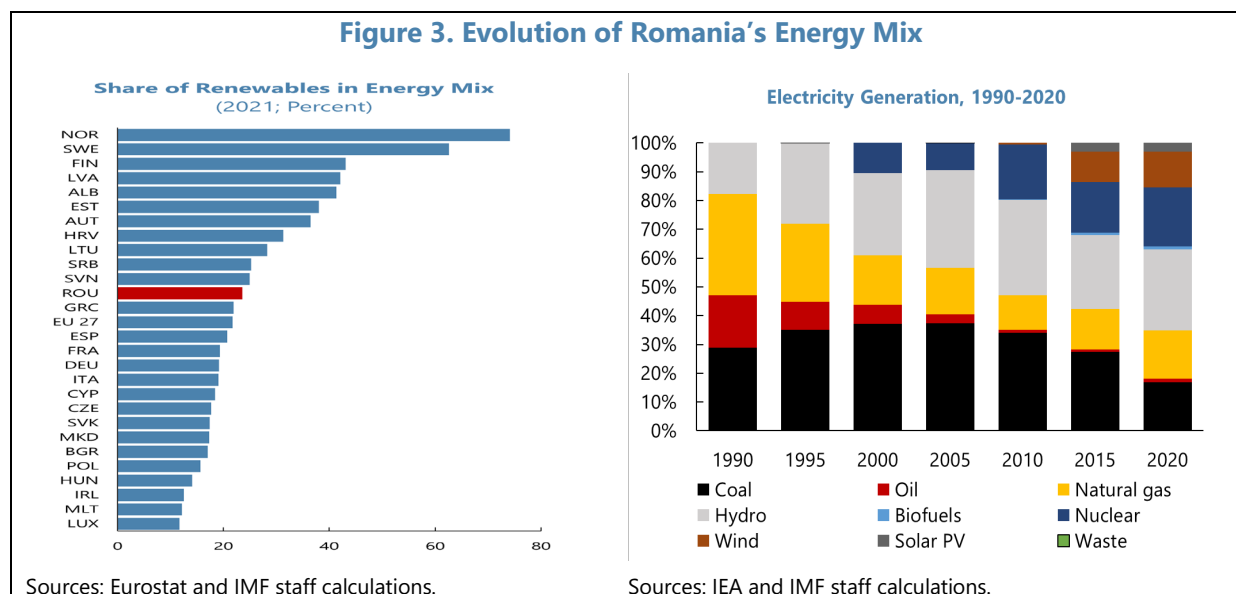[6] EEA greenhouse gas projections - data viewer: https://www.eea.europa.eu/data-and-maps/data/data-viewers/eea-greenhouse-gas-projections-data-viewer/

B. Greenhouse Gas Emissions and Energy Mix in Romania

6.   Romania's absolute and per capita emissions are comparatively low and continue to decline. Romania's contribution to EU-wide and global emissions remains marginal, with a decarbonization trend that sees absolute GHG emissions persistently declining since 1990 (Figure 2). The country's per capita carbon footprint also continues to fall since 1990—to 6.0 metric tons of CO_2 equivalent in 2021—below the EU average of 7.8 metric tons of CO2 equivalent. Romania's transition to a market-based economy in the early 1990s largely explained these strong initial decarbonization trends. The transition involved the restructuring and privatization of heavy-polluting state-owned enterprises. This attracted private investment in renewable energy sources (Campos and others, 2002; Roaf and others, 2014), further reducing the carbon footprint of the Romanian economy (Colesca and Ciocoiu, 2013).

Figure 2. Absolute and Per Capita GHG Emissions

Sources: Eurostat and IMF staff calculations.
Note: LULUCF=Land Use, Land-Use Change and Forestry

Sources: Eurostat and IMF staff calculations.

7.   The ongoing phase-out of coal, coupled with investments in low-carbon energy sources, will reduce emissions further. Under Romania's 2022 Decarbonization Law, coal is scheduled to be phased out and coal-fired power generation facilities will be decommissioned by 2032. Although coal accounted for approximately 20 percent of Romania's electricity generation in 2022, it disproportionately contributed up to 70 percent of the country's electricity related GHG emissions. Furthermore, the phase out of coal, if fully committed to, will catalyze green private investments, and quicken the pace of decarbonization across the economy. For example, investments in green hydrogen—which is highly dependent on the availability of low-carbon energy supply (i.e., wind, solar, hydro)— and carbon capture and storage infrastructure will be critical in meeting Romania's growing energy demand in a climate-friendly manner, especially in hard-to-abate sectors (World Bank, 2023). The ongoing exploration of the Black Sea natural gas reserve—as a transitional fuel—can help strengthen short-term energy security as Romania pursues a cleaner energy future.

8.   Overall, renewable energy generation continues to increase, although Romania's energy mix is still fossil fuel dependent. The share of renewables in Romania's energy mix has been steadily rising in recent years and stood at 23.6 percent in 2021, above the EU average of 21.8 percent (Figure 3). Notably, electricity generation continues to shift more toward low-carbon sources, including hydro and biomass in addition to nuclear, wind, and solar. In 2021, these sources accounted for up to 64 percent of Romania's electricity mix. Electricity generation from biomass is small but growing rapidly, with the need for more sustainably sourced wood-generated biomass becoming urgent. That is because while biomass is counted toward achieving renewable energy target across member states, EU rules require strict sustainability criteria[7] for woody biomass.

Figure 3. Evolution of Romania's Energy Mix

Sources: Eurostat and IMF staff calculations.

Sources: IEA and IMF staff calculations.

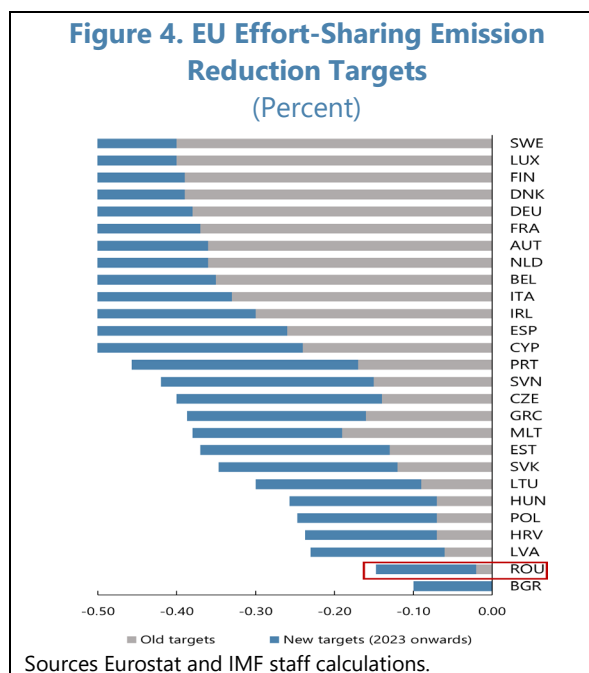## C.   Climate Policies in Romania

9.   Romania is committed to the decarbonization targets under the EU Green Deal, with access to regional funding for a just transition. These targets are currently captured by two comprehensive goals.

- **First,** over the medium term (2023-2030), member states must cut their GHG emissions by at least 55 percent by 2030 (relative to 1990 levels) under the Fit-For-55 package, to be facilitated by a more stringent new ETS regime. While on path to achieve the Fit-for-55 target, Romania's decarbonization drive moving forward would be challenged on at least three fronts:

  i.   *Stringent 'Effort Sharing Regulation (ESR):* As a key element of the Fit-for-55 package, the ESR imposes binding annual GHG emissions reduction targets for sectors not currently covered by the ETS (i.e., transport, buildings, agriculture, waste management, and small industries). For the period up to 2030, the ESR also sets specific annual emission limits, with member states receiving decreasing emission allocations each year. For Romania, adhering

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[7] European Commission, Joint Research Centre, *Brief on biomass for energy in the European Union*, Publications Office, 2019, https://data.europa.eu/doi/10.2760/546943

to these targets will require significant policy and structural changes. The country must develop and implement national strategies to quicken the pace of emissions reduction in the effort-sharing sectors—up to 12.7 percent relative to 2005—rather than the lower 2 percent required under the old effort sharing Directive (Figure 4).

ii. *Gradual phase-in of the 'Carbon Border Adjustment Mechanism (CBAM)' and phaseout of free ETS allowances:* The gradual introduction of the CBAM from 2026, and the concurrent phasing out of free ETS allowances, mark a pivotal shift in EU climate policy. The CBAM levels the cost of greenhouse gas emissions between EU and non-EU products by pricing carbon on specific imports, aiming to prevent carbon leakage and promote global emissions reduction. This shift may challenge Romania, especially sectors dependent on free ETS allowances, underscoring the need for more stringent decarbonization effort moving forward.

Figure 4. EU Effort-Sharing Emission Reduction Targets
(Percent)

Sources Eurostat and IMF staff calculations.

iii. *Separate ETS applied to Transport and Building sectors.* The introduction in 2027–28 of a separate ETS for transport, buildings, and select small industries ('ETS 2') will harmonize carbon pricing and reduce distortions across the EU, especially since such extra taxes already exist in some EU countries (e.g., Denmark, Finland, Latvia). Where such additional taxes are absent (like in Romania), the immediate gradual introduction of carbon pricing in these sectors can ease the transition towards ETS 2. Additionally, early revenues generated from these taxes could support further decarbonization effort and exempt implementing countries from the eventual introduction of ETS 2.

- **Second,** all member states must become carbon-neutral (net-zero GHG emitters) by 2050. In addition to several other funding schemes toward the green transition, including via Romania's National Resilience and Recovery Plan (NRRP), the EU's Just Transition Mechanism provides further funding aimed at ensuring a fair and inclusive green transition.

10.   Several national measures, in addition to the EU ETS, are underpinning the decarbonization agenda in Romania. Beyond the ETS, Romania has institutionalized several national instruments to facilitate the country's decarbonization effort in the medium term (via the Integrated National Energy and Climate Plan) and over the long run (through the Long-Term Strategy). Several sectoral green schemes are in place to promote the national decarbonization agenda, targeting increased renewable energy generation (e.g., the National Hydrogen Strategy; contract-for-difference for renewables), strong energy efficiency standards (via the District Heating Program), high modernization rates in the buildings sector (via the National Long-Term Renovation Strategy), and an inclusive and fair climate transition (via the National Adaptation Strategy).

11.   Specifically, Romania has earmarked renewable energy penetration and energy efficiency benchmarks consistent with EU's targets.

- **Renewable energy:** Romania commits to increase the overall share of renewable energy in gross final energy consumption to 30.7 percent in 2030. This translates into a renewable energy share of 49.4 percent in electricity, 14.2 percent in transport, and 33.09 percent in heating and cooling (Table 1).

- **Energy efficiency improvement:** Primary and final energy consumptions are targeted to be cut by 45.1 and 40.4 percent respectively, by 2030 to meet the EU-wide target of 32.5 percent energy efficiency improvement.

Table 1. Romania: Renewable and Energy Efficiency Targets (2021–30)

Increasing Share of Renewable Energy (RE) in Energy Mix (%)	
Overall Share of RE in Final Energy Consumption	30.7
Electricity	49.4
Transport	14.2
Heating and Cooling	33.0
Improving Energy Efficiency (%)	
Primary Energy Consumption	-45.1
Final Energy Consumption	-40.4

Source: Romania Integrated National Energy and Climate Plan (INECP),
Note: These figures are based on the latest INECP which is being updated by the authorities.

12.   There is strong national coordination of decarbonization measures. Romania has centralized its decarbonization efforts through the Inter-ministerial Committee on Climate Change (CISC), which streamlines climate policies across various agencies. For example, the Ministry of Energy, in coordination with the Ministry of Environment, Water, and Forests, oversees the decarbonization and environmental policy agenda, while the Ministries of Finance and European Investments and Projects are pivotal in green financing. But the CISC not only coordinates these efforts (including at the sub-national level, especially regarding green public investments) but also enhances public engagement in climate action.

D.   Decarbonization Challenges in Romania

13.   Nonetheless, emissions continue to rise in sectors not covered by the EU ETS, with the potential to slowdown the transition to carbon neutrality. While overall emissions have been falling in Romania, non-ETS emissions continue to rise. For example, in 2022, Romania was among the EU countries whose non-ETS emissions exceeded the new national limit under the new Effort Sharing Regulation (Figure 5). This presents a crucial decarbonization challenge and underscores the need for further policy measures.

14.   Relative to the EU level, the Romanian economy is highly energy and emission intensive. Romania's relatively low level of

Figure 5. EU Effort-Sharing Emission Reduction Progress
(Percent estimates, 2022)
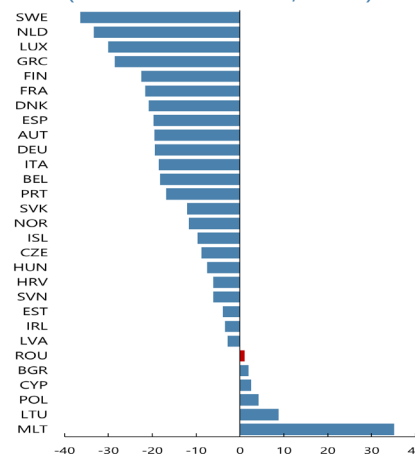
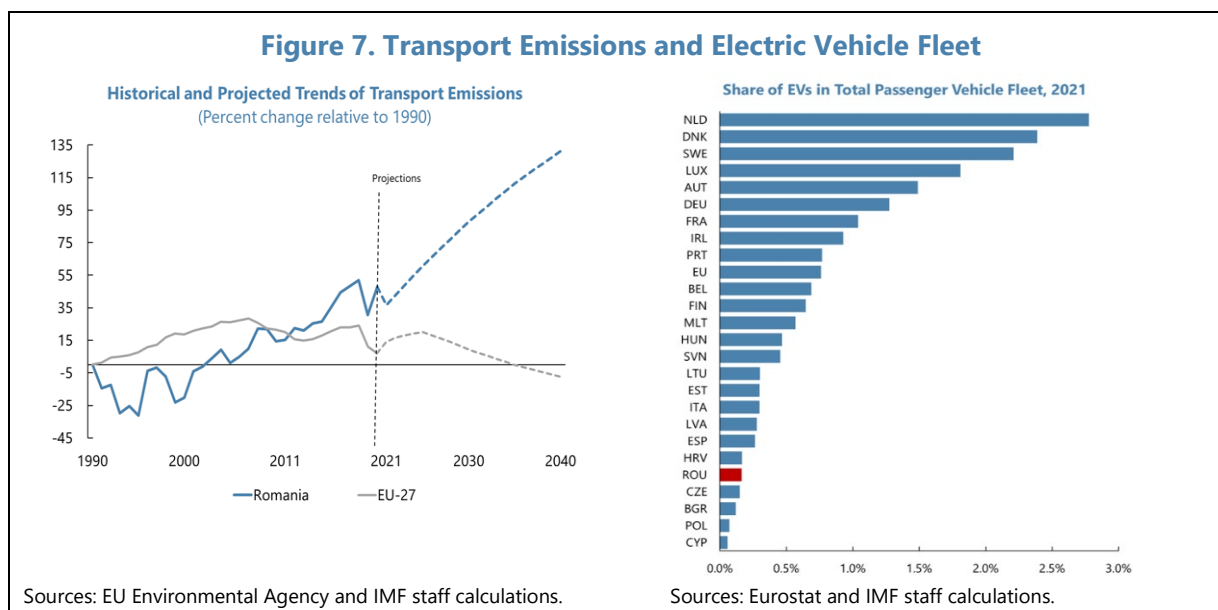Sources: Eurostat and IMF staff calculations.

emissions (Figure 2) is the result of its still modest per capita GDP (the lowest in the EU), rather than because of low emissions per unit of output. The Romanian economy uses about 60 percent more energy per unit of output—at 0.19 kg of oil equivalent—than the average EU economy in 2021 (Figure 6). As the share of low-carbon sources in total energy supply remains low, this high energy demand is largely sourced from fossil fuels, underpinning the country's high emission intensity—at over 70 percent above the EU average in 2021.

Figure 6. Energy and Emission Intensity of Output

Sources: Eurostat and IMF staff calculations.
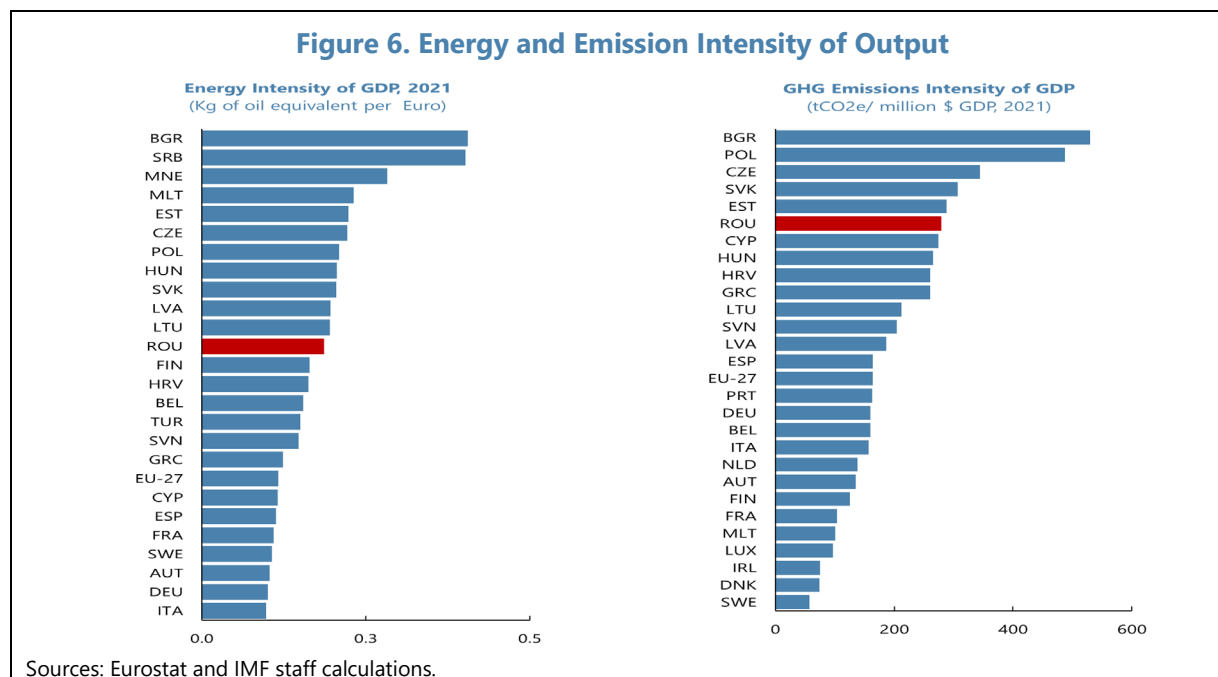
15.   High oil dependency in the transport sector is fueling a persistent rise in emissions, which are projected to further diverge from the downward trend in the EU. The transport sector's emissions have been on a persistent upward trend over the last two decades, partly fueled by increased vehicle ownership as Romania closes the per capita income gap relative to the EU. According to the EEA, this trend is projected further upward, with emissions in the sector transport expected to surge by 84 percent by 2030 relative to the level in 1990 (Figure 7). Curbing this trend would require increased electric mobility. While progress is being made in electrifying public transport, the share of electric vehicles (EVs) in Romania's total passenger vehicle fleet was well below 1 percent in 2021, like the rest of the EU where EV penetration remains low (Figure 7). Romania's generous EV subsidies—under the *'Rabla Plus Program*[8]—will likely increase EV ownership over time, requiring further investments in charging stations (powered by low-carbon energy sources) to incentivize uptake.
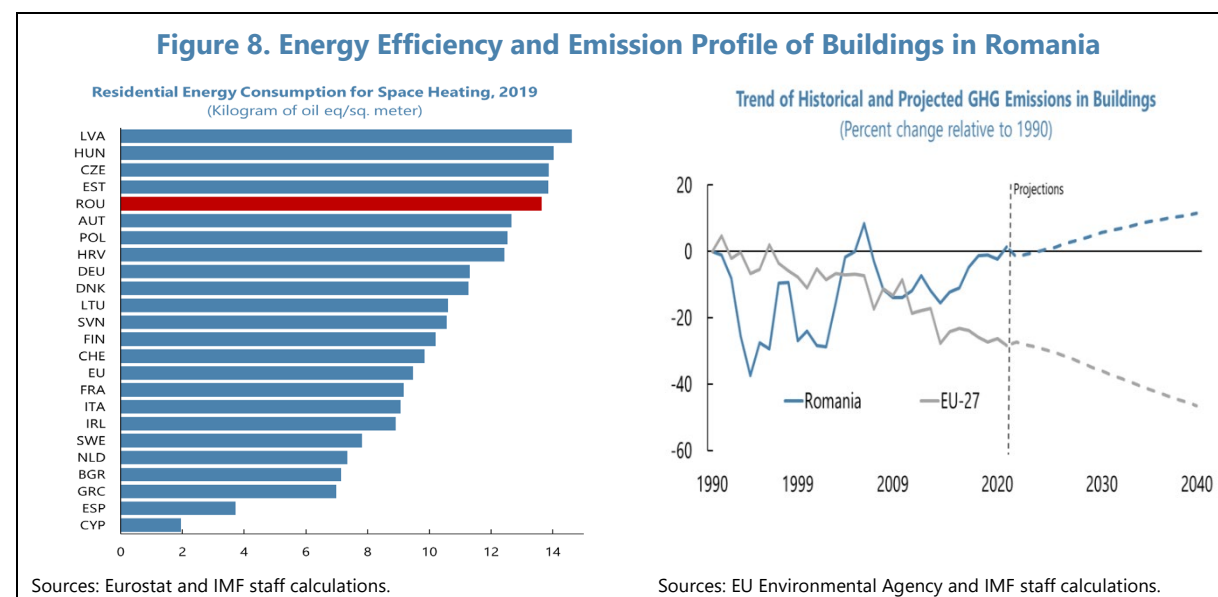
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[8] Grants for battery electric vehicles can reach up to €4,450 (20,000 RON), while plug-in hybrids can receive €1,100. An additional subsidy of €10,000 is available for the purchase of a new electric vehicle, and an extra €1,430 can be obtained for scrapping vehicles over eight years old. The funding covers up to 50 percent of the vehicle's value.

Figure 7. Transport Emissions and Electric Vehicle Fleet

Historical and Projected Trends of Transport Emissions
(Percent change relative to 1990)

Share of EVs in Total Passenger Vehicle Fleet, 2021

Sources: EU Environmental Agency and IMF staff calculations.

Sources: Eurostat and IMF staff calculations.
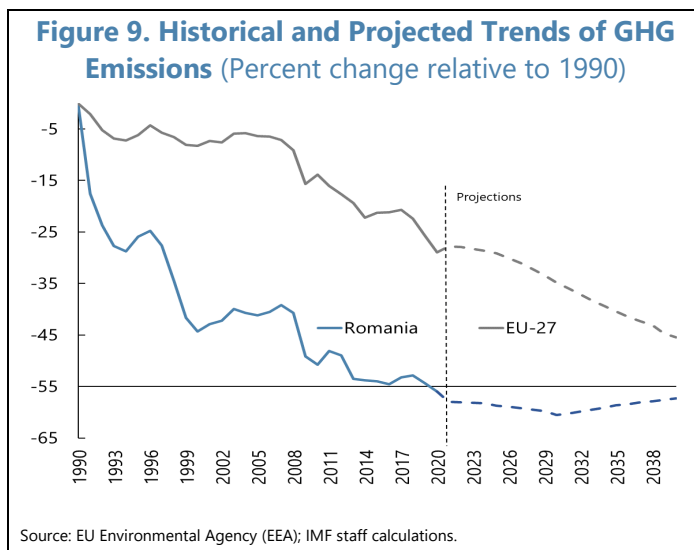
16.   Furthermore, emissions from Romania's aging building stock have been increasing and are also projected to diverge from the falling trend in the EU. Romania has one of the most energy inefficient building stocks in the EU, with emissions in the sector projected to rise over time (Figure 8). High energy demand, mostly met by fossil fuels, underpins the projected increase in emissions from buildings. Arresting this trend, including through better insulation, is vital for keeping the country on course to net-zero emissions. Romania's current renovation rate of 0.5 percent annually is targeted to rise to 3½ percent by 2030 under the National Renovation Strategy. Meeting this ambitious goal requires substantial investment. This underscores the need for stronger incentives in addition to the "CasaVerde" program which provides grants for heat pumps and insulation to foster residential energy efficiency.

Figure 8. Energy Efficiency and Emission Profile of Buildings in Romania

Residential Energy Consumption for Space Heating, 2019
(Kilogram of oil eq/sq. meter)

Trend of Historical and Projected GHG Emissions in Buildings
(Percent change relative to 1990)

Sources: Eurostat and IMF staff calculations.

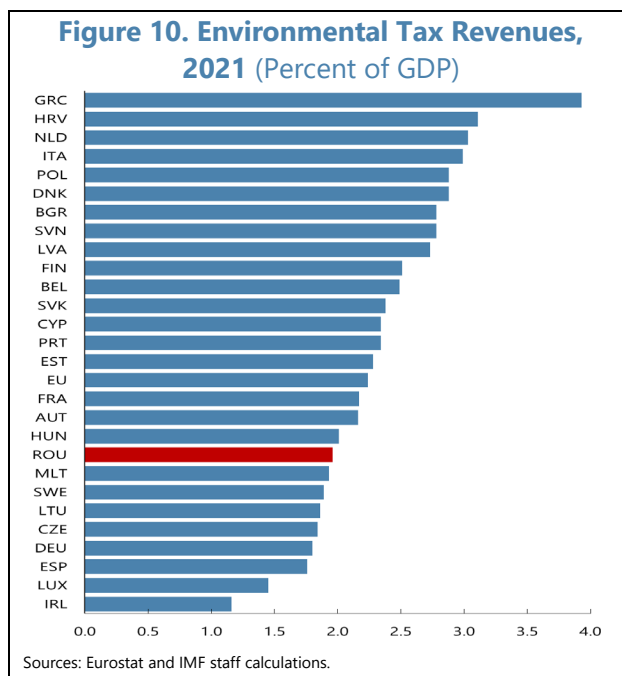Sources: EU Environmental Agency and IMF staff calculations.

17. **In sum, while Romania appears to be on track to meet the EU's Fit-for-55 target, meeting the longer-term net zero target is far from secured.** The current level of emissions is

relatively low, and projection by the EEA shows the country is on track to exceed the 55 percent reduction target well before 2030 (Figure 9). However, beyond this horizon, Romania is expected to continue to converge to the higher income levels elsewhere in the EU, while its energy and emission intensity remains high, notwithstanding efforts to decarbonize through a variety of programs. As a result, the pathway to carbon neutrality by 2050—which partly depends on the state of progress in low-carbon innovations globally—remains highly uncertain, underscoring the need for significant additional policy action and green investments.
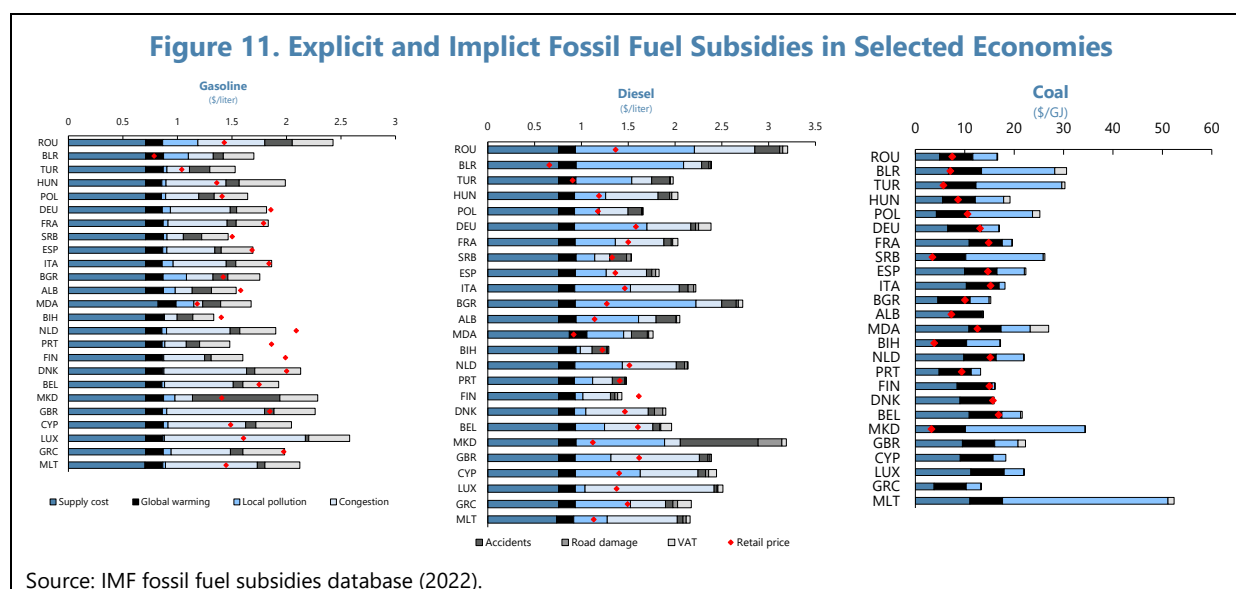
Figure 9. Historical and Projected Trends of GHG Emissions (Percent change relative to 1990)

Source: EU Environmental Agency (EEA); IMF staff calculations.

E. Complementary Policy Options

18. **Romania has made significant progress in reducing emissions and greening its energy mix, but the transition to carbon neutrality requires further policy effort.** Notably, the ongoing rise in non-ETS emissions—particularly in the transport building sectors—as discussed in the preceding section underscores the need for a further decarbonization push. Tax-based decarbonization measures—starting with pre-announced rates that phase in gradually—can complement the ETS and other national policies in driving Romania's transition to a low-carbon economy. Using the IMF-World Bank Climate Policy Assessment (CPAT) tool, this section examines the decarbonization and macroeconomic effects of complementary green tax policy options that the Romanian authorities could consider.

19. **Green tax instruments are the most efficient, although not the only measures, that can drive the further decarbonization effort.** While further positive incentives, including subsidies, do have a role in facilitating the net-zero transition, tax-based decarbonization tools will need to play a greater role in Romania. Optimal pricing of fossil fuels would incentivize efficient energy use while facilitating strong private investments in renewables. Moreover, the negative

Figure 10. Environmental Tax Revenues, 2021 (Percent of GDP)

Sources: Eurostat and IMF staff calculations.

externalities of fossil fuels are underpriced in Romania (relative to other EU member states). This is reflected in Romania's low environmental tax revenues—below the EU average in 2021 (Figure 10). Tax measures that fully internalize these externalities (Figure 11) can promote decarbonization and fiscal sustainability at the same time (IMF, 2023).

Figure 11. Explicit and Implict Fossil Fuel Subsidies in Selected Economies

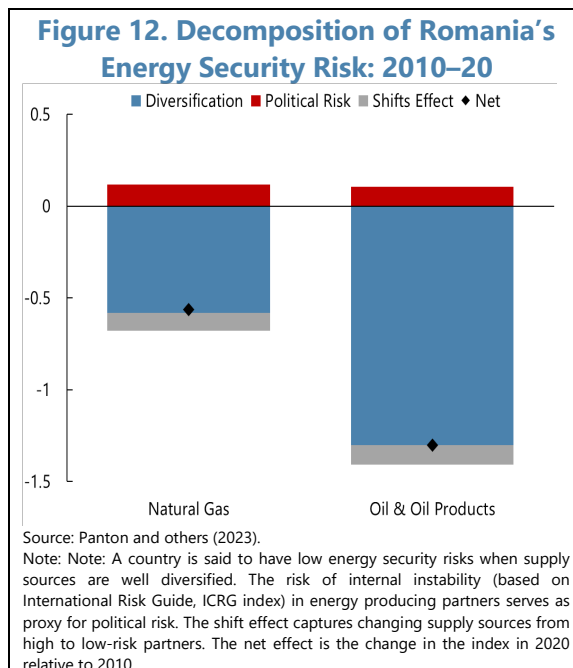Source: IMF fossil fuel subsidies database (2022).

20.   In this context, two tax-based measures are simulated in this paper, specifically aimed at reversing the rising trends in non-ETS emissions while putting Romania on a firmer net-zero path. Complementary national carbon pricing schemes are common in the EU, with carbon taxes that vary in stringency from €9 in Latvia to €108 per ton of CO_2 in Sweden. While more stringent carbon price signals would be needed to achieve the desired emission reduction in Romania, the need to broaden political support by gradually phasing in such measures cannot be overemphasized (Andersen, 2019). Therefore, the goal in this section is to illustrate that tax-based measures (explicit carbon taxes and excise reforms), even if starting low before rising linearly over time, can induce investment in low-carbon energy sources while shifting preferences away from fossil fuel use (Stiglitz and Others, 2017; IMF, 2022). In this context, the proposed instruments below are largely illustrative and not intended as optimal policy paths.

- **A carbon tax in the transport and building sectors** that Starts low at €25 in 2024, before linearly rising to €75/ton of CO2 by 2030. For such a sectoral policy to deliver large cuts in emissions, the tax rate would have to be significantly higher. This tax, when implemented before the new EU ETS 2 is rolled out in 2027–28, would facilitate the early collection of revenues and the eventual exemption of the transportation and building sectors under ETS 2.

- **Gradual phase-in of excise taxes on fossil fuels:** This option sets additional excises on fossil fuels to reach 75 percent of the optimal price by 2030, effectively internalizing a large part of the externalities associated with burning fossil fuels beyond their supply costs (Black and others, 2023). These excises would be phased in from 2024, rising gradually to their target levels by 2030. On an equivalent basis, the excise for coal, gasoline, and diesel would be €68.1, €257.7, and €474 per ton of CO2 in 2030, respectively.

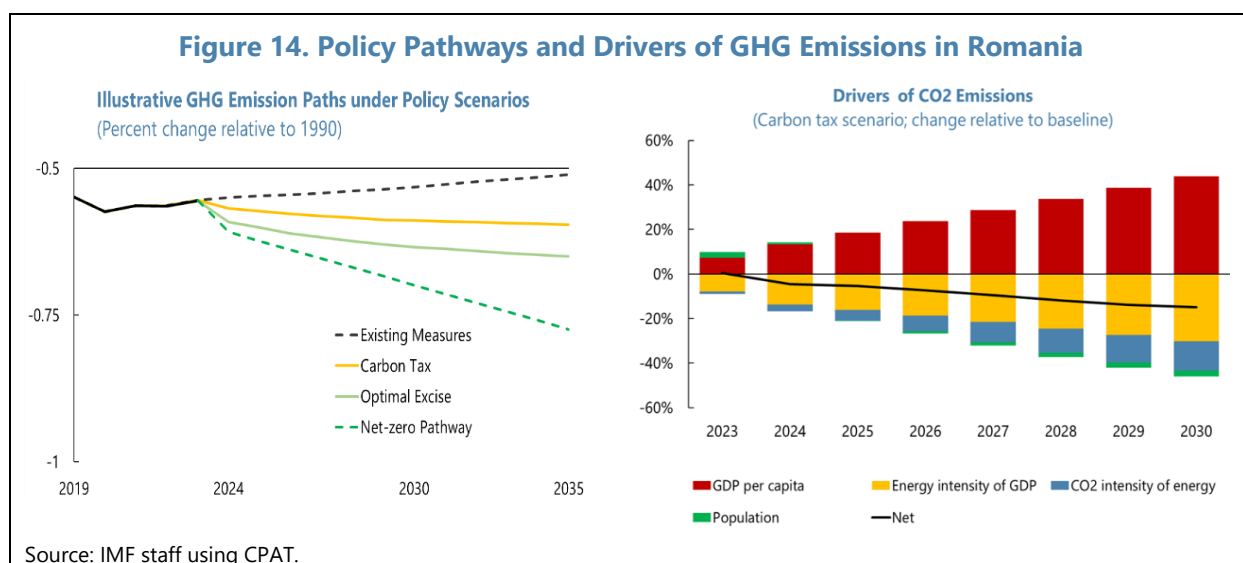**21.** **Well designed and communicated, these measures could also enhance energy security in Romania.** The energy crisis due to Russia's war in Ukraine has demonstrated the energy security risks posed by high fossil fuel reliance. Over the last two decades, Romania has maintained a diversified portfolio of energy supply, strengthening overall energy security (Panton and others, 2023). However, a strong decarbonization agenda that promotes green investment while phasing out reliance on fossil fuels would be required to ensure energy security during the green transition. Such a policy agenda, as advocated in this paper, would promote energy security on at least two fronts. First, decarbonization policies will promote energy efficiency and reduce fossil fuel demand. Second, increased renewable energy penetration amid stringent decarbonization measures will reduce energy import dependence and improve energy security. However, the increased penetration of intermittent renewable energy sources requires substantial investments in modern energy infrastructure to balance loads and store energy, underscoring the need for tax-based measures that can generate fiscal revenues.


Figure 12. Decomposition of Romania's Energy Security Risk: 2010–20

Source: Panton and others (2023).
Note: Note: A country is said to have low energy security risks when supply sources are well diversified. The risk of internal instability (based on International Risk Guide, ICRG index) in energy producing partners serves as proxy for political risk. The shift effect captures changing supply sources from high to low-risk partners. The net effect is the change in the index in 2020 relative to 2010.

22. **These tax measures would reverse the rising trend in non-ETS emissions.** The simulated carbon tax is effective at reducing transport and building emissions by 2030 by 6 percent. The relatively higher rate of emissions reduction in the transport sector reflects the stronger dependence of the transport sector on fossil fuels (mainly gasoline and diesel) while coal's contribution to heating in building continues to fall with its phase out. The excise tax, which applies to a larger fossil fuel base, delivers faster emissions reduction, although its implementation might need to be more gradual to broaden public support. Across individual fuels, diesel usage declines at a faster rate due to its (implicitly) highly subsidized pre-policy level, followed by coal.
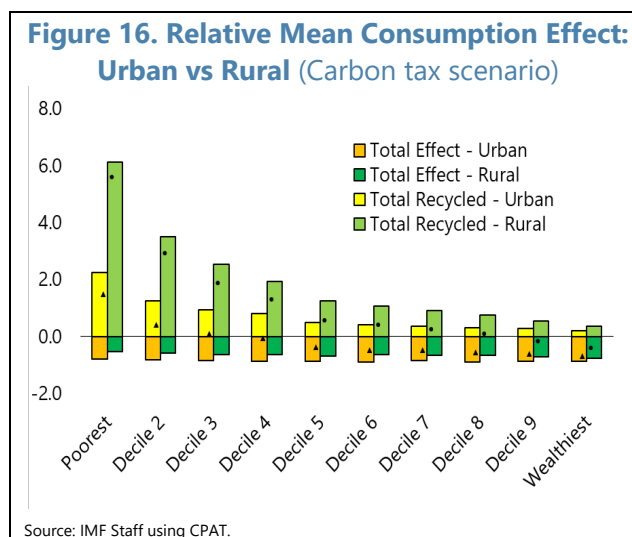

Figure 13. Decarbonization Effects of Policies in 2030

Source: IMF staff using CPAT.
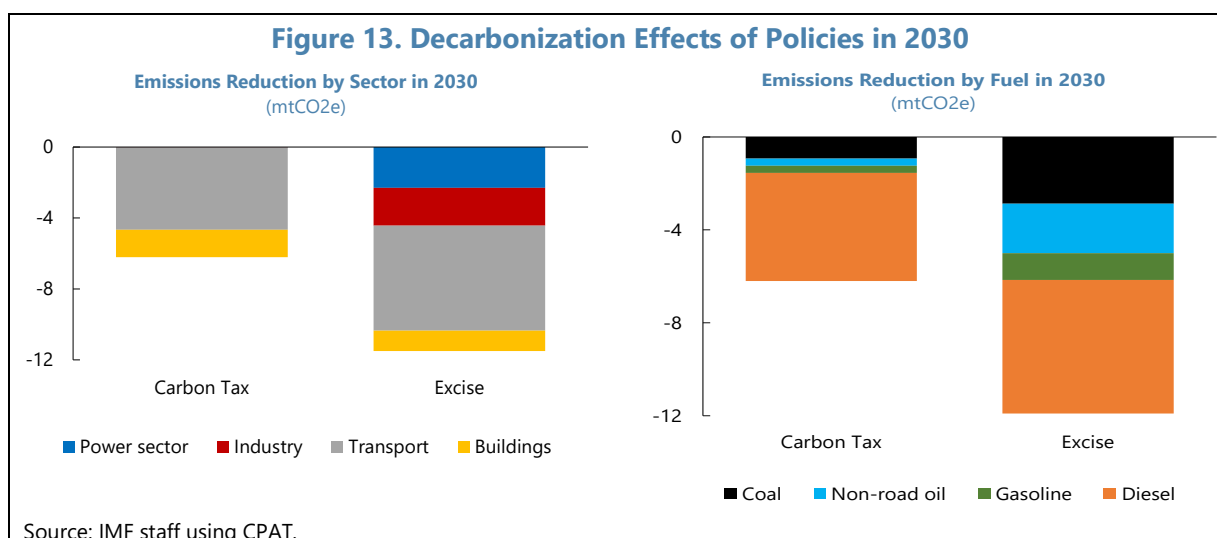
23. **These measures can incentivize emission reduction across the economy, putting Romania on track to carbon neutrality.** Under existing policies, our model projection shows that Romania's emissions would rise over time, diverging from the path to carbon neutrality (Figure 14). The simulated tax-based instruments, despite starting at relatively low rates, facilitate a reversal of that rising trend in emissions, thus reducing the gap between current emission levels and the desired net-zero path. These measures work through several important channels. Foremost, the carbon tax—like the excise tax reform—incentivizes efficient energy use, gradually reducing the high energy intensity of activity in Romania. Second, the introduction of these measures also shifts consumption preferences to low-carbon energy sources while promoting renewable energy investments, gradually decoupling per capita income growth from emissions. For a carbon-intensive economy like Romania, these dynamics are critical in charting a sustainable course to carbon neutrality (Budina and others, 2023). In short, complementing Romania's existing policies with stringent national measures would help put the country on track to carbon neutrality.

Figure 14. Policy Pathways and Drivers of GHG Emissions in Romania

Source: IMF staff using CPAT.

24. **Furthermore, these tax-based measures can generate substantial fiscal revenues in a growth-friendly way.** Tax-based decarbonization measures, as simulated in this paper, when well designed (e.g., well communicated and phased in gradually), can deliver their desired outcome (emissions reduction) while also serving as a means of fiscal reform in a growth-friendly way (Gilbert and Stock, 2023; IMF, 2023). For example, the carbon tax would raise fiscal revenues of up to 1.1 percent of GDP (while the excise tax could deliver up to twice) by 2030, while having a net positive effect on output (Figure 15).

Figure 15. Growth and Fiscal Impacts of Extra Decarbonization Measures

Source: IMF staff using CPAT.
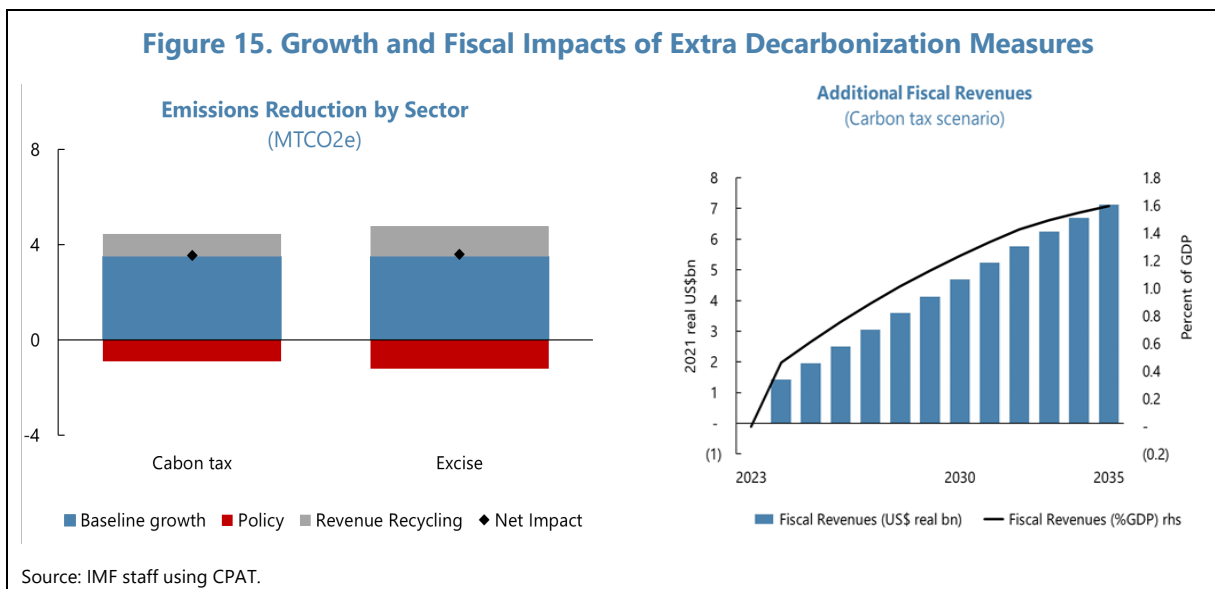
25.   The proper recycling of the generated revenues can help broaden political support and strengthen social cohesion. The growth-friendly nature of these measures crucially hinges on how the generated revenues are recycled—from lowering labor income taxes and providing transfers to vulnerable households to reducing fiscal deficit and investing in green infrastructure (IMF, 2022)[9]. The generated revenues can be recycled towards effective emission reduction avenues such as green public investments in low-carbon energy infrastructure (IMF, 2022, 2020). These

Figure 16. Relative Mean Consumption Effect: Urban vs Rural (Carbon tax scenario)

Source: IMF Staff using CPAT.

investments would not only contribute to further emission reduction, but they will also generate higher growth—consistent with evidence in the literature that green spending's output multipliers are quite large (Batini and others, 2022). As further evidence suggests (see Schoder, 2022; World Bank, 2022), the high emission intensity of the Romanian economy makes it very attractive to tax-based policies as instruments of growth- and employment-friendly decarbonization. Absent effective tools to mitigate the adverse distributional effects[10] of decarbonization policies, the imposition of these measures would have stronger disproportionate impact on vulnerable segments—including low-income households and vulnerable workers. However, as indicated in

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[9] For the illustrative CPAT model simulation analyzed in this paper, the carbon tax and excise revenues are recycled as 30 percent apiece to public infrastructure and household transfers and 40 percent to labor income tax reduction. These revenue allocations are merely illustrative as governments may decide on alternative uses, including fiscal deficit reduction.

[10] It is worth noting that these policies do generate other positive co-benefits, including lower local air pollution and pollution mortality, that society can enjoy.

Figure 16, strategic revenue recycling can mitigate these negative effects, potentially making the reforms progress for both rural and urban consumers.

26.   These complementary measures can also generate significant co-benefits for Romania. While the simulated carbon tax and excise taxes do indeed impose some costs on the Romanian economy, the net benefits—beyond being growth friendly while reducing GHG emissions—are positive. For example, an accelerated green agenda underpinned by a complementary carbon tax could improve economic efficiency and induce cleaner production processes economywide. Other meaningful co-benefits include less air pollution as well as reductions in traffic congestion and accidents.

Figure 17. Welfare Benefits from €75 Carbon Tax by 2030

Source: IMF staff using CPAT.
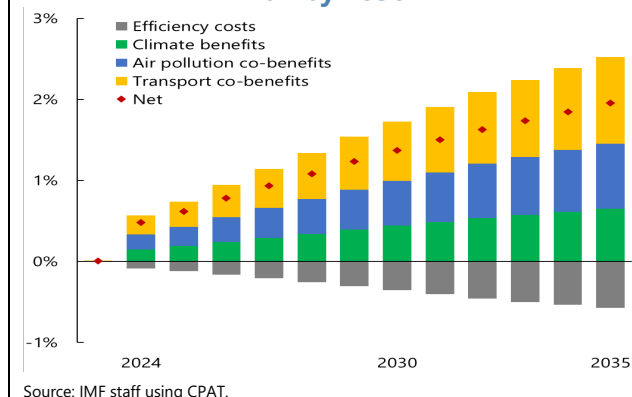
27.   Beyond decarbonization, a stronger green push could enhance Romania's resilience and competitiveness in critical green value chains. In 2020, Romania outperformed the EU average in the production of environmental goods and services, with low-carbon goods and services amount to 2½ percent of GDP (Figure 18). With such potential, an accelerated decarbonization agenda could serve as a catalyst for the private sector to channel more investments into green value chains, building on Romania's existing advantage. These investments would not only diversify Romania's economy but also stimulate job creation in high-value green tech industries.

Figure 18. Gross Value Added in Environmental Goods and Services in 2020
(Percent of GDP)

Source: European Environmental Agency; IMF staff calculations
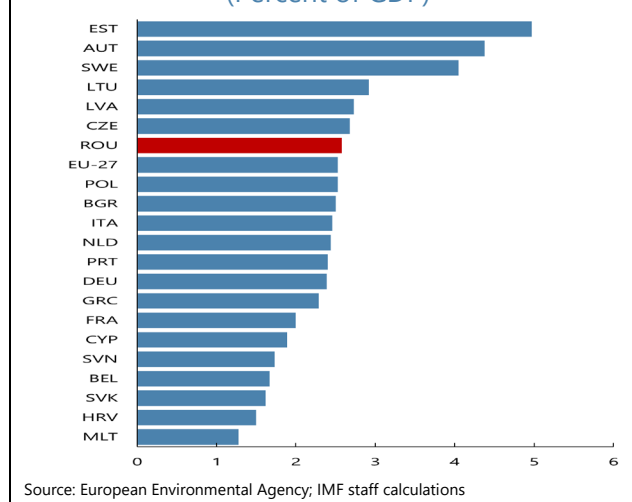
28. **Romania is also well positioned to exploit opportunities in emerging green industries.** Romania has high comparative advantage in the production of low-carbon technologies which are key to facilitating the global transition to carbon neutrality (Figure 19). To support private sector development in the related value chains, a strong domestic agenda is critical (Barker and others, 2009). For example, Romania has high potential in the production of green hydrogen given the availability of low-carbon sources like hydro power. The introduction of the EU's CBAM beginning 2026 will transform trade into a lever for climate policy, incentivizing cleaner production methods. As an EU member state, Romania is well-positioned to leverage this shift to enhance its global trade resilience. By

Figure 19. Comparative Advantage in Low-Carbon Tech Products, 2021
(Values greater/less than 1 imply advantage/disadvantage)

Sources: IMF Climate Change Dashboard and IMF staff calculations.

greening its production processes, Romania stands to benefit from increased competitiveness in a market where sustainability is becoming a prerequisite, not just an option, for economic success.
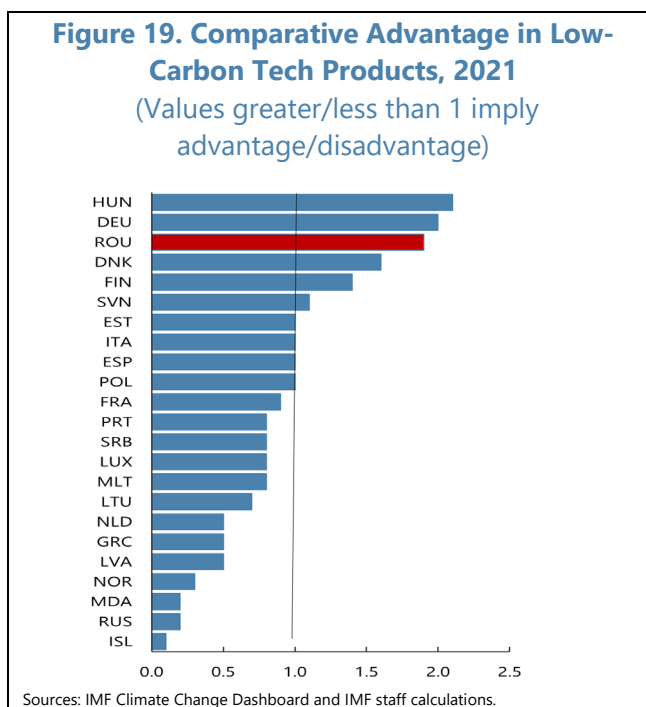
F.   Conclusions and Policy Implications

29. **The transition to carbon neutrality presents both challenges and transformative growth opportunities for Romania.** The transition to a low-carbon economy presents enormous opportunities for Romania's structural transformation. The country's potential in sectors like green hydrogen and wind energy production is vast, promising economic benefits alongside environmental progress. However, this transition is not without its challenges. Most importantly, substantial investments are needed for whole-of-economy decarbonization, particularly in hard-to-abate sectors like transport, buildings, and industries. Additionally, the country must confront the immediate and costly impacts of climate change, such as floods, heatwaves, and droughts, to which it is notably vulnerable.

30. **Romania has in place several policies to address the macro-critical challenges posed by climate change.** Romania has institutionalized several policy measures to adapt to and mitigate the impact of climate change. Strongly anchored by EU funding and climate policy stance, efforts are being made to promote renewable energy generation, strengthen energy efficiency standards, ensure energy security, and deliver an inclusive and fair climate transition. But the Romanian economy remains highly emission- and energy-intensive amid the country's strong dependence on fossil fuels.

31. **Romania is on course to becoming fit for 55, but the transition to carbon neutrality now requires a more stringent and well-designed decarbonization agenda.** While the country's absolute and per capita emissions are currently low and projected to stay below the EU's 55 percent reduction benchmark by 2030, there are rising concerns in specific sectors. The transport sector is

moving away from the EU's downward trend, necessitating a shift towards increased electric mobility powered by low-carbon energy sources. Similarly, Romania has one of the most energy-inefficient building stocks in the EU which continues to drive the country's high fossil fuel demand. Strategic policy initiatives, such as the CasaVerde" program, are crucial to enhance energy efficiency and integrate renewable energy in heating and cooling. Achieving these ambitious targets requires further decarbonization measures to urgently incentivize and catalyze green private investments that are pivotal for Romania's transition to a low-carbon economy.

32.   Tax-based instruments can support the green transition in a growth friendly manner while strengthening fiscal sustainability and social inclusion. Romania should make greater use of various tax measures, including targeted carbon taxes (as illustrated in the transport and building sectors) and fossil fuel subsidy removal to price more effectively the externalities from the country's high reliance on fossil fuels. By shifting consumption preferences to low-carbon energy sources while promoting renewable energy investments, these measures can gradually decouple per capita income growth from emissions.

33.   A proactively stringent decarbonization agenda can enable Romania to realize its full green potential and exploit opportunities in emerging green industries. Romania's strong potential in critical green value chains, including wind energy and green hydrogen, can serve as an engine of macroeconomic resilience and competitiveness during the green transition. To this end, the role of strong policy signals in terms of fully pricing fossil fuel externalities while fostering green private sector investments cannot be overemphasized. By greening its production processes, Romania stands to benefit from increased competitiveness in a global economy where sustainability is becoming a prerequisite, not just an option, for economic success.

34.   The strategic recycling of revenues generated from decarbonization policies is pivotal for broadening political support and bolstering social cohesion. Revenues generated from tax-based measures can help to facilitate an effective and inclusive green transition. These revenues can be recycled towards multiple ends depending on national priorities. They can be used for reducing labor income taxes, thereby easing the financial burden on the working population. Additionally, providing targeted support can cushion the impact of decarbonization policies on vulnerable households. Investing in green infrastructure is another significant avenue for using these funds. This does not only contribute to the overall goal of reducing carbon emissions but also stimulates job creation in new, sustainable industries. Furthermore, these revenues can play a role in reducing fiscal deficits, contributing to the overall health and stability of the economy.

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