The Strategic Role of Renewable Energy Certificates (RECs) in Corporate Initiatives

Reik Ong's Profile

- Over a decade of extensive experience in the Renewable Energy sector across Southeast Asia.
- Leads a prominent Environmental Attribute Commodities trading organization, specializing in RECs and Carbon Credits.
- Provides strategic sustainability consultancy, guiding organizations toward achieving 100% Renewable Energy and carbon neutrality through offset instruments.
- Saxon Renewables is a leading supplier of RECs, offering a diverse range of technologies such as Solar, Wind, Hydro, Biogas/Biomass, and Geothermal from Southeast Asian countries, including Malaysia, Singapore, Thailand, Indonesia, the Philippines, and Vietnam.
- Currently, Saxon Renewables is one of the largest consultancy and supplier of RECs in Malaysia, delivering over a million RECs and Carbon Credits to large corporations and MNCs in Southeast Asia, aiding them in meeting their sustainability objectives.
- Saxon Renewables also develops and invests in Carbon Projects to generate Carbon Credits.

SAXON RENEWABLES

Saxon Renewables, headquartered in Singapore, having offices in Petaling Jaya, Malaysia, and Ho Chi Minh, Vietnam, is at the forefront of transforming business sustainability across Southeast Asia.

Our mission is to **accelerate the transition to a sustainable future**, **reducing carbon emissions and mitigating the impacts of climate change**.

We are dedicated to providing sustainable solutions for organizations striving to reduce their carbon footprint and greenhouse gas emissions.

1.1 Key Drivers of Sustainability

1.2 Understanding Scope 1, 2 & 3

1.3 Carbon Management

1.4 RE Initiatives

1.1 – Key Drivers of Sustainability

Rising environmental worries and urgent climate action are driving a greater need for green energy. Unlike before, where sustainability was seen as optional, today's businesses face immense pressure from various sources.

01

Regulatory Pressure

- Emissions Trading System
- Carbon Pricing Mechanism
- Disclosure & Reporting Requirement

02

Social Pressure

- Consumer Awareness & Boycotts
- Media & Public Opinion
- Community Expectation

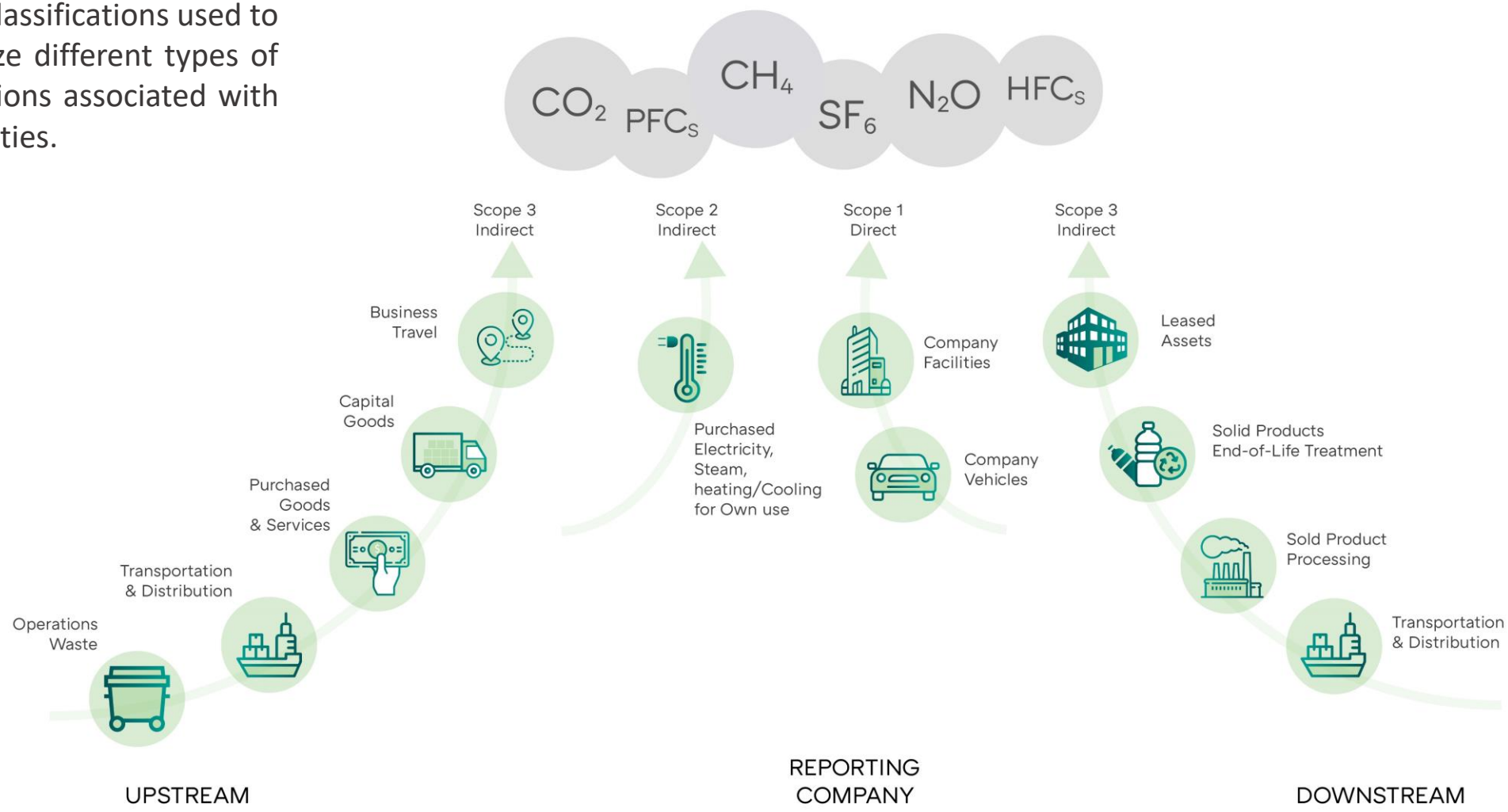
03

Market Pressure

- Client Demands
- Supply Chain Expectations
- Credit Rating Agencies
- Shareholder Pressure

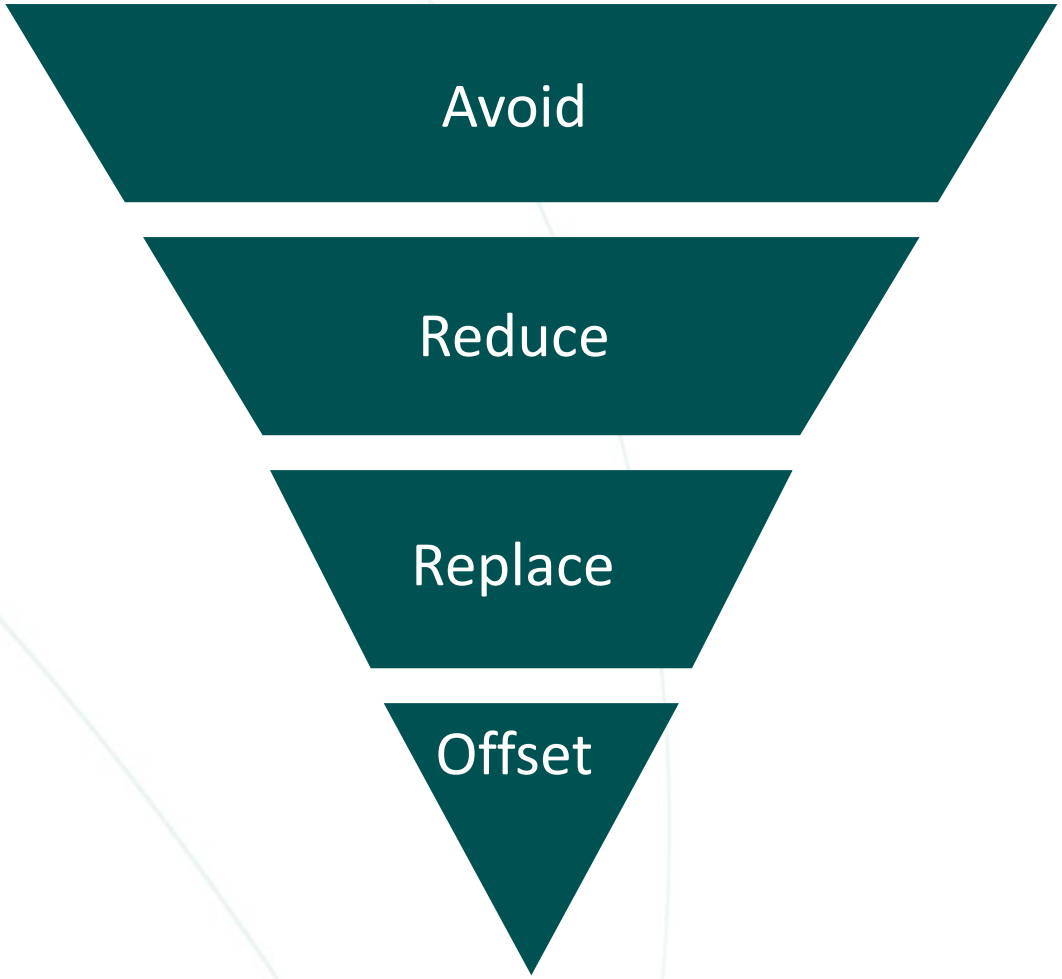
1.2 – Understanding Scope 1,2 & 3

Scope 1, 2, and 3 are classifications used to measure and categorize different types of greenhouse gas emissions associated with an organization's activities.



1.3 – Carbon Management

Most favored option



Least favored option

Cut carbon at the source; eliminate emission-intensive practices.

Enhance operational processes and equipment to boost efficiency.

Substituting high-carbon or environmentally harmful technologies and materials with greener alternatives

Neutralize emissions by investing in projects that reduce or capture greenhouse gases.

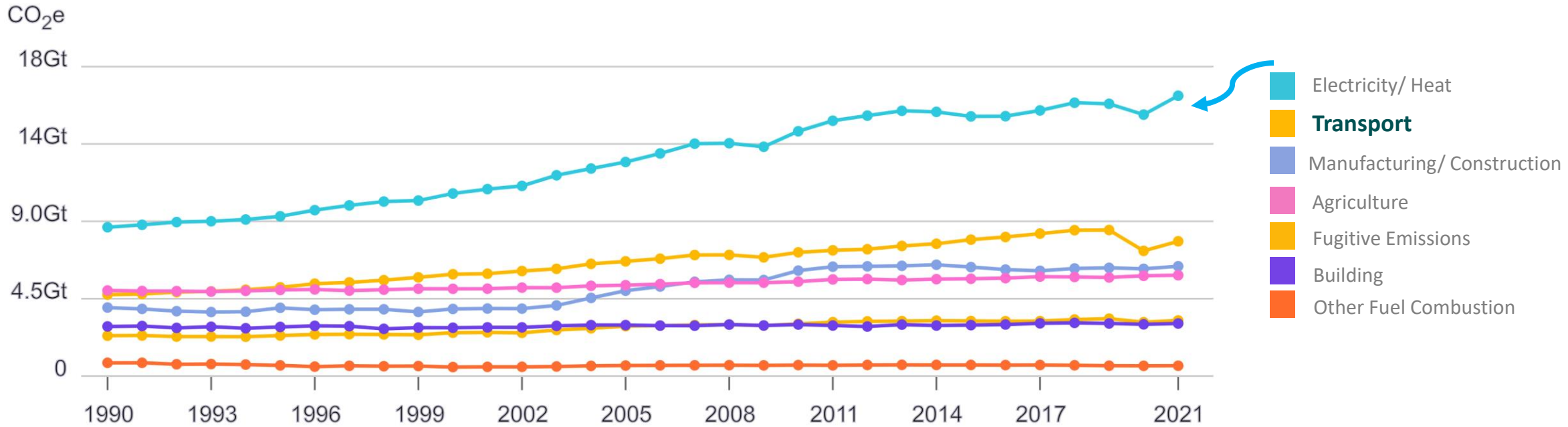
Rising Electricity Carbon Emission

Global GHG Emissions by Industry: Highest Contributing Sectors (1990-2021)

Historical GHG emissions

CLIMATEWATCH

Data source: Climate Watch; Location: World; Sectors/Subsectors: Agriculture, Building, Electricity/Heat, Fugitive Emissions, Manufacturing/Construction, Other Fuel Combustion, Transportation; Gases: All GHG; Calculation: Total; Show data by Sectors.



https://www.climatewatchdata.org/ghg-emissions

1.4 – RE Initiatives (RE100)

Renewable Energy 100 (RE100) is a global corporate renewable energy initiative led by the Climate Group in partnership with CDP aimed at getting the world's most influential businesses, to commit to 100% renewable electricity and reach this target by 2050.

The company must have a renewable electricity strategy that includes credible deadlines for achieving 100% RE.

- 60% by 2030
- 90% by 2040
- 100% by 2050

400+
members

175
markets

440
TWh/yr

1.4 – RE100

Here are some examples of companies that have made commitments through RE100:

•Apple Inc.: Apple has committed to using 100% renewable energy across all its operations worldwide by 2030.

•Google: Google, a subsidiary of Alphabet Inc., announced that it reached 100% renewable energy for its global operations in 2017.

•Microsoft: Microsoft has pledged to power its data centres and offices with 100% renewable energy by 2025.

•Facebook: Facebook aims to support its global operations with 100% renewable energy, and it already achieved this goal in 2020.

•Unilever: Unilever has committed to using 100% renewable energy in its operations by 2030. The company is actively transitioning to clean energy sources to reduce its carbon emissions.

1.4 – RE Initiatives (SBTi)

The Science Based Targets initiative (SBTi) is a global body enabling businesses to set ambitious emissions reductions targets in line with the latest climate science. The SBTi's goal is to accelerate companies across the world to support the global economy to halve emissions before 2030 and achieve net-zero before 2050.

The company must have a renewable electricity strategy that includes credible deadlines for achieving RE.

- 80% by 2025
- 100% by 2030

SCIENCE BASED TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

9,436 companies and financial institutions that have set science-based targets, or have committed to developing targets.

31Oct2024
https://sciencebasedtargets.org/companies-taking-action

Environmental Attribute Commodities

2.1 EAC (RECs & Carbon Credits)

2.2 Renewables Energy Certificates (RECs)

2.3 Carbon Credits

2.4 Corporate Examples

2.1

Environmental Attribute Commodities

Environmental attribute commodities are units that quantify the environmental benefits of sustainable actions, such as generating renewable energy. These units can be traded, encouraging businesses to adopt eco-friendly practices.

Renewable Energy Certificates (RECs)

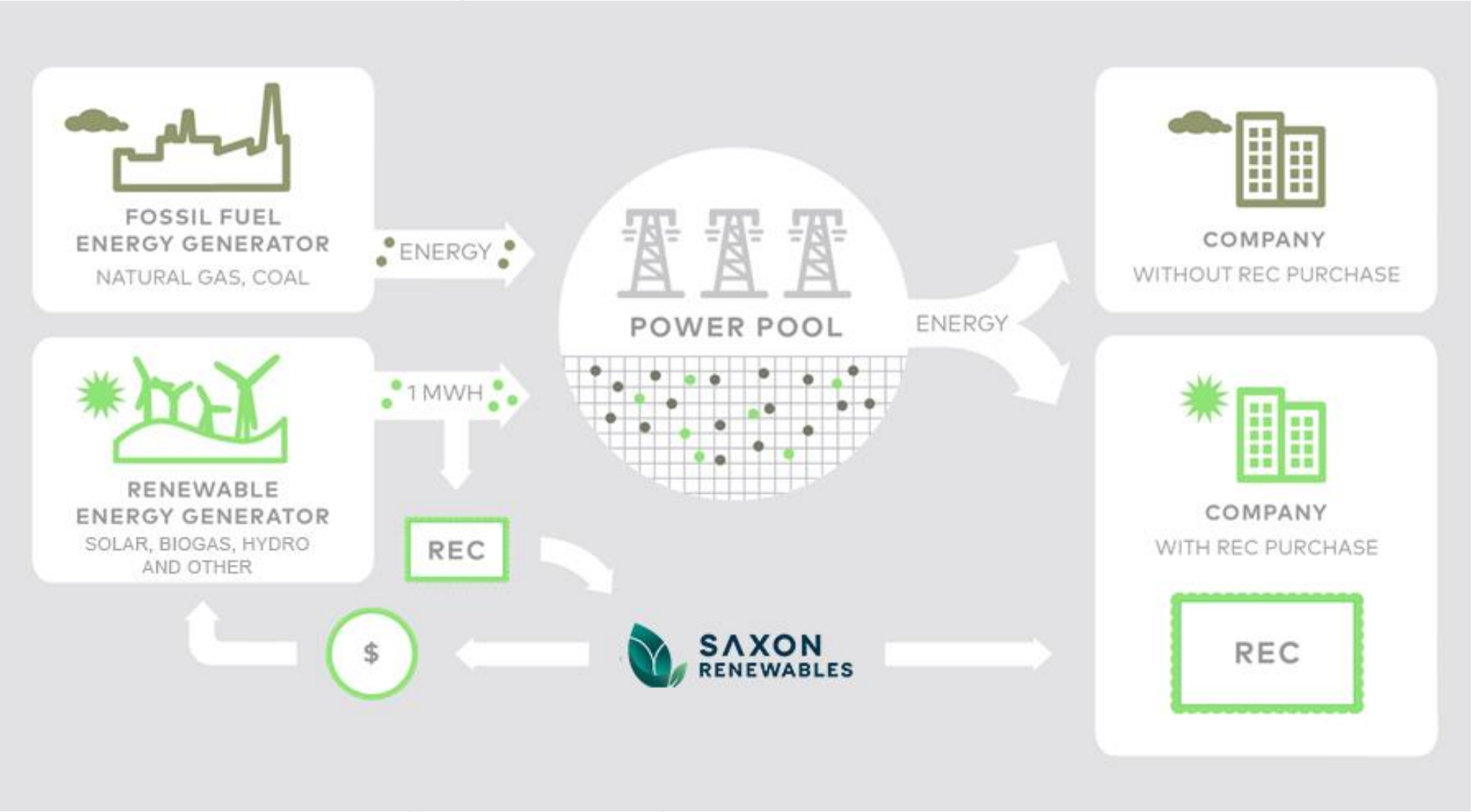
- Represent the environmental attribute of renewable energy generation and are used to track and verify the production and use of **renewable energy**.
- **Each REC certifies that 1MWh** of electricity was generated from a renewable energy source and can be bought and sold independently of the electricity itself.

Carbon Credits

- Knowns as carbon offsets, are units representing the reduction, avoidance
- Removal of **1 ton of carbon dioxide (CO2) = 1 carbon credit** or its equivalent in other greenhouse gases.
- Generated through projects that avoid or remove emissions, such as reforestation or methane capture.

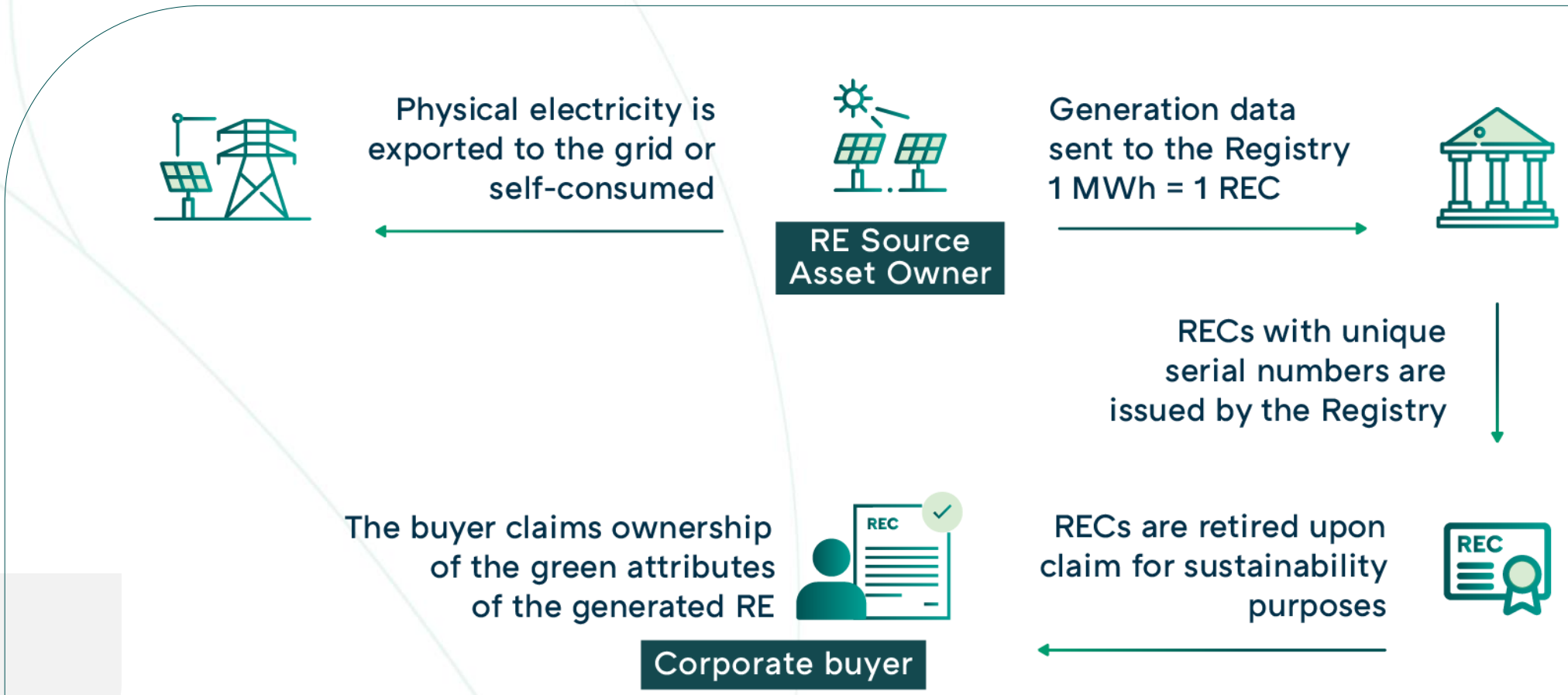
2.2 – Renewable Energy Certificates (RECs)

How RECs Work?



2.2 – Renewable Energy Certificates (RECs)

How RECs Work?



2.2 – Renewable Energy Certificates (RECs)

Renewable Energy (RE) Asset Owner

RECs are **tradeable certificates** or proof that energy has been generated from renewable sources such as solar, wind or hydro power.

RE owners can **generate additional income** by selling RECs to users, in addition to the savings or income generated from renewable energy.

Corporate Buyer

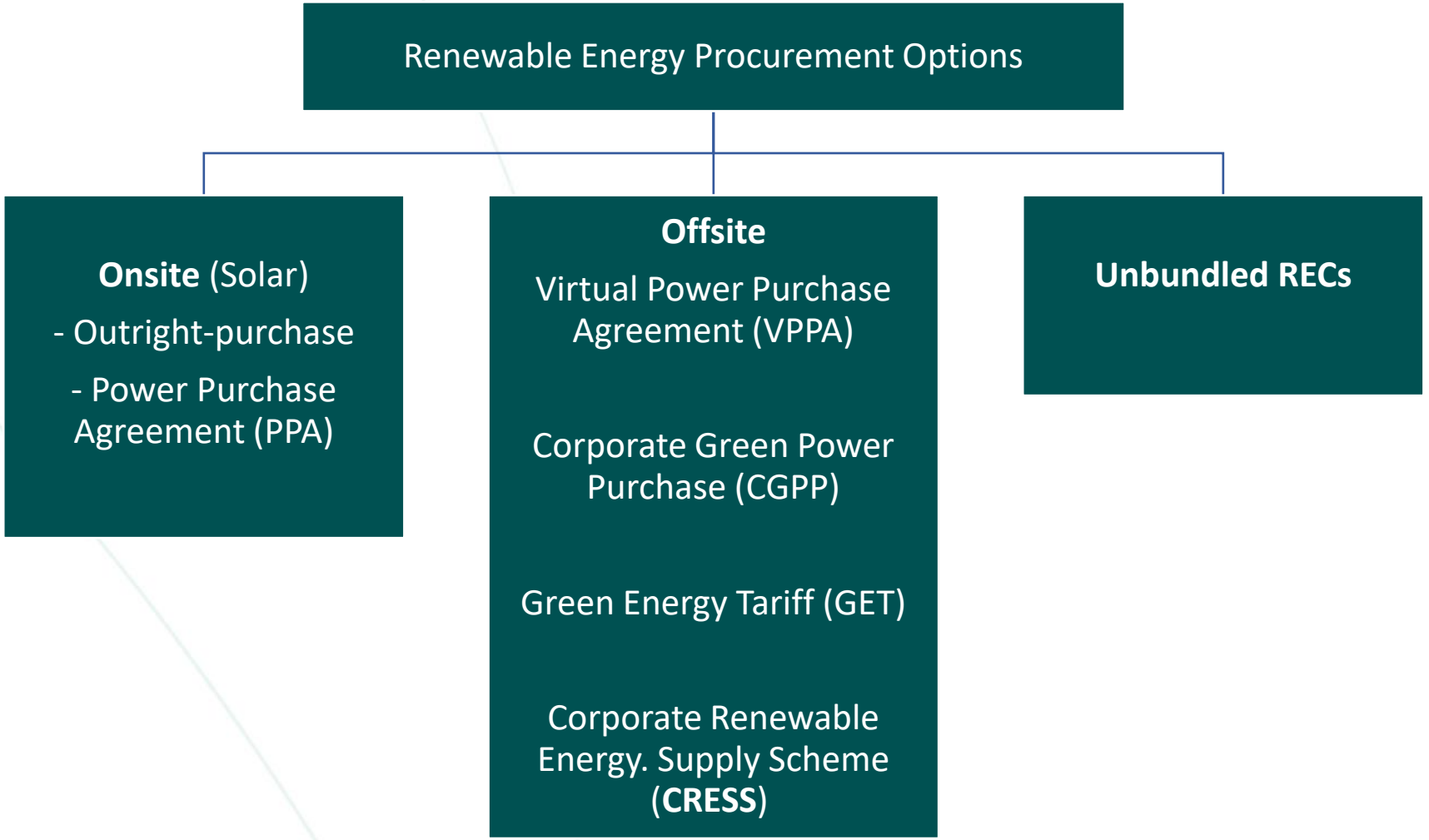
Corporate purchase of RECs enables companies to **offset their carbon emissions** by supporting renewable energy projects.

Buying RECs showcases a **commitment to environmental responsibility**, enhancing a company's reputation and attracting environmentally conscious customers, investors, and partners.

2.2 – RE Procurement Options

Exploring Renewable Energy Procurement Options in Malaysia

When it comes to acquiring renewable energy, different approaches are available, depending on the options provided by each country. In Malaysia, there are several approaches.



2.2 – TNB MGAT – Green Energy Tariff (GET)

- When participating in the GET program, TNB consumers pay GET Block subscription prices on top of the normal tariff for their monthly electricity consumption, then TNB will get the RECs redeemed to customers right after the end of calendar year within 30days working day.

- Sources of RE : Solar Large Scale Solar plants, and Hydro plants owned by TNB.

- I-REC.

- GET price : RM0.20/kWh, able to offset ICPT : RM0.17/kWh, net price : RM0.03/kWh or RM30/REC or approximately USD6.85/REC.

Green
Electricity Tariff

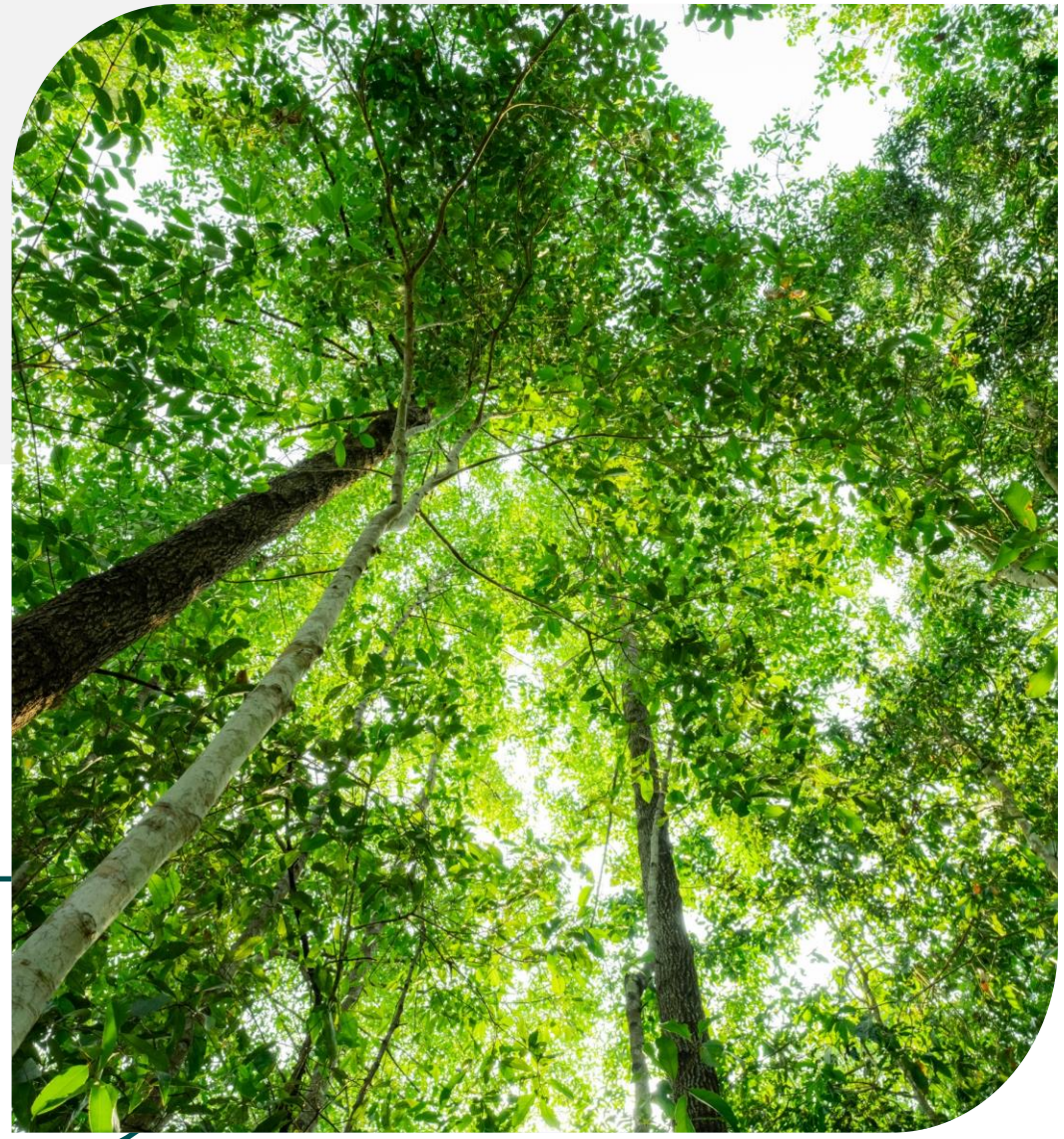
Example - unbundled and bundled RECs in Malaysia

SAXON RENEWABLES ACCELERATING A SUSTAINABLE FUTURE	Green Electricity Tariff
UNBUNDLED	BUNDLED
Flexible delivery date	Delivery within 30 working days after conclusion of each calender year
Payment upon delivery	Upfront payment
Single Trade Contract	Yearly Contract
I-REC / TIGR	I-REC
Solar, Large Hydro, Small Hydro, Biomass, Biogass (Specific)	Solar, Large Hydro (Random)
Local assets owner	TNB only

2.3 – Carbon Credits

Businesses aiming to achieve carbon neutrality can neutralize their carbon footprint using the equivalent volume of carbon offset credits.

Through our broad network of suppliers and corporate buyers worldwide we can provide liquidity for high-quality carbon credits from Renewable Energy to Nature-Based Solutions and Household projects, all verified by the most robust standards (VCS, GS, CDM, ACR, CAR)



Do you know?

Are you aware that many of the carbon projects are contributing positively towards the sustainable development of underprivileged regions worldwide?

2.3 – Carbon Credits

Carbon offset projects

Renewable Energy
Biomass, geothermal, hydro (e.g run of river hydro-electricity), solar*, wind

Energy Efficiency
Waste heat recovery, process efficiencies, insulation / weatherization of buildings

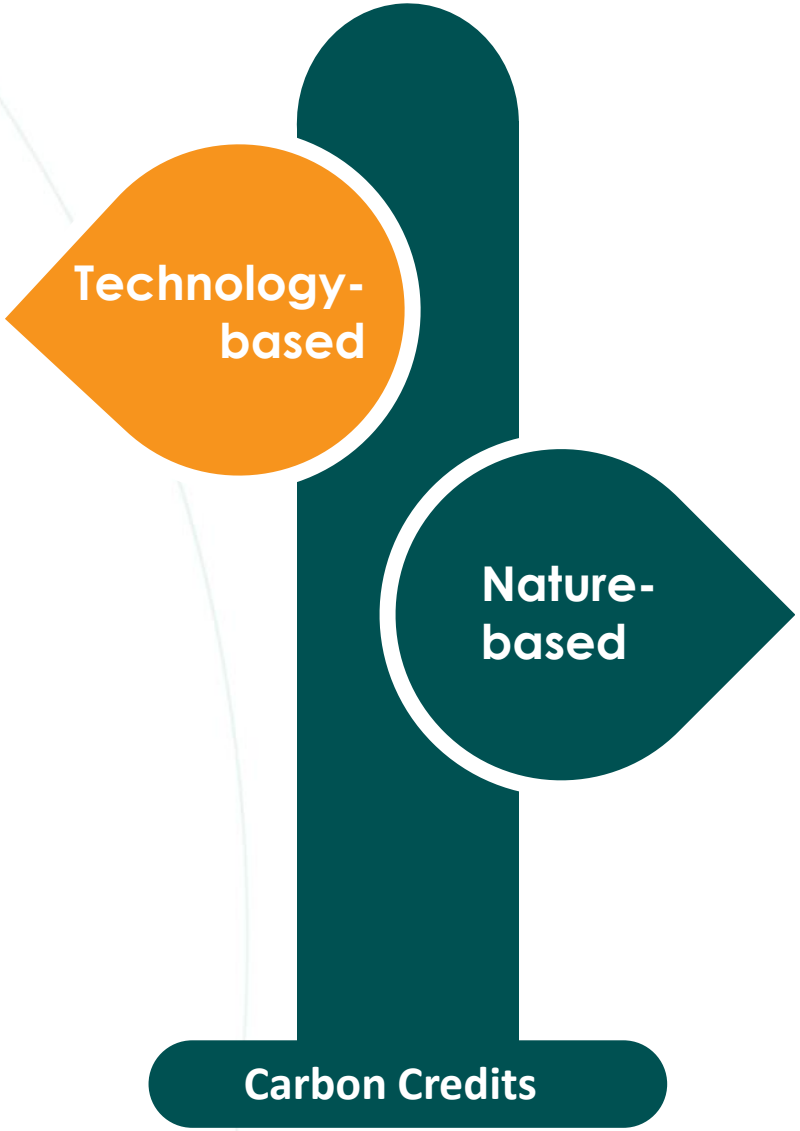
Waste Disposal
Waste management, landfill gas (e.g. landfill methane), wastewater, biogas

Industrial Gases
N2O from nitric acid and adipic acid plants, Ozone-depleting substances (HFCs)

Household Devices
Clean cookstoves, water purification devices

Transport
Electrification, lower fuel use (e.g. biofuels)

Tech-Based Removals
Direct air, bio energy carbon capture and storage



Agriculture / Soil Carbon
Rice methane, improved fertilizer management, No-and low-fill agriculture, cover crops

Forestry
Afforestation, reforestation, Improved forest management (IFM), Conservation (REDD+)

Other Land Use
Grassland management, restoring or avoiding Conversion of peatlands

Blue Carbon
Restoring or avoiding conversion of mangroves, Wetlands, seagrass

2.4 – Examples – DBS Bank

Generating renewable energy

In maximising our renewable energy production, we continue to enhance our **'Everything Solar Everywhere'** initiative, which entails ensuring that every appliance installed in the spaces we build run on renewable energy wherever possible. This has led to installations of solar arrays on our buildings, along with solar-powered air conditioners, exhaust fans, walkway lights, parking lamps, ATM kiosks, and fountain pumps on our premises across the markets we operate in. Total renewable energy production rose from 944 MWh in 2021 to 1,362 MWh in 2022.

Purchasing RECs and carbon offsets

Despite our comprehensive efforts in reducing consumption, generating and purchasing renewable energy as part of our four-lever approach, there remained gross carbon emissions in our operations, which we compensated for through the purchase of RECs and carbon credits.

- On RECs: We purchased a total of 48,900 MWh of RECs to compensate for all 100% of grid electricity consumption across our core markets outside of Singapore.

Read more in "Information on Environmental Footprint" on page 98

- On carbon credits: We further strengthened the governance and processes around the selection, purchase and use of carbon offsets as the final lever to our operational decarbonisation strategy by updating our Carbon Offset Guide. We purchased 41,700 tCO_2e of high-quality carbon removal and avoidance credits from three nature-based projects (see table below). These projects deliver positive climate impacts and also support important social and economic development opportunities for local communities, further contributing to the United Nations Sustainable Development Goals. Read more about our approach on the next page.

2.4 – Examples - Netflix

Reducing Emissions in the Workplace

ENERGY EFFICIENCY

In 2022, we completed energy efficiency audits at our major facilities across North America. Except for Albuquerque Studios in New Mexico and the Egyptian Theater in Los Angeles, Netflix does not own the facilities in which we operate. This makes the immediate implementation of the audit recommendations more challenging. So we engaged with our landlords in the US and have begun to implement projects within our control at several of our offices and studios including: window replacements, temperature setbacks, lighting improvements and controls, heat pump installs, plug load controls, daylight sensor installs and equipment upgrades. We will replicate this approach across priority facilities in EMEA in 2023.

RENEWABLE ENERGY (ELECTRICITY AND FUELS)

In 2022, as in previous years, we have matched our global operations with **100% renewable electricity**, covering all electricity consumption in our offices and for productions we directly manage. This was achieved through a range of approaches that include utility-supplied clean electricity, landlord-supplied clean electricity, and renewable energy certificates (RECs).

Netflix ESG Report 2022

2022 Electricity Consumption Summary Table

SCOPE	METRIC	2020	2021	2022
Hardware Infrastructure Electricity	Electricity consumed (MWh)	26,196	33,407	36,110
	Percentage grid electricity	100%	100%	100%
	Percentage renewable	100%	100%	100%
Remaining Electricity	Electricity consumed (MWh)	68,089	123,148	120,857
	Percentage grid electricity	100%	100%	100%
	Percentage renewable	100%	100%	100%
Total Electricity	Total electricity consumed (MWh)	94,285	156,555	156,967

We recognize that not all renewable energy supply is the same in terms of its positive impact. So we're working to increase the proportion of onsite generation, utility and landlord-supplied clean electricity and direct sourcing from offsite projects.

2.4 – Examples - Netflix

GREENHOUSE GAS INVENTORY

	2019 MTCO2e	2020 MTCO2e	2021 MTCO2e	2022 MTCO2e
SCOPE 1	51,487	30,883	62,815	59,388
SCOPE 2 (market-based)	565	141	0	0
SCOPE 2 (location-based)	26,594	28,585	42,291	41,411
SCOPE 2 (target-based)	26,317	29,356	31,937	23,622
SCOPE 1+2 (market-based)	52,052	31,024	62,815	59,388
SCOPE 1+2 (target-based)	77,804	60,239	94,752	83,010
SCOPE 3 (market-based)	1,192,659	1,020,541	1,466,497	1,086,833
TOTAL (market-based)	1,244,711	1,051,564	1,529,312	1,146,221
CARBON CREDITS	(35,506)	(54,107)	(1,529,312)	(1,146,221)

2.4 – Examples - Netflix

2023 Carbon Credit Portfolio[32] (Continued)

PROJECT NAME AND ID	LOCATION	CREDIT TYPE	REGISTRY AND PROTOCOL	PROJECT BENEFITS	SUPPLIER	Metric Tons
Reforesting Degraded Lands in Chile through the use of Mycorrhizal Inoculation (VCS1055)	Chile; Regions RM, V, VI, VII, VIII	Removal	Verified Carbon Standard AR-ACM0003	Advances biotechnology, biodiversity, local skilled jobs, soil rehabilitation	Mikro-Tek	58,760
Chyulu Hills REDD+ Project	Kenya; Makueni, Taita Taveta and Kajiado Counties	Avoided Emissions	Verified Carbon Standard: VM0009 v3 Climate Community Biodiversity Standard: 2nd Edition	Biodiversity protection, drought prevention, education, local jobs and alternative livelihoods	Conservation International	186,836
Salvador da Bahia Landfill Gas Management Project (CDM0052)	Brazil; Municipality of Lauro de Freitas, Bahia State	Avoided Emissions (methane)	Clean Development Mechanism: ACM0001 ver.19	Reduced air pollution, local skilled jobs, increased public health	ClimatePartner GmbH	300,000
Supporting Landless Farmers in the Tembien Highlands (EthioTrees, ID# 104000000014099)	Ethiopia; Hagere Selam 01, Tigray	Removal	Plan Vivo: PM001 Agriculture and Forestry Carbon Benefit Assessment Methodology	Food security, soil regeneration, water conservation	ClimatePartner GmBH	60,000
GreenTrees ACRE (ACR114)	USA; Mississippi Alluvial Valley floodplain	Removal	American Carbon Registry: Afforestation and Reforestation of Degraded Land v1.0	Floodplain restoration, biodiversity protection, job creation	Arbor Day Foundation	92,000
Ejido florestal Los Bancos (CAR1392)	Mexico; Municipio de Pueblo Nuevo, Durango	Removal	Climate Action Reserve: Mexico Forest Protocol v3	Ecosystem restoration, skills training, job creation, climate adaptation	Cool Effect	79,200
Durango portfolio of aggregated ejido projects (CAR 1675,1704,1735,1736,1737)	Mexico; Santiago Papasquiaro, Otaez, and Tepehuanes in Durango State	Removal	Climate Action Reserve: Mexico Forest Protocol v3	Ecosystem restoration, protection of endangered species, strengthen community governance	Carbonof	49,019
Scott River Whiskey IFM project (ACR733)	USA; Etna, California	Combination Removals and Avoided Emissions.	American Carbon Registry: Improved Forest Management (IFM) on Non-Federal U.S. Forestlands v1.3	Fire prevention, biochar production, watershed restoration	EFM	17,292
					TOTAL	843,107

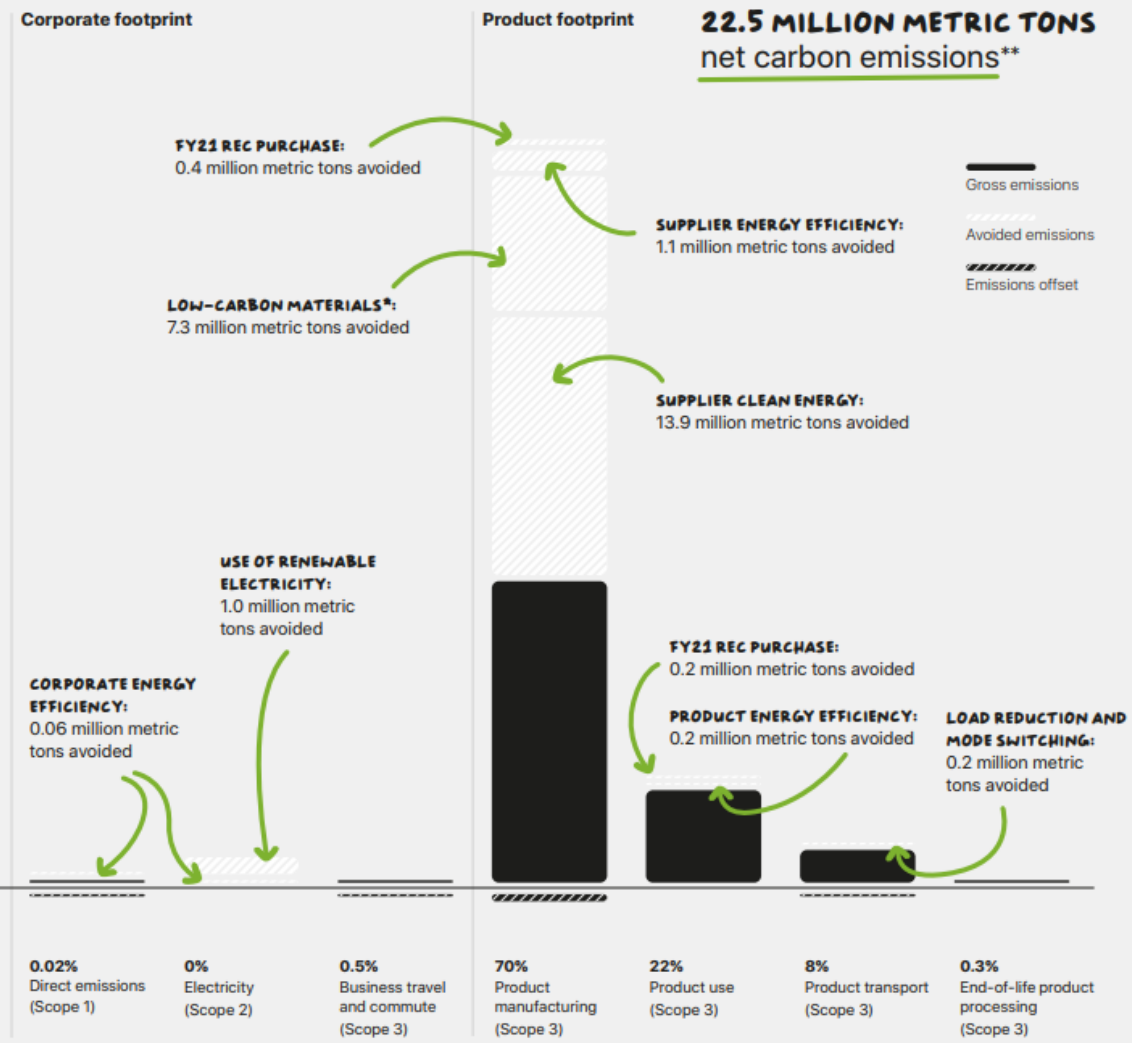
[32] The total volume of credits listed in the table were retired on behalf of Netflix with the retired volume matching our 2023 remaining emissions. These retirements have been subject to limited assurance by EY.

2.4 – Examples - Apple

Apple's comprehensive carbon footprint

This past year we intensified our efforts to reduce Apple's emissions. In fiscal year 2021, we avoided over 23 million metric tons of emissions across all scopes. Initiatives that we've been growing for years — like sourcing 100 percent renewable electricity for our facilities, transitioning suppliers to clean energy, and using low-carbon materials in products — yielded indisputable results.

Thanks to this work, we've begun to decouple business growth from emissions: While our revenue grew 33 percent, our emissions grew by less than 5 percent. To mitigate this increase in emissions, we applied an additional 0.6 million tons of renewable energy credits (RECs) and 0.5 million metric tons of carbon offsets to proportionally cover electricity use and direct emissions, respectively, across our value chain. This represents a short-term bridging solution as we grow our carbon reduction programs to meet the scale of the challenge.



* Low-carbon materials represents emissions savings from transitioning to recycled materials in our products, or use of low-carbon aluminum, as described on page 18.

** Net carbon emissions represents our total gross footprint minus carbon offsets applied to each category. Percentages shown for each emissions category represent the share of Apple's gross footprint. Totals add up to more than 100 percent, due to rounding.

2.4 – Examples – Marina Bay Sands

continue to explore industry-leading methods to further decouple our carbon footprint from our business growth," said Kevin Teng, Executive Director of Sustainability, Marina Bay Sands.

Achieving carbon neutrality

Since its early days, Marina Bay Sands has invested in energy efficient infrastructure to reduce its carbon footprint. For example, its S$25 million Intelligent Building Management System has helped save over 7.4 million kWh of energy annually since 2012. Sub-metered floors at the integrated resort's (IR) MICE venue also help event organisers effectively track energy usage across specific areas.

Marina Bay Sands' latest investment in Renewable Energy Certificates (RECs) and carbon offsets covers 100 per cent of the carbon emissions generated from the meeting venue's gas and electricity consumption. The RECs are being purchased from Sembcorp Solar (Sembcorp), as part of the IR's commitment to support the development of renewable energy in Singapore. Each REC represents the environmental benefits of one megawatt-hour (MWh) of electricity generated from a renewable energy source.

From 2019 to 2022, Marina Bay Sands is committed to purchase an annual average of approximately 25,000 RECs, based on the IR's yearly energy consumption levels over the last five years. This corresponds to electricity generated by various solar rooftop projects in Singapore which have been developed, installed, owned and operated by Sembcorp.

The greatest threat to our planet is the belief that someone else will save it.

- Robert Swan

Thank You

Sustainability is not just about our future, but the future of generations yet to come.

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