



Industrial Energy in a Net Zero World



**CIBO Environmental, Energy and
Sustainability Work Group
Sept 15, 2021**



Outline

- **Business Climate Goals and Targets**
- **Energy Options**
- **Discussion**

Climate Goals and Targets: Overview



Explosion of Activity

Many Programs

- Science Based Targets
- Net Zero / Race to Zero
- Related Programs



SCIENCE
BASED
TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

[How it works](#)

[Set a target](#)

[Companies taking action](#)

[Sector guidance](#)

[Resources](#)

[Net-zero](#)

A background image showing a cityscape at sunset, with mountains in the distance. A red line graph is overlaid on the left side of the image, curving downwards from the top left towards the bottom right.

AMBITIOUS CORPORATE CLIMATE ACTION

Lead the way to a zero-carbon economy, boost innovation and drive sustainable growth by setting ambitious, science-based emissions reduction targets

[SET A TARGET](#)

[LEARN MORE](#)



Science Based Targets (SBTs)

- Science-based GHG reduction goals
 - Aligned with Paris Agreement goals of 2015
 - Limit warming to 1.5 degrees Celsius (required ambition by July 2022)
- 5 - 10 year timeframe
- **Offsets not allowed**
 - Requires direct reductions in your organizational emissions
- Evolving
 - Was 5 - 15 years and well-below 2 degrees ambition
- Validation and approval process by the SBTi team

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Launch of the UN Race to Zero emissions Breakthroughs

COP26 President's challenge to every sector of the global economy to reach critical **net zero** tipping points

TOPICS

BUSINESS ACTION

CHALLENGES

Net Zero Goals



Not all net zero commitments are necessarily UN-related, but it drives the zeitgeist






Generally “net zero” \sim “carbon neutral”

- Rally leadership from all “sub-national” stakeholders (UN Race to Zero)
- Achieve net zero carbon emissions by 2050 at the latest
- 733 cities, 31 regions, 3,067 businesses, 173 investors, 622 higher education institutions

[Race To Zero](#) participants collectively represent nearly 25% of global CO₂ emissions and over 50% of global GDP. Driving net zero commitments, particularly internationally.

Other Programs



Program	Details	Offsets Allowed?	More than Climate?	Timeframe
 <p>SCIENCE BASED TARGETS</p> <p>DRIVING AMBITIOUS CORPORATE CLIMATE ACTION</p>	Core program driving reductions	N	N	2025 - 2030 (+5-10 yrs)
	Little restriction	Y	N	2025 - 2050
	Encourages SBTs	Y	Y	2030
 <p>CLIMATE NEUTRAL</p>	Encourages SBTs	Y	N	On certification (in two years)
	Encourages climate resilience among other SDGs	N/A	Y	2030

Implications for Industrial Heat

Options



Combustion

Boilers

- Carbon Capture and Storage
- Biomass (Pulp and Paper, Waste Wood, Etc.)
- Methane Capture
- Waste Heat?

Waste Organics

Hydrogen

Non-Combustion

Electrification w/Renewables

Concentrated Solar

Fuel Cell?

Boilers

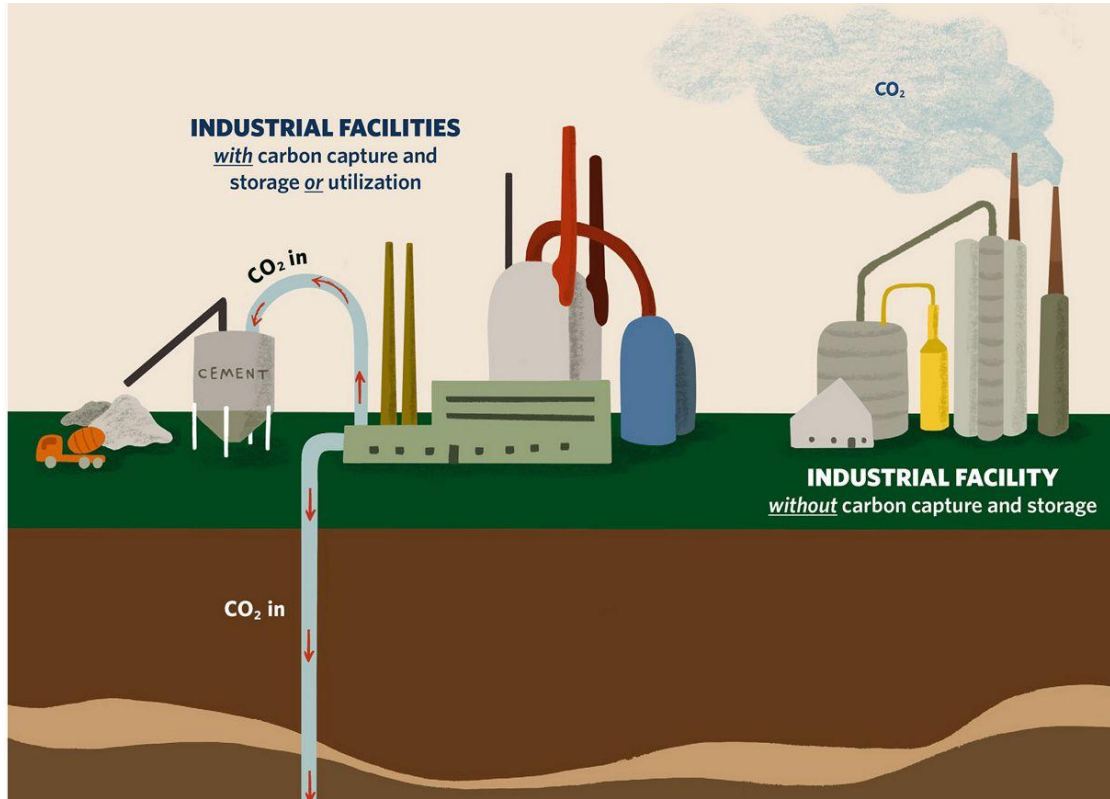
Less about the technology and more about the energy source

Biomass:	Can be net zero, need to watch deforestation issues
Waste Heat:	Make whole system efficiency that much better
Methane Capture:	Wastewater treatment, CAFOs, abandoned coal mine
Electricity:	To be discussed

ONE Caveat

Successful carbon capture and storage (on existing gas/propane boiler)

Carbon Capture and Storage (CCS)



Waste Organics



Hydrogen



Electrification

Electric Boiler Manufacturers, Suppliers, and Industry Information

Directory
INDUSTRIAL QUICK SEARCH
MANUFACTURER DIRECTORY
Watch later Share

Electric Boilers

0:00 / 1:01

YouTube

This image shows a YouTube video player interface. The video title is "Electric Boilers" and the description is "Electric Boiler Manufacturers, Suppliers, and Industry Information". The video player includes a play button, a volume icon, a progress bar showing 0:00 / 1:01, a settings gear icon, the YouTube logo, and a full-screen icon. The video content features several images of electric boilers and industrial equipment. A large, dark blue semi-transparent box with the text "Electric Boilers" is overlaid on the bottom right of the video frame. In the top right corner of the video frame, there is a "Directory" logo with the text "INDUSTRIAL QUICK SEARCH" and "MANUFACTURER DIRECTORY", along with "Watch later" and "Share" buttons. The background of the video frame shows a complex industrial facility with pipes and structures.

Concentrated Solar



Which Technologies Will Win Out?



What Policies Will Come Into Play (Help or Hinder)?



?



Where Will Market Forces Push Us?



More Accurately, Where Will Various Technologies Gain Traction?



Discussion



Onward!

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CLIMATE POSITIVE BUSINESS

HOW YOU AND YOUR COMPANY HIT BOLD
CLIMATE GOALS AND GO NET ZERO

David Jaber

ROUTLEDGE






CDP

[Carbon Disclosure Project](#) is the international forum for GHG emissions reporting.

8,500+ companies involved with 2020 Climate.

- Involves annual response to extensive questionnaire

