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WBC  
Global  
Network

# DELIVERING THE 'NET' IN NET-ZERO

A VIRTUAL DISCOURSE & WORKSHOP SERIES

March, 13 (Wednesday), MYT 4:00 PM

## Discourse 1.0

**Understanding The Net In 'Net-Zero': Taxonomy, Options And Strategies in Carbon Dioxide Removal (CDR)**

*"Redefine Your Impact: Carbon Removal is Everyone's Business"*

[www.bcsd.my](http://www.bcsd.my)



# Housekeeping



**This session  
is being  
recorded.**



**Kindly use the  
'Q&A' function to  
ask a question.**



**Use the chat function  
to comment or  
provide feedback.**

# Topics That Will Be Explored

## Net-Zero Transition



What does the 'net' in net zero means?



What are the different types of carbon removal strategies and what are their roles?



How do we achieve net zero strategically?

## Driving local net-zero



Net-zero transition challenges in oil & gas sectors and aerospace sectors.



Trends and opportunities that support net-zero carbon emissions



Foresight in the local context: Generating nature-positive outcomes



# Welcoming Remarks



## Joe Phelan

Executive Director, Asia Pacific & Member of the Extended Leadership Group

# Session 1: Understanding Net Zero: Taxonomy, Options And Strategies in Carbon Removal

## OVERVIEW

### 1. WBCSD [Joel] Net-zero plans & project

Understanding the role of CDR

### BCSD Malaysia [Roberto] 2 Rationale & Considerations

Strategies to build more carbon removal markets (E.g. initiatives to scale up voluntary corporate commitments)



### 3 WBCSD [Neal] Carbon Removal Report

- Introduction and implementation of report

### Panel Discussion 4

- Moderated by **Celine Ng (BCSD Malaysia)**
- Q&A session

**Speaker 1**  
**MYT 4:10 - 4:20 pm**



**bcsd Malaysia**



**Roberto Benetello**

Founding Director, BCSD  
Malaysia



bcsd malaysia



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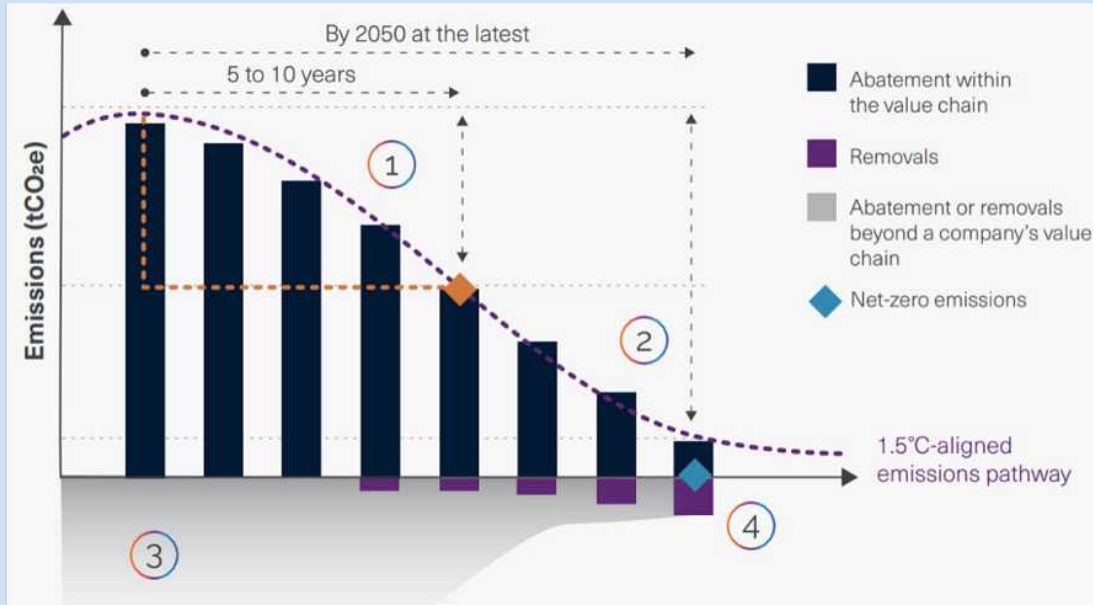
# THE RATIONALE FOR RESPONSIBLE CARBON REMOVAL FOR NET-ZERO TRANSITION

**ROBERTO BENETELLO**

Discourse 1.0: Understanding the 'Net' in 'Net Zero'  
13 March 2024



# Corporate Action: Reaching Net Zero



WBCSD: “Set an ambition to reach Net Zero GHG emissions no later than 2050 and have a science-informed plan to achieve it, that can include Natural Climate Solutions and other carbon removal solutions.”

Net-zero emissions, or “net zero,” will be achieved when all emissions released by human activities are counterbalanced by removing carbon from the atmosphere in a process known as carbon removal.

## Carbon Removal Methods:

- Nature-based solutions
- Hybrid solutions
- Engineered Solutions & Technology (E.g. DACCS, BECCS)

Source: SBTI CORPORATE NET-ZERO STANDARD

13 MARCH 2024







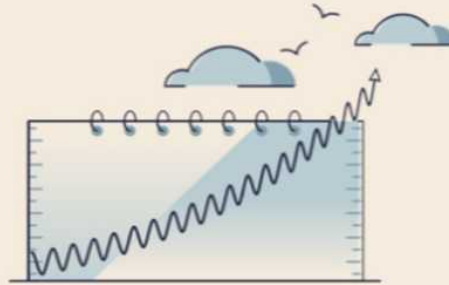
# Significance of CDR



## CDR is required to limit global warming to 1.5°C



CDR is required to limit warming to 1.5°C. Particularly, CDR is needed to counter-balance emissions from difficult-to-decarbonise sectors, such as industry, long-distance transportation, and agriculture.



Mitigation scenarios assume large volumes of future global CDR deployment compared to current volumes of deployment.



Future deployment of CDR will require rapid and sustained upscaling.

Source: IPCC AR6 WGIII: CDR Factsheet





# Understanding the Terms Used

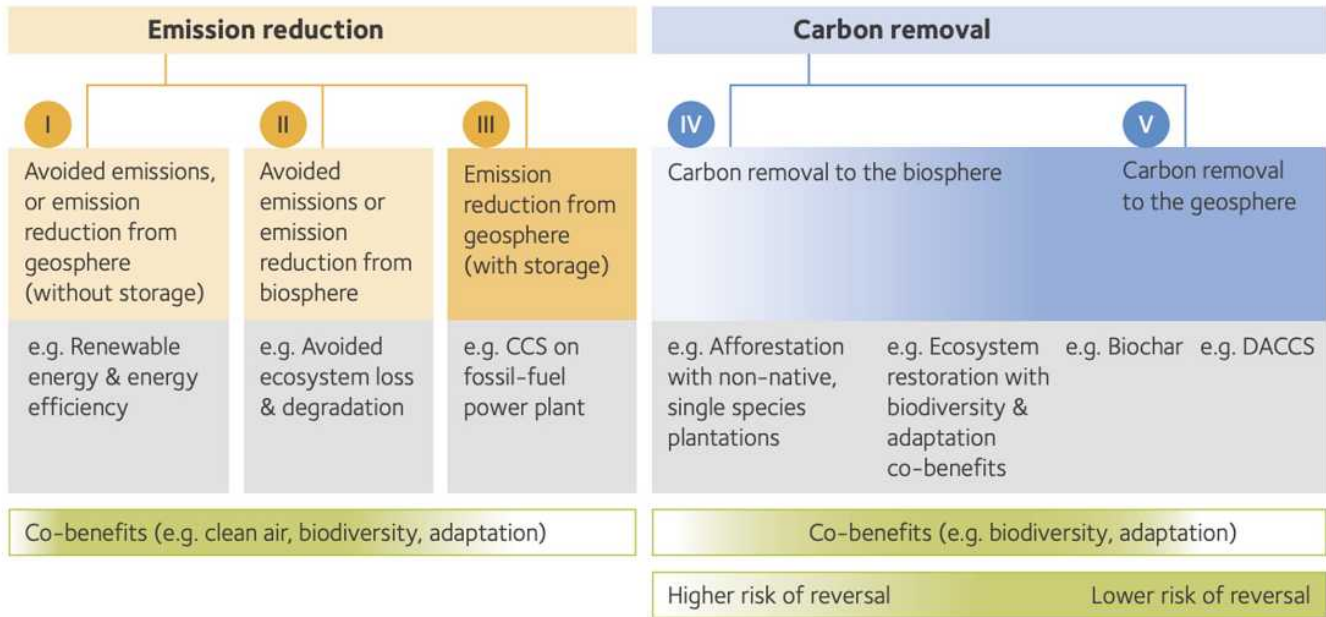


**CARBON REMOVAL**

Carbon removal is the elimination of existing carbon emissions, by absorption, after they have entered the atmosphere.

**CARBON AVOIDANCE**

Carbon avoidance is the prevention of future carbon emissions being released into the atmosphere.



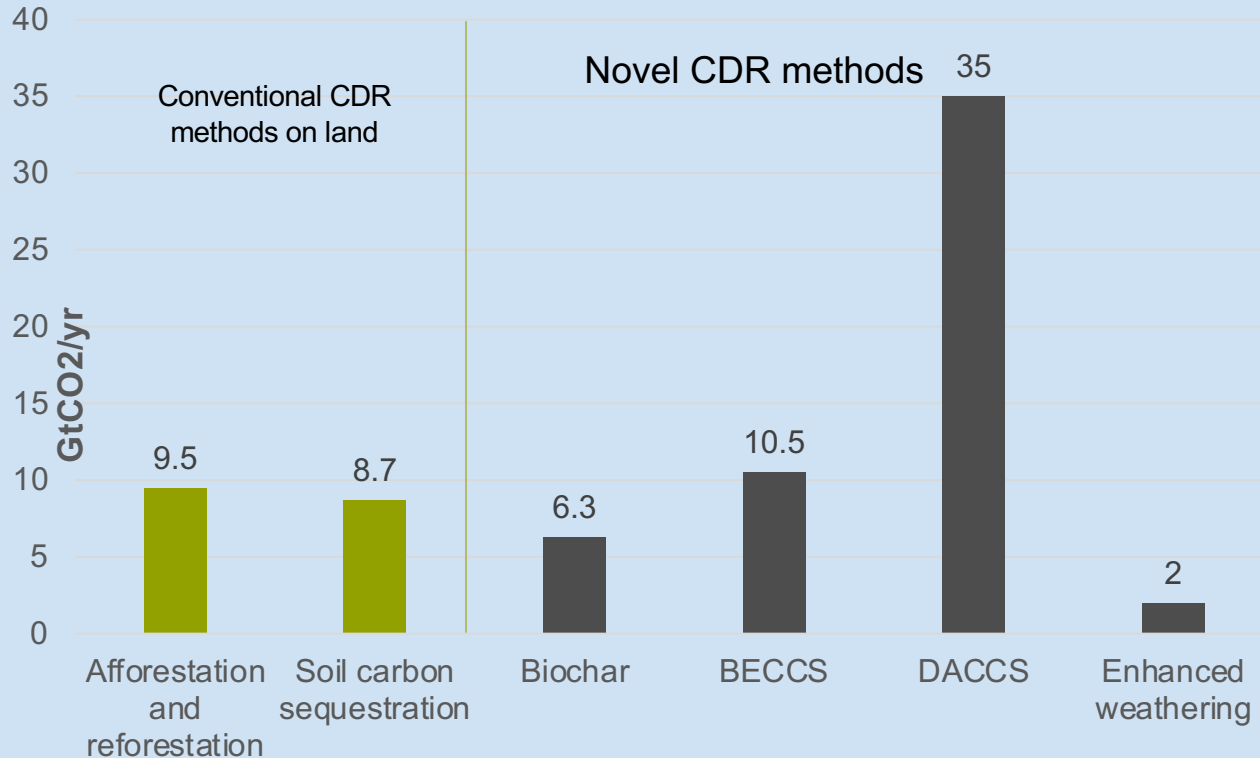
Source: Oxford Principles for Net Zero Aligned Carbon Offsetting (2024)

**Both are equally important climate solutions.**





# Mitigation potentials of CDR

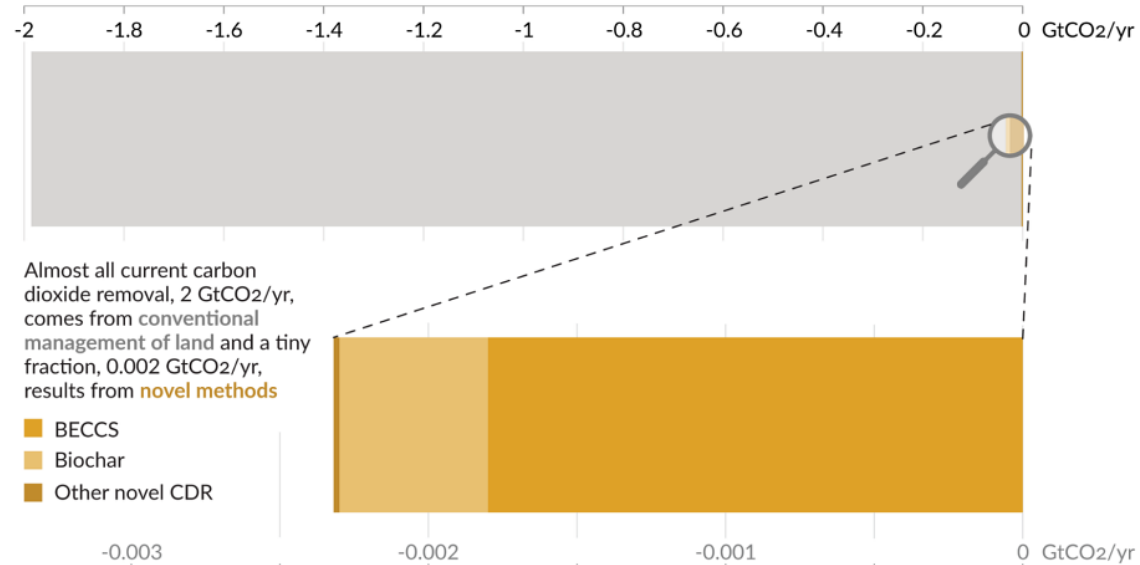




# Where are we now?

Only a tiny fraction of all current carbon dioxide removal results from **novel methods**

Total current amount of carbon dioxide removal, split into **conventional** and **novel methods** (GtCO<sub>2</sub>/yr)

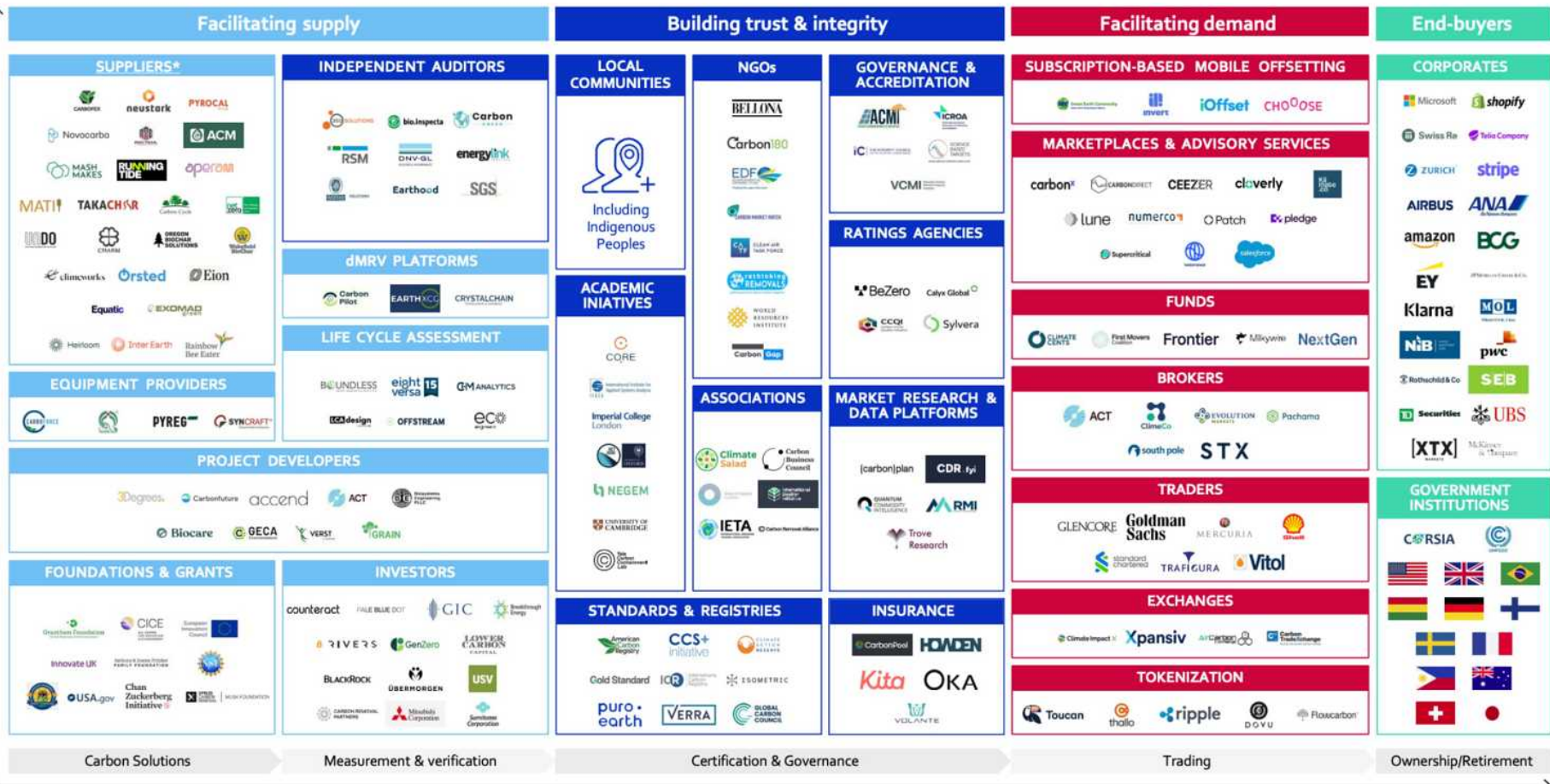


Source: The State of Carbon Dioxide Removal Report (2023)

# Carbon Dioxide Removal (CDR) Market Map

VISIBILITY TO END-USERS

MARKET INFRASTRUCTURE



\* There are many more CDR suppliers, for more information on Puro.earth suppliers visit here <https://carbon.puro.earth/CDR-co2-removal-certificate/supplier-listings>

# Malaysia's Potential As Carbon Market



- Has some demand for carbon offsets-  $\frac{1}{3}$  of top Malaysian companies declared emission-reduction goals, mainly in energy sector (McKinsey).
- Has supply for carbon offsets- substantial natural endowments to generate carbon credits- carbon crediting potential of up to 40 million tons of CO<sub>2</sub> annually (McKinsey).
- Digitisation key to positioning Malaysia as SEA carbon hub.





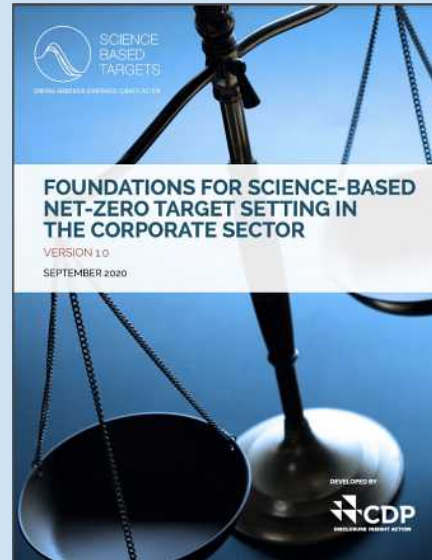
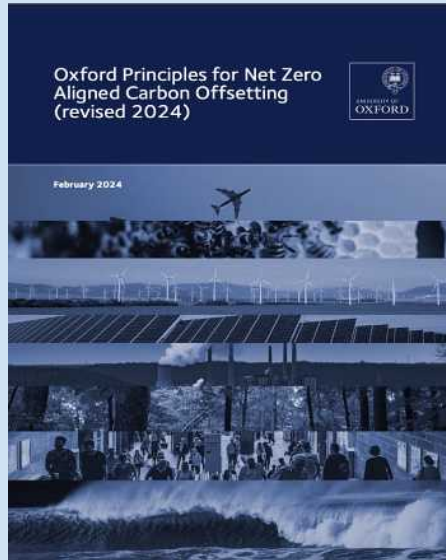
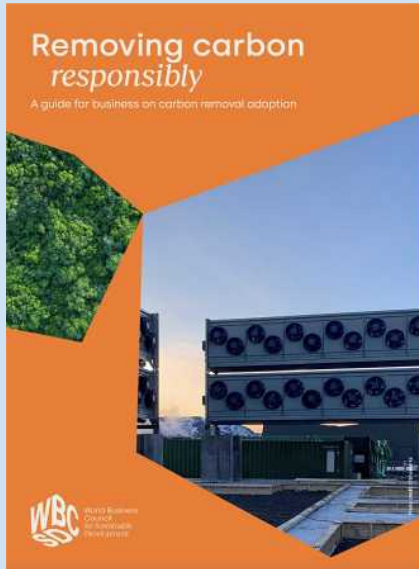
# Recommendations & Good Practices

- Minimize the overall need for CDR by reducing value chain emissions as much as possible;
- Ensure that CDR investments are not prioritized ahead of emissions reduction;
- Ensure the timely deployment of removals so they can achieve their full potential to neutralize residual emissions at net zero;
- Plan and develop a portfolio of removals that includes a diverse array of both conventional land-based and novel;
- Conduct due diligence to ensure purchased removals are of high quality;
- Ensuring CDR projects provide material removal for a climate relevant duration - that is potentially up to 100 years.





# Tools & Resources







Making More Sustainable Business More Successful

# THANK YOU

BCSD Malaysia creates the business case for sustainability through the development of tools, research and business models. These scalable science-based solutions deliver measurable impact and enable our members to engage at the highest level, influencing the agenda as well as demonstrating leadership.

**ROBERTO BENETELLO**

*roberto.benetello@bcsd.my*

*www.bcsd.my*



**Speaker 2**  
**MYT 4:20 - 4:35 pm**



# Neal Gray-Wannell

Manager, CCS and Removals

# Carbon Removal Discourse

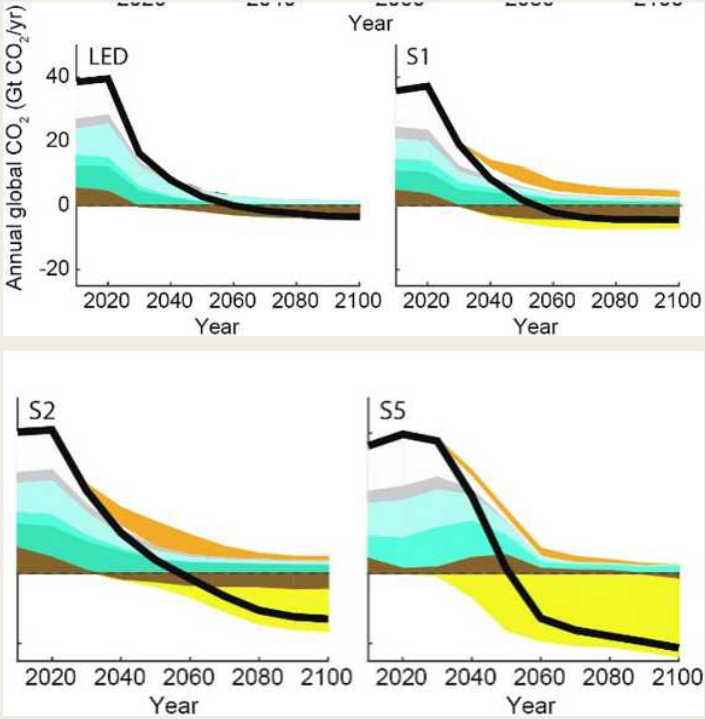
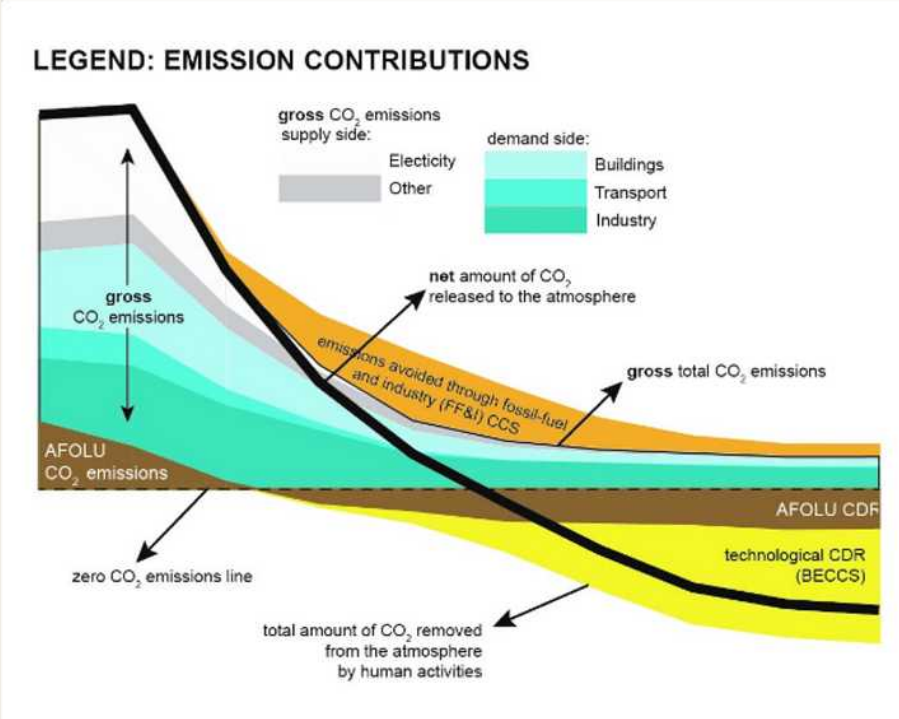
*BCSD Malaysia*



World Business  
Council  
for Sustainable  
Development



# Carbon removal in 1.5degC-aligned emissions trajectories



# Six principles for responsible carbon removal projects

## 1. Safety

CDR projects must be safe for nearby communities and ecosystems. All potential risks must be identified and mitigated.

## 2. Durability

Minimize the risk of reversal as much as possible, monitor and mitigate reversals.

## 3. Performance

Ensure that the carbon removal performance is quantified and reported in line with certification requirements. Ensure projects deliver on additional benefits and mitigate all risks.

## 4. Accountability

Open information sharing with communities.

## 5. Inclusivity

Openly engaging with communities and involving different demographics.

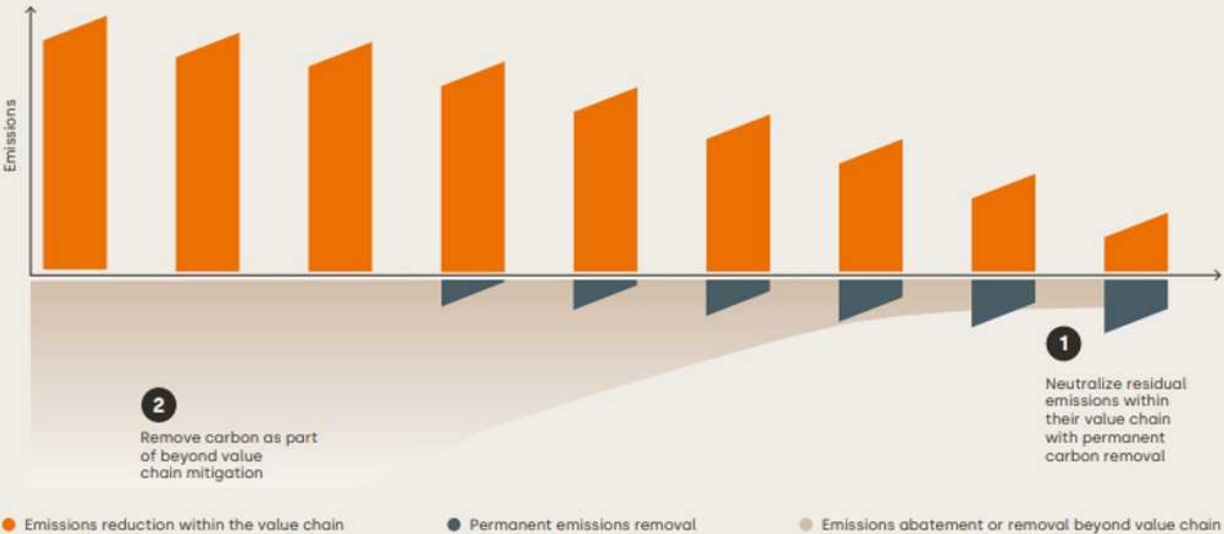
## 6. Equity/justice

Deploy carbon removals globally to direct Global North financing to the Global South.



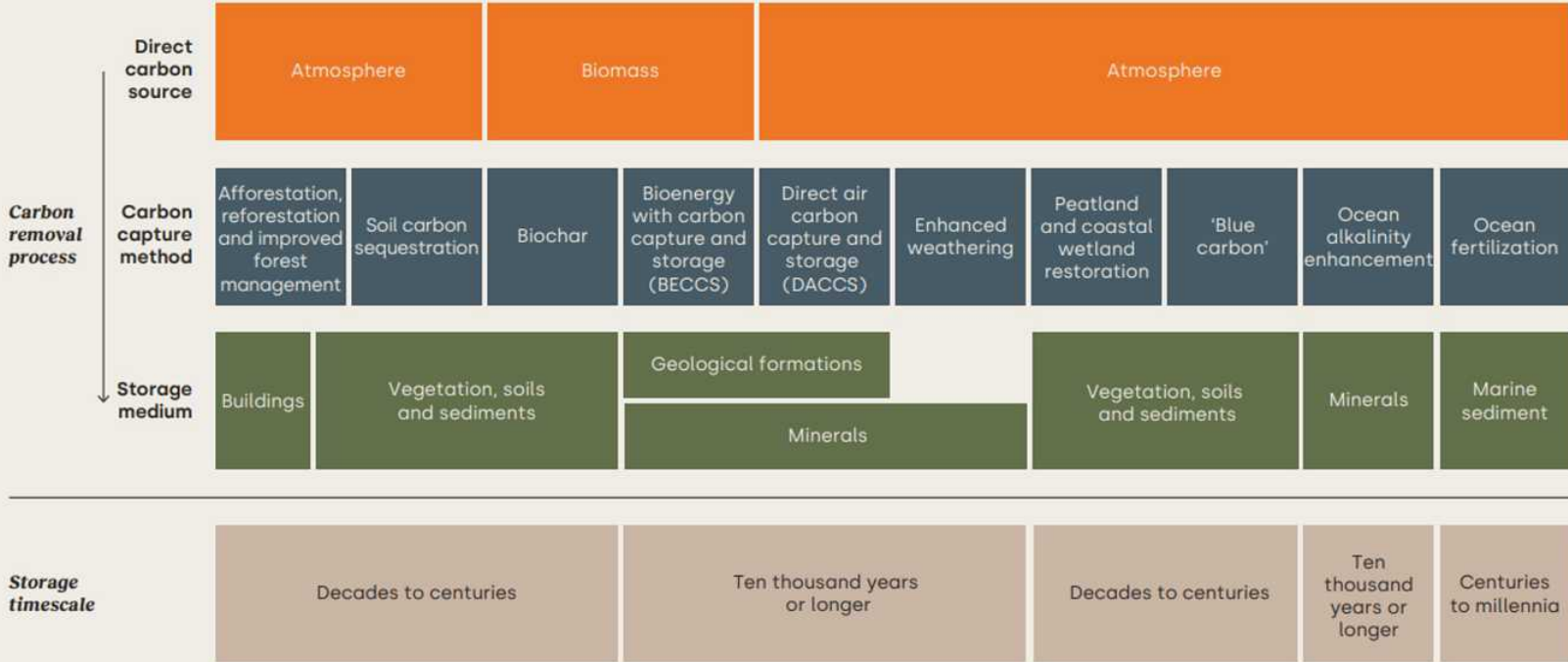
# Carbon removal in a SBTi-aligned net-zero trajectory

Figure 4: An example of a non-FLAG sector corporate net-zero pathway



Source: Science Based Targets initiative<sup>3</sup>

# What are the different removal methods?



Removing carbon responsibly: A guide for business on carbon removal adoption, WBCSD 2023



# CCS vs Carbon Removal

Storage medium	Direct carbon source		
	Fossil emissions	Atmosphere	Biomass
Geologic (e.g., depleted oil and gas reservoirs and aquifers)	Fossil/point source CCS	Direct air carbon capture and storage (DACCS)	Bioenergy carbon capture and storage (BECCS)
Long-term products (e.g., cement)	Fossil carbon capture and utilization (CCU)	Direct air carbon capture and utilization (DACCU)**	Bioenergy carbon capture and utilization (BECCU)**
Short-term products (e.g., synthetic fuels)	Fossil carbon capture and utilization (CCU)*	Direct air carbon capture and utilization (DACCU)**	Bioenergy carbon capture and utilization (BECCU)**

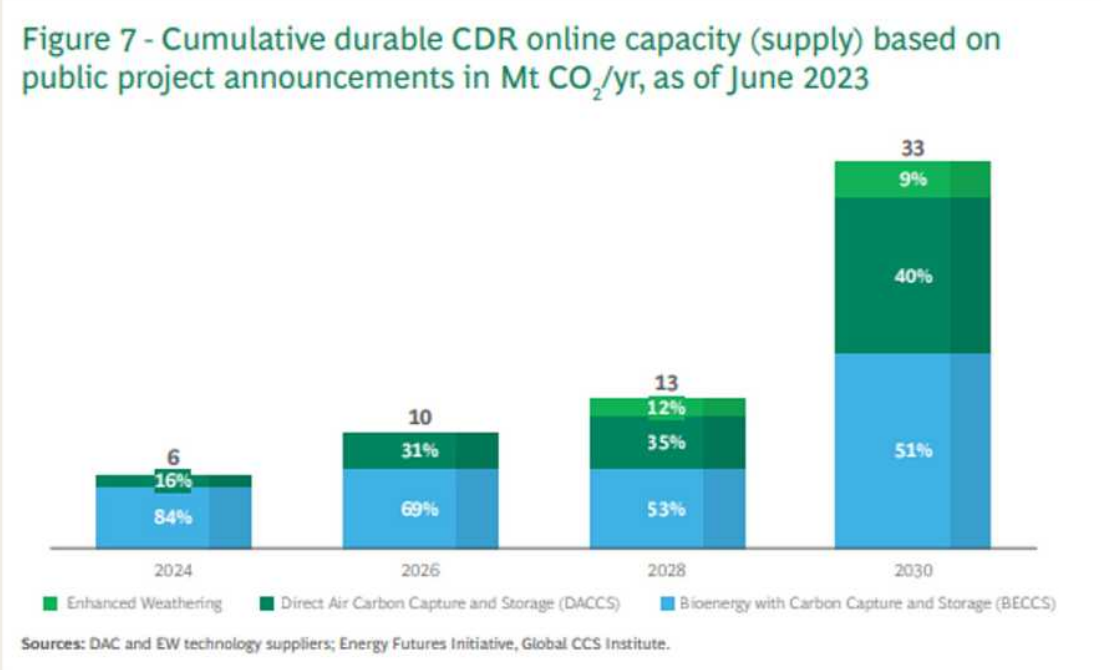
● Carbon reduction     
 ● Carbon removal

\* Synthetic fuels made from fossil-based CCU can only ever result in partial emissions reductions from increased carbon efficiency.

\*\* Biogenic CCU can result in removals for long-lived products, for use in synthetic fuels, but the best outcome that can be achieved is net-zero emissions.



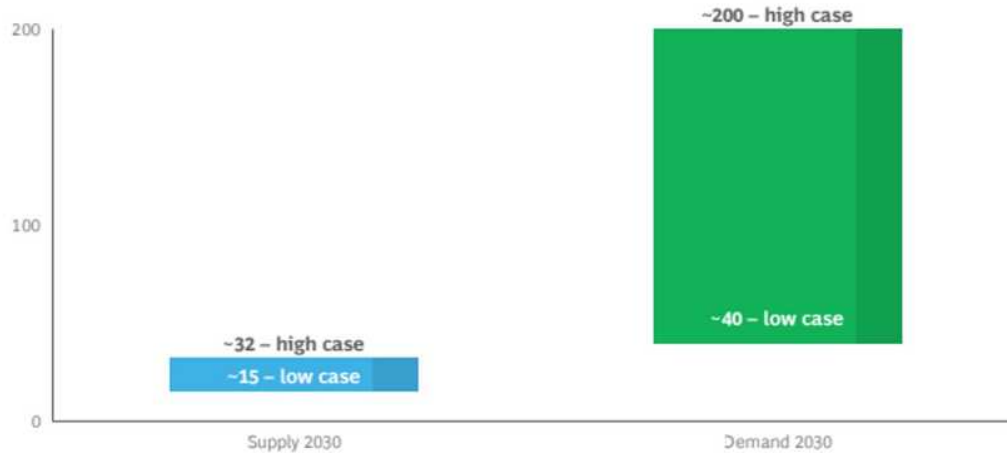
# Projected carbon removal market supply



# Carbon removal market supply – demand gap



Figure 8 - Supply and demand range (Mt CO<sub>2</sub> per annum) for 2030 and 2040 market as of June 2023



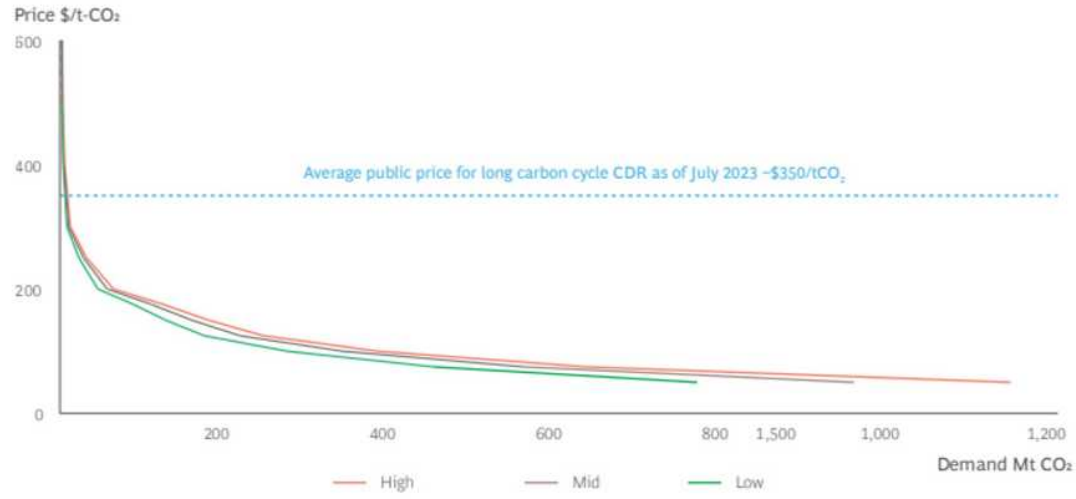
Sources: CDR.fyi; BCG Survey and Analysis, 2023.

**Note:** While we recognize significant uncertainty in the carbon removals future market, the low scenario represents what we believe is the most likely lower bound. The market is potentially lower if the price of CDR does not go below \$300 by 2030, or if net-zero pledges are not addressed.

# Durable carbon removal price projection



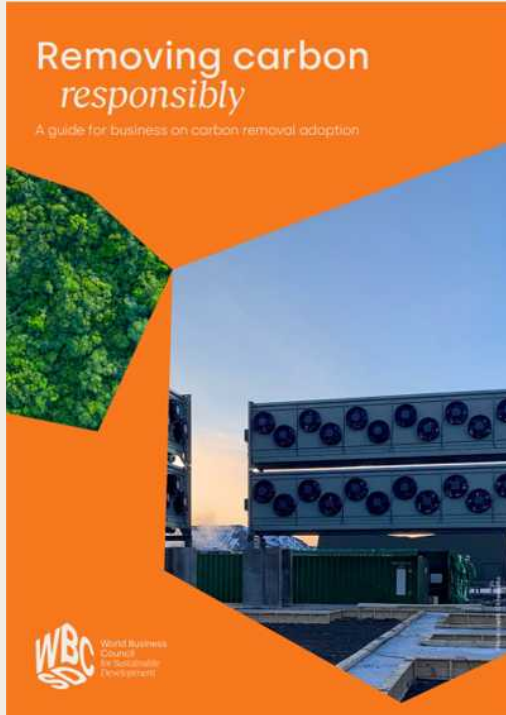
Figure 9 - Volume of durable CDR demand (Mt CO<sub>2</sub>) at given price points, 2030 projections



Source: BCG Carbon Credits Survey 2022.



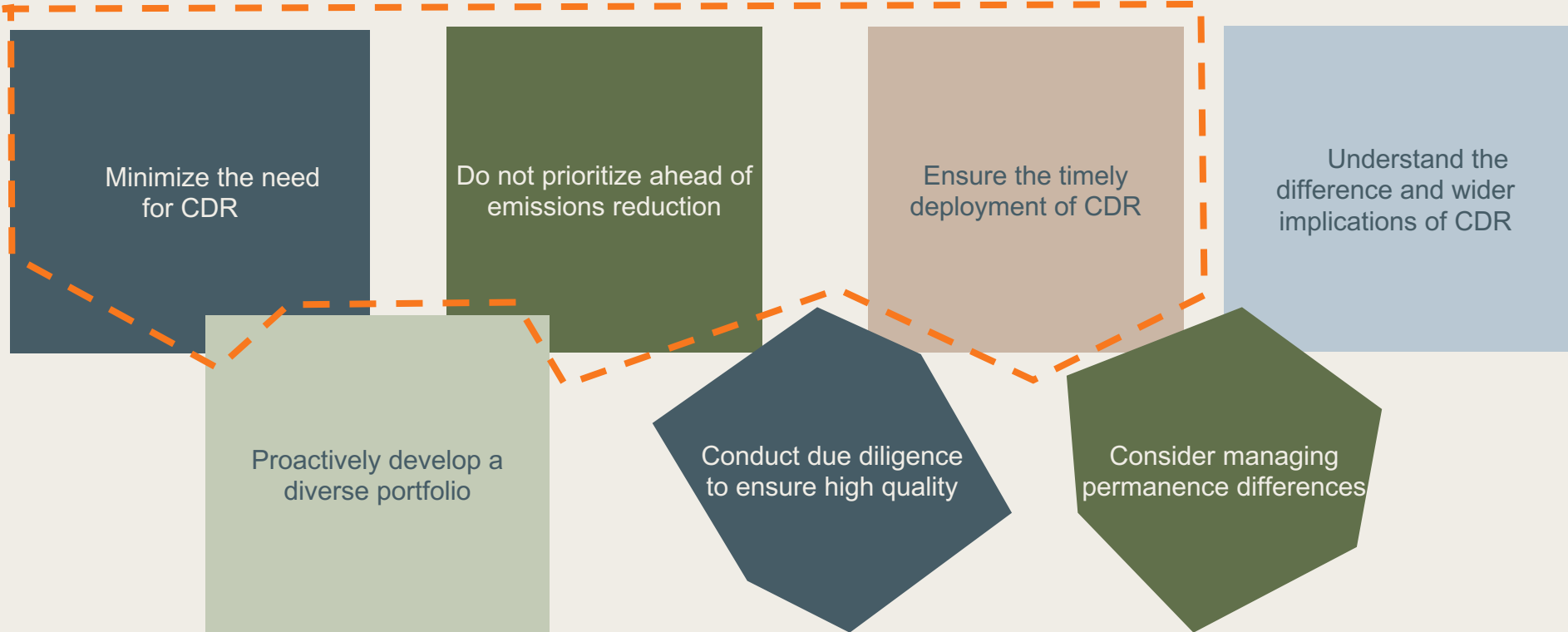
# Removing carbon responsibly: A guide for business on carbon removal adoption



- 1. Carbon removal's role in corporate climate strategies*
- 2. Key considerations for responsible carbon removal adoption*
- 3. Multi-criteria decision framework to evaluate different removal methods based on corporate sustainability preferences.*
- 4. Practical guidance for the planning and development of a diverse removal portfolio.*



# Key considerations for responsible business adoption



Removing carbon responsibly: A guide for business on carbon removal adoption, WBCSD 2023



Understand the differences and wider implications of CDR



Source: Based on<sup>13</sup>

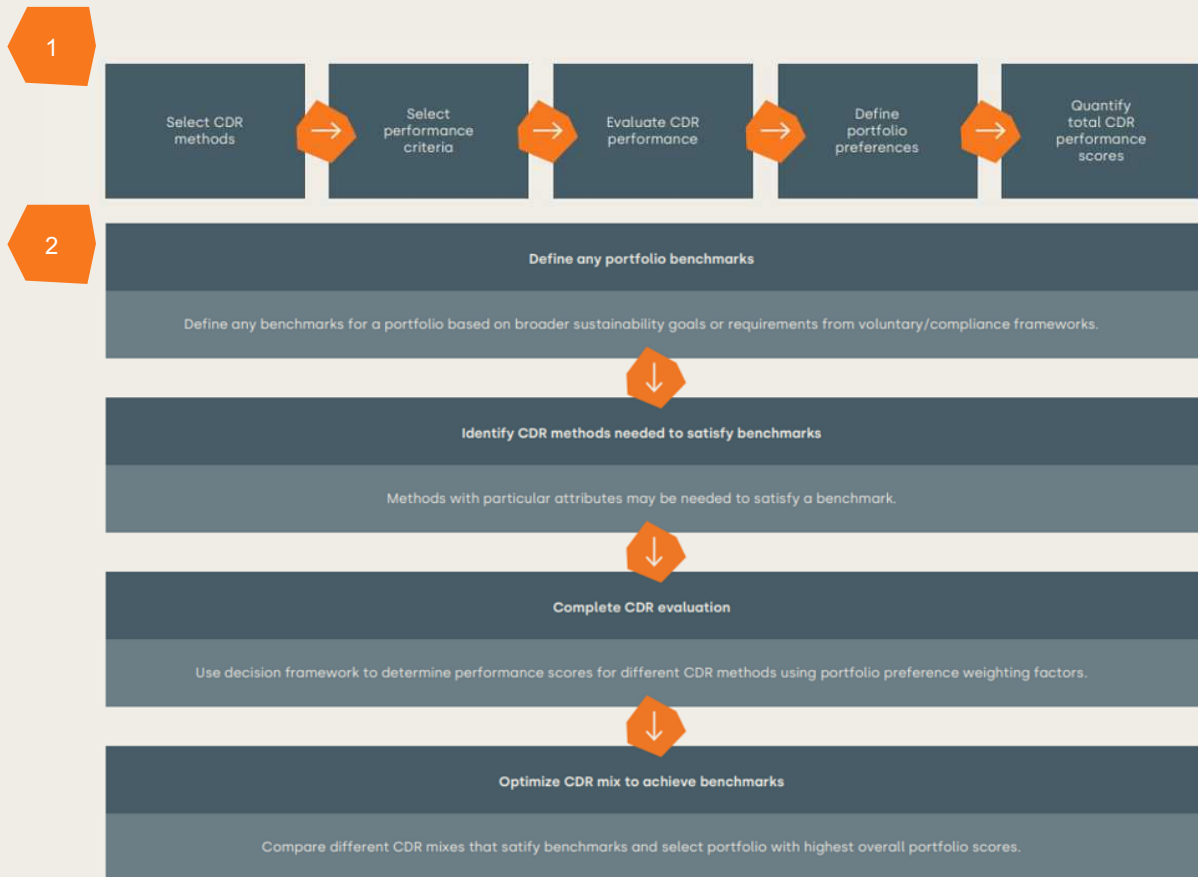
CDR option	Feasibility			Climate change effectiveness			Side impacts		
	Technical	Economic	Governance	Effect	Timeliness	Durability	Environ.	Economic	Social
Afforestation	9.4	10.0	6.0	2.0	1.5	2.0	1.7	5.0	5.0
Reforestation	9.4	10.0	6.0	4.0	1.5	2.0	10.0	6.7	8.3
Soil carbon sequestration	9.4	10.0	5.0	3.0	2.0	2.0	6.7	8.3	10
Low-temperature biochar	7.2	9.0	6.0	5.0	10	3.0	6.7	6.7	6.7
High-temperature biochar	7.2	6.0	6.0	6.0	10	6.0	6.7	6.7	6.7
BECCS no exp.	8.0	7.0	6.0	8.0	8.0	9.0	3.3	8.3	6.7
BECCS exp.	8.0	7.0	5.0	7.0	1.0	9.0	0.0	5.0	1.7
DACCS saline aq.	8.3	1.0	8.0	8.0	10	9.0	3.3	3.3	5.0
DACCS mineralization	5.5	1.0	8.0	10	10	9.0	3.3	3.3	5.0
Enhanced weathering	3.9	6.0	6.0	10	3.5	9.0	3.3	6.7	3.3

Removing carbon responsibly: A guide for business on carbon removal adoption, WBCSD 2023

Proactively develop a diverse portfolio

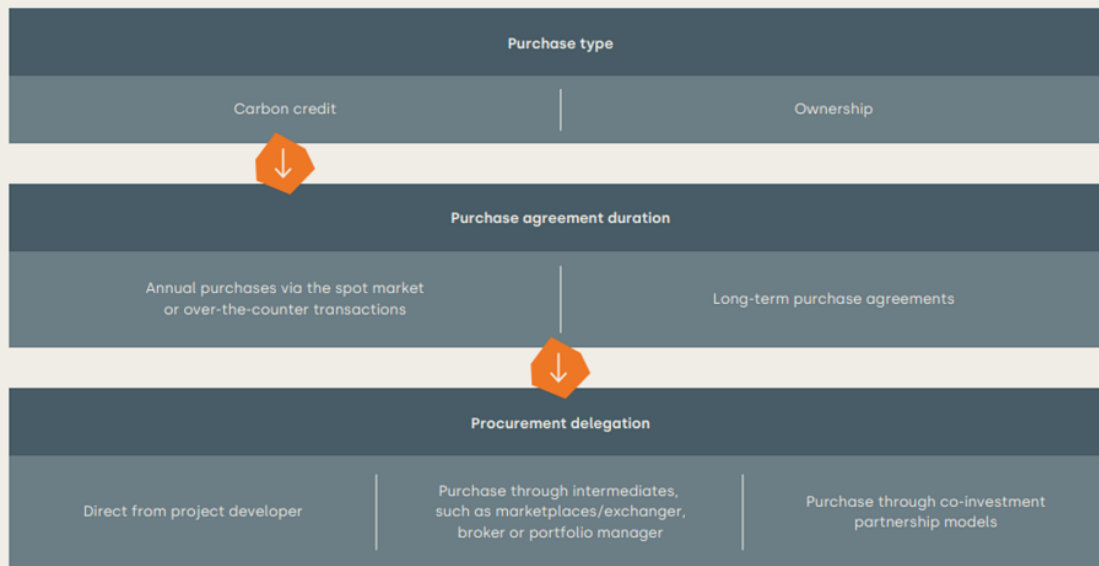
- A diverse portfolio of **methods** can:
  - Maximise climate benefit
  - Maximise contribution to sustainable development goals
  - Minimise trade-offs.
- Diversity across **technology** types can minimize risk.
- Diversity across **project scales** and **geographies** can help promote equity/climate justice.

Removing carbon responsibly: A guide for business on carbon removal adoption, WBCSD 2023



Proactively develop a diverse portfolio

- Selecting the purchasing/investment approach is key to planning a portfolio.
- The carbon removals market is nascent and will be supply limited in the future so innovative approaches are key to scale the market:
  - Long-term credit purchasing agreements
  - ‘Insetting’ or other ownership approaches




Source: National Climate Solutions Alliance<sup>®</sup> and McKinsey<sup>®</sup>



## Why not buying credits? What role can carbon removals play within value chains?

- **Securing long-term access** to the removals that you need to be net zero
- Seizing the **business opportunities** associated with a rapidly scaling market.
- Stacking **co-benefits** within value chains.
- Enhancing **brand** identity
- Future-proofing supply chains by enhancing **climate resilience**.
- Creating or joining new value chains, introducing **waste valorisation** and other revenue opportunities.
- Minimizing costs.
- Having a degree of control on the removal projects
- The role of in-value chain removals in **product LCA's** and **Green Claims** regulations.



Conduct due diligence to ensure high quality

## Only invest in high-quality projects and ensure sufficient due diligence is carried out.

### ICVCM CCP's

- Additionality
- Permanence
- Robust quantification
- No double counting
- SDG benefits and safeguards
- Contribution to net zero.
- Governance
- Tracking
- Transparency

- High-quality projects will help scale carbon removal in line with the 6 key principles for responsible carbon removal.
- The ICVCM Core Carbon Principles provide a useful framing for high-quality projects in line with these principles.
- There has been rapid development of science-based standards and methodologies for carbon removals to help scale the market with integrity.
- Companies should also carry out independent 3<sup>rd</sup> part verification for due diligence. Credit rating agencies, such as Sylvera, can help provide this assurance.

The Core Carbon Principles, Integrity Council for the Voluntary Carbon Market, 2023



# Thank *You*

For more info, contact:

**Neal Gray-Wannell**

Manager, Energy

*[Gray-wannell@wbcsd.org](mailto:Gray-wannell@wbcsd.org)*



World Business  
Council  
for Sustainable  
Development

4:35 pm - 4:45 pm

# Q&A Session

Moderated By:



**Celine Ng**

Project Coordinator at BCSD  
Malaysia Berhad



**Roberto Benetello**

Founding Director of BCSD  
Malaysia Berhad



**Neal Gray-Wannell**

Manager (Carbon Capture  
Storage and Removals) at  
WBCSD

Speaker 3

MYT 4:45 – 4:55 pm

## BSI Malaysia (Malaysia Aerospace Industry Association)



# Wan Muqtadir

Head of Sustainability (Operations  
– Assurance) at BSI Malaysia

**bsi.**

● **Net-zero carbon emissions  
transition in the aerospace Industry**

**Wan Muqtadir  
Head of Sustainability**



## ● What had happened last year?



- There were more conflicts worldwide in 2023 than in any single year since World War II
- Not a single **indicator for SDG5**, gender equality, has been met - or even “almost” met. A quarter of people worldwide believe it is justifiable for a man to beat his wife
- 2023 **investments in renewable energy** outpaced those in fossil fuels for the first time, reaching \$2.8 trillion
- **Finance to nature-based solutions** increased from \$150 bn (2021) to \$154 bn (2022) – though still less than half the \$384 bn needed
- Less than a third (27%) of people in low-income countries used the internet in 2023
- The cloud has a bigger **carbon footprint** than the airline industry
- 2023 is set to be the warmest year on record - and El Niño will likely make 2024 hotter
- 50% of the **world’s population** is under 30. The average age of leaders is 62
- 2023 saw a notable **increase in protests** across the world, with new protests in 83 countries





## ● What is decarbonization

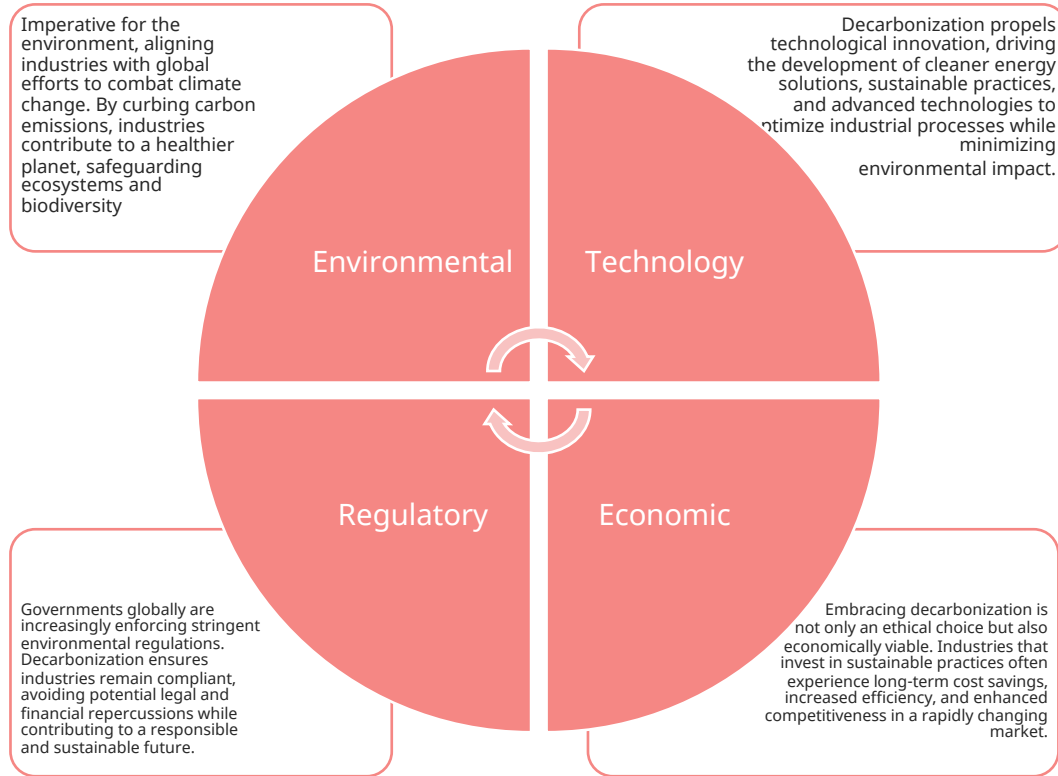
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**Decarbonization is the systematic reduction or elimination of carbon emissions from industrial processes, aiming to mitigate climate change by transitioning to cleaner, sustainable energy sources and enhancing energy efficiency**

**Decarbonization is like giving our planet a superhero makeover. Imagine Earth as a superhero, and carbon emissions as the villains causing trouble. Decarbonization is the process of equipping our superhero with eco-friendly gadgets and tools to defeat these villains. It's about transforming industries to use cleaner, sustainable energy sources and becoming energy-efficient sidekicks. This way, our superhero Earth becomes stronger, healthier, and ready to save the day by fighting climate change and keeping our world safe.**



# Decarbonization Imperative



## Then there are the usual thing organizations do



## ● What is the actual problem?

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**The challenge lies in industries heavily dependent on carbon-intensive processes and energy sources. Breaking free from traditional practices demands overcoming technical, financial, and infrastructural barriers to successfully achieve widespread decarbonization and foster a resilient, low-carbon industrial landscape.**

# Where are we (Malaysia) today?



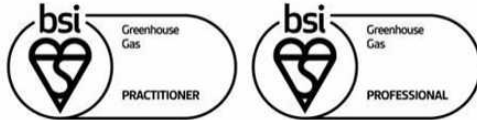
Dashboards: ● SDG achieved ● Challenges remain ● Significant challenges remain ● Major challenges remain ● Information unavailable

Trends: ↑ On track or maintaining SDG achievement ↗ Moderately improving → Stagnating ↓ Decreasing \*\* Trend information unavailable

# The role of BSI in Decarbonization

## Capacity Building and Training Programs:

BSI can initiate training programs to educate organizational staff on best practices for decarbonization. This includes workshops on energy-efficient technologies, sustainable supply chain management, and maintaining compliance. Empowering employees with knowledge is vital for the successful implementation of decarbonization strategies.



## Verification of Sustainable Practices:

BSI can provide a rigorous verification process to ensure that organizations adhere to sustainable practices and meet decarbonization targets. Certification from a reputable body adds credibility, demonstrating a commitment to environmental responsibility.

## Compliance Monitoring with Regulatory Standards:

BSI can assist organizations in navigating and complying with evolving environmental regulations. Staying up-to-date with legal requirements ensures that organizations not only meet current standards but also future-proof their operations against upcoming environmental regulations.



# Hey! I am confused now... with all these terms!

---

## Decarbonization:

- **Definition:** Decarbonization refers to the process of reducing carbon emissions from various sources, such as industrial processes, energy production, and transportation.
- **Objective:** The primary goal is to transition from carbon-intensive practices to cleaner, more sustainable alternatives, minimizing the overall carbon footprint.

## Net-Zero:

- **Definition:** Net-zero refers to the balance between the amount of greenhouse gas emissions produced and the amount removed from the atmosphere. Achieving net-zero means the organization or entity is not contributing additional emissions beyond what is being offset or removed.
- **Objective:** Organizations strive to reach net-zero emissions by either reducing emissions directly or by employing strategies like carbon offsetting and removal to counterbalance any remaining emissions.

## Carbon Neutrality:

- **Definition:** Carbon neutrality implies that an entity's overall carbon emissions are balanced or offset by an equivalent amount of emissions removed or reduced, resulting in a net-zero carbon footprint.
- **Objective:** Achieving carbon neutrality involves actively working to minimize emissions and investing in projects or initiatives that absorb or reduce an equivalent amount of emissions, thereby neutralizing the entity's impact on the climate.

## So, for the Aerospace/Aviation Industry – am I a polluter?

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For the aerospace industry, transitioning to Net-Zero involves concerted efforts to reduce the environmental impact associated with aviation activities.

**Carbon Offsetting  
and Emission  
Reduction  
Programs**

**Research into  
Alternative  
Propulsion  
Technologies**

**Fleet  
Modernization**

**Operational  
Efficiency  
Measures**

**Transition to  
Sustainable  
Aviation Fuels  
(SAFs)**

**Fuel Efficiency  
and Technology  
Upgrades**

**Regulatory  
Compliance and  
Industry  
Collaboration**



# How do I report this?

## Carbon Emission Metrics:

Companies report their current carbon emissions, often measured in terms of CO2 equivalents, detailing both direct (Scope 1) and indirect (Scope 2 and Scope 3) emissions.

## Targets and Goals:

Companies set and communicate specific decarbonization targets and goals, indicating their commitment to reducing emissions over a defined timeframe. These targets may align with international climate agreements and industry standards.

## Investment Allocation:

Companies disclose the allocation of funds for decarbonization initiatives. This includes investments in renewable energy projects, carbon offset programs, technology upgrades, and research and development efforts.

## Technological Innovations:

Reports highlight advancements in technology and innovative solutions adopted by the company to reduce carbon emissions. This may include the development of cleaner extraction methods, carbon capture technologies, or investments in sustainable energy sources.

## Partnerships and Collaborations:

Companies often report on partnerships and collaborations with other entities, including research institutions, governments, and industry peers. This demonstrates a collective effort to address challenges and accelerate the pace of decarbonization.

## Sustainable Practices:

Reports detail specific sustainable practices implemented by the company, such as energy efficiency measures, waste reduction, and efforts to minimize the environmental impact of operations.

## Verification and Certification:

Companies may engage third-party verification or certification bodies (such as BSI or other accredited organizations) to independently assess and validate their decarbonization efforts. The results of these assessments are often included in annual sustainability reports.

## Regulatory Compliance:

Reports address the company's compliance with existing and upcoming environmental regulations, demonstrating a commitment to meeting or exceeding industry standards.

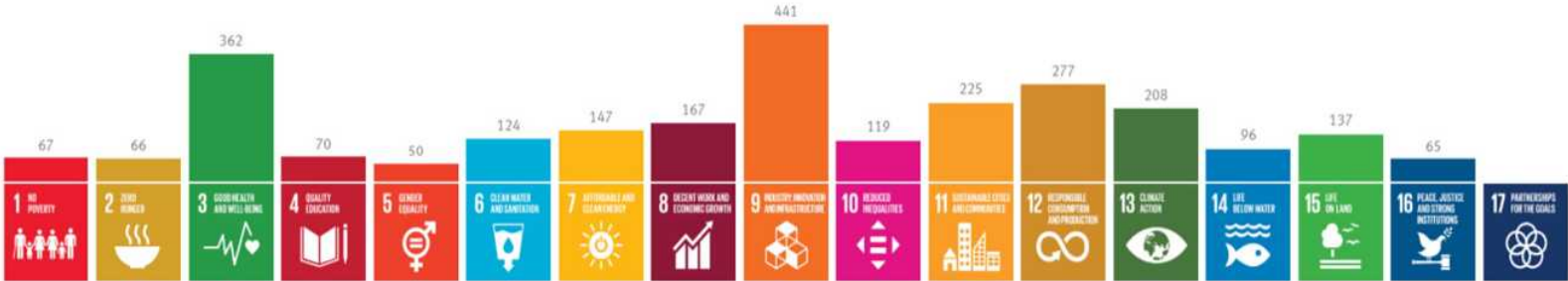
## Community and Social Impact:

Companies may report on the broader social and community impact of their decarbonization efforts, showcasing initiatives that contribute to local communities and align with sustainable development goals.

# BSI and UNSDG Goals

## SUSTAINABLE DEVELOPMENT GOALS

For each of the 17 UN Sustainable Development Goals (SDGs), BSI has solutions and expertise to support you. Over 2,500 ISO Standards relate to the SDGs



# ● What do we have for you?

## ENVIRONMENT

ISO 14001 Environment Management

**ISO 14064 GHG**

ISO 50001 Energy Management

ISO 46001 Water Management

PAS 2050 Carbon Footprint

**ISO 14068 Carbon Neutrality**

BS 8001 Circular Economy

ISO 14090 Climate Change Adaptation

## SOCIAL

ISO 26000 Social Responsibility

BS 76000 Valuing People

PAS 1948 Diversity, Equality & Inclusion

ISO 10018 Employee Engagement

ISO 45001 Occupational Health & Safety

ISO 20400 Sustainable Procurement

## GOVERNANCE

ISO 37000 Organizational Governance

ISO 22316 Organizational Resilience

ISO 27001 Information Security

ISO 37001 Anti-Bribery Management

ISO 31000 Risk Management

ISO 22301 Business Continuity Management

## ● Responsible Sourcing? How do you evaluate them?

Criteria	Summary	
Culture and Top Management	Commitments, regular agendas, committees, partnership, competent leaders	✓
Risk Management	Stakeholder participation, risk around products, fix data, practicalities	✓
Policies and Procedures	Communicate, best-fit for industry, identify and update, integrated	✓
Governance and Systems	Clear responsibilities, include disclosure elements, benchmarking	✓
Control	Framework readiness, control within dept (legal, finance, operations), codes	✓
Awareness	Employee and stakeholders' communication, informed leaders, records	✓
Reporting, Investigation, and Remediation	Scoping, compliance to requirements, data easy to fetch, expectations aligned	✓
Monitoring	Regular verify due diligence at corporate and unit level, testing of control	✓

● Let's think about few statements

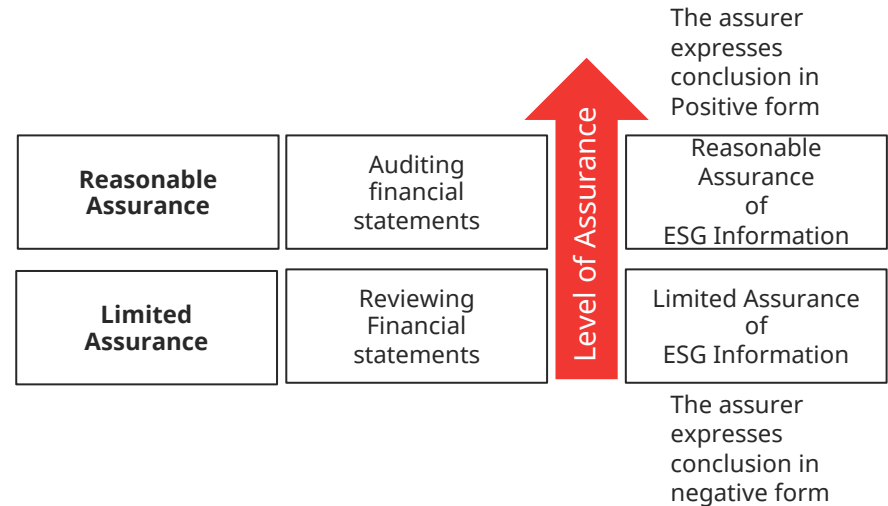


1. My dear, your cooking is good
2. My dear, your cooking is *never not* good

## ● How is BSI doing this?

BSI Audits and Verification undertaken are determined using professional judgment, data insights, experiences and in reality, may be subject to adjustment, based on the results of the activities completed

Assurance can be provided in accordance with the relevant industry, sector, or professional standards through the issuance of an **Independent Assurance Report through limited or reasonable assurance**



# 2024 will look like? Verifiers Outlook

<b>2024</b>	Limited assurance for reported sustainability information.
<b>2026</b>	Reasonable assurance for Reported sustainability information.

The Accounting Directive ([www.eur-lex.europa.eu](http://www.eur-lex.europa.eu))

Heavy scrutiny  
**Scope 3**

Hello  
**Scope 4!**



Human Rights in Supply Chain



Artificial Intelligence



Increase in **Independent Verification!**

# 2024 will look like?

bsi.



## Opinion Statement

### Product Carbon Footprint Verification Opinion Statement

This is to certify that: **Your Company name  
and address here**

Holds Statement No.: PCFV XXXXX-X

As a result of carrying out the verification of product life cycle greenhouse gas emissions, it is the opinion of BSI with reasonable assurance that:

- The product carbon footprint with the declared unit of a kilogram (**Product/Operation**) is XXXX kg of CO<sub>2</sub> equivalent.
- No material misstatements in this product life cycle greenhouse gas emission statement were revealed.
- The product life cycle GHG data quality was verified to be acceptable against the requirements of ISO 14067:2018.

This statement shall be valid for a maximum period of two years after the latest issue date on this certificate. Should there be a change in the life cycle of the product whose GHG emissions are being assessed, the validity of this opinion statement will cease.

*Evelyn Chye*

For and on behalf of BSI:

Evelyn Chye – Managing Director, BSI Malaysia

Original Registration Date: 2024-XX-XX  
Latest Revision Date: 2024-XX-XX

Effective Date: 2024-XX-XX  
Expiry Date: 2025-XX-XX

...making excellence a habit™

The British Standards Institution is independent to the above named client and has no financial interest in the above named client. This Opinion Statement has been prepared for the above named client only for the purpose of providing an opinion regarding its carbon emissions and is not intended to be used for any other purpose. The British Standards Institution will not, in providing this Opinion Statement, accept or assume responsibility (legal or otherwise) or accept liability for or in connection with any other purpose for which it may be used or for any person to whom this Opinion Statement may be used. This Opinion Statement is prepared on the basis of information provided to the British Standards Institution by the above named client. The review does not extend beyond such information and is solely based on it. In preparing such review, the British Standards Institution has assumed that all such information is complete and accurate. Any queries that may arise by virtue of this Opinion Statement or matters relating to it should be addressed to the above named client only. BSI Malaysia is a subsidiary of British Standards Institution.

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## INDEPENDENT ASSURANCE OPINION STATEMENT

|

To the Directors of TH Plantations Bhd

Holds Statement No.: SRA B03024

The British Standards Institution (BSI) has conducted a limited assurance engagement on the sustainability information (described in the "Scope") in the Sustainability Statement of TH Plantations Bhd Annual Report 2023

### Scope

The scope of engagement agreed upon with TH Plantations Bhd includes the following:

The assurance covers the information of the following subject matters in the TH Plantations Bhd Sustainability Statement for 2023.

- Anti-corruption
  - Percentage of who have received training on anti-corruption by employee category.
  - Percentage of operations assessed for corruption related risks.
  - Confirmed incidences of corruption and action taken.
- Diversity
  - Percentage of employees by gender and age group for each employee category.
  - Percentage of directors by gender and age group.
- Data Privacy and Security
  - Number of substantiated complaints concerning breaches of customer privacy and losses of customer data.
- Water Consumption
  - Total volume of water used.

The selected information are reported in accordance with ISAE 3000 (revised)

### Opinion Statement

We have conducted a limited assurance engagement on the sustainability information described in the "Scope" above.

Based on the procedures we have performed and the evidence we have obtained, nothing has come to our attention that causes us to believe that the accompanying Sustainability Information is not prepared, in all material respects, in accordance with ISAE 3000 (Revised).

### Methodology

Our assurance engagements were carried out in accordance with ISAE3000 (Revised). Our work was designed to gather evidence on which to base our conclusion. We undertook the following activities:

- a top-level review of issues raised by external parties that could be relevant to TH Plantations Bhd policies to provide a check on the appropriateness of statements made in the report;
- discussion with managers and staffs on TH Plantations Bhd approach to stakeholder engagement. However, we had no direct contact with external stakeholders.
- interviews with staffs involved in sustainability management, report preparation and provision of report information were carried out.
- document review of relevant systems, policies, and procedures where available.
- review of supporting evidence for claims made in the report.
- visit of the headquarter office to confirm the data collection processes, record management and practices.

### Responsibility

TH Plantations Bhd is responsible for the preparation and fair presentation of the sustainability information and report in accordance with the agreed criteria. BSI is responsible for providing an independent assurance opinion statement to stakeholders giving our professional opinion based on the scope and methodology described.

### Independence, Quality Control and Competence

BSI is independent to TH Plantations Bhd and has no financial interest in the operation of TH Plantations Bhd other than for the assurance of the sustainability statements contained in this report.

This independent assurance opinion statement has been prepared for the stakeholders of TH Plantations Bhd only for the purposes of verifying its statements relating to the Scope above.

This independent assurance opinion statement is prepared on the basis of review by BSI of information presented to it by TH Plantations Bhd. In making this independent assurance opinion statement, BSI has assumed that all information provided to it by TH Plantations Bhd is true, accurate and complete. BSI accepts no liability to any third party who places reliance on this statement.

BSI applies its own management standards and compliance policies for quality control. In accordance with ISO/IEC 17021-1:2015 and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

BSI is a leading global standards and assessment body founded in 1901. The BSI assurance team has extensive experience in conducting verification over environmental, social and governance (ESG), and management systems and processes.

Issue Date: 6 February 2024

For and on behalf of BSI:

*Shafiq Rahman*

Shafiq Rahman, Lead Assurer

*Evelyn Chye*

Evelyn Chye, Managing Director BSI Malaysia

BSI Malaysia (Sdn Bhd), Level 29, The Gardens North Tower, 48A Jalan Duta, Ulu Kuning Road, 50088 Kuala Lumpur, Malaysia

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# ● Who is BSI

---

Leading Global Standards Creation Body

- British, European, ISO, Public, Private

The UK National Standards Body

- The source of British Standards Specialist Focus on Standards Creation, Training and Certification

Global Network

- 84,000 clients in 193 countries worldwide including governments, global brands and SME's

Experienced

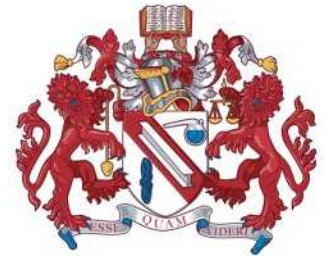
- The world's first National Standards Body established in 1901 and a founding member of ISO

Thought Leaders

- Shaped the world's most adopted standards, incl. ISO 9001, ISO14001, OHSAS 18001

Trusted

- We're a Royal Charter Company, reinvesting profits back into our business to improve our clients' experience

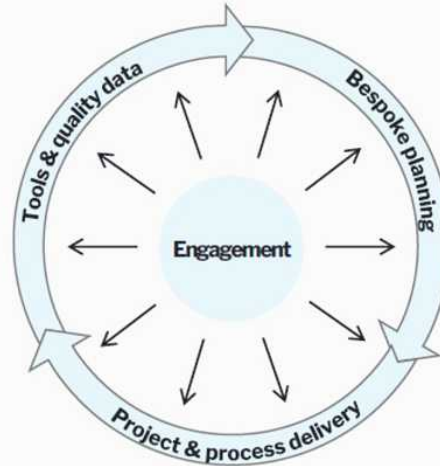


By Royal Charter

## ● Walking the talk...

Adopting standards and BSI's own solutions to achieve our goals is a cornerstone in our approach: thus, the measurement and reporting of our GHG data is being done under the Guidance for Quantification and Reporting of GHG Emissions and Removals (**ISO 14064**). This has provided the added benefit of assuring our internal and external stakeholders that we can meet the highest global standards.

Additionally, we capture richer and more accurate data by providing training workshops and support for our people, so they understand how to report their own GHG-related activities (with invoices, expenses, and travel planning).



### Our decarbonization engine

Our Net Zero Cycle demonstrates the interconnected relationships which drive our progress towards achieving net zero in our operations. Employee engagement sits at the core, supporting development of better tools and data, which then feeds into custom implementation plans, in turn successfully embedding sustainability into BSI's projects and processes.

## ● We at BSI is focusing on the future

---

2030 is only a few short years away. We must act now to accelerate progress towards a safer, sustainable world for coming generations.

At BSI, we are driven by helping organizations and society make progress toward a sustainable world. As a result, we are pulling many levers (strategy, culture, communication, and engagement) to ensure we reach our carbon targets while staying focused on our broader environmental and societal impacts.

We are proud to be your partners, sharing insights from our journey to help you progress yours. We have seen first-hand how laying a foundation that aligns goals, generates quality data, engages employees, instils collective ownership and is consistent across geographies and divisions can shift the sustainability conversation from ambition to action.

We are focused on delivering genuine progress at pace, which we hope will inspire organizations around the world to become sustainability leaders.



**Thank You.**

**Speaker 4**  
**MYT 4:55 - 5:05 pm**



## **Diego Hopkins**

Manager (Climate Change) in  
Corporate Sustainability at Petroliam  
Nasional Berhad (PETRONAS)



# Net Zero Transition in Malaysia: Implications for the Energy sector

Presentation to BCSD Malaysia  
13.03.24

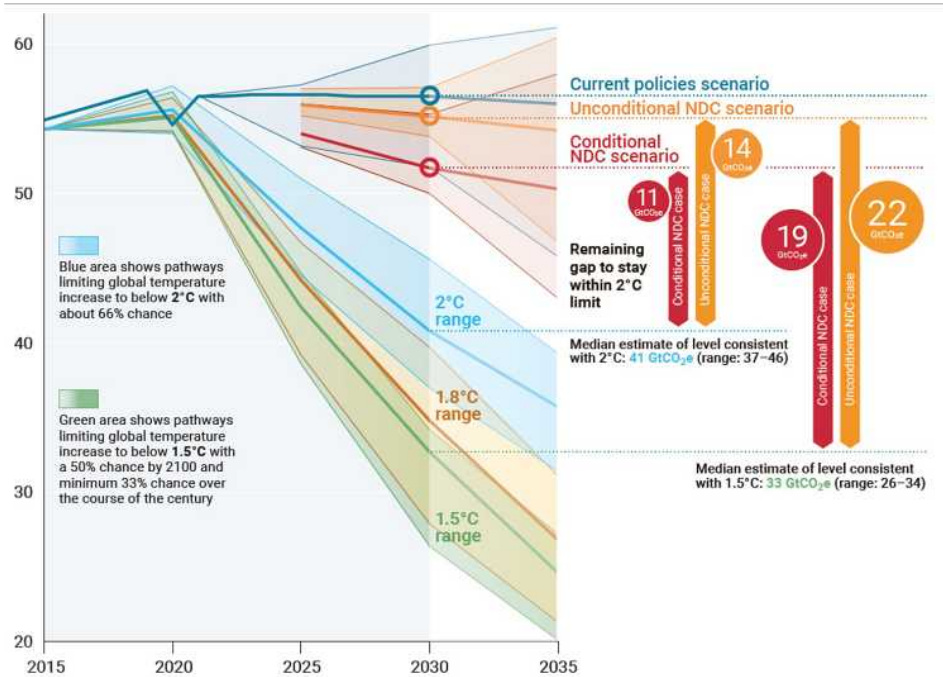
The PETRONAS Group adopts zero tolerance against all forms of bribery and corruption. We abide by the PETRONAS Code of Conduct and Business Ethics (CoBE) & Anti-Bribery and Corruption (ABC) Manual, guided by our Shared Values and Statement of Purpose.

© 2024 Petroliaam Nasional Berhad (PETRONAS)

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# Under a Current Policies scenario, the peak warming throughout the 21st century would be 3.5 °C. Improvement on policies and NDCs is needed

GHG emissions under different scenarios and the emissions gap in 2030 and 2035



- The resulting median estimate of global GHG emissions in 2030 and 2035 under current policies is 56 gigatons of carbon dioxide equivalent (GtCO<sub>2e</sub>) and 57 GtCO<sub>2e</sub>, respectively.
- For 2030, full implementation of the latest unconditional NDCs is estimated to result in an 1.5°C emissions gap of 22 GtCO<sub>2e</sub>. If conditional NDCs are also fully implemented, the 1.5°C emissions gap reduces to 19 GtCO<sub>2e</sub>.
- The emissions gap for 2°C is about 14 GtCO<sub>2e</sub>, assuming full implementation of unconditional NDCs. If conditional NDCs are also fully implemented, the 2°C emissions gap reduces to 11 GtCO<sub>2e</sub> for 2030.
- Continuation of current policies is projected to result in global GHG emissions of 56 GtCO<sub>2e</sub> in 2035, which is 36 per cent and 55 per cent higher than levels consistent with 2°C and 1.5°C pathways, respectively.

## Peak warming throughout the 21<sup>st</sup> century

Scenario	66% chance	90% chance
Current policies continuing	3.0°C (range: 1.9–3.8)	3.5°C (range: 2.3–4.5)
Unconditional NDCs continuing	2.9°C (range: 2.0–3.7)	3.4°C (range: 2.3–4.4)
Conditional NDCs continuing	2.5°C (range: 1.9–3.6)	3.0°C (range: 2.2–4.2)
Unconditional NDCs and net-zero pledges using strict criteria	2.7°C (range: 1.9–3.5)	3.2°C (range: 2.3–4.1)
Conditional NDCs and all net-zero pledges (most optimistic case)	2.0°C (range: 1.8–2.5)	2.4°C (range: 2.0–3.0)



# COP28 received polarised criticism and reactions from various groups and concluded with mixed views on the final negotiated text

## Critique during COP28

### UAE COP28 Presidency

- Dr. Sultan Ahmed Al-Jaber, the President-Designate for COP28 was confronted with demands to phase out of fossil fuels.

### Cop28 president forced into defence of fossil fuel phase-out claims

Sultan Al Jaber, who is state oil CEO, had said phase-out of fossil fuels would take world 'back into caves'

- Also accused of leveraging the conference to strike fossil fuel deals for Abu Dhabi National Oil Company (ADNOC).



## Atmosphere at the negotiation zone

### UN Secretary-General, António Guterres' opening remarks



- the 1.5-degree limit is only possible if fossil fuels are phased out with a clear timeframe
- stop oil and gas expansion, and funding and licensing for new coal, oil and gas
- fossil fuel companies must detail transition plans across the entire value chain

### Intense negotiations on including fossil fuel language in the agreement:

- revolved around Phase-out of abated vs unabated fossil fuels
- developing countries arguing for a move away from fossil fuels that is “fair, funded, and fast”, with rich countries transitioning first.

- COP28 presidency convened a Majlis-styled council. Dr. Sultan urging ministers to speak “heart to heart”.
- COP28 concluded in the “UAE Consensus”



## Inclusive COP28

- 100,000+ attendees
- seen as “historic’ for referencing fossil fuels in the agreement
- others regarding it inadequate as there is no explicit commitment to a fossil fuels phase-out
- the first to hold a consultation on the agenda, resulting in new themes of health, relief, recovery and just transition



*Demonstrations against fossil fuels taking place during COP28*





# Formal negotiations concluded with the UAE Consensus leading to potential implications for the energy sector

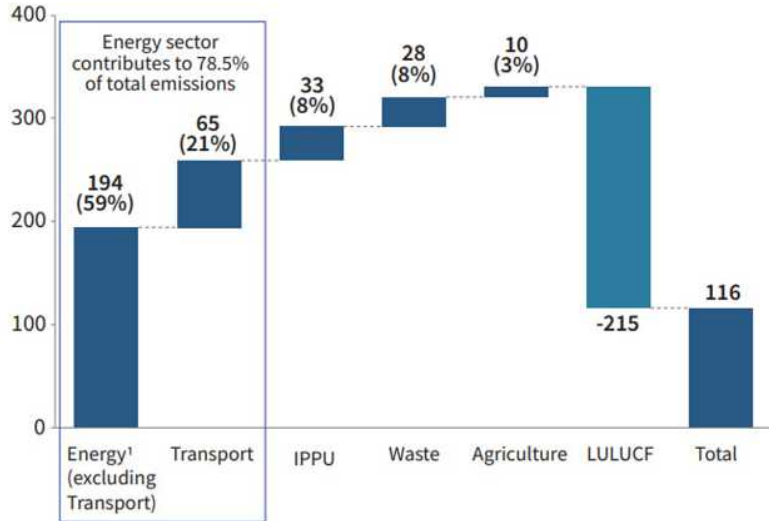
## Key Takeaways & Outcomes

Fossil Fuel	<ol style="list-style-type: none"><li>1. Transitioning away from fossil fuels</li><li>2. Phasing out inefficient fossil fuels subsidies</li><li>3. Role of transitional fuels in energy transition</li></ol>
Renewable & Decarbonization	<ol style="list-style-type: none"><li>4. Coal phase out</li><li>5. Tripling renewable energy capacity and doubling the global energy efficiency improvements by 2030</li><li>6. Accelerating zero- and low-emission technologies, including CCS</li></ol>
Partnership	<ol style="list-style-type: none"><li>7. Private sector involvement</li></ol>
Loss & Damage and Adaptation	<ol style="list-style-type: none"><li>9. The formation of the Global Goal on Adaptation (GGA) framework. The urgent need to scale up adaptation finance</li></ol>
National Agenda	<ol style="list-style-type: none"><li>10. Revision of Malaysia's economy-wide NDCs</li></ol>



# Malaysia has established goals to reduce its GHG emissions and move towards a more sustainable economic landscape

Malaysia's GHG inventory, MtCO<sub>2</sub>eq (2019)



The energy sector has been the main contributor to Malaysia's development and growth. Nonetheless, emissions have increased as well.

Urgent action is needed to transition towards a low carbon economy. Malaysia's main goal is to meet its NDC climate commitment to cut 45% carbon intensity against GDP by 2030 compared to the 2005 baseline.



## Malaysia's updated Nationally Determined Contribution

Malaysia intends to reduce its economy-wide carbon intensity against GDP of 45% in 2030 compared to 2005 level. The updated NDC includes the increased ambition to achieve the 45% of carbon intensity reduction, which is unconditional, and represents an increase of 10% from the earlier submission.

## PETRONAS role in Malaysia's catalyst projects

	<b>Future Fuel</b>	<b>Biofuels Hub</b> A bio-refinery will be developed in Pengerang, Johor, to serve as a catalyst for creating hubs to produce a range of bio-based products, including SAF, hydrotreated vegetable oil (HVO), advanced sustainable fuel (ASF) and biochemicals.
	<b>CCS for Industry</b>	<b>Regulatory Framework</b> Development of policy and regulatory framework to facilitate the implementation of CCUS projects, including transboundary carbon movement.
		<b>Kasawari and Lang Lebah CCS</b> Implementation of CCS catalyst projects for Kasawari and Lang Lebah high-CO <sub>2</sub> gas fields in collaboration with the Sarawak Government, which are expected to be in operation by 2026 and 2028 respectively. CCS technology will be used to capture CO <sub>2</sub> from the gas production field and store it in the depleted fields.

# Our targets drive our performance to achieve net zero carbon emissions by 2050

 PETRONAS' greenhouse gas emissions reduction targets (Scope 1 and Scope 2)

2024 & 2025

49.5 

MtCO<sub>2</sub>e

Cap emissions at 49.5 million tonnes of carbon dioxide equivalent (MtCO<sub>2</sub>e) from PETRONAS' Malaysia operations by 2024

50% 

reduction

in methane emissions from PETRONAS Groupwide natural gas value chain\*\* operations by 2025

2030

25% 

reduction

in PETRONAS Groupwide emissions, including:

70% 

reduction

in methane emissions from PETRONAS Groupwide natural gas value chain\*\*

50% 





reduction

in methane emissions from Malaysia's natural gas value chain\*\*

2050

**NET ZERO**   
2050 

Net zero carbon emissions

-  GHG emissions\*
-  Methane emissions (included in GHG emissions target)
-  Operational control approach
-  Equity share approach



PETRONAS aims to allocate 20% of total capital expenditure to scale up decarbonisation and renewables from 2022 to 2026

\* GHG emissions inclusive of carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O) measured in carbon dioxide equivalent (CO<sub>2</sub>e)

\*\* Natural gas value chain definition is aligned with Oil and Gas Climate Initiative's (OGCI) reporting parameters, which includes production processing and storage, transportation, distribution and end-use of natural gas

Year 2019 is the reference year for Scope 1 and Scope 2 emissions reduction

PETRONAS recognises the importance of Scope 3 emissions and is taking a progressive approach to measure, report and understand our impact prior to establishing our position and strategy

# PETRONAS is creating value through low carbon energy solutions with clearly defined ambitions for 2030

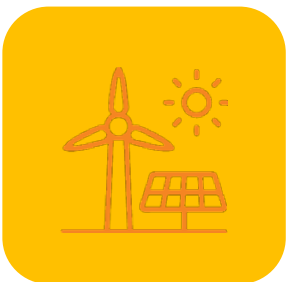


**Gentari Sdn Bhd is PETRONAS' dedicated business for delivering integrated sustainable energy solutions, including renewable energy, hydrogen and green mobility**

[PETRONAS Integrated Report 2022](#)



## Gentari's 2030 ambitions



Leading next generation utility-scale **renewable energy** developer

**30 – 40 GW**



Large-scale **hydrogen** producer and go-to industry partner

**Up to 1,200,000** tonnes per annum of hydrogen



Preferred **green mobility** solutions provider

**10% market share** (circa 25,000 charging points) across key markets in Asia Pacific

# Climate and nature considerations are intertwined and need to be addressed in parallel



## On-going environmental conservations efforts in Malaysia



Rainforest conservation at Imbak Canyon, Sabah



Mangrove rehabilitation and the establishment of the EcoCare Centre in Kertih, Terengganu



Walk4Trees challenge at 14 sites across 11 states in Malaysia



Marine biodiversity restoration in Biodiversity, Environment and Conservation (BEACON) in Bintulu, Sarawak

In support of our net zero carbon emissions by 2050 pathway, PETRONAS strives to demonstrate visible leadership on nature and biodiversity protection and preservation in Malaysia and in countries where we operate

### Our five key areas of actions on nature and biodiversity

- 1 Establish voluntary exclusion zones
- 2 Manage nature and biodiversity risks
- 3 Promote nature and biodiversity through partnerships and collaborations
- 4 Support public policy that aims to protect nature and biodiversity
- 5 Promote high-quality nature-based climate solutions





**PETRONAS**

**50**  
**YEARS**

**Speaker 4**  
**MYT 5:05 - 5:15 pm**

**MIGHT**  
*Malaysian Industry-Government Group  
for High Technology*



## **TS. Mohamad Azreen Firdaus**

Principal Analyst, Malaysian  
Industry-Government Group for  
High Technology (MIGHT)

# **Foresight Studies for RDCI Ecosystem in Supporting Decarbonisation**

**BCSD Malaysia & WBCSD  
Corporate Climate Mitigation  
Strategies: Decarbonisation Discourse  
& CDR Workshop Series**





A partnership technology think tank established in 1993 to undertake foresight & future studies.  
 A government agency **at present** under the purview of the Ministry of Science, Technology & Innovation



# THE MANDATE



Nurture & Invest to Build Technology Capabilities



Platform for Technology & Industry Clusters



Strategic Advice to Government and Industry



Foresight & Future Studies



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**Understanding**  
Current & Future Needs

Anticipating  
**Changes & Disruptions**

Deploying  
**Various**  
Methodologies

**Mobilizing**  
Actions

Managing  
**Uncertainties**

Identifying  
**Drivers of Change &  
Champions**

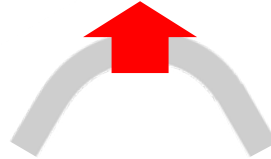


# FORESIGHT APPROACH

# THE FUTURE TRIANGLE

## PULL OF THE FUTURE

The pull of the future is not only about what is possible, but also about what is preferable. It reflects our values, aspirations, and hopes for the future. The pull of the future can help us envision and design a future that aligns with our purpose and goals



Where are we heading  
towards the future?

## WEIGHT OF THE PAST

The weight of the past refers to the patterns and choices we made in our past, the history and legacy of the issue or topic we are investigating, the values and assets we want to preserve or protect, and the barriers and constraints that hold us back from changing.



## PUSH OF THE PRESENT

The push of the present refers to the trends and drivers of change in the present, such as demographics, technology, globalization, etc. that force us to adapt and respond to different challenges and opportunities



Source: Future Triangle, Sohail Inayatullah

# PULL OF THE FUTURE

## RDCI DRIVING THE NATIONAL ASPIRATIONS

### POLICY ASPIRATION AND DIRECTION

#### Vision:

“A sustainable, inclusive & scientifically enriched society towards high-tech nation”

#### Mission:

Driving inclusive & sustainable development through the development and application of progressive STIE.

#### Thrust 2:

Technology Development through R&D&C&I.

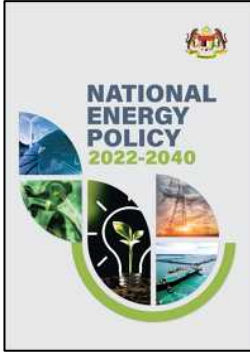
#### Strategies:

- A. Determining national research priority areas.
- B. Enhancing R&D for high value output, high impact outcomes & new innovations.
- C. Improving R&D fund management & alternative fund resources.
- D. Encouraging open data sharing.
- E. Encouraging collaboration in addressing national challenges.
- F. Driving social innovation for the benefit of the marginalised and underprivileged groups.



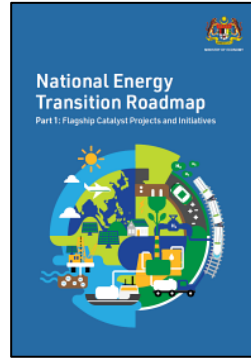
# PULL OF THE FUTURE

## RDCI DRIVING THE NATIONAL ASPIRATIONS



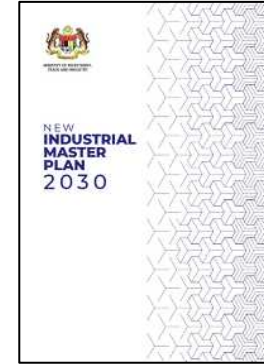
**National Energy Policy**  
published by Ministry of  
Economy

Outlined the action plans to unlock the opportunities for long-term competitive advantage in the emerging energy industry towards net zero.



**National Energy Transition Roadmap**  
published by Ministry of  
Economy (MOE)

Outlined the role of few energy pillars as in the Energy Transition Levers and Flagship for Catalyst Projects towards decarbonization.



**New Industrial Master Plan**  
published by Ministry  
of International Trade and  
Industry (MITI)

Outlined the strategy to foster the RDCI ecosystem & hydrogen economy agenda is incorporated for the transition to renewable and clean energy.

# PUSH OF THE PRESENT

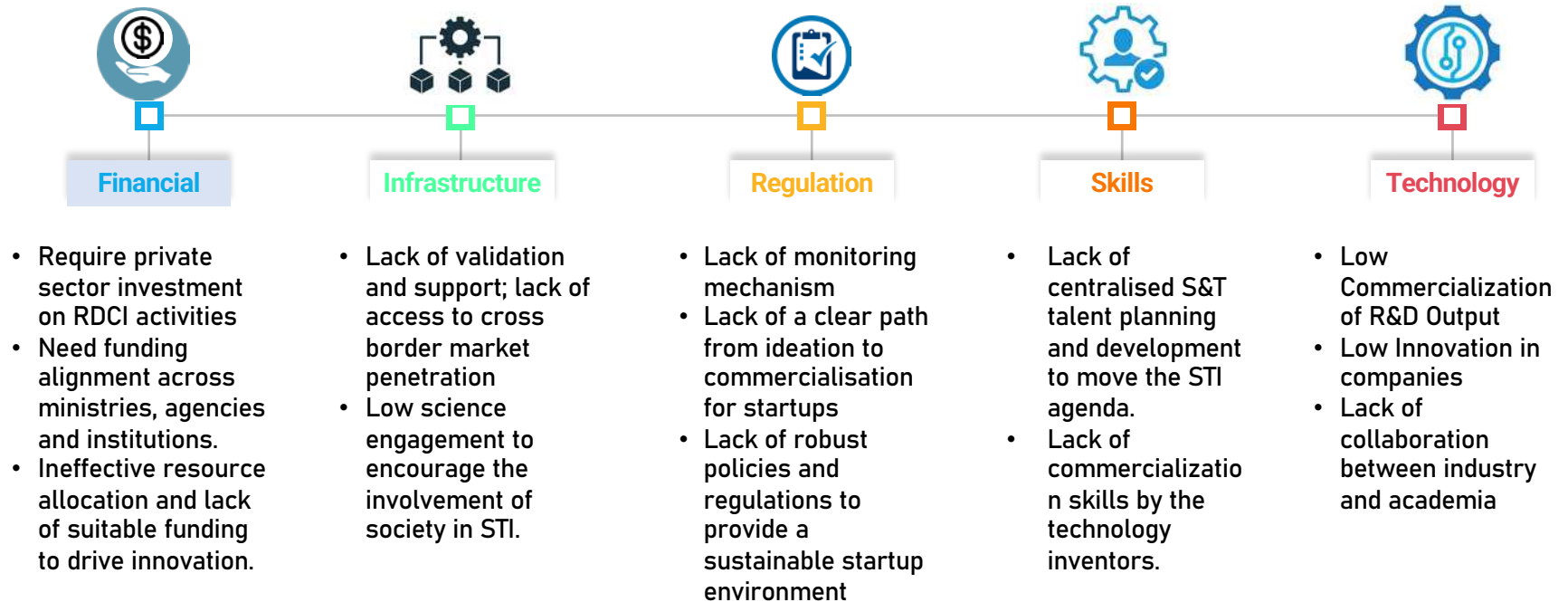
## MAJOR TRENDS DRIVING THE DECARBONIZATION



# WEIGHT OF THE PAST

## ISSUES AND CHALLENGES RDCI ECO-SYSTEM

Current STI related policies are in place to address issues and challenges faced by the RDCI eco-system



Source: National Science, Technology & Innovation Policy (2021-2030), Malaysia Startup Ecosystem Roadmap 2030

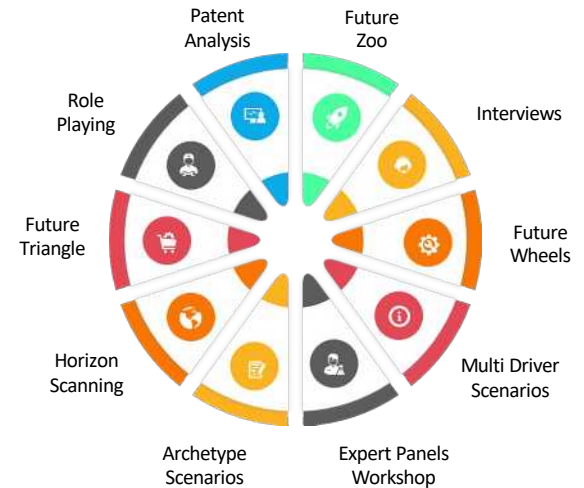
# TECHNOLOGY FORESIGHT

MIGHT foresight initiatives on technology is driven by identifying opportunities to either create new industries, strengthen existing industry or solving the issue of the industry within Malaysia.

This has resulted in the “make some, buy some” strategy, through the identification of key industrial technologies, emerging & converging technologies, national issues related technology, global issues related technology as well government led technologies.

**myForesight**<sup>®</sup> Malaysian Foresight Institute

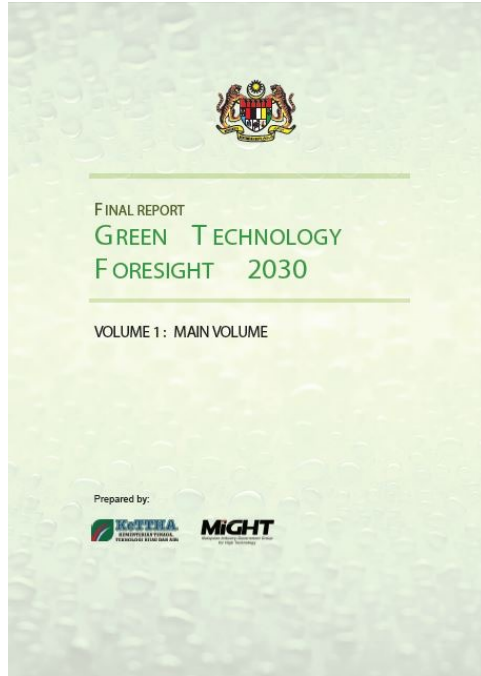
Malaysian Foresight Institute (myForesight) play the roles to harness its knowledge on foresight methodologies and its networks to enhance future planning in the country through its initiatives by aligning with the two (2) main strategic thrusts



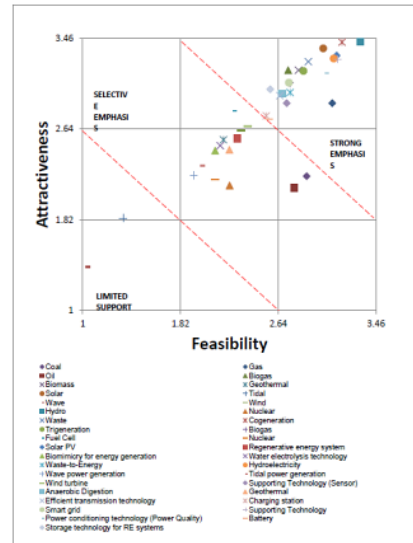


# GREEN TECHNOLOGY FORESIGHT

## ENERGY SECTOR



The identification of green technologies application based on future plausible scenarios in 9 sectors towards conserving the natural environment and resources, minimise and reduces the negative impact of human activities.



### Unexpected Future Development

- Drastic reduction in energy demand per capita has been achieved through “super EE technologies” and energy conservation practices.
- Minimal dependency on traditional fuel sources through disruptive technology
- The energy scenario has transitioned to a hydrogen economy.
- Hydrogen charging stations are widely available with efficient hydrogen producing systems at low cost.

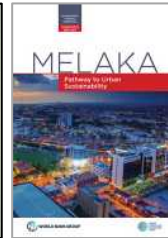
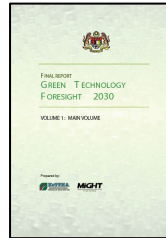
# OUR INITIATIVES IN DECARBONISATION

At MIGHT, we advocate the sustainable agenda based on F.I.R.S.T for the industry and government by executing multi-level interventions from global, federal and state level geared via policy input, strategic programmes, catalytic projects and nurturing the industries through our investment arm.

Focus on key thematic areas such as climate change, advanced material for high tech & green products, energy transition, clean technology application, net zero, decarbonisation, environmental social and governance (ESG), and smart & sustainable cities.



## SUSTAINABLE PROGRAMS WITH THE INTERNATIONAL PARTNERS



STRATEGIC STUDIES AT FEDERAL AND STATE LEVEL





LET'S HAVE A CONVERSATION

#letscollaborate for #betterfutures

# Q&A Session

Moderated By:



**Emily Oi**

Director of BCSD Malaysia  
Berhad



**Wan Muqtadir**

Head of Sustainability  
(Operations – Assurance) at  
BSI Malaysia



**Diego Hopkins**

Manager (Climate Change) in  
Corporate Sustainability at  
Petroleum Nasional Berhad  
(PETRONAS)



**Ts. Mohamad Azreen Firdaus  
Bin Abd Aziz**

Principal Analyst at Malaysian  
Industry Government Group  
for High Technology (MIGHT)  
(Sustainable Development  
Technologies Division)





**BUSINESS COUNCIL FOR SUSTAINABLE  
DEVELOPMENT MALAYSIA**

**Thank you for  
joining us!**

For further inquiries or comments, please contact  
[roberto.bernetello@bcds.my](mailto:roberto.bernetello@bcds.my) / [info@bcds.my](mailto:info@bcds.my)

[WWW.BCSD.MY](http://WWW.BCSD.MY)



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