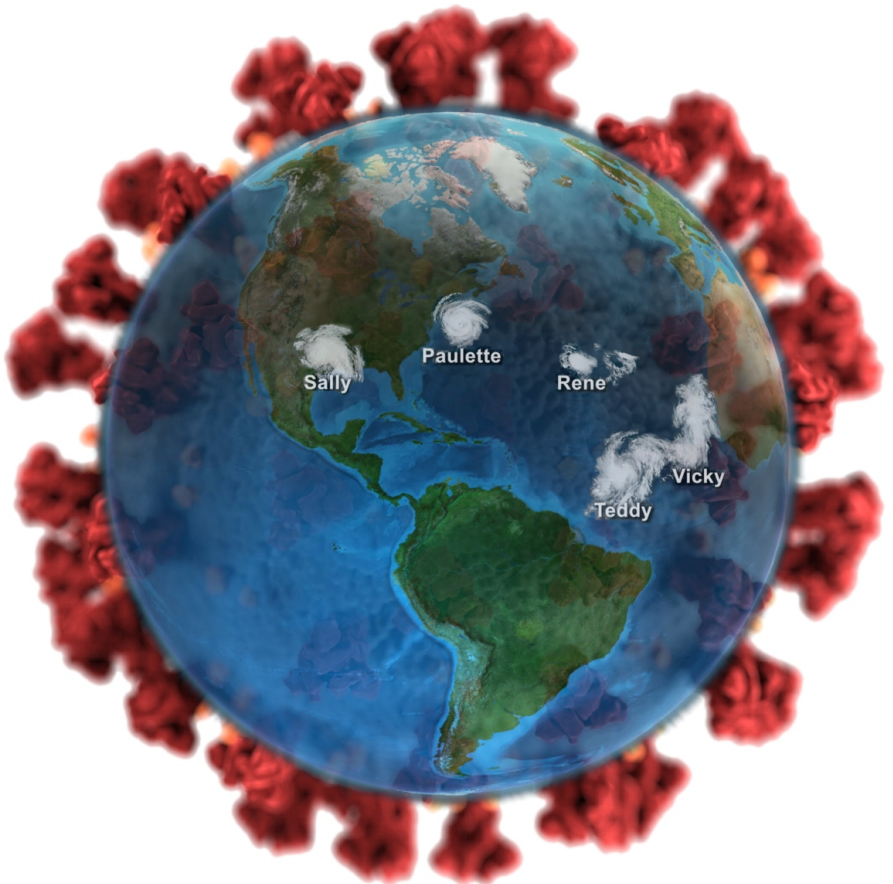




GREENNOVA  
FOUNDATION

# 2020 Annual Report

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Year 2020 will be remembered as the year in which the coronavirus pandemic broke out and disrupted our lives, and Greenova Foundation has also suffered its consequences. Research labs have been closed for months and the availability of sponsors and donors has been lower.

But 2020 will also go down in history as the warmest in terms of temperature records, the one with the most tropical storms and the second in number of hurricanes. In September there were even five active tropical cyclones at the same time.

Therefore, because climate change does not stop, for Greenova it will also be the year when GRAFECO2 project was kickstarted. This 3 year project will investigate different graphene structures to capture atmospheric carbon dioxide.

GRAFECO2 is the third project that Greenova is launching, after CAPTACO2 and POLUSTOP, the progress of which is explained in this report.

All three maintain our goals of fighting against climate change and pollution through technological, non-profit solutions.

Sebastià Carrión  
Director

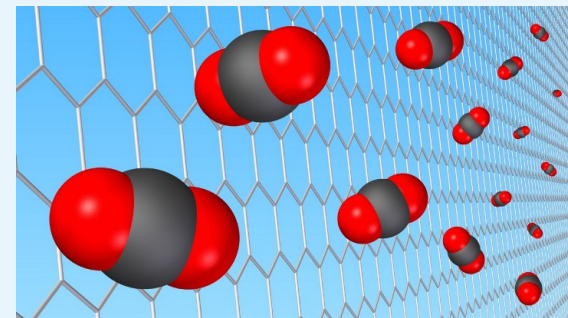
GRAFECO2 project will explore different graphene structures to capture atmospheric CO<sub>2</sub>, with the purpose of reducing the amount of greenhouse gases in the atmosphere and thus combating global warming and climate change.

Graphene is a structural form of carbon, in which its atoms are placed in a two-dimensional hexagonal lattice. It is a novel material with very special properties.

GRAFECO2 project proposes to use graphene alone or to add it to metal-organic frameworks (MOF), compounds that bond metals through organic ligands creating structures with controlled porosity.

Whether alone or with MOF, the resulting graphene structure will act as a strainer, sticking CO<sub>2</sub> molecules that pass through it which later will be released through a physical process.

GRAFECO2 is developed with the collaboration of University of Barcelona, and Greenova Foundation is hiring a student who will carry out her PhD with this project during 3 years.



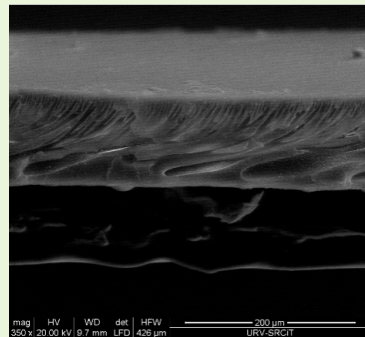
The pandemic has affected the development of CAPTACO2 project. The laboratories were closed for two months, and there were shortages in certain chemical compounds needed for the testing.

But the project has moved forward. Firstly the polysulfone membrane has been considerably improved by increasing its hydrophobicity and CO<sub>2</sub> diffusion capabilities.

And secondly, the speed and the efficiency of CO<sub>2</sub> absorption have been substantially improved thanks to a change in the chemical reaction. Now, instead of an hydroxide, a mixture of potassium carbonate and the enzyme carbonic anhydrase is used.

The results are good enough to dedicate more resources to the project, so the Foundation will hire a full-time PhD student who will develop it.

The PhD will last three years, guaranteeing the permanent dedication of a trained person with the support of a first-class research team, maintaining the initial goal of developing a CO<sub>2</sub> capturing device that can be industrialized.

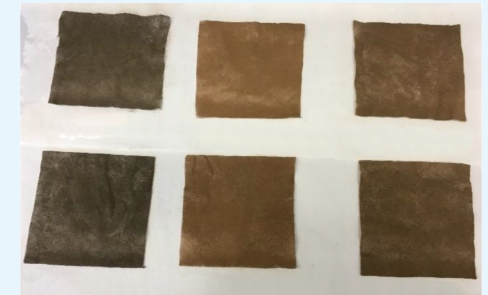


Polisulfone membrane section

POLUSTOP project moved forward during 2020 too, but testing has not been fully completed and will be finished during the first quarter of 2021.

Preliminary results point to the possibility of filter regeneration after its use by cleaning them with water flows, which have given better results than air flows.

The testing has considered different cleaning flow configurations, with different outcomes. If the filters regeneration is succesful and they can be reused over time, the project will explore the possibility to couple the regeneration system to an industrial type equipment and performing more testing in an urban environment.



Dirty filters before being cleaned



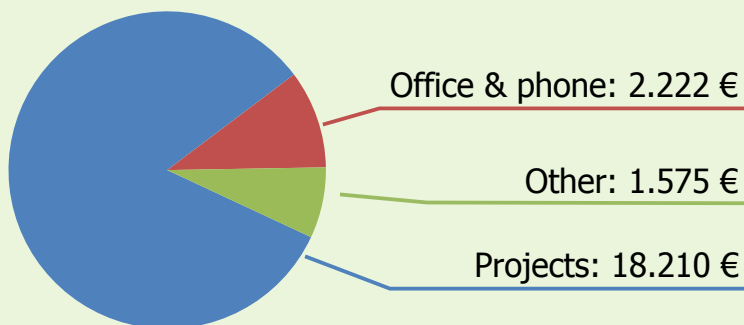
The same filters once cleaned

# Transparent accounts

## Greennova Foundation accounting inflows and outflows during 2020

Patrimony start 2020	54.640 €
Received donations	29.000 €
Expenditures	-22.007 €
Patrimony start 2021	61.632 €

### Expenditures per type



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FOUNDATION

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