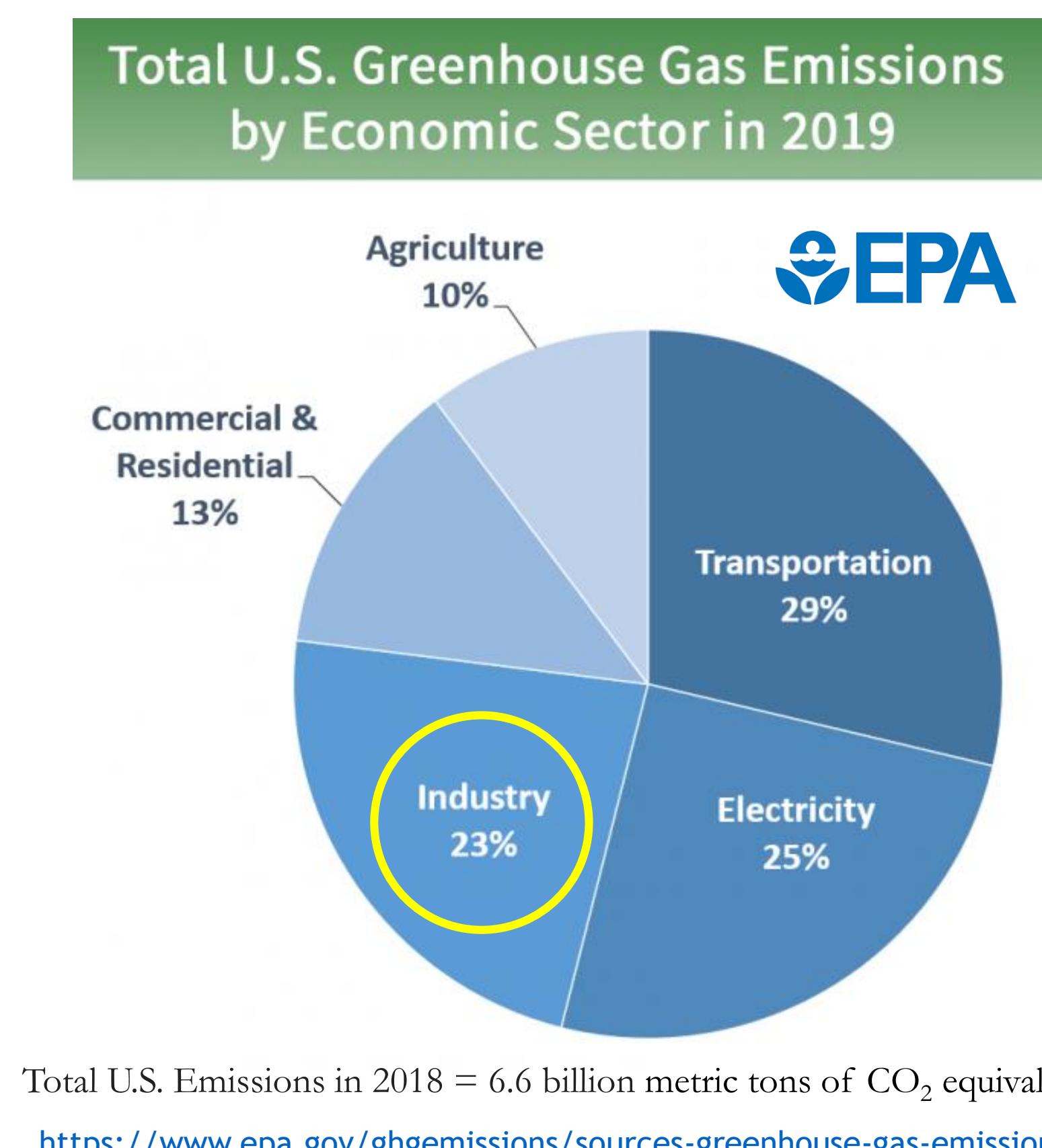


# A Lifecycle Framework for Industrial Decarbonization

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## Problem Statement



Nearly a quarter of all greenhouse gas emissions in the U.S. are from Industrial Processes and Manufacturing



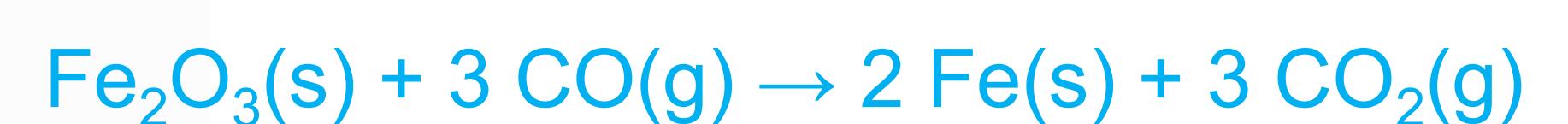
## Objective

Develop a probabilistic lifecycle assessment framework and technoeconomic analysis to prioritize and conduct RD&D that achieves desired metrics for industrial decarbonization\*

\*Metrics may include emissions reductions, cost, safety, equity/justice, and others

## Approach

### 1. Carbon-free feedstock & chemical processes



### 4. Recycling, repurposing, and recovery



### 2. Fossil-free heat and electricity sources



### 3. Novel capture and sequestration methods



Decrease CO<sub>2</sub> emissions across entire product life cycle from feedstock, to processing, to sequestration, and finally to recycling of materials to feedstock