EUROPEAN COMMISSION
EUROSTAT

Directorate E: Sectoral and regional statistics
Unit E-5: Energy

Luxembourg
ESTAT.E.5/TE

29/09/2022

# Indicator: Natural gas dependency by country of origin

## LEGEND

**$UOGAS_{C,P}$** is the indicator for origin of imports of natural gas of country C from origin country P and it is expressed as a percentage of total net imports

**C** is the country of interest (e.g. EU Member States, reporting partner countries)

**allRC** refers to all reporting countries, which is all 27 EU Member States plus Norway, Iceland, EU candidate countries, EU potential candidates and Energy Community Contracting Parties

**P** will be Russia, Norway, Algeria, Qatar, United States, United Kingdom, Nigeria that are the top 7 non-EU origins of natural gas. It is to be noted that this excludes the category "Not specified" which is de-facto on the 2nd – 4th place, depending on the reference year.

**$I_{j,C}$** is the imports of natural gas from country j to country C (Eurostat series nrg_ti_gas for 2020).

**$I_{P,j}$** is the imports of natural gas from country P to country j (Eurostat series nrg_ti_gas for 2020).

**$E_{Tot,C}$** is the total exports of natural gas from country C (Eurostat series nrg_te_gas for 2020).

**$I_{Tot,C}$** is the total imports of natural gas to country C (Eurostat series nrg_ti_gas for 2020).

**$PROD_j$** is domestic (indigenous) production of natural gas in country j.

**$PROD_C$** is domestic (indigenous) production of natural gas in country C.

**$PROD_P$** is domestic (indigenous) production of natural gas in country P.

**:M** represents Eurostat's database convention for dissemination of "missing value – data cannot exist"

## FORMULAS

If $I_{Tot,C} \leq E_{Tot,C}$ then we define $UOGAS_{C,P}$ = :M (indicator is not calculated for net exporters)

$I_{Tot,C}=0$ then $UOGAS_{C,P}$ = :M

If $I_{Tot,C} > E_{Tot,C}$ then

For Russia, Algeria, Qatar, United States and Nigeria and UK from 2020 we have no detailed data and we cannot make corrections[1] to these declared imports – corrections are possible only for origins that declare annual statistics to Eurostat. For these countries we use the following formula:

$$UOGAS_{C,P} = \left( I_{P,C} + \sum_{j \in allRC} I_{j,C} \times \frac{I_{P,j}}{PROD_j + I_{Tot,j}} \right) \times \frac{I_{Tot,C} - E_{Tot,C}}{I_{Tot,C}} / (I_{Tot,C} - E_{Tot,C} + PROD_C)$$

For Norway and United Kingdom for 2015 to 2019, we know that their imports of natural gas are mixed with their production and where the imported gas comes from. This needs to be considered and is reflected in the following formula:

$$UOGAS_{C,P} = \left( I_{P,C} \times \frac{PROD_P}{PROD_P + I_{Tot,P}} + \sum_{j \in allRC} I_{j,C} \times \frac{I_{P,j}}{PROD_j + I_{Tot,j}} \right) \times \frac{I_{Tot,C} - E_{Tot,C}}{I_{Tot,C}} / (I_{Tot,C} - E_{Tot,C} + PROD_C)$$

Note: missing UK data for 2020 cause a break in the series for several countries and 2019 data indicated that 6.7% of imports into the UK were from Russia. Several conditions are included in the MS Excel file to account for missing data from UK in 2020 (e.g. to avoid division by zero error).

## NOTES

1. The years in the Excel file are from 2015 to 2020
2. Data source: Eurostat series nrg_ti_gas, nrg_te_gas, nrg_cb_gas

[1] It is important to note that some "Russian natural gas" can be actually originating from other countries of the former Soviet Union