

Review of ESSD paper

Title: Natural gas supply from Russia derived from daily pipeline flow data and potential solutions for filling a shortage of Russian supply in the European Union (EU)

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General comment of appreciation

This paper is not only documenting timely information but entails also important messages for policymakers to understand different options to address the current energy crisis with options at a given cost, also in terms of GHGs. This paper is recommended to receive extra advertisement of ESSD for two reasons. Firstly, it illustrates the importance of data and observation-based evidence for informed decision making. Substitutes for Russian gas supply are needed now and this paper comes with very timely advice. Secondly, science and data sharing can help to keep an open dialogue between many countries in troubled times. It is remarkable how much regional data has been taken up in this exercise.

Comment on the data used for section 2.3.3:

It is difficult to assess if the data and information collection is complete for Europe, given the very different approaches in the different EU27 MS. Import from North Africa might benefit extra attention. As an example, ENI Italy was already end April seeking to untap North-Africa's potential for gas supply, getting deals with Algeria and Egypt.

Ref: [Italy looks at Mediterranean for alternatives to Russian gas – EURACTIV.com](#); [Italy's ENI to tap North African gas for Europe - Al-Monitor: Independent, trusted coverage of the Middle East](#); [pr-capital-markets-day-2022-eng.pdf \(eni.com\)](#)

Comment on the substitution discussed in section 2.3.2:

Why is biogas production within EU27 not taken up? Even if the source is small, a little upscaling is still possible and all small bits help.

Ref: [EU rolls out plan to slash Russian gas imports by two thirds before year end – EURACTIV.com](#); [Biogas made from farm waste could replace Russian fossil fuels in Germany | Euronews](#)

Comment on Supplementary Information – gas network simulation

The total amount of the gas pipelines from North Africa seems reduced. This might be acceptable, if the total volumetric flow rate is fully taken up. In fact, there are three pipelines available from North Africa to Italy: the Transmediterranean (via Tunisia – El Haouaria), the Greenstream (Libya – Mellitah) and the Galsi (Algeria – Koudiet Draoucha) and there are two pipelines available from Algeria to Spain: the Medgaz (Algeria – Beni Saf) and Maghreb-Europe gas (via Morocco – Gibraltar)

Ref: [\(15\) Sustainable capacitated facility location/network design problem: a Non-dominated Sorting Genetic Algorithm based multiobjective approach | Request PDF \(researchgate.net\)](#)

Comment on Supplementary Information – sectoral splitting validation

It would benefit the transparency, if EuroSTAT sectors 4 “Industry – E and NE” and sector 5 “sum of the other four sectors” could be described shortly. It would be interesting to understand if “fertiliser production” is part of sector 4 as Industry NE or of sector 5.

Minor editorial comments:

I.2 + I.36: please replace “dramatically” by “drastically”

I.35: More countries saw a sudden decrease and this sentence might be completed with a date and a reference.

I.25 + I.62: when mentioning USA, Australia and Norway, adding North Africa could be appropriate

I.179: please specify the reason why gas consumption for Latvia and Estonia are underestimated.

I.246: adding North Africa could be appropriate.

I.264: first verb “could” seems too much for good reading

fig.1: the “legend” figures for input dataset, output dataset and model estimation is not needed and could be deleted, if the first green box reads “Open input dataset”

fig.2: a) I would prefer to read “annual consumption” instead of “total consumption”

Fig.5: please write TTF in full

Fig.6: this is the difference of two shares, but for which the total maximum is different because of different years. I would prefer to see the difference between 2021 and 2020 (in absolute terms of Russian gas supplied) divided by the total in 2021 (of gas supplied). This would present the change in Russian supply share for 2021 compared to a previous year in a cleaner way. And since 2020 is a special COVID year, a fourth row would be welcome, where also the difference between 2021 and 2019(in absolute) divided by the total in 2021 is also presented.

Fig.7: excellent graph!