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Assessment of the Brazilian market for products by conversion of CO₂ from thermal power plants

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Growing concerns about climate change accomplished by human action have been the subject of intergovernmental debate. Countries that have adhered to the latest Paris agreement have committed to reducing their greenhouse gas emissions, with the goal of keeping the planet's average temperature below 2°C above that of the pre-industrial period [1]. Carbon dioxide (CO₂) plays an important role among greenhouse gases due to being highest content. Natural gas (NG) represents a large share of the world's energy matrix (around 24%), second only to coal [2]. The use of natural gas in thermal power plants has advantages if compared to coal, such as: (i) lower total cost, (ii) fewer CO₂ emissions, (iii) higher efficiency and (iv) quicker dispatch time. Despite these benefits, NG thermal power plants (PP) are still CO₂ emission intensive. An alternative to promote abatement of this CO₂ is the PP integration to with processes that uses it as raw material to produce chemicals. This work aims to perform an analysis of the Brazilian market for possible products obtained from the direct conversion of CO₂ from the exhausted gases of thermal power plants, in order to make them more sustainable (by mitigate CO₂ emissions), as well as increase their profit, since higher added value products are generated.

An Brazilian market analysis (based on exportation and importation) was carried out for 14 CO₂ conversion products. Figures 1 and 2 represent, respectively, the quantity imported and exported from each product in the last 5 years. The study highlights the growth of acetic acid consumption, pointing to a potential investment in national production, to reduce its imports.

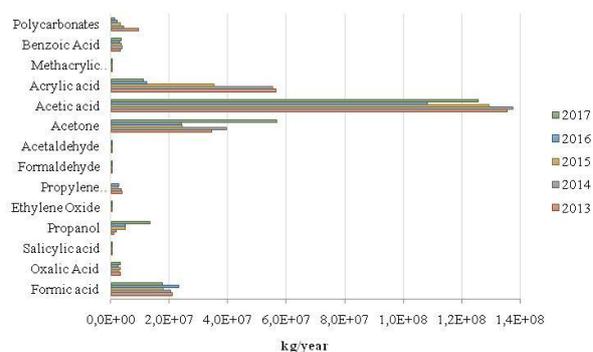


Figure 1. Importation values of CO₂ conversion products the last 5 years.

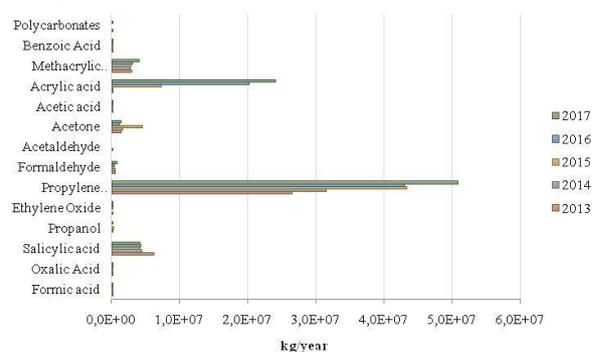


Figure 2. Exportation values of CO₂ conversion products the last 5 years.

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