

Sustainable Ethylene Production via CO₂ Reduction

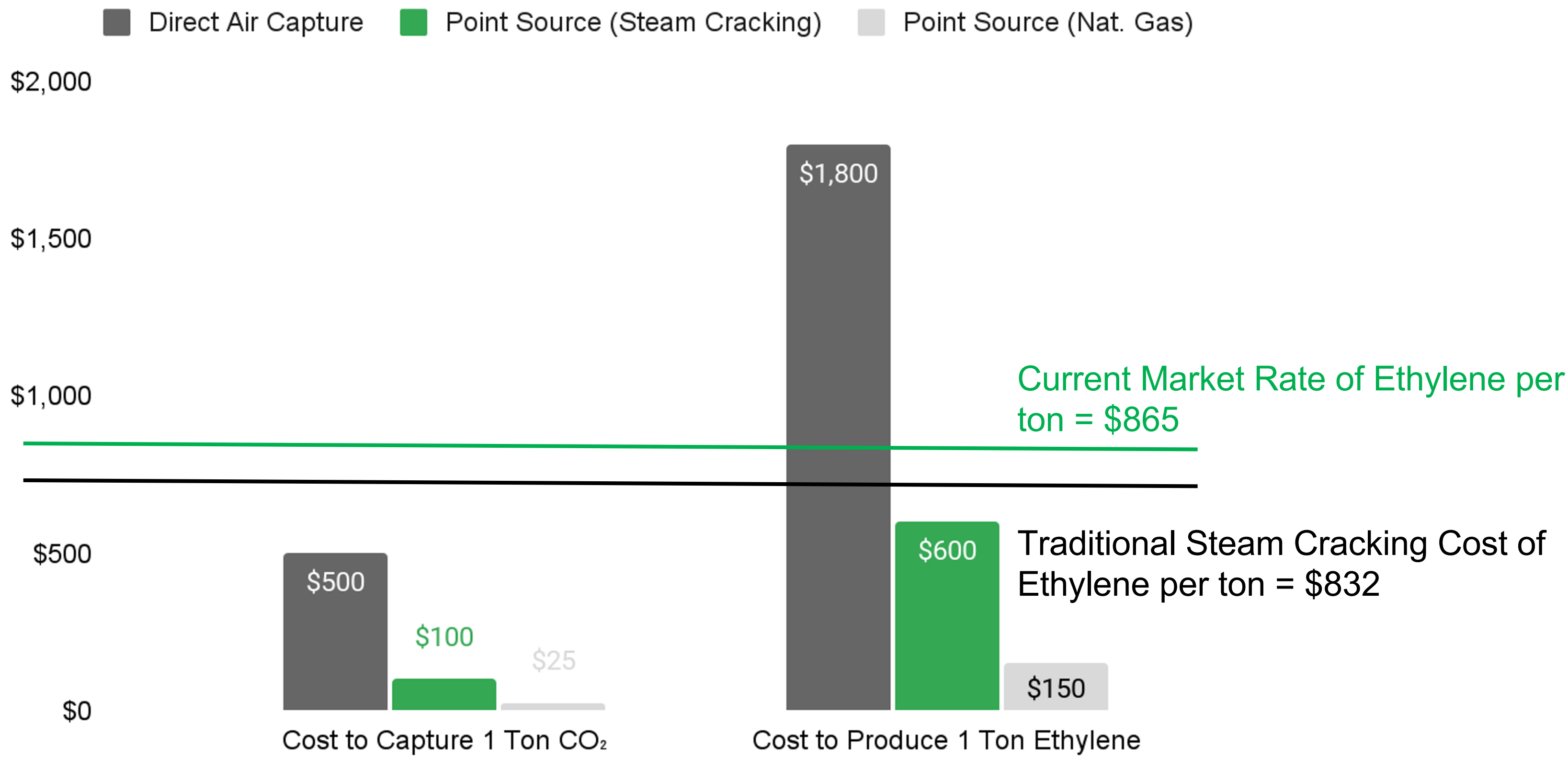
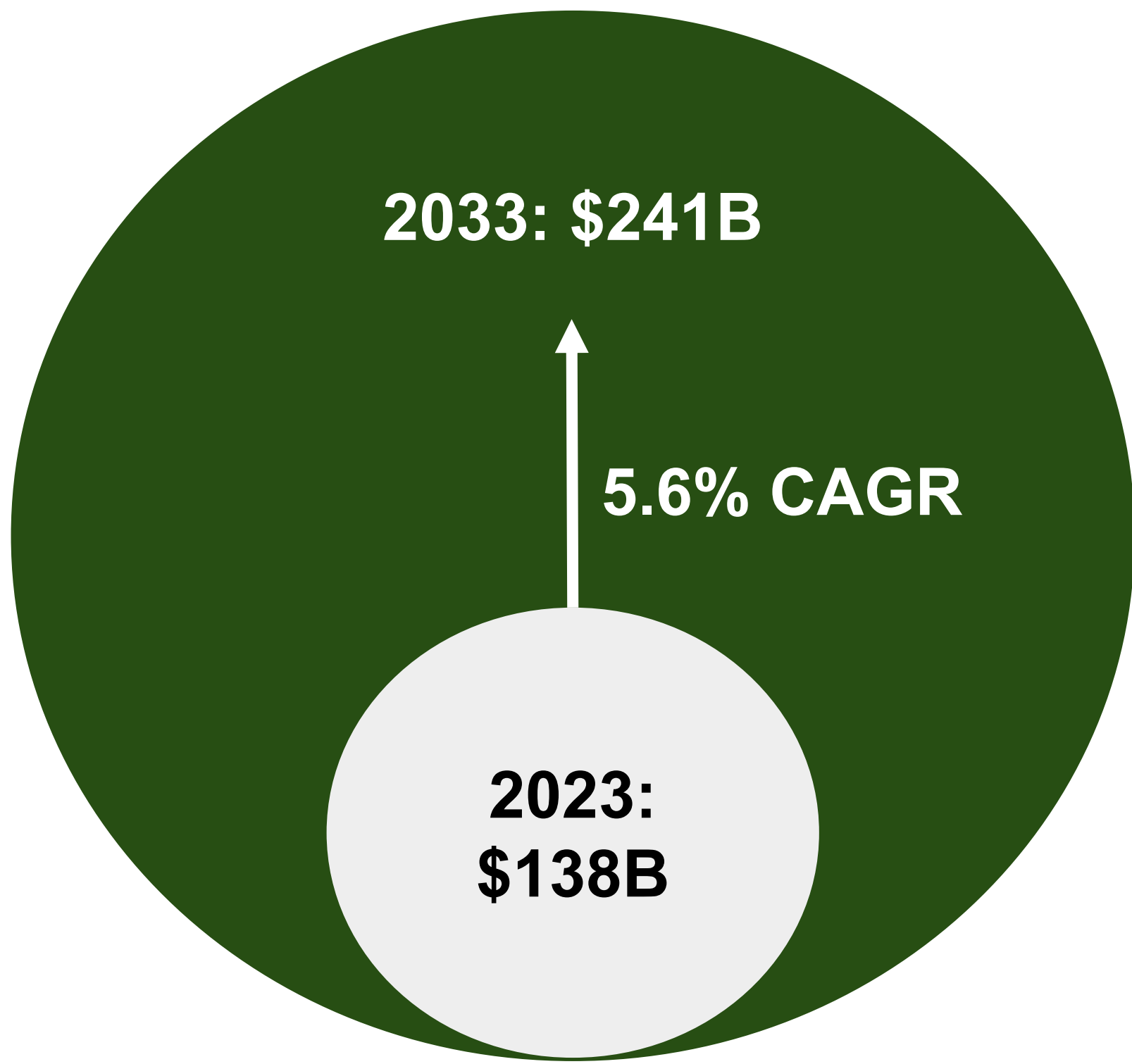
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Steam cracking for ethylene production emits over **260 million metric tons of CO₂ annually**, nearly 1% of the world's 2023 total carbon emissions of 35.8 billion metric tons, according to (Li et al., 2024). The emissions will continue to increase as the ethylene market size grows. The solution is to shift ethylene production to sustainable methods including reduction of CO₂ into ethylene (C₂H₄).

Market Growth & Unit Economics of Ethylene Production:

The total addressable market for ethylene is already significant at \$138B, and is projected to continue to grow as demand for ethylene-based products increases.



At a high level, the unit economics appear to favor production of ethylene via CO₂ capture and reduction, illustrating that these technologies have a strong case to succeed in a thin-margin commodity industry.

Current Competitive Landscape:



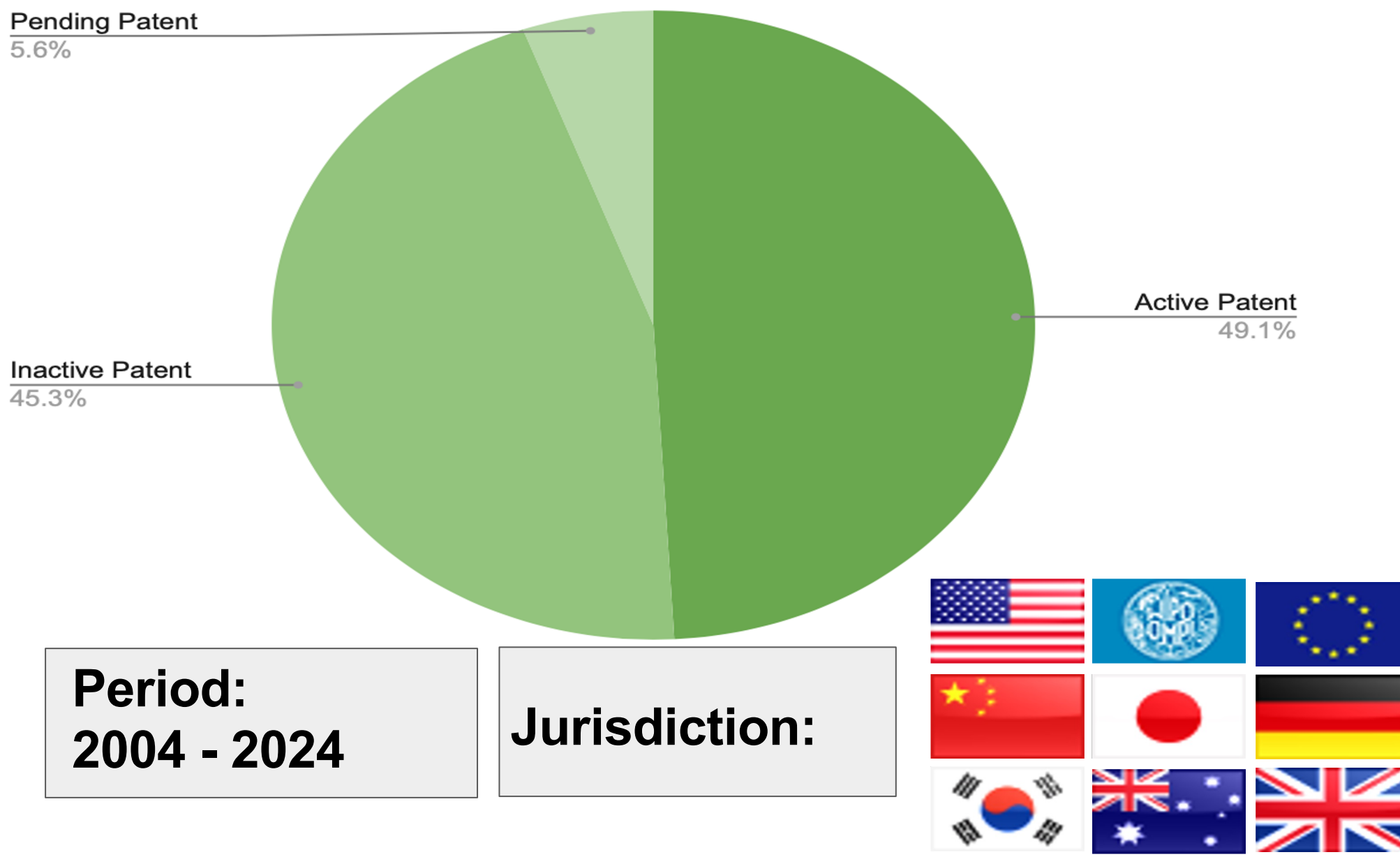
Dioxycle is the only player in the market focused on ethylene production from CO₂ capture and reduction. All other CO₂ utilization companies are working on different products (ex. Twelve is primarily producing sustainable aviation fuel).

The traditional players still leverage steam cracking which is a much more mature technology.

Patent Analysis of CO₂ Capture & Utilization:

Patent landscape shows significant interest and potential competition in carbon dioxide capture and utilization. Any entrant to the market will need to ensure a strong control position to maintain competitive advantage and to win market share.

1,549 Related Patents



Top Applicants

