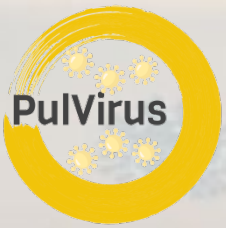


***The PULVIRUS Project:
A Pilot Study to Evaluate the Impact of COVID-19 on the Italian
Economy and Energy System***

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Authors: Cecilia Camporeale (ENEA), Antonio Caputo (ISPRA) and Emanuele Peschi (ISPRA)



Activity 4.2 – GHG emissions reduction due to *Covid-19* in Italy

Activity 4.2 of Pulvirus project aims to clarify the Covid-19 impacts on energy consumptions, GHG emissions and socio-economic parameters.

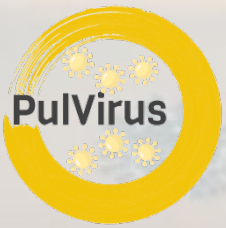


How does the pandemic affect the processes of sustainability and GHG emissions reduction?

How does the pandemic affect the energy demand and the economy?

What can we learn by such event?

....

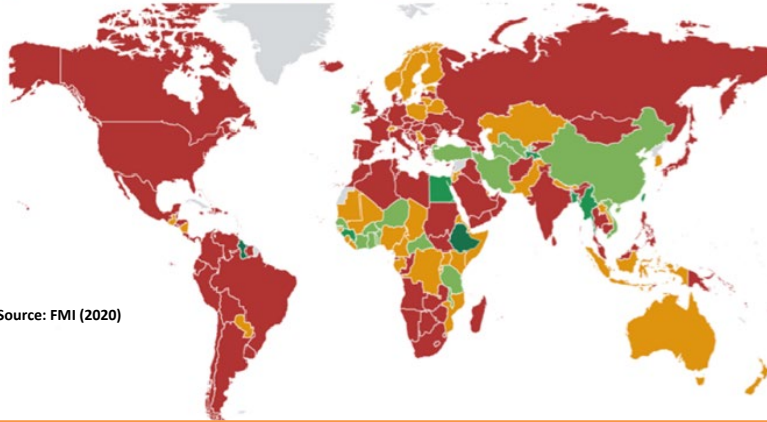


Activity 4.2 – Results:

Economy...

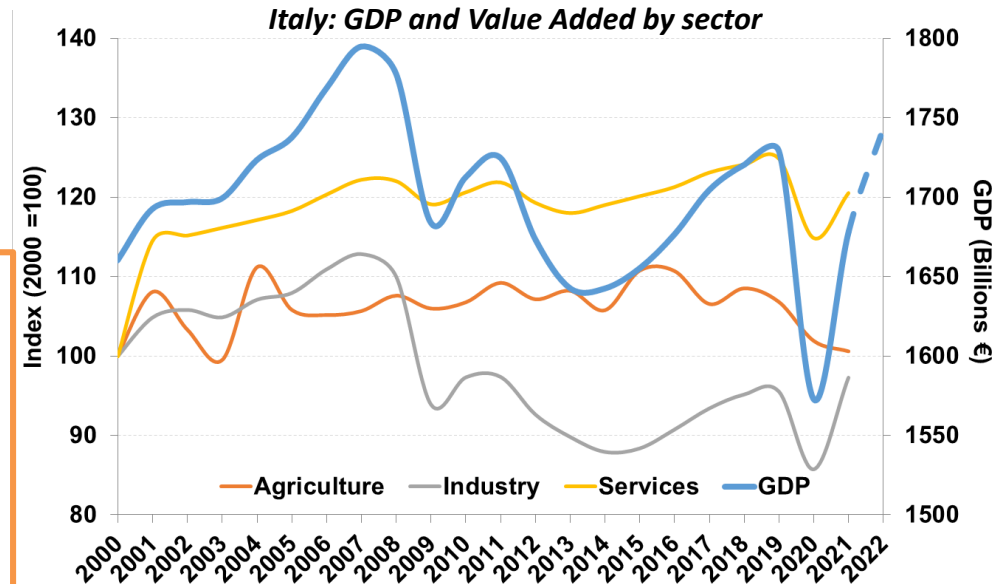
% GDP change in 2020

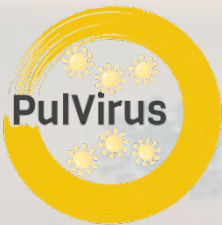
● 6% o oltre ● 3% - 6% ● 0 - 3% ● -3% - 0 ● meno del -3% ● no dati



The pandemic broke out when Italy was still recovering the economic crisis of 2008/2009 (GDP -5.3%) and further drop in 2012 and 2013, -3.0% and -1.8% respectively. Covid-19 triggered the lowest fall of Italian economy in the last 25 years (-9%), with significant decrease of Value Added in the three sectors: agriculture (-6.3%), industry (-10.1%) e services (-8.3%).

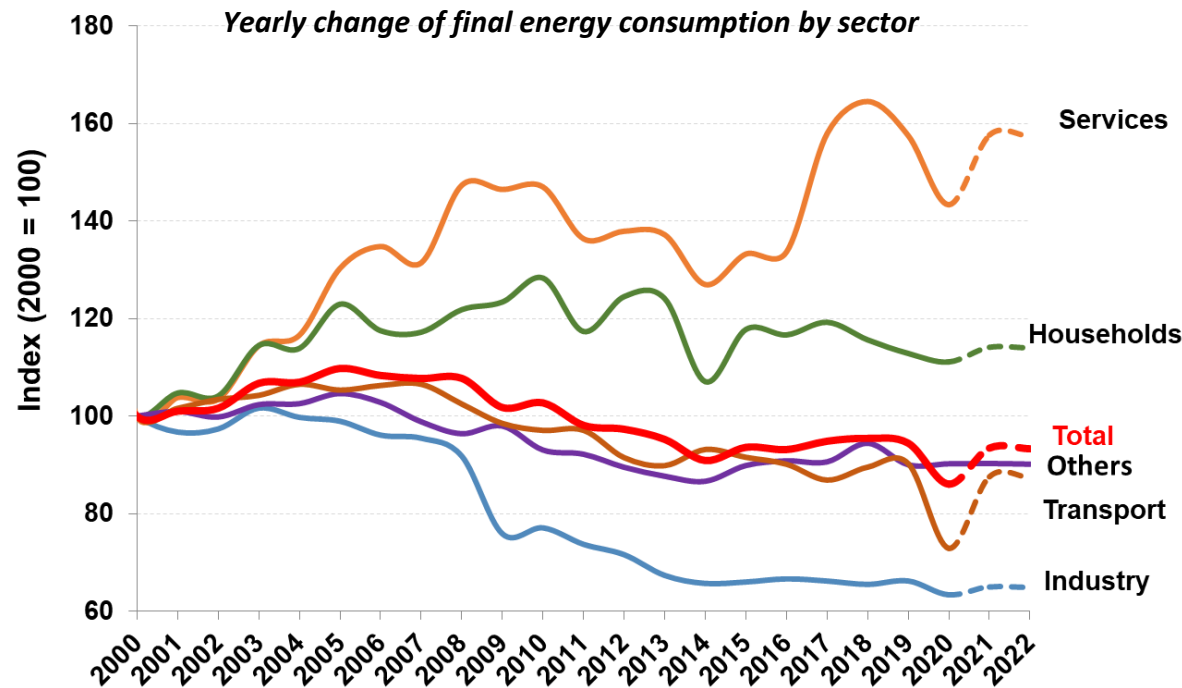
The global crisis triggered by the pandemic caused a sharp GDP fall at global level, less than -3% wrt 2019 in almost all countries with more advanced economies.





Activity 4.2 – Results:

...energy consumption...



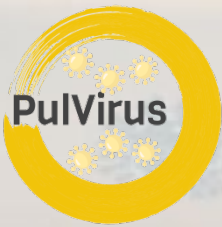
Final energy consumption in 2020 decreased by -8.9% wrt 2019, the highest reduction since 2000.

All main sectors decreased their consumptions from -19.2% in transport to -1.5% in household sectors.

Energy consumption in industry sectors decreased by -36.5% since 2000 (-4.3% in 2020), The highest reduction in industry was recorded in 2009, 17% below the 2008 level.

Services increased by 43.5%, nevertheless the highest contraction registered in 2020 (-9%).

The household consumptions depend on climatic condition which determines the heating or cooling demands.

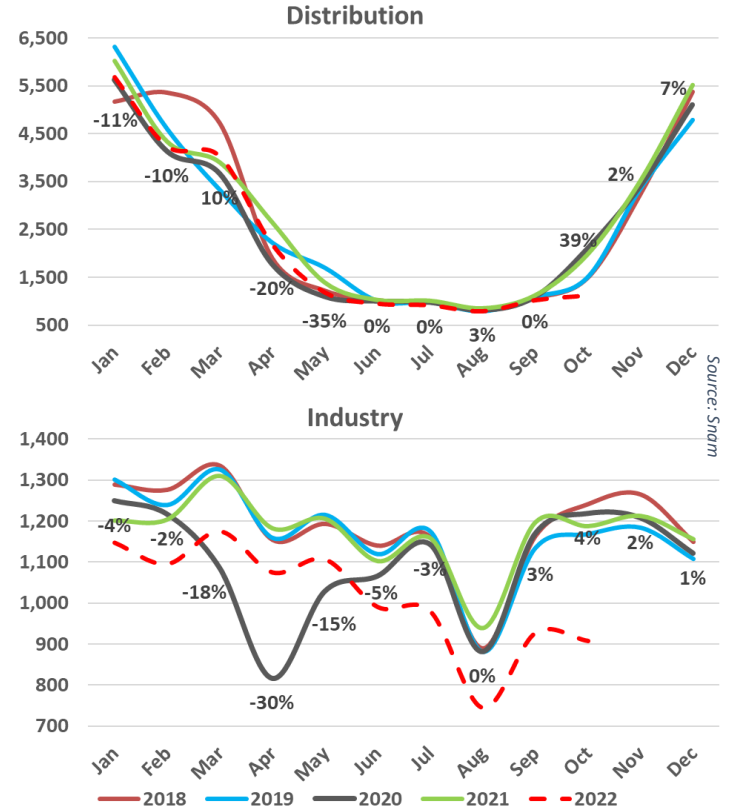
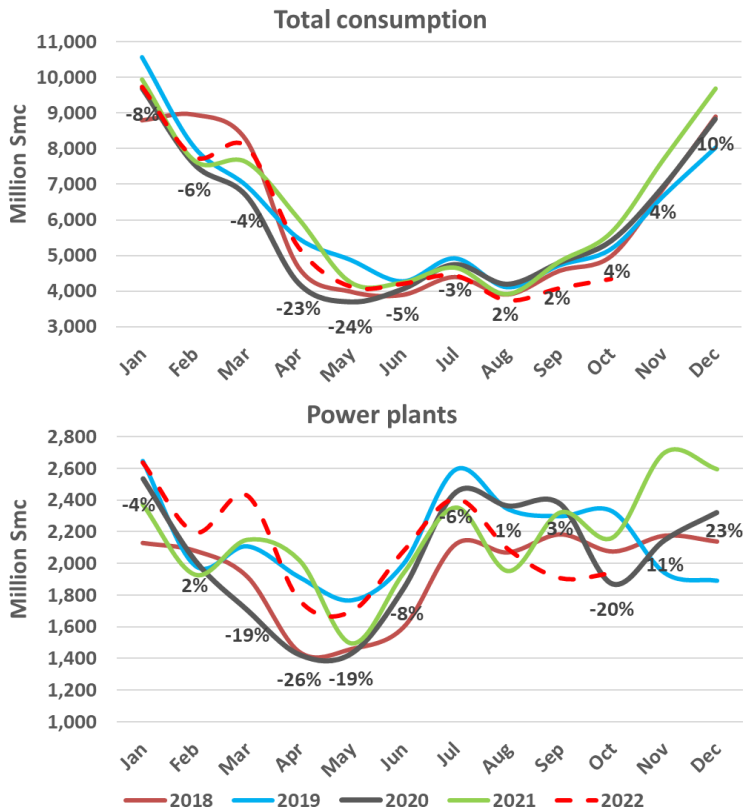


Activity 4.2 – Results:

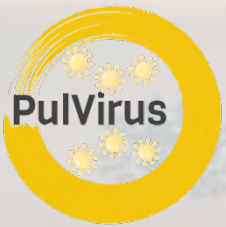
...a) Natural gas consumption...

Total consumption by month shows that the curves are quite overlapping in the second half of the year, with the increase due to winter demand for heating.

The consumptions in the first half of 2020 are below any other shown year.



Source: Snam

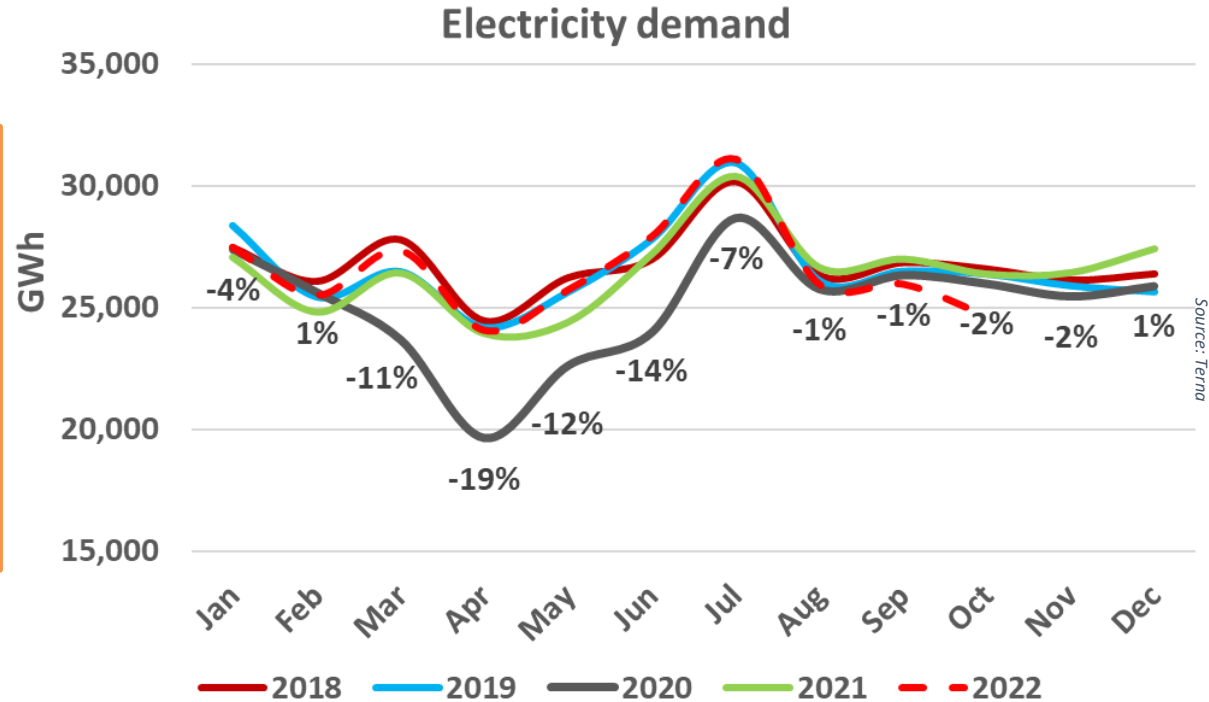


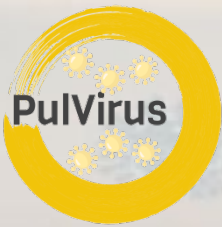
Activity 4.2 – Results:

...b) Electricity demand...

The overall contraction of electricity demand in 2020 was -5.8% compared to 2019.

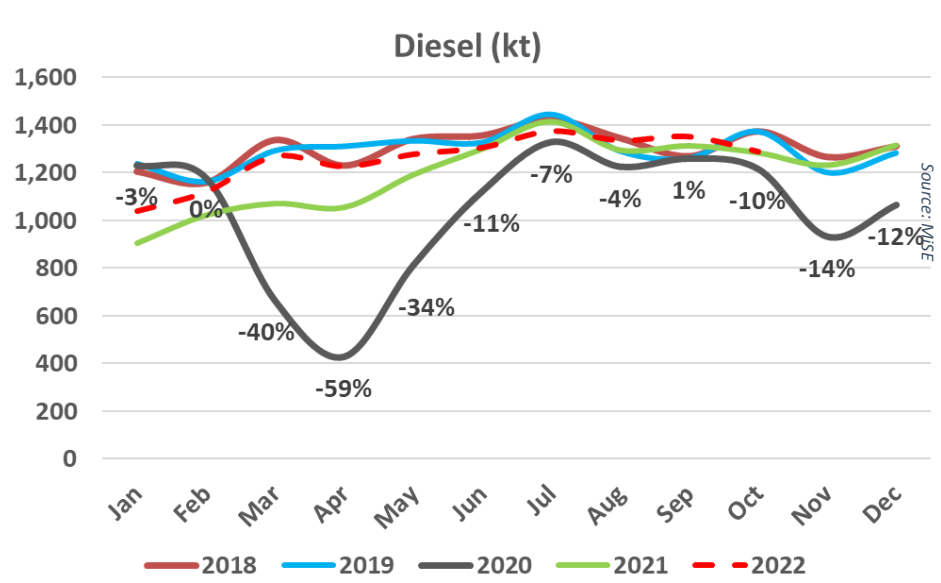
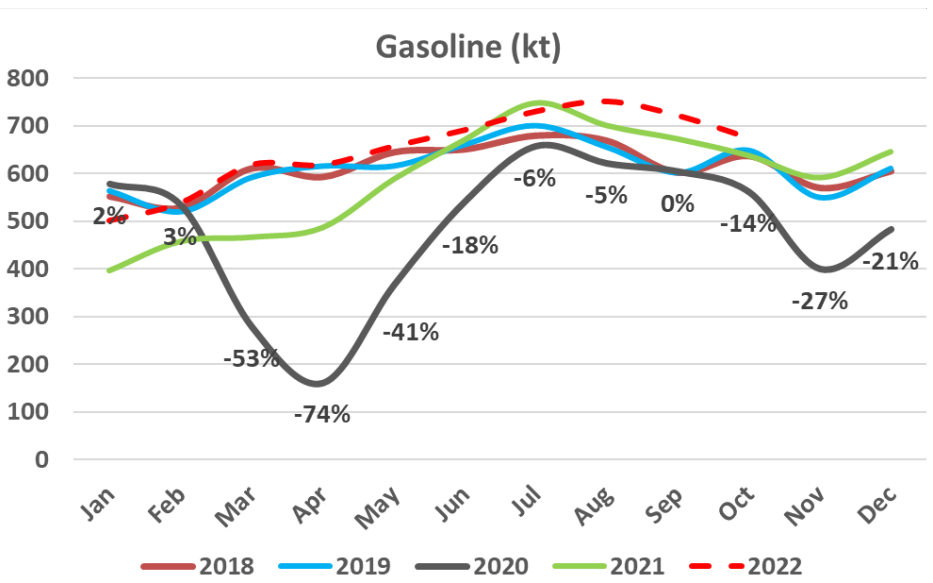
After the lockdown, electricity demand fell up to -19% compared to April of the previous year. Since August 2020 the electricity demand come back in line with the average values of the previous years, even though remained below.



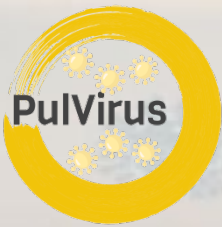


Activity 4.2 – Results:

...c) Transport fuels sales...



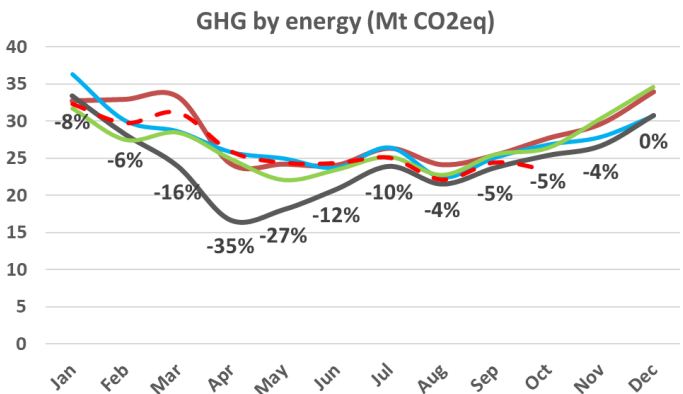
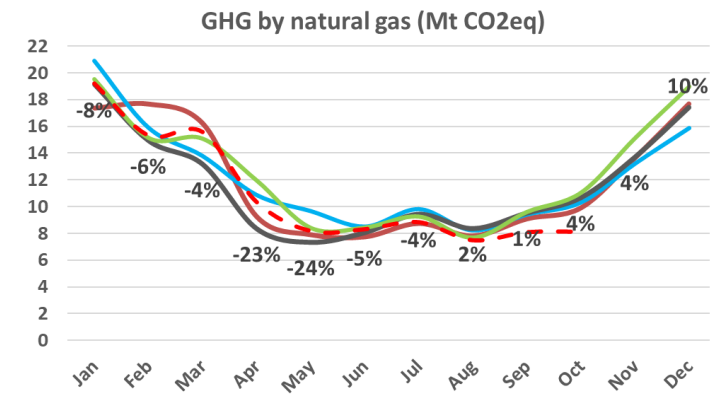
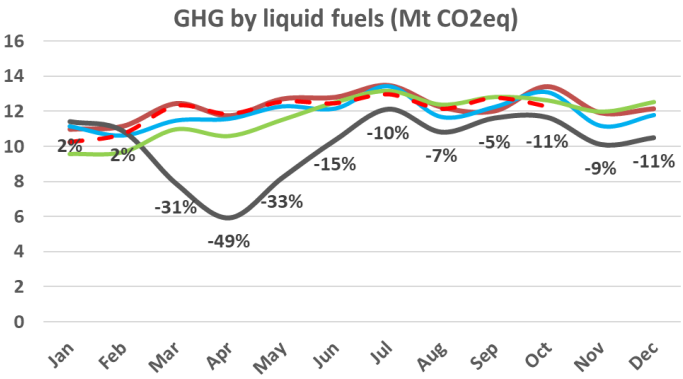
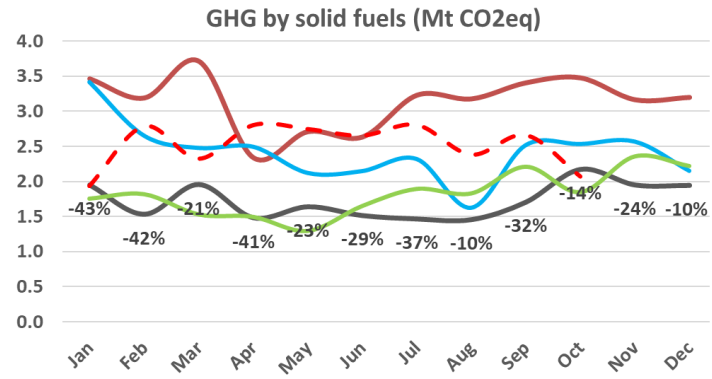
Transport have been heavily affected throughout 2020 due to the restrictions on mobility decreed to curb the virus spread. Diesel, mostly linked to the transport of goods, has suffered a lower reduction than gasoline during the lockdown period.



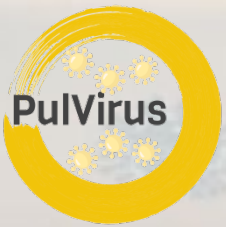
Activity 4.2 – Results:

...and GHG emissions (1)

Emissions by natural gas and liquid fuels in 2020 are the lowest since 2018. Emissions by solid fuels are more heterogeneous, 2020 is below 2019 but quite intertwined with 2021. Emissions by liquid fuels faced the lowest reduction accordingly with the main use of such fuels in the transport sector.



— 2018 — 2019 — 2020 — 2021 - - 2022

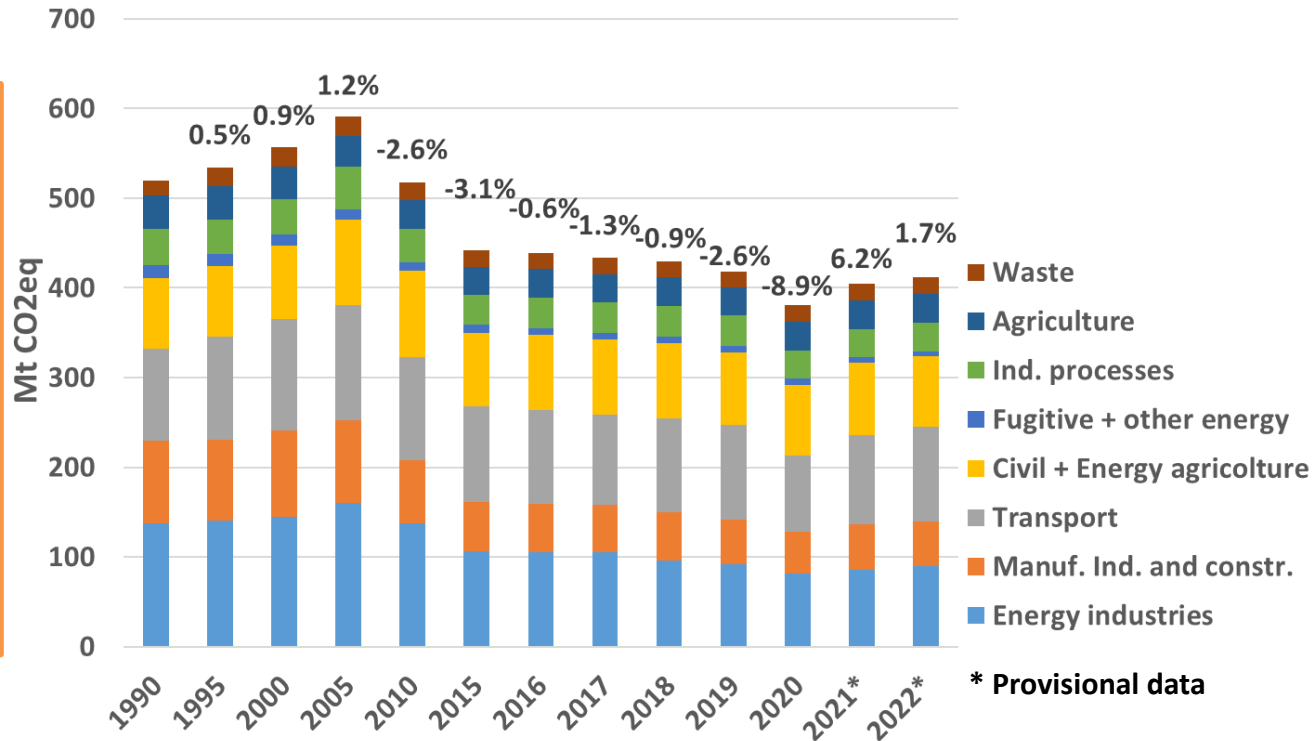


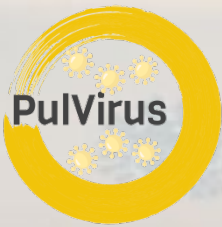
Activity 4.2 – Results:

...and GHG emissions (2)

Since 1990 the national GHG emissions increased up to 2005, then decreased for many reasons, such as fuel shift, renewable sources development, efficiency increase and so on. The economic crisis in 2009 has contributed to slow down the activities reducing the emissions.

The contraction in 2020 (-8.9%) is the second one after 2009 (-9.8%).



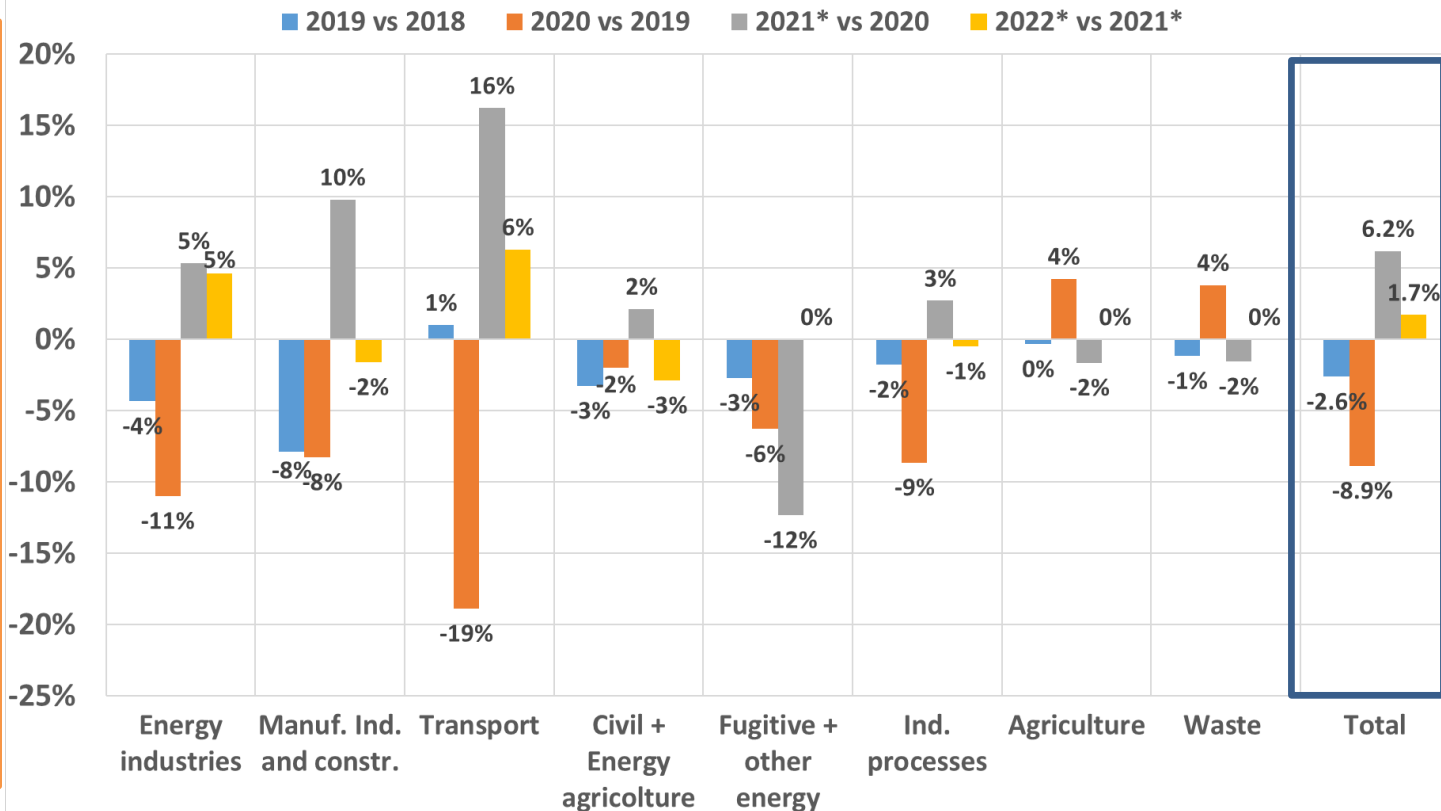


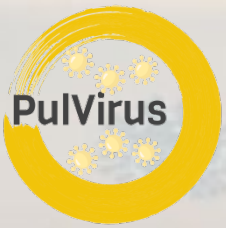
Activity 4.2 – Results:

...and GHG emissions (3)

The annual comparison of emissions makes clear that in 2020 transport was the most affected sector by the lockdown (-19% compared to 2019), corresponding to the decrease in passenger and freight mobility, respectively around 36% and 10%, reaching traffic levels below those of 1990.

Emissions from the civil sector and energy in agriculture undergo only a slight decrease.





Activity 4.2 – Conclusions

What have we learned?

It was developed the analytical tool to perform earlier estimates of GHG emissions with a delay of only few months to follow as near as possible the ongoing impact of measures adopted to tackle Covid-19.

The analysis allows to follow in quasi real time the effectiveness of any politics and measures adopted to reduce the GHG emissions.