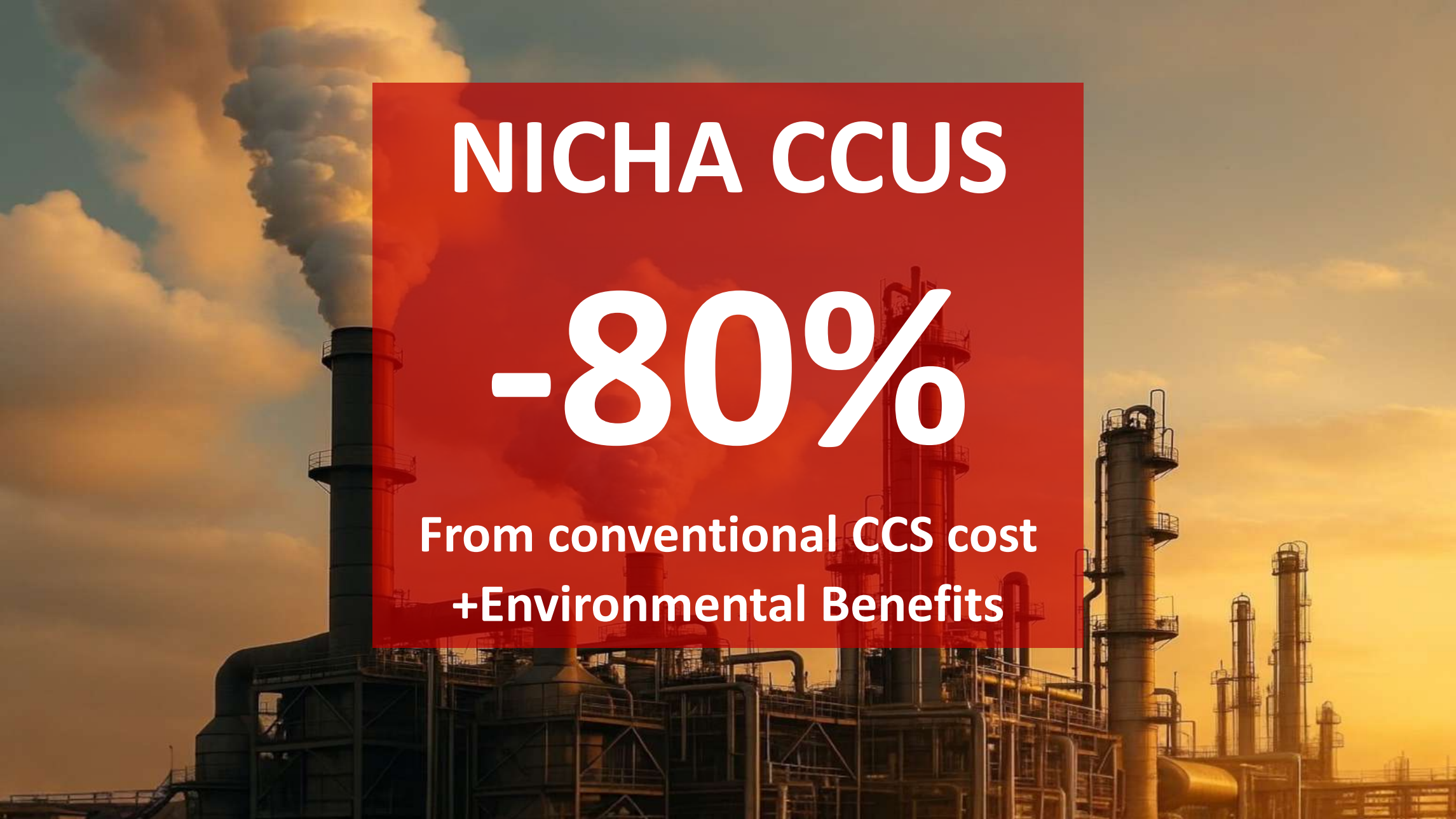

NICHA CCUS
-80%
From conventional CCS cost
+Environmental Benefits

Global Carbon Emission **56** **$GtCO_2eq/y$**

Global Flue Gas Emission **24** **$GtCO_2eq/y$**

CCS is commonly used for Flue Gas Treatment

High Cost - High Energy - Site Limitations - No Return on Investment

NICHA CCUS Concept

Turning CO_2 into a **Climate VACCINE**

CO_2 >> CO_3^{2-}

CO_2 Capturing

CO_2 Conversion by

pH 11-12 Alkaline Water
Under High Pressure

$$CO_2 + H_2O \rightleftharpoons H_2CO_3$$
$$H_2CO_3 \rightleftharpoons H^+ + HCO_3^-$$
$$HCO_3^- \rightleftharpoons H^+ + CO_3^{2-}$$

Filtration

Utilization & Storage

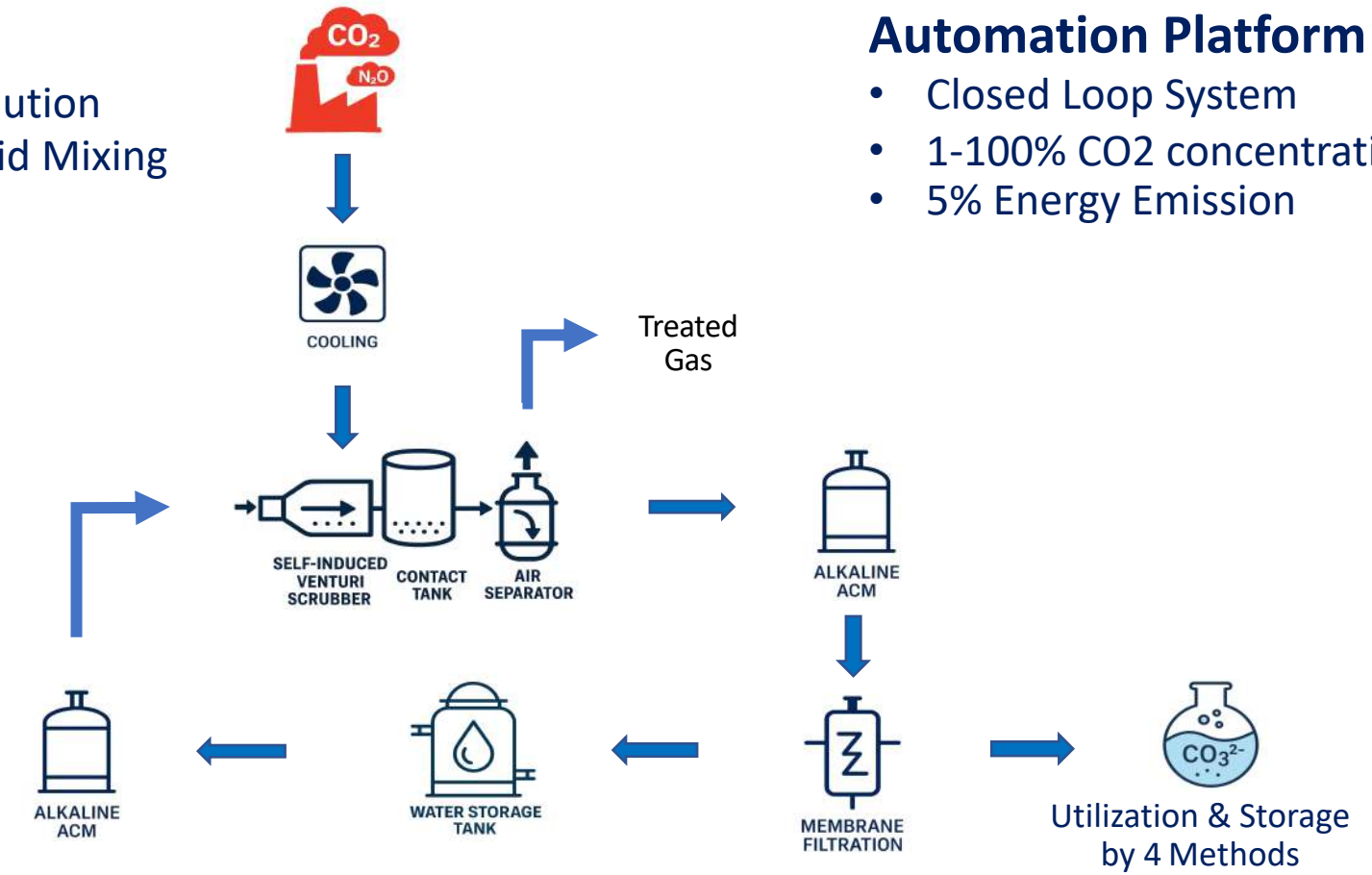
NICHA CCUS Technology

Core Technology

- Low Cost Alkaline Solution
- Low Energy Gas-Liquid Mixing
- AI Application

Automation Platform

- Closed Loop System
- 1-100% CO2 concentration
- 5% Energy Emission



Utilized & Storage vary by Site Location

Ocean Alkalinity Enhancement (OAE)

$$CO_3^{2-} + H_2O + CO_2 \rightleftharpoons 2HCO_3^-$$

- Facilitate additional CO_2 removal
- Stored as carbonate compounds
- Promotes marine ecosystem health
- Creates long-term CO_2 Storage

Soil Carbon Sequestration (SCS)

$$CO_3^{2-} + H_2O + Ca^{2+} \rightarrow CaCO_3(s) + 2OH^-$$

- Stored as Soil Inorganic Carbon (SIC)
- Improve soil quality
- Improve crop yield by 10 – 40%
- Enhance CO_2 uptake by plants

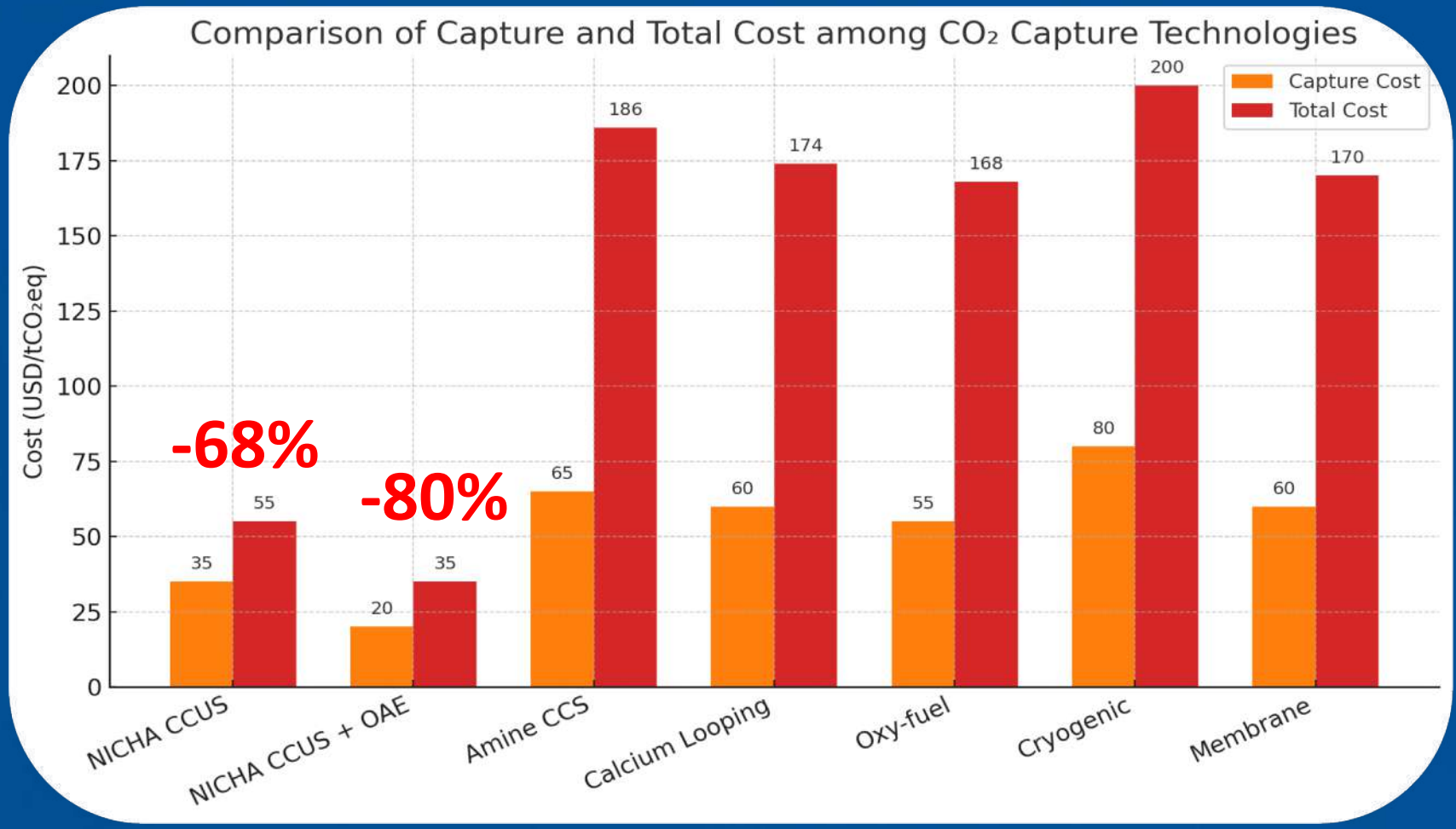
Utilized & Storage vary by Site Location

Wastewater Treatment

- Heavy metal & chemical removal
- Decrease Methane emission by 50%
- Decrease N_2O emission by 17%
- Stored as carbonate sludge

Carbonate for Concrete Production

- Enhance strength by 15 – 70%
- Reduce cement consumption 10 -30%
- Extend cement service life by 50%
- Stored permanently in form of $CaCO_3$



Low Alkaline Cost – Low Energy – Low Transportation Cost

Business Model

- Turnkey + 15-yr operation
- Scalable up to 10 $MtCO_2eq/yr$

Market Opportunity

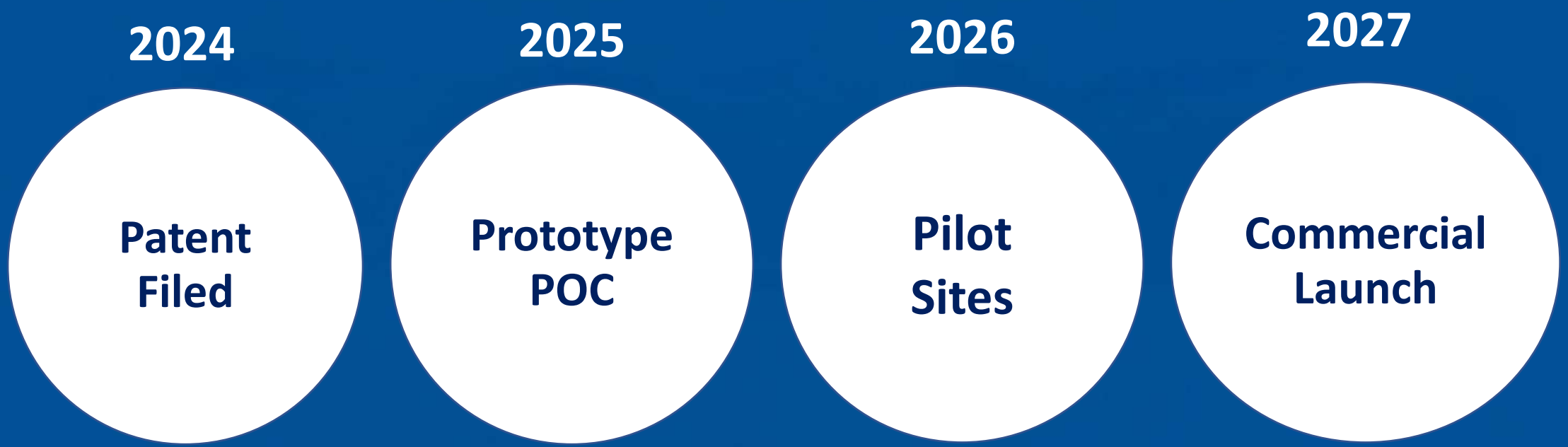
$ 4.5 T

25

$GtCO_2eq/yr$

2035-50

Traction


2024
Patent Filed
2025
Prototype POC
1-10 kg CO_2eq/hr
2026
Pilot Sites
• 1,000 tCO_2eq/yr
• 10,000 tCO_2eq/yr
2027
Commercial Launch
Up to 10 M tCO_2eq/yr

POC with PTT Group & SCG Cement

Decarbonization for Cement & Concrete Industries in Thailand

Initial Technology Validation with Leading Corporates and Investors

NICHA CCUS Team's Competency

Pakorn I. CEO

Nattawan I. COO

Yokin C. GM

Boonlert L. Adv

Suthirak B. Adv

Low Cost Alkaline Water Production

pH 11 – 12 cost @ 1 USD/ton


NICHA CCUS
Capturing Carbon, Creating Future
www.nichaclimatetech.com