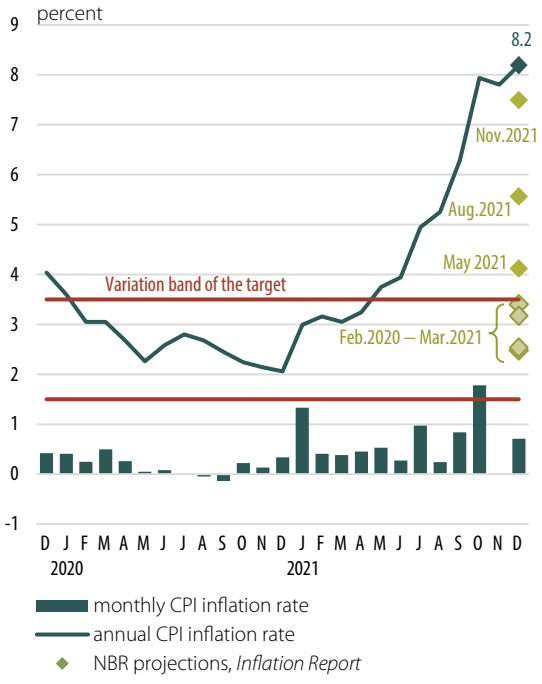
Box 2. Assessing the accuracy of macroeconomic forecasts on the December 2021 annual CPI inflation rate

The same as in the previous February editions of *Inflation Report*, the box provides an annual assessment of the accuracy of NBR projections on the annual CPI inflation rate at the end of the prior year, i.e. December 2021 in this case. The December 2021 annual CPI inflation rate was subject to eight forecasting rounds corresponding to the *Inflation Reports* published February 2020 through November 2021, with the projected values running below the actual levels (8.2 percent, of which the contribution of inflation components beyond the scope of monetary policy to the annual CPI inflation rate was roughly 5.5 percentage points).

Chart A. Annual CPI inflation rate – historical developments and forecasted values for December 2021



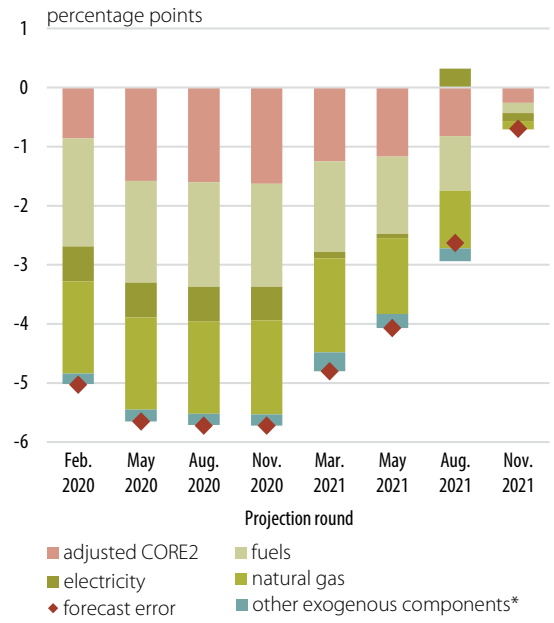
Source: NIS, NBR projections

The annual CPI inflation rate saw a fast-paced increase in 2021 H2, with prices posting notable monthly changes in July, September, October and December (Chart A). The trajectory was mainly driven by the rapid hike in energy prices, overlapping with additional supply-side shocks (substantial increases in agri-food commodity prices, bottlenecks in global production and supply chains). These developments, which are difficult to anticipate (including in terms of magnitude), were gradually incorporated into the NBR projections, as the information became available, with the December 2021 annual CPI inflation rate being projected to run above the upper bound of the variation band of the target as early as in the May 2021 *Inflation Report* (Chart A). Prior to these shocks, the NBR projections for end-2021 indicated, in line with other institutions' forecasts, an annual CPI inflation rate in the upper half of the variation band of the target, with inflation components beyond the scope of monetary policy making a roughly 1.5 percentage point contribution. Subsequently, the NBR forecasts were subject to successive upward revisions, remaining however below the actual level of 8.2 percent. In fact, the nature and magnitude of such shocks are difficult to anticipate and the only reasonable way to incorporate them *ex ante* into the monetary policy decision-making process is via the risk scenarios associated with the macroeconomic forecasts, built and submitted on a regular basis by the specialised departments to decision makers[1].

The breakdown of forecast errors – defined as the difference between the forecasted value and the actual one – by CPI components (Chart B) shows the main contribution

[1] The most significant risk sources that may cause the CPI inflation rate to deviate from the projected path are referred to in Section 4.4. "Risks associated with the projection" of the *Inflation Reports*.

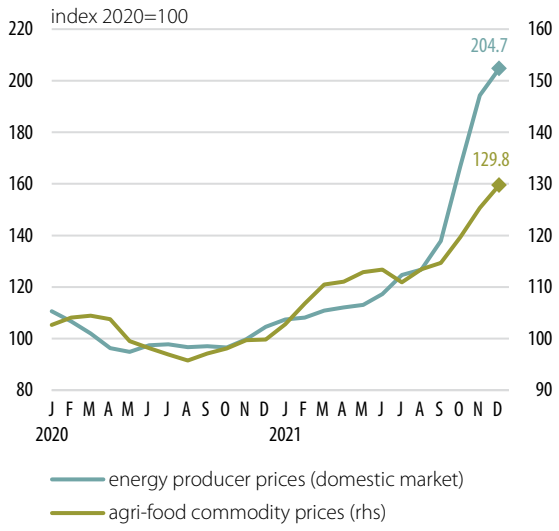
Chart B. The breakdown of forecast errors for end-2021 annual inflation rate by CPI components



*) beyond the scope of monetary policy (VFE, administered prices, tobacco, alcoholic beverages)

Source: NIS, NBR calculations and projections

Chart C. Developments in energy producer prices and agri-food commodity prices



Source: Eurostat, ECB

of energy prices (fuels, natural gas and electricity) and the adjusted CORE2 index to explaining the errors (in fact, these components of the consumer basket are the most seriously affected by the above mentioned shocks).

Thus, an important contribution to the acceleration of inflation during 2021 came from energy prices. On the one hand, behind this stood the progress in global vaccination in early 2021, which enabled the easing of mobility restrictions and hence an economic recovery at a higher-than-expected pace. Consequently, the prices of most commodities (oil and natural gas included) embarked on a sharply upward trajectory, as the supply of such goods could not keep up with the growth pace of demand. On the other hand, an important driver of the surge in wholesale natural gas prices in Europe was an incidental factor, namely the low stock levels, difficult to replenish against the background of both structural and geopolitical causes[2]. Behind the increase in electricity prices on the European and, implicitly, Romanian market in 2021 H2 stood mainly the sizeable pick-up in production costs for fossil fuel power plants, but also the higher prices of carbon dioxide emission allowances, in view of the measures taken at European level to accelerate the transition to a green economy. At the same time, in the case of natural gas and electricity, the pass-through of the change in international commodity prices into domestic final prices was also influenced by the full liberalisation of these markets in July 2020 and January 2021, respectively.

Looking at adjusted CORE2 inflation, in 2021 H2, it came under relatively high pressure from production costs (induced by the substantial rise in wholesale energy prices), but also from the hikes in the prices of agri-food and other commodities and materials (Chart C), *inter alia* as a result of supply chain bottlenecks. At the same time, the favourable developments in demand, amid the restoration of consumer confidence once with the easing of mobility restrictions, facilitated the pass-through of higher costs into final prices.

2 For details, see the box entitled "The rise in energy prices: its impact on inflation rate and economic activity" in the November 2021 *Inflation Report*.

The increase in the CPI group of volatile food prices (VFE), of a considerably lower magnitude, also contributed to the underestimation of the December 2021 annual CPI inflation rate. In spite of good crops, at end-2021, the annual dynamics of this component stood relatively high (8.6 percent), amid favourable demand conditions (*inter alia*, following the reopening of the hospitality industry), which allowed economic agents to recover part of their losses recorded during the pandemic.

Administered prices and tobacco product and alcoholic beverage prices made marginal contributions to the forecast errors for the December 2021 annual CPI inflation rate.