Energy Transition in the Americas: An Environmental Law Perspective

October 10, 2024

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Red Interamericana de Especialistas en Legislación Ambiental

Welcome Remarks

Russell Lewis (Baker Botts Partner-in-Charge, Houston Office)
Mariana Hierro (RIELA President)

Setting the Stage: The Net-Zero Movement Drivers

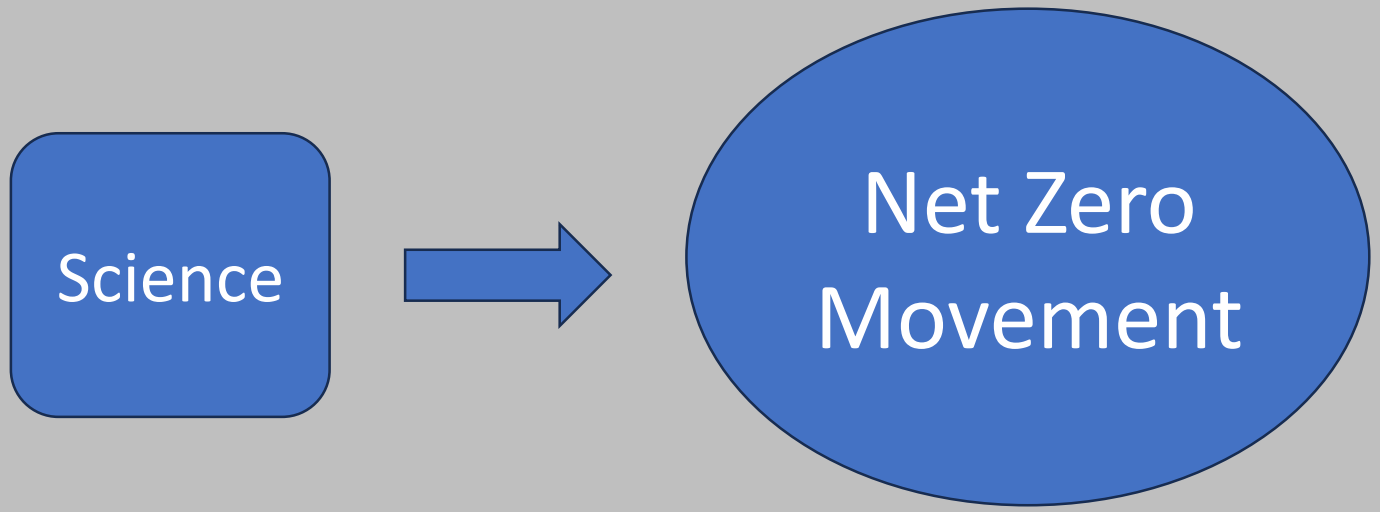
Professor Jim Blackburn, Rice University

The Net-Zero Movement Drivers

by Jim Blackburn
Rice University

October 10, 2024

Art By Isabelle Scurry Chapman


Science
Net Zero
Movement

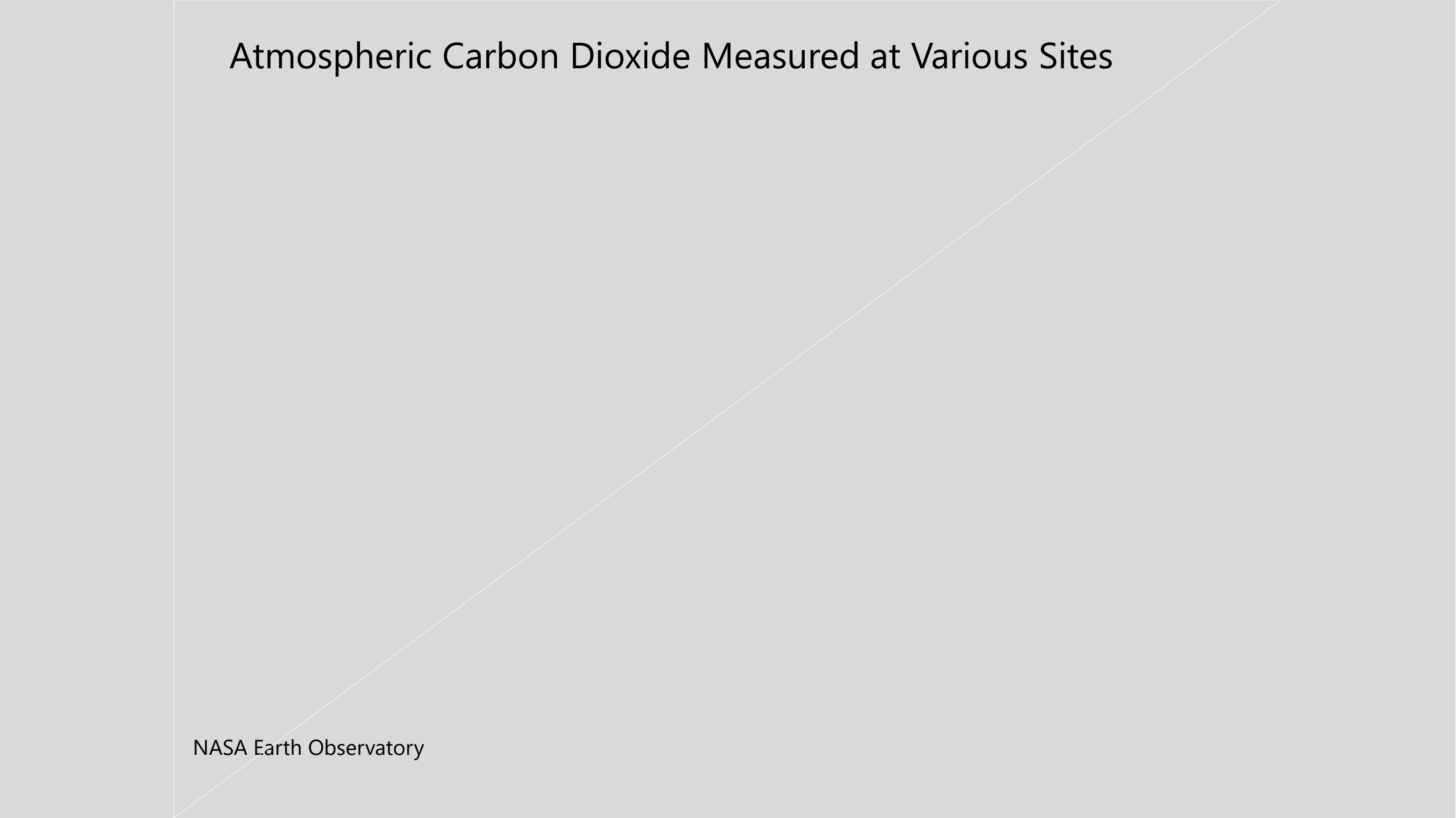
Dr. Kathryn Hayhoe, Climate Evangelist

- **Established in 1988**
- **Comprised of scientists from around the world**
- **Works to achieve consensus on science and policy aspects of global climate change**
- **Won ½ Nobel Peace Prize in 2007**

Observed Warming and its Causes

- Human activities, principally through emissions of greenhouse gases, have unequivocally **caused global warming, with global surface temperature reaching 1.1°C above 1850-1900 in 2011-2020. Global greenhouse gas emissions have continued to increase, with unequal historical and ongoing contributions arising from unsustainable energy use, land use and land-use change, lifestyles and patterns of consumption and production across regions, between and within countries, and among individuals *(high confidence). {2.1, Figure 2.1, Figure 2.2}***

Atmospheric Carbon Dioxide Measured at Various Sites



NASA Earth Observatory

Most Important Graphic Re: Human Impact on Climate

Intergovernmental Panel on Climate Change (IPCC)

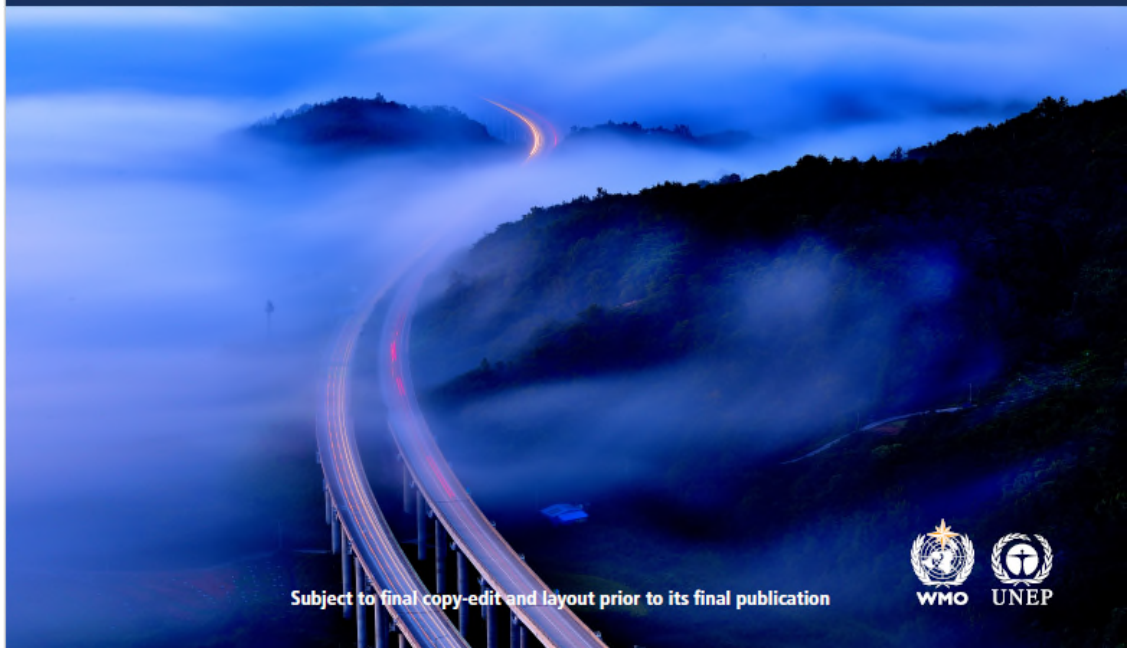
- First Report 1990 – emphasizing importance of climate change
  - 1992 – United Nations Framework Convention on Climate Change
- Second Assessment Report (SAR) – 1995 – new and better information
  - 1997 – Kyoto Protocol – Reductions back to and below 1990 levels
- Third Assessment Report (TAR) – 2001 – impacts and need for adaptation
- Fourth Assessment Report (AR4) – 2007 - focus on limit increase to 2 degrees C
- Fifth Assessment Report (AR5) – 2014 – laid groundwork for Paris Accord
  - Paris Accord – 2015 – pledge to limit increase to 1.5 degree C
- Two Special Reports – Land 2019 and Oceans 2019
- Sixth Assessment Report (AR6) - 2023

ipcc
INTERGOVERNMENTAL PANEL ON climate change

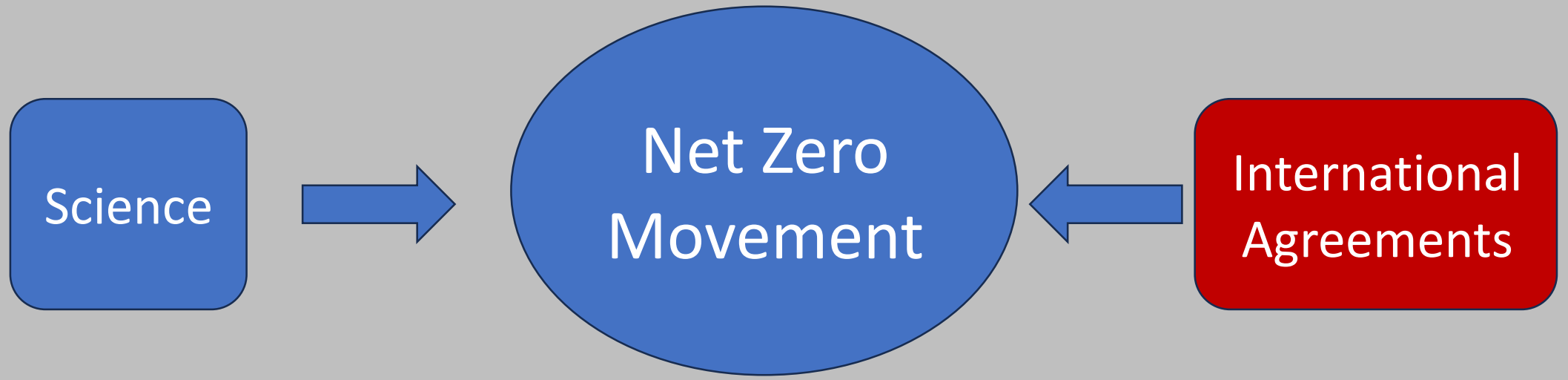
CLIMATE CHANGE 2023
Synthesis Report

Summary for Policymakers

A Report of the Intergovernmental Panel on Climate Change



WMO UNEP


Science
Net Zero Movement
International Agreements

Framework Convention on Climate Change Adopted

Framework Convention on Climate Change

- Umbrella Treaty for All Global Climate Action
- Created Directorate for Climate Change
- Established annual Council of Parties or COPs

Kyoto Protocol 1997

COP 3

Established approach to addressing climate carbon emissions

Based on dividing the world between developed and developing nations

Control plans proposed for developed world
Some percentage reduction from 1990 emission levels

No control plans for developing world

Doha Amendment to the Kyoto Protocol
COP 18 2012

Paris Accord 2015
COP 21

Status of Compliance as of 2020

Currently U.S. Back In

Paris Agreement

Temperature Goals

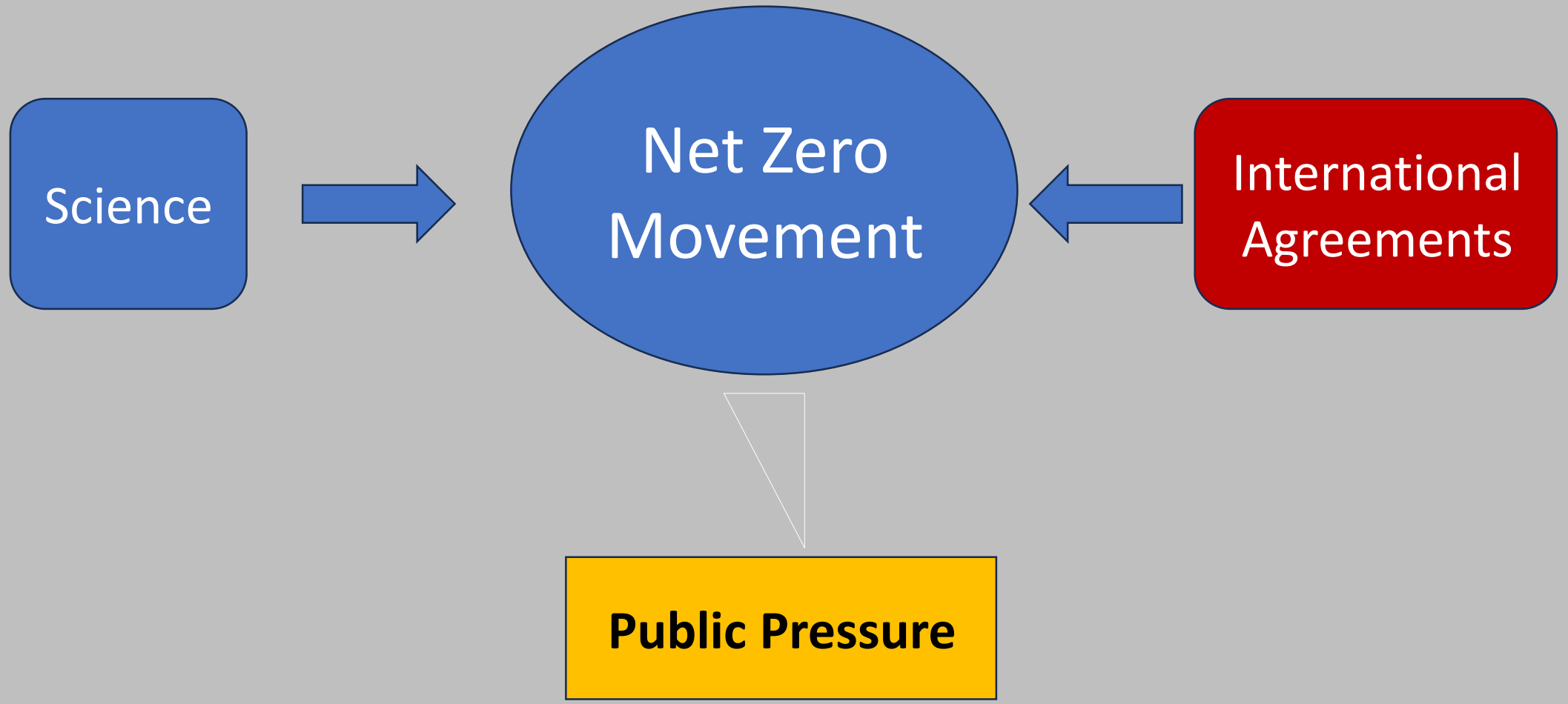
- Attempt to keep temperature increase below 2 degrees C
- Trying to keep temperature increase below 1.5 degrees C

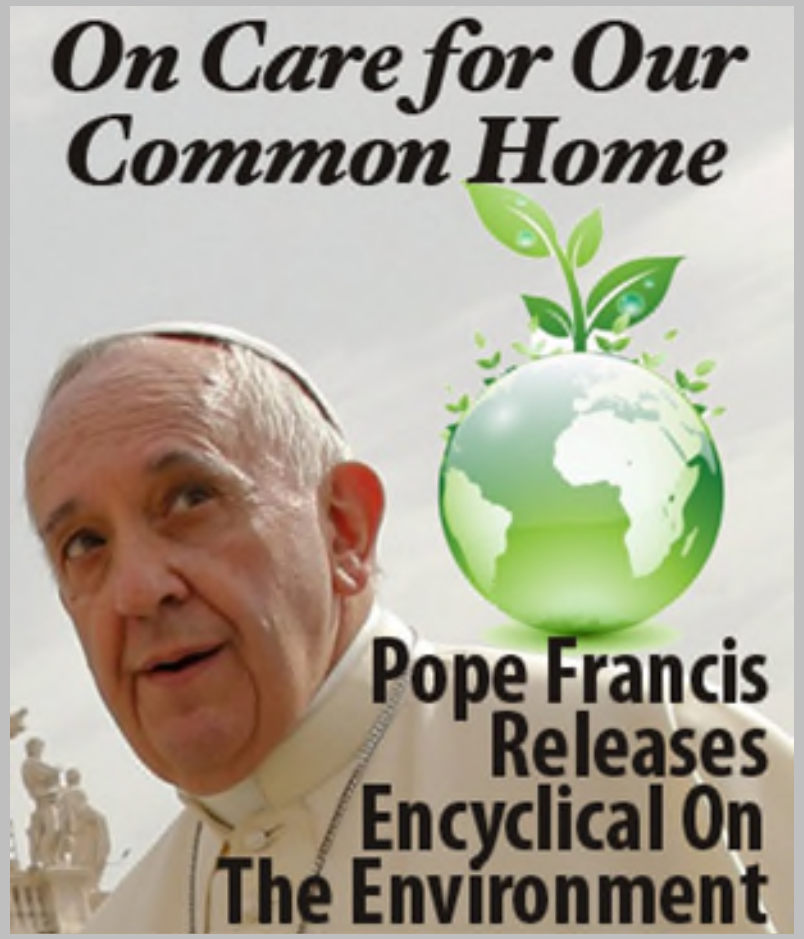
Emission Goals

- Each country sets its own goals
- These are called Nationally Determined Contributions of NDCs
- Emission reduction plan for each signatory to the convention

Time Frame for Net Zero?

From the IPCC


Science
Net Zero Movement
International Agreements
Public Pressure



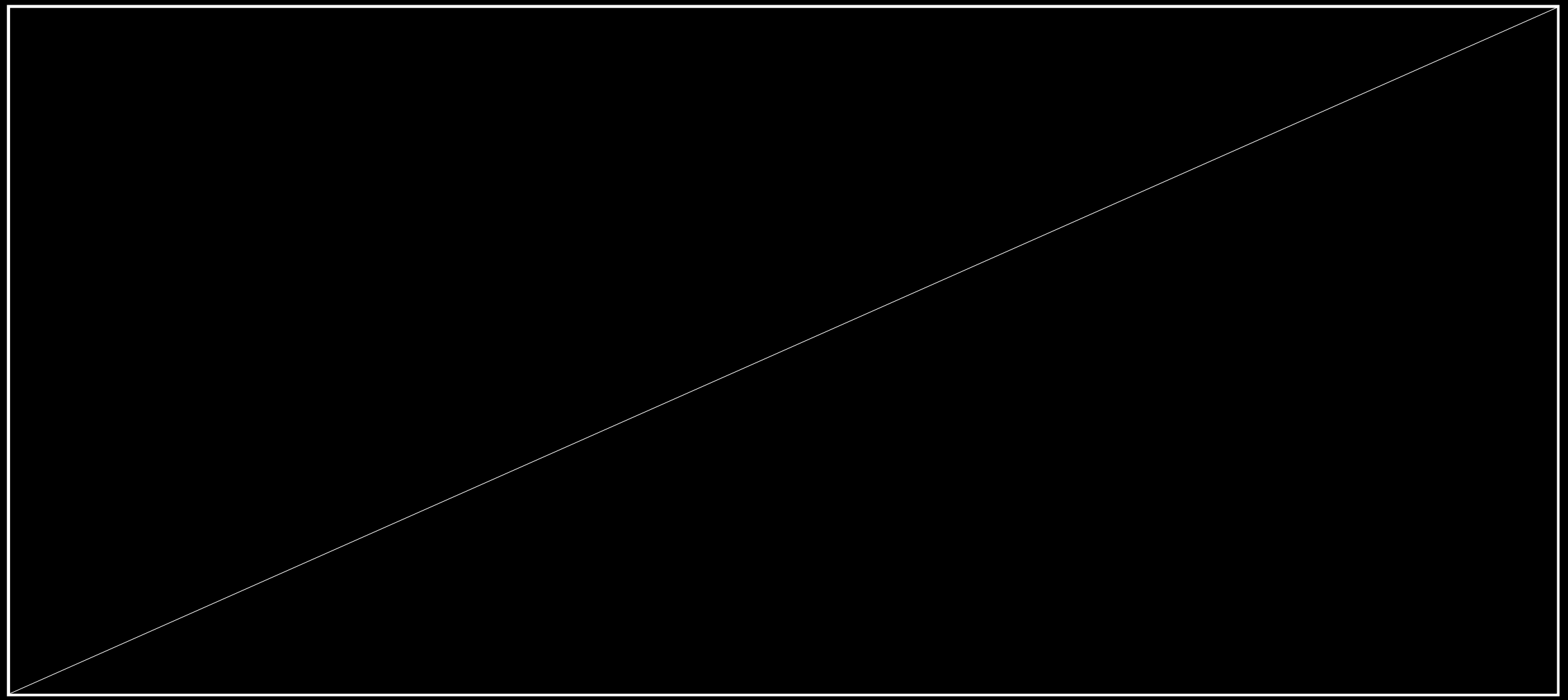
LAUDATO SI'

ON THE CARE OF OUR COMMON HOME

POPE FRANCIS

ENCYCLICAL LETTER

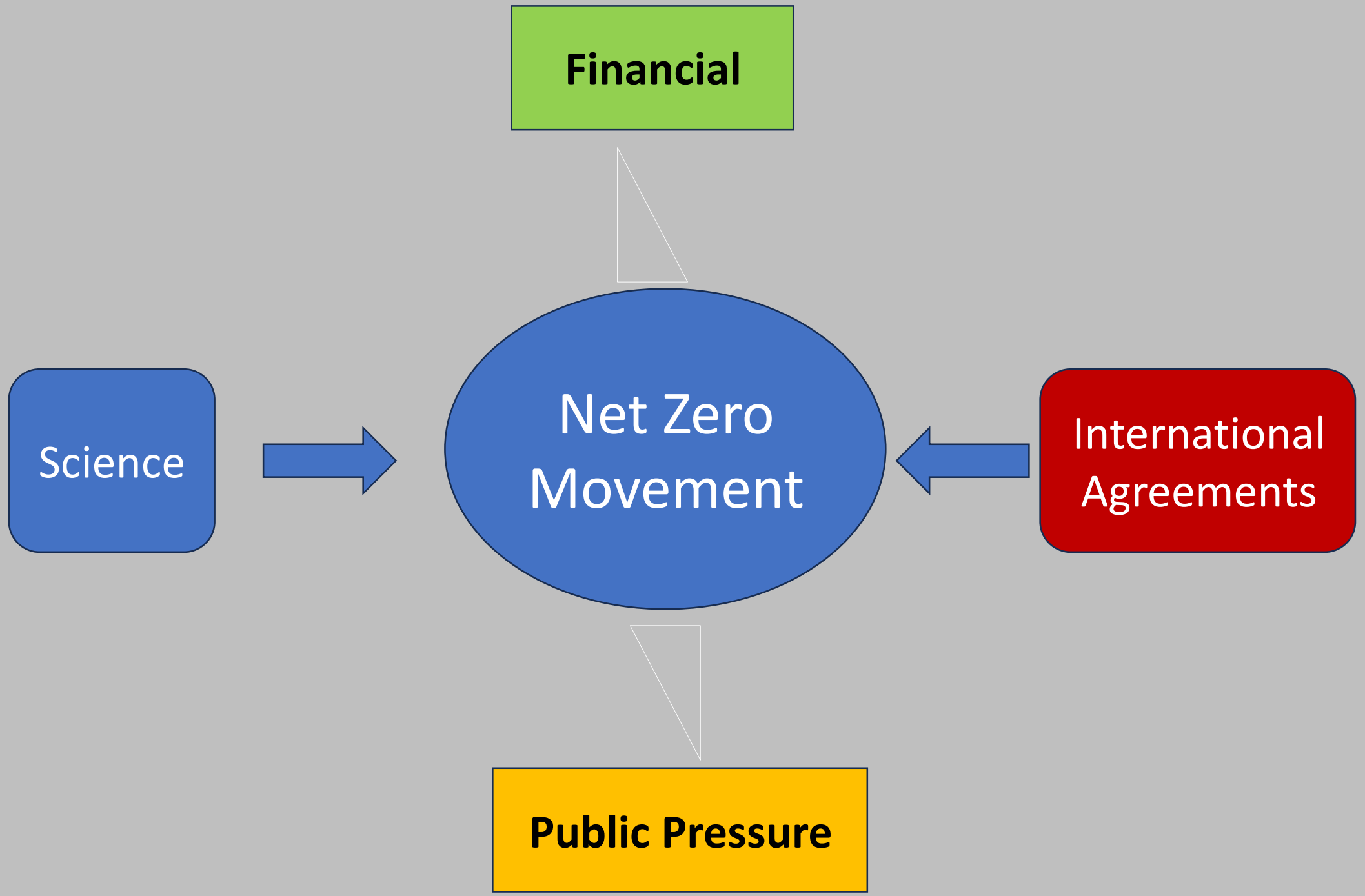
Pope Francis Meeting in Vatican, July 2019



Pressure To Divest

Perception

In Houston Harvey Was The Turning Point 2017


Financial
Science
Net Zero Movement
International Agreements
Public Pressure

Larry Fink
Jan 14, 2020

BlackRock will begin to:

- **exit investments in coal production,**
- **introduce funds that ban fossil-fuel stocks and**
- **vote against corporate management who aren’t making progress on fighting climate change.**

Bobby Tudor, 2020 – Houston Must Lead the Energy Transition

ESG Loan Funds

ipcc
INTERGOVERNMENTAL PANEL ON climate change

CLIMATE CHANGE 2023
Synthesis Report

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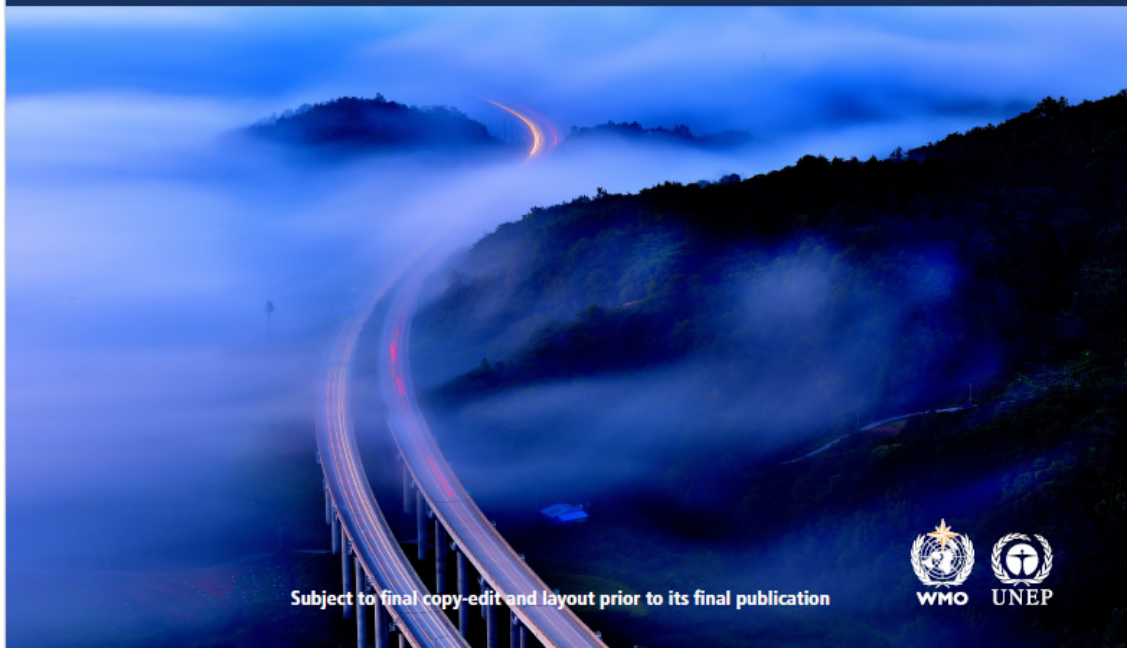
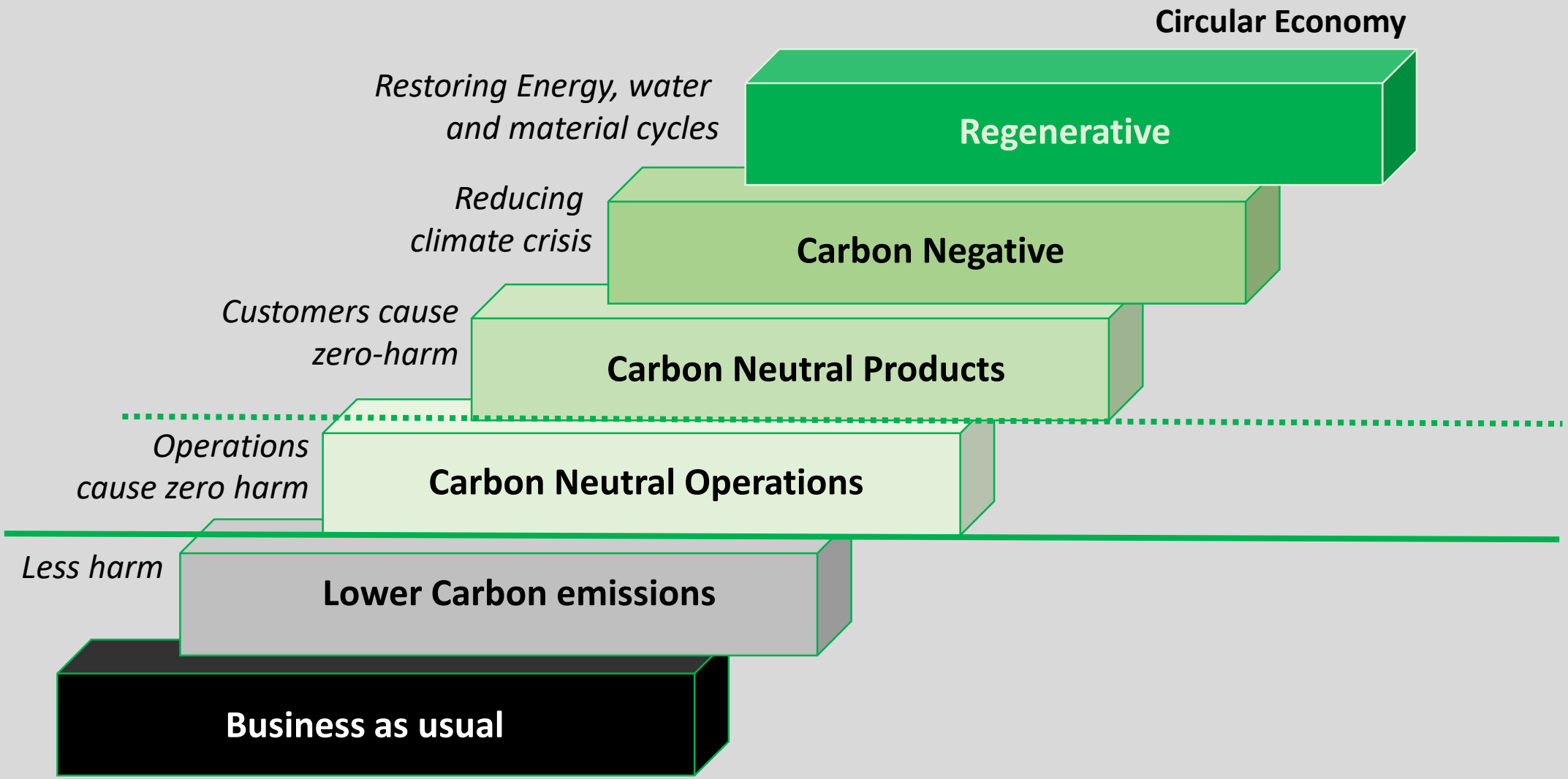


WMO UNEP

Corporate targets



Ultimately, carbon removal from atmosphere –

by soil,
by forest,
by coastal wetlands
by plugging leaking wells

BCarbon

Thank You

Approaches to and Challenges of Energy Transition and Carbon Reduction Initiatives: Industry Perspective

Claude Griffin, Executive Director, US Business Council for Sustainable Development

Energy Transition In America

"Approaches to and Challenges of Energy Transition and Carbon Reduction Initiatives: Industry Perspective"

Claude Griffin, Executive Director
US Business Council for Sustainable Development

October 10, 2024

Background

The US Business Council for Sustainable Development (US BCSD) was founded in 1992 to give leading US businesses a platform to work together to design, implement and scale sustainability solutions.

The US BCSD's cross-sector platforms, projects, and partnerships bring leading companies together to solve circular economy, carbon, energy, water, and equity challenges across North America.

The US BCSD is a Global Network partner of the World Business Council for Sustainable Development.

Carbon Collaborative

The Carbon Collaborative is a cross-industry platform designed to mobilize the collective energy & motivation of businesses in the United States to create measurable, long-term impact in reducing carbon emissions in specific regions while enhancing economic vitality.

Working Groups are formed around various technologies:

- CCS/CCUS
- Hydrogen
- Nature-based Solutions
- Low generation technologies (i.e., electrification, wind, solar, geothermal, nuclear)

Small Landowner Carbon Collaborative Project

Challenges

- The drive for tremendous growth
  - Data-center trend
- Huge emissions challenge
- Investing in low and zero carbon sources, having to start planning for gas fired assets going strong
- Community Acceptance - Pushback
- Equity

Summary

- NetZero by 2050 in jeopardy
- CCS is needed to reach scale
- Must have renewables
- Risks are many and high
- Opportunities for increased collaboration

Stay Connected

usbcsd.org

info@usbcsd.org

@usbcsd

Thank you

The Evolution of ESG and Carbon Markets

John McDougal (Anew Climate – Houston, Texas)
Jaime Zaldumbide (Pérez Bustamante & Ponce - Ecuador)
Carlos Alberto Echeverría (Interlex Bufete Echeverria - Costa Rica)

Energy Transition in the Americas: An Environmental Law Perspective

Introduction to Anew

Who We Are

Anew brings together climate-committed businesses and environmental projects to create measurable impact. Together, we are helping build the low-carbon economy of the future.

- **Largest marketer and developer** of high-quality carbon offsets and environmental credits in North America
- **Most experienced** participant in environmental credit markets in North America
- Led by a team of **proven experts** with decades of success in the environmental commodities space
- Innovator and first mover on **new protocols and pathways** in LCFS, RINs, Carbon
- **Expansive geographic reach** with offices across the U.S., Canada & Europe
- The **most decorated firm** in the industry, receiving major awards and first place market rankings

180+
Employees

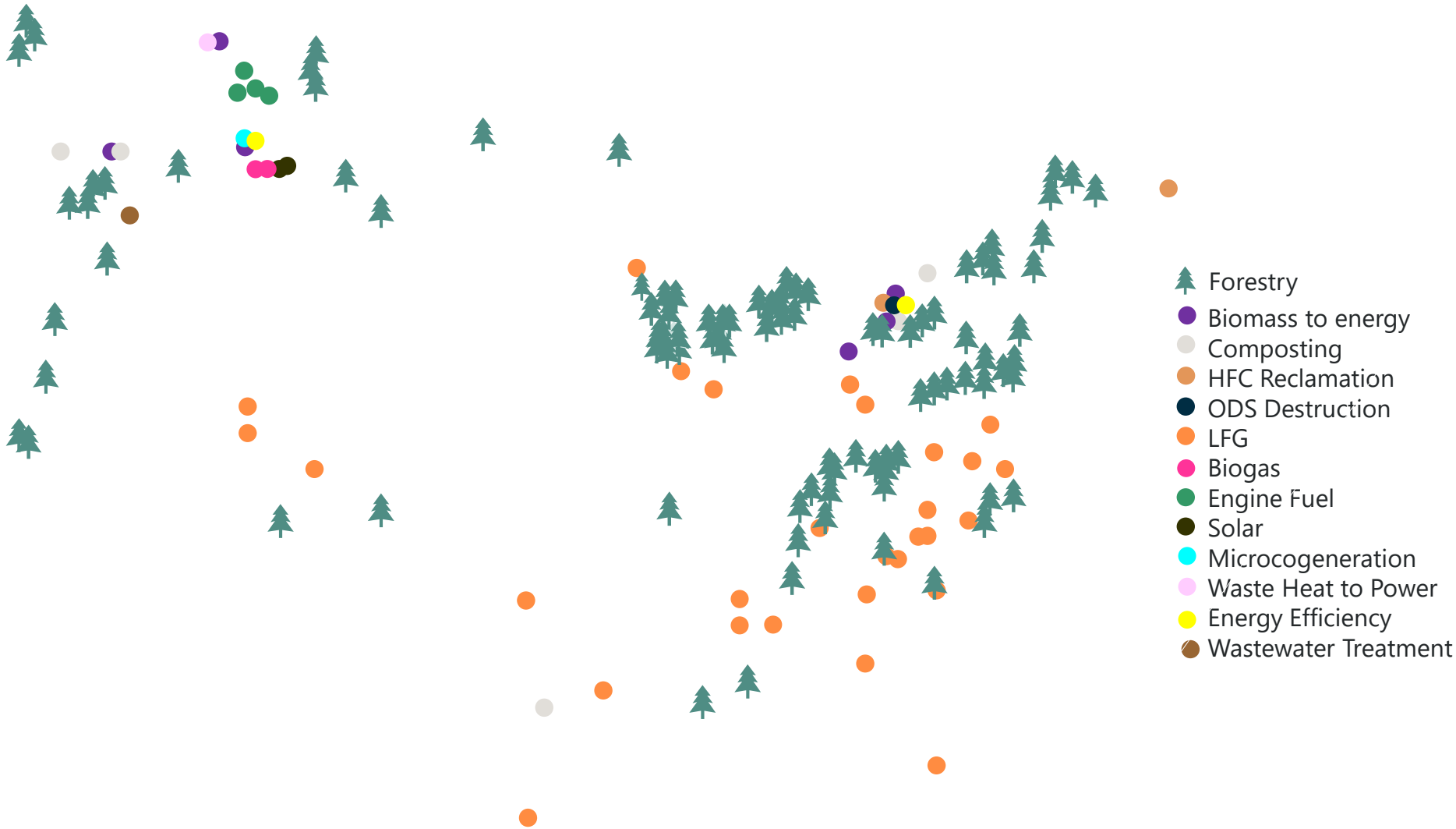
>20%
RNG in U.S. Transportation Markets

6M+
Acres under management

Anew's Carbon Projects

Carbon Projects

- North America's leading EA project developer
- Over 400 various EEA carbon projects in N. America, 100 of which are forestry
- 30+ EA types and 20+ technologies



Note: Does not include Renewable Natural Gas ("RNG") and Biogas projects.

Carbon Offsets Explained

Carbon offsets represent the reduction of one metric ton of carbon dioxide equivalent and has received certification by one of the specified host registries to meet **five criteria**:

1

Real

Reductions can be accurately measured in accordance with scientifically based protocols

2

Additional

Reductions are not required by regulation or any other legal requirements; project activity is not business-as-usual as defined by the applicable registry and protocol

3

Verifiable

Reductions are independently verified by an accredited third party and subject to extensive data collection and review prior to credit generation

4

Enforceable

There is undisputed ownership of the reductions and no double counting of offsets

5

Permanent

Any net reversal in reductions is accounted for and compensated by the applicable registry through buffer credits; buyers do not assume risk

Defining the Carbon Market: Voluntary vs. Compliance

Compliance Markets

EU ETS	€60.29 / $66.03
China National ETS	100.03 yuan / $14.13
Australia Domestic Market	36.05 AUD / $24.20
CA Cap and Trade CCAs	$37.20
CA Cap and Trade DEBS Golden CCOs	$31.60
Washington Cap and Invest WCAs	$43.27
Regional Greenhouse Gas Initiative (RGGI)	$18.80
Low Carbon Fuel Standard (LCFS)	$68.00
Alberta Offsets	40.50 CAD/$29.84
British Columbia Carbon Tax	$80.00

Voluntary Carbon Market

U.S. Landfill Methane Capture	$6.00 – $8.50
U.S. Forestry (Avoidance and Removal)	$12.00 - $33.00
REDD (International Forestry)	$3.00 – $4.75
Int. Renewables (S. America + Asia)	$0.70 – $3.75
Boreholes (Africa Clean Water)	$6.85 – $13.25

Compliance Markets ($865 billion market value in 2022)

Market-based programs comprised of obligated compliance entities trading and surrendering carbon allowances for emissions.

Program Examples:

- EU ETS: Cap-and-trade covering power stations, industrial plants, and airlines
- RGGI: Fossil fuel-fired power generators with nameplate capacity >25 MW
- AB 32: All industries emitting >25,000 MT CO2 annually in CA and Quebec
- Waxman-Markey: Proposed federal cap-and-trade during Obama Administration

Voluntary Markets ($2.4 billion market value in 2023)

Wide variety of players voluntarily setting and achieving sustainability and emission reduction goals (e.g., carbon neutral, net zero, etc.)

- It is these voluntary offsets that are used for CEQA compliance after all feasible internal reductions have been made.
- Most jurisdictions require local offsets from within the County if available to be used first, then offsets developed in the state can be used, then US-based offsets, and then international offsets.

Carbon Market Dynamics

- Carbon markets have been **rapidly expanding** in recent years, but market shifts, coupled with a delay of end users entering into the market and negative media on specific offset projects, led to a slow down in 2023.
- The market has largely highlighted existing and/or shifted towards provable safeguards, project pathways, and design requirements to answer the call of for quality.
- Many initial or interim corporate goals are set for **2030** – and many of the corporates that had been delaying investment are entering the market every quarter as we move closer to 2030, as they realize that their set goals will not be met based on internal reductions alone.

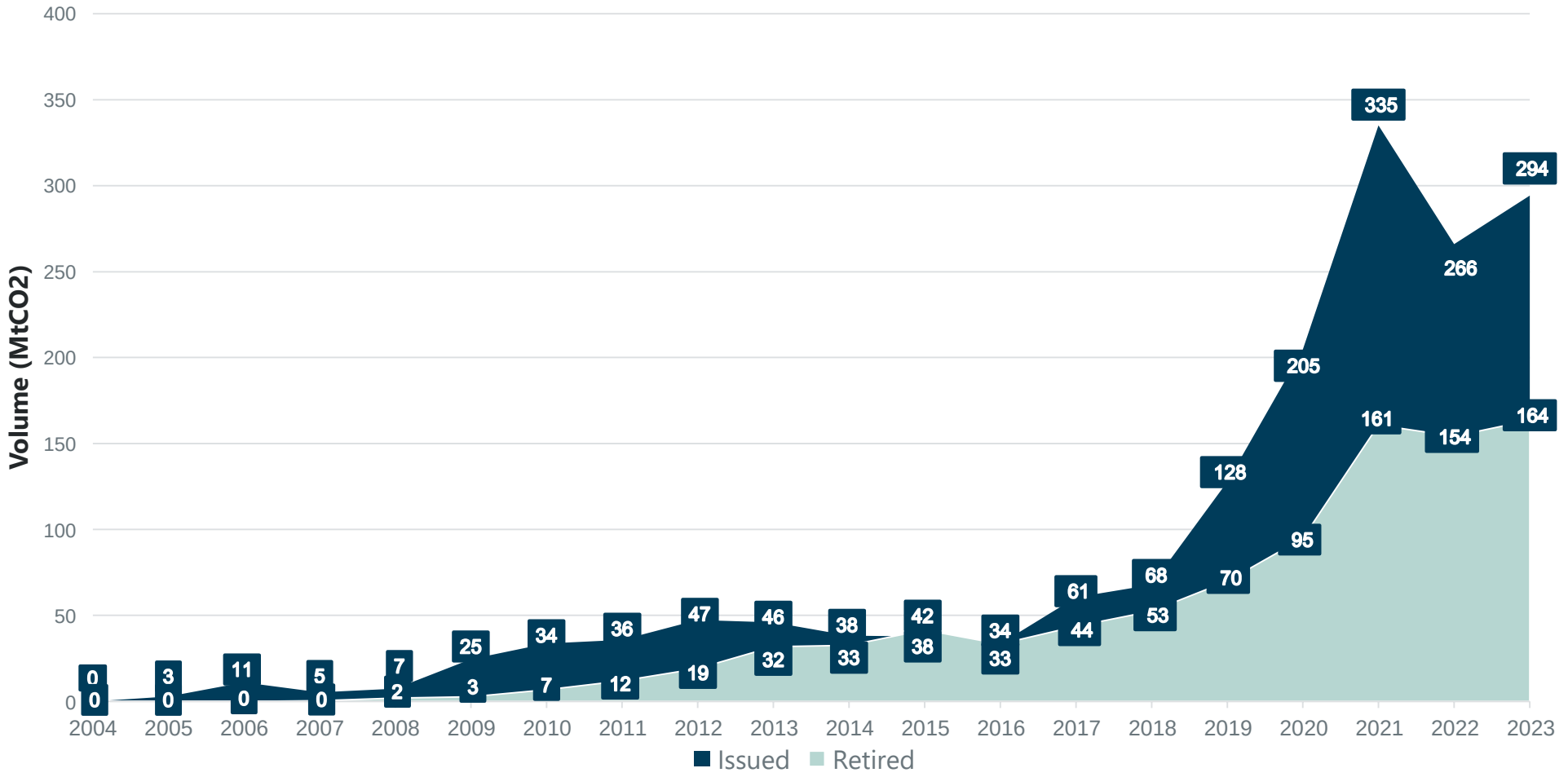
Carbon Market Dynamics Cont.

- Voluntary carbon credits and offsets are used as a mitigation measure for meeting **climate goals, objectives,** demonstrating good corporate **social responsibility** and to demonstrate that investments had a positive **GHG outcome**.

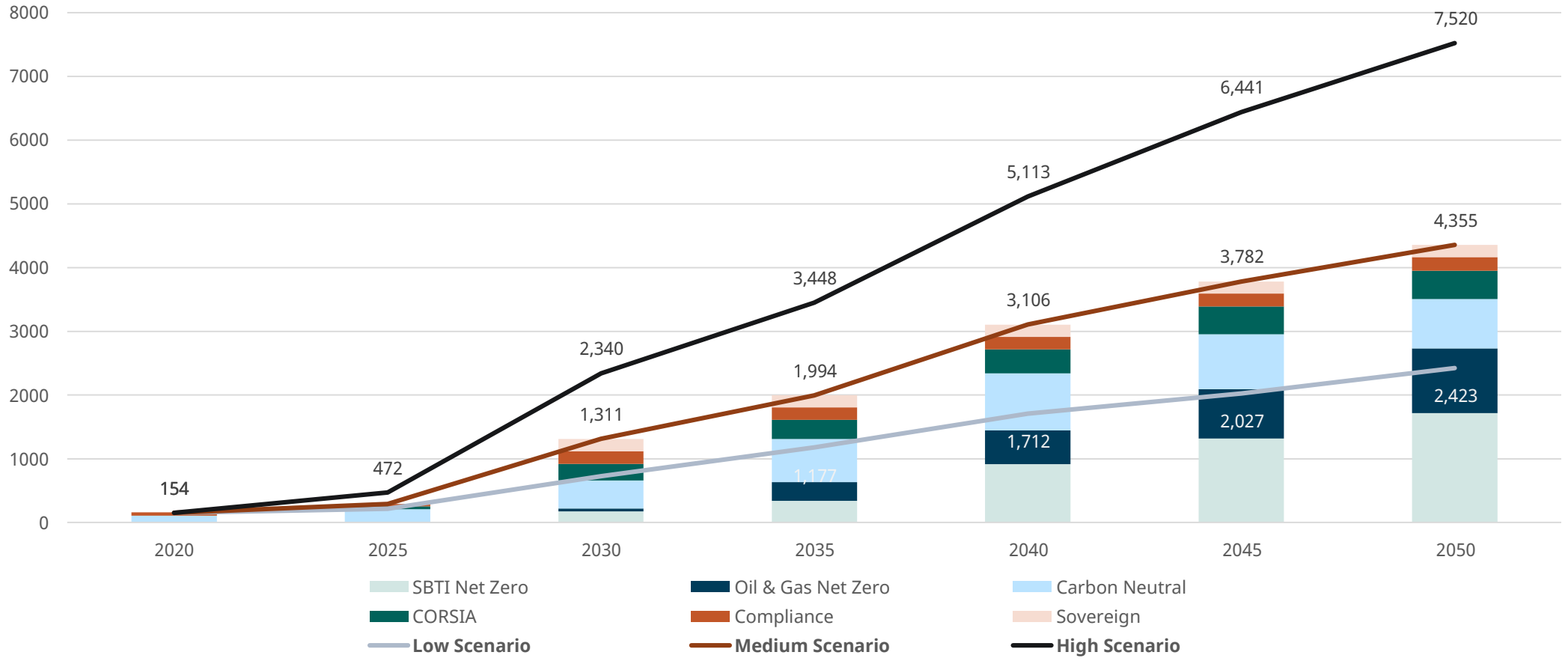
Why is demand increasing? And expected to grow?

- Paris Agreement - global net zero by 2050; Corporate **Net Zero goals and carbon neutrality claims** are the biggest driver today.
  - **Over a third (34%)** of the world's largest companies have a public net- zero target (up 7% since December 2021)
  - In 2020, the number of companies with net zero goals doubled
  - **More than 8,000 entities** committed to net-zero goals (>5,000 companies) are listed on the UNFCCC website
- **Stakeholder pressure (e.g. shareholders/investors, employees, customers, general public)** on companies to do more and be more aggressive on climate commitments
- **Businesses are electing to "opt-in"** through participation in voluntary initiatives around offsets, RNG and renewables (i.e., demand for other environmental attributes, not just carbon credits)

Historic Voluntary Carbon Issuances & Retirements



Carbon Demand - Offset Retirements Forecast (MmtCO2e)



Data Source: MSCI

Thank you

John McDougal, Senior Vice President

jmcdougal@anewclimate.com

John McDougal

Senior Vice President, Carbon Portfolio Management

Mr. McDougal supports Anew clients that are participating in carbon offset, emission reduction credit, and renewable energy certificate programs. Mr. McDougal has over 10 years of experience in the environmental credit markets and specializes in development and commercialization of carbon offsets and emission reduction credits in the U.S. While on the engineering desk, he supported Anew's development and marketing operations in the biogas industry, managed over 16 carbon projects operating around the U.S., and successfully completed over 50 verifications as the project proponent for over 20 carbon offset projects registered with the Climate Action Reserve, the Verified Carbon Standard, or the American Carbon Registry. Prior to joining EM in May 2011, Mr. McDougal has a B.S. in Biological Sciences from University of Georgia and an M.S. in Environmental Analysis and Management from Rice University in Houston, TX.

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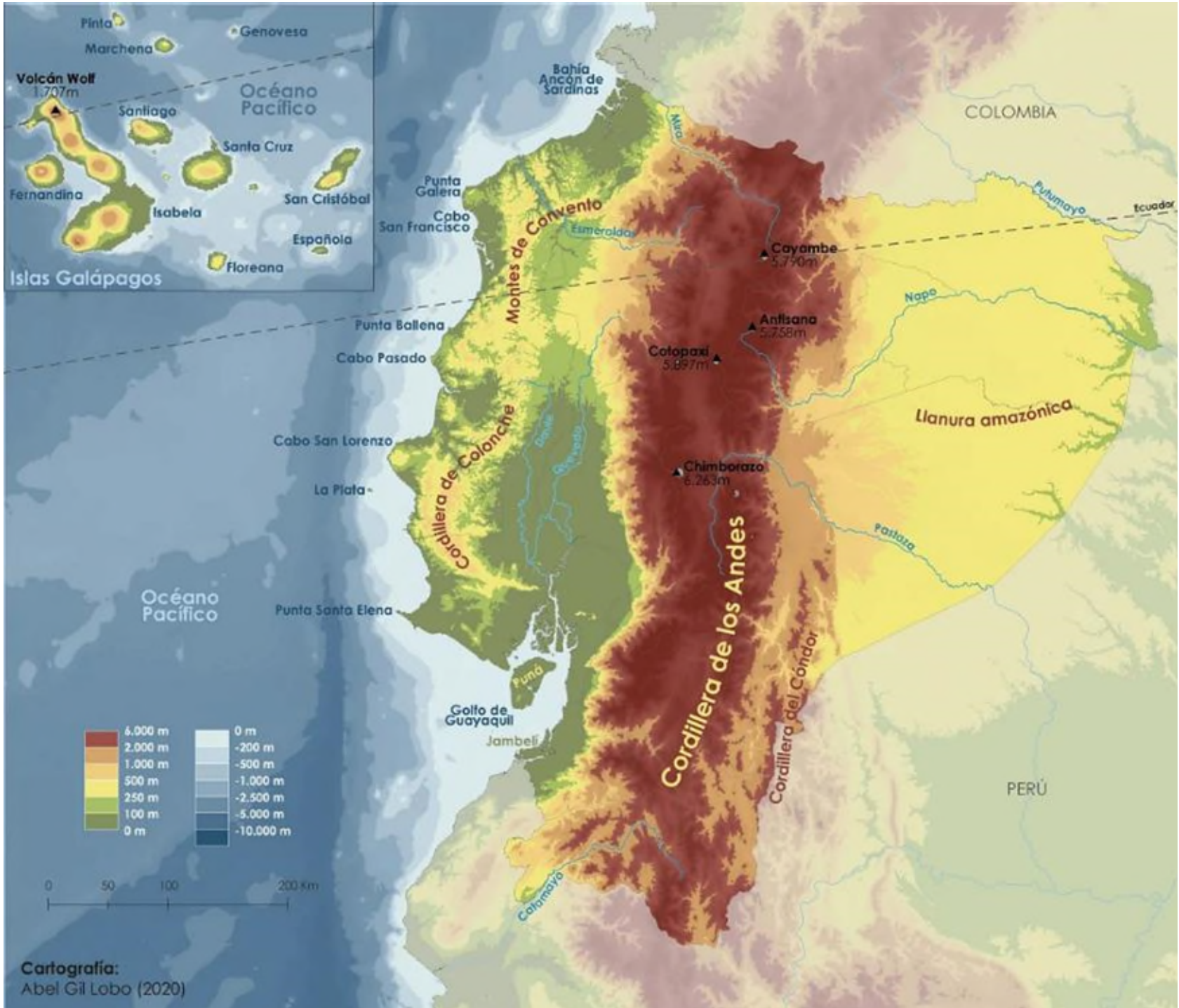
New trends in the carbon credit markets in Ecuador

PBP Pérez Bustamante & Ponce

Ecuador

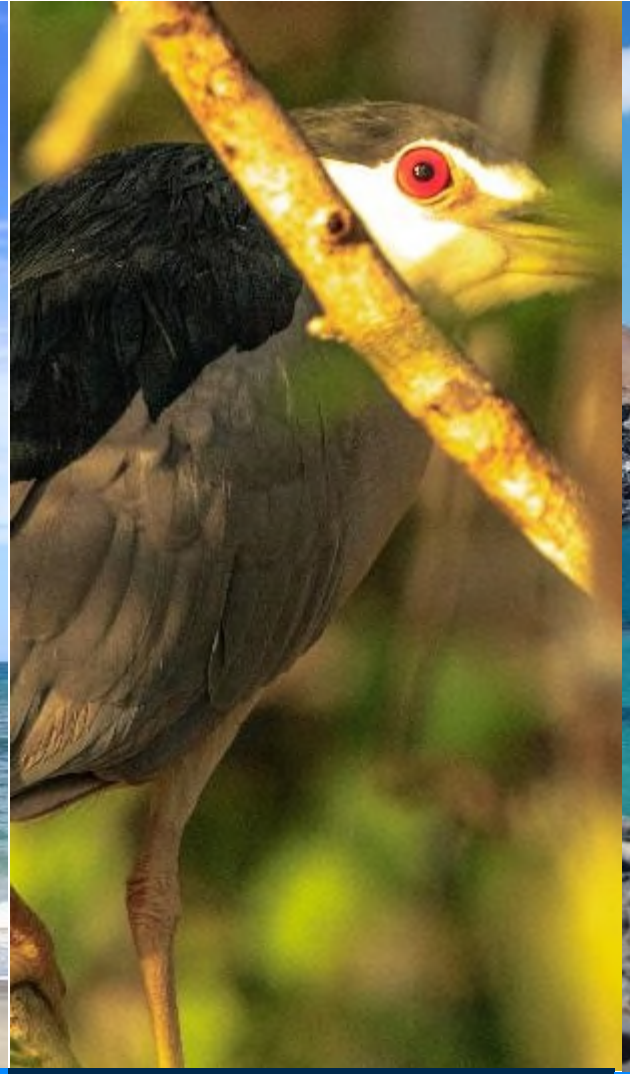
Geographical Regions



Fuente: Gil A. (2020).*El mapa físico de Ecuador*. EOM. https://elordenmundial.com/mapas-y-graficos/mapa-fisico-ecuador/

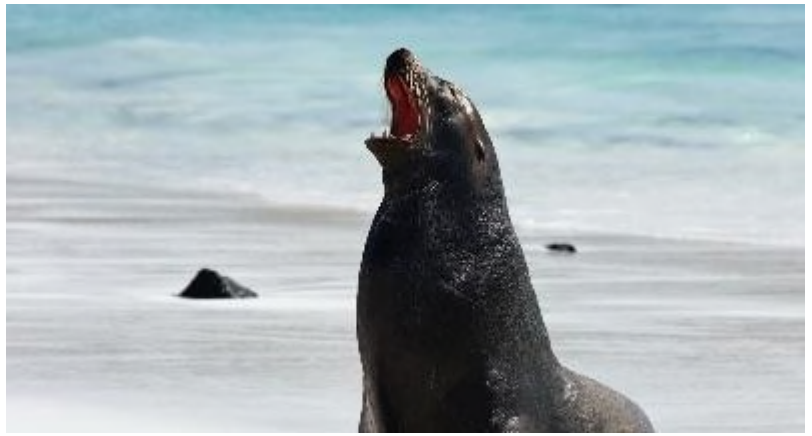
HIGHLANDS

COAST



AMAZON BASIN

GALÁPAGOS



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MAIN INTERNATIONAL AGREEMENTS ON CLIMATE CHANGE TO WHICH ECUADOR IS A SIGNATORY

United Nations Framework Convention on Climate Change (UNFCCC):

Signed (1993) it aims to stabilize greenhouse gas concentrations in the atmosphere.

Kyoto Protocol:

Signed in 1999, it promotes the reduction of greenhouse gas emissions.

Paris Agreement:

Signed in 2016, it establishes commitments to limit global warming.

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CONSTITUTIONAL FRAMEWORK

Constitution of the Republic of Ecuador

Rights of Nature

Principles:

Environmental protection

Obligation of reparation

National System of Protected Areas

Fight against climate change through emission reduction programs

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STATE ENVIRONMENTAL PROTECTION ACTION PROGRAMS

- Implementation of public policies and programs for environmental protection and GHG reduction
- Compliance with commitments derived from international agreements
- Conservation and restoration of forests, particularly the Ecuadorian Amazon basin
- Conservation and restoration of coastal mangroves
- Conservation and restoration of “páramos” (highlands) and wetlands
- Conservation of watersheds

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ENVIRONMENTAL REGULATORY FRAMEWORK

Organic Environmental Code and its regulations

- Contains the legal framework for environmental management in Ecuador.
- In August 2024, the National Assembly amended the COA to allow the State and individuals or legal entities to benefit from their conservation efforts (forests, mangroves, rivers, wetlands and “páramos”) through the issuance and commercialization of CERs.
- Regulates the principles under which conservation efforts of environmental services aimed at reducing/mitigating Greenhouse Gases (GHG) emissions can be compensated with CERs.
- Includes the implementation of national plans and policies for GHG emission reduction
- Details on compensation schemes for voluntary mitigation actions, measures, and strategies for GHG capture and reduction

Environmental projects by local indigenous communities and the private sector

Conservation, reforestation, or recovery of forests, páramos, and mangroves owned by private individuals or indigenous peoples and ancestral communities with their own territories

Renewable energy generation projects:

Solar

Wind

Geothermal

Tidal

Hydroelectric

Replacement of fossil fuel use in transportation systems

Waste management projects

Optimization of agricultural management

Sustainable forest management

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ECONOMIC COMPENSATION SYSTEMS

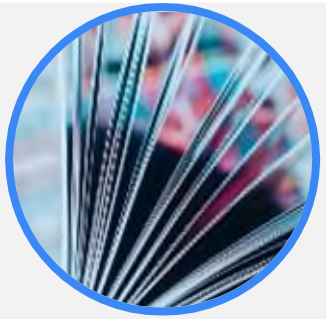
Tax Incentives:

- Deduction of double the project value for income tax calculation purposes
- Accelerated depreciation of machinery and equipment for the reduction of emissions derived from fossil fuel use

Issuance of Emission Reduction Certificates (CERs) for commercialization in the international carbon market

REQUIREMENTS FOR OBTAINING “CERs”

1. Project’s registration that will generate the CERs before the Ministry of Environment



2. Environmental Evaluation and Certification

- The Ministry verifies if the project requires registration or an environmental license.

3. Project Validation and Verification

- The project requires validation and verification by an independent body of the GHG reduction efficiency

4. Registration and Verification

- Project registration: Once approved, the project is registered in the corresponding system for monitoring and verification

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Issuance of emission reduction certificates (CERs)

Certification:

After verification, Emission Reduction Certificates are issued.

Registration in carbon markets:

Certificates are registered in national and international carbon markets for commercialization.

Commercialization:

National and international markets:

Carbon Credits can be sold on carbon trading platforms, both in Ecuador and international markets.

Benefits and opportunities of conservation in GHG reduction projects

Emission Reduction:

Help reduce greenhouse gas emissions and combat climate change.

Economic Incentives:

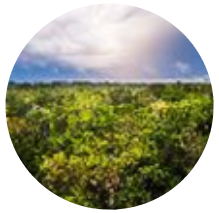
Generate additional income for both the State and private developers of sustainable projects.

Technology Transfer:

Promote the adoption of clean and efficient technologies.

Sustainable Development:

Contribute to the economic and social development of the country.



Progress of Ancestral Peoples:

Encourage the conservation of forests located in ancestral territories and provide income to their inhabitants.

Opportunities for big corporations and foreign states

Access to Ecuadorian State or private corporation CERs at the international carbon credit markets to support GHG reduction or to comply with ESG policies or environmental international treaties commitments.

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Carlos Echeverría
InterLex Bufete Echeverria
Costa Rica

Understanding Carbon Trading

Definition of Carbon Trading:

Carbon trading is a market-based mechanism aimed at reducing greenhouse gas **(GHG) emissions. It operates on the principle of a cap-and-trade system where countries or companies have emission limits (caps) and can buy or sell allowances to stay within their targets.**

Key Mechanisms: Cap-and-Trade, Carbon Offset Trading:

- Cap-and-Trade: A government sets a cap on emissions, and companies can trade allowances.
- Carbon Offset Trading: Companies invest in projects that reduce or capture emissions (e.g., reforestation, renewable energy) to offset their emissions.

Importance of Carbon Trading

Climate Change Mitigation:

-Carbon trading is an essential tool in mitigating global climate change by encouraging industries to lower emissions.

-Incentivizes Innovation: By making pollution a financial liability, carbon trading fosters innovation in green technologies.

-Market-Driven Solution: A flexible, market-based approach to reducing emissions.

Key Global Carbon Trading Markets

-European Union Emissions Trading System (EU ETS): The largest carbon trading market globally.

- California Cap-and-Trade Program: A leading system in the U.S. and globally.

- China's National Carbon Market: The world’s largest in emissions covered.

- Voluntary Carbon Markets: Includes private sector-driven offset programs.

Investment & Costs

Certified Emission Reductions (CER)

This is expected to make high-carbon activities more expensive than if they used clean alternatives. These credits were ratified in the Kyoto Protocol.

Voluntary Emission Reductions (VER)

Allow people to voluntarily offset their emissions. This type of carbon credit can be created under the same standards as CERs. VERs are independent of government commitments under the Kyoto Protocol.

Costa Rica's Environmental Leadership

Sustainable Development Model:

The country emphasizes renewable energy (98% of its electricity comes from renewable sources) and conservation.

- Carbon Neutrality Goals: Costa Rica aims to be carbon neutral by 2050, building on its reputation as a global environmental leader.
- National Carbon Market: Costa Rica was one of the first countries in Latin America to establish a domestic carbon market, allowing companies to trade emissions rights.

Costa Rica’s Carbon Trading Policies

-Nationally Appropriate Mitigation Actions (NAMAs): Costa Rica has implemented NAMAs for sectors like coffee and livestock, integrating sustainable practices into key industries.

- Forest Carbon Sequestration: With over 50% forest cover, Costa Rica heavily focuses on using its forests for carbon offset projects.

Costa Rica's Role in International Carbon Markets

Participation in REDD+ (Reducing Emissions from Deforestation and Forest Degradation):
Costa Rica is active in this UN initiative, using its forests to generate payment for environmental services.

Costa Rica is not active in the International Carbon Market the problems created by the concepts of *intentionality and additionality* .

Legal Framework Supporting Carbon Trading

- Payment for Environmental Services (PES) Program:
A pioneering initiative where the government compensates landowners for reforestation and conservation efforts, generating carbon credits.

- Environmental Law and Regulations: Costa Rica has developed a robust legal framework to support carbon trading, including regulations under the Ministry of Environment and Energy (MINAE).

- Compliance and Enforcement: Legal mechanisms are in place to ensure transparency, accountability, and adherence to international standards in carbon trading.

Legal Challenges and Opportunities for Lawyers

Cross-Border Issues:

As Costa Rica engages with international carbon markets, lawyers must address the complexities of cross border trading.

Dispute Resolution:

Legal professionals may play a key role in mediating disputes over carbon credits and trading practices.

Regulatory Complexity:

Lawyers must navigate a multi-layered regulatory environment, including international agreements, national laws, and market rules.

Contracts and Agreements:

Structuring carbon offset agreements, ensuring the additionality of projects, and managing legal risks.

The Future of Carbon Trading in Costa Rica

-Expansion of the National Carbon Market:

Potential growth in sectors like agriculture, tourism, and energy.

-Role in Global Climate Goals:

Costa Rica’s leadership in carbon trading could influence regional and global climate strategies.

The goal is to advocate for legal and policy reforms that integrate sustainability into core business practices.

Sustainability Integration

Get Started

Recent Development in Climate Litigation

Brent Cooper (Baker Botts – USA)
Fernando Tabet (Tabet Advogados - Brazil)

Climate Change Litigation

The Lay of the Land

Climate Change Litigation

The Venues

- All or nearly all of these climate-change lawsuits were filed by state or municipal plaintiffs in state court.

- Defendants in most of these cases attempted to remove the cases to federal court, but that effort has largely not succeeded.

Climate Change Litigation

The Claims

- Typical claims include:
  - Nuisance
  - Trespass
  - Negligence
  - Consumer-Protection Statutes
- Alleged injuries include a wide variety of climate change abatement and adaptation measures.

Climate Change Litigation

The Defenses

- Many parties have asserted defenses based on the plaintiffs' failure to state cognizable claims.
- Many parties have asserted defenses based on statute of limitations.
- Many parties have asserted defenses based on a lack of personal jurisdiction.

Climate Change Litigation

Trends and Issues: Potential U.S. Supreme Court Action

- The U.S. Supreme Court has two upcoming opportunities to halt climate-change litigation on a nationwide basis.
  - Case No. 23-947, *Sunoco LP et al. v. Honolulu et al.*
  - Case No. 22O158, *Alabama et al. v. California et al.*
- Three potential outcomes:
  - If the court declines to hear these cases, the status quo might continue.
  - If the court hears the cases and validates the plaintiffs' legal theories, more of these lawsuits may be filed.
  - If the court hears these cases and rejects plaintiffs' legal theories, it could halt these lawsuits nationwide.

Climate Change Litigation

Trends and Issues: Discovery

- Given the breadth of these claims, discovery is extremely broad.
- Future discovery fights could reveal the extent to which courts will permit this broad discovery.

Climate Change Litigation

Trends and Issues: Insurance

- Disputes have arisen over whether general commercial liability (GCL) insurance policies impose on insurers a duty to defend these lawsuits.
    - Hawaii Supreme Court Case No. SCCQ-23-0000515, *Aloha Petroleum, Ltd. v. Nat'l Union Fire Ins. Co. of Pittsburgh, Penn., et al.*

Climate Litigation in Brazil

Fernando Tabet

(Houston, Oct. 10/2024)

Legal Framework

- Brazilian Constitution (1988)
  - ✓ the climate as a dimension of the “right to a balanced environment for present and future generations”

- Ratified Multilateral Agreements on Climate Change
  - ✓ UN Framework Convention on Climate Change (1992)
  - ✓ Kyoto Protocol (1997)
  - ✓ Paris Agreement (2015)

- National Policy of the Environment (Federal Law No. 6,938/1981)
- National Policy on Climate Change (Federal Law No. 12,187/2009)
- Sectoral public policies (for instance: RENOVABIO, for biofuels)
- State and Municipal Policies on Climate Change (State and Municipal Laws)

Climate Litigation Cases in Brazil

Survey conducted by the Pontifical Catholic University of Rio de Janeiro (PUC-Rio):

- Number of cases: 93
- Types of Lawsuits:
  - ✓ Public Civil Action
  - ✓ Popular Action
  - ✓ Collective Writ of Mandamus
  - ✓ Direct Action of Unconstitutionality
  - ✓ Action Against Violation of Fundamental Rules
- What is being requested:
  - ✓ interpretation and enforcement of the law in accordance with climate protection principles
  - ✓ implementation of climate mitigation and adaptation policies
  - ✓ suspension / cancellation of administrative acts
  - ✓ environmental compensation / indemnity
- First Case Filing Date: Nov./1996
- Latest Case Filing Date: Aug./2024

Climate Litigation Cases in Brazil (cont.)

Survey conducted by PUC-Rio:

- Plaintiffs:
  - ✓ Federal/State District Attorneys' Office
  - ✓ Public Defense Authority
  - ✓ NGOs
  - ✓ IBAMA (Brazilian Federal Environmental Entity)
  - ✓ Individuals

- Defendants:
  - ✓ Public Entities
  - ✓ Private Companies
  - ✓ Individuals

Climate Litigation Cases in Brazil (cont.)

Survey conducted by PUC-Rio:

- Main legal controversies
  - ✓ Standing (legitimacy) to file the lawsuit
  - ✓ Environmental impacts caused by legally permitted activities
  - ✓ Lack of technical / economic viability of claimed measures
  - ✓ Conflict of public policies: socioeconomic development / land use X environmental protection

Climate Litigation Cases in Brazil (cont.)

The (30) Public Civil Actions against Airlines:

- Filing date: December/2010
- Plaintiff: District Attorneys' Office of the State of São Paulo
- Defendants: several airlines with operations at Guarulhos International Airport, with the intervention of ANAC (National Agency of Civil Aviation) as an interested third party
- Motive: impact of GHGs emissions generated by airplanes contributing to enhance global warming
- Request: environmental compensation (forestry recovery of area aiming a carbon sequestration that is equivalent to the emissions generated by the planes during take-off and landing, or monetary indemnity)
- Defense arguments: the activity is regulated and permitted by the competent authority
- Outcome: rulings unfavorable to plaintiff in three different instances
- Date of dismissal: December/2020

Climate Litigation in Brazil

Other issues of concern associated with “energy transition”:

- Direct and indirect environmental impacts caused by the so-called “clean energy”
- Greenwashing lawsuits
- Vulnerabilities of the carbon credit markets

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Tax Incentives for Energy Transition Projects in the U.S.

Barbara de Marigny (Baker Botts – USA)

Review of Inflation Reduction Act of 2022 Impact

- Huge increase in value of clean energy tax credits
  - Original estimate: $271 billion over 10 years
  - Recent estimates: $734 billion (CBO – June 2024); others higher
- 45 – extend, increase credit for renewables (wind, solar)
- 45Q – carbon capture - increase in dollar amount per ton
- 45V – new credit for clean hydrogen production
- 45X – new credit for manufacture of clean energy items (wind turbines, solar modules, batteries)
- 45Z – new credit for clean fuel production (2025 – 2027 only)
- 48/48E/48C – investment tax credit for energy properties and projects increased and extended

Tax Credits for Many Climate-Related Projects and Technologies

• Wind – offshore	• Renewable Natural Gas (RNG)
• Wind – onshore	• Sustainable Aviation Fuel
• Solar	• Carbon Capture & Sequestration
• Battery Storage	• Clean Hydrogen
• Geothermal	• Fuel Cell Property
• Waste Heat Property	• Nuclear
• Hydropower	• Microgrid Controllers
• Thermal Energy Storage	• Dynamic Glass
• Electric Vehicles	• Residential Energy Efficienct Property

What's the catch? JOBS

- For most credits, the $ amount is contingent on compliance with **"prevailing wage and apprenticeship requirements".** Requires IRS guidance.
- **Multiplier of FIVE times a base credit amount** if compliance; only base credit received if not (i.e. expected credit cut by 80%)
  - In construction of projects must pay prevailing wages as determined by Secretary of Labor and have apprentices perform certain % of "labor hours" (ramping up from 10% to 15% over time)
  - Applies to both contractors and subcontractors
  - Applies to alterations and repairs (but not routine O&M) during entire credit term
  - Clients need to ensure contractors commit to compliance
- **When** do these requirements apply?
  - Apply to any project that "begins construction" after January 28, 2023). Exemption for facilities with a max net output of less than 1MW

Other Tax Credit "Adders"

- **Domestic Content**
  - A 10% "adder" to credit amount for projects that meet domestic content requirements (100% domestic iron or steel and at least 40% domestic components, increasing to 55% after 2026).
- **Energy Community**
  - A 10% adder for projects located in communities (census tracts) that are considered to be converting from fossil fuel-based communities to encourage transition/retraining of workers

Credit Monetization – Sales of Credits and Direct Pay Refunds

- A federal tax credit has value if you can use it against your tax liability: $1 credit = $1 less of tax to pay
- What if you do not have a tax liability (e.g., a net operating loss (NOL) removed liability) ?
- Traditionally, **tax equity investors** used structures to avoid prohibition on sale of credits by having investors take ownership interest in financed project: capital for credits
- The IRA introduced two new ways to monetize
- **"Direct Pay"** – government "refund" of credit, even when recipient of refund has no tax liability
  - Special rule that allows hydrogen projects, carbon capture projects to get direct refund from government for 5 years
- **"Transferability"** – transfer for cash consideration, i.e., **sale** of credits
  - Transfer market is brand new and evolving = a $20 billion market this year??
  - Borrowing against future credit sales contracts? That's happening, too!

Hydrogen Update

- The clean hydrogen production tax credit (Section 45V) is a **dollar amount of credit per kilogram** of low-carbon hydrogen produced.
- Applies for **10-year period** beginning when facility placed in service.
- Must be produced in the United States
- Credit amount **depends upon extent of CO2 emissions** in connection with production, not on the "color" of the hydrogen.
- Key question: how to count emissions from power sources for the hydrogen production?

Clean Hydrogen Credit Amount

Credit Value ($ per kg of H2)*	Lifecycle Greenhouse Gas Emissions (kg of CO2e per kg of H2)
$3.00	0 - .45 kg CO2e
$1.00	0.45 – 1.5 kg CO2e
$0.75	1.5 - 2.5 kg CO2e
$0.60	2.5 - 4 kg CO2e

*If prevailing wage and apprenticeship requirements are met; otherwise, credit is 20% of these amounts. Inflation adjustment applies to these amounts starting in 2024.

Proposed 45V Regulations (December 2023)

- Premise of regulations is that allowing hydrogen industry to freely count renewable power will induce more power production from fossil-fueled sources ("**induced emissions**"). Therefore, only certain power purchases can reduce emissions score for credit purposes.
- Adopt "**three pillars**" limiting ability to purchase renewable power or RECs (referred to as an "energy attribute credit" or "EAC")
  - **Additionality/Incrementality**: generating facility must be no more than 36 months old; possible 5% exception for nuclear/hydropower
  - **Temporal Matching**: must match the time that the power is generated to the time power is used in producing hydrogen: match annually at first but hourly matching starting in 2028
  - **Geographic Matching/Deliverability**: purchased power must come from same region as hydrogen production facility

Proposed 45V Regulations – Status

- Released on Dec. 22, 2023
- Simultaneous release of 45H2-GREET model
- During 60-day comment period 29,000+ comments submitted.
- 300+ comments from companies and trade associations (available at www.bakerbotts.com/thought-leadership/publications/2024/march/with-a-little-help-from-our-ai-friends)
- IRS held a 3-day hearing in March 2024
- Final regulations: When ???

What is Carbon Capture?

Section 45Q Tax Credit for Carbon Capture and Sequestration

- A dollar amount **per metric ton of carbon oxide** that is captured and:
  - **sequestered in secure geological storage**
  - **used in enhanced oil recovery** (“EOR”) **or**
  - **utilized** in chemical products and other **commercial operations.**
- Unlimited amount for **12 years** from date carbon capture equipment is placed in service.
- Both emission/capture and sequestration/utilization must be in the U.S.
- The credit may be subject to **recapture in the case of leakage** of sequestered carbon
- **Credit can now be sold** or turned in for cash from government (“direct pay”)

How Much is the 45Q Credit Worth?

- Inflation adjustments will apply to these amounts
- **Example:** at **500,000 MT** annual sequestration, the credit over 12 years would total approx. **$510 million**

	Placed in service before 2023	Placed in Service after 2022*
Permanent Sequestration	$50	$85
EOR or other utilization	$35	$60
Direct air capture ("DAC")	$85	$180

* Assumes compliance with prevailing wage and apprenticeship requirements

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Looking Ahead

- **The Election –** does it matter?
- **2025 Tax Legislation** – the "Superbowl of Taxation" – 2017 tax cuts are expiring after 2025 – full extension would cost $4.6 trillion
- **Forthcoming IRS Guidance**
  - On 45Q carbon capture – minimum required capture amount for power plants determined by looking at drop in emissions against baseline
  - On 45Z clean fuel production credit
  - On 45V (hydrogen) – expect lawsuits to try to invalidate based on overturn of Chevron

Project Insights: Renewables

Guily Shemer (Santroni Parsons - Dominican Republic)
Claudia Rodríguez Campos (Santamarina y Steta - Mexico)

Renewable Energies in the Dominican Republic

Renewable Energy Regulations in the Dominican Republic

The government of the Dominican Republic has implemented policies and regulations to promote the use of renewable energy in the country, including the National Energy Plan and the Renewable Energy Incentives Law.

General Electricity Law No. 125-01 modified by Law No. 186-07 which aim is regulating the functions of the governmental entities created to promote the proper performance of the Dominican Power sector as well as the activities related to production, transmission, distribution and commercialization of electricity.

Renewable Energy Incentives and Subsidies:

- Law No. 57-07 on Incentives for development of renewable energy sources and its special regimes, the objectives of which are based upon the promotion of renewable energy sources and focused on increasing the country's energy diversity, and reducing depended on imported fossil fuels.

- Law No. 103-13 of incentives for importation of vehicles from non conventional energy sources with the objectives of promoting the use of vehicle that do not contaminate and therefore, reduce pollutants associated to combustion of fossil fuel vehicles.

Renewable Energy Matrix

Electricity generation is around 30,539.29 megawatt-hours (MWh), more than half of which is generated by natural gas and the emergence of renewable energies such as solar, wind and biomass.

As of today natural gas represents 35.60% (10,868 MWh), followed by wind with 10.04% (3,065 MWh), solar 5.15% (1,573 MWh) and biomass 1.17% (358 MWh), a total of 15,864 megawatt-hours (MWh).

Renewable Energy Potential in the Dominican Republic

Solar Energy

The Dominican Republic entire national geography has an estimated potential of around 50,000 MW due to its location in the middle of the Caribbean and its outstanding levels of solar irradiation along the year.

Wind Energy

The Dominican Republic has several wind farms, with the largest one located in the province of Pedernales. The farm generates over 300 megawatts of electricity and provides power to over 200,000 homes.

According to studies made the Dominican Republic has an estimate potential of 30,000 MW. Being the southeast and north coast regions the major ones.

Hydropower

The Dominican Republic has several hydropower projects, with the largest one located in the province of La Vega. The project generates over 300 megawatts of electricity and provides power to over 200,000 homes. Its estimated that it can reach more than 1500 MW from which only approx. 615 have been develop.

Net Metering Regulation

The Net Metering Regulation allows consumers to sell excess energy back to the grid, encouraging the use of renewable energy sources and promoting energy efficiency in the Dominican Republic (Law No. 57-07)

Renewable Energy Projects in the Dominican Republic

Monte Plata Solar Project

The Monte Plata Solar Project is one of the largest renewable energy projects in the Dominican Republic. It has a capacity of 69 MW and is located in the Monte Plata province.

Larimar II Wind Farm

The Larimar II Wind Farm is the largest wind farm in the Dominican Republic. It has a capacity of 48 MW and is located in the Enriquillo region.

Pinalito Hydroelectric Plant

The Pinalito Hydroelectric Plant is a run-of-the-river hydroelectric power plant located in the northwest of the Dominican Republic. It has a capacity of 14 MW and generates electricity from the flow of the Bao River.

Renewable Energy in Private Projects in the Dominican Republic

The use of renewable energy in private tourism projects has been on the rise, aligning with the country's goal of promoting sustainable tourism and reducing dependence on fossil fuels.

Many tourism projects, such as resorts, boutique hotels and tourist complexes in high-traffic areas such as **Punta Cana, La Romana, Puerto Plata and Samaná,** have begun to incorporate renewable energy sources, mainly solar and wind.

Solar energy is the most commonly used, both for electricity generation and for heating water. Many resorts have installed photovoltaic panel systems on roofs, parking areas and other areas to take advantage of the abundant tropical sunshine.

Although wind power is less common than solar, some resorts have begun to install wind turbines to supplement their energy supply. This has been seen especially in coastal areas with good winds, such as Punta Cana.

Regarding other types like Biomass and biogas some hotels are exploring the possibility of using biomass from organic waste or biogas for energy generation, which not only reduces the use of fossil fuels but also helps manage the hotel's waste.

Energy Transition in Dominican Republic:

The country has had its most extraordinary acceleration and impact in recent years, going from a renewable energy generation capacity of 555.5 MW in 2020 to another of 1,126.25 at the end of 2023.

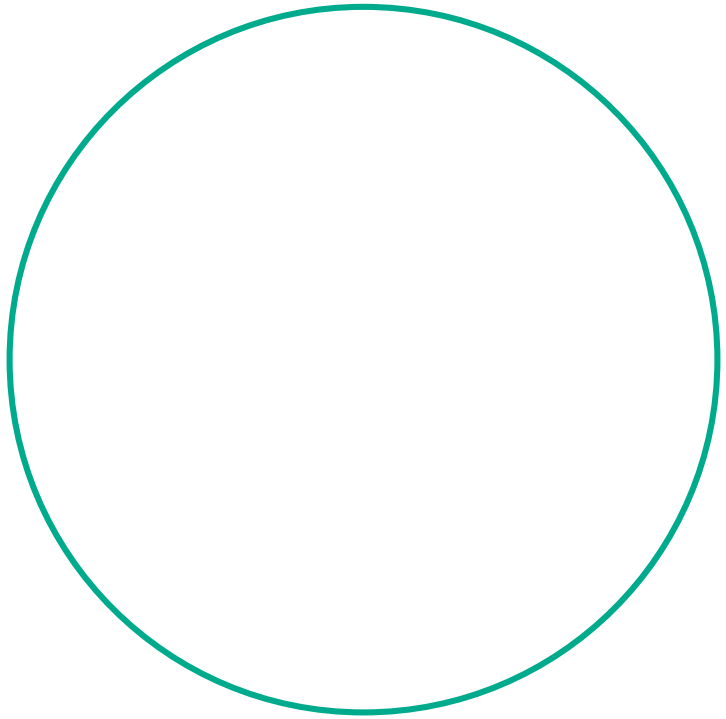
According to the 2023 Climatescope Ranking, prepared by Bloomberg New Energy Finance (BNEF), which evaluates and classifies the most attractive markets for foreign investment in energy transition, the Dominican Republic has improved its position internationally since 2022, moving from 45th to 43rd place out of 140 countries.

This was a consequence of the fact that in the first half of 2023, energy was supplied to the National Interconnected Electric System by natural gas 41%, coal 31%, petroleum derivatives 12%, water 5%, biomass 1%, wind 5% and sun 5%.

Final Observations:

Renewable energy is an important source of energy in the Dominican Republic and the country has made significant progress in developing renewable energy projects in recent years, but there are still challenges to overcome.

By continuing to invest in renewable energy and address the challenges facing the industry, like the financing constraints, including lack of access to capital, high interest rates, or lack of grid integration, insufficient transmission capacity, and inadequate storage capabilities we hope it can reduce its dependence on fossil fuels and create a sustainable energy future.





RIELA October, 2024

Santamarina + Steta

Clean Energy

Electric Industry Law

Artículo 3, fracción XXII

Santamarina
+ Steta

Some Context

- During the Peña Administration, an Energy reform was enacted and renewable projects were incentivized.
- The López Obrador Administration shifted its policy to favor fossil fuels, claiming national soverignty and certainty and consistency in the supply.
- Notwithstanding, by 2024 Mexico needs to comply with the 35% target on Clean Energy
- In order to fulfil its international GHG reduction pledges, Mexico has also set a clean energy power generation target for 2050. The aim is to reach a share of as much as **40% in power generation from zero or low-emission energy types by 2035**, and **50% by 2050**.
- The mechanism enacted to implement this were clean energy certificates. Mexico's carbon market is still at the pilot stage.

Santamarina + Steta

Mexico’s Current Situation

- At the COP27 summit in Egypt last year, Mexico announced 'Plan Sonora' which seeks to increase the country's manufacturing and renewable energy capacity. The project includes the construction of one of the world's largest solar power plants, the development of Sonora's lithium reserves and the manufacture of electric vehicle (EV) parts. It also includes the expansion of the state's main port, Guaymas.
- On October 1st, 2024, we had a change of government with the beginning of of Dr. Claudia Sheinbaum’s term.

Santamarina + Steta

Mexico’s Current Situation

- Mexico's energy demand is expected to continue to increase. At the same time, many of its fossil fuel operations will begin to run out, meaning that the government faces the choice of allowing new oil and gas exploration or developing its renewable energy capacity.
- Despite the ambitious targets announced at last year's COP27, energy experts are concerned about the lack of policies and financing to make Mexico's climate goals a reality.
- With energy demand expected to grow between 3% and 4% annually, Mexico must expand its renewable energy production to meet its climate targets and support a global green transition.

Santamarina + Steta

Mexico's Current Situation

- It will be important to know the policy of the new Administration.
- This policy should include the interaction of the different Ministries to achieve sustainability and emission reduction commitments.

Dr. Claudia Sheinbaum in her first speech as President:

- Important announcements on the energy sector.
- Public and private participation, maintain the 54%-46% ratio
- Transition to renewables to combat climate change.
- Promotion of private investment based on a clear regulatory framework
- Importance of promoting energy efficiency.

Santamarina + Steta

Mexico's Current Situation

- Circular Economy: Tula, Hidalgo project (Environmental complex Project).
- Strategy for Mobilizing Sustainable Finance.
- Mexican Sustainable Taxonomy.
- Capacity building.
- Innovation based on science.

Main Environmental Requirements

- Extensions of land required, appropriate zoning (urban and environmental)
- Title, at least half of the mexican territory is under the ejido or common property regime (and most undeveloped land is still under the ejido regime. Special formalities are required.)
- Forestry authorizations for the felling of vegetation (if possible, set the project at a site that has been impacted to avoid forestry authorization, compensation payments and the requirement of broad conservation areas.)
- Environmental Impact Authorization (mitigation and compensation of impacts)
- Social Impact Assessment that shall be approved along with its social management program (social license). Will determine if an indigenous consultation is required considering communities in the area of influence, even if the project is not located in indigenous lands, it may be located within an influence area relevant for their development or impact relevant resources.
- Indigenous Consultation If required, it shall be carried out by the authorities that shall issue the permits/licenses to he consulted. There is not enough regulation, and in any case, the protocol for the development of the consultation shall be established by the community to be consulted. It shall be free, previous, appropriate and duly informed. And it shall end with the execution of agreements to share benefits.

Main Environmental Requirements and Challenges

- Generation permit (by the Energy Regulatory Commission)
- Interconection studies (CENACE, independent system operator)
- Depending on the location, investigation and clearance from the national anthropology and history institute
- Transmission lines (title and easements)
- Depending on the type of project, construction license.
- Depending on the operation of the project special handling waste registration and plan and hazardous waste registration and plan. Traceability and appropriate handling from birth til death.

Main Challenges

- Current political climate, ongoing reforms (being voted as we speak). After the June elections, Morena has a majority that almost enables them to pass constitutional reforms. One of the initiatives being voted refers to the energy sector, intended to limit the participation of private parties. If this constitutional reform is passed, the secondary laws will provide the rules for its implementation.
- Such secondary laws shall be proposed by President Sheimbaum, who is aware of the challenges that our country faces.
- For instance, electrical demand has been steadily growing faster than the development of new capacity, and thus demand will continue to grow with the effect of nearshoring.
- President Sheimbaum is also aware of investors' need for certainty, and has stated that there will be certainty and collaboration.

Main Challenges

- Community acceptance, pushback, lots of misinformation among the population.
- Mitigation and compensation of social and environmental impacts (e.g. damage to ecosystems by removal of vegetation, localized temperatute increases, noise, affectations to birds and bats, water draining in terraces required for the installation of wind turbines, etc.)
- Adequate hazardous waste management (increased risk in natural soil).

Thank you!

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Project Insights: Hydrogen and Carbon Capture Utilization and Storage

Aileen Hooks (Baker Botts – USA)
Jonathan M. Skaggs (GSI Environmental Inc. –USA)
Kyle Doherty (Baker Botts – USA)

Energy Transition in the Americas: An Environmental Law Perspective

Hydrogen and Carbon Capture Utilization and Storage (CCUS) in the Americas:
A Regulatory and Technical Update

GSI ENVIRONMENTAL

Energy Transition in the Americas

10 October 2024

Jonathan M. Skaggs, PG
Principal Geoscientist
Aileen M. Hooks
Senior Counsel
Kyle Doherty
Senior Associate

HYDROGEN – THE NEXT GENERATION?

- **Infancy/Conceptual**
- **Technical challenges**
  - Production
  - Transportation
  - True fuel replacement
  - Storage (geologic)
  - Permitting

HYDROGEN – THE NEXT GENERATION?

- **$7B funding IRA**
  - DOE selected seven clean hydrogen hubs in 2023
- **IRA Clean Hydrogen Tax Credits**
  - $0.60 to $3/kg of hydrogen produced

Carbon Capture Utilization and Storage 101

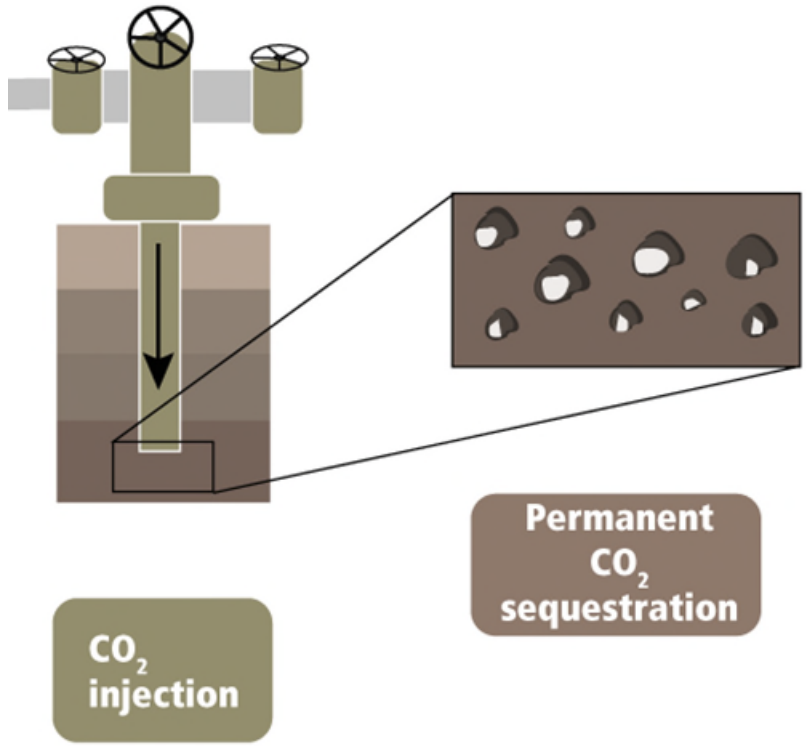
Class II UIC

Class VI UIC

- **C** = Carbon (dioxide)
- **C** = Capture
- **U** = Utilization
- **S** = Storage/ sequestration

https://ww2.arb.ca.gov/our-work/programs/carbon-capture-sequestration/about

Carbon Capture Utilization and Storage 101



2022 Inflation Reduction Act Expands CCS Incentives

Key Updates

- Increases to credit amounts
- Significant increases for direct air capture (DAC)
- Decreases minimum project capture threshold
- Extends project startup deadline to 2033
- Direct payment in lieu of tax credits
- Ability to transfer credits

NOTES:
EOR = Enhanced Oil Recovery.
*To be eligible for max tax credits, projects must implement specific prevailing wage, hour, and apprenticeship requirements.

2022 Inflation Reduction Act Expands CCS Incentives

Key Updates

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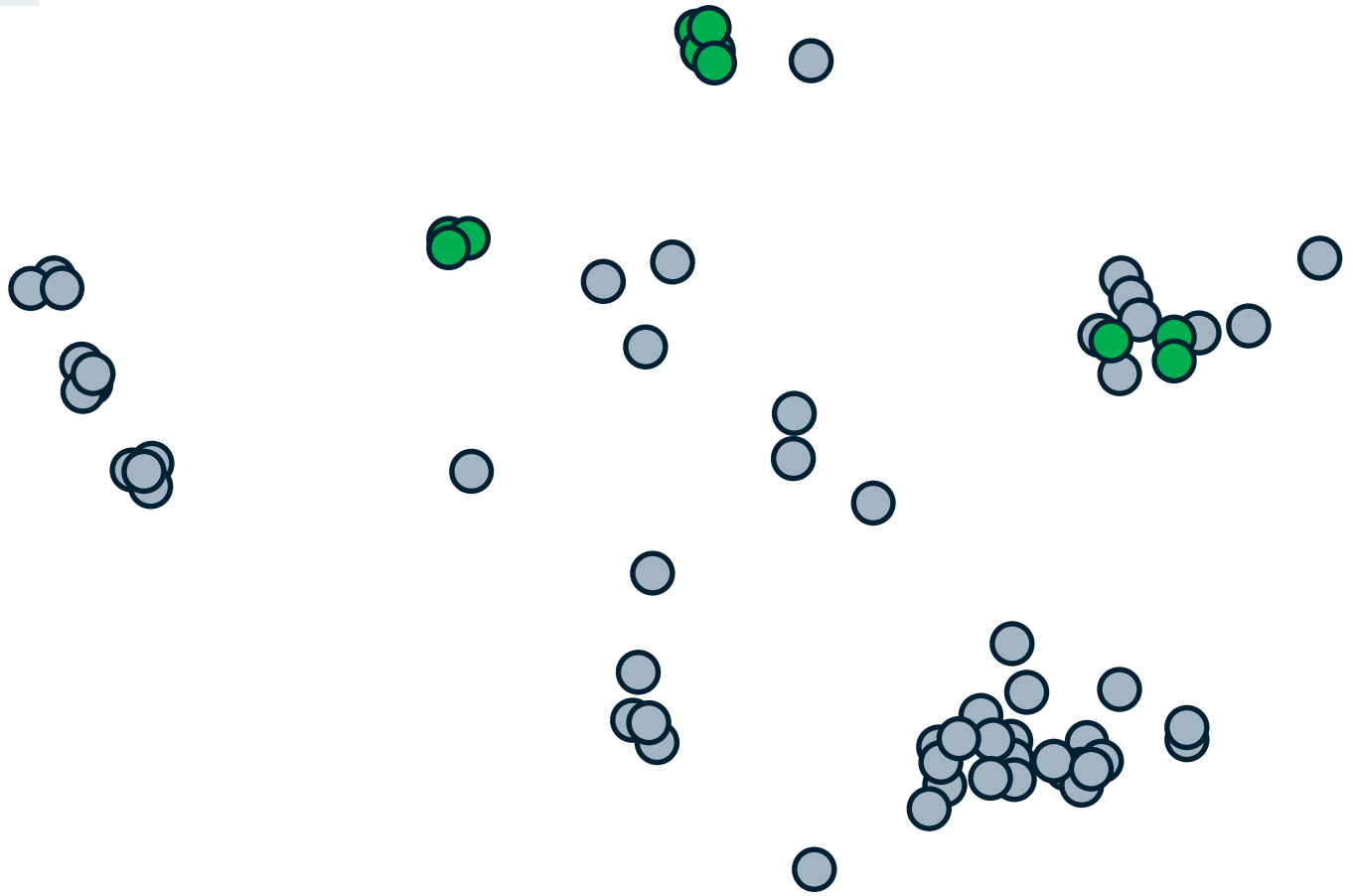
Where is CO_2 Injected?

KEY POINT

UIC Class VI
Well Permits

As of 7/2024

- Permit issued
- Permit pending (application in review)



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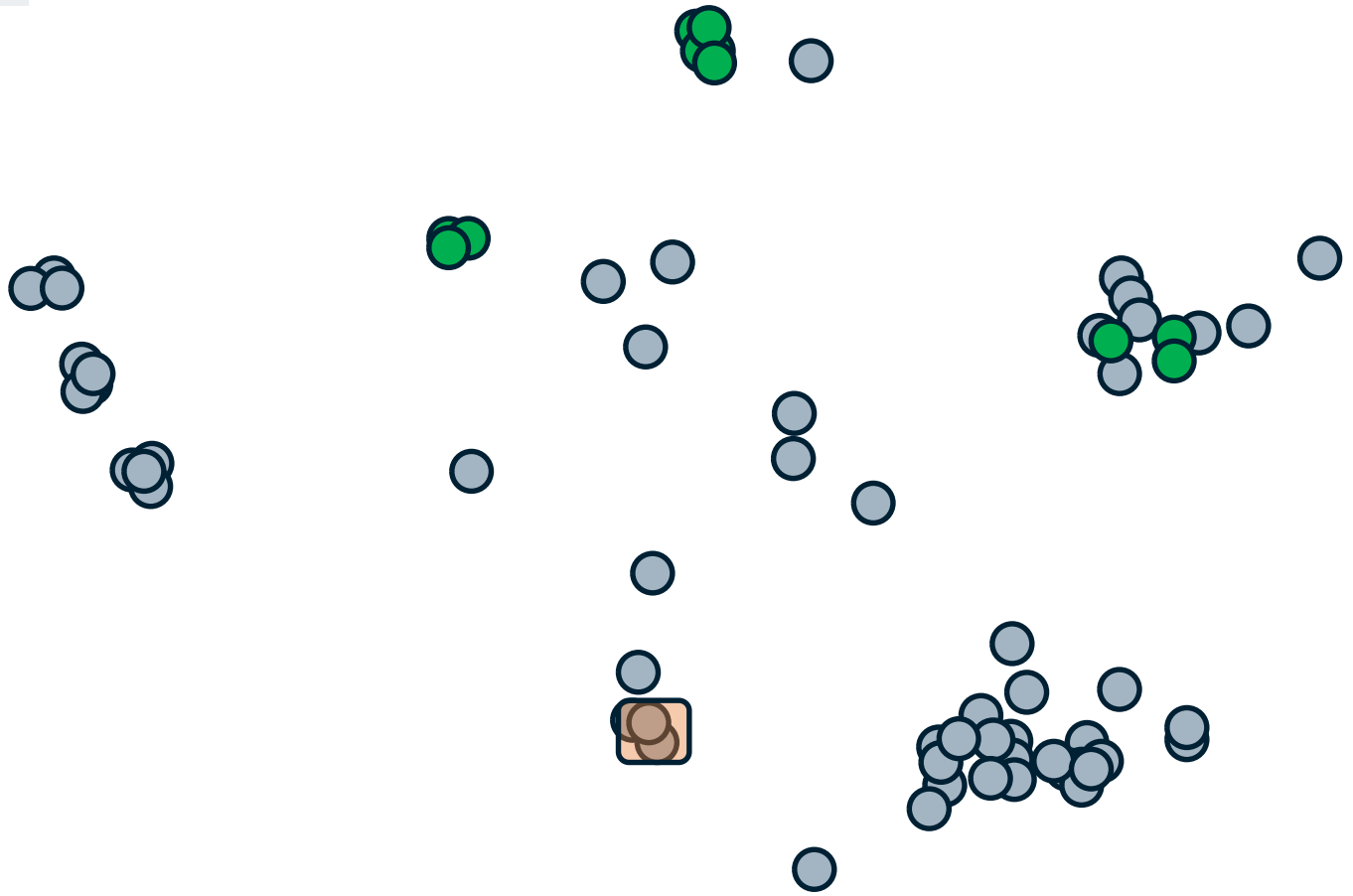
- Permit issued
- Permit pending (application in review)



Where is CO_2 Injected in US?

KEY POINT UIC Class VI Primacy

2018

State primacy (year effective)

2020

EPA BIL grant to pursue Primacy (deadline 3/2023)

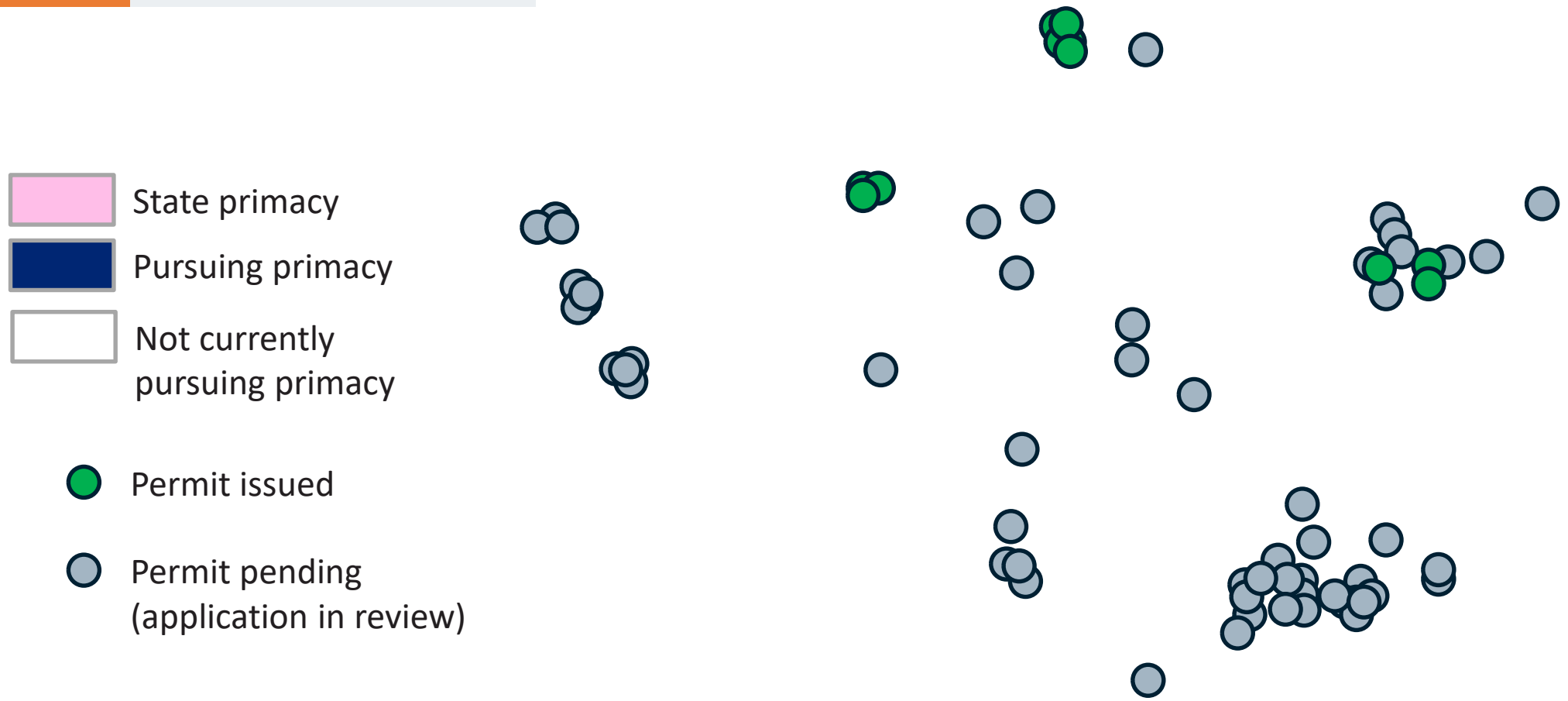
Not currently pursuing primacy

2024

As of 7/2024

Where is CO_2 Injected in US?

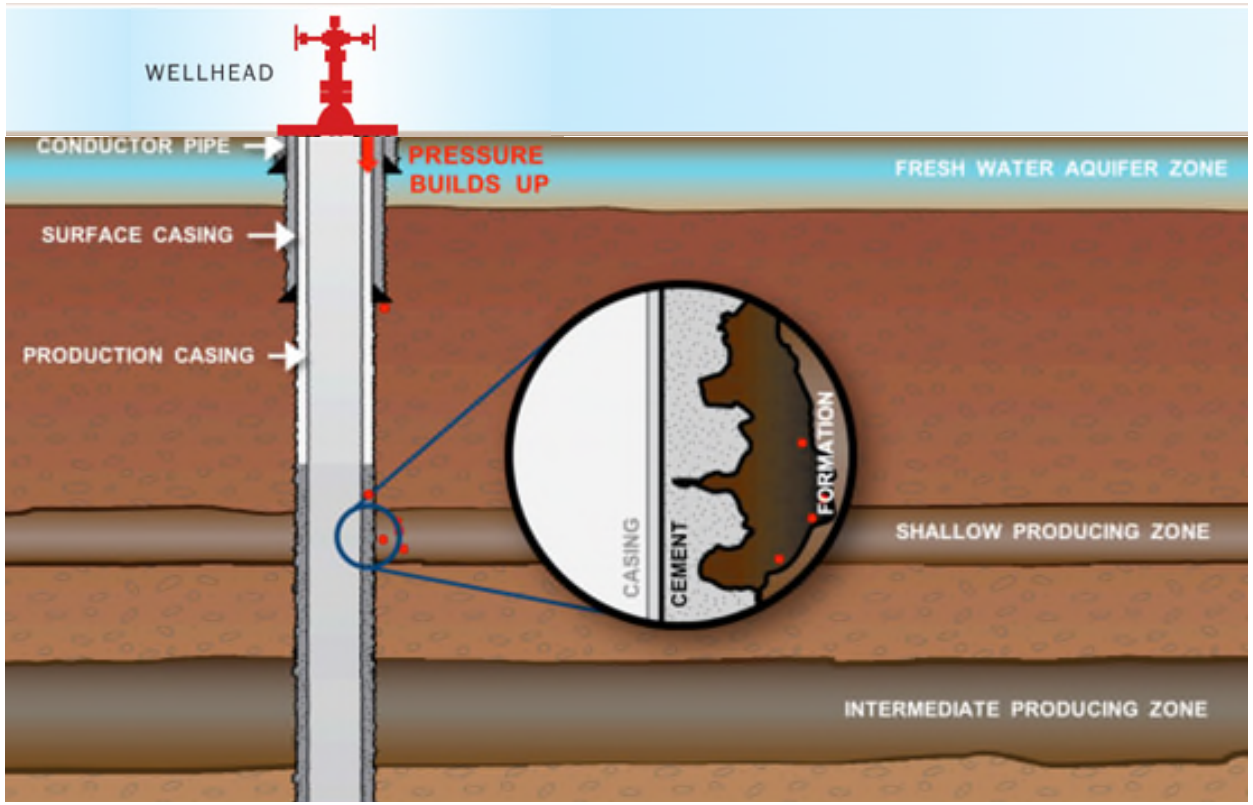
KEY POINT Primacy and Project Advancement



As of 7/2024

Environmental Issues Posed by CCS

CO_2 Leaks from Storage Reservoirs – *How do they happen?*



- Most common pathway is through annular space of oil/gas wells

Well compromised due to:

- Cement integrity problem
- Casing corrosion or perforation

Environmental Issues Posed by CCS

CO_2 Leaks from Storage Reservoirs – *Where do they go?*

If gas leaks occur:

- Gas moves through preferential pathways (e.g., wells, faults, bedding planes).

SACROC – 175 million metric tons CO2 since 1972

*The fact that the quality of **shallow drinking water** over SACROC **has not been impacted by CO2 injection** is strong evidence that it is possible to safely sequester CO2 in deep subsurface reservoirs.*

Environmental Issues Posed by CCS

CO_2 Leaks from Storage Reservoirs – *What are the potential impacts?*

- Fugitive emissions
- Possible groundwater impacts
  - Increased acidity
  - Increased solubility of metals
  - Possible leaching of hydrocarbons
  - Risks associated with other gases (e.g., methane)
- Vegetative stress

BUBBLING!

SOURCE: https://eesa.lbl.gov/projects/potential-impacts-of-co2-leakage-on-groundwater-quality/

Alleged Leak at the Kerr Farm, Canada

- Landowner observed bubbling, algal growth, oily sheen, dead livestock

Sheen

Watch Out for False Positives!

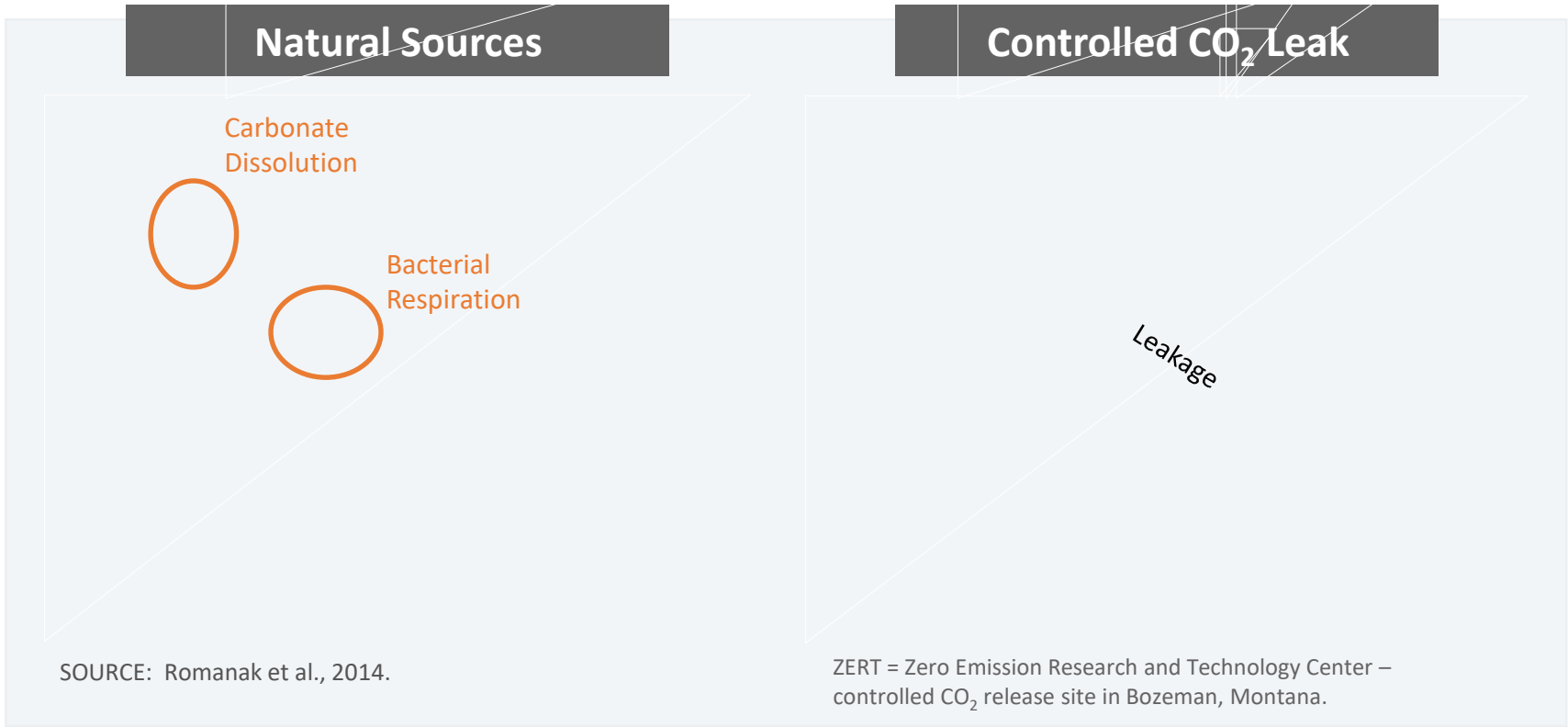
Multiple Sources of CO_2 in the Subsurface:

- Biologic respiration
- Atmospheric
- Dissolution of carbonates
- Methane oxidation
- CO_2 leakage from storage reservoir

GAS RATIO & ISOTOPIC ANALYSES

SOURCE: Romanak et al., 2014.

Alleged Leak at the Kerr Farm, Canada



SOURCE: Romanak et al., 2014.

ZERT = Zero Emission Research and Technology Center – controlled CO_2 release site in Bozeman, Montana.

Key Point

Gas samples from the Kerr Farm indicate natural sources of CO_2 (e.g., bacterial respiration)

CCUS Legal Considerations

Legal Considerations Disclaimer

Any opinions expressed in this presentation reflect the general views of the presenter at the time of this presentation and are not necessarily the views of Baker Botts L.L.P. or the presenter's opinion with respect to any specific matter. Given the early stage of the CCUS market and the unsettled nature of the legal and regulatory framework applicable to CCUS, the views expressed in this presentation could and likely will change over time as the CCUS market and applicable legal frameworks continue to develop.

CCUS Legal Considerations

DRIVERS

- Evolving climate change policies
- Tax incentives
- Anticipated regulatory requirements
- Market demand for low carbon products
- Getting ahead in the energy transition
- Net zero carbon goals

ISSUES

- Eligibility for tax Incentives – “45Q”
- Surface and pore space rights for sequestration activities
- Contractual arrangements among parties in the value chain
- Financing
- Insurance
- Environmental permitting and compliance
- Environmental liabilities
- Potential for generation of carbon credits or California LCFS credits

CCUS – Parties/Stakeholders in the Value Chain

CO2 Emitters	Transporters (Pipelines, Trucks, Vessels)	Sequestration Facility Owner/Operator or EOR Operator	Parties Utilizing Captured Carbon	Surface Interest Owners
Mineral Interest Owners	Groundwater Owners	Environmental NGOs	Third Parties Impacted by CCUS Activities/Environmental Justice (“EJ” Communities)	Regulatory Authorities

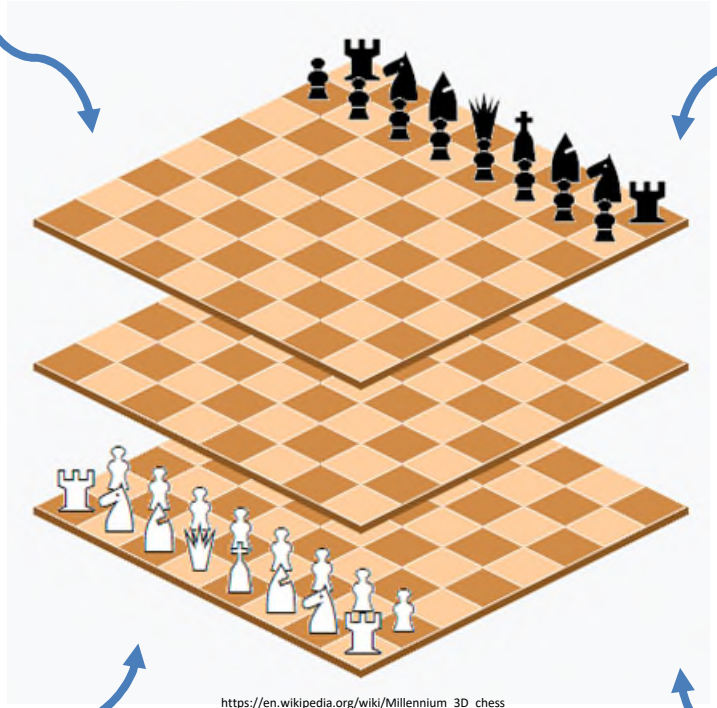
CCUS Legal Framework

Regulatory

- Class VI UIC Program
- State Regulations
- Low Carbon Fuel Standard CCS Protocol

Commercial Agreements

- Amalgamation
- Access
- Payment Terms
- Allocation of Liability



https://en.wikipedia.org/wiki/Millennium_3D_chess

Statutory

- Safe Drinking Water Act
- State CCUS Statutes
- State Eminent Domain Statutes

Common Law

- Pore Space Ownership
- Tort Liability
- Equitable Payment for Forced Amalgamation

Class VI Well Requirements

- Permitting
- Well construction
- Operation
- Well plugging
- Post-injection site care (PISC)
- Site closure

NOTE: Potential for State Permitting in addition to EPA Permit in States without Primacy

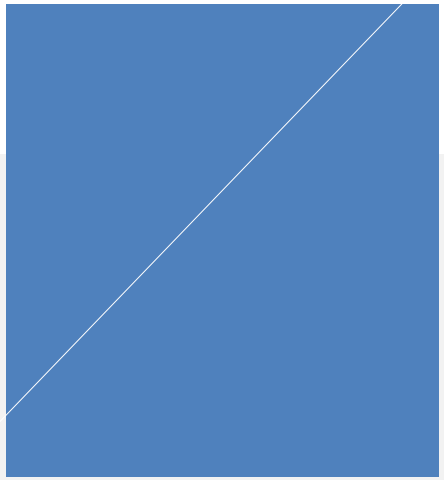
CCUS Liability Considerations

- Sources of potential CCUS liability
  - Leakage
    - Regulatory liability
    - Third party damages – tort claims
    - Seepage damage to flora or fauna, agriculture
    - Seepage or displacement of brines into drinking water
    - Trespass claims by hydrocarbon owners or other pore space owners – proof of damages requirement
    - Invalidation of credits and tax incentives
  - CERCLA liability – CO_2 not currently listed as a hazardous substance, but a stream could contain other hazardous substances (facts and circumstances determination)
  - RCRA liability
    - EPA amended regulations to conditionally exclude hazardous CO_2 streams captured from emissions sources and injected in Class VI wells from hazardous waste definition
  - State liability – statutory and tort
    - Regulatory
    - Negligence
    - Damages

CCUS Liability Considerations

- Division of liability risks today
  - Legal and liability framework for various CCUS activities remains under development – inherent uncertainties
  - Liability depends on
    - Ownership and/or generation of CO_2
    - Ownership and operation of various CO_2 capture, transportation, injection and storage assets
    - Rights to use/ownership of pore space
  - Liability mostly allocated pursuant to contractual arrangements between parties owning CO_2, parties owning or operating various CCUS assets and pore space owners/stakeholders
    - Permitting and some environmental matters are solely applicable to owners and operators of CCS facilities and not CO_2 owners or generators
    - Changing legal and regulatory environment requires diligence and on-going management
- Need to anticipate change in legal and regulatory environment in developing contractual arrangements throughout the CCUS value chain
- Liability Tail
  - Sequestration – permit requirement length versus liability for the sequestered CO_2 – how long?
  - Transfer of the liability to third parties following a period of confirmed sequestration (e.g., statutory transfer to the state of Louisiana)

Thanks for attending!



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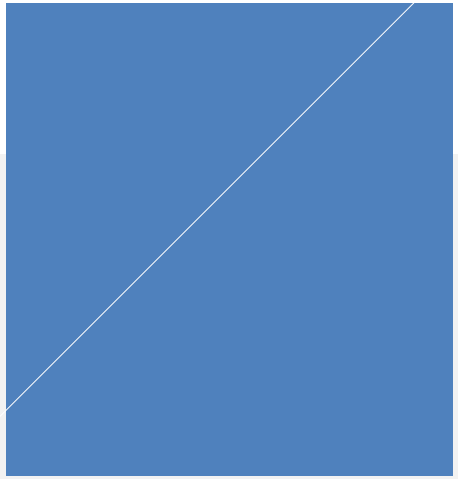

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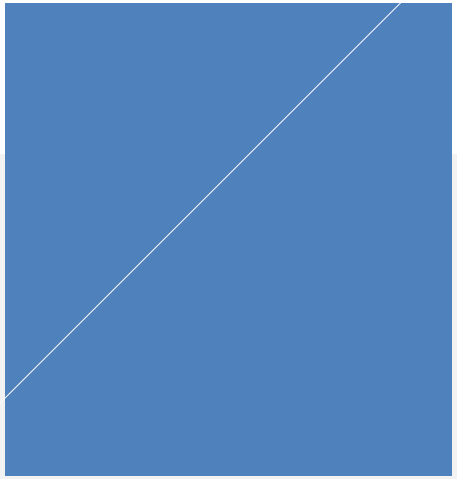

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Project Insights: Battery Energy Storage Systems (BESS) and EV Batteries

Julio Recordon (Carey - Chile)
Jennifer Danahy (Gowling WLG – Canada)

BESS – EV Batteries

Relevant developments in Chile

Battery Energy Storage Systems

STORAGE SYSTEM TO DATE

BESS in test phase.

BESS in construction phase.

BESS in environmental assessment.

Challenges – Environmental perspective.

- Permitting.

- Battery recycling.

EV Batteries - Lithium

NATIONAL LITHIUM STRATEGY- MAIN OBJECTIVES

Dealing with legal restrictions on state participation – Public-private partnership.

Promotion of research for a better protection of the salt flats.

Sustainable development, incorporating associated technological and scientific innovation.

MAIN MILESTONES

Association agreement between the Chilean state-owned company Codelco and the private company Sociedad Química y Minera de Chile S.A. to develop productive and commercial activities in the Salar de Atacama from 2025 to 2060.

Empresa Nacional de Minería ("Enami"), launched a call for expressions of interest to set up a public-private partnership for the exploration, exploitation and beneficiation of lithium deposits in the Salares Alto Andinos project, receiving responses from Eramet (France), Rio Tinto (Australia), BYD (China), Summit-Nanotech-HATCH (Canada), among others.

Ministry of Mining issued an invitation to national and international investors to in lithium exploration and exploitation projects in salt flats that have not been declared protected or declared as strategic.

Creation of a National Network of Protected Salt Flats.

Gracias!

JENNIFER DANAHY (GOWLING WLG)

RIELA CONFERENCE 2024
HOSTED BY BAKER BOTTS LLP – TEXAS OFFICE

- **Canada’s Action Plan for Clean On-Road Transportation**
- **Federal Electric Vehicle Availability Standard**

  Amendments to *Passenger Automobile and Light Truck Greenhouse Gas Emissions Regulations*
- **Canada’s Critical Minerals Strategy**

- ***Canadian Net Zero-Emissions Accountability Act* confirmed Canada's:**
  - Commitment under the Paris Agreement to reduce emissions by 40 – 45% below 2005 levels by 2030
  - Commitment to set national targets every 5 years, to achieve net-zero emissions by 2050
- **Transportation is responsible for ~25% of Canada's greenhouse gas emissions**
  - Switching to zero-emission vehicles ("ZEV") will be critical to achieving Canada's goals
  - ZEV = vehicles without tailpipe emissions (battery electric, plug-in hybrid and hydrogen fuel cell vehicles)

- To make ZEVs more available, across the country
- To provide incentives to offset higher purchase prices, making ZEVs more affordable
- To build charging and refuelling stations across the country
- To build public awareness and confidence
- To support R&D – particularly re: medium and heavy duty vehicles
- Green procurement by federal government
- Investments to support a net-zero vehicle manufacturing sector

Credit: Clean Transportation Strategy, p. 4.

- **Nationally, the light-duty ZEV market share reached 7.9% in 2022,**
  - up from 3.1% in 2019 (S&P Global Mobility)
- However, market share is uneven across the country; highest in B.C. and Quebec, which have abundant access to hydro power, provincial ZEV regulations, and provincial incentives
- Market share is lowest in the north, despite incentives, hampered by cold climates and a reliance on off-grid diesel generators that lessen the environmental benefits of ZEVs

Credit: Clean Transportation Strategy, p. 5.

- **Federal Incentives for ZEV Program:**
  - federal purchase incentives of up to $5,000, funded through March 2025, with 37 eligible models at October 2022
  - $2.3 billion allocated in total
  - 171,000 participants
- **Medium and Heavy-Duty ZEV Program**
  - $547.5 million allocated, 40 eligible models, 14 different manufacturers
  - Certain provinces have complementary programs
- **Alternatively, businesses can elect to use a one year tax exemption on ZEV purchases**

Credit: Clean Transportation Strategy, p. 8.

- **100% of new light duty federal fleet purchases to be ZEV or hybrid by 2030**
  - Electrical vehicle readiness assessments at federal buildings; working groups re charging infrastructure
- **Zero Emission Transit Fund - $2.75 billion program for school and transit buses**
  - Prior initiatives have helped support the purchase of 550 ZEV transit and school buses
- **Canada Infrastructure Bank's Zero-Emission Bus Initiative**
  - Flexible financing helps leverage operational life cycle cost savings to offset higher up-front costs

Credit: Clean Transportation Strategy, p. 13.

- **Projects for 35,000 chargers (+25 hydrogen) approved prior to 2022**
- **In 2022, funding was added for 50,000 more, for a total of 85,000 charging stations at $1.2 billion**
  - Canada Infrastructure Bank will also invest $500 million into large-scale ZEV charging infrastructure
  - Zero-Emission Infrastructure Program call for proposals re commercial fleet charging
- **However, 442,000 – 469,000 publicly available chargers required by 2035**
- **Work is also needed to ensure that Canada's electricity grid can support the electricity demand of ZEVs**
  - Estimated 5% by 2030 and 9.5% by 2050

Credit: Clean Transportation Strategy, p. 9.

- Canada has sought to align with U.S. vehicle emissions standards since 2011
- 2020 Climate Plan committed to aligning with the most stringent post-2025, whether at the U.S. federal or state level
- June 2022 - Canada/California Memorandum of Cooperation on Climate Action - requires 100% of new light duty vehicles to be ZEV by 2035
- Within Canada, some provinces are following suit, with ZEV regulations in place in Quebec and B.C., which represent 35% of Canada's new light-duty ZEV market

Credit: Government of Canada, Canada's Electric Availability Standard, Dec. 19, 2023.

- ***Passenger Automobile and Light Truck Greenhouse Gas Emissions Regulations* were amended Dec. 20, 2023**
- **Create a new “Electric Vehicle Availability Standard”**
  - applicable to passenger cars, SUVs, and light trucks, which account for about half of Canada’s transportation sector

- **Amended federal regulations will require:**
  - new light-duty vehicle sales to be 100% ZEV by 2035 (cars, SUVs, light trucks)
  - Increasing annual targets between now and then:
    - **20% by 2026,** and **60% by 2030**
  - new medium & heavy duty vehicle sales to be ZEV by 2030
  - 100% by 2040 for a subset of vehicles, based on feasibility
- **Average lifespan of a vehicle is 15 years, so the 2035 targets have been set to facilitate Canada's 2050 emission reduction goals**

Credit: Clean Transportation Strategy, p. 3

- Targets begin in the 2026 model year, requiring 20% of new light-duty vehicles offered for sale be ZEV, increasing to 60% annually just six years from now

- There were more than 50 models of ZEV available in Canada as of 2023 and another 41 expected in 2024 – sedans, hatchbacks, SUVs, pickup trucks, with two and four wheel drive

Credit: Government of Canada, Canada's Electric Availability Standard, Dec. 19, 2023.

- **The Standard is designed to:**
  - Help ensure a growing supply of ZEVs across Canada,
  - To help develop a robust electric vehicle supply chain and infrastructure across Canada, and
  - Keep pace with U.S. EPA projections that 60% of new vehicles in the U.S. will be ZEV by 20230
- **Regulations apply to companies that manufacture in Canada, and import vehicles into Canada to sell to the first retail purchaser**
  - ZEVs include battery electric vehicles, fuel cell vehicles that operate using hydrogen and plug-in hybrids, which are given partial or full credit depending on their electric-only range
- **Regulations have a 12 year phase-in period**

- **Total cost of ownership was estimated at $80,000 for a gasoline vehicle and $49,000 for the ZEV equivalent**
- **Gas cost estimated at $3,000 /yr for an average vehicle, vs. $600 to charge ZEVs**
- **Operating and maintenance costs are lower for ZEVs, but up front costs are higher**
- **Canada estimates that by 2030, the cost of gasoline powered and electric vehicles will be comparable**

- **The regulations are designed to help close the gap by ensuring supply**
- **RIAS predicts:**
  - 362 megatonnes of cumulative GHG emissions avoided, and
  - $36.7 billion in reduced energy costs over 25 years

- **Health Canada estimates air pollution from on-road vehicles cause**
  - 1,200 premature deaths and millions of non-fatal injuries, with an estimated cost of $9.5 billion /yr
- **Half of Canadians live or attend school near a high traffic road**
  - Decreases in asthma, lung cancer and leukemia are predicted as air pollution is reduced

- **Environment and Climate Change Canada (ECCC) predicts a reduction of:**
  - 36% in fine particulate matter;
  - 50% in nitrogen oxide;
  - 61% in volatile organic compounds; and
  - 68% in carbon monoxide

- **Companies that perform better than their ZEV targets generate credits, that can be**
  - banked for up to 5 model years, or
  - traded
- **Companies that do not meet targets generate a deficit, which must be discharged within three model years**
  - No banked or accumulated credits can be used in or after 2035
- **Early action credits have been included for ZEV sales in 2024 and 2025**
  - Credits can be earned between the annual minimum and 20% during those years
- **Companies must have 8% ZEVs in model year 2024 and 13% in 2025**
  - These credits cannot be used or traded after 2027

- **Credits may also be generated by investing in charging infrastructure**
  - focus on fast-charging infrastructure and investment during the early years, when needed the most
- **Such credits can be traded, but cannot be used after model year 2030**
- **The combined value of early action credits and charging credits cannot exceed 10% of a company's ZEV target in any one year**

- **One credit is generated per $20,000 invested in certain projects, which:**
  - Must install new DC fast-charging stations;
  - Must have rated power of at least 150 kW;
  - Must be operable for at least five years after completion;
  - Must be available to any ZEV with a compatible charging port or adapter; and
  - Must be opened between Jan 1, 2024 and Dec. 31, 2027

- **Battery electric, fuel cell vehicles and plug-in hybrid with a range of 80 km or more generate one credit in all years**
- **There are partial credits available to plug in hybrids**
  - These are more generous in 2026 and gradually decrease in 2027 and 2028

- Canada is home to almost half of the world’s publicly listed mining and mineral exploration companies, with a presence in 100 countries and combined market capitalization of $520 billion

- Canada views critical minerals as a “generational opportunity” in many areas, from exploration and extraction through processing, downstream product manufacturing and recycling

- Certain value chains – such as clean tech, like ZEVs, wind turbines, solar panels, advanced batteries, hydrogen fuel cells and small modular reactors, are seen as having high potential for national integration

- Bolstering domestic supply viewed as a hedge against foreign political instability affecting the supply chain

- **Clean energy transition requires critical minerals**
  - Critical = with few or no substitutes,
  - Strategic and limited commodities; and
  - Increasingly concentrated in terms of extraction and processing location
- **Global demand poised to increase significantly – up to six fold by 2040**
  - Driving a focus on supply chain resilience and vertical integration (EV manufacturers will benefit from having all stages of battery development occur close by)

- **Canada has a list of 31 minerals it considers to be critical**
- **6 of these are prioritized as having the potential to spur growth, and inputs to priority supply chains:**
  - Lithium, graphite, nickel, cobalt, copper and rare earth elements
- **Canada currently ranks 5th globally in production of graphite and nickel**
  - In 2021, 11% of globally mined nickel and 24% of graphite were used in batteries
- **Others critical minerals are targeted for increasing export to allies**

- **Critical minerals are seen as the building blocks of the green and digital economy**
  - Canada’s goal: seize the benefit of the global clean energy transition
  - Create a made-in-Canada EV and battery “ecosystem”
- **From “mines to mobility”:**
  - Extraction and processing of critical minerals such as nickel, cobalt, graphite and lithium
  - Battery manufacturing - solidifying Canada’s position in the EV and battery supply chain
  - Industrial transformation of the transportation sector
  - Green energy from water, wind and sunlight
  - Highly skilled workforce

- **ZEV market is estimated to reach $174 billion by 2030 in North America**
  - Creating 220,000 jobs in mining, processing and manufacturing
- **A battery supply chain in Canada could:**
  - contribute $5.7 - $24 billion to GDP by 2030, and
  - support 18,500 -81,000 direct jobs

Credit: Critical Minerals Strategy, p. 11.23

Thank you for joining us!

The in-house reception will be held in the reception area.