VCM Handbook

Your Comprehensive Project Development Toolkit

Prepared by:

MGTC

BURSA MALAYSIA

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Foreword by Prime Minister

Salam Malaysia MADANI.

The Synthesis Report for the Sixth Assessment Report (AR6) released by the Intergovernmental Panel on Climate Change (IPCC) in March 2023 confirmed that global greenhouse gas (GHG) emissions have continued to increase, as a result of “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”. Widespread impacts such as drought, floods, and storms, attributed to human-caused climate change, have been observed. This represents a clear and present threat to water and food security, health and well-being, settlements and infrastructure, and biodiversity and ecosystems, which no nation can afford to ignore.

As at the end of 2019, Malaysia reported net GHG emissions of 116 million tonnes of carbon dioxide equivalent after taking into account the net sink of the land use, land-use change and forestry (LULUCF) sector (Malaysia’s Fourth Biennial Update Report to the UNFCCC, 2022). Our contribution of carbon emissions at global level remains very small. In year 2021, Malaysia accounted for less than 0.7% of global GHG emissions. Nevertheless, we recognise that climate change is an unprecedented global issue that requires international cooperation. Malaysia is actively contributing towards global efforts to address climate change, by unconditionally setting commitment to reduce our economy-wide GHG emissions intensity against gross domestic product (GDP) by 45% in 2030 compared to 2005 level and aspire to achieve net-zero GHG emissions by as early as 2050. Accordingly, a Long-Term Low Emissions Development Strategy (LT-LEDS) is being developed to guide the realisation of these aspirations.

Globally, a Voluntary Carbon Market (VCM) has been regarded as an important carbon pricing instrument in driving the climate agenda. Carbon markets can effectively facilitate the energy transition and decarbonisation efforts, and hence address climate change. In this regard, on 17 September 2021, the Cabinet agreed to develop a national carbon pricing policy and implementation framework for carbon market, which includes the emissions trading system (ETS). This also resulted in the announcement of a Voluntary Carbon Market (VCM) initiative under Budget 2022, and the mandate was given to Bursa Malaysia to develop a facilitative platform for carbon credits to be traded between green asset owners and corporates transitioning towards low-carbon practices. It was a welcomed development when Bursa Malaysia launched the world’s first Shariah carbon exchange – the Bursa Carbon Exchange (BCX) - on 9 December 2022.

In line with the concept of Malaysia MADANI, the BCX will play a crucial role in promoting climate action and sustainable development in our nation. It is my firm belief that the VCM will generate a ripple effect on the nation's economy; by creating job opportunities, benefitting local communities, and ushering a green economy that is inclusive in Malaysia. Access to the VCM would importantly help ensure our local companies are more competitive in global markets, and able to unlock access to global green supply chains.

Being one of the fruits of collaboration between Bursa Malaysia and the Malaysian Green Technology and Climate Change Corporation (MGTC), this national VCM Handbook is a step forward to spur the growth of our domestic carbon market ecosystem. It will be a living document that will provide initial guidance for interested parties to develop carbon projects in Malaysia. It is important that these projects yield high-quality carbon credits under internationally recognised standards and be aligned to the broader United Nations Sustainable Development agenda (UN SDG 2030). With the publication of this national VCM Handbook, it is my hope to see more domestic carbon credit projects successfully developed in the coming years, and that corporates will have ample access to locally produced carbon credits through Malaysia's very own VCM. I extend my appreciation to Bursa Malaysia and MGTC for producing this valuable publication.

I encourage potential Malaysian carbon market ecosystem players to seize opportunities and stay abreast of the latest developments related to VCM, leveraging resources provided by related agencies towards progressing on the nation's climate change aspirations.

Most importantly, I genuinely hope that everyone in Malaysia will collectively contribute his or her part to systematically change our economic model that, for a long time, has brought hazards to the environment and the larger society. I will end this foreword with a quote attributed to a renowned philosopher and social scientist, to guide and inspire us:

The ultimate goal of economic activity
is to promote the common good and
the flourishing of society as a whole.
- Ibn Khaldun

Dato' Seri Anwar bin Ibrahim
Prime Minister of Malaysia

Acknowledgements

The invaluable contributions of all stakeholders are gratefully acknowledged. We would like to express our appreciation to the following ministries, agencies, departments and organisations that supported the development of the Voluntary Carbon Market Handbook.

Ministries & Agencies

NRECC	Ministry of Natural Resources, Environment and Climate Change
FRIM	Forest Research Institute Malaysia
JPSM	Forestry Department of Peninsular Malaysia
MFF	Malaysia Forest Fund
REDD PLUS Malaysia	Reducing Emissions from Deforestation and Forest Degradation-Plus Malaysia
MUDeNR	Ministry of Natural Resources and Urban Development, Sarawak

State Governments

BPEN Johor	Economic Planning Division Johor State
UPEN Kelantan	Kelantan State Economic Planning Unit
UPEN Melaka	Economic Planning Unit Melaka State
UPEN Negeri Sembilan	Economic Planning Unit Negeri Sembilan State
BPEN Pahang	Economic Planning Department Pahang State
BPEN Perak	Economic Planning Division Perak State
BPEN Perlis	Economic Planning Division Perlis State
SUK Pulau Pinang	Penang State Secretariat
UPEN Selangor	Economic Planning Unit Selangor State
UPEN Terengganu	Economic Planning Unit Terengganu State

State Forestry Departments

Forest Department Sarawak

Pahang State Forestry Department

Sabah Forestry Department

Selangor State Forestry Department

Organisations

Berjaya EnviroParks Sdn Bhd

Bureau Veritas Certification (M) Sdn Bhd

Cenergi-SEA Berhad

ClimatEra Consulting Sdn Bhd
Eco-Ideal Consulting Sdn Bhd
Global Tunikara Sdn Bhd
Green Lagoon Technology Sdn Bhd
Permian Global
Permian Malaysia Sdn Bhd
Shell Malaysia Ltd
South Pole
YTL SV Carbon Sdn Bhd
Melaka Green Technology Corporation

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Chapter 1

Background on Climate Change

Chapter 1: Background on Climate Change

1.1 Chapter Summary

This chapter provides an overview of the international and national policies on climate change, focusing on the commitment to sustainability and decarbonisation. It highlights the growing recognition of the urgent need to address climate change and the role of both international and national policy frameworks in tackling this global challenge.

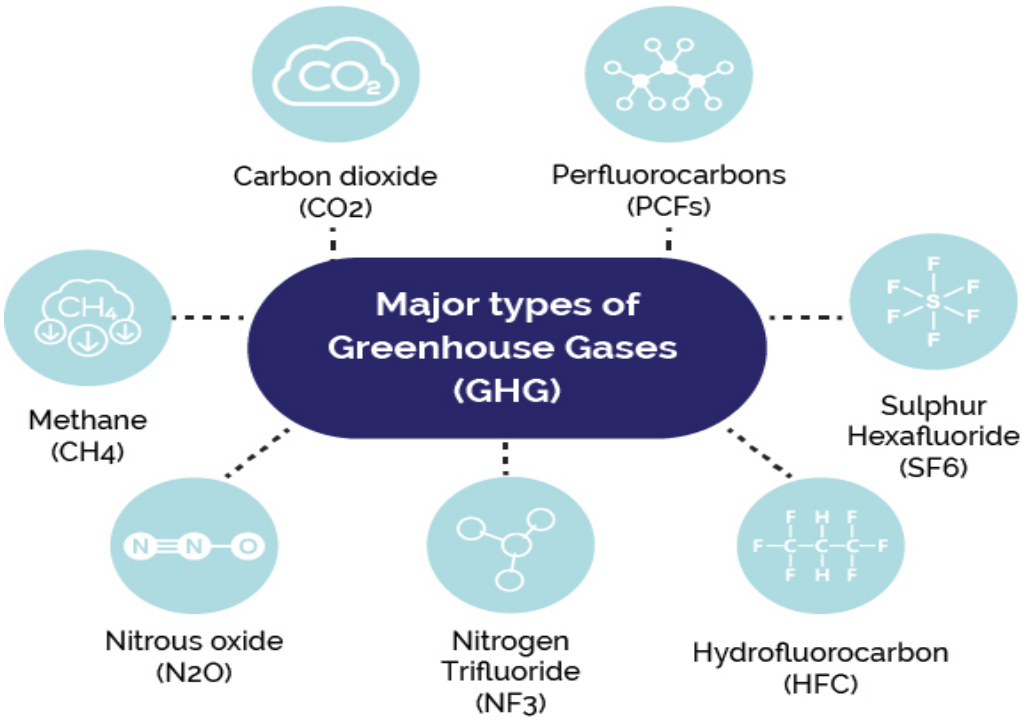
The chapter begins by emphasising the interconnectedness of climate change and the importance of coordinated efforts at the international level. It discusses key international agreements, such as the Paris Agreement, which aims to limit global warming to well below 2°C. The chapter also highlights the significance of countries' commitments to reducing greenhouse gas emissions, fostering sustainable development and supporting vulnerable nations in adapting to the impacts of climate change. This chapter provides an overview of Malaysia's national strategies and efforts aimed at major emission sectors, demonstrating its commitment to combating climate change and promoting a low-carbon, sustainable future.

1.2 Introduction

Climate change is the phrase used to describe the long-term changes in weather patterns that have been seen over the past century and which are mostly related to human activities that cause the atmosphere to absorb enormous amounts of greenhouse gases (GHG). The phenomenon has become a critical issue, threatening the environment and leading to various economic and social impacts on the planet.

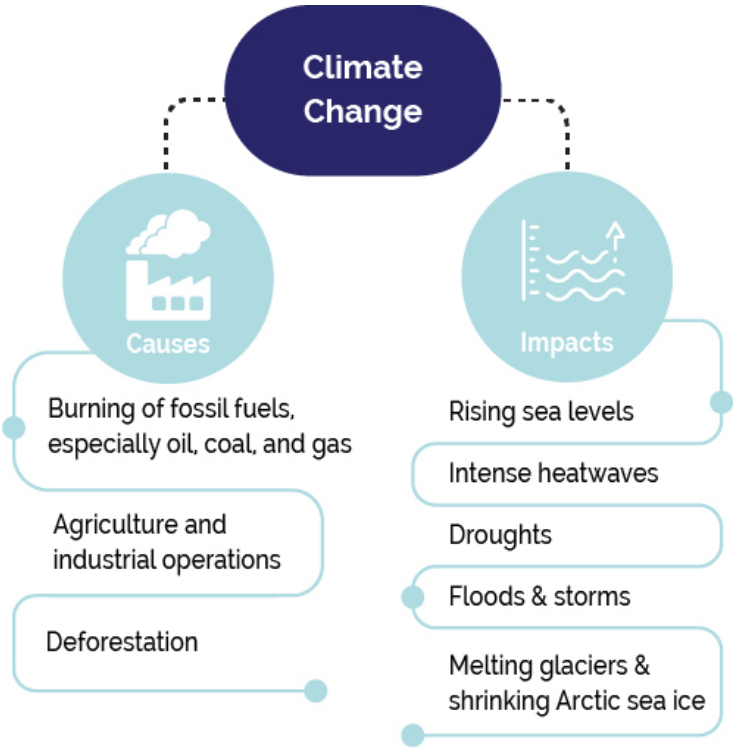
The GHG trap heat in the earth's atmosphere, leading to the greenhouse effect and causing the temperature to rise, thus warming the planet. The following Exhibit 1 shows the major types of GHG.

Exhibit 1: Major types of greenhouse gases.



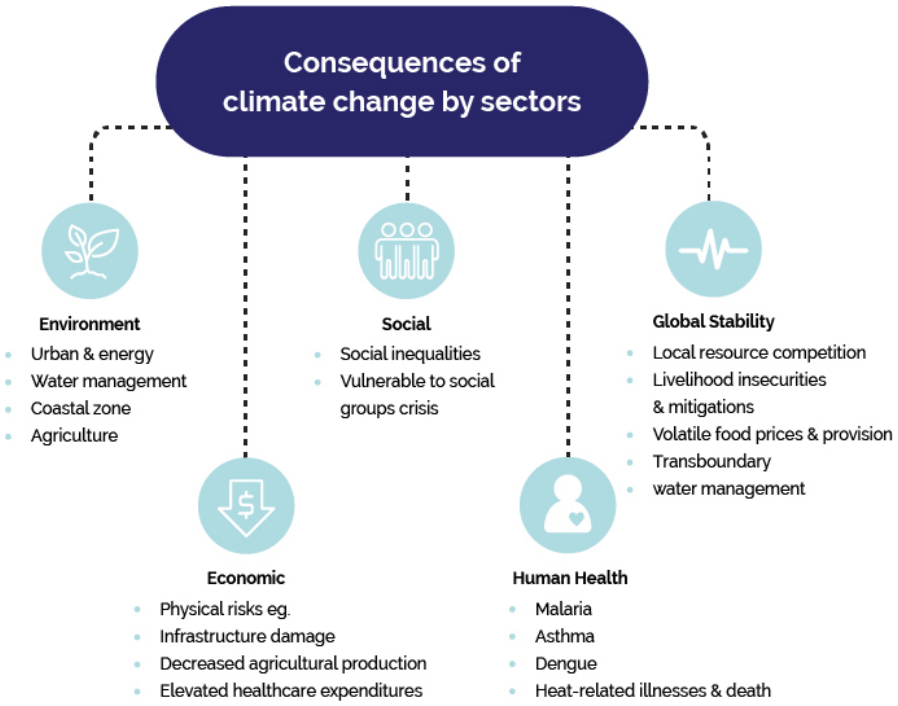
The burning of fossil fuels, particularly oil, coal and gas, is the primary cause of GHG emissions. In addition, agriculture, industrial activities and deforestation contribute significantly to GHG emissions. The consequences of climate change are already evident worldwide. Exhibit 2 shows the main causes and the impacts of climate change.

Exhibit 2: Causes and impacts of climate change.



The Intergovernmental Panel on Climate Change (IPCC) has warned that the earth's temperature could rise by 1.5°C or more above pre-industrial levels by the end of the century if action is not taken to reduce GHG emissions. International efforts to address climate change impacts include the United Nations Framework Convention on Climate Change (UNFCCC), signed by most of the countries in the world, which aims to stabilise GHG concentrations in the atmosphere at a level that will prevent dangerous human interference with the climate system. The Paris Agreement, adopted in 2015, is a landmark global agreement that aims to limit global warming to well below 2°C above pre-industrial levels while pursuing efforts to limit the temperature increase to 1.5°C. The impacts of climate change often have cascading effects across multiple sectors, as shown in Exhibit 3. Refer to Appendix 1 for details.

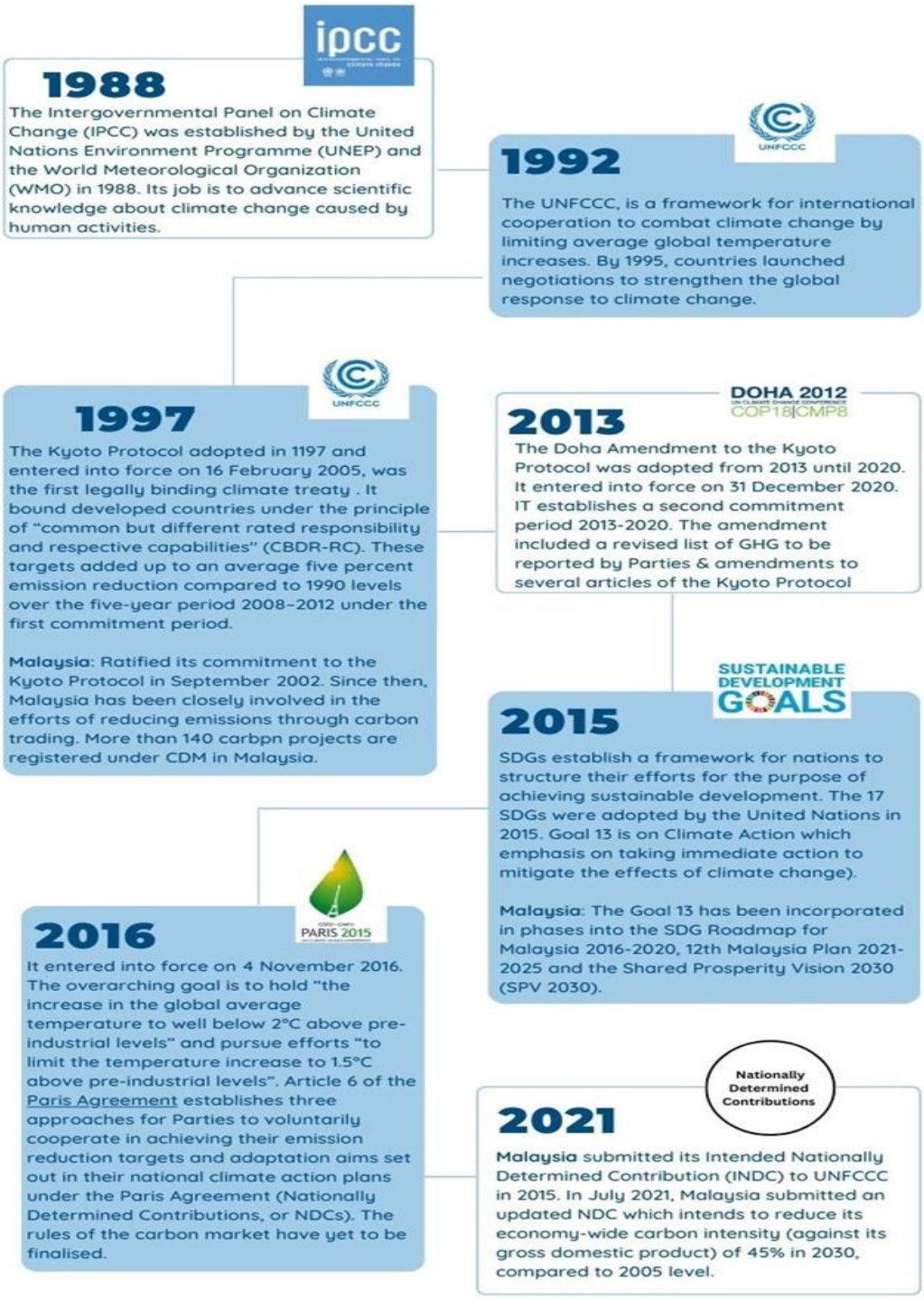
Exhibit 3: Consequences of climate change across multiple sectors.



1.3 Global Response and National Commitment to Climate Change

To address climate change, several global agreements and initiatives have been formulated and established. The Malaysian government has made several commitments in response to the global climate change treaty, as shown in Exhibit 4. Appendix 2 provides an overview of the commitments made by the Malaysian government in addressing climate change and the SDG Goals.

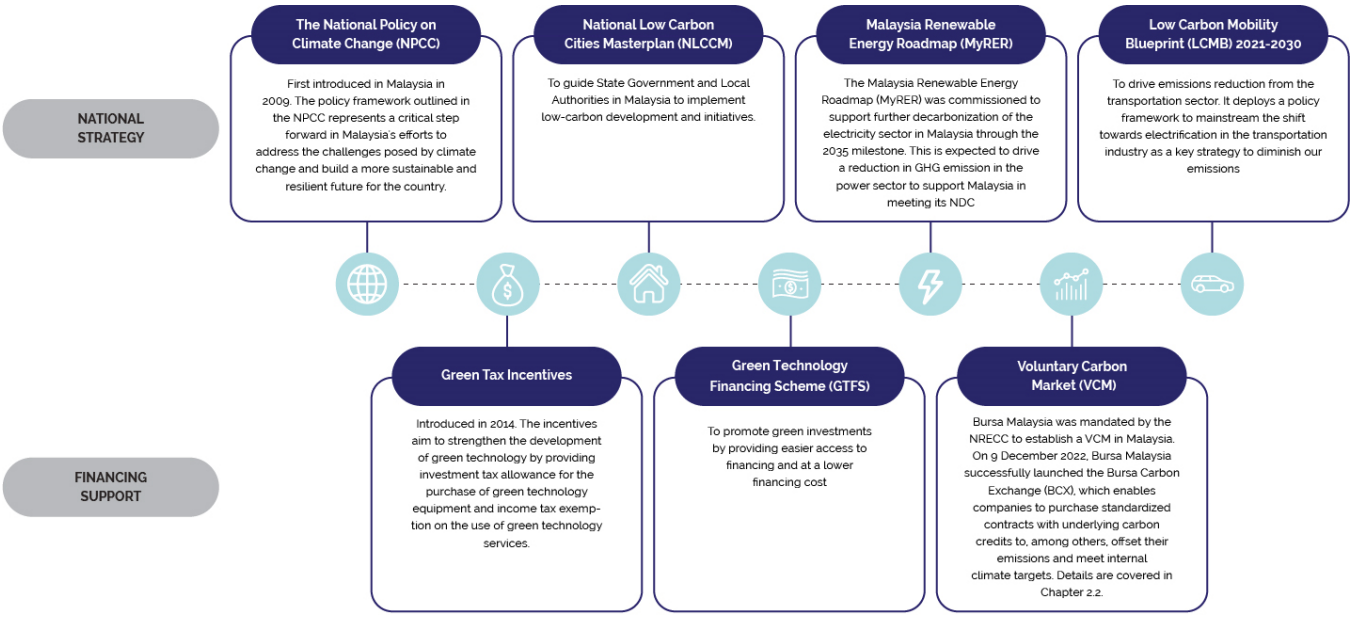
Exhibit 4: Global and national commitments to climate change.



Source: Derived from various sources

Malaysia has formulated comprehensive policies and action plans targeting major sectors that significantly contribute to GHG emissions. Some of these are shown in Exhibit 5. These policies and action plans demonstrate Malaysia's commitment to mitigating climate change and transitioning towards a low-carbon and sustainable future. Refer to Appendix 3 for further details on these policies and action plans.

Exhibit 5: National low-carbon policies, action plans and financing support.



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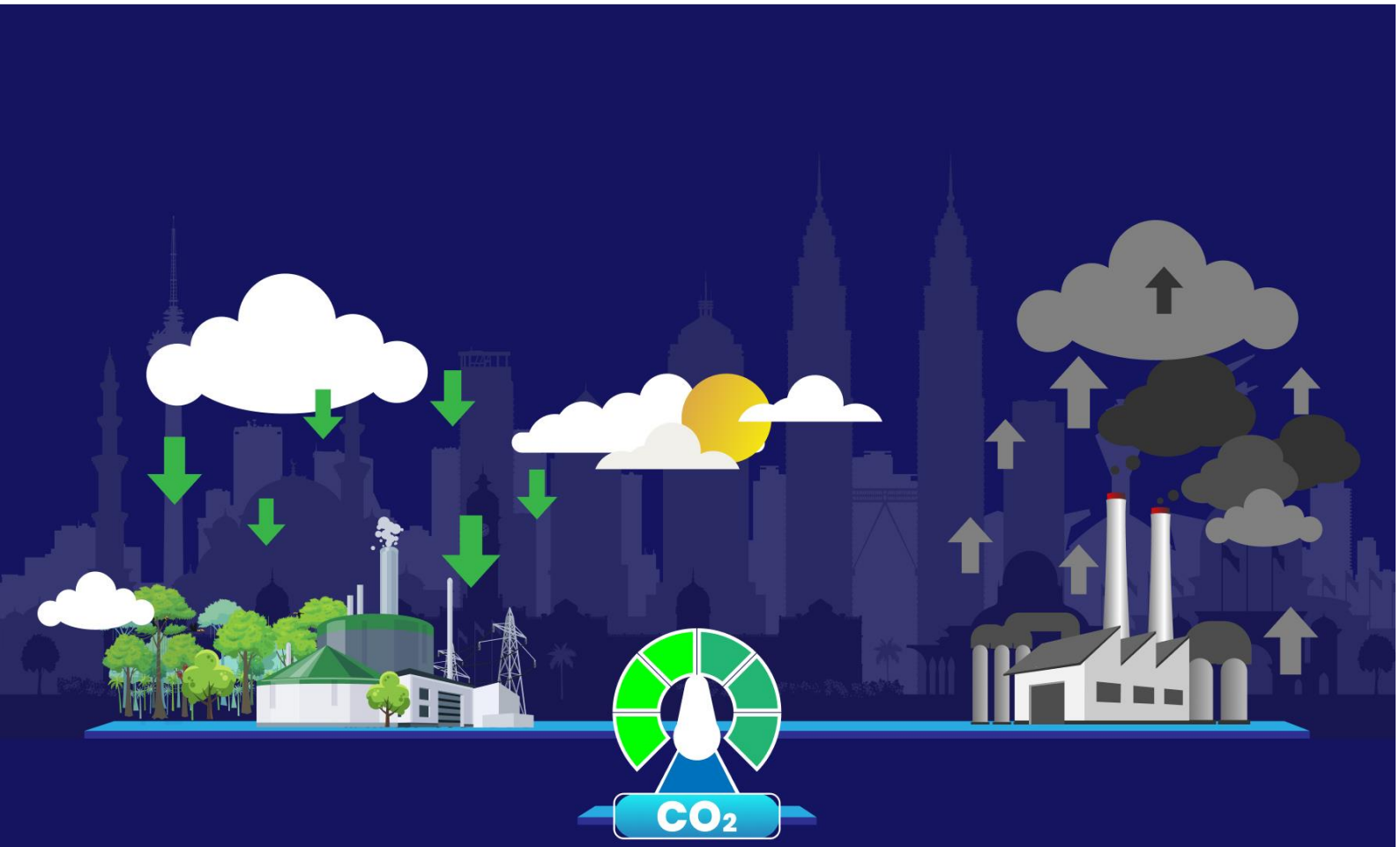
Chapter 2

Introduction to Voluntary Carbon Market (VCM)



Chapter 2: Introduction to the Voluntary Carbon Market (VCM)

2.1 Chapter Summary

The carbon market refers to the trading of carbon credits or carbon allowances, of which one (1) unit represents one (1) tonne of carbon dioxide equivalent (CO_{2eq}). It can be divided into two (2) main types: compliance market and voluntary market. In the compliance market, a carbon allowance is a government-issued permit allowing a company or entity to emit a specific quantity of CO_{2eq} into the atmosphere, whereas, in a voluntary market, a carbon credit refers to a specific quantity of CO_{2eq} avoided, reduced or removed from the atmosphere.

The compliance market operates under regulatory frameworks, such as the Paris Agreement or national emission trading schemes. It sets mandatory emission reduction targets for participating entities, who can trade carbon credits to meet their obligations. The goal is to achieve emission reduction commitments and compliance with international agreements.

The voluntary market, on the other hand, is driven by organisations and individuals voluntarily offsetting their emissions. Participants purchase carbon credits to compensate for their carbon footprint and demonstrate environmental responsibility. This market is not bound by regulatory requirements but is guided by international standards and best practices.

The participants of the VCM include various entities that engage in the trading and offsetting of carbon credits outside of regulatory compliance requirements. These participants can range from companies, organisations and governments to individuals who voluntarily take part in offsetting their emissions or supporting climate projects.

The trading platform of the VCM serves as a marketplace where the buying and selling of carbon credits occur. It provides a centralised platform for participants to trade verified emission reductions (VERs) or carbon offsets. The platform facilitates transparency, efficiency and liquidity in the carbon market by connecting buyers and sellers, enabling transactions and ensuring the integrity of carbon credits.

The issuance of voluntary carbon credits involves the assessment, verification and registration of carbon projects. Once a project meets the required criteria and undergoes a rigorous evaluation process, carbon credits are issued and can be bought and sold in the voluntary market. This mechanism incentivises sustainable projects, encourages investment in climate action and supports the transition to a low-carbon economy. International standards, such as those developed by organisations like Verra and Gold Standard, provide guidelines and certification for voluntary carbon projects. These standards ensure transparency, credibility and additionality of carbon credits. They define the eligibility criteria and verification processes for project activities, ensuring the integrity of voluntary carbon credits. Although challenges exist in the current VCM, the international VCM community is developing solutions to address the current gaps to improve the integrity and quality of carbon credits generated.

The VCM is one of the key initiatives identified to enable Malaysia to become a net zero greenhouse gas (GHG) emission nation as early as 2050. Launched by Bursa Malaysia, the Bursa Carbon Exchange (BCX) is Malaysia's pioneer VCM trading platform, and is also the world's first Shariah-compliant carbon exchange.

Operated by a well-established national multi-asset exchange, the BCX is designed for corporates that embrace Environmental, Social and Governance (ESG) principles and are aligned with Shariah principles. Being market-driven, the BCX provides market participants with access to high-quality carbon credits, operates on a pre-funding model to reduce counterparty and delivery risk and offers standardised products to provide a user-friendly trading experience.

The BCX offers three (3) modes of trading: auction, off-market transaction and continuous spot trading. The settlement shall be instantaneous. Further details on the BCX and onboarding can be found in the Rules of Bursa Carbon Exchange, accessible via the BCX website.

2.2 Introduction to Carbon Markets

2.2.1 Carbon Credit and Carbon Allowance

One (1) tradable carbon credit or carbon allowance normally equates to one (1) tonne of carbon dioxide (CO_2) or CO_{2eq}, and both carbon credits and carbon allowances are referred to as tradable assets.

These key instruments are used in carbon markets to incentivise and finance projects that reduce GHG emissions.[1] Carbon credits or carbon allowances can be bought, sold or retired/surrendered.[2] Both instruments are used in carbon markets to manage and reduce GHG emissions.[3] However, there are some key differences between carbon credits and carbon allowances, as illustrated in Exhibit 6.

[1] This includes GHG emissions avoidance, reduction and removal.
[2] Within the context of the voluntary carbon market, carbon credits are retired, whereas within the context of the compliance carbon market, allowances are surrendered.
[3] This includes GHG emissions avoidance, reduction and removal.

Exhibit 6: Differences between carbon credits and carbon allowances.

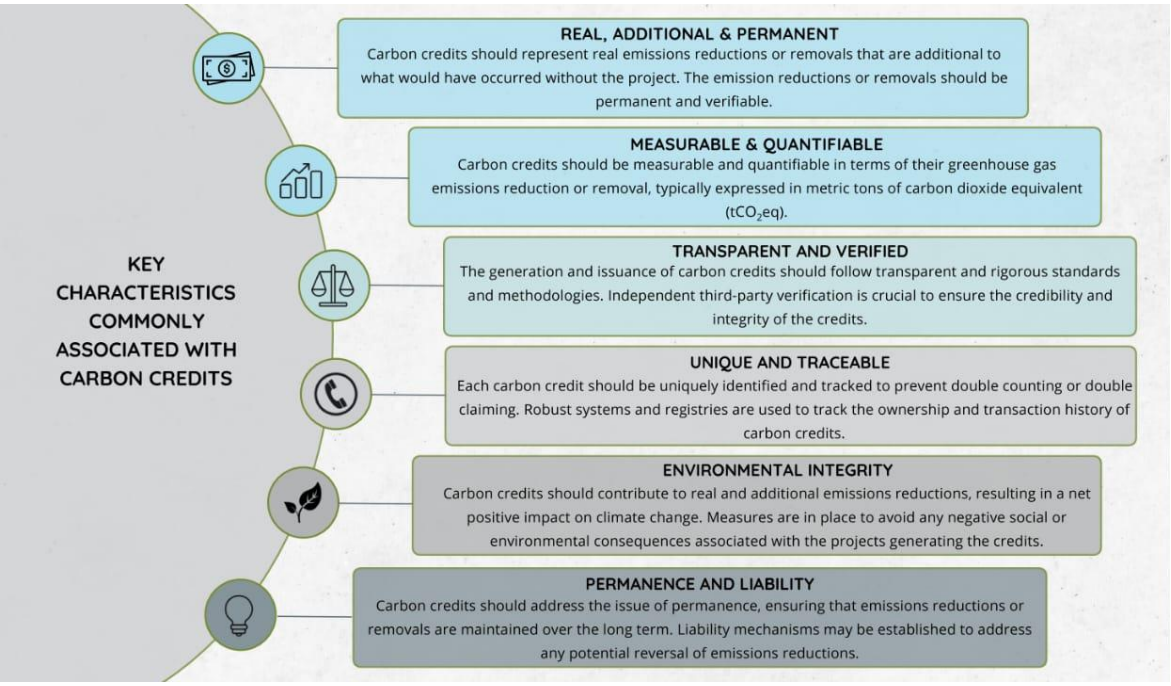
	Carbon Credits	Carbon Allowances
Definition	Represent a quantifiable reduction or removal of GHG emissions that can be bought or sold as a unit. They are generated by projects or activities that reduce emissions or enhance carbon removal.	Permits/allocations granted by regulatory authorities to compliance entities covered by Emissions Trading Schemes (ETSs) to emit a certain amount of GHG within a defined time period.
Purpose	Used by entities to offset their own emissions. They can be purchased to compensate for emissions that exceed a company's target or compliance limit.[4]	Allocated to compliance entities by regulatory authorities as part of a cap-and-trade system. They serve as permits that allow a specified level of emissions.
Generation of Units	Voluntary international and independent standards are used to measure, monitor and issue carbon credits.	Issued or allocated by government or regulatory bodies based on a predefined cap on emissions for a specific industry or sector.
Flexibility	Offer flexibility as they can be bought and sold in the carbon market. They can be used by entities to meet their emission reduction targets or to trade with other entities.	Generally, they are not freely transferable and are tied to specific compliance entities or industries, limiting their trading flexibility.
Carbon Pricing	Carbon credit prices are influenced by various factors, including quality, certification standards, market demand and voluntary buyer preferences.	In an ETS, carbon permit/allowance prices are determined through market mechanisms where entities buy and sell based on supply and demand dynamics. In a carbon tax regime, the carbon tax is typically a fixed rate.
Market Mechanisms	Carbon credits are traded in voluntary or compliance markets. Voluntary markets allow individuals, companies or governments to purchase and retire carbon credits to offset their emissions. Compliance markets exist within regulatory frameworks and involve the trading of carbon allowances to comply with emission reduction obligations.	Carbon allowances are specifically designed for trading within emissions trading systems or cap-and-trade programmes. These systems establish a market mechanism where compliance entities can buy, sell or trade allowances based on their emissions needs and regulated requirements.
Scope of Applicability	Carbon credits have a broader scope of applicability and can be utilised by entities globally. They are not limited to specific sectors or regions and can be used by any entity interested in offsetting its emissions.	Carbon allowances are typically applicable within specific jurisdictions or regions that have established emissions trading programmes. The scope of carbon allowances is more focused on regulated sectors or industries that fall under the jurisdiction of the emissions trading system.

Source: Derived from various sources

Some key characteristics commonly associated with carbon credits are shown in Exhibit 7.

[4] This is upon the condition that the compliance market allows a certain volume of carbon credits to be used to reduce emissions beyond the cap imposed.

Exhibit 7: Key characteristics of carbon credits.



These characteristics are based on widely recognised principles and standards in carbon markets. It is important to note that specific details and comprehensive guidelines may vary depending on the governing standards and organisations in particular regions.

2.2.2 Carbon Markets

A carbon market is generally a trading system or a place where instruments that are related to GHG emissions are bought and sold. Depending on the type of carbon market, the traded instrument is typically called a carbon credit or a carbon allowance.

There are broadly two (2) types of carbon markets:

- Compliance Carbon Market
  Mandatory systems that are regulated by national, regional or sub-regional governments and laws for the purpose of capping emissions for specific industries.

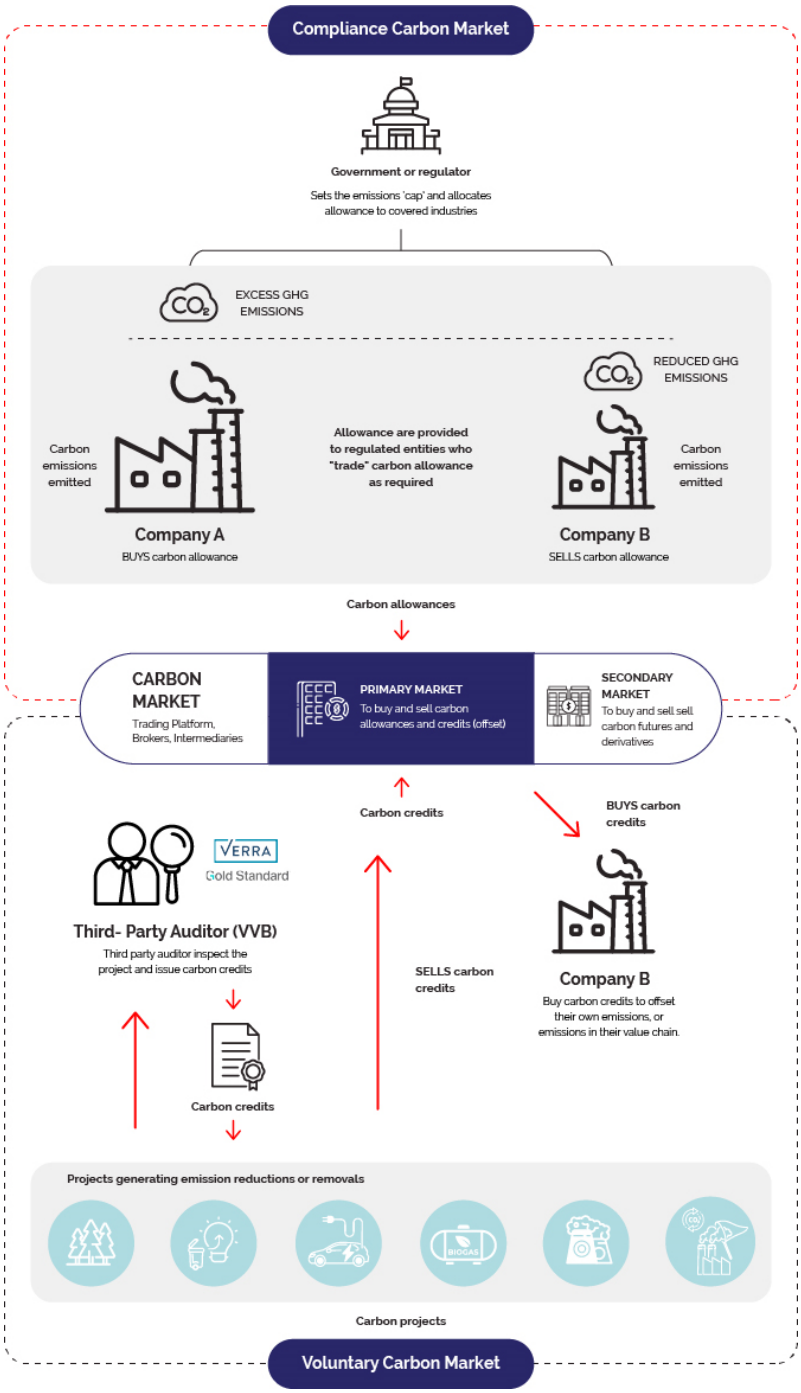
- Voluntary Carbon Market
  The market operates outside of compliance markets and enables entities to buy and sell carbon credits to meet their own purposes on a voluntary basis.

Corporates play a significant role in the carbon market as they actively participate in carbon trading and offsetting activities. Many corporates disclose and report their GHG emissions and carbon reduction initiatives as part of their sustainability reporting. These disclosures provide transparency and accountability, demonstrating the corporates' commitment to addressing climate change.

The carbon market provides a platform for corporates to buy and sell carbon credits, allowing them to manage their carbon emissions and meet their sustainability goals. Many corporates voluntarily purchase carbon offsets to compensate for their GHG emissions. In regions where Emissions Trading Systems are established, corporates are required to obtain and surrender emissions allowances corresponding to their emissions. They can trade these allowances with other participants in the market, allowing for flexibility in meeting their emission reduction targets.

The voluntary carbon market provides an opportunity for corporates to go beyond regulatory requirements and take voluntary action to offset their emissions. They can purchase carbon credits from projects that generate emission reductions or removals, supporting sustainable development and contributing to climate change mitigation. Exhibit 8 illustrates the carbon market ecosystem.

Exhibit 8: Carbon market ecosystem.



Source: Illustration by the author for a visual representation of the text in the document

Both the compliance and voluntary carbon markets contribute to the global effort of addressing climate change by incentivising emission reduction projects and supporting sustainable projects. However, these markets diverge in terms of regulatory demands, market behaviour

and the range of participants involved, as they serve distinct compliance obligations and voluntary initiatives. Exhibit 9 shows the distinctions between the compliance and the voluntary carbon markets.

Exhibit 9: Differences between compliance and voluntary carbon markets.

Market	Compliance		Voluntary
Instrument Type	Allowances/permits to emit	Carbon credits generated from emission reduction/avoidance/removal projects	Carbon credits generated from emission reduction/avoidance/removal projects
Description	An allowance to emit one tonne of CO_2e. Issuance is based on the emissions cap set.	One unit of carbon credit, which is equivalent to one tonne of CO_{2e}, generated from an emission reduction/avoidance/removal project	One unit of carbon credit, which is equivalent to one tonne of CO_{2e}, generated from an emission reduction/avoidance/removal project
Issuer	National governments	Certification bodies that recognise the compliance scheme	Independent certification bodies
Examples	European Union Emissions Trading System	Certified Emission Reduction under the United Nations' Clean Development Mechanism	Verified Carbon Unit by Verra; Verified Emission Reduction by Gold Standard

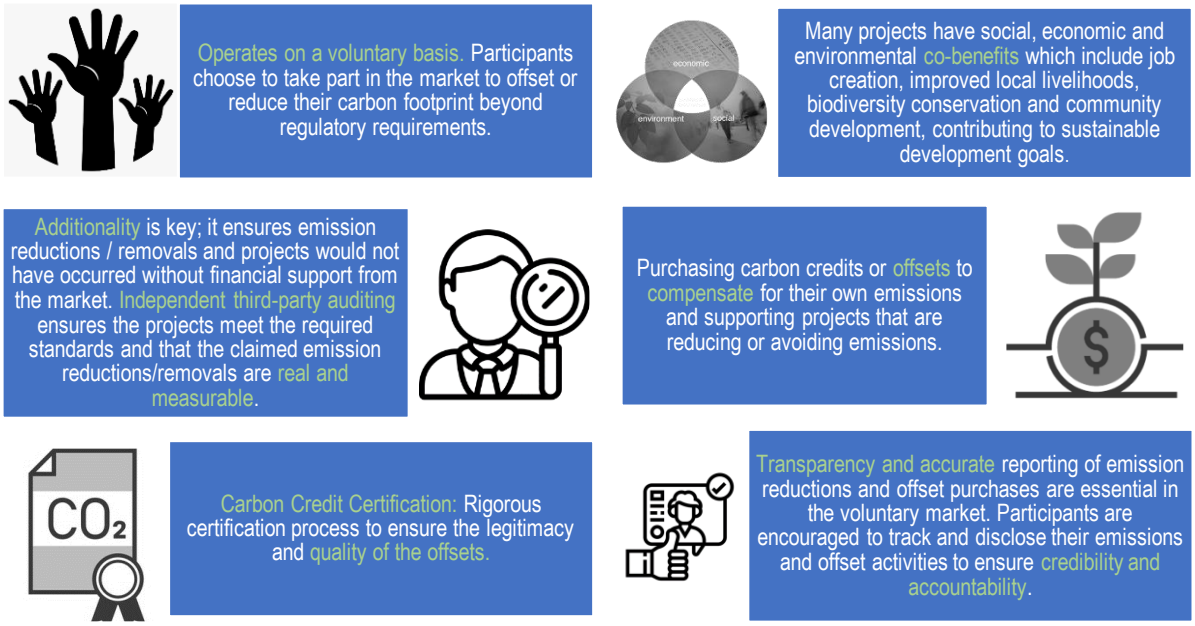
Source: https://www.magnuscmd.com/carbon-offset-projects/

The focus of global climate action has shifted towards the Paris Agreement, which was adopted in 2015 and has broader participation. Article 6 of the United Nations Framework Convention on Climate Change (UNFCCC) encompasses a range of measures and principles aimed at fostering international collaboration and implementing market-based mechanisms to tackle climate change. It establishes a framework that encourages countries to voluntarily work together to meet their emission reduction goals while promoting sustainable development objectives.

2.2.3 Voluntary Carbon Market

The voluntary carbon market (VCM) serves as a tool for individuals, organisations and companies to take voluntary action on climate change by supporting projects that reduce GHG emissions and promote sustainable development. It allows participants to go beyond regulatory requirements and demonstrate their commitment to environmental stewardship and sustainability. Exhibit 10 explains the principles of a VCM.

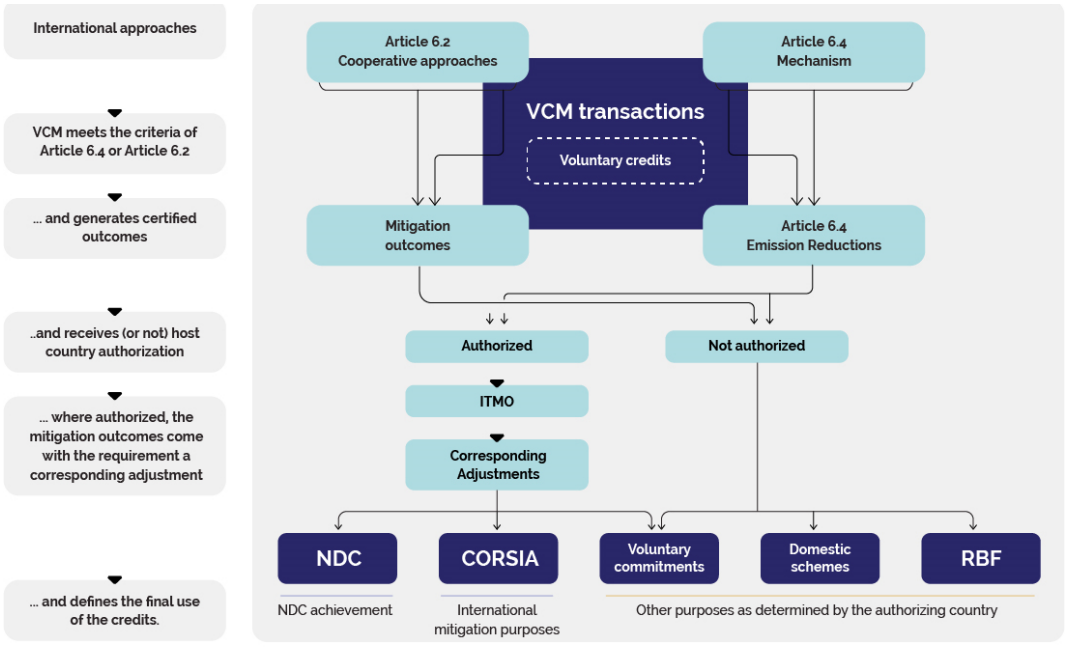
Exhibit 10: Key principles of a voluntary carbon market.



Source: Illustration by the author for a visual representation of the text in the document

The VCM plays a significant role in helping host nations fulfil their Nationally Determined Contribution (NDC) under the Paris Agreement. By generating local carbon credits that can be sold to international corporations, the VCM enables these nations to achieve emission reductions beyond their regulatory obligations. The VCM provides a platform for the trading and transfer of carbon credits and helps countries achieve their emission reduction goals collectively. Exhibit 11 shows how voluntary carbon credits may contribute to the objectives of the Paris Agreement.

Exhibit 11: Movement of voluntary carbon credits under Article 6.



Source: https://vcmprimer.org/chapter-3-how-does-the-voluntary-carbon-market-link-to-the-paris-agreement-and-article-6/

Carbon credits transacted between countries must always be authorised by the host Parties to be transferred internationally and be used towards an NDC or other international mitigation purpose (such as the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) programme for international aviation). These require a Corresponding Adjustment (CA) to the seller country's GHG emissions inventory at the first international transfer and to the buyer country's GHG emissions inventory when the credits are retired for compliance with an NDC. The credits that are not authorised for international use towards other NDCs do not require CAs because the mitigation impact continues to be accrued in the host country. The carbon credits issued can be traded and retired by voluntary market participants such as project developers, intermediaries and corporations. It should, however, be noted that the implementation details of CAs have not been hashed out, pending further Conference of the Parties (COP) discussions and negotiations.

Exhibit 12 illustrates the contribution of the VCM in the carbon market, highlighting its importance in facilitating voluntary offsetting activities. Additionally, research indicates that the VCM has the potential for substantial growth and may even surpass the compliance carbon market in terms of market size and trading volume. This growth projection suggests that the VCM is becoming increasingly significant in the overall landscape of carbon markets. It signifies the growing demand from corporations seeking to voluntarily offset their carbon emissions and contribute to climate change mitigation efforts.

Exhibit 12: Contribution of the VCM in the carbon market.

FACTS:

In 2022, the global carbon market's traded value was estimated to be US$978.56 billion[1] and the estimated share of the VCM was US$2 billion,[2] meaning over 99% of the carbon market is dominated by the compliance carbon market (CCM). However, studies, such as by McKinsey 2021, have indicated that VCM growth may outpace CCM growth to achieve a similar total market value by 2030 by growing approximately fifteen-fold to 1.5 to 2 gigatonnes of CO_2 per year by 2030, and approximately a hundred-fold to 7 to 13 gigatonnes[3] of CO_2 per year by 2050.

Sources:

[1]https://www.researchandmarkets.com/reports/5774731/global-carbon-credit-market-analysis-traded?

[2]https://allianceforscience.org/blog/2023/04/carbon-removal-why-developers-often-face-difficulties-in-financing-low-carbon-projects/

[3]efaidnbmnnnibpcajpcglclefindmkaj/https://www.mckinsey.com/~/media/mckinsey/business%20functions/sustainability/our%20insights/putting%20carbon%20markets%20to%20work%20on%20the%20path%20to%20net%20zero/putting-carbon-markets-to-work-on-the-path-to-net zero.pdf

The Paris Agreement requires Parties to commit to NDCs and report on emissions regularly. Some countries use international market mechanisms to fulfil their targets, trading carbon credits and offsets. This has led to a surge in demand globally.

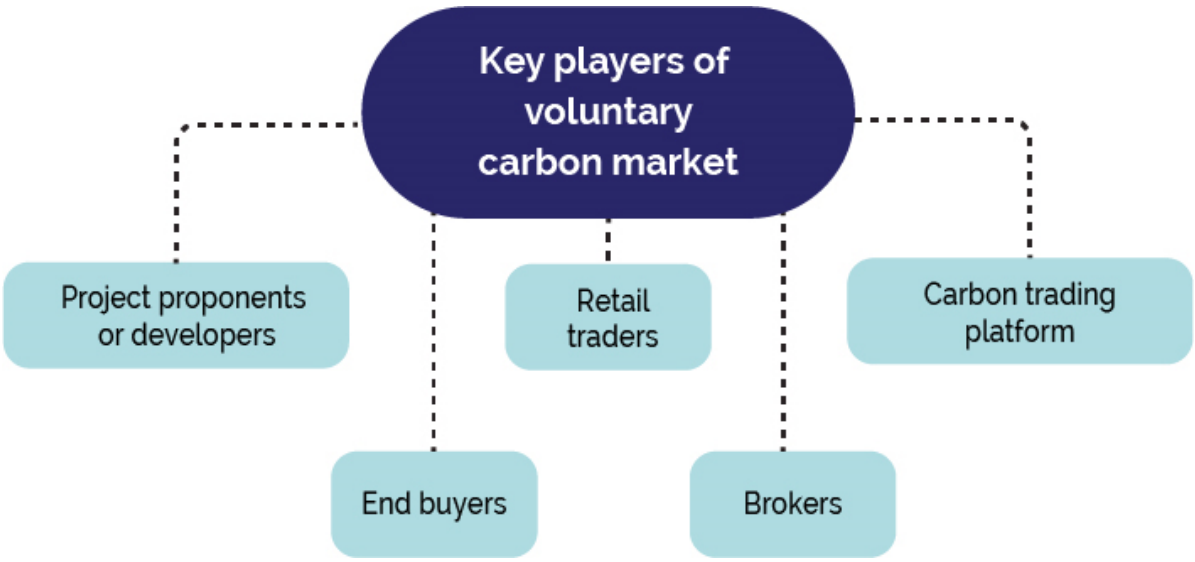
In response, the Ministry of Natural Resources, Environment and Climate Change (NRECC), formerly known as the Ministry of Environment and Water, published a National Guidance on Voluntary Carbon Market Mechanisms and the National Guidance on Forest Carbon Market in 2021 (see Section 3.2 for details). These non-legally binding documents serve as a reference for entities engaging in VCM activities in Malaysia, ensuring no double-counting in accounting for NDCs. They cover various sectors and complement existing forestry carbon market guidance. Emission reduction efforts are reported to the UNFCCC, with adjustments made to prevent double-counting.

Bursa Malaysia was mandated by the NRECC to establish a VCM in Malaysia. On 9 December 2022, Bursa Malaysia successfully launched the BCX, which enables companies to purchase standardised contracts with underlying carbon credits to, among others, offset their emissions and meet internal climate targets. Details are covered in Section 2.2.

2.2.4 Participants of a VCM

The key players of a VCM are shown in Exhibit 13. The section below provides an explanation of their roles in the carbon market.

Exhibit 13: Key players of a VCM.



2.2.4.1 Project Proponents or Developers

Project proponents or developers are the core of the VCM. They identify mitigation and business opportunities and bring partners together to design, implement and manage projects that avoid or reduce GHG emissions or remove carbon from the atmosphere. The project proponent or developer can be the project owner or the external investors who typically invest their own resources, time and expertise in the project, while also providing the necessary funding for the project.

Project developers support the project proponent by ensuring that the project meets the criteria and requirements for carbon credits. These criteria are established by various carbon credit standards, including voluntary standards such as the Verified Carbon Standard (VCS).

To generate carbon credits, project developers assist project proponents in following a rigorous process that involves establishing a baseline of emissions, implementing a project that reduces emissions or increases carbon sequestration beyond the baseline and procuring the verification of the emission reductions or carbon removals by an independent third-party auditor such as a Validation and Verification Body (VVB). The carbon credits that are issued by the voluntary standards upon the completion of these processes can then be sold to buyers, such as companies who use them to offset their own emissions on a voluntary basis.

In addition to managing the technical and administrative aspects of carbon credit-generating projects, project developers may also need to secure financing, negotiate contracts with stakeholders and engage with local communities and other stakeholders to ensure that the project is socially and environmentally sustainable.

2.2.4.2 End Buyers

End buyers in the VCM are individuals, companies or organisations that purchase carbon credits on a voluntary basis, without being required to do so by any regulatory or legal obligation. These buyers are driven by climate action aspirations to reduce their own carbon footprint or to support sustainability initiatives.

End buyers of voluntary carbon credits will typically evaluate the quality and credibility of the credits they intend to purchase and ensure that the projects they support truly contribute to meaningful emission reductions and sustainable development. Buyers will look for carbon credits that are verified and certified by recognised standards.

2.2.4.3 Traders

Traders in the VCM are largely diverse groups of organisations that purchase and trade voluntary carbon credits as a form of financial investment. Traders may participate in the market through various channels, such as online carbon trading platforms, carbon brokers or investment funds that specialise in voluntary carbon credits. Some carbon trading platforms allow individuals to purchase and trade carbon credits directly, while others may require participation through a broker or direct buyer.

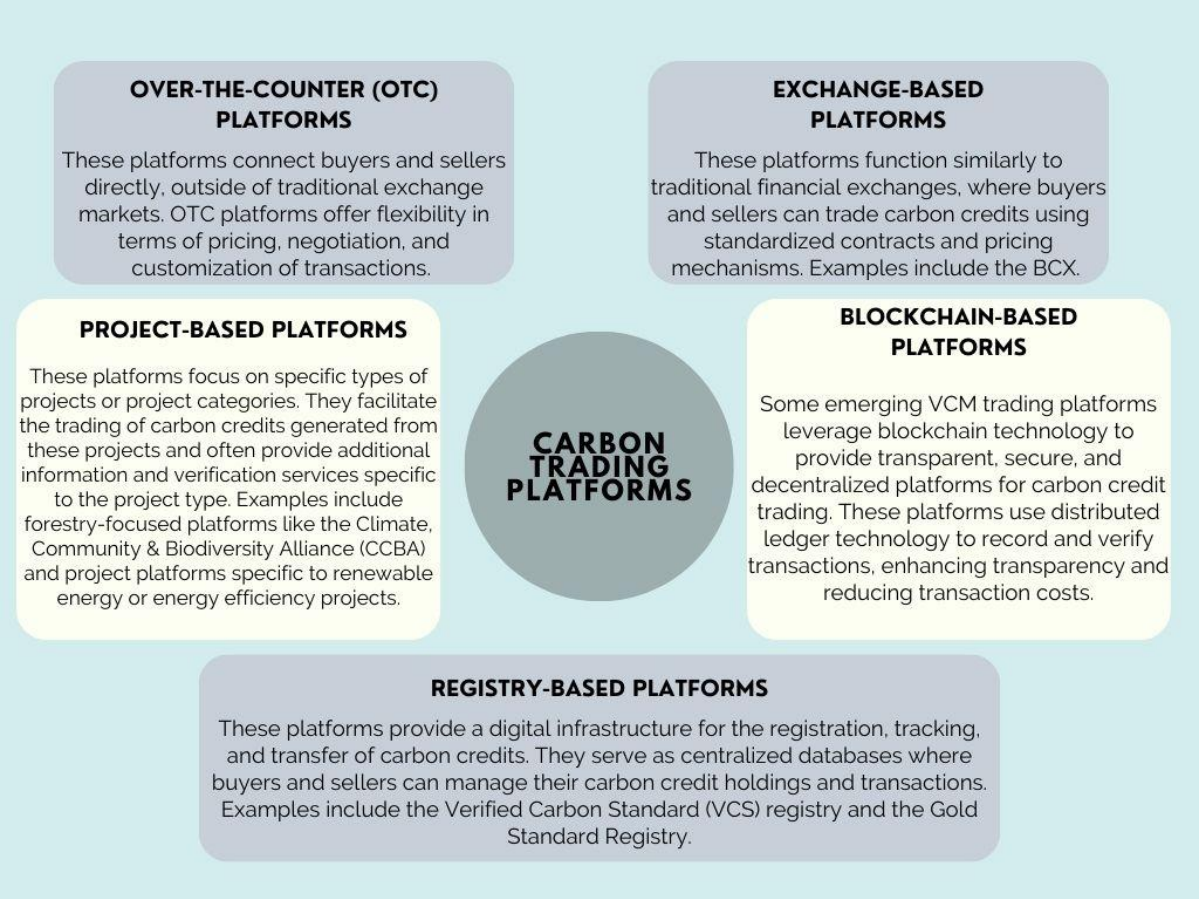
Like any other financial market, the VCM is subject to fluctuations in prices due to demand and supply, and may involve risks for investors. Traders usually evaluate the credibility and quality of the carbon credits they purchase, and consider factors such as the certification and verification of the credits, the reputation of the project developer or carbon standard and the financial return potential.

2.2.4.4 Carbon Trading Platform

A carbon trading platform serves as a digital marketplace or exchange where organisations can engage in the buying and selling of carbon credits. The platform provides a centralised and transparent marketplace for participants to trade carbon credits and facilitates transactions by matching buyers with sellers based on their respective preferences and requirements.

A carbon trading platform typically offers functionalities such as order placement, price discovery, trade execution and settlement. It may also provide tools for monitoring and tracking carbon credit transactions. Carbon trading platforms can be accessed by various market participants, including companies, organisations, governments and individuals. Exhibit 14 shows the various types of trading platforms.

Exhibit 14: Types of carbon trading platforms.



Source: Derived from various sources

In a carbon exchange platform, standardised contracts are traded for the buying and selling of carbon credits. These contracts establish the terms and conditions for the exchange of carbon credits between participants in the market. Some key aspects of standardised contracts traded in carbon exchange platforms are shown in Exhibit 15.

Exhibit 15: Key aspects of standardised contracts.

Quantity and Quality	A standardised contract represents the emission reduction or removal achieved by the project. The quality aspects can include the project's validation and verification status, the methodology used for calculating emission reductions and any additional certification or accreditation requirements.
Pricing Mechanism	The price may be determined through various methods, such as auctions, market-based mechanisms or bilateral negotiations. The price can fluctuate based on supply and demand dynamics in the market and can vary across different projects or regions.
Delivery and Settlement	The delivery and settlement process for carbon credits includes specifying the timeframe for delivery, the location of delivery (such as a registry or account) and the mechanism for transferring ownership and ensuring the integrity of the transaction.
Terms and Conditions	The terms and conditions for the trade are outlined, including the rights and obligations of the buyers and sellers. This can include provisions related to warranties, liability, *force majeure* events, confidentiality and dispute resolution mechanisms.
Regulatory Compliance	Compliance with relevant regulations and standards is ensured. The exchange trading platform may incorporate requirements set by governmental bodies or regulatory frameworks, such as emission reduction targets, reporting obligations and eligibility criteria for participating in the market.
Market Transparency	The contract provides consistent and comparable information about carbon credits. This allows buyers and sellers to evaluate the attributes and credibility of the credits being traded and make informed decisions.

Source: Derived from various sources

The standardisation of contracts in carbon exchange platforms brings efficiency and liquidity to the market. It facilitates the trading of carbon credits as fungible and tangible products, enabling participants to buy and sell credits with confidence, knowing that the terms and conditions are well defined and standardised across the platform. The details of standardised contracts may vary depending on the particular carbon exchange platform, regional regulations and market practices.

2.2.4.5 Brokers

Brokers in the VCM are intermediaries who facilitate the trading of voluntary carbon credits between buyers and sellers. A carbon broker assists clients in navigating the complexities of the carbon market. They provide expertise, market knowledge and access to a network of buyers and sellers. Carbon brokers offer services such as market analysis, advisory and matchmaking. They help clients identify suitable carbon credit opportunities, where applicable, negotiate prices and facilitate transactions on their behalf.

2.2.5 Carbon Standards

A carbon standard or GHG-crediting programme refers to the complete set of rules, procedures and methodologies according to which certified carbon credits are generated and issued. Carbon standards are developed and governed by standards organisations, typically international non-governmental organisations (NGOs) that consist of a standard-setting arm, a regulatory arm and a validation and verification system usually outsourced to third parties. Governments can also develop or support the development of carbon standards.

Standards organisations as the regulators of the VCM have developed and administered standardised procedures for crediting GHG emission reductions, avoidance and removals. The standards organisations also safeguard the quality of VCM carbon credits and provide credibility to the baseline-and-credit system. They have clear rules and requirements that are regularly updated, i.e. mechanisms for stakeholder consultation and grievances and environmental and social safeguards, as well as methodologies for determining baselines and project contributions and for independent reviews of projects by competent, third-party auditors (known as validation/verification bodies or VVBs).

Carbon standards both certify carbon projects and programmes and facilitate the trade of carbon credits. Carbon standards issue one (1) credit for each metric tonne of GHG emissions avoided, reduced or removed, which are measured in tCO_{2eq}. This way, the carbon standards convert certified GHG emission reductions and removals into tradable carbon credits. To obtain certification of GHG emission reductions or removals and be issued credits to trade, VCM projects and programmes must comply with the standards' processes, rules, requirements and safeguards; apply methodologies approved by the standards; and provide evidence of compliance that is generated by project developers/project proponents and reviewed by an independent third-party auditor. Carbon standards use registries to track all credits generated, transfer tradable credits and trace transactions between buyers and sellers.

Examples of international carbon standards are as follows (this list is non-exhaustive; see also Exhibit 16 for more details on selected carbon standards):

- Verified Carbon Standard (VCS)
- Gold Standard (GS)
- ART TREES
- Plan Vivo
- Global Carbon Council (GCC)
- Puro.earth.

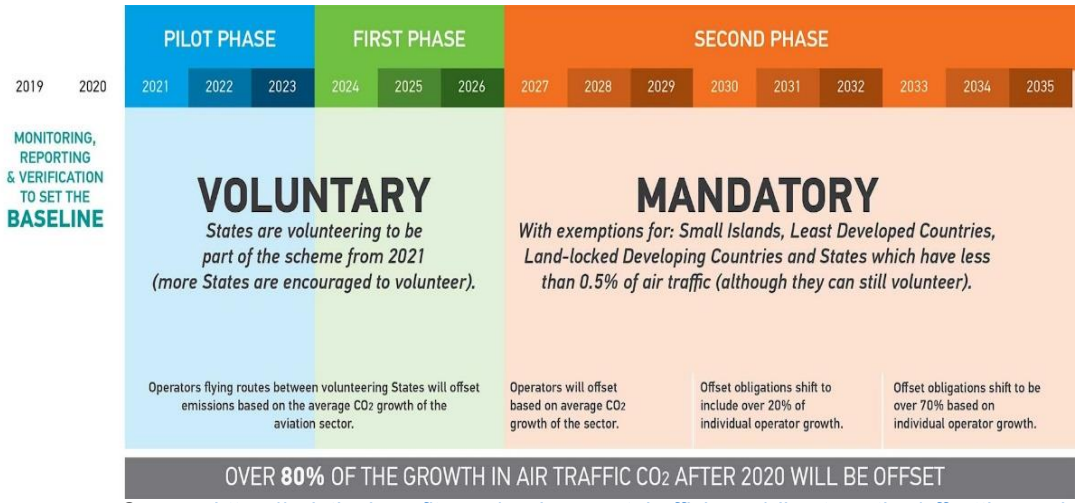
Exhibit 16: Examples of international carbon standards.

Standard	Market Volume (M = million)	Name of Credits (Representing 1 tCO_{2e})	Geographical Scope	Sectoral Scope
Verified Carbon Standard	1,154 M credits *(as of July 2023)*	Verified Carbon Units (VCUs)	2,052 registered projects in 88 countries. VCS is dominant in developing countries	Covers all project classes
Gold Standard	238 M credits *(as of July 2023)*	Verified Emission Reductions (VERs)	2,900 registered projects in over 100 countries. Credits are purchased especially by buyers in the European Union	Covers most project classes, but excludes project-level REDD+
PLAN VIVO For nature, climate and communities	7 M credits *(as of July 2023)*	Plan Vivo Certificates (PVCs)	28 registered projects in over 20 countries including Latin America, Africa, Asia and the Pacific	Nature-Based Solutions (NBS) and Nature Climate Solutions (NCS); includes ecosystem rehabilitation, restoration and sustainable land management initiatives

Source: Verra Project and Credit Summary, Gold Standard Our Impact & PlanVivo History & Standard Overview

The International Civil Aviation Organization (ICAO) created the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), a global market-based mechanism to mitigate GHG in international aviation. CORSIA aims to reduce the growth in CO_2 emissions from international flights by requiring airlines to purchase carbon credits from authorised projects in other industries, like forestry or renewable energy, to make up for their emissions. CORSIA is expected to be implemented in phases, with voluntary participation starting in 2021 and a mandatory phase starting in 2027, as shown in Exhibit 17.

Exhibit 17: Implementation phases of CORSIA.



Source: https://aviationbenefits.org/environmental-efficiency/climate-action/offsetting-emissions-corsia/corsia/corsia-explained/

Projects that attain additional benefits, such as biodiversity conservation, engagement with local communities and climate change adaptation, can obtain supplementary certifications based on specific international standards. Carbon credits associated with these additional certifications often command higher prices compared to basic carbon credits. These sought-after credits are particularly attractive to corporations or organisations looking to invest in carbon projects that go beyond the scope of climate change mitigation and deliver broader environmental and social advantages. Examples of additional certifications are as follows:

i. Verra:
   a. Climate, Community and Biodiversity Standard (CCB)
   b. Sustainable Development Verified Impact Standard (SD VISta).

ii. Gold Standard: Global Goals (GS4GG).

2.2.6 Challenges and Gaps in Scaling Up the VCM

Several challenges and gaps have been identified within the carbon credits ecosystem that need to be addressed to ensure its effectiveness in reducing GHG emissions. Exhibit 18 highlights the key challenges identified by key players and stakeholders in the VCM ecosystem.

Exhibit 18: Key challenges identified in the VCM ecosystem.

No.	Key challenges identified in the VCM ecosystem
1.	**Insufficient overarching governance** The VCM does not have any overarching governance body. This entails difficulties in the legal qualification of voluntary carbon units. Since each standard sets its own qualification criteria for offset projects, the quality of the carbon credits often cannot be compared apples to apples.
2.	**Adverse media** Ongoing negative publicity on the quality and credibility of carbon standards and carbon projects is impacting confidence in the global VCM.
3.	**Evolving standards** The VCM is still undergoing an evolution with standards and criteria of the quality of carbon credits being refined and shaped along the way. Part of the reason for these evolving standards could be the increasing scrutiny by the global carbon community that serves to preserve the integrity of carbon credits. This poses challenges to project developers as they do not want to invest in projects that could potentially end up as stranded assets. A direct consequence is an evolving definition of "high"-quality carbon credits, which impacts liquidity in the carbon market.
4.	**Additionality and baselines** • Financial-based additionality could be difficult to prove and there is a lack of clear consensus on project implications. • Practice-based additionality is the norm in the VCM; however, there should be an added focus on funding projects through multiple streams so as to avoid the confounding potential of financial additionality. Carbon removal projects utilise inherently subjective baselines and more assumptive estimations to determine the impact.
5.	**High-quality credits are scarce** Accounting and verification methodologies vary and there is a lack of explicitly specified additional benefits.
6.	**Financing is a barrier** • Financing is another key challenge, especially for small- to mid-size project developers. • Most prevalent financing methods include forward purchase agreements and own funding. 90% of contributors agree that forward products will be key to scaling up the VCM.
7.	**Long lead times, uncertain carbon prices** • In recent years, due to the surge in new carbon projects pending registration with carbon registries, bottlenecks have been caused in validation and verification processes and the issuance of carbon credits. Certain carbon projects have long implementation periods and financial recovery will have to endure long lead times. Unless the suppliers have locked in the purchase agreement, they are exposed to unpredictable demand and carbon prices.
8.	**Lack of awareness and capacity** In jurisdictions where VCMs are at a nascent stage, there is a general lack of awareness and institutional capacity among the corporates, investment communities, policymakers and technical experts required to develop a sustaining ecosystem. Examples of technical experts include carbon consultants, project developers, validation and verification bodies and those bodies providing monitoring, reporting and verification services (MRV).
9.	**Lack of linkages to the compliance market** • These linkages are perceived to be crucial to help drive the prices of carbon credits in the VCM and in turn, promote more carbon projects in the ecosystem. This situation could be changed by future linkages to Article 6 of the Paris Agreement, which aims to integrate voluntary international cooperation for carbon emission reduction and in certain jurisdictions, domestic carbon compliance markets already have interactions with VCMs.

Source: Analysis with carbon community

To tackle the challenges and issues, initiatives have been introduced to simplify the complexities of the VCM and enhance transparency. These initiatives empower governments, businesses and society as a whole to engage in informed discussions regarding the significance of carbon finance as a crucial component of climate action. By increasing

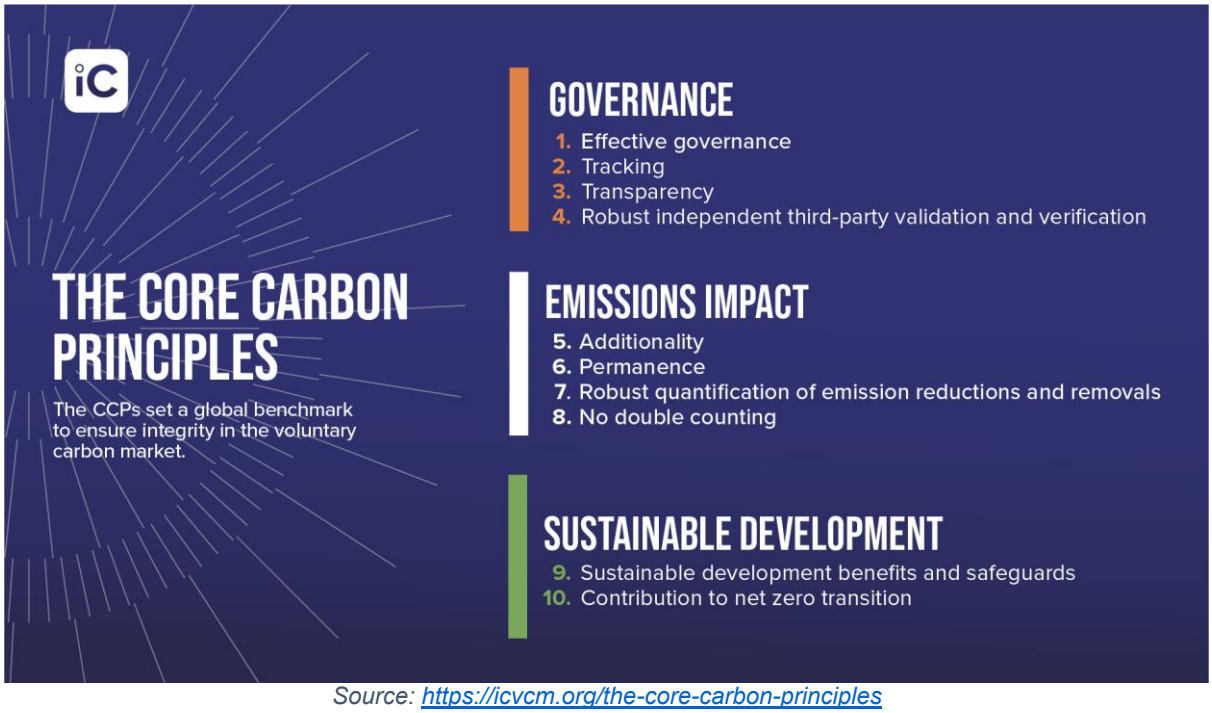
transparency and streamlining processes, these initiatives contribute to a more effective and inclusive VCM that supports the broader goal of addressing climate change.

While high-quality carbon credits possess the potential to unlock essential financial resources for reducing and removing billions of tonnes of emissions, concerns have been raised regarding the quality of these credits. These concerns have implications for the demand for carbon credits within the VCM.

The Integrity Council for the Voluntary Carbon Market (Integrity Council or ICVCM) serves as an independent governing body for the VCM. It establishes a threshold standard based on its Core Carbon Principles (CCPs). This standard provides a reliable and strict framework for recognising carbon credits of high integrity that have a demonstrable and verifiable impact on the climate and are in line with the latest scientific insights and best practices.

This standard is applied through an Assessment Framework at both the carbon-crediting programme and carbon credit category levels. It determines which carbon-crediting programmes and categories are eligible for CCP status. The 10 CCPs are depicted in Exhibit 19.

Exhibit 19: Fundamental principles for high-quality carbon credits.



Source: https://icvcm.org/the-core-carbon-principles

This publication, released in March 2023, presents the Programme-level Criteria and Assessment Procedure of the Assessment Framework (AF). It provides carbon-crediting programmes with insights into the Integrity Council process and the operational requirements for assessment, acting as a global benchmark and promoting transparency and accountability in the carbon credit market. The AF specifies which carbon-crediting programmes and technique types are CCP-eligible and offers instructions on how to apply the CCPs. The carbon credits issued by GHG-crediting programmes shall be examined by the Integrity Council. The carbon credits cannot be referred to as CCPs until the credit category has been examined and has proven to meet the stated standards for high integrity in terms of climate, environmental and social elements.

Besides the ICVCM, certain experts offer carbon rating services or frameworks to assess the integrity and quality of carbon credits to assist buyers and investors. Buyers primarily focus on factors such as additionality, leakage, permanence and verification processes when

considering the purchase of carbon credits. These services aim to provide an assessment of carbon credits based on established criteria and standards, aiding buyers in making informed decisions about their carbon credit investments, as shown in Exhibit 20.

Exhibit 20: Carbon rating services and frameworks in the market.

Framework & Rating Tools	Organisations	Source
Carbon Credit Quality Initiatives (CCQI) – An online scoring tool that offers a free, user-friendly method to score different types of carbon credits against seven quality objectives.	Environmental Defense Fund, World Wide Fund for Nature (WWF-US) and Oeko-Institute	https://carboncreditquality.org/scores.html
BeZero's Carbon Ratings (BCR) represent BeZero's opinion on the likelihood that a given credit achieves a tonne of CO_2e avoided or removed. The BCR is a publicly available, risk-based framework for assessing carbon efficacy which provides users with a risk-based assessment for understanding and interrogating carbon credit performance of any type, in any sector and country.	BeZero Carbon and AlliedOffsets	https://bezerocabon.com/ratings/
Sylvera Carbon Credit Ratings develop specific frameworks for each project category to assess quality across fundamentally different categories of activities. All frameworks are peer-reviewed by a committee of experts and carbon market stakeholders – including project developers and registries – to ensure scientific consensus.	Sylvera	https://www.sylvera.com/ratings

2.3 Introduction to the VCM in Malaysia

2.3.1 Role of Carbon Markets in Malaysia

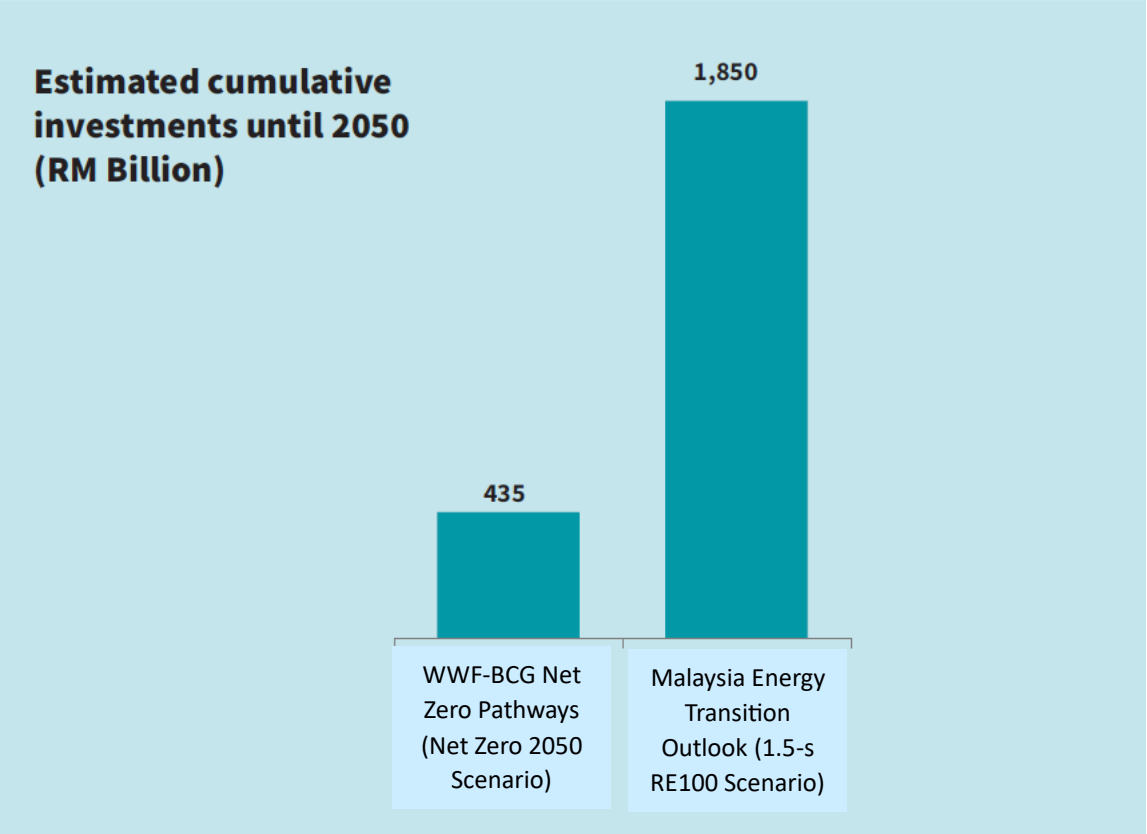
Globally, governments and businesses are pursuing paths to achieve their net zero goals. Climate Action Tracker, an independent scientific project that tracks government climate action, reported as of November 2022 that around 140 countries had announced or are considering net zero targets and these countries cover close to 90% of global emissions, compared to 130 countries, covering about 70% of emissions, in May 2021. Malaysia is one of the countries with the same aspiration and its target is to become a net zero GHG emissions nation as early as 2050. Malaysia increased its mitigation ambition with an unconditional target to reduce its economy-wide carbon intensity against GDP by 45% in 2030 compared to 2005 levels in its revised NDC in July 2021.

Investments Required for Net Zero

There have been several indicative investments required for Malaysia to achieve its net zero aspiration. During the launch of Part 1 of the National Energy Transition Roadmap (NETR) on

27 July 2023, it was stated that a cumulative investment ranging from RM435 billion to RM1.85 trillion is needed for Malaysia to make the energy transition and achieve net zero by 2050 (see Exhibit 21). In order to achieve the target of 70% of renewable energy in the installed power mix by 2050, an indicative investment of RM637 billion is required. Part 1 of the NETR unveiled the implementation of ten (10) flagship projects and initiatives, which are expected to generate investments of approximately more than RM25 billion through a combination of private and public funding. To this end, the NETR has also acknowledged the role of the BCX in driving a nascent VCM.

Exhibit 21: Cumulative investments required for Malaysia to achieve net zero.



Source: National Energy Transition Roadmap (July 2023)

Separately, IRENA's Malaysia Energy Transition Outlook (2023) has forecast that as much as USD415 billion will need to be invested in energy transition technologies and related infrastructure in the 1.5°C-Scenario by 2050, compared to USD159 billion in the Planned Energy Scenario (PES).[5]

The corporates in Malaysia are preparing, enhancing and aligning their commitments to the sustainability and decarbonisation strategy in response to increasing ESG pressures from stakeholders such as financial institutions, investors and customers. Over the years, Bursa Malaysia has expended significant resources and efforts to aid and nudge public listed companies to improve their ESG practices so that they remain relevant and investable. In 2022 alone, Bursa Malaysia announced the following ESG-related initiatives:

1. Launched two new ESG-themed indices under the FTSE Bursa Malaysia Index Series:

[5] The PES reflects current plans and other expected objectives or policies that were approved as of the time of conducting the analysis.

- the FTSE Bursa Malaysia Top 100 ESG Low Carbon Select Index (FBM100LC) and
- the FTSE Bursa Malaysia Top 100 ESG Low Carbon Select Syariah Index (FBM100LS) (29 Aug 2022);

2. Released enhanced sustainability reporting requirements in the Main Market and the ACE Market Listing Requirements, with the aim of elevating the sustainability practices and disclosures of listed issuers (26 Sep 2022); and

3. Launched the BCX, Malaysia's VCM (9 Dec 2022).

2.3.2 Background of the Bursa Carbon Exchange (BCX)

In the Malaysian Budget 2022 tabled on 29 October 2021, it was announced that the VCM initiative will be implemented by Bursa Malaysia to provide a trading platform of carbon credits between green asset owners and other entities transitioning towards low-carbon practices. This is to encourage sustainable growth, ensure competitiveness and relevance in the global market and ultimately enable Malaysia to achieve the aspiration of being a net zero GHG emissions country as early as 2050.

In addition to the mandate of building a trading platform, Bursa Malaysia has set out to develop and nurture the local VCM ecosystem by connecting and bringing together a host of key actors and players (see Exhibit 22). This local VCM ecosystem is essential to pivot the country towards a low-carbon economy while the trading platform provides an avenue for transparent, fair and orderly trading of carbon credits. Towards this end, Bursa Malaysia's endeavour to develop a robust local ecosystem includes frequent engagements with stakeholders from the public and private sectors to develop cohesive carbon trading policies for Malaysia which adopt the whole-of-nation approach. Additionally, Bursa Malaysia has established industry working groups comprising established local corporates and project developers for consultation on the development of a vibrant VCM ecosystem.

Exhibit 22: Key actors and players in the Malaysian VCM ecosystem.

Source: Bursa Carbon Exchange

On 9 December 2022, Bursa Malaysia launched Malaysia's pioneer VCM initiative with the introduction of the BCX, which is also the first Shariah-compliant carbon exchange in the world, diversifying the product universe for ESG and Shariah-compliant products. The launch was officiated by the Minister of Natural Resources, Environment and Climate Change (NRECC), Yang Berhormat Tuan Nik Nazmi Nik Ahmad (see Exhibit 23).

Exhibit 23: Launch of Bursa Carbon Exchange, 9 December 2022.

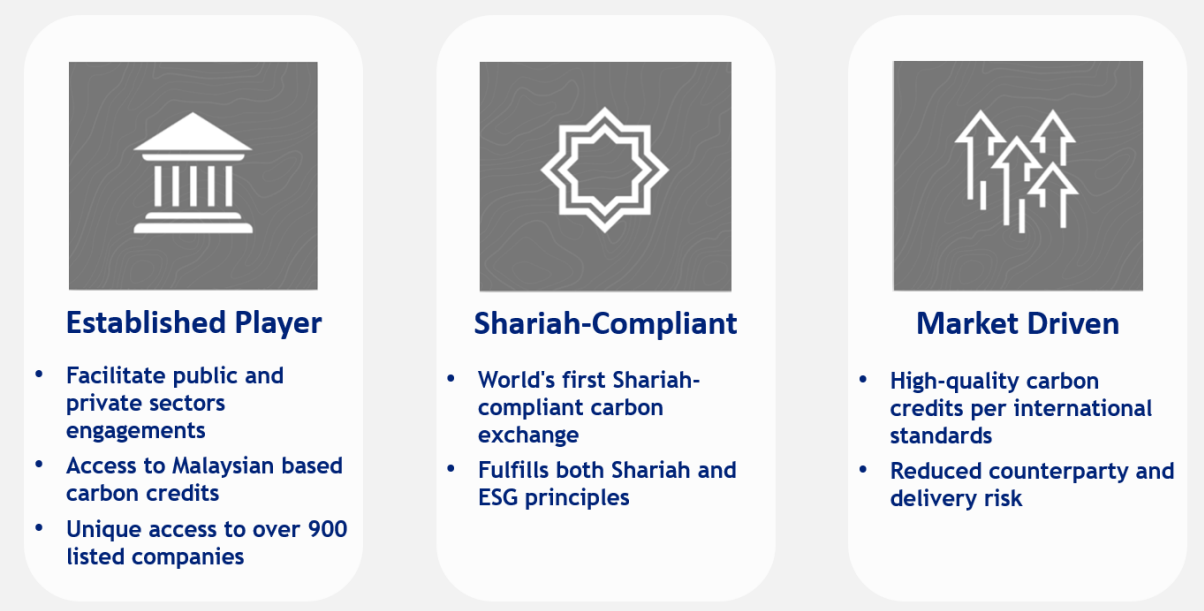
Tan Sri Abdul Wahid Omar, Chairman of Bursa Malaysia, presenting a token of appreciation to Yang Berhormat Tuan Nik Nazmi Nik Ahmad, Minister of NRECC, following the successful launch of the BCX. This was witnessed by (from left to right): Datuk Muhamad Umar Swift, Chief Executive Officer of Bursa Malaysia; Datuk Seri Ir. Dr. Zaini Ujang, NRECC and Dato' Anis Rizana Mohd Zainudin, Deputy Secretary General of Treasury (Investment), Ministry of Finance.

Source: Bursa Malaysia Berhad

2.3.3 Unique Aspects of the BCX

The main unique aspects of the BCX are summarised in Exhibit 24.

Exhibit 24: Unique aspects of BCX.



Source: Bursa Carbon Exchange

The BCX is operated and managed by Bursa Malaysia Carbon Market Sdn Bhd (formerly known as BM Carbon Market Sdn Bhd), a wholly owned subsidiary of Bursa Malaysia Berhad, which is a well-established market operator and one of the largest trading bourses in the ASEAN region. Being the national stock exchange of Malaysia, Bursa Malaysia has vast experience in setting up exchanges and ensuring a fair and orderly market, and is thus confident of providing a seamless trading experience to both international and domestic participants.

Firstly, by working closely with the Malaysian federal government and various state governments, Bursa Malaysia aims for the BCX to become the primary, trusted way for corporate buyers from around the world to access Malaysian-based carbon credits. Furthermore, with an increasing number of Malaysian companies stepping up to meet rising ESG expectations over time, the more than 950 listed companies on Bursa Malaysia could benefit from the BCX through their active participation in carbon trading. Malaysian corporates can participate in the demand and supply and purchasing or selling of carbon credits as part of their decarbonising, investment or cost recovery strategies.

Secondly, the BCX is the world's first Shariah-compliant carbon exchange. The Shariah pronouncement was made by the Shariah Committee of Bursa Malaysia on 10 November 2022, specifically in relation to:

1. The following key features of the BCX trading platform:
    - Non-interest-bearing accounts;
    - No interest charged for late payment; and
    - Listing of Shariah-compliant products.

2. Shariah-compliant products on the BCX that fulfil the following requirements:
    - The asset must have an attached value;
    - The asset must prove to be beneficial according to prevalent customs;

- The asset must be owned and controlled by a party; and
- The asset must be allowed to be utilised by the Shariah (i.e. does not fall under the category of Shariah-prohibited assets).

Against this backdrop, the BCX is designed for corporates that embrace ESG principles and are aligned with Shariah principles.

To this end, the BCX is market-driven, continuously engaging with market players and participants for improvements and to provide better services.

Major features implemented after much industry consultation include:

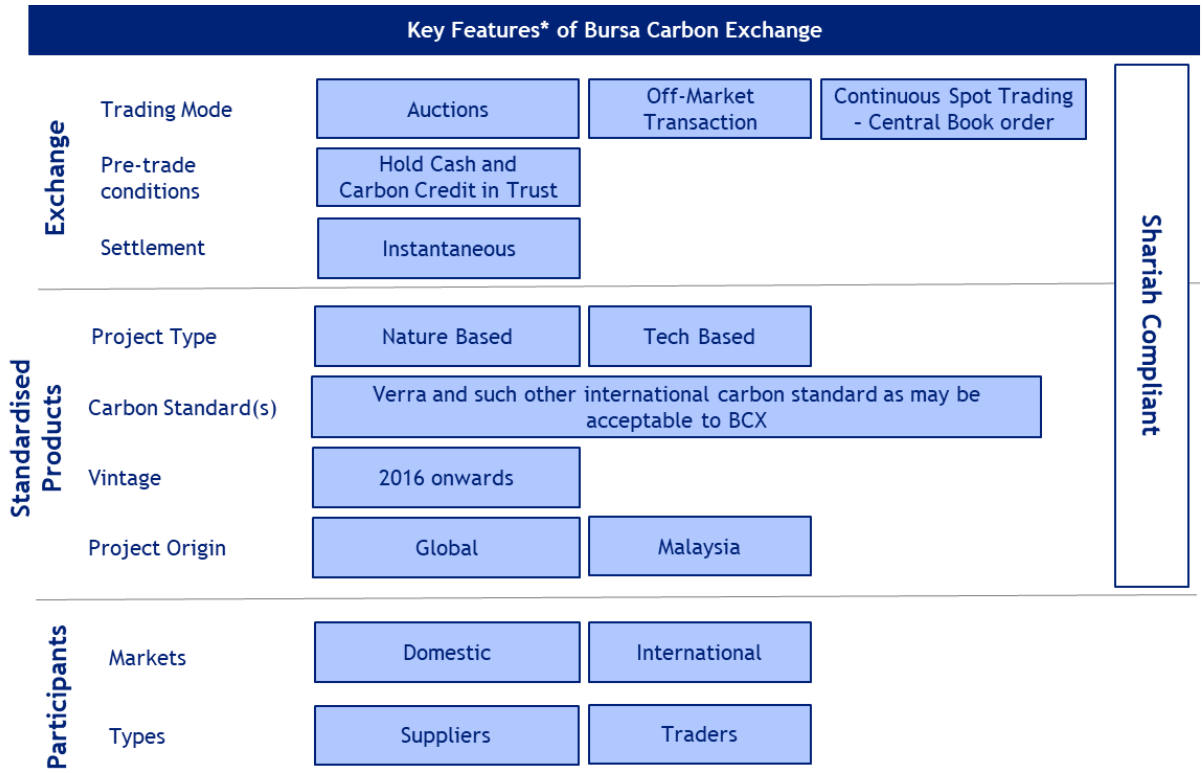
1. Only high-quality carbon credits per well-recognised international standards will be offered on the BCX platform;
2. A pre-funding and pre-allocation of carbon credits mechanism based on a bare trustee model has been adopted to reduce counterparty and delivery risk; and
3. Standardised products with underlying Malaysian carbon credits will be traded to cater for both global and domestic participants.

The BCX will continue to focus on developing relevant, data-driven solutions and innovative environmental products to meet the evolving needs of BCX participants.

2.3.4 Salient Features of the BCX

The salient features of the BCX can be divided into three categories: exchange, standardised products and participants (see Exhibit 25).

Exhibit 25: Key features of BCX in a nutshell.



Source: Bursa Carbon Exchange

Trading

Three (3) trading modes are offered by the BCX:

1. Auction
   An auction is conducted for the purpose of facilitating the price discovery of new products launched by the BCX, unless specified otherwise.

   Sellers who wish to participate in the auction are required to provide a reserve price. On the other hand, buyers who wish to purchase are required to submit their sealed bids electronically through the BCX platform (see Exhibit 26).

   Bids will be ranked by price, volume and time basis. The price at which the total quantity of received bids does not exceed the total offered quantity will be the auction clearing price. All successful bidders will pay the same clearing price.

Exhibit 26: BCX successfully completes Malaysia's Inaugural Carbon Auction.

On 16 March 2023, the first transaction of the BCX was conducted by way of auction. The auction, which was carried out electronically, saw encouraging participation with 15 buyers from various industries purchasing a total of 150,000 standardised contracts with underlying Verra-registered carbon credits, and facilitated the price discovery of two new products offered by the BCX – the Global Technology-Based Carbon Contract (GTC) and the Global Nature-Based Plus Carbon Contract (GNC+). The GTC was oversubscribed and the 100% domestic bidders represented the first-movers of the local voluntary carbon market in Malaysia.

Source: Bursa Malaysia Berhad

2. Off-market transaction
   A seller and a buyer are permitted to enter into an off-market transaction, in which the BCX trading platform will be used for clearing and settlement, for any trades negotiated and matched outside of the BCX's central order book. This reduces the counterparty and delivery risk for both the seller and buyer.

   This is also widely known as a block trade or over-the-counter (OTC) transaction.

3. Continuous spot trading
   Both the seller and buyer will be able to submit bid and offer orders electronically on the BCX trading platform. Bids and offers shall be matched by the BCX's central order book using a price-time algorithm (see Exhibit 27).

Exhibit 27: Continuous spot trading on BCX.

What's next?

The BCX intends to organise subsequent auctions to introduce new standardised products for trading (either via off-market transactions or continuous spot trading), for instance, the introduction of the Malaysian Nature-based Plus Carbon Contract (MNC+). Meanwhile, the off-market and continuous spot trading platform has gone live since 25 September 2023.

Source: Bursa Malaysia Berhad

Bare trustee model

Both the seller and buyer must pre-fund their account before any trade order can be submitted. This means that the seller must deposit carbon credits with the BCX before any sell order can be entered, or the buyer must deposit sufficient cash with the BCX before any buy order can be entered. The BCX will hold the deposited cash and carbon credits in trust for BCX participants.

Upon a successful request of an off-market transaction or matching through the trading platform on the BCX, the settlement shall be instantaneous. This means that the seller's and the buyer's accounts with the BCX will be updated immediately with their asset and cash balance reflecting the latest transaction instantly.

Standardised products

In terms of products, the BCX will categorise carbon projects into standardised products based on the carbon credits meeting the BCX's contract specifications. This will reduce the complexity that buyers might face otherwise, given the many carbon projects available in the VCM space and the nuanced differences between carbon projects.

Carbon projects will be categorised based on the following two (2) attributes:

1. Project type (i.e. whether nature-based or tech-based); and
2. Project geography (i.e. whether the project is located in or outside Malaysia).

As of the publication date of the Handbook, the BCX only accepts carbon projects issued by Verra to be traded on the BCX trading platform, and the vintage of the carbon projects must be from 2016 onwards. Vintage typically refers to the calendar year during which the emission reduction, avoidance or sequestration occurs. This criterion is in line with the eligibility framework of the CORSIA, which is the world's first mechanism targeted to reduce GHG emissions from the international aviation sector.

Participants

As for market participants, the BCX is open to Malaysian and international corporates to participate as a Trader, Supplier, Broker or Market Maker. The types of market participants will be introduced in stages. At the commencement of trading, both Traders and Suppliers will be offered, while Brokers and Market Makers will be included at a later stage.

Further details can be found in the Rules of Bursa Carbon Exchange, accessible via the BCX website.

2.3.5 Onboarding as a BCX Participant

Any entity interested in participating and trading on the BCX should first check if it fulfils the eligibility requirements specified in Rule 3.03 of the Rules of Bursa Carbon Exchange (BCX Rules).

If deemed eligible, the Application Form for Participation in Bursa Carbon Exchange can be downloaded, read in conjunction with the BCX Rules, and filled out accordingly. Part F of the Application Form for Participation in Bursa Carbon Exchange contains the list of relevant supporting documents to be submitted together with the Application Form. For ease of application, a standard template for Board Resolution is provided for further action or reference.

All documents, except the Application Form, must be certified true copies (CTC-ed) by the company secretary, a lawyer, a notary public or a Commissioner of Oaths. To complete the application, the filled Application Form, together with all the relevant supporting documents, can be submitted to bcx@bursamalaysia.com. Hard copy submission is not required.

Upon application approval and successful payment of the onboarding fee, if applicable, BCX participants will be granted access to all functions on the BCX trading platform.

Chapter 3

Guidance on Voluntary Carbon Market Mechanism in Malaysia

Chapter 3: Guidance on Voluntary Carbon Market Mechanism in Malaysia

3.1 Chapter Summary

The Malaysian government recognises the importance of Voluntary Carbon Market (VCM) participation in complementing national efforts to address climate change and meet Malaysia's NDC target. As part of its commitment, Malaysia has developed guidances and frameworks to guide VCM activities.

The National Guidance on Voluntary Carbon Market Mechanisms serves as a reference for project developers, buyers and other stakeholders involved in voluntary carbon projects. This guidance outlines the key principles, requirements and procedures for the development, certification and trading of voluntary carbon credits in Malaysia. They ensure that projects meet international standards and best practices, promoting transparency, credibility and environmental integrity.

In addition to the VCM Guidance, Malaysia has established the National Guidance on Forest Carbon Market as a reference point for domestic parties that want to participate in forest carbon-related activities. The guidance provides information on the role of actors and requirements, such as registration, monitoring, validation and verification, issuance, renewal and reporting, related to forest-based carbon projects.

Having both guidances will enhance the credibility and effectiveness of the VCM and promote the development of high-quality projects that contribute to climate change mitigation, sustainable development and biodiversity conservation. They also facilitate stakeholder participation in Malaysian VCM activities from businesses, communities and individuals.

Apart from this, the forestry sector plays a vital role in socioeconomic growth, climate change mitigation and biodiversity conservation. Under the National REDD Plus Strategy (NRS), NRECC has introduced the REDD Plus Finance Framework (RFF) as a sustainable financing mechanism. The RFF has identified two (2) innovative financing mechanisms: the Forest Conservation Certificate (FCC) and the Forest Carbon Offset (FCO). The FCC is a non-market-based approach, while the FCO is a market-based approach that allows the offsetting of carbon emissions from the forest. The agency that is responsible for implementing the RFF is the Malaysia Forest Fund (MFF).

In Malaysia, the federal government has authority over matters specified in the Federal Constitution, including economic planning at the national level. On the other hand, state governments have jurisdiction over matters which include areas such as land administration, agriculture and local government.

With regard to the carbon market, few states have developed policies and regulations related to carbon trading. The aim is to align with federal guidelines and work towards sustainable climate action and emission reduction targets.

Among the states, Sarawak is considered the most advanced in this area and has enforced the law on carbon trading. Sabah is currently in the process of formulating its law, while Pahang is amending its existing enactment to accommodate carbon trading. States like Terengganu, Johor and Kelantan are actively engaged in the REDD+ programme and in exploring the possibilities of aligning their state-level carbon trading policies and regulations with the guidelines provided by the federal government.

The information provided in Section 3.2 below is based on interviews and surveys received from the state governments.

3.2 At National Level

3.2.1 National Level Setup & Requirements

The government of Malaysia has published a National Guidance on Voluntary Carbon Market Mechanisms and a National Guidance on Forest Carbon Market for Malaysia. These are non-legally binding documents intended as references for entities engaging in VCM mechanisms and forestry carbon-related activities.

The National Guidance on Voluntary Market Mechanisms covers emission reductions from the energy (including transport), waste, Industrial Processes and Product Use (IPPU) and Agriculture, Forestry and Other Land Use (AFOLU) sectors. The National Guidance on Forest Carbon Market, on the other hand, identifies the roles and functions of the various actors involved in forest carbon projects in Malaysia.

The National Guidance on Forest Carbon Market complements the National Guidance on Voluntary Carbon Market Mechanisms. Both documents are to enhance coordination, collaboration and effective implementation of carbon projects while ensuring transparency and accountability. Emission reduction efforts from all sectors will be reported in the Biennial Update Report (BUR) and later, from 2024 onwards, in the Biennial Transparency Report (BTR), to be submitted to the United Nations Framework Convention on Climate Change (UNFCCC).

During the inauguration of the Bursa Carbon Exchange in December 2022, the Minister of NRECC highlighted the significance of the Ministry's initiatives to the UNFCCC and national-level endeavours to achieve the country's net zero target. An extract of the Minister's speech is presented in Exhibit 28.

Exhibit 28: NRECC Minister's speech during the launch of Bursa Carbon Exchange.

"Malaysia also announced its aspiration to achieve net zero GHG emissions as early as 2050, subject to the outcomes of Malaysia's Long Term Low Emissions Development Strategy or LT-LEDS, which NRECC is tasked to prepare. We furthermore reiterated our commitment to maintain at least 50% of our forest cover as pledged at the Rio Earth Summit in 1992.

We will steadfastly uphold the principles of UNFCCC of equity and common but differentiated responsibilities with respective capabilities or CBDR-RC. As Minister of Natural Resources, Environment and Climate Change, my main priority will be the NDC Roadmap and LT-LEDS which will determine our pathway towards net zero GHG emissions. The findings from the LT-LEDS will assist the Ministries in developing policies and action plans that are aligned to our climate goals. It will also determine the direction of the much-awaited Climate Change Act and other policy instruments needed to advance our climate actions.

Moreover, I firmly believe economic instruments such as carbon pricing is essential in supporting, not only GHG emissions reduction efforts, but also greening the business operations of Malaysian companies and create sustainable investments which will benefit the nation. It will also help companies in fulfilling their ESG commitments."

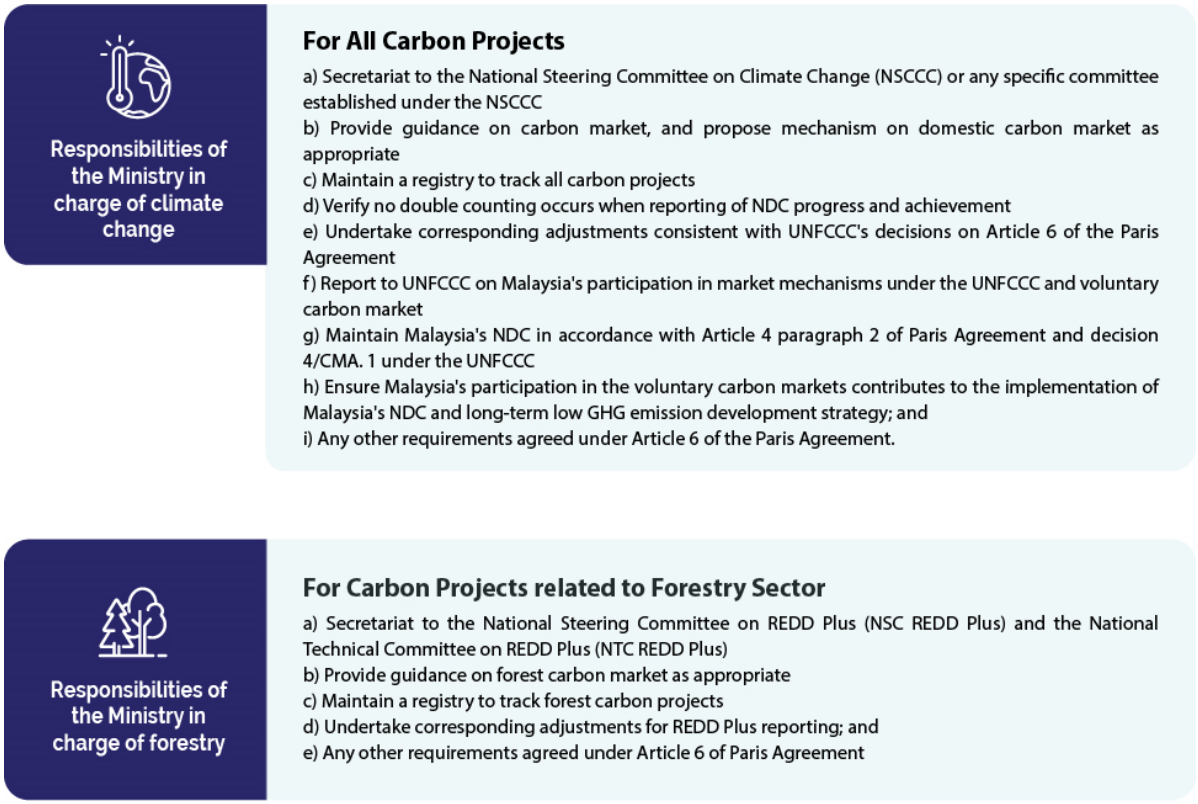
~ Speech by the Honourable Minister Tuan Nik Nazmi Nik Ahmad, Ministry of Natural Resources, Environment and Climate Change (NRECC), at the Launch of the Bursa Carbon Exchange, 9 Dec 2022.

3.2.2 Key Institutions and Contacts

The National Steering Committee on Climate Change (NSCCC) serves as a high-level advisory and decision-making body responsible for coordinating and guiding climate change-related efforts at the national level. Meanwhile, the National Steering Committee on REDD Plus (NSC REDD Plus) and the National Technical Committee on REDD Plus (NTC REDD Plus) serve as governing and coordinating bodies responsible for overseeing and guiding REDD Plus initiatives at the national level. The jurisdiction of technology-based and forestry-based carbon projects in Malaysia would typically fall within the purview of different governmental bodies and agencies.

The responsibilities of the ministry in charge of climate change and forestry are detailed in Exhibit 29. Currently, NRECC is the key ministry that oversees the development of the VCM and REDD Plus in Malaysia.

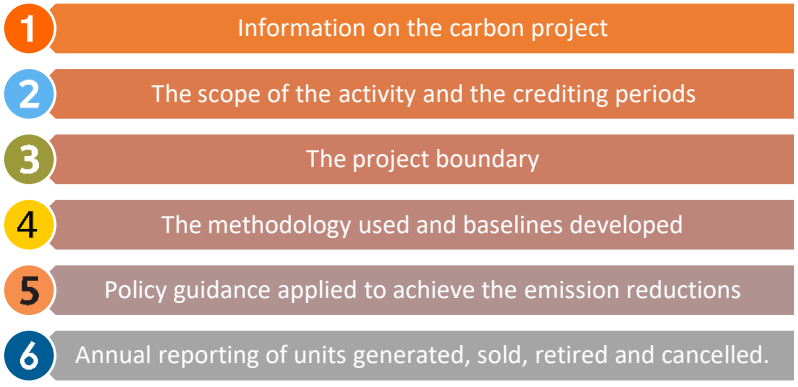
Exhibit 29: Responsibilities of the Ministry of Natural Resources, Environment and Climate Change (NRECC).



Source: National Guidance on Voluntary Carbon Market Mechanisms and National Guidance on Forest Carbon Market for Malaysia

Project participants that are involved in the development of carbon projects or activities in Malaysia must report the information shown in Exhibit 30 to the ministry responsible for climate change and the NSCCC. For any carbon project related to the forestry sector, the project participants will need to report to the NSC REDD Plus.

Exhibit 30: Information to be submitted to ministry responsible for NSCCC and to NSC REDD Plus.

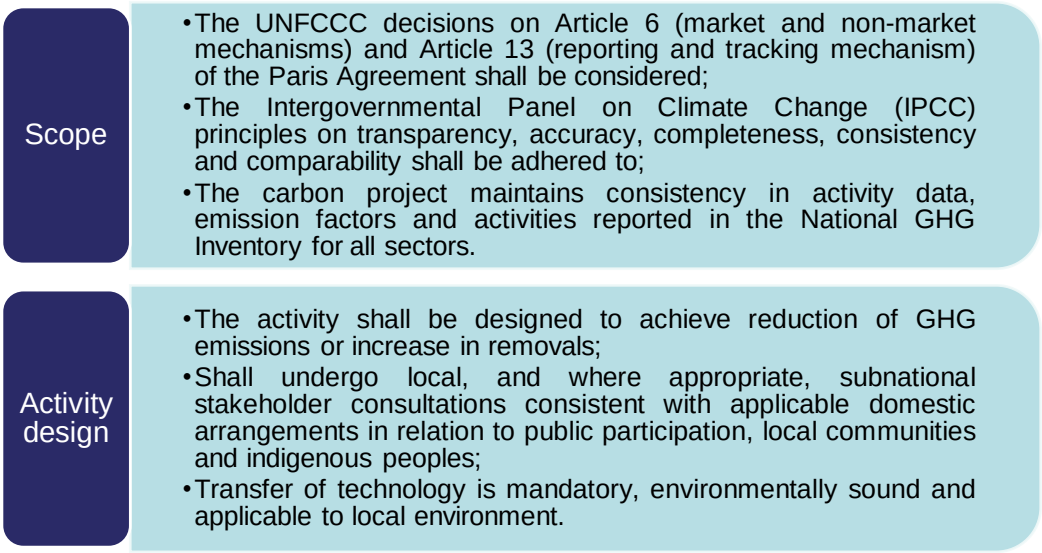


Source: National Guidance on Voluntary Carbon Market Mechanisms and National Guidance on Forest Carbon Market for Malaysia

3.2.3 Technical Requirements for VCM and REDD Plus Carbon Projects

The VCM carbon projects may vary depending on the chosen carbon standard. Exhibit 31 illustrates the defined scope and activity design of any entity involved during its project development.

Exhibit 31: Carbon project scope and activity design.



Source: National Guidance on Voluntary Carbon Market Mechanisms and National Guidance on Forest Carbon Market for Malaysia

Exhibit 32 provides an overview of the principles and criteria that the VCM carbon project activity should adhere to in the guidances.

Exhibit 32: Overview of principles and criteria for carbon project activity.

PRINCIPLES

- Deliver real, measurable and long-term benefits related to climate
- Minimise the risk of reversals and displacements of emission reductions, and where reversals occur, ensure that these are addressed in full
- Avoid negative environmental and social impacts
- Avoid double financing
- Establish a robust accounting system.

CRITERIA

- Set a baseline for the calculation of emission reductions and/or removals to be achieved by the activity
- Demonstrate the additionality of the activity
- Ensure monitoring of emission reductions and/or removals
- Calculate the emission reductions and/or removals achieved by the activity.

CARBON ACCOUNTING

- Data and estimation methodologies used for baseline development and accounting should be consistent with the National GHG Inventories
- National GHG Inventory for LULUCF methodology guidelines shall be used
- The 100-year time-horizon global warming potential (GWP) values from the IPCC Fifth Assessment Report shall be applied
- Consistency in scope and coverage, definitions, data sources, metrics, assumptions and methodological approaches shall be maintained throughout the project implementation
- For forestry projects, the state government shall ensure that there is no double counting.

Source: National Guidance on Voluntary Carbon Market Mechanisms and National Guidance on Forest Carbon Market for Malaysia

3.2.4 Corresponding Adjustment

In both the above national guidances, corresponding adjustments (CAs) are mentioned and this section serves to explain the concept of a CA. A CA means that the “host” country, or the country where the carbon project is located, must first authorise the transfer and then adjust its own GHG inventory to reflect the fact that the emission reduction achieved inside its borders is being credited to another country. The buying country then adjusts its GHG inventory by the same amount. It is a mechanism used to avoid duplication of emission reduction claims and maintain carbon markets' integrity. CAs help to maintain the integrity of carbon markets by ensuring that emission reductions are accurately accounted for and credited only once. This promotes transparency, trust and confidence in the carbon market system.

The CAs may vary across different carbon market systems, jurisdictions and international frameworks. Compliance with applicable guidelines and regulations is essential to ensure the accuracy and reliability of carbon credit transactions and emissions accounting.

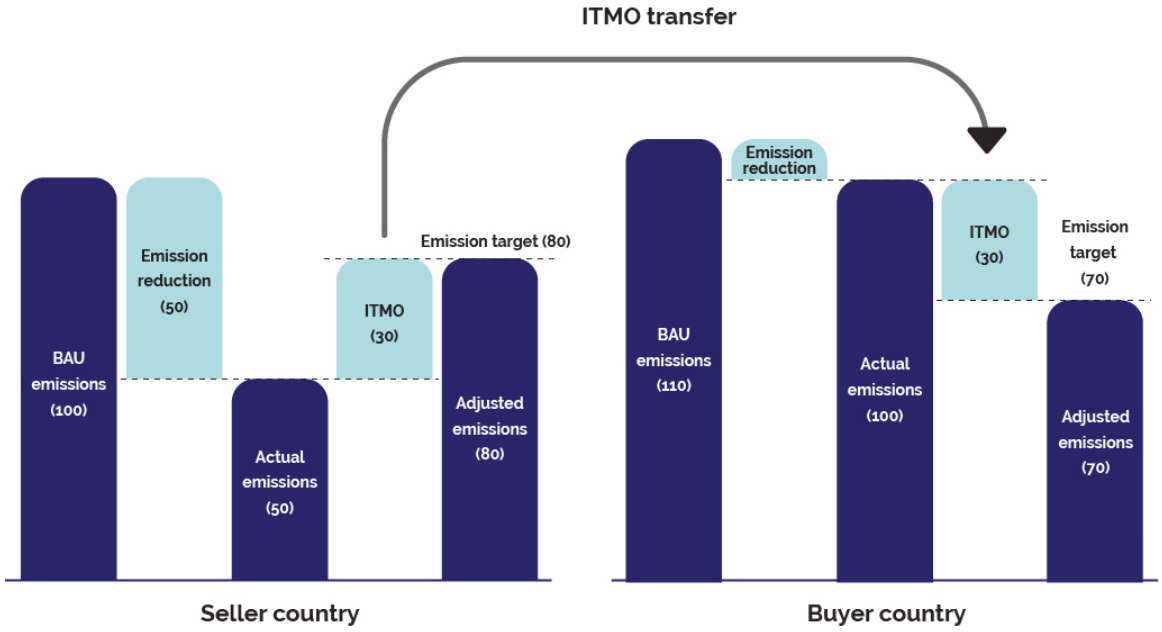
Article 6 of the Paris Agreement provides a framework for international cooperation in achieving emission reductions and promoting sustainable development. There are two (2) components to note in this regard:

i. Article 6.2, which focuses on the voluntary cooperation between countries in the form of internationally transferred mitigation outcomes (ITMOs); and

ii. Article 6.4, which establishes a mechanism to promote mitigation and support sustainable development.

Article 6.2 of the Paris Agreement refers to the accounting mechanism used to avoid double counting of emission reductions or removals transferred between countries to meet the buyer country's NDC. When a country transfers ITMOs to another country, a CA is made to ensure that the transferring country does not count those emission reductions as part of its targets or commitments. Exhibit 33 visually depicts the transfer of ITMOs between two countries engaged in carbon trading.

Exhibit 33: Overview of transfer of ITMOs between seller & buyer countries, which requires a CA.



Source: https://www.researchgate.net/figure/Avoidance-of-double-claiming-through-corresponding-adjustments_fig2_321057832

ITMOs can also be performed to meet other international mitigation purposes (OIMPs), such as the CORSIA scheme which will be enforced by 2027. However, it should be noted that carbon credits traded between corporates under the VCM will not be obliged to secure authorisation from the national authority to perform corresponding adjustments.

During the launch of the BCX, the Minister of NRECC announced the following (see Exhibit 34) in his keynote address, which provides some clarity on carbon trading policies in the country.

Exhibit 34: Announcement on carbon trading by the Minister of NRECC.

> "… under a voluntary carbon market, there is no restriction imposed on the sales of carbon credits generated from projects located in Malaysia to buyers outside of the country.
>
> "… Malaysian carbon credits traded under the Bursa Carbon Exchange shall not be authorised to meet the NDC of other countries or for other international mitigation purposes. This requirement has been incorporated into the BCX Rules.
>
> "… the trading of carbon credits generated from projects in Malaysia through the Bursa Carbon Exchange does not require approval from the national authority, which is my Ministry [referring to NRECC]
>
> "… require that all domestic carbon projects registered in all international carbon credit registries such as Verra, Gold Standard, and others, be reported to the national authority. The information to be reported is stipulated in the National Guidance on Voluntary Market Mechanisms."
>
> *~ Speech by the Honourable Tuan Nik Nazmi Nik Ahmad, Minister of Natural Resources, Environment and Climate Change (NRECC), at the launch of the Bursa Carbon Exchange, 9 Dec 2022.*

According to the National Guidance on Voluntary Carbon Market Mechanisms and the National Guidance on Forest Carbon Market, there are specific requirements for the application of CAs, as below:

i. For non-forestry sectors, baselines shall be developed in accordance with the emissions and removals time series reported under the national reports. Baseline development shall correspond with the activity data and the emission factors used in national GHG inventory reporting.
ii. For forestry sector-related activities, the following shall be applied:
    a) The activities shall take steps towards adjusting or nesting within an existing National REDD Plus Forest Reference Level (FRL), where possible, aligning their project baselines with the FRL.
    b) For activities without an FRL, the activity should develop a baseline aligned to the extent possible with the data, parameters and methods at a jurisdictional level.
    c) The state government and project participants shall explain the approach(es) used in aligning the project baseline with the existing FRL in a transparent manner, including the gases covered.

3.2.5 Registration of Carbon Projects and Reporting to the NSCCC

Upon receiving a positive validation for the carbon project and preparing for registration with the standards registry, the project owner is required to submit the information stated in Exhibit 35 to the secretariat of the NSCCC.

Exhibit 35: Specific details and information on carbon projects to be submitted to NSCCC.

1.	Account name
2.	Serial number of the units issued
3.	Pending account
4.	Holding account
5.	Account for mandatory cancellation
6.	Cancellation amount
7.	Retirement account
8.	Account for mandatory cancellation
9.	Holding account each public or private entity authorized.

Source: National Guidance on Voluntary Carbon Market Mechanisms and National Guidance on Forest Carbon Market for Malaysia

3.2.6 REDD Plus Finance Framework (RFF)

The forestry sector is vital to Malaysia's economy, environment and social development. For their role in wildlife protection, water catchment, climate change mitigation and adaptation, forests must be maintained sustainably.

> "Recognising this, the provision of a financial mechanism known as *Reducing Emissions from Deforestation and Forest Degradation and the Role of Conservation, Sustainable Management of Forests and Enhancement of Forest Carbon Stocks in Developing Countries* (REDD Plus), is developed through an international collaborative effort under the UNFCCC."
>
> *Source: Malaysia Forest Fund (MFF)*

In 2017, the Malaysian government launched the National REDD Plus Strategy (NRS) to provide a framework to conserve its forest sinks and biodiversity, and this serves as a guiding principle for implementing REDD Plus in the country. The NRS builds upon the country's relevant policies and best practices related to forest management systems. The strategy aims to achieve three (3) primary objectives:

(i) Increase synergy between the federal government and the state governments in the implementation of policies related to climate change, forests and biodiversity;
(ii) Measure, report and verify REDD Plus results and as part of efforts to achieve the nation's NDC;
(iii) Develop an innovative financing mechanism for REDD Plus implementation. The NSC REDD Plus was established to formulate strategies and directions for REDD Plus implementation.

At the same time, the NTC REDD Plus supports the NSC REDD Plus by providing methodological guidance on REDD Plus implementation and formulating national action plans. The implementation of REDD Plus actions in Malaysia will also contribute to its national targets, such as:

(i) Maintaining 50% forest cover;

(ii) Achieving the NDC pledge made under the Paris Agreement for the period between 2020 and 2030;
(iii) Supporting the National Policy on Biological Diversity (2016-2025) and other forest-related policies.

To implement REDD Plus, a sustainable financing mechanism, the REDD Plus Finance Framework (RFF), was introduced. The RFF instrument allows private sectors to participate in conservation and protection activities in Malaysia's forests. There are two (2) components in the RFF:

a) Forest Conservation Certificate (FCC) – A non-market-based mechanism that will act as an incentive for environmental and social contributions focusing on the conservation and protection of ecosystem services. The FCCs are generated following the REDD Plus requirements agreed under the UNFCCC.
b) Forest Carbon Offset (FCO) – A carbon market mechanism that allows the transfer of emission reduction from forests to the buyers, in the form of carbon offsets. Robust accounting will be applied to generate the carbon offsets, considering robust methodologies for GHG estimation, calculation and environmental integrity, and transparent, complete and accurate reporting. The FCO will only be issued for domestic use.

The FCC protocol will undergo pilot testing while the FCO protocol is still under development. The RFF is implemented by the Malaysia Forest Fund (MFF), an agency of NRECC.

3.3 At State Level

3.3.1 Introduction

Malaysia follows a federal system of governance, which means power is divided between the federal and state governments. The federal government has authority over matters specified in the Federal Constitution, including economic planning at the national level. On the other hand, state governments have jurisdiction over matters assigned to them under the State List, which include areas such as land administration, agriculture and local government. State governments have the authority to enact laws on matters within the State List. However, in some cases, both the federal and state governments can legislate on matters in the Concurrent List, such as environmental protection.

The implementation and operation of climate change mitigation projects are governed by different laws and regulations. These legal frameworks provide guidance and requirements for different types of projects aimed at reducing carbon emissions. Carbon projects in Malaysia can be categorised as either technology-based or natural-based, depending on the approach employed to achieve carbon reduction goals. The specific laws and regulations governing these projects ensure compliance, promote sustainable practices and facilitate the overall transition to a low-carbon economy.

The main law governing the activities relevant to the environment, energy and waste is the Environmental Quality Act 1974 which regulates pollution from industrial processes and activities, while the Renewable Energy Act 2011 promotes the development and use of renewable energy sources in the country.[6] The Solid Waste and Public Cleansing Management Act 2007 provides regulation on the management of solid waste and public cleansing services in Malaysia. It establishes a comprehensive waste management hierarchy that prioritises waste reduction, reuse and recycling over disposal to landfills.
The National Forestry Act 1984 establishes the legal framework for the management, protection and use of forest resources and covers a range of forestry-related activities,

[6] Save for the State of Sarawak.

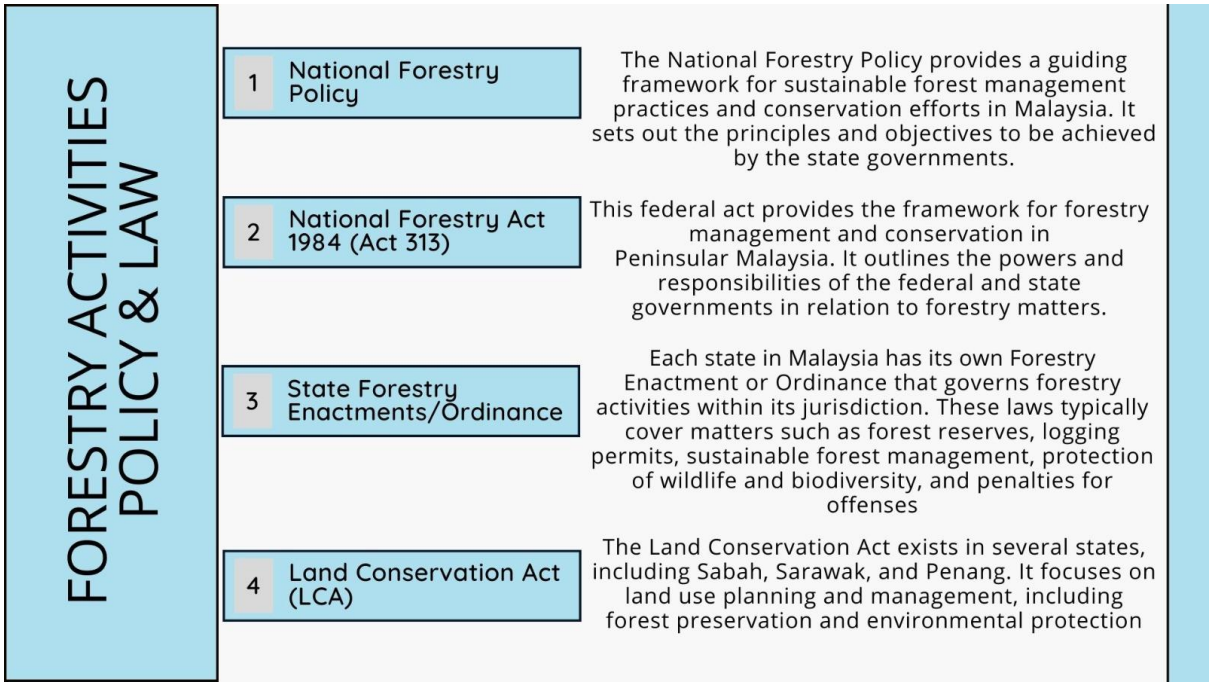
including forest conservation, forest exploitation, timber production and forest certification. Additionally, there are policies related to forestry activities in Malaysia, such as the National Forestry Policy 1978 and the National Forest Stewardship Council Standards.

3.3.2 State-Level Regulations

Jurisdiction over forestry activities in Malaysia does not fall under the purview of the federal government. Instead, the management and regulation of forestry activities are primarily handled by the respective state governments. Each state government in Malaysia has authority over the forests and natural resources within its jurisdiction. This decentralised approach allows for localised decision-making and management of forestry resources in accordance with the specific needs and characteristics of each state.

Each state has its own forestry rules for forest management and conservation within its jurisdiction. While specific rules may vary between states, there are some common policies and laws related to forestry in Malaysia, as shown in Exhibit 36.

Exhibit 36: Forestry activities policy and law in Malaysia.



Source: Existing forestry-related policy and law in Malaysia

The forestry-related projects pertaining to carbon projects for carbon credit issuance are subject to compliance with state enactments or ordinances. State governments in Malaysia play a crucial role in managing and monitoring carbon reduction activities, particularly those carried out within forests and other natural ecosystems. The state governments have the authority to establish rules, guidelines and requirements related to carbon reduction initiatives within their jurisdiction.

In developing this VCM Handbook, interviews and surveys were carried out with representatives from the state governments to gather insights and information. The interviews and surveys aimed to obtain details related to the specific states and their policies, regulations and services relevant to forestry carbon projects. The following section provides a high-level overview of the existence of policies, requirements and procedures at the state level for carbon project development.

3.3.3 Development of Carbon Projects at State Level

The state information that has been included in this sub-chapter is based on the feedback received during the development of this Handbook through interview sessions and surveys conducted. Based on the information gathered, the states are at various stages of developing carbon-related policies. In several states, committees have been established to develop participation criteria and establish rules and processes for the implementation of carbon projects, with a particular focus on forestry projects.

3.3.3.1 Johor

Currently, Johor is in the midst of establishing specific policies or regulations on carbon credits or carbon project development. The Johor State Economic Planning Division has begun exploring carbon offset initiatives for the state. The Johor Green Growth Roadmap is in its final stage and includes a focus on the Carbon Offset Strategy Paper. The Carbon Offset Strategy Paper explores different options for implementing carbon offset initiatives in Johor. At the moment, the initiative is spearheaded by the Johor State Economic Planning Division. The aim is to develop a comprehensive plan that outlines the strategies, mechanisms and guidelines for carrying out carbon offset projects in Johor.

Johor has currently imposed a moratorium on forest logging activities. In light of this situation, the state is exploring alternative avenues to generate revenue, including the potential utilisation of carbon credits. The Johor Forestry Department is actively involved in carbon project development and is working closely with the MFF to identify potential areas for carbon projects in the state. The Johor State Economic Planning Division has conducted seminars and workshops with stakeholders to better understand the federal government's requirements, which is a positive step towards effective collaboration and alignment.

Recognising the significance of a robust governance structure, the Johor State Economic Planning Division, with the support of related agencies, is actively engaged in studying and developing appropriate mechanisms. It has acknowledged that data and information related to carbon projects and initiatives need to be submitted to the federal government in a structured and organised manner. An efficient governance framework that ensures the proper management and coordination of carbon-related activities within Johor will be established to ensure the benefits of carbon financing in revenue generation, job creation, sustainable development and attracting investment.

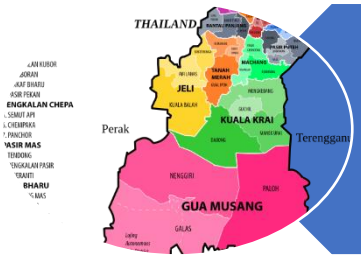
For any inquiries regarding the development of carbon projects in the State of Johor, please refer to the following contact for further details or information:

3.3.3.2 Kelantan

The Kelantan state government is exploring the necessary steps to promote the development of carbon projects. At present, the state does not have dedicated policies or laws in place for carbon projects. The state government has approved two (2) specific committees to evaluate projects related to carbon trading, namely:

i) The Committee for the Development of Carbon Credits in Kelantan – Chaired by the Deputy *Menteri Besar* of Kelantan
ii) The Special Research Team – Chaired by the Deputy State Secretary (Development).

The State Economic Planning Unit of Kelantan (UPEN) serves as the secretariat for both committees, which also include members from relevant technical departments. The ongoing research and review phase will determine the subsequent procedures that will be implemented. It is expected that project-related fees will be aligned with the procedures that will be introduced at a later stage.

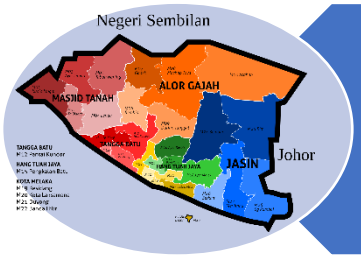


Contact Info for State of Kelantan

Kelantan State Economic Planning Unit
Designation: Director
Email: upen@kelantan.gov.my
Tel No.: 09-748 2560

3.3.3.3 Melaka

Melaka is working towards the development of carbon projects in Melaka, including undertaking efforts to explore policies, laws, regulations and guidelines related to carbon trading. Additionally, the state is actively engaged in the implementation of REDD+ through the National REDD+ Strategy. Two (2) key government bodies in Melaka, namely the Melaka State Economic Planning Unit and the Melaka Green Technology Corporation, are involved in climate change programmes and projects within the state. These entities are responsible for driving the development and implementation of related carbon credit projects. The state government intends to establish carbon credit requirements that align with the VCM to enable its participation in this market.



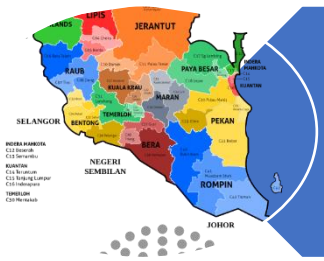
Contact Info for State of Melaka

Melaka State Economic Planning Unit
Designation: Assistant State Secretary
Email: upen@melaka.gov.my
Tel No.: 06-333 3333

3.3.3.4 Negeri Sembilan

Negeri Sembilan has included carbon projects as one of the targets in *Rancangan Pembangunan (Development Plan) Negeri Sembilan 2021-2025* and *Pelan Strategik (Strategic Plan) SUKNS 2021-2025*. Recognising the immense value of carbon projects and their potential benefits, the state is actively working on developing the requirements to support their implementation. Currently, Negeri Sembilan is yet to have any specific policies and laws related to carbon trading within the state. The State Economic Planning Unit of Negeri Sembilan plays a crucial role as the state authority responsible for driving the development, issuance and implementation of carbon credit project requirements.

The Economic Planning Division of Negeri Sembilan aims to learn from successful carbon projects implemented in other states and leverage that knowledge to develop effective policies and regulations tailored to the state's specific context. This approach ensures that Negeri Sembilan can benefit from the experiences and best practices of other regions in advancing their carbon projects.



Contact Info for State of Negeri Sembilan

Negeri Sembilan State Economic Planning Unit
Designation: Assistant Director
Email: corporatsukns@ns.gov.my
Tel No.: 06-765 9900

3.3.3.5 Pahang

The Pahang state government is currently in the process of exploring the potential of carbon projects in the state. As part of this effort, it is considering the development of its policies, laws and guidelines for carbon trading. The Pahang state government intends to align its carbon trading policy with the direction set by the federal government. This alignment ensures consistency and coordination between the state and federal levels in addressing climate change and promoting sustainable development through carbon trading initiatives.

The state government bodies and agencies in Pahang have various roles and responsibilities in governing and managing the affairs of the state. The key state government bodies and agencies in Pahang and their relevant roles and responsibilities in carbon project development include:

i. Pahang State Economic Planning Unit
   a. Is responsible for formulating and implementing state policies and programmes; and
   b. Acts as a central coordinating body, facilitating collaboration and coordination among various government agencies, departments and stakeholders involved in the carbon project development process.
   c. *Pejabat Pengarah Tanah dan Galian Pahang* (Pahang Land and Mines Director General's Department) is the government agency that coordinates Pahang's land matters or activities.

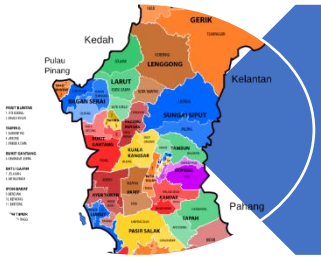
ii. Pahang Forestry Department
   a. Formulates and implements policies and strategies related to the management of forest resources, forest conservation, forest development and sustainable forestry practices. This involves activities such as forest inventory, planning and monitoring to ensure the sustainable use and conservation of forests and the protection and conservation of forest ecosystems, biodiversity and wildlife habitats.

b. Issues licences and permits for activities related to forestry, including logging, forest plantation establishment and collection of forest products, complying with relevant laws, regulations and sustainable practices.
c. Enforces laws and regulations related to forestry, including the prevention of illegal logging, encroachment and wildlife poaching. It conducts patrols, investigations and prosecutions to deter and address forestry-related offences.
d. Promotes public awareness and education on the importance of forests and sustainable forest management. It engages with communities, schools and other stakeholders to foster a sense of stewardship and understanding of forest conservation.

Contact Info for State of Pahang
Pahang Economic Planning Division
Designation: Assistant Secretary
Tel No.: 09-512 6720

3.3.3.6 Perak

Perak is currently implementing a strategy known as *Perak Lestari 2030*, which is a state-level initiative focused on environmental preservation and green projects. There is an ongoing effort to reorganise Perak's priorities to better align with an environmentally conscious approach. Perak has yet to complete the process of integrating carbon projects into its overall plan.



Contact Info for State of Perak
Perak Economic Planning Division
Designation: Director
Email: upen@perak.gov.my
Tel No.: 05-241 8173

3.3.3.7 Perlis

The Perlis state government is exploring the potential for the development of carbon projects within the state. The state government is awaiting clear policies and guidelines to be established by the federal government for the implementation of carbon trading at the state level. By aligning with federal policies, Perlis aims to ensure a coordinated and consistent approach to carbon project development within its jurisdiction.

Contact Info for State of Perlis
Perlis State Economic Planning Division
Designation: Principle Assistant Secretary
Email: bpen@perlis.gov.my
Tel No.: 04-973 1859

3.3.3.8 Pulau Pinang

As of now, Penang state has not implemented any specific rules or procedures that project developers or proponents must adhere to if they intend to undertake carbon credit project development within the state. Presently, the state is collaborating with the ICLEI – Local Governments for Sustainability South Asia and the IMT-GT Joint Business Council Malaysia to create Green City Action Plans (GCAPs) as a roadmap for fostering sustainable and resilient cities. Data collection is underway to develop a comprehensive city profile and assessment, which will be instrumental in preparing the GHG Emissions Inventory and conducting the Climate Risk and Vulnerability Assessment (CRVA).

The State Economic Planning Division (BPEN) and Local Government Division (BKT) are the primary agencies/authorities responsible for leading the development of the pertinent carbon credit project-related requirements in Penang state.

3.3.3.9 Sabah

On 1 January 2019, the Forest Enactment, 1968 came into force, which recognises REDD+ activities and carbon stock through sustainable activities as part of forest produce.[7] Any proposed REDD+ initiatives and projects in Sabah involving forest produce in any forest reserve, state land or alienated land, whether for the regulated or voluntary market, shall obtain written approval from the Minister, subject to further terms and conditions. This is as per the Sabah Forest Enactment, 1968 under "Part IIIA Forest Management and Development on 28C: Reduce Emissions from Deforestation and Forest Degradation-plus (REDD+)".

Currently, Sabah has no official specific policy on carbon study or carbon trading, although the state amended its Rules under the National Forestry Act to include carbon stock as forest produce in 2019. At the moment, the carbon laws and policies are still being updated and awaiting the Sabah Cabinet's approval and hence, any processes or procedures (including applicable fees to be paid to the government) that must be complied with by any project developer/proponent wishing to undertake carbon project development within Sabah are yet to be finalised at the time of the preparation of this Handbook.

The Sabah Climate Change Action Council (SCAC) was formed and officially endorsed by the State Cabinet on 17 March 2022 to assist the state government in setting the direction and coordinating climate change mitigation and adaptation projects in Sabah. The SCAC Main Committee is chaired by the State Secretary. Membership includes the state Attorney General, Permanent Secretaries and other relevant state agencies that could contribute to advancing

[7] "forest produce" means:
(a) timber, converted timber, wood chip, saw dust, oil, carving, firewood, charcoal, *getah*, *gaharu*, wood oil, bark, extracts of bark, copal, damar and *atap* found in or brought from a forest reserve, state land or alienated land;
(b) the following when found in or brought from a forest reserve or state land:
(i) trees and any produce thereof, silk, cocoons, honey and wax; or
(ii) carbon stored in trees or plants;
(c) all vegetable and animal matter and products other than animals and animal products which are subject to the provisions of the Wildlife Conservation Enactment 1997 [Enactment No. 6/1997.], and all minerals and mineral substances other than mineral oil and minerals and mineral substances which are subject to the provisions of the Mining Ordinance 1960 [Ordinance No. 20/1960] found in or brought from a forest reserve or state land;
(d) imported timber.

the climate change agenda in Sabah. The Sabah Forestry Department is the Interim Secretariat of the Council.[8]

The role of the SCAC includes:[9]

i. The state's focal point for the implementation of the climate change agenda at the state level;
ii. To make policy decisions with regard to climate change mitigation & adaptation programmes and green technology;
iii. To decide on the fair share of the state's contribution to Malaysia's NDC;
iv. To ensure the state's commitment to compliance with climate change-related agreements (national, regional and international);
v. To monitor, assess and discuss plans and actions related to climate change; and
vi. To deliberate on forest carbon project proposals.

The Council is under the purview of the Sabah Forestry Department and the following sectors, Energy, Waste, IPPU, AFOLU-Agriculture and AFOLU-LULUCF, are under the supervision of the SCAC. Any forest-based carbon-related project proposals will be evaluated by the Technical Working Group on AFOLU-LULUCF of the SCAC, with the following terms of reference:

I. To evaluate and recommend proposals to develop forest carbon-based projects in Sabah for SCAC decision;
II. To provide advisory services to the state government on issues related to forest-based carbon within and outside the state; and
III. To assist in the development of a long-term policy for forest carbon projects in Sabah.

The said Council is in the midst of sorting out the existing laws, land ordinances and enactments to include a legal framework on carbon exchange-related matters in the existing legislation. The revised legislation is currently awaiting approval from the Sabah Cabinet.

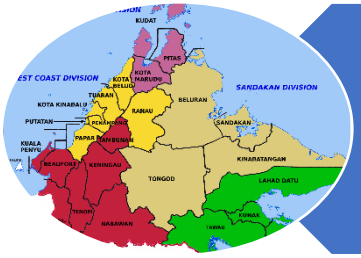
At the moment, there are no specific legal regulations on imposing royalties and levies for carbon-related projects. However, there are plans in the future to impose fees and royalties once the carbon laws and policies are finalised.

Any project proponent who wishes to initiate a carbon project, including feasibility studies, shall apply for approval from the SCAC prior to starting any study or work. Permit applications are not required at the moment as there is no legislation regarding the mandatory applications for permits. However, all approvals are subject to the Council's decision. Besides that, all projects must be certified as "carbon compliant", i.e. projects involved in GHG emission reductions or removals that are real, measurable, additional, permanent, independently verified, conservatively estimated, uniquely numbered and transparently listed by the carbon registries, e.g. Verra, Gold Standard and so on.

The primary agency or authority responsible for driving the development and issuance of any carbon-project-related requirements is the Chief Minister's Department. Together with the Sabah Forestry Department, it forms the implementing authority for carbon project-related requirements.

In terms of future planning, Yayasan Sabah is most likely to be the lead entity to handle and manage any carbon exchange-related matters.

[8] Sabah Forestry Department Annual Report 2022.
[9] Approved Cabinet Paper on SCAC establishment.



Contact Info for State of Sabah
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3.3.3.10 Sarawak

Sarawak has amended the rules to enact legislation on permitting carbon storage and nature-based venture businesses, which demonstrates the Sarawak government's efforts to be at the forefront of climate change mitigation.

Sarawak amended The Land Code, 2015 in 2022, and these Rules are cited as The Land Code, Cap.81 (1958 Edition) made on the Land Code, Cap.81 (1958 Edition) and the Forests Ordinance, 2015, to make provisions to regulate carbon storage and forest carbon activities.

The amendment of both Ordinances shall generate revenue for Sarawak and also develop further local capabilities.

3.3.3.10.1 Land (Carbon Storage) Rules, 2022

Sarawak amended The Land Code, 2015 and these Rules are cited as Land (Carbon Storage) Rules, 2022 (gazetted under Swk L. N. 349/2022) and came into force on 1 January 2023. These Rules shall apply to:

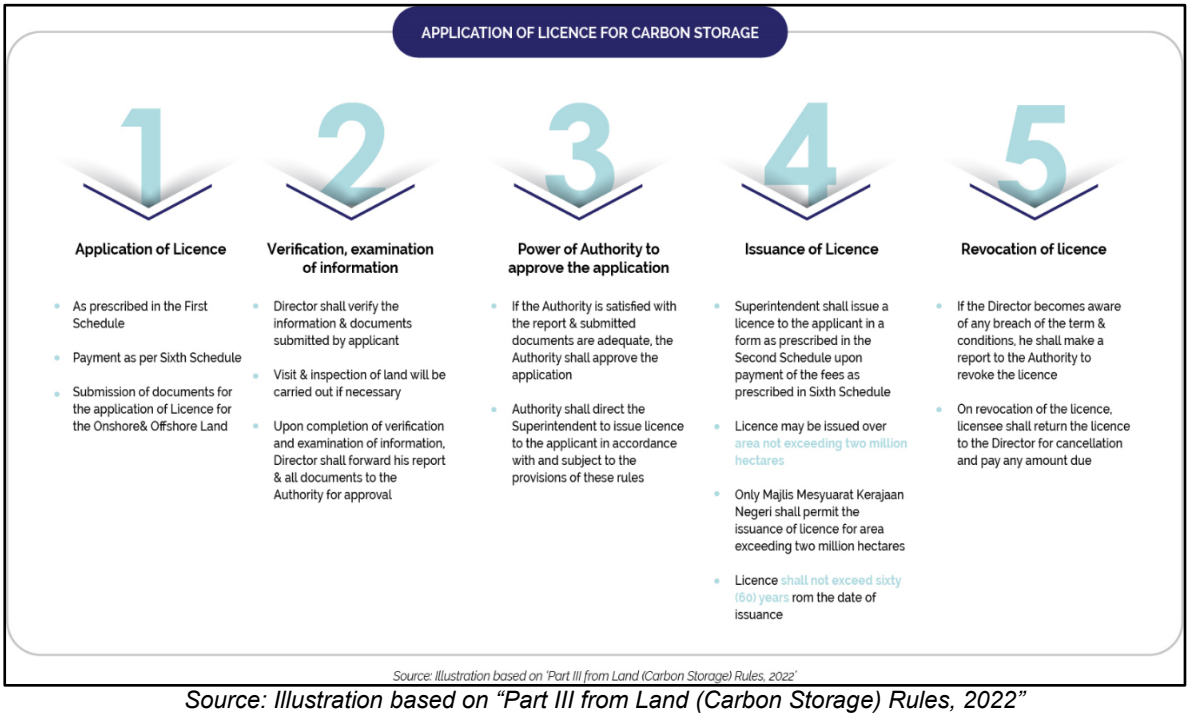
a) The use of land for the development of storage sites for scheduled gases in any part of Sarawak, whether on onshore land or offshore land, by any petroleum operator or any person undertaking any industrial activity whether or not required by any written law, industrial best practices and international treaties ratified by Malaysia, to capture and store scheduled gases as measures to reduce the emission of such gases to mitigate the effects of global climate change; and
b) Any storage user including any person or entity who is not resident in Sarawak, who desires to use any storage site for the storage of scheduled gases whether or not such gases were captured within or outside Sarawak.

Sarawak is the first state in Malaysia to have legislation to enable industries, including oil and gas industries operating in Sarawak, to comply with international requirements to reduce carbon emissions intensity under the UNFCCC.

Under the Land (Carbon Storage) Rules, 2022, the Sarawak government shall be entitled to possess any abandoned petroleum sites within Sarawak. Any petroleum operator shall submit a written decommissioning plan of the abandoned petroleum site to the Director for approval by the Authority. All costs and expenses incurred in the decommissioning of the abandoned petroleum site shall be borne by the petroleum operator.

The procedure to apply for a Carbon Storage Licence is presented in Exhibit 37.

Exhibit 37: Procedure to apply for a Carbon Storage Licence in Sarawak.



Source: Illustration based on "Part III from Land (Carbon Storage) Rules, 2022"

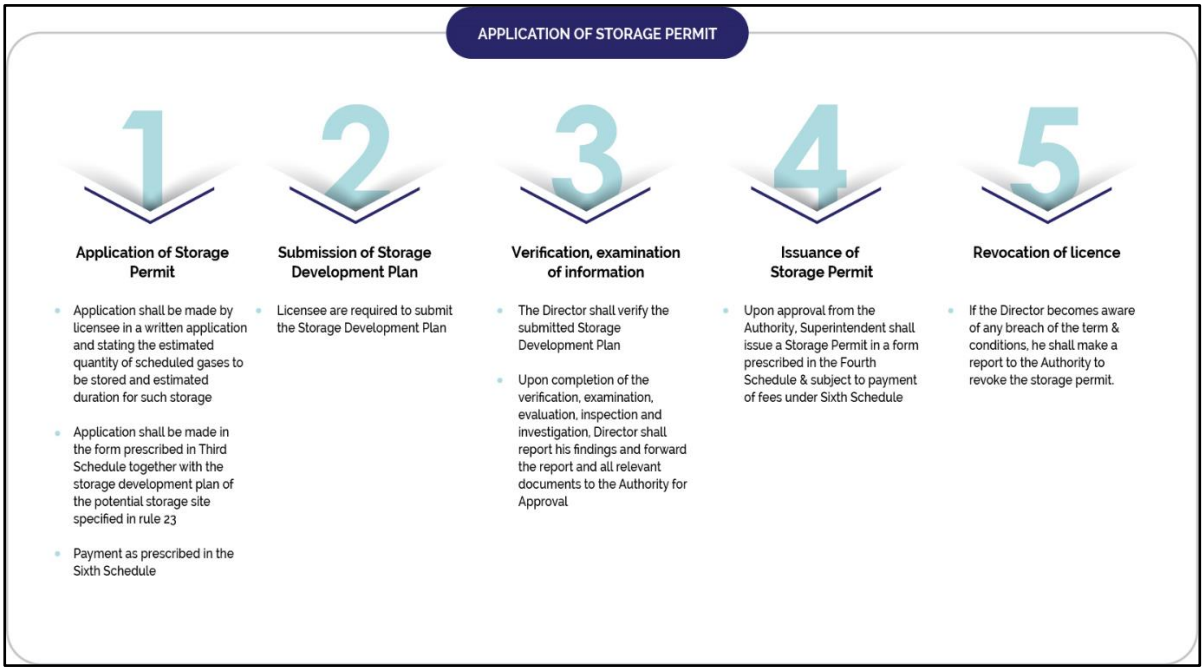
1. **To apply for the Carbon Storage Licence** – The documents to be submitted for the application for the licence for onshore and offshore carbon storage are as outlined in the Land (Carbon Storage) Rules, 2022.
2. **Verification and examination of information** – All applications and documents submitted shall be verified by the Director[10] of the Land and Survey Department and additional information shall be requested if deemed necessary. The Director shall make a report of his findings on the licence application. The report and application will then be forwarded to the Authority, i.e. the State Planning Authority established under section 228 of the Land Code [Cap.81 (1958 Ed.)] for approval.
3. **Power of Authority to approve an application for a licence** – If the Authority is satisfied with the application, the Authority shall approve the application and direct the issuance of the licence to the applicant in accordance with the provisions of these Rules.
4. **Issuance of licence** – The licence may be issued over an area not exceeding two (2) million hectares and the licence issued shall not exceed 60 years from the date of the issuance. If an extension is required, the applicant shall submit a written extension at least 12 months before the date of expiry of the licence and stating the grounds for extension. The payment of the licence fees is as prescribed in the Sixth Schedule.

In terms of a Storage Permit, none shall be permitted to use any land for the storage of scheduled gases unless the applicant is issued with a permit from the Superintendent of the Land & Survey Department for carbon storage.

The procedure for applying for a Storage Permit is as follows (see Exhibit 38).

[10] As per the First Schedule, Application Form for Licence for Carbon Storage.

Exhibit 38: Procedure to apply for a Carbon Storage Permit in Sarawak.



Source: Illustration based on "Part IV from Land (Carbon Storage) Rules, 2022"

1. **Application for Storage Permit** – A written application shall be submitted by the licensee who intends to be a storage user within the licensed area to the Director and specify the estimated quantity of scheduled gases to be stored and the estimated duration of the storage.
2. **Submission of storage development plan** – The licensee is required to submit the storage development plan of the potential storage site for the Storage Permit application. The outline of the storage development plan is included in the Land (Carbon Storage) Rules, 2022.
3. **Verification and examination of information** – The Director shall verify the documents and inspect and investigate the proposed storage site, if necessary, prior to submitting all the documents to the Authority for approval.
4. **Issuance of Storage Permit** – The Superintendent shall issue the Storage Permit in a form prescribed in the Fourth Schedule and subject to the payment of fees and charges specified under the Sixth Schedule. The contents of the Storage Permit shall contain the terms as stated in the Land (Carbon Storage) Rules, 2022.
5. **Revocation of Storage Permit** – Any leakages or significant irregularities in the storage operations or breach of the terms and conditions shall lead to the revocation of the Storage Permit.

A licensee and storage user shall pay all fees, levies, dues, rents, cess and other payments for the use and occupation of the land for exploration and development of the storage site as stipulated in the Sixth Schedule.

The relevant costs of the permit application and licence are tabulated in Exhibit 39.

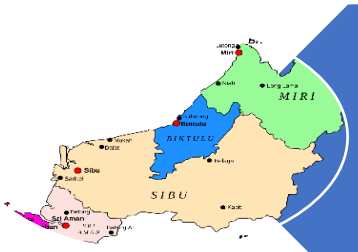
Exhibit 39: Sixth Schedule: Fees, levies and other payments (Rule 44).

No.	Item	Fee Applicable
1.	Application for Licence	RM50,000.00 per application
2.	Licence Fee	RM1.00 per hectare/ per year
3.	Application for Permit	RM50,000.00 per application
4.	Permit Fee	RM25.00 per m^3 metric tonne/ per year
5.	Levy in Carbon Storage Charges	An amount to be determined by the Authority
6.	Cess	An amount to be determined by the Authority
7.	Preparation and Registration of Issuance of Licence	RM300.00 per licence
8.	Preparation and Registration of Issuance of Permit	RM300.00 per permit
9.	Registration and Issuance of Certificate of Storage Operator	RM1,000.00 per certificate

Source: Sixth Schedule of the Land (Carbon Storage) Rules, 2022

Carbon Credit Plan

A licensee shall give written notice to the Director and seek approval from the Authority in the event the licensee plans to seek validation of the scheme for the capture and storage of scheduled gases in the storage site on state land to secure certification for the issuance of carbon credits. For any licensee who receives any revenue from the trade of carbon credits, the government, through the Authority, shall be entitled to a percentage of the revenue in kind or in cash.



Contact Info for State of Sarawak

Land and Survey Department Sarawak
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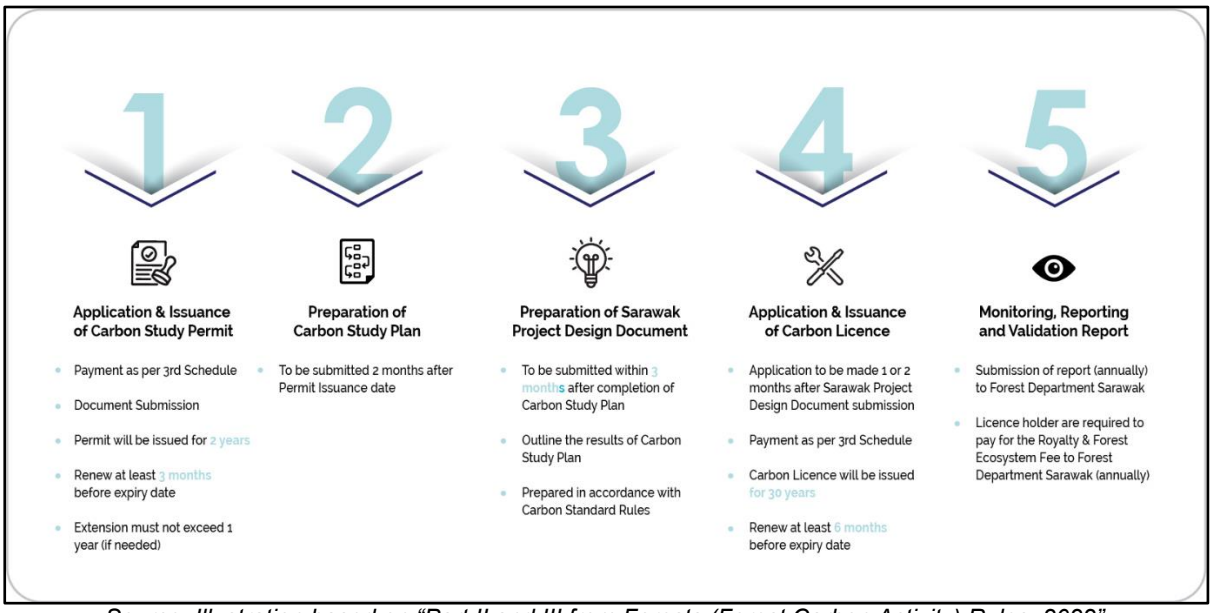
Email: landsurvey@sarawak.gov.my
Tel No.: 082-444 111

3.3.3.10.2 Forests (Forest Carbon Activity) Rules, 2022

The Rules are cited as the Forests (Forest Carbon Activity) Rules, 2022, gazetted under Swk L.N. 350/2022, and came into force on 1 January 2023. The Rules highlight the regulation of forest carbon activities, including afforestation and reforestation.

The procedure to develop a carbon project in Sarawak is presented in Exhibit 40.

Exhibit 40: Procedure to develop a carbon project in Sarawak.



Source: Illustration based on "Part II and III from Forests (Forest Carbon Activity) Rules, 2022"

1. **Application for Carbon Study Permit** – Any project proponent who wishes to conduct a forest carbon activity in the forest carbon area, including a feasibility study, is required to apply for a Carbon Study Permit from the Director of the Forest Department. The permit will be issued upon payment of the necessary fees and charges as per the Third Schedule of the Rules (see Table 3). The permit will be issued for two (2) years. For permit application purposes, the documents to be submitted are as follows:

    i. Certified true copies of documents relating to the applicant's profile, including its incorporation, shareholders and their respective shareholdings, directors and latest annual returns;
    ii. Audited financial statements for the last three (3) consecutive financial years and the latest management accounts, and where the applicant is a subsidiary, such audited financial statements and management accounts of the holding company;
    iii. A precise description of the land on which the carbon study is intended to be carried out and the land status, and if the study to be carried out is on an alienated land of which the applicant is not the registered proprietor, the application shall be accompanied by a letter from the registered proprietor thereof, giving his consent to the use of the land for carbon study.

2. **Submission of Carbon Study Plan** – A Carbon Study Plan should be submitted together during the application for the Carbon Study Permit. The outline for the Carbon Study Plan is listed below:

    i. Description of procedures and methodologies to be used; and
    ii. Information on the proposed forest carbon activity, including:
        a) A description of the proposed scope of the intended activities and the crediting periods;
        b) A map illustrating the boundaries of the proposed forest carbon area;
        c) A description of the methodology to be used for quantifying the emission reductions to be generated by the proposed forest carbon activity and any scheme that could constitute additionality;
        d) Where rights and interests of native communities may be affected by the carbon project, the methodology or measures, including benefit-sharing, to be adopted to secure their consent and support; and

iii. A description of the local stakeholder consultation to be undertaken in accordance with the applicable laws, including the procedures or methods to be used for engaging with local stakeholders, the methods for documenting such consultation and the mechanisms for ongoing communications with local stakeholders; and

iv. Such other information as may be relevant to the carbon study.

The detailed outline of the Carbon Study Plan is included in the Land (Carbon Storage) Rules, 2022.

3. **Submission of Sarawak Project Design Document (SPDD)** – During the Carbon Study Permit issuance period, applicants must submit the SPDD before being granted the Carbon Licence. The requirements for the SPDD are listed below:

   - Detailed description of the proposed forest carbon activity;
   - Description of the baseline scenario within the carbon study;
   - Description of how the proposed forest carbon activity will satisfy the requirement of additionality;
   - Outcomes from the local stakeholder consultations undertaken during the carbon study;
   - Estimation of the expected emission reduction to be achieved; and
   - Any other information as may be required by the applicable Carbon Standard Rules as part of the validation process.

   The detailed outline of the SPDD is included in the Land (Carbon Storage) Rules, 2022**.** The SPDD should be submitted within three (3) months of the completion of the carbon study (Rule 11) and when applying for a Carbon Licence (Rule 13).

4. **Application for a Carbon Licence** - The licence will be issued upon payment of the necessary fees and charges as per the Third Schedule of the Ordinance (see Table 3). The applicant must obtain a licence before undertaking any forest carbon activity. For licence application purposes, the documents to be submitted are as follows:

   - Completed SPDD in accordance with Rule 11 following a Carbon Study Plan, together with all reports, analyses, maps, plans, data and other information obtained and prepared during the Carbon Study Plan;
   - Audited financial statements for the last three (3) consecutive financial years and the latest management accounts, and where the applicant is a subsidiary, such audited financial statements and management accounts of the holding company;
   - If the study to be carried out is on an alienated land of which the applicant is not the registered proprietor, the application shall be accompanied by a letter from the registered proprietor thereof, giving consent to the use of the land for carbon study;
   - Where the applicant intends to undertake the carbon project jointly with another person or entity, the name of that person or entity, particulars of the shareholders and directors thereof and the respective roles of the applicant and the other person or entity in carrying out the forest carbon activity for the carbon project;
   - Such other information, data and documents as may be necessary in support of the application; and
   - The payment of a processing fee as prescribed in the Third Schedule.

5. **Submission of Monitoring, Reporting and Validation Report** – The licence holder is required to submit the Monitoring, Reporting and Validation Report annually to Forest Department Sarawak. The contents of the Monitoring, Reporting and Validation Report are listed as follows:

    - Information on the forest carbon activity;
    - The scope of activity and the crediting periods;
    - The boundary of the forest carbon area;
    - The methodology used and baseline developed;
    - The measures that have been and will be taken and applied to achieve the carbon emission reduction;
    - Annual reporting of the carbon credit units generated by the forest carbon activity and annual reporting of the carbon credit units sold, traded, retired and cancelled; and
    - The methodology, including benefit-sharing with the native communities from the forest carbon activity.

The activities will be verified in accordance with the Verified Carbon Standard (VCS) by Verra or other recognised global institutions for the issuance of tradeable verified carbon units (VCUs). These rules also authorise the state government to collect royalties, premia, levies or taxes for or in connection with a forest carbon activity.

The relevant costs of the permit application and licence are tabulated in Exhibit 41.

Exhibit 41: Third Schedule: Rate of fees (Rule 3).

1. Carbon Study Permit (CSP)

Type of Carbon Study Permit	Area of Carbon Study Permit (Hectare)	Fees (RM)		
		Issuance	Extension	Processing (Issuance & Extension)
CSP-01	>50,000	5,000	1,000	1,000
CSP-02	3,000	800	800	3,000
CSP-03	100-2,499	300	100	100

2. Carbon Licence (FCL)

Type of Carbon Licence	Area of Carbon Study Permit (Hectare)	Fees (RM)		
		Issuance/ Renewal	Extension	Processing (Issuance & Extension)
FCL-01	>50,000	12,000	1,000	1,000
FCL-02	2,500-49,999	8,000	800	800
FCL-03	100-2,499	700	100	100

3. Other Costs

No.	Items and Services	Fees Payable (RM)
1.	Inspection of Sarawak Forest Carbon Registry	100.00
2.	Reproduction of Sarawak Forest Carbon Registry	5.00 per page
3.	Inspection of Licence Register	50.00 per page
4.	Reproduction of Licence Register	5.00 per page

Renewal and processing fees for a Carbon Licence must be paid annually, according to the type of Carbon Licence issued (e.g. FCL-1, FCL-2 or FCL-3).

The licence holder shall pay the government the annual royalty for the carbon stock contained in the forest carbon area as per the Fourth Schedule of the Ordinance (see Exhibit 42).

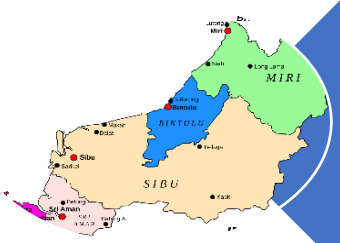
Exhibit 42: Fourth Schedule: Rates of statutory charges (Rule 41 (3)).

1. Royalty and Forest Ecosystem Fee

Item	Particulars	Rates (RM)
1.	Royalty (RM/ha/year)	260.00
2.	Forest Ecosystem Fee	Five per centum (5%) of annual revenue earned through Verified Carbon Units (VCUs) traded

In terms of the carbon trading credit units, the Director shall determine the total number of credit units generated by the forest carbon activity that is tradable, after the deduction of a carbon buffer with a sum not exceeding 50 per centum of Sarawak-LULUCF (Removal) meant

for domestic GHG mitigation, which shall be specified in the terms and conditions of the Carbon Licence.



Contact Info for State of Sarawak

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Tel No.: 082-495 111

3.3.3.11 Selangor

Currently, Selangor does not have any specific policies or regulations related to carbon project development. However, the state government is planning to establish a comprehensive low-carbon city policy and initiatives to achieve a net zero carbon target by 2050. This signifies the state's commitment to addressing climate change and transitioning to a more sustainable future.

To facilitate carbon credit transactions at the state level, the Selangor state government is prepared to utilise the national carbon trading platform, the Bursa Carbon Exchange. By leveraging this platform, the state aims to create opportunities for carbon credit trading within its jurisdiction. Additionally, Selangor is open to collaboration with NRECC to tap into the carbon market.

In terms of driving the development of carbon projects, several key agencies and authorities are involved:

i. The State Government of Selangor, particularly through its Economic Planning Unit, takes a leading role in formulating policies and strategies for carbon project development. The Selangor State Economic Planning Unit is the implementing authority for carbon project-related requirements.
ii. Local authorities also play a significant role in implementing and regulating carbon projects within their respective jurisdictions.
iii. Subsidiary companies of the State of Selangor may be involved in supporting and facilitating carbon project initiatives.

Contact Info for State of Selangor

Selangor State Economic Planning Unit
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Tel No.: 03-552 12355

3.3.3.12 Terengganu

Terengganu has yet to have a dedicated policy or legislation specifically governing carbon activities within the state. However, the state is exploring the potential of carbon projects, with a particular focus on forestry activities.

The State Government of Terengganu has established the Green Financing Task Force Terengganu since 2019. The task force, which is chaired by the Director of the Terengganu State Economic Planning Unit, is the official platform to discuss the potential of initiating carbon projects in Terengganu. The members of this task force are as follows:

i. Director, State Economic Planning Unit (Chairman)
ii. State Legal Advisor
iii. State Finance
iv. PTD Director
v. Forestry Department
vi. Department of Wildlife Protection and National Parks
vii. Terengganu Water Resources Board
viii. University of Malaysia Terengganu (UMT)
ix. Sultan Zainal Abidin University (UniSZA)
x. Terengganu Incorporated (a government-linked company).

Numerous seminars, workshops and training sessions have been conducted since its establishment, facilitating knowledge sharing and capacity building. Also, various research findings have been released, exemplified by the following:

i. Estimating above-ground biomass trends in Terengganu
    a. Results/data available from 1990 to 2050 scenarios; and
    b. Remote sensing data from research carried out around Terengganu.

ii. Enhancing carbon finance governance
    a. Governance involves preparing the legal and finance frameworks. These frameworks provide the necessary guidelines and requirements to determine the additionality of carbon projects.
    b. The Finance Framework in Terengganu is based on the current standards set by organisations such as Verra or Gold Standard. However, certain standards like ART TREES may not be feasible in Terengganu due to the large land area requirement of 2.5 million hectares as specified by the standard.
    c. Terengganu emphasises voluntary carbon-based projects that carry the Climate Community Biodiversity (CCB) label. The state, with its diverse biodiversity, including tigers, elephants and bears, recognises the importance of incorporating climate and community considerations into carbon projects to ensure environmental sustainability and conservation, as well as social inclusiveness.

iii. Forestry-Based Voluntary Carbon Offsets Project
At present, there is no dedicated regulatory body at the state level overseeing carbon trading in Terengganu. The Terengganu State Economic Planning Unit is taking steps to adopt the latest National Forest Act that has been approved by Parliament. Additionally, it is planning to amend the existing enactment to facilitate the implementation of projects involving nature-based solutions.

iv. Business Plan – Pilot Project
Terengganu is currently planning to develop various projects, but the state government is not inclined to lease the land for these initiatives. There is a strong commitment to preserving the existing status of the forests, particularly permanent forest reserves (*Hutan simpan kekal*). It is worth noting that Terengganu has achieved high rankings in the MyEPI (Environmental Performance Index) of NRECC, highlighting its environmental performance and sustainability efforts.

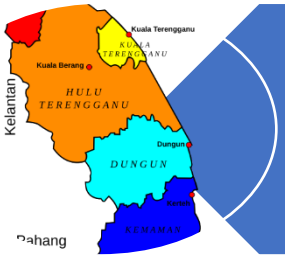
A potential pilot project situated within the Kenyir State Park, covering an area of 30,000 hectares, has been identified. A pre-feasibility study has been carried out for this project, and it has been determined to be eligible for the VCS.

In addition to the efforts of the Terengganu State Economic Planning Unit, the MFF has conducted profiling activities in Terengganu to identify potential areas for carbon projects. The MFF has assessed various regions in Terengganu to determine their suitability for carbon project development.

The Terengganu State Economic Planning Unit, as the state authority, assumes responsibility for spearheading the development and implementation of relevant regulations and guidelines pertaining to carbon project development. Decisions regarding carbon projects in Terengganu will be presented to the State Executive Council (*Majlis Mesyuarat Kerajaan Negeri Terengganu*) for consideration and decision-making. It is responsible for reviewing and approving various matters, including those related to carbon projects, to ensure alignment with the state's development objectives and priorities.

The Terengganu State Economic Planning Unit has indicated that certain fees or charges may be applicable to carbon project development, including but not limited to the following:

i. Land use (*Permit Penggunaan Hutan* / Land Use Permit);
ii. Project cost (Upfront Payment); and
iii. All related costs of the projects.



Contact Info for State of Terengganu

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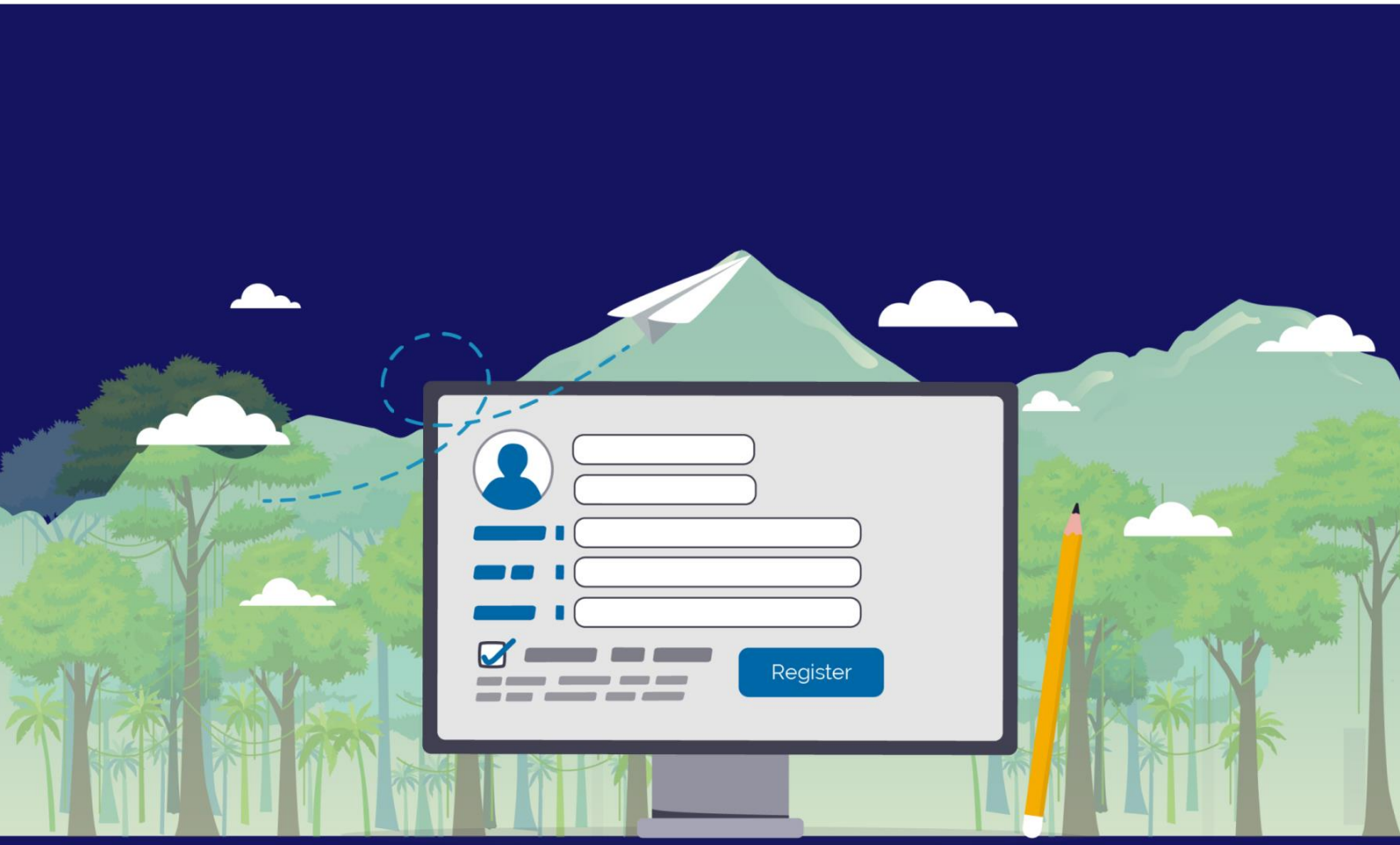
Chapter 4

Type of Eligible Projects



Chapter 4: Types of Eligible Projects

4.1 Chapter Summary

The Verified Carbon Standard (VCS) is fast becoming the standard of choice for project proponents in Malaysia. The fact that it is the world's leading voluntary carbon market programme gives market participants, particularly project proponents, additional confidence in taking serious action to fulfil their commitments, e.g. net zero carbon goals, etc.

Projects involving methane capture from palm oil mill effluent (POME), landfill gas and industrial wastewater remain low-hanging fruit for VCM strategy in Malaysia, scaling local supply as local experience and know-how to deliver these projects are widely available, compared to other types of projects or sectoral scopes.

Currently, at the time of preparing this VCM Handbook, there are several Nature-based Solutions (NBS) projects registered with Verra and the Clean Development Mechanism (CDM) and this could be a middle-term strategy for the BCX to focus more on, i.e. to promote and support the registration of more NBS projects in the VCM.

As for Carbon Capture and Storage (CCS) and other nascent technologies, these projects could be the mid- to long-term strategy since the experience, know-how and acceptance of these types of projects are still limited. Having said that, however, all types of projects that are feasible should be initiated now as different projects have different maturation periods.

4.2 Projects according to VCS Sectoral Scopes

In a VCM, there is a wide range of eligible projects that can generate carbon credits. These projects must adhere to methodologies that are accepted by the standards and protocols used in the market, for example, the VCS or Verra. The types of projects included under the VCS are NBS and Technology-based Solutions (TBS). These are the only projects that will be considered and allowed to be traded on the BCX. In the near future, once more carbon credit standards are recognised by the BCX, the VCM Handbook will be revised to reflect the updates.

The NBS, also commonly known as Agriculture, Forestry and Other Land Use (AFOLU), are carbon projects related to the actions of protecting, conserving, restoring, using and managing the ecosystem in a sustainable way, as well as livestock management, while the TBS are projects related to the mitigation of climate change with the help of technologies. Both solutions are intended to avoid, reduce or remove GHG emissions from the atmosphere.

Nature-based Solutions

4.2.1 Nature-Based Solutions

Forests are home to most of the world's terrestrial biodiversity, providing a wide range of ecosystem services and helping to regulate climate by removing carbon from the atmosphere. They are undisputedly one of the best examples of nature-based solutions. In Malaysia, forests are categorised into several legal forest categories, as tabulated in Exhibit 43. Due to

the unavailability of eligible forests listed for NBS projects, eligibility was identified based on the assumption made by understanding the functions of each forest class.

Exhibit 43: Definition of forest classification in Malaysia.

Type of Forest	Definition	Eligibility for NBS Projects
Permanent Reserved Forest (PRF)	PRF is defined as any land constituted or deemed to have been constituted a permanent reserved forest under the National Forestry Act 1984 (ACT 313), Section 2. It is further sub-categorised into four (4) types of functional classes: (a) Production Forest (b) Protection Forest (c) Amenity Forest (d) Research and Education Forest.	See below
(a) Production Forest	Forests where the management objective is the production of wood, fibre, bio-energy and/or non-wood forest products (Global Forest Resources Assessment 2020). Production Forests are sub-categorised into: (a) Natural Forest Natural Forests are forests composed of indigenous trees, not planted by man. (b) Plantation Forest Plantation Forests are intensively managed and meet all the following criteria at planting and stand maturity: one or two species, even age class and regular spacing.	Yes
(b) Protection Forest	Forests for ensuring favourable climatic and physical conditions of the country, the safeguarding of water resources, soil fertility, environmental quality, the preservation of biological diversity and the minimisation of damage by floods and erosion to rivers and agricultural lands (National Forestry Policy, 1978 (Revised 1992)). Includes: • Soil Protection Forest • Soil Reclamationa Forest • Flood Control Forest • Water Catchment Forest • Forest Sanctuary for Wildlife • Virgin Jungle Reserves.	No
(c) Amenity Forest	Forests for the conservation of adequate forest areas for recreation, ecotourism and public awareness of forestry.	No
(d) Research and Education Forest	Forests for conducting research, education and conservation of biological diversity.	Yes
State Land Forest	Land that is under the jurisdiction of the state authority.[11]	Yes

[11] Forestry Policy of Peninsular Malaysia.

NBS projects include two (2) main categories:

4.2.1.1 Agriculture, Forestry and Other Land Use (AFOLU)

AFOLU is defined as the sectoral scope that covers GHG emissions and emission reductions and/or removals from projects or programme activities in the agriculture, forestry and other land use/land use change sectors and for which the VCS Program has established rules and requirements with respect to specific project categories

AFOLU can be further categorised into six (6) sub-sectors, as outlined below:

4.2.1.1.1 Afforestation, Reforestation and Revegetation (ARR)

Activities that increase carbon stocks in woody biomass (and in some cases, soils) by establishing, increasing and/or restoring vegetative cover through planting, sowing and/or human-assisted natural regeneration of woody vegetation.

4.2.1.1.2 Agriculture Land Management (ALM)

Activities that increase carbon stocks in soils and woody biomass and/or decrease CO_2, N_2O and/or CH_4 emissions from soils on croplands and/or grasslands. Examples of projects include sustainable management of croplands and/or grasslands by reducing fertiliser and pesticide application, conservative tillage, cover crops, etc. to adapt to climate change impacts and achieve productivity.

4.2.1.1.3 Improved Forest Management (IFM)

Activities that change forest management practices and increase carbon stocks on forest lands managed for wood products such as saw timber, pulpwood and fuelwood. Forest management practices such as extension of the rotation age of forest, stopping selective logging, conversion from logged to protected forest, etc. are some of the examples of practices and projects eligible under the IFM category. For instance, in Malaysia, a VCS project on the rehabilitation of logged-over dipterocarp forest is being carried out in Sabah.

4.2.1.1.4 Reducing Emissions from Deforestation and Forest Degradation (REDD)

Activities that reduce GHG emissions from deforestation and/or degradation by slowing or stopping the conversion of forests to non-forest land and/or reducing the degradation of forest land where forest biomass is lost, and/or activities that enhance carbon stocks through improved forest management and/or afforestation, reforestation or revegetation. Globally, most of the carbon credits generated from the NBS are from REDD projects.

4.2.1.1.5 Avoided Conversion of Grasslands and Shrublands (ACoGS)

Avoiding GHG emissions by preventing the conversion of native grasslands and shrublands to a non-native state. Under this category, projects mainly involve avoiding conversion to commodity crop production, which will decrease the soil's organic carbon and increase soil erosion due to increased crop tillage practices, etc.

4.2.1.1.6 Wetland Restoration and Conservation (WRC)

Restoration and conservation of wetlands by creating and/or managing the conditions required for healthy, sustainable wetland ecosystems by removing underground drain tiles or building small dikes which may help to reduce coastal flooding and erosion, while maintaining biodiversity in the ecosystem.

4.2.1.2 Livestock and Manure Management

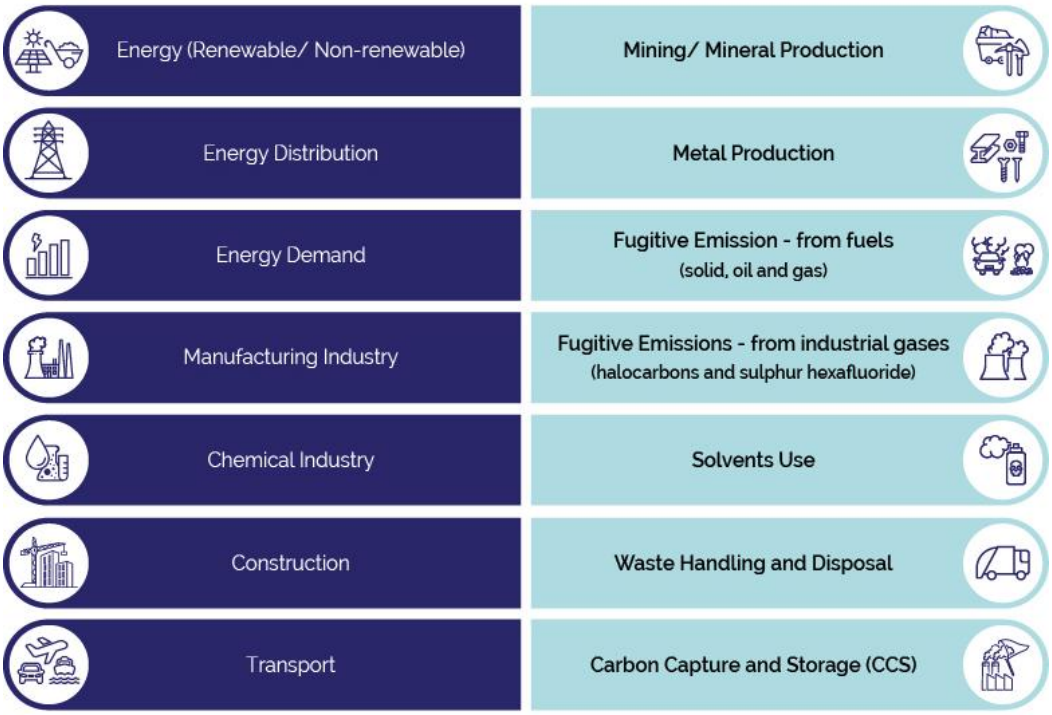
Management of livestock and manure that results in methane emission reductions from ruminant livestock enteric fermentation and manure decomposition. Enteric fermentation is a digestive process that occurs in ruminant animals where methane is released as a by-product. On the other hand, manure management involves the capturing, storing, treating and using of manure, which has important implications for farm productivity and the environment.

Technology-based Solutions

4.2.2 Technology-Based Solutions

Technology-Based Solutions comprise a total of 14 sectoral scopes, which are listed in Exhibit 44:

Exhibit 44: Categories of Technology-Based Solutions projects.



Source: Illustration based on Verra

4.2.2.1 Energy (Renewable/ Non-renewable)

Energy-related activities that involve any type of energy (renewable/non-renewable).

4.2.2.2 Energy Distribution

Energy-related activities that involve the distribution of energy (e.g. electricity grid or heat distribution system).

4.2.2.3 Energy Demand

Energy-related activities that involve the demand or need for energy.

4.2.2.4 Manufacturing Industry

Businesses or industries producing goods in large quantities in factories, etc.

4.2.2.5 Chemical Industry

Businesses or industries producing inorganic and organic chemicals (e.g. ammonia, nitric acid, adipic acid, etc.).

4.2.2.6 Construction

Activities that involve the process or method of building or making something, especially roads, buildings, bridges, etc.

4.2.2.7 Transport

Activities that involve a system for carrying people or goods from one place to another using vehicles, roads, etc.

4.2.2.8 Mining/ Mineral Production

Activities that involve the process of getting coal and other minerals from under the ground or the production of minerals (e.g. cement production, lime production, glass production, etc.).

4.2.2.9 Metal Production

Production of metals (e.g. iron, steel, aluminium, etc.).

4.2.2.10 Fugitive Emissions – from fuels (solid, oil and gas)

Intentional and unintentional emissions from the extraction, processing, storage and transport of fuel to the point of final use.

4.2.2.11 Fugitive Emissions – from industrial gases (halocarbons and sulphur hexafluoride)

Intentional and unintentional emissions from industrial gases, i.e. halocarbons and sulphur hexafluoride.

4.2.2.12 Solvents Use

Activities that involve the use of solvents.

4.2.2.13 Waste Handling and Disposal

Activities that involve the handling and disposal of materials that are no longer needed and are disposed of.

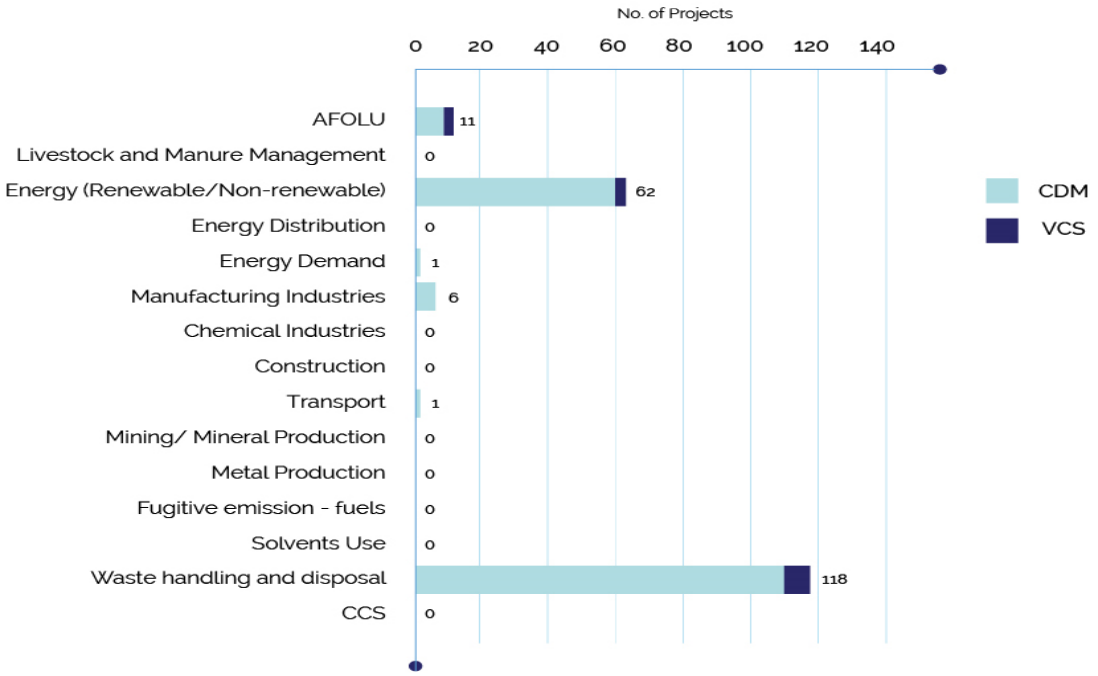
4.2.2.14 Carbon Capture and Storage (CCS)

GHG emission reduction or removal activities that capture CO_2 and sequester it into saline aquifers or into depleted oil or gas reservoirs with the intention of permanent sequestration on geological timescales. CCS is a type of geological carbon storage.

4.3 Examples of Applicable Projects in Malaysia

As of the time of preparing this VCM Handbook, there are 13 registered/requesting for registration VCS projects and 143 registered/requesting for registration CDM projects in Malaysia (see Exhibit 45). Most of these projects in Malaysia have adopted methodology(ies) which are focused on energy (renewable/non-renewable), waste handling and disposal and AFOLU.

Exhibit 45: Carbon projects registered / requesting for registration in Malaysia as of 16 May 2023.



Source: Illustration based on Verra and CDM

Note: Some of the CDM projects may fall into more than one (1) sectoral scope. The total number of projects for CDM is 143 and the total number of projects for CDM which fall into the respective sectoral scopes is 186.

From Exhibit 45 above, it can be seen that most of the projects are in waste handling and disposal, followed by the energy (renewable/non-renewable) sectoral scope. These projects are primarily projects on methane capture from POME or industrial wastewater. The next sectoral scope is AFOLU projects, e.g. avoidance of methane production from the decay of biomass (for CDM projects) and IFM (for VCS projects).

Project proponents are allowed to develop any carbon projects as long as there is at least a methodology applicable to their projects whereby all the applicability conditions and eligibility criteria are met. However, if there is no applicable methodology, the project proponent can

choose to develop a new methodology where the processes are as described in **Chapter 6** of this VCM Handbook.

Under the CDM, which is one of the Verra-approved GHG programmes, there are lists of technologies and associated conditions that confer automatic additionality to CDM project activities and CDM programmes of activities (PoAs) that apply such technologies and meet specified conditions (hereinafter referred to as Positive Lists of Technologies, version 04.0 which are valid up to 10 March 2025). The Positive Lists include the sectoral scopes related to renewable energy (renewable energy technologies for large-scale grid-connected power generation / isolated grid power generation, small-scale grid-connected power generation / small-scale off-grid power generation and rural electrification projects) and waste handling and disposal (landfill gas recovery and its gainful use and methane recovery in wastewater treatment), among many others. More details on the conditions to be satisfied are presented in Exhibit 46.

Exhibit 46: Positive Lists of Technologies.

Positive Lists of Technologies	Conditions
Renewable Energy	
Renewable energy technologies for large-scale grid-connected power generation • Solar thermal electricity generation including concentrating solar power • Off-shore wind technologies • Marine wave technologies • Marine tidal technologies • Ocean thermal technologies	Any of the following conditions are met at the time of Project Design Document (PDD) submission: • The percentage share of the total installed capacity of the specific technology in the total installed grid-connected power generation capacity in the host country is equal to or less than two (2) percent; or • The total installed capacity of the technology in the host country is less than or equal to 50 MW
Renewable energy technologies for large-scale isolated grid power generation • Solar photovoltaic technologies • Solar thermal electricity generation including concentrating solar power • Off-shore wind technologies • Marine wave technologies • Marine tidal technologies • Ocean thermal technologies	Any of the following conditions are met at the time of PDD submission: • The percentage share of total installed isolated grid power generation capacity of the specific technology in the total installed isolated grid power generation capacity in the host country is equal to or less than two (2) percent; or • The total installed isolated grid power generation capacity of the specific technology in the host country is less than or equal to 50 MW
Renewable energy technologies for small-scale grid-connected power generation • Solar thermal electricity generation including concentrating solar power • Off-shore wind technologies • Marine wave technologies • Marine tidal technologies • Building-integrated wind turbines or household rooftop wind turbines of a size up to 100 kW • Biomass internal gasification combined cycle	None
Renewable energy technologies for small-scale off-grid power generation • Micro/pico-hydro (with power plant size up to 100 kW)	The individual units do not exceed the thresholds indicated in parentheses with the aggregate project installed capacity not exceeding the 15 MW threshold

Positive Lists of Technologies	Conditions
• Micro/pico-wind turbine (up to 100 kW) • PV-wind hybrid (up to 100 kW) • Geothermal (up to 200 kW) • Biomass gasification/biogas (up to 100 kW)	
Rural electrification projects Rural electrification[12] project activities using renewable energy sources in countries with rural electrification rates less than 50%. The most recent available data on the electrification rates shall be used to demonstrate compliance with the 50% threshold. In no case shall data older than three (3) years from the date of commencement of validation of the project activity be used	Rural electrification project activities by grid extension are automatically additional when all the following criteria are met: • Rural electrification rate in the country is below 50% • Geography: Least Developed Countries (LDCs), Small Island Developing States, Special Under Developed Zone (SUZ)[13] • Recent trends: Rural electrification rate has increased by less than 20% over the past 10 years • The extension of a grid for rural electrification of a community involves at least a distance of 3 km from the point of grid extension to the rural community at which the CDM project is implemented
Waste Handling and Disposal	
Landfill gas recovery and its gainful use The project activities and PoAs at new or existing landfills (greenfield or brownfield) are deemed automatically additional if it is demonstrated that prior to the implementation of the project activities and PoAs, the landfill gas (LFG) was only vented and/or flared (in the case of brownfield projects) or would have been only vented and/or flared (in the case of greenfield projects) but not utilised for energy generation	Any of the following conditions are met under the project activities and PoAs: • The LFG is used to generate electricity in one or several power plants with a total nameplate capacity that equals to or is below 10 MW • The LFG is used to generate heat for internal or external consumption • The LFG is flared
Methane recovery in wastewater treatment	Any of the following conditions are met under the project activities and PoAs in an existing facility: • The existing treatment system is an anaerobic lagoon and the wastewater discharged meets the host country's regulations • There is no regulation in the host country that requires the management of biogas from domestic, industrial and agricultural sites • There is no capacity increase in the wastewater treatment system • No other alternative economic activity is expected to be undertaken on the land of the existing lagoon • The biogas is used to generate electricity in one or more power plants, and the total nameplate capacity is below 5 MW
Technology/Measure Used by Households, Communities and Small and Medium Enterprises (SMEs)	

[12] Rural electrification for the purpose of this document is defined as a project activity for supplying renewable electricity to facilities and energy consumers that do not have access to any electricity distribution system/network such as a national grid or regional grid. Such electricity end-use facilities may include but are not limited to households, public buildings and/or small, medium and micro-enterprises. Electricity uses may include but are not limited to interior lighting, street lighting, refrigeration or agricultural water pumps. The rural electrification rate is the percentage of the rural population having access to electricity.
[13] SUZ as defined under the micro-scale additionality tool.

Positive Lists of Technologies	Conditions
Biogas digesters for cooking	Digesters used in biogas generation from anaerobic treatment waste (e.g. kitchen, vegetable, animal and farm) where the resulting biogas is used for heat production for cooking purposes, as eligible under the approved CDM methodologies, for example, AMS-I.C., AMS-I.E. or AMS-I.I.
Micro-irrigation	Application of optimum quantify of water at low hourly flow rates directly to the root zone of plants (such as drip irrigation, micro-sprinklers), which results in avoidance of water losses attributed to the traditional flooded irrigation systems, as eligible under the approved CDM methodology, for example, AMS-II.F.
Energy-efficient pump set for agriculture	Energy-efficient pump and motor assembly together with starter and other electrical accessories/devices to deliver water for irrigation, as eligible under the approved CDM methodology, for example, AMS-II.P. Only pump sets belonging to the highest efficiency class in the national standards and labelling (S & L) programme (e.g. five-star energy efficiency rating) are eligible. Where such S & L programmes are not in place, it shall be demonstrated that the efficiency of project pump sets is at least 10% (in relative terms) higher than the average efficiency of the pump sets in the market to be eligible

Source: Positive Lists of Technologies, v04.0, CDM UNFCCC

Apart from the CDM, the scope of the VCS Program **excludes projects** that can reasonably be assumed to have GHG emissions primarily for their subsequent reduction, removal or destruction. The VCS Program also excludes the following project activities under the circumstances indicated in Exhibit 47.

Exhibit 47: Excluded project activities under the VCS Program.

Exclusions from VCS Program Scope	Exclusion
Grid-connected electricity generation activities using hydroelectric power plants • The exclusion does not apply to ocean energy (e.g. wave, tidal, salinity gradient and ocean thermal energy conversion) • For hydro projects, large-scale means a maximum capacity of greater than 15 MW, where maximum capacity is the installed/rated capacity or authorised capacity (as determined in the activity approval from the project regulator, government or similar entity), whichever is lower • Grid-connected means >50% of total generation is exported to a national or regional grid[14]	Excluded in non-least developed countries (LDCs). Furthermore, large-scale projects excluded in LDCs[15]
Grid-connected electricity generation activities using wind, geothermal or solar photovoltaic (PV) power plants • The exclusion does not apply to concentrated solar thermal-to-electricity, floating solar PV or energy storage systems (e.g. batteries) • Grid-connected means >50% of total generation is exported to a national or regional grid	Excluded in non-LDCs

[14] Grid-connected electricity generation: The generation of electricity primarily for delivery to a national or regional grid where at least 50% of annual electricity generation (by the quantity of energy, not capacity) is planned to be delivered to such a grid. Generation of electricity for onsite self-consumption, delivery to a micro-grid, distributed mini-grid or off-grid consumption is not included in this definition.

[15] As of the time of preparing this VCM Handbook, Malaysia is not listed as one of the LDCs designated by the United Nations.

Exclusions from VCS Program Scope	Exclusion
Activities recovering waste heat for combined cycle electricity generation, or to heat/cool via cogeneration or trigeneration • The exclusion does not apply to waste gas recovery or electricity generation using waste heat recovery outside of combined cycle applications (e.g. organic Rankine cycles)	Excluded in non-LDCs
Activities generating electricity and/or thermal energy for industrial use from the combustion of non-renewable biomass, agro-residue biomass or forest residue biomass • The exclusion does not apply to gasification, pyrolysis, combusting biofuels, biogas, fractions of renewable biomass in refuse-derived fuels, agro/forest biomass residues in waste streams that are sent to landfills, CO_2 capture and storage from renewable biomass combustion or thermal efficiency improvements (e.g. cook stoves)	Excluded in non-LDCs
Activities generating electricity and/or thermal energy using fossil fuels and activities that involve switching from a higher to a lower carbon content fossil fuel • The exclusion does not apply to the use of captured flare and/or vent gas or waste containing previously used petroleum products (e.g. used plastics, oils, lubricants)	Excluded in non-LDCs
Activities replacing electric lighting with more energy-efficient electric lighting such as the replacement of incandescent electrical bulbs with compact fluorescent lights (CFLs) or light-emitting diodes (LEDs) • Large-scale means energy-efficient improvements with a maximum saving greater than 60 GWh/year or emission reduction greater than 60 kt CO_2e per year	Excluded for large-scale projects in non-LDCs
Activities installing and/or replacing electricity transmission lines and/or energy-efficient transformers • Large-scale means energy-efficient improvements with a maximum saving greater than 60 GWh/year or emission reduction greater than 60 kt CO_2e per year	Excluded for large-scale projects in non-LDCs
Activities that reduce hydrofluorocarbon-23 (HFC-23) emissions	Excluded in all countries

Source: VCS Standard, v4.4

Apart from Exhibit 47 above, in Malaysia, project proponents are free to develop any projects that fit into any one or more of the 16 sectoral scopes under the VCS. The details of all types of projects and examples of the VCS and some CDM projects registered in Malaysia are shown in Exhibit 48.

Exhibit 48: Type of applicable projects and examples of projects in Malaysia.

Sectoral Scope	Types of Applicable Projects	Example
Nature-Based		
Agriculture, Forestry and Other Land Use (AFOLU)	*Please refer to the breakdown of the six (6) AFOLU categories below:*	VCS The projects are categorised as per the six (6) AFOLU categories below: CDM (Agriculture) • 1214: Mensilin Holdings Biomass Energy Plant Project • 0501: Bentong Biomass Energy Plant in Malaysia

Sectoral Scope	Types of Applicable Projects	Example
		• 0503: Johor Bundled Biomass Steam Plant in Malaysia • 0386: Seguntor Bioenergy 11.5 MW EFB Power Plant • 0385: Kina Biopower 11.5 MW EFB Power Plant
Afforestation, Reforestation and Revegetation (ARR)	• Agroforestry	No registered VCS and CDM projects as of the time of preparing this VCM Handbook
Agriculture Land Management (ALM)	• Reductions in fertiliser application and tillage • Improvements in water management • Residue management • Cash crop and cover crop planting and harvest • Grazing practices • Sustainable Grassland Management (SGM)	VCS No registered VCS projects as of the time of preparing this VCM Handbook CDM The projects, if any, are categorised under the AFOLU category above
Improved Forest Management (IFM)	• Extension of rotation age of a forest or patch of forest before harvesting • Stopping selective logging • Conversion from logged to protected forest (LtPF) • Protecting logged or degraded forests from further logging or protecting unlogged forests from future logging • Reduced Impact Logging (RIL)	VCS • 672: INFAPRO Rehabilitation of logged-over dipterocarp forest in Sabah, Malaysia • 2609: Kuamut Rainforest Conservation Project CDM The projects, if any, are categorised under the AFOLU category above
Reducing Emissions from Deforestation and Forest Degradation (REDD)	• Project activities that reduce emissions from planned (APD) and unplanned (AUDD) deforestation • Project activities that reduce emissions from planned (APWD) and unplanned (AUWD) wetland degradation • Degradation through the extraction of wood for fuel (fuelwood and charcoal production)	VCS No registered VCS projects as of the time of preparing this VCM Handbook CDM The projects, if any, are categorised under the AFOLU category above
Avoided Conversion of Grasslands and Shrublands (ACoGS)	• Avoided ecosystem conversion	VCS No registered VCS projects as of the time of preparing this VCM Handbook CDM The projects, if any, are categorised under the AFOLU category above
Wetland Restoration and Conservation (WRC)	• Tidal wetland and seagrass restoration • Rewetting drained tropical peatlands	VCS No registered VCS projects as of the time of preparing this VCM Handbook CDM

Sectoral Scope	Types of Applicable Projects	Example
		The projects, if any, are categorised under the AFOLU category above
Livestock and Manure Management	• Inhibition of methanogenesis through the introduction of a feed ingredient into ruminants' diets	<u>VCS</u> No registered VCS projects as of the time of preparing this VCM Handbook <u>CDM</u> The projects, if any, are categorised under the AFOLU category above
Technology-Based		
Energy (Renewable/Non-renewable)	Renewable/Non-renewable • Biomass power generation – on-grid and off-grid • Biogas power generation from POME, animal waste, etc. • Solar: Solar water heating, solar photovoltaic systems • Hydro: Mini-hydro power • New gas-fired co-generation plant that provides electricity to the grid and generates steam/hot water • Displacement of electricity supplying the grid which would have been produced from more carbon-intensive sources Energy Efficiency • Improving efficiency in electricity production • Improving combined heat and electricity production • Improved boilers, more efficient process heat and steam systems • Fuel switching • Energy efficiency through demand-side management	<u>VCS</u> • 1016: CE Technology Fuel Switch for Cleanroom Glove Industry Project, Taiping • 968: Sungai Kerling Hydropower Plant (*was previously registered under CDM*) • 1552: Bundled Run-Of-River Mini Hydro Power Projects at Sungai Sia and Sungai Benus, Pahang, Malaysia <u>CDM</u> • 4999: Ranhill Powertron II 190 MW Gas-Fired CCPP Project • 0385: Kina Biopower 11.5 MW EFB Power Plant • 0386: Seguntor Bioenergy 11.5 MW EFB Power Plant • 1783: Methane Capture from POME for Electricity Generation in Batu Pahat • 2594: Bintulu Combined-Cycle Project STG Unit No.9, Tanjung Kidurong, Bintulu, Sarawak
Energy Distribution	• Installation of energy-efficient transformers in a power distribution grid • Installation of high voltage direct current power transmission line • Introduction of low-resistance power transmission line	No registered VCS and CDM projects as of the time of preparing this VCM Handbook
Energy Demand	• Implementing energy efficiency measures that	No registered VCS projects as of the time of preparing this VCM Handbook

Sectoral Scope	Types of Applicable Projects	Example
	reduce the energy consumption of buildings • Replacement of mobile homes • Implementing individual energy efficiency measures in existing buildings • Utilising on-wing jet engine washing as a means to improve jet engine propulsive efficiency • Replacement of baseline water flow devices (e.g. showerheads, faucets) with low-flow hot water savings devices	CDM • 1372: Factory Energy Efficiency Improvement in Compressed Air Demand and Supply in Malaysia (*yet to have credits issuance*)
Manufacturing Industries	• Using waste CO_2 as a feedstock in the production of concrete	No registered VCS projects as of the time of preparing this VCM Handbook CDM • 0247: Replacement of Fossil Fuel by Palm Kernel Shell Biomass in the Production of Portland Cement • 1186: Biomass Thermal Energy Plant – Hartalega Sdn Bhd, Malaysia • 4516: MNI Renewable Energy Plant
Chemical Industry	• Use of Hydrogen Peroxide-based Propylene Oxide (HPPO) Technology	No registered VCS and CDM projects as of the time of preparing this VCM Handbook
Construction	• Substitution of a sulphur product for a proportion of Portland cement when producing precast concrete and other concrete-based products such as pre-cast pipes, paving stones, slabs and tanks	No registered VCS and CDM projects as of the time of preparing this VCM Handbook
Transport	• Efficiency improvements for vehicles • Switching to fuel systems with lower emissions • Electric vehicle charging stations, including their associated infrastructure • Use of pallets – the flat, portable structures that support goods during freight transport – lighter in weight than conventional alternatives • Substitution of a sulphur product for a proportion of the bitumen binder used in	No registered VCS projects as of the time of preparing this VCM Handbook CDM • 7455: Nittsu Fuel Efficiency Improvement with Digital Tachograph Systems on Road Freight Transportation CDM Project in Malaysia

Sectoral Scope	Types of Applicable Projects	Example
	conventional hot asphalt paving	
Mining/ Mineral Production	• Pre-draining methane from an active open-cast mining operation • Capturing and destroying methane from abandoned/decommissioned coal mines	No registered VCS and CDM projects as of the time of preparing this VCM Handbook
Metal Production	• Improving electrical energy efficiency of an existing submerged electric arc furnace used for the production of silicon and ferroalloys • Upgrading the smelting technology, which results in the reduction of perfluorocarbon (PFC) emissions • Improving the electrical energy use efficiency in primary aluminium smelters • Replacement of sulphur hexafluoride (SF_6) with alternate cover gas in the magnesium industry • Waste heat utilisation for pre-heating of raw materials in sponge iron manufacturing process • Improving energy efficiency by modifying ferroalloy production facility • Use of charcoal from planted renewable biomass in a new iron ore reduction system • Introduction of hot supply of Direct Reduced Iron in Electric Arc Furnaces • Installation of an abatement system in existing semiconductor manufacturing facilities	No registered VCS and CDM projects as of the time of preparing this VCM Handbook
Fugitive Emissions – from fuels (solid, oil and gas)	• Capturing, using and destroying methane emitted from coal bed seeps	No registered VCS and CDM projects as of the time of preparing this VCM Handbook
Fugitive Emissions – from industrial gases (halocarbons and sulphur hexafluoride)	• Recovering and destroying Ozone-Depleting Substances (ODS) from products where a partial or total atmospheric release of ODS occurs	No registered VCS and CDM projects as of the time of preparing this VCM Handbook
Solvents Use		No registered VCS and CDM projects as of the time of preparing this VCM Handbook
Waste Handling and Disposal	Waste Management • Power and heat production from waste (waste-to-energy, WtE)), biomass burning	VCS • 769: Methane Recovery and Utilisation Project at United Plantations Berhad,

Sectoral Scope	Types of Applicable Projects	Example
	• Gas recovery from landfills • Anaerobic wastewater treatment • Conversion of waste biomass into biochar • Agrobiomass residue to power / biofuel • Methane avoidance	Jendarata Palm Oil Mill, Malaysia (*was previously registered under CDM (1153)*) • 864: AMA08-W-23, Methane Recovery in Wastewater Treatment Sarawak, Malaysia (*was previously registered under CDM (2635)*) • 863: AMA08-W-25, Methane Recovery in Wastewater Treatment Pahang, Malaysia (*was previously registered under CDM (2602)*) • 862: AMA08-W-24, Methane Recovery in Wastewater Treatment Pahang, Malaysia (*was previously registered under CDM (2642)*) • 861: AMA08-W-21, Methane Recovery in Wastewater Treatment Johor, Malaysia (*was previously registered under CDM (2632)*) • 860: AMA08-W-22, Methane Recovery in Wastewater Treatment Johor, Malaysia (*was previously registered under CDM (2641)*) • 867: AMA08-W-10, Methane Recovery in Wastewater Treatment, Kedah, Malaysia (*was previously registered under CDM (2623)*) • 865: MY08-WWP-26, Methane Recovery in Wastewater Treatment Pahang, Malaysia (*was previously registered under CDM (2657)*) CDM

Sectoral Scope	Types of Applicable Projects	Example
		• 0503: Johor Bundled Biomass Steam Plant in Malaysia • 0501: Bentong Biomass Energy Plant in Malaysia • 0867: Kim Loong Methane Recovery for Onsite Utilisation Project at Kota Tinggi, Johor, Malaysia • 0927: Landfill Gas Utilisation at Seelong Sanitary Landfill, Malaysia • 1108: Golden Hope Composting Project – Merotai • 0916: Methane Recovery and Utilisation Project at TSH Kunak Oil Palm Mill • 2467: Landfill Gas Recovery and Utilisation at Bukit Tagar Sanitary Landfill, Hulu Selangor in Malaysia • 1925: Taman Beringin Integrated Landfill Management Project, Kuala Lumpur, Malaysia • 3686: Sungei Kahang POME Biogas Recovery for Energy Project in Johor, Malaysia • 4907: Abedon Enviro Bio-Waste Composting Project, Malaysia • 6673: Jeram Landfill Gas Recovery Project
Carbon Capture and Storage (CCS)		VCS No registered VCS projects as of the time of preparing this VCM Handbook CDM There is no sectoral scope for CCS

Source: Illustration based on Verra and CDM

4.4 Methodologies Applicable for Eligible Projects in Malaysia

Under each sectoral scope, there are relevant methodologies applicable that the project proponents have to select before starting their projects. Hence, a proper understanding of the sectoral scopes and methodologies under the VCS Program is crucial to ensure that the projects can be implemented according to the applicability conditions and eligibility criteria of the methodologies.

The VCS Program has its own methodologies that have been approved for use. In addition, methodologies from other approved GHG programmes, including the CDM, can be used by the project proponents who seek to register their projects under the VCS Program. Do note that the project proponents should always prioritise and check on the suitability of the VCS methodologies first, prior to the CDM methodologies. Exhibit 49 shows a summary of methodologies for each sectoral scope within the context of Malaysia.

Exhibit 49: Approved methodologies in VCS and CDM programmes.

Scope No.	Sectoral Scope	VCS Methodology	CDM Methodology (Eligible under VCS)		
			Large-scale	Small-scale	Consolidated
Nature-Based					
1	**Agriculture, Forestry and Other Land Use (AFOLU)**				
(a)	Afforestation, Reforestation and Revegetation (ARR)	VM0024 Methodology for coastal wetland creation VM0033[16] Methodology for tidal wetland and seagrass restoration VM0034 Canadian Forest Carbon Offset Methodology VM0037 Methodology for implementation of REDD+ activities in landscapes		AR-AMS0007 Afforestation and reforestation project activities implemented on lands other than wetlands	AR-ACM0003 Afforestation and reforestation of lands except for wetlands

[16] Verra has replaced CDM AR-AM0014 and AR-AMS0003 methodologies with VM0033 Methodology for Tidal Wetland and Seagrass Restoration, v2.0. Projects that have completed pipeline listing on the Verra Registry by 31 August 2022 may use CDM methodologies AR-AM0014 and AR-AMS0003 if they complete validation and request registration by 28 February 2023.

Scope No.	Sectoral Scope	VCS Methodology	CDM Methodology (Eligible under VCS)		
			Large-scale	Small-scale	Consolidated
		affected by mosaic deforestation and degradation			
(b)	Agriculture Land Management (ALM)	VM0017[17] Adoption of sustainable Agricultural Land Management VM0022 Quantifying N_2O emission reductions in agricultural crops through nitrogen fertiliser rate reduction VM0026 Methodology for Sustainable Grassland Management (SGM) VM0032 Methodology for the adoption of sustainable grasslands through adjustment of fire and grazing VM0042[18] Methodology for Improved Agricultural Land Management	AM0073 (Agriculture) GHG emission reductions through multi-site manure collection and treatment in a central plant AM0089 (Agriculture) Production of diesel using a mixed feedstock of gasoil and vegetable oil	AMS-I.H. (Agriculture) Biodiesel production and use for energy generation in stationary applications AMS-III.A. (Agriculture) Offsetting of synthetic nitrogen fertilisers by inoculant application in legumes-grass rotations on acidic soils on existing cropland AMS-III.BE. (Agriculture) Avoidance of methane and nitrous oxide emissions from sugarcane pre-harvest open burning through mulching AMS-III.BF. (Agriculture) Reduction of N_2O emissions from use of Nitrogen Use Efficient (NUE) seeds that require less fertiliser application AMS-III.BK. (Agriculture) Strategic feed supplementation in smallholder dairy sector to increase productivity AMS-III.D. (Agriculture)	ACM0010 (Agriculture) GHG emission reductions from manure management systems
(c)	Improved Forest Management (IFM)	VM0003 Methodology for Improved Forest Management through extension of rotation age VM0005 Methodology for conversion of low-productive forest to high-productive forest VM0010			

[17] As of the time of preparing this VCM Handbook, this methodology is inactive.
[18] As of the time of preparing this VCM Handbook, this methodology is undergoing revision.

Scope No.	Sectoral Scope	VCS Methodology	CDM Methodology (Eligible under VCS)		
			Large-scale	Small-scale	Consolidated
		Methodology for Improved Forest Management: Conversion from logged to protected forest VM0011 Methodology for calculating GHG benefits from preventing planned degradation VM0012 Improved Forest Management in temperate and boreal forests (LtPF) VM0034 Canadian Forest Carbon Offset methodology VM0035 Methodology for Improved Forest Management through Reduced Impact Logging VM0045 Methodology for Improved Forest Management using dynamic matched baselines from National Forest Inventories		Methane recovery in animal manure management systems AMS-III.R. (Agriculture) Methane recovery from livestock and manure management at households and small farms	
(d)	Reducing Emissions from Deforestation and Forest Degradation (REDD)	VM0004 Methodology for avoided planned land use conversion in peat swamp forests VM0006			

Scope No.	Sectoral Scope	VCS Methodology	CDM Methodology (Eligible under VCS)		
			Large-scale	Small-scale	Consolidated
		Methodology for carbon accounting for mosaic and landscape-scale REDD projects VM0007 REDD+ Methodology Framework (REDD+MF) VM0009 Methodology for avoided ecosystem conversion VM0015 Methodology for avoided unplanned deforestation VM0029 Methodology for avoided forest degradation through fire management VM0034 Canadian Forest Carbon Offset methodology VM0037 Methodology for implementation of REDD+ activities in landscapes affected by mosaic deforestation and degradation			
(e)	Avoided Conversion of Grasslands and Shrublands (ACoGS)	VM0009 Methodology for avoided ecosystem conversion			

Scope No.	Sectoral Scope	VCS Methodology	CDM Methodology (Eligible under VCS)		
			Large-scale	Small-scale	Consolidated
(f)	Wetland Restoration and Conservation (WRC)	VM0024 Methodology for coastal wetland creation VM0027 Methodology for rewetting drained tropical peatlands VM0033[19] Methodology for tidal wetland and seagrass restoration VM0036 Methodology for rewetting drained temperate peatlands			
2	**Livestock and Manure Management**	VM0041 (Livestock & Manure Management) Methodology for the reduction of enteric methane emissions from ruminants through the use of feed ingredients	–	–	–
Technology-Based					
3	**Energy (Renewable/ Non-renewable)**	VM0002 New cogeneration facilities supplying less carbon intensive electricity to grid and/or hot water to one or more grid customers VM0038 Methodology for electric vehicle charging systems	AM0007 Analysis of the least-cost fuel option for seasonally-operating biomass cogeneration plants AM0019 Renewable energy projects replacing part of the electricity production of one single fossil fuel fired power plant that stands alone or supplies to a	AMS-I.A. Electricity generation by the user AMS-I.B. Mechanical energy for the user with or without electrical energy AMS-I.C. Thermal energy production with or without electricity	ACM0006 Electricity and heat generation from biomass ACM0007 Conversion from single cycle to combined cycle power generation

[19] Verra has replaced CDM AR-AM0014 and AR-AMS0003 methodologies with VM0033 Methodology for Tidal Wetland and Seagrass Restoration, v2.0. Projects that have completed pipeline listing on the Verra Registry by 31 August 2022 may use CDM methodologies AR-AM0014 and AR-AMS0003 if they complete validation and request registration by 28 February 2023.

Scope No.	Sectoral Scope	VCS Methodology	CDM Methodology (Eligible under VCS)		
			Large-scale	Small-scale	Consolidated
			grid, excluding biomass projects AM0026 Methodology for zero-emissions grid-connected electricity generation from renewable sources in Chile or in countries with merit order-based dispatch grid AM0036 Use of biomass in heat generation equipment AM0045 Grid connection of isolated electricity systems AM0048 New cogeneration project activities supplying electricity and heat to multiple customers AM0049 Methodology for gas based energy generation in an industrial facility AM0052 Increased electricity generation from existing hydropower stations through Decision Support System optimization	AMS-I.D. Grid connected renewable electricity generation AMS-I.E. Switch from non-renewable biomass for thermal applications by the user AMS-I.F. Renewable electricity generation for captive use and mini-grid AMS-I.G. Plant oil production and use for energy generation in stationary applications AMS-I.H. Biodiesel production and use for energy generation in stationary applications AMS-I.I. Biogas/biomass thermal applications for households/small users AMS-I.J. Solar water heating systems (SWH) AMS-I.K. Solar cookers for households	ACM0012 Waste energy recovery ACM0013 Construction and operation of new grid connected fossil fuel fired power plants using a less GHG intensive technology ACM0017 Production of biofuel ACM0018 Electricity generation from biomass in power-only plants ACM0020 Co-firing of biomass residues for heat generation and/or electricity generation in grid connected power plants ACM0022 Alternative waste treatment processes ACM0023 Introduction of an efficiency improvement technology in a boiler ACM0024

Scope No.	Sectoral Scope	VCS Methodology	CDM Methodology (Eligible under VCS)		
			Large-scale	Small-scale	Consolidated
			AM0053 Biogenic methane injection to a natural gas distribution grid AM0055 Recovery and utilization of waste gas in refinery or gas plant AM0056 Efficiency improvement by boiler replacement or rehabilitation and optional fuel switch in fossil fuel-fired steam boiler systems AM0058 Introduction of a district heating system AM0061 Methodology for rehabilitation and/or energy efficiency improvement in existing power plants AM0062 Energy efficiency improvements of a power plant through retrofitting turbines AM0069 Biogenic methane use as feedstock and fuel for town gas production	AMS-I.L. Electrification of rural communities using renewable energy AMS-I.M. Solar power for domestic aircraft at-gate operations AMS-II.B. Supply side energy efficiency improvements – generation AMS-II.H. Energy efficiency measures through centralization of utility provisions of an industrial facility AMS-III.AH. Shift from high carbon-intensive fuel mix ratio to low carbon-intensive fuel mix ratio AMS-III.AL. Conversion from single cycle to combined cycle power generation AMS-III.BL. Integrated methodology for electrification of communities	Natural gas substitution by biogenic methane produced from the anaerobic digestion of organic waste ACM0025 Construction of a new natural gas power plant ACM0026 Fossil fuel-based cogeneration for identified recipient facility(ies)

Scope No.	Sectoral Scope	VCS Methodology	CDM Methodology (Eligible under VCS)		
			Large-scale	Small-scale	Consolidated
			AM0072 Fossil fuel displacement by geothermal resources for space heating AM0074 Methodology for new grid connected power plants using permeate gas previously flared and/or vented AM0075 Methodology for collection, processing and supply of biogas to end-users for production of heat AM0076 Implementation of fossil fuel trigeneration systems in existing industrial facilities AM0081 Flare or vent reduction at coke plants through the conversion of their waste gas into dimethyl ether for use as a fuel AM0084 Installation of cogeneration system supplying electricity and chilled water to new and existing consumers AM0089		

Scope No.	Sectoral Scope	VCS Methodology	CDM Methodology (Eligible under VCS)		
			Large-scale	Small-scale	Consolidated
			Production of diesel using a mixed feedstock of gasoil and vegetable oil AM0094 Distribution of biomass-based stove and/or heater for household or institutional use AM0095 Waste gas based combined cycle power plant in a Greenfield iron and steel plant AM0098 Utilization of ammonia-plant off gas for steam generation AM0099 Installation of a new natural gas fired gas turbine to an existing CHP plant AM0100 Integrated Solar Combined Cycle (ISCC) projects AM0103 Renewable energy power generation in isolated grids AM0104 Interconnection of electricity grids in countries with economic merit order dispatch		

Scope No.	Sectoral Scope	VCS Methodology	CDM Methodology (Eligible under VCS)		
			Large-scale	Small-scale	Consolidated
			AM0107 New natural gas-based cogeneration plant AM0108 Interconnection between electricity systems for energy exchange		
4	**Energy Distribution**		AM0067 Methodology for installation of energy efficient transformers in a power distribution grid AM0069 Biogenic methane use as feedstock and fuel for town gas production AM0075 Methodology for collection, processing and supply of biogas to end-users for production of heat AM0118 Introduction of low resistivity power transmission line	AMS-II.A. Supply side energy efficiency improvements – transmission and distribution AMS-II.T. Emission reduction through reactive power compensation in power distribution network AMS-III.AW. Electrification of rural communities by grid extension AMS-III.BB. Electrification of communities through grid extension or construction of new mini-grids AMS-III.BL. Integrated methodology for electrification of communities	
5	**Energy Demand**	VM0008 Weatherization of single family and multi-family buildings VM0013	AM0017 Steam system efficiency improvements by replacing steam traps and returning condensate	AMS-I.I. Biogas/biomass thermal applications for households/small users	ACM0003 Partial substitution of fossil fuels in cement or quicklime manufacture

Scope No.	Sectoral Scope	VCS Methodology	CDM Methodology (Eligible under VCS)		
			Large-scale	Small-scale	Consolidated
		Calculating emission reductions from jet engine washing VM0020 Transport energy efficiency from lightweight pallets VM0025 Campus clean energy and energy efficiency VMR0005 Methodology for installation of low-flow water devices VMR0006 Methodology for installation of high efficiency firewood cookstoves[20]	AM0018 Baseline methodology for steam optimization systems AM0020 Baseline methodology for water pumping efficiency improvements AM0044 Energy efficiency improvement projects – boiler rehabilitation or replacement in industrial and district heating sectors AM0046 Distribution of efficient light bulbs to households AM0060 Power saving through replacement by energy efficient chillers AM0068 Methodology for improved energy efficiency by modifying ferroalloy production facility AM0086 Distribution of low greenhouse gas emitting	AMS-II.C. Demand-side energy efficiency activities for specific technologies AMS-II.E. Energy efficiency and fuel switching measures for buildings AMS-II.G. Energy efficiency measures in thermal applications of non-renewable biomass AMS-II.J. Demand-side activities for efficient lighting technologies AMS-II.K. Installation of co-generation or tri-generation systems supplying energy to commercial building AMS-II.L. Demand-side activities for efficient outdoor and street lighting technologies AMS-II.M. Demand-side energy efficiency activities for	ACM0005 Increasing the blend in cement production

[20] As of the time of preparing this VCM Handbook, this methodology is undergoing revision.

Scope No.	Sectoral Scope	VCS Methodology	CDM Methodology (Eligible under VCS)		
			Large-scale	Small-scale	Consolidated
			water purification systems for safe drinking water AM0088 Air separation using cryogenic energy recovered from the vaporization of LNG AM0105 Energy efficiency in data centres through dynamic power management AM0113 Distribution of compact fluorescent lamps (CFL) and light-emitting diode (LED) lamps to households AM0117 Introduction of a new district cooling system AM0120 Energy-efficient refrigerators and air-conditioners AM0121 Emission reduction from partial switching of raw materials and increasing the share of additives in the production of blended cement	installation of low-flow hot water savings devices AMS-II.N. Demand-side energy efficiency activities for installation of energy efficient lighting and/or controls in buildings AMS-II.O. Dissemination of energy efficient household appliances AMS-II.P. Energy efficient pump-set for agriculture use AMS-II.Q. Energy efficiency and/or energy supply projects in commercial buildings AMS-II.R. Energy efficiency space heating measures for residential buildings AMS-II.S. Energy efficiency in motor systems AMS-III.AE.	

Scope No.	Sectoral Scope	VCS Methodology	CDM Methodology (Eligible under VCS)		
			Large-scale	Small-scale	Consolidated
				Energy efficiency and renewable energy measures in new residential buildings AMS-III.AL. Conversion from single cycle to combined cycle power generation AMS-III.AR. Substituting fossil fuel based lighting with LED/CFL lighting systems AMS-III.AV. Low greenhouse gas emitting safe drinking water production systems AMS-III.X. Energy Efficiency and HFC-134a Recovery in Residential Refrigerators	
6	**Manufacturing Industries**	VM0030 Methodology for pavement application using sulphur substitute VM0043 Methodology for CO_2 utilization in concrete production	AM0007 Analysis of the least-cost fuel option for seasonally-operating biomass cogeneration plants AM0036 Use of biomass in heat generation equipment AM0049	AMS-II.D. Energy efficiency and fuel switching measures for industrial facilities AMS-II.H. Energy efficiency measures through centralization of utility provisions of an industrial facility AMS-II.I.	ACM0003 Partial substitution of fossil fuels in cement or quicklime manufacture ACM0005 Increasing the blend in cement production ACM0012 Waste energy recovery

Scope No.	Sectoral Scope	VCS Methodology	CDM Methodology (Eligible under VCS)		
			Large-scale	Small-scale	Consolidated
			Methodology for gas based energy generation in an industrial facility AM0055 Recovery and utilization of waste gas in refinery or gas plant AM0057 Avoided emissions from biomass wastes through use as feed stock in pulp and paper, cardboard, fibreboard or bio-oil production AM0065 Replacement of SF6 with alternate cover gas in the magnesium industry AM0070 Manufacturing of energy efficient domestic refrigerators AM0078 Point of Use Abatement Device to Reduce SF6 emissions in LCD Manufacturing Operations AM0092 Substitution of PFC gases for cleaning Chemical Vapour Deposition (CVD) reactors in the semiconductor industry	Efficient utilization of waste energy in industrial facilities AMS-III.AD. Emission reductions in hydraulic lime production AMS-III.AS. Switch from fossil fuel to biomass in existing manufacturing facilities for non-energy applications AMS-III.BD. GHG emission reduction due to supply of molten metal instead of ingots for aluminium castings AMS-III.BG. Emission reduction through sustainable charcoal production and consumption AMS-III.K. Avoidance of methane release from charcoal production AMS-III.L. Avoidance of methane production from biomass decay through controlled pyrolysis AMS-III.N.	ACM0015 Emission reductions from raw material switch in clinker production ACM0021 Reduction of emissions from charcoal production by improved kiln design and/or abatement of methane

Scope No.	Sectoral Scope	VCS Methodology	CDM Methodology (Eligible under VCS)		
			Large-scale	Small-scale	Consolidated
			AM0095 Waste gas based combined cycle power plant in a Greenfield iron and steel plant AM0096 CF4 emission reduction from installation of an abatement system in a semiconductor manufacturing facility AM0106 Energy efficiency improvements of a lime production facility through installation of new kilns AM0109 Introduction of hot supply of Direct Reduced Iron in Electric Arc Furnaces AM0111 Abatement of fluorinated greenhouse gases in semiconductor manufacturing AM0114 Shift from electrolytic to catalytic process for recycling of chlorine from hydrogen chloride gas in isocyanate plants AM0115	Avoidance of HFC emissions in rigid Poly Urethane Foam (PUF) manufacturing AMS-III.P. Recovery and utilization of waste gas in refinery facilities AMS-III.Q. Waste energy recovery AMS-III.V. Decrease of coke consumption in blast furnace by installing dust/sludge recycling system in steel works AMS-III.Z. Fuel Switch, process improvement and energy efficiency in brick manufacture	

Scope No.	Sectoral Scope	VCS Methodology	CDM Methodology (Eligible under VCS)		
			Large-scale	Small-scale	Consolidated
			Recovery and utilization of coke oven gas from coke plants for LNG production AM0121 Emission reduction from partial switching of raw materials and increasing the share of additives in the production of blended cement		
7	**Chemical Industry**	VM0023 Reduction of GHG emissions in propylene oxide production	AM0021 Baseline Methodology for decomposition of N_2O from existing adipic acid production plants AM0027 Substitution of CO_2 from fossil or mineral origin by CO_2 from biogenic residual sources in the production of inorganic compounds AM0028 N_2O destruction in the tail gas of Caprolactam production plants AM0037 Flare (or vent) reduction and utilization of gas from oil wells as a feedstock AM0050 Feed switch in integrated Ammonia-urea manufacturing industry	AMS-III.AC. Electricity and/or heat generation using fuel cell AMS-III.AI. Emission reductions through recovery of spent sulphuric acid AMS-III.AJ. Recovery and recycling of materials from solid wastes AMS-III.J. Avoidance of fossil fuel combustion for CO_2 production to be used as raw material for industrial processes AMS-III.M. Reduction in consumption of electricity by recovering soda from paper manufacturing process AMS-III.O.	ACM0017 Production of biofuel ACM0019 N_2O abatement from nitric acid production

Scope No.	Sectoral Scope	VCS Methodology	CDM Methodology (Eligible under VCS)		
			Large-scale	Small-scale	Consolidated
			AM0053 Biogenic methane injection to a natural gas distribution grid AM0055 Recovery and utilization of waste gas in refinery or gas plant AM0063 Recovery of CO_2 from tail gas in industrial facilities to substitute the use of fossil fuels for production of CO_2 AM0069 Biogenic methane use as feedstock and fuel for town gas production AM0075 Methodology for collection, processing and supply of biogas to end-users for production of heat AM0081 Flare or vent reduction at coke plants through the conversion of their waste gas into dimethyl ether for use as a fuel AM0089	Hydrogen production using methane extracted from biogas	

Scope No.	Sectoral Scope	VCS Methodology	CDM Methodology (Eligible under VCS)		
			Large-scale	Small-scale	Consolidated
			Production of diesel using a mixed feedstock of gasoil and vegetable oil AM0098 Utilization of ammonia-plant off gas for steam generation AM0114 Shift from electrolytic to catalytic process for recycling of chlorine from hydrogen chloride gas in isocyanate plants AM0115 Recovery and utilization of coke oven gas from coke plants for LNG production		
8	**Construction**	VM0031 Methodology for precast concrete production using sulphur substitute VM0039 Methodology for use of foam stabilized base and emulsion asphalt mixtures in pavement application		AMS-III.BH. Displacement of production of brick and cement by manufacture and installation of gypsum concrete wall panels	
9	**Transport**	VM0019 Fuel switch from gasoline to ethanol in flex-fuel vehicle fleets VM0020 Transport energy efficiency from lightweight pallets	AM0031 Bus rapid transit projects AM0090 Modal shift in transportation of cargo from road transportation to water or rail transportation	AMS-I.M. Solar power for domestic aircraft at-gate operations AMS-III.AA. Transportation Energy Efficiency Activities using Retrofit Technologies	ACM0016 Mass Rapid Transit projects ACM0017 Production of biofuel

Scope No.	Sectoral Scope	VCS Methodology	CDM Methodology (Eligible under VCS)		
			Large-scale	Small-scale	Consolidated
		VM0028[21] Methodology for carpooling VM0030 Methodology for pavement application using sulphur substitute VM0038 Methodology for electric vehicle charging systems VMR0004 Revisions to AMS-III.BC to Include mobile machinery	AM0101 High speed passenger rail systems AM0110 Modal shift in transportation of liquid fuels AM0116 Electric taxiing systems for airplanes	AMS-III.AK. Biodiesel production and use for transport applications AMS-III.AP. Transport energy efficiency activities using post - fit Idling Stop device AMS-III.AQ. Introduction of Bio-CNG in transportation applications AMS-III.AT. Transportation energy efficiency activities installing digital tachograph systems to commercial freight transport fleets AMS-III.AY. Introduction of LNG buses to existing and new bus routes AMS-III.BC. Emission reductions through improved efficiency of vehicle fleets AMS-III.BM. Lightweight two and three wheeled personal transportation	

[21] As of the time of preparing this VCM Handbook, this methodology is inactive.

Scope No.	Sectoral Scope	VCS Methodology	CDM Methodology (Eligible under VCS)		
			Large-scale	Small-scale	Consolidated
				AMS-III.BN. Efficient operation of public transportation AMS-III.BO. Trip avoidance through equipment improvement of freight transport AMS-III.BP. Emission reduction by shore-side electricity supply system AMS-III.BQ. Hydrogen fuel cell vehicles AMS-III.C. Emission reductions by electric and hybrid vehicles AMS-III.S. Introduction of low-emission vehicles/technologies to commercial vehicle fleets AMS-III.T. Plant oil production and use for transport applications AMS-III.U. Cable Cars for Mass Rapid Transit System (MRTS)	
10	**Mining/ Mineral Production**	VMR0001 Revisions to ACM0008 to include pre-drainage of methane from an active open	AM0064 Capture and utilisation or destruction of mine methane	AMS-III.W. Methane capture and destruction in non-hydrocarbon mining activities	ACM0003 Partial substitution of fossil fuels in cement or quicklime manufacture

Scope No.	Sectoral Scope	VCS Methodology	CDM Methodology (Eligible under VCS)		
			Large-scale	Small-scale	Consolidated
		cast mine as a methane emission reduction activity VMR0002 Revisions to ACM0008 to include methane capture and destruction from abandoned coal mines	(excluding coal mines) or non-mine methane AM0121 Emission reduction from partial switching of raw materials and increasing the share of additives in the production of blended cement		ACM0005 Increasing the blend in cement production ACM0008 Abatement of methane from coal mines ACM0015 Emission reductions from raw material switch in clinker production
11	**Metal Production**	–	AM0030 PFC emission reductions from anode effect mitigation at primary aluminium smelting facilities AM0038 Methodology for improved electrical energy efficiency of an existing submerged electric arc furnace used for the production of silicon and ferro alloys AM0059 Reduction in GHGs emission from primary aluminium smelters AM0065 Replacement of SF_6 with alternate cover gas in the magnesium industry	AMS-III.V. Decrease of coke consumption in blast furnace by installing dust/sludge recycling system in steel works	-

Scope No.	Sectoral Scope	VCS Methodology	CDM Methodology (Eligible under VCS)		
			Large-scale	Small-scale	Consolidated
			AM0066 GHG emission reductions through waste heat utilisation for pre-heating of raw materials in sponge iron manufacturing process AM0068 Methodology for improved energy efficiency by modifying ferroalloy production facility AM0082 Use of charcoal from planted renewable biomass in a new iron ore reduction system AM0109 Introduction of hot supply of Direct Reduced Iron in Electric Arc Furnaces		
12	**Fugitive Emissions – from fuels (solid, oil and gas)**	VM0014 Interception and destruction of fugitive methane from Coal Bed Methane (CBM) seeps	AM0009 Recovery and utilization of gas from oil fields that would otherwise be flared or vented AM0023 Leak detection and repair in gas production, processing, transmission, storage and distribution systems and in refinery facilities AM0037	AMS-III.BI. Flare gas recovery in gas treating facilities AMS-III.W. Methane capture and destruction in non-hydrocarbon mining activities	ACM0008 Abatement of methane from coal mines

Scope No.	Sectoral Scope	VCS Methodology	CDM Methodology (Eligible under VCS)		
			Large-scale	Small-scale	Consolidated
			Flare (or vent) reduction and utilization of gas from oil wells as a feedstock AM0043 Leak reduction from a natural gas distribution grid by replacing old cast iron pipes or steel pipes without cathodic protection with polyethylene pipes AM0064 Capture and utilisation or destruction of mine methane (excluding coal mines) or non mine methane AM0074 Methodology for new grid connected power plants using permeate gas previously flared and/or vented AM0077 Recovery of gas from oil wells that would otherwise be vented or flared and its delivery to specific end-users AM0122 Recovery of methane-rich vapours from hydrocarbon storage tanks		
13	**Fugitive Emissions – from industrial gases**	VM0001	AM0001 Decomposition of fluoroform (HFC-23) waste streams	AMS-III.AB.	-

Scope No.	Sectoral Scope	VCS Methodology	CDM Methodology (Eligible under VCS)		
			Large-scale	Small-scale	Consolidated
	(halocarbons and sulphur hexafluoride)	Infrared automatic refrigerant leak detection efficiency project methodology VM0016 Recovery and destruction of Ozone-Depleting Substances (ODS)	AM0035 SF_6 emission reductions in electrical grids AM0065 Replacement of SF6 with alternate cover gas in the magnesium industry AM0071 Manufacturing and servicing of domestic and/or small commercial refrigeration appliances using a low GWP refrigerant AM0078 Point of Use Abatement Device to Reduce SF_6 emissions in LCD Manufacturing Operations AM0079 Recovery of SF_6 from Gas insulated electrical equipment in testing facilities AM0092 Substitution of PFC gases for cleaning Chemical Vapour Deposition (CVD) reactors in the semiconductor industry AM0096 CF_4 emission reduction from installation of an abatement	Avoidance of HFC emissions in Standalone Commercial Refrigeration Cabinets AMS-III.X. Energy Efficiency and HFC-134a Recovery in Residential Refrigerators	

Scope No.	Sectoral Scope	VCS Methodology	CDM Methodology (Eligible under VCS)		
			Large-scale	Small-scale	Consolidated
			system in a semiconductor manufacturing facility AM0111 Abatement of fluorinated greenhouse gases in semiconductor manufacturing AM0119 SF_6 emission reductions in gas insulated metal enclosed switchgear		
14	**Solvents Use**	–	–	–	–
15	**Waste Handling and Disposal**	VM0018 Energy efficiency and solid waste diversion activities within a sustainable community VM0044 Methodology for biochar utilization in soil and non-soil applications VMR0003 Revisions to AMS-III.Y to include use of organic bedding material	AM0057 Avoided emissions from biomass wastes through use as feed stock in pulp and paper, cardboard, fibreboard or bio-oil production AM0073 GHG emission reductions through multi-site manure collection and treatment in a central plant AM0080 Mitigation of greenhouse gases emissions with treatment of wastewater in aerobic wastewater treatment plants AM0083 Avoidance of landfill gas emissions by in-situ aeration of landfills	AMS-III.AF. Avoidance of methane emissions through excavating and composting of partially decayed municipal solid waste (MSW) AMS-III.AJ. Recovery and recycling of materials from solid wastes AMS-III.AO. Methane recovery through controlled anaerobic digestion AMS-III.AX. Methane oxidation layer (MOL) for solid waste disposal sites AMS-III.BA. Recovery and recycling of materials from E-waste	ACM0001 Flaring or use of landfill gas ACM0010 GHG emission reductions from manure management systems ACM0014 Treatment of wastewater ACM0022 Alternative waste treatment processes

Scope No.	Sectoral Scope	VCS Methodology	CDM Methodology (Eligible under VCS)		
			Large-scale	Small-scale	Consolidated
			AM0093 Avoidance of landfill gas emissions by passive aeration of landfills AM0112 Less carbon intensive power generation through continuous reductive distillation of waste	AMS-III.BE. Avoidance of methane and nitrous oxide emissions from sugarcane pre-harvest open burning through mulching AMS-III.BJ. Destruction of hazardous waste using plasma technology including energy recovery AMS-III.E. Avoidance of methane production from decay of biomass through controlled combustion, gasification or mechanical/thermal treatment AMS-III.F. Avoidance of methane emissions through composting AMS-III.G. Landfill methane recovery AMS-III.H. Methane recovery in wastewater treatment AMS-III.I. Avoidance of methane production in wastewater treatment through	

Scope No.	Sectoral Scope	VCS Methodology	CDM Methodology (Eligible under VCS)		
			Large-scale	Small-scale	Consolidated
				replacement of anaerobic systems by aerobic systems AMS-III.Y. Methane avoidance through separation of solids from wastewater or manure treatment systems	
16	**Carbon Capture and Storage (CCS)**	–	–	–	-

Source: Illustration based on Verra

4.5 Projects Registered under Other GHG Programmes

With reference to Section 3.22 of the VCS Standard, version 4.4, projects may be registered under both the VCS Program and another GHG programme (which may be an approved GHG programme such as the Clean Development Mechanism (CDM), Joint Implementation (JI), Climate Action Reserve or any other GHG programme).

However, project proponents shall not seek credit for the same GHG emission reduction or removals under the VCS Program and another GHG programme. Besides that, projects issuing GHG credits under both the VCS Program and another GHG programme shall also conform with the rules and requirements set out in the VCS Program document Registration and Issuance Process. In addition, there shall be other conformances to be complied with for AFOLU projects registered under both the VCS Program and another GHG programme, as further explained in Section 3.22, VCS Standard, version 4.4.

For the CDM, the following applies.

4.5.1 CDM – Without Carbon Credits Issued

Project proponents with projects registered under the CDM can potentially be suppliers of standardised carbon contracts for trading on the BCX, provided that they are able to convert their issued Certified Emission Reductions (CERs) to Verified Carbon Units (VCUs) in the VCS registry and the credits' vintage is from 2016 onwards.

With reference to the VCS Standard, version 4.4 (Appendix 2), projects registered under another GHG programme (in this case, CDM), with activities that are included within the scope of the VCS Program, shall only be eligible to complete a gap validation and/or register under the VCS Program where the following applies:

Project that does not include afforestation and/or reforestation activities
The project must have an original project crediting period start date on or after 1 January 2016 with another GHG programme (in this case, CDM); or

Where the project has an original project crediting period start date from 1 January 2013 to 31 December 2015, the project must have issued credits during the period 1 January 2016 to 5 March 2021 or must have a status of "issuance requested" on the relevant GHG programme registry (in this case, CDM) by 5 March 2021.

Project with afforestation and/or reforestation activities
The project must have been registered under another GHG programme (in this case, CDM) on or after 1 January 2013.

Furthermore, the following applies with respect to vintages:

For a project that does not include afforestation and/or reforestation activities, only emission reductions with vintages beginning on or after 1 January 2016 are eligible for VCU issuance. For a project with afforestation and/or reforestation activities, only emission reductions with vintages beginning on or after 1 January 2013 are eligible for VCU issuance.

4.5.2 CDM – With Carbon Credits Issued

With reference to the Registration and Issuance Process, version 4.3 (Appendix 1), project GHG credits issued to projects registered under another GHG programme (in this case, CDM), with activities that are included within the scope of the VCS Program, are only eligible for conversion into VCUs where one (1) of the following is demonstrated:

For GHG credits issued to a project that does not include afforestation and/or reforestation activities
The project shall have an original project crediting period start date on or after 1 January 2016 with another GHG programme (in this case, CDM); or

Where the project has an original project crediting period start date from 1 January 2013 to 31 December 2015, the project shall have issued credits during the period 1 January 2016 to 5 March 2021, or shall have a status of "issuance requested" on the relevant GHG programme registry (in this case, CDM) by 5 March 2021.

For GHG credits issued to a project with afforestation and/or reforestation activities
The project shall have been registered under another GHG programme (in this case, CDM) on or after 1 January 2013.

Furthermore, the following applies with respect to vintages:

For GHG credits issued to a project that does not include afforestation and/or reforestation activities, only GHG credits with vintages beginning on or after 1 January 2016 are eligible for conversion into VCUs. For GHG credits issued to a project with afforestation and/or reforestation activities, only GHG credits with vintages beginning on or after 1 January 2013 are eligible for conversion into VCUs.

4.6 Other Requirements

When the project proponents have decided to proceed with registering their projects with the VCS, i.e. after formulating ideas and identifying suitable methodology(ies), the eligibility criteria and the applicability conditions of the selected methodology(ies) shall be adhered to. This information is provided in the specific methodology(ies) documents which are available on Verra's website. Besides that, there are other requirements which shall be followed for projects which are to be registered in Malaysia.

Below is a list that shows some of the important points to be noted from the specific methodology(ies) and other requirements in Malaysia. Most of the project proponents in Malaysia have adopted these methodology(ies), which are focused on energy (renewable/non-renewable), waste handling and disposal and AFOLU.

4.6.1 AMS-I.C. Thermal energy production with or without electricity

This methodology comprises renewable energy technologies (e.g. solar thermal water heaters and dryers, solar cookers, energy derived from renewable biomass and other technologies that provide thermal energy that displaces fossil fuel) that supply users, i.e. residential, industrial or commercial facilities.

For project activities implemented in existing facilities under AMS-I.C. Thermal energy production with or without electricity, baseline calculations shall be based on operational data on energy use (e.g. electricity, fossil fuel) and plant output (e.g. thermal and/or electrical energy) using:

a) The most recent three (3) years' operational data immediately prior to the start date of the project activity in the case of existing facilities which have more than three (3) years of operation history;
b) A minimum of the most recent one (1) year's data in the case of existing facilities that have more than three (3) years of operation history but do not have three (3) years' operational data; or

c) A performance test/measurement campaign carried out prior to the implementation of the project activity in the case of existing facilities that have more than three (3) years of operation history but do not have operational data/information such as efficiency or energy consumption and output, or the available data is not reliable due to various factors such as the use of imprecise or non-calibrated measuring equipment.

4.6.2 AMS-I.D. Grid connected renewable electricity generation

Project activities that consist of renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass, which supply electricity to a national or a regional grid or supply electricity to an identified consumer facility via a national/regional grid through a contractual arrangement such as wheeling (see Exhibit 50). Combined heat and power (co-generation) systems are not eligible under this category:

- ✓ If the new unit has both renewable and non-renewable components (e.g. a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. However, if the new unit co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.
- ✓ In the case of project activities that involve the capacity addition of renewable energy generation units at an existing renewable power generation facility, the capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units.
- ✓ In the case of retrofit, rehabilitation or replacement, to qualify as a small-scale project, the total output of the retrofitted, rehabilitated or replacement power plant/unit shall not exceed the limit of 15 MW.

Exhibit 50: Grid-connected renewable energy produced from biogas engines.

Photo credit: Eco-Ideal Consulting Sdn Bhd.

4.6.3 AMS-III.E. Avoidance of methane production from decay of biomass through controlled combustion, gasification or mechanical/thermal treatment

Avoidance of methane production from decay of biomass through controlled combustion, gasification or mechanical/thermal treatment, apart from solid waste disposal sites (SWDS)

and stockpiles (a pile of solid waste (not buried below ground) (see Exhibit 51). Anaerobic conditions are not assured in a stockpile with low volume-to-surface area ratios (less than 1.5) because the waste may be exposed to higher aeration), which can be characterised as waste disposal sites that consist of waste of a homogenous nature with similar origin (e.g. rice husks, empty fruit bunches of oil palm, sawmill waste, etc.) are also applicable under this methodology but their calculations for baseline emissions, where the baseline is stockpiling of the waste, differ and shall be followed.

Exhibit 51: Empty fruit bunches (EFBs), a biomass source, is used in the production of pellets (a source of energy) in Sabah.

Photo credit: Eco-Ideal Consulting Sdn Bhd.

4.6.4 AMS-III.F. Avoidance of methane emissions through composting

Projects under this methodology adopt measures to avoid the emissions of methane to the atmosphere from biomass or other organic matter that would have otherwise been left to decay anaerobically in an SWDS, or an animal waste management system (AWMS) or in a wastewater treatment system (WWTS). In the project activity, controlled aerobic treatment by composting of biomass is introduced.

Project activities that increase capacity utilisation at existing facilities under AMS-III.F. Avoidance of methane emissions through composting are required to demonstrate that special efforts have been made to increase the capacity utilisation, that the existing facility meets all applicable laws and regulations and that the existing facility is not included in a separate project activity. The special efforts should be identified and described. This methodology is also applicable to co-composting wastewater and solid biomass waste but it has to be demonstrated that the organic matter would have been left to decay anaerobically, otherwise baseline emissions related to such organic matter shall be accounted for as zero (0).

4.6.5 AMS-III.H. Methane recovery in wastewater treatment

This methodology comprises measures that recover biogas from biogenic organic matter in wastewater by means of one (1), or a combination, of the following options:

(a) Substitution of aerobic wastewater or sludge treatment systems with anaerobic systems with biogas recovery and combustion;
(b) Introduction of anaerobic sludge treatment system with biogas recovery and combustion in a wastewater treatment plant without sludge treatment;
(c) Introduction of biogas recovery and combustion in a sludge treatment system;
(d) Introduction of biogas recovery and combustion in an anaerobic wastewater treatment system such as an anaerobic reactor, lagoon, septic tank or an onsite industrial plant;
(e) Introduction of anaerobic wastewater treatment with biogas recovery and combustion, with or without anaerobic sludge treatment, in an untreated wastewater stream;
(f) Introduction of a sequential stage of wastewater treatment with biogas recovery and combustion, with or without sludge treatment, in an anaerobic wastewater treatment system without biogas recovery (e.g. introduction of treatment in an anaerobic reactor with biogas recovery as a sequential treatment step for the wastewater that is presently being treated in an anaerobic lagoon without methane recovery).

For a wastewater treatment plant that would like to be registered with AMS-III.H. Methane recovery in wastewater treatment and has been operating for at least three (3) years, and if one (1) year of historical data is not available, an ex ante measurement campaign shall be implemented to determine the required parameters (Chemical Oxygen Demand (COD) removal efficiency, specific energy consumption and specific sludge production). The measurement campaign shall be implemented in the baseline wastewater systems for at least ten (10) days. The measurements should be undertaken during a period that is representative of the typical operation conditions of the systems and the ambient conditions of the site (temperature, etc.) (see Exhibit 52).

According to the latest criteria for licence application to the Malaysian Palm Oil Board (MPOB), *Kriteria dan Panduan Permohonan Lesen MPOB, Edisi Ketiga, 2022* (page 21), all existing oil palm mills that apply for additional throughput shall install methane gas trapping or emissions avoidance facilities. However, effective from 2 May 2021, exemption is given to mills that process 270,000 mt FFB or below per year. **Any existing mills which apply with a yearly processing capacity of more than 270,000 mt FFB per year must install the biogas trapping facilities or methane gas emissions avoidance technology, or both, with 80% (±5%) consumption rate of POME produced**.

With reference to the VCS Standard, a project activity is additional if it can be demonstrated that the activity results in emission reductions or removals that are in excess of what would be achieved under a “business-as-usual” scenario and the activity would not have occurred in the absence of the incentive provided by the carbon markets. For palm oil mills that have applied for additional throughput and are required to install methane gas trapping or emissions avoidance facilities, the projects that have to follow the requirements are considered **not additional**.

Exhibit 52: Palm oil mill effluent (POME) treatment in a Johor palm oil mill by using anaerobic digester tanks.

Photo credit: Sungei Kahang Palm Oil Sdn Bhd.

4.6.6 ACM0001 Flaring or use of landfill gas

Project activities that include the destruction of methane emissions and the displacement of a more GHG-intensive service by capturing landfill gas from the landfill site and/or flaring it and/or using it to produce energy (i.e. electricity, thermal energy), and/or using it to supply consumers through a natural gas distribution network, dedicated pipeline or trucks, are eligible for ACM0001 Flaring or use of landfill gas (see Exhibit 53). However, project activities that have chosen this methodology are not permitted to combine with other methodology(ies) and are not applicable if the management of the SWDS in the project activity is deliberately changed during the crediting in order to increase methane generation compared to the situation prior to the implementation of the project activity.

Exhibit 53: Methane recovery from a landfill gas project in Selangor.

Photo credit: Eco-Ideal Consulting Sdn Bhd.

4.6.7 ACM0013 Construction and operation of new grid connected fossil fuel fired power plants using a less GHG intensive technology

The baseline scenario is identified based on an assessment of which new power generation technologies use the same fossil fuel category as the project activity and are currently being implemented in the geographical area of the project activity. The project activity is the construction and operation of a new fossil fuel-fired grid-connected power plant that uses a more efficient power generation technology than what would otherwise be used with the given fossil fuel category.

ACM0013 Construction and operation of new grid connected fossil fuel fired power plants using a less GHG intensive technology is only applicable to new power plants. For project activities involving a retrofit of existing power plants, project proponents are encouraged to submit new methodologies or submit a request for revision to existing methodologies, as appropriate. For project activities involving a switch to a less GHG-intensive fossil fuel in existing power plants or the construction and operation of a new power plant with less GHG-intensive fossil fuel, project proponents may consider using other methodology(ies).

4.6.8 VM0005 Methodology for Conversion of Low-productive Forest to High-productive Forest

This methodology facilitates the quantification of the net GHG benefits of Improved Forest Management (IFM) projects in natural evergreen tropical rainforests that achieve carbon benefits in one (1) of, or a combination of, two (2) activities:

- Avoiding emissions from the relogging of already logged-over forest; and
- Rehabilitation of previously logged-over forest by cutting climbers and vines, or liberation thinning or enrichment planting, or a combination of these activities.

The baseline scenario, therefore, consists of a logged-over natural evergreen tropical rainforest, normally with no or insignificant regrowth, which may or may not be relogged.

As for the AFOLU sector, one (1) of the VCS methodologies, i.e. VM0005 Methodology for Conversion of Low-productive Forest to High-productive Forest (see Exhibit 54), which is applicable to IFM activities, specifies that only areas that have been designated, sanctioned or approved for such activities (e.g. as logging concessions) by national or local regulatory bodies are eligible for crediting. In particular, this methodology is applicable to improved forest management practices that achieve the conversion of low-productive forest to high-productive forest (LtHP) through the protection of logged-over, degraded forest from further logging or the adoption of silvicultural techniques increasing the density of tree vegetation, or a combination of these activities.

Exhibit 54: Logging activities in one of the Forest Management Units (FMUs) in Sabah.

Photo credit: Eco-Ideal Consulting Sdn Bhd.

The above list is non-exhaustive and project proponents shall ensure that all the applicability conditions and eligibility criteria as per the chosen methodology(ies), as well as the other requirements and policies required in Malaysia, are followed.

Chapter 5

How to Formulate a VCM Project

Chapter 5: How to Formulate a VCM Project

5.1 Chapter Summary

This chapter provides an overview of how to formulate a VCM project and the applicable fees. The summary table below compiles and lists out all the templates and costs expected at each stage of the VCM formulation process.

Templates (Available on Verra's website)	Fees
Opening a Verra Registry Account	
No template	USD500 for each account
Selecting Suitable Methodology(ies)	
No template	No fee
Preparing PD	
VCS Project Description Template	No fee
Pipeline Listing Process	
VCS Project Description Template *VCS Listing Representation Template*	USD1,000 for each pipeline listing request
Preparing Monitoring Report	
VCS Monitoring Report Template	No fee
Project Registration Process	
Step 1: Project validation and verification	
VCS Project Description Template *VCS Monitoring Report Template*	VVB fee depends on mutual agreement between the project proponent and VVB
Step 2: Registration & issuance request	
VCS Project Description Template *VCS Monitoring Report Template* *VCS Validation Report Template* *VCS Verification Report Template* *VCS Registration Representation Template (Single/Multiple PP)* *VCS Validation Representation Template* *VCS Verification Representation Template*	USD2,500 for each project registration request
Step 3: Project review	
VCS Project Description Template *VCS Monitoring Report Template* *VCS Validation Report Template* *VCS Verification Report Template*	No fee
Step 4: Project registration & issuance of VCU	

Templates (Available on Verra's website)	Fees
VCS Project Description Template *VCS Monitoring Report Template* *VCS Validation Report Template* *VCS Verification Report Template* *VCS Issuance Representation Template (Single/Multiple PP)* Notification to national authority of Malaysia upon successful registration of project	USD0.20 per VCU, payable at the time of the issuance request
Step 5: Periodic VCU issuance	
VCS Project Description Template *VCS Monitoring Report Template* *VCS Verification Report Template*	USD0.20 per VCU, payable at the time of the issuance request
Step 6: VCU retirement & cancellation	
No template	No fee
Step 7: Project maintenance	
No template	USD500 per year for each account, payable in full at account approval and subsequently in January of each year
External Costs (Not Tracked by Verra)	
• Project development fees include project development and operations, monitoring and consultants' fees • Auditing fees payable directly to the VVB	

Note: The fee schedule is subject to changes by Verra. For more updated information, please visit Verra's fee schedule webpage.

5.2 General Process

This chapter outlines the procedures for developing a VCM project, from the idea formulation to the project registration. The project proponent will be guided step by step, from registering the Verra online account to issuing and maintaining the Verified Carbon Units (VCUs), as described in details under Section 5.2.3 Development of a VCM Project.

The concept for developing a VCM project, which involves three (3) elements, is described in Exhibit 55.

Exhibit 55: Elements of a VCM Project.

Source: Illustration based on Section 5.2.3 Development of a VCM Project

5.2.1 Idea Formulation

The first step when developing a project is to formulate an idea. This process serves to obtain a complete picture of the project being undertaken without really arriving at a detailed feasibility study. It is also aimed at a preliminary evaluation of the proposed project. Exhibit 56 helps to outline the specific steps needed to develop an idea and turn it into strategic planning.

Exhibit 56: Idea Formulation.

Source: Illustration based on Section 5.2.3 Development of a VCM Project

5.2.2 Feasibility Study

As its name suggests, the study is designed to assess whether a project/plan is feasible. The purpose of the feasibility study is to provide an independent assessment that examines all aspects of a proposed project, including technical, economic, financial, legal and environmental considerations. Exhibit 57 describes the key elements in conducting a feasibility study.

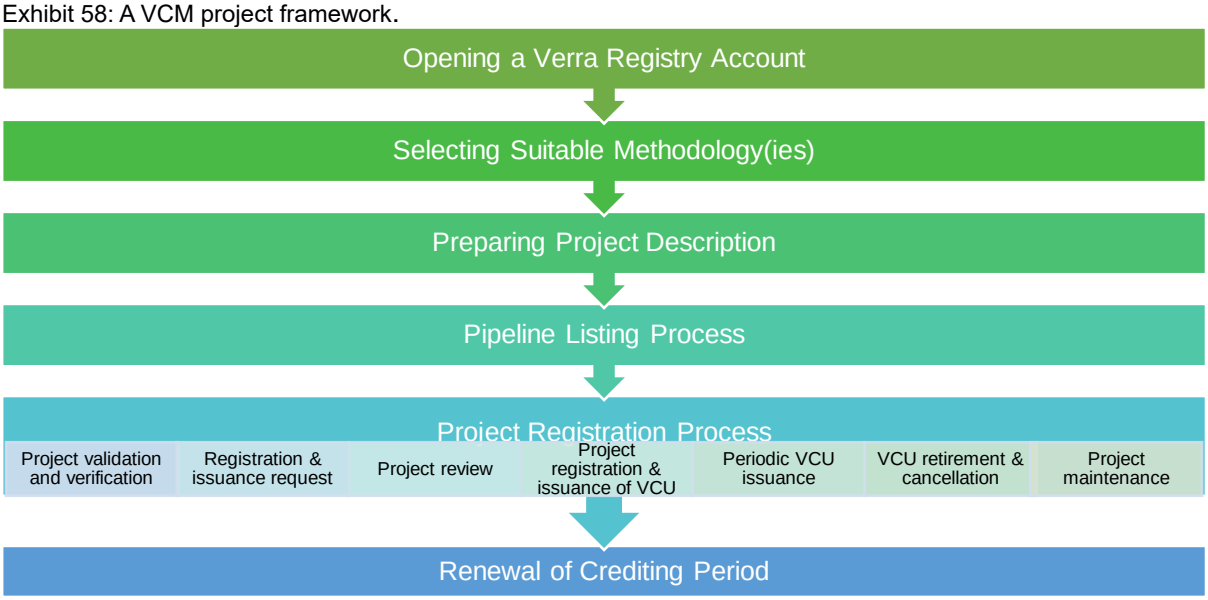
Exhibit 57: Key elements in conducting a feasibility study.

Source: Illustration based on Section 5.2.3 Development of a VCM Project

5.2.3 Development of a VCM Project

Developing a VCM project involves several processes, from opening a Verra Registry online account to the registration of the project. The processes involved in developing a VCM project are shown in Exhibit 58.

Exhibit 58: A VCM project framework.



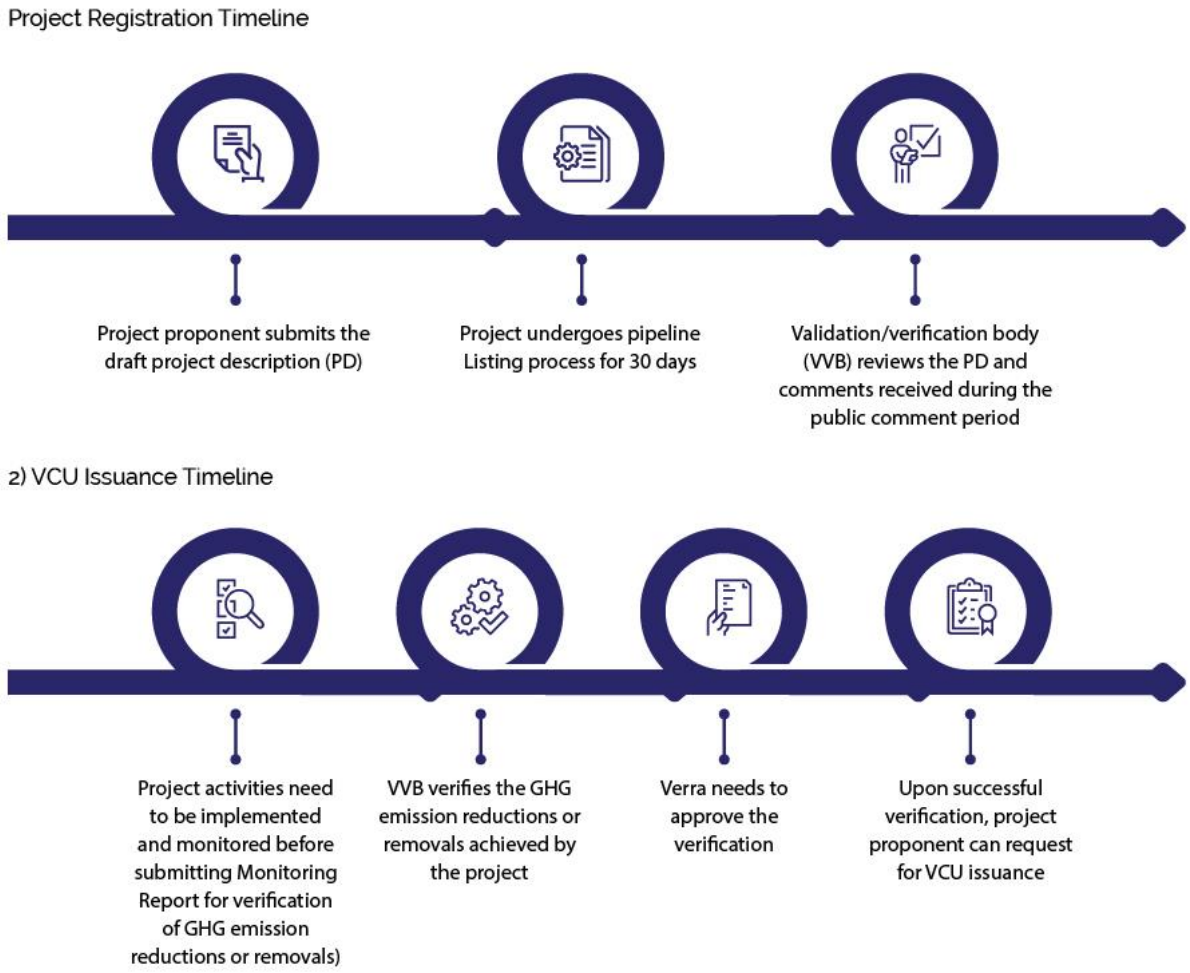
Source: Illustration from various sources (Verra source 1, Verra source 2 and Verra source 3)

Before starting to develop a VCM project, the project proponent needs to know the timeline and the costs expected when developing a VCM project.

Timeline

There are two (2) timelines that the project proponent needs to be aware of (see Exhibit 59).

Exhibit 59: Typical VCM project timeline.



Source: Verra's website (https://verra.org/programs/verified-carbon-standard/#starting-a-vcs-project:-what-to-expect)

Costs

VCM project development costs vary from project to project. They fall into three (3) categories:

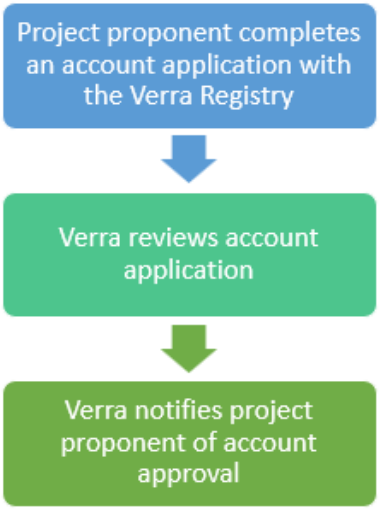
i. Verra fees, as outlined in Section 2 of the VCS Program Fee Schedule. All Verra fees disclosed in this Handbook are accurate at the time of publication;
ii. Project development fees, which include project development and operations, monitoring and consultants' fees; and
iii. Auditing fees payable directly to the validation/verification body (VVB).

5.2.3.1 Opening a Verra Registry Account

The project proponent must own an online Verra Registry account at the early stage of VCM project development. The Verra Registry is a platform where project pipeline listing, registration of a project and/or issuance, trading or retiring of VCUs take place. The Verra Registry account can be created by the project proponent at any time.

The general process of opening a Verra Registry account is summed up in Exhibit 60 below.

Exhibit 60: Opening a Verra Registry account.



Project proponent can apply to open a Verra Registry account through the Verra website at registry@verra.org

Account opening fee is USD500

Verra will send the applicants a list of Know-Your-Customer (KYC) questions that must be submitted for the account review

The review will take two (2) to five (5) working days to complete

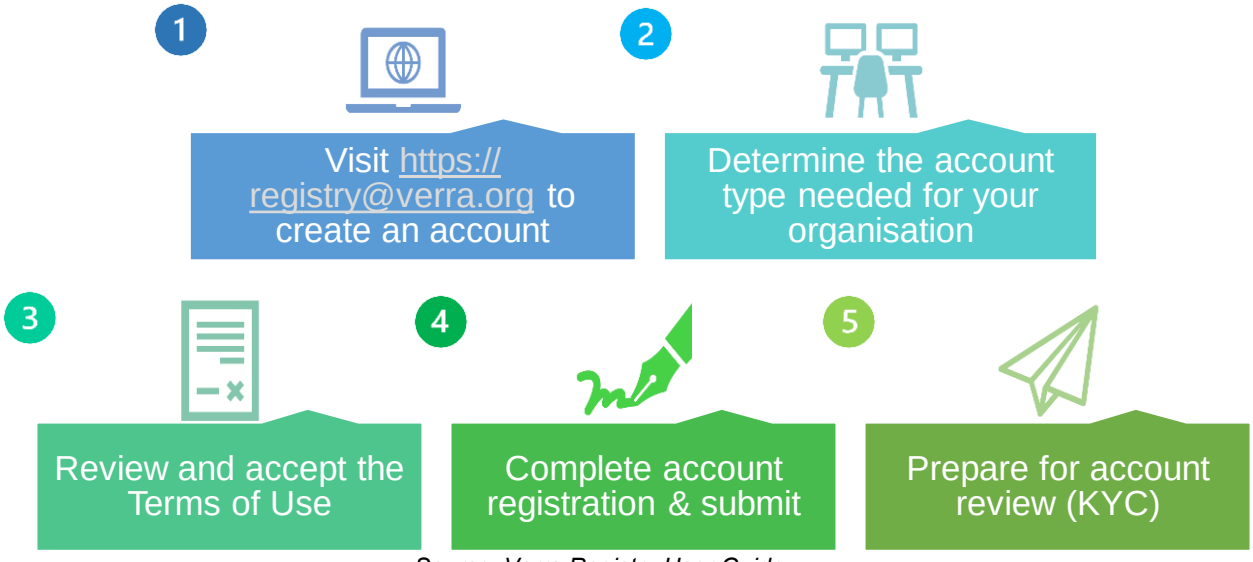
The email notification of account approval will be sent to the designated Account Manager's email address

Note that a single account on the Verra Registry may be used to manage multiple projects and projects participating in more than one Verra programme (e.g. VCS and Climate, Community and Biodiversity Standards (CCB)). It is not necessary to open separate accounts for each Verra programme.

Verra online account registration: Step by step

The process of account registration with the Verra Registry is summarised in Exhibit 61.

Exhibit 61: Verra account application step-by-step procedure.



Source: Verra Registry User Guide

There are four (4) types of accounts. The project proponent needs to understand and choose which type of account (see Exhibit 62) is best suited for the organisation, as it will determine how the organisation interacts. For each type of account in the Registry, there are different functions available.

Exhibit 62: Definition of each account type.

Account Type	Definition
General Account	This account type allows the Account Holder to register projects, issue credits, transfer or export credits to counterparties, receive transfers of credits from counterparties and retire VCUs on its behalf. A General Account Holder can also retire credits on behalf of third parties.
Project Proponent	This account type allows the Account Holder to register projects, issue credits, transfer or export credits to counterparties and retire credits on its behalf. This account type cannot receive credit transfers nor hold or retire credits on behalf of third parties. This account type is recommended for most project proponents. If, in addition to registering projects, an Account Holder wishes to buy credits, a General Account is required.
Retail Aggregation	This account type allows the Account Holder to receive transfers of credits from counterparties and retire credits on behalf of third parties. Any credits transferred to the account must be retired within a certain period after delivery to the account, with the maximum holding period being established by the Registry Administrator. If the Account Holder does not retire the VCUs within the prescribed timeline, the Registry Administrator will do so. A Retail Aggregator Account Holder cannot transfer credits to counterparties. This account type is recommended for organisations that buy credits to retire on behalf of third parties.
End User	This account type allows the Account Holder to receive transfers of credits from counterparties for immediate retirement only. Retirements can only be on behalf of the Account Holder. An End User Account Holder cannot transfer or export credits to counterparties or hold active credits in their accounts. This account type is recommended for organisations that buy credits to offset their emissions.

Source: Verra Registry User Guide

Once the registration has been completed and submitted, all new accounts are subject to a KYC review of the application form.

The Registry Administrator will contact the Account Holder through the Account Manager's email address provided in the new account application form and send the Account Holder a list of questions that must be answered and submitted for the KYC review.

Email notification of account approval will be sent to the Account Manager. Once the account opening fee is paid, the Account Holder will be able to use all the functions of the system available for its type of account.

5.2.3.2 Selecting Suitable Methodology(ies)

Methodologies are one of the vital keys in developing a VCM project. Methodologies provide requirements and procedures to determine project boundaries, identify baselines, assess additionality, monitor relevant parameters and ultimately, quantify GHG emission reductions or removals. Methodologies often refer to modules or tools that include specific methodological tasks and analyses (e.g. additionality) that are used in conjunction with the methodology(ies).

The methodologies can be either approved methodologies in the VCS Program or developed under an approved GHG programme such as the CDM.

When choosing a methodology for a project, the project proponent needs to identify the sector or category relevant to the project. Refer to **Chapter 4** for the types of eligible projects and VCS sectoral scopes.

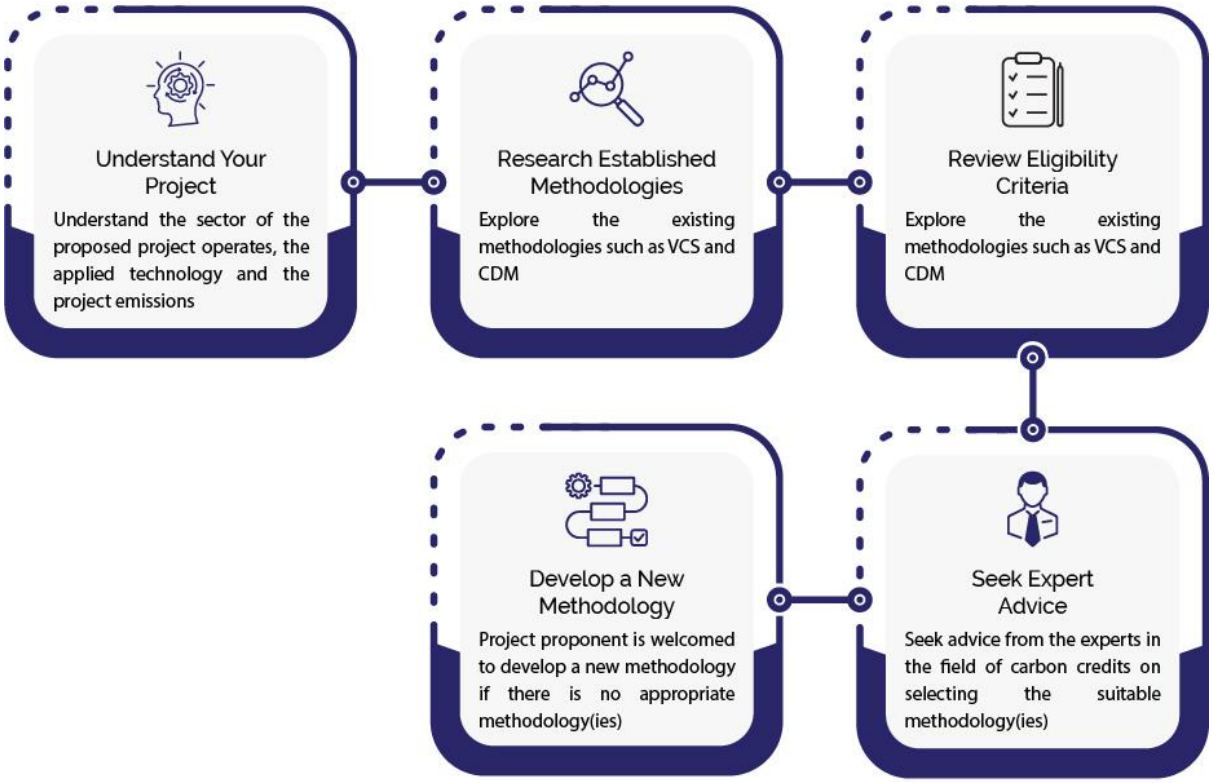
The project proponent should check the list of methodologies available on Verra's and the CDM's websites and identify which methodology(ies) best suit the proposed project.

If no methodologies are applicable, the project proponent is welcome to propose a new methodology, which is described in **Chapter 6** of this Handbook.

When applying a methodology with scale and/or capacity limits, it shall be demonstrated that the project is not a fragmented part of a larger project or activity that would otherwise exceed such limits.

Exhibit 63 below shows the systematic steps in finding a suitable methodology for a proposed project.

Exhibit 63: Finding a suitable methodology.



Source: Illustration based on CDM Methodology Booklet

5.2.3.3 Preparing the Project Description (PD)

To register a project, a PD needs to be prepared as early as before the pipeline listing process, where project proponents are required to submit their PD when requesting for pipeline listing.

Following the VCS Program, a PD needs to be prepared using the VCS Project Description Template which is available on the Verra website. You may refer to the "Training on Using the VCS and VCS/CCB Templates" webinar for guidance and tips.

In the PD, project proponents are required to describe the details of the project and project activities, including project location, start date, project crediting period and ownership of the GHG emission reductions or removals.

Project proponents will also have to demonstrate additionality, identify the most plausible baseline scenario, estimate the GHG emission reductions or removals in the baseline and project scenarios and set out the data and parameters that will be monitored throughout the project. All the monitored data and parameters of the project shall be included in the PD.

⚠ *All information in the PD shall be presumed to be available for public review, although commercially sensitive information may be protected (as set out in the VCS Registration and Issuance Process) where it can be demonstrated that such information is commercially sensitive. The VVB shall check that any information designated by the project proponent as commercially sensitive meets the VCS Program definition of commercially sensitive information.*

The requirements for the development of a project are as follows:

5.2.3.3.1 Project Location

The project location for non-AFOLU projects shall be specified by a single geodetic coordinate, while for AFOLU projects, it shall be clearly specified and the description shall include the name of the project area, maps of the project zone, a Keyhole Markup Language (KML) file (i.e. a Geographic Information System (GIS) file format for representing geographic features) with geodetic polygons, total size of the project zone and details of ownership.

5.2.3.3.2 Project Boundary

The project boundary shall be described (using diagrams, as required) and GHG sources, sinks and reservoirs shall be identified and assessed in accordance with the methodology applied to the project. If any relevant GHG source, sink or reservoir is not selected, justification shall be provided.

5.2.3.3.3 Project Start Date

- ✓ The project start date of a non-AFOLU project is the date on which the project begins generating GHG emission reductions or removals. Non-AFOLU projects shall complete validation within two (2) years of the project start date. However, additional time is granted for non-AFOLU projects to complete validation where they are applying a new VCS methodology. Specifically, projects using a new VCS methodology and completing validation within two (2) years of the approval of the methodology by Verra may complete validation within four (4) years of the project start date.

- ✓ For AFOLU projects, the project start date is the date on which activities that lead to the generation of GHG emission reductions or removals are implemented (e.g. preparing land for seeding, planting, changing agricultural or forestry practices, rewetting, restoring hydrological functions or implementing management or protection plans). AFOLU projects shall initiate the pipeline listing process within three (3) years of the project start date. All AFOLU projects with ex ante emission reduction/removal estimates of 20,000 tCO_2e per year or less and ARR, RWE and IFM (with the exclusion of Logged to Protected Forest (LtPF) projects of any size) shall complete validation within eight (8) years of the project

start date. All other AFOLU projects shall complete validation within five (5) years of the project start date.

5.2.3.3.4 Project Crediting Period

- ✓ For non-AFOLU projects, the project crediting period shall be either seven (7) years, twice renewable for a total of 21 years, or ten (10) years fixed.

- ✓ As for AFOLU ALM projects focusing exclusively on reducing N_2O, CH_4 and/or fossil-derived CO_2 emissions, the project crediting period shall be either seven (7) years (twice renewable for a total of 21 years) or ten (10) years fixed. For all AFOLU projects other than such ALM projects, the project crediting period shall be a minimum of 20 years, up to a maximum of 100 years, which may be renewed at most four (4) times, with a total project crediting period not to exceed 100 years.

5.2.3.3.5 Additionality

All VCM projects must demonstrate that they are additional to what would have occurred under a business-as-usual (BAU) scenario. Specifically, the projects shall demonstrate regulatory surplus at validation and each project crediting period renewal. Regulatory surplus means that project activities are not mandated by any law, statute or other regulatory framework, or for UNFCCC non-Annex I countries, any systematically enforced law, statute or other regulatory framework. Generally, additionality shall be demonstrated and assessed in accordance with the requirements set out in the methodology(ies) applied to the project.

For AFOLU projects, all approved VCS methodologies address additionality using the most recent *VCS Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities* and/or *VCS Tool for the Demonstration and Assessment of Additionality in IFM Project Activities*. These tools generally follow a step-by-step process involving: (0) preliminary screening; (1) identifying alternative land use scenarios; (2) performing an investment analysis or barriers analysis; and (3) performing a common practice analysis.

5.2.3.3.6 Compliance with Laws

Projects and the implementation of project activities shall not lead to the violation of any applicable law, regardless of whether or not the law is enforced. Project proponents should stay abreast of applicable rules and requirements that may apply to their projects.

Once the PD is completed, it must be validated by the approved VVB before proceeding with project registration.

⚠ ***Grouped Projects***

A VCS grouped project combines multiple project activity instances into a single, combined project that adds new instances over time. Using VCS requirements for grouped projects, a project proponent may avoid undergoing a full validation for each new instance added to the project. This can allow projects to scale up over time and reduce transaction costs. A grouped project shall be described in a single PD with all the required information as stated in the VCS Program Standard, Section 3.6.22.

A project proponent sets the geographic boundaries for the grouped project, including where new project activity instances may be added, and establishes criteria for determining the eligibility of future instances.

5.2.3.4 Pipeline Listing Process

The pipeline listing process is a process whereby project proponents will list their projects on the Verra Registry for public comments for 30 days.

There are two (2) types of pipeline listing: Under Development and Under Validation.

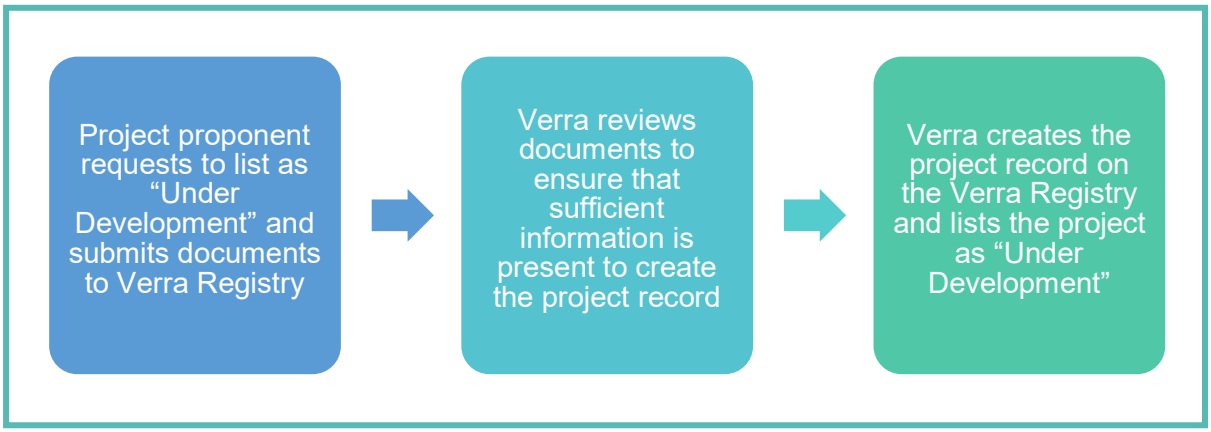
The project proponent needs to pay a pipeline listing request fee of USD1,000 for each pipeline listing request, payable at the time of the request. Refer to Verra's latest *VCS Program Fee Schedule*.

Please refer to Verra's latest VCS Program Fee Schedule which is available on Verra's website.

5.2.3.4.1 Project Listing as "Under Development"

Projects that are listed under the status of "Under Development" are those projects that have yet to contract a VVB (see Exhibit 64). Under this status, a list of documents, as tabulated in Exhibit 66, shall be submitted to the Verra Registry.

Exhibit 64: Pipeline listing process for "Under Development" status.



Source: VCS Registration and Issuance Process, v4.3

Projects may later transition from "Under Development" status to "Under Validation" status and undergo a public comment period when requested by the project proponent.

5.2.3.4.2 Project Listing as "Under Validation"

Projects that have requested to list as "Under Validation" status need to be validated by contracting a VVB (see Exhibit 65). The project proponent is required to submit proof of contracting along with other documents.

Exhibit 65: Pipeline listing process for "Under Validation" status.

Source: VCS Registration and Issuance Process, v4.3

The following is the list of documents to be submitted to the Verra Registry for projects Under Development and Validation (see Exhibit 66).

Exhibit 66: List of documents to be submitted for projects Under Development and Validation.

Under Development	Under Validation
Templates (Available on Verra's Website)	
VCS Project Description Template *VCS Listing Representation*	*VCS Project Description Template* *VCS Listing Representation*
Documents to be prepared and submitted	
Draft PD • Shall include at a minimum the cover page and draft of sections 1.1-1.5, 1.7-1.11, 1.13-1.17 and 3.1-3.2 of the *VCS Project Description Template* • Verra will conduct a completeness review of the submitted documents and project proponents shall address the raised issues before the project listing request can proceed.	Complete PD • All sections of the PD template are to be completed
Listing Representation	Listing Representation
–	Proof of contracting of the validation

Source: VCS Registration and Issuance Process, v4.3

The latest template for PD and Listing Representation can be obtained on Verra's website.

For a project to be qualified as "Under Validation" status, project proponents are required to submit a complete PD and proof of contracting of the validation to the Verra Registry. Verra will then review the submitted documents and update the status of the project from "Under Development" to "Under Validation" status in the Verra Registry. Second Listing Representation is not required.

All relevant documents will be submitted to the Verra Registry in electronic format.

After submission, Verra shall review all the submitted project documents to ensure that sufficient information is given and all issues raised by Verra are addressed.

The public comment period starts on the date on which the project status is updated to "Under Validation" or the date on which the project is listed on the pipeline as "Under Validation". After the 30 days of the public comment period, Verra will provide all the comments received to the project proponent. The project proponent shall address all the comments.

Once the project has successfully completed the pipeline listing process, it may progress to Project Registration in the Verra Registry. An unsuccessful project will remain in the listing for 12 months before becoming inactivated unless the validation is still being pursued by the project proponent.

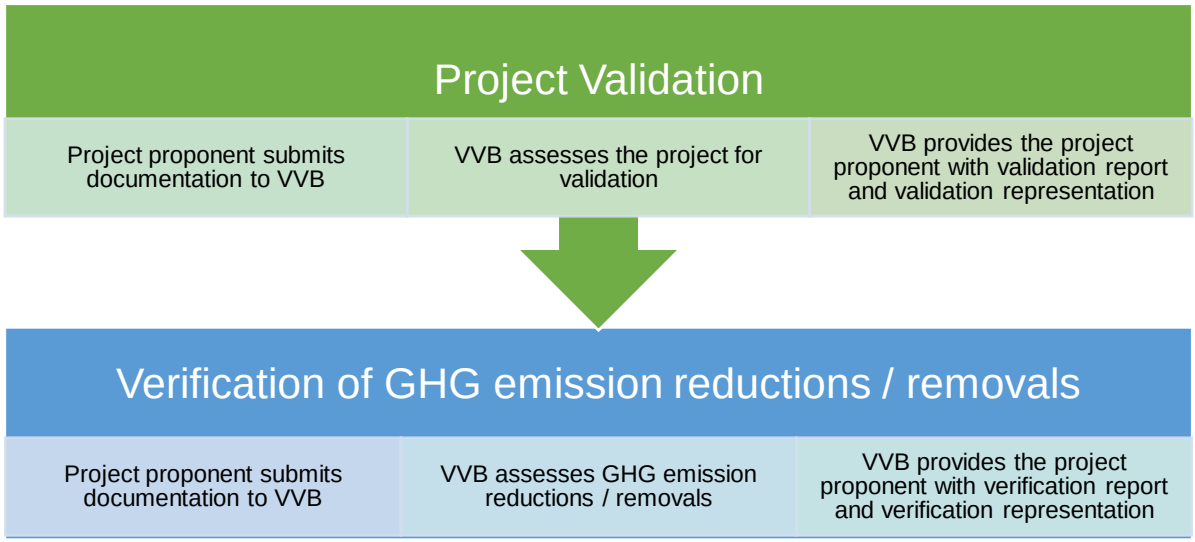
For further details on the pipeline listing process, the project proponent can refer to the *VCS Registration and Issuance Process*.

5.2.3.5 Project Registration Process

5.2.3.5.1 Step 1: Project Validation and Verification

The first step of the project registration process is the validation of the project and verification of GHG emission reductions or removals, as shown in Exhibit 67 below.

Exhibit 67: Project validation and verification process.



Source: VCS Registration and Issuance Process, v4.3

Exhibit 68 lists all the documents to be submitted to the VVB for validation and verification. Project proponents shall address all the issues raised in the validation report and verification report sent by the VVB. In accordance with the *VCS Program Standard* and *VCS Program*

Guide, project proponents shall complete the validation process before requesting verification approval.

Exhibit 68: List of documents to be submitted to VVB for validation and verification.

Project Validation	Verification of GHG Emission Reductions / Removals
PD	Monitoring Report
Evidence of project ownership	Others as required by VVB
Others as required by VVB	–

Preparing a Monitoring Report

When a project proponent intends to request for project registration together with verification approval, the project proponent is required to prepare and submit a Monitoring Report as part of the requirements for verification.

A project proponent shall monitor and measure the GHG emission reductions or removals for a project during a defined monitoring period. A Monitoring Report is used to detail all the information of the project, as well as the GHG emission reductions or removals achieved during the specified period. It covers sections on project details, safeguards, implementation status, data and parameters, quantification of GHG emission reductions and removals and appendices.

The monitoring period of the Monitoring Report shall be a distinct time period that does not overlap with previous monitoring periods.

Metric tonnes shall be used as the unit of measure and the quantity of each type of GHG shall be converted to tonnes of CO_2 equivalent (CO_2e).

The project proponent shall use the *VCS Monitoring Report Template* to prepare the Monitoring Report and must report the implementation status of the project activity. All recorded data and parameters monitored and used to calculate the GHG emission reductions or removals generated for that monitoring period shall be included.

Monitoring is a crucial part of a project activity as it is the key to ensuring successful verification and VCU issuance. A dedicated monitoring team within the project proponent's organisation can be set up, with its roles and responsibilities clearly outlined in an organisation chart. The monitoring team shall carry out all the tasks related to project monitoring, including proper recording and documentation of data. Engagement with technical experts, e.g. carbon credit consultants who can provide consultancy services for carbon credits, or pre-feasibility studies to explore the options, is useful in this situation.

Monitoring Plan

The project proponent shall establish a GHG information system for obtaining, recording, compiling and analysing data and information important for quantifying and reporting GHG emissions and/or removals relevant for the project (including leakages) and the baseline scenario. Where measurement and monitoring equipment is used, the project proponent shall ensure the equipment is calibrated according to the equipment's specifications and/or relevant national or international standards.

The project proponent shall then submit the completed Monitoring Report to the contracted VVB for verification of GHG emission reductions or removals. Once the VVB concludes the verification, the project proponent may submit the project for verification approval.

Grouped Projects/ AFOLU Projects

Grouped projects, AFOLU projects and other projects with a risk of a reversal or loss event shall not have gaps between monitoring periods.

Grouped Projects

The VVB is to assess the grouped project based on the initial project activity instances and to assess whether the eligibility criteria are appropriate for determining the validity of future instances.

The VVB is to verify the monitored GHG emission reductions or removals for the project activity instances that have been validated to be part of the grouped project.

During the verification, a project proponent may include new project activity instances. The contracted VVB assesses whether the project activity instances comply with the eligibility criteria and fall within the pre-determined geographic boundary. New instances are then monitored with the other project activity instances and GHG emission reductions or removals are verified.

5.2.3.5.2 Step 2: Registration and Issuance Request

The project registration process can only be initiated by the project proponent, an entity to which the project proponent has assigned sole rights to the GHG emission reductions or removals for the entire project crediting period or the authorised representative of either of these entities. No other entities can initiate the project registration process.

The project proponent may request both project registration and verification approval at the same time, or only project registration without verification approval.

Depending on which scenario the project proponents wish to register their projects under, the documents to be submitted to the Verra Registry are tabulated in Exhibit 69 below.

The request for registration of the project can only proceed after the validation process has been completed, but before the first verification of GHG emission reductions or removals.

Exhibit 69: List of documents to be submitted to Verra Registry for registration and issuance request.

Scenario 1	Scenario 2
The project proponent requests registration without requesting verification approval	The project proponent requests both registration and verification approval
Relevant documents to be submitted to Verra Registry	
PD and registration representation	PD and registration representation
Validation report and validation representation	Validation report and validation representation
Emission reductions and removals calculation spreadsheets	Emission reductions and removals calculation spreadsheets Monitoring report and issuance representation
Proof of right or proof of contracting, where relevant	Verification report and verification representation
Any annexes or supporting documents referenced in the PD	Proof of right[22] or proof of contracting,[23] where relevant
	Any annexes or supporting documents referenced in the PD
	Evidence and representation with respect to the cancellation of GHG credits under another GHG programme

Source: Illustration based on VCS Registration and Issuance Process, v4.3

The latest templates for the PD, Registration Representation, Monitoring Report, Validation Report and Verification Report can be obtained on Verra's website.

Exhibit 70 lists all the information required when preparing the evidence of proof of right.

Exhibit 70: Evidence of proof of right.

[22] Proof of right shall be submitted to the Verra Registry where an entity other than the project proponent or its authorised representative initiates the project registration process.

[23] Proof of contracting shall be provided to the Verra Registry where required. The project proponent or its authorised representative shall provide evidence of the legal agreement between the project proponent (or other entity that has contracted the VVB to undertake validation) and the VVB in relation to the validation of the project. A final legal agreement, letter of intent, memorandum of understanding or term sheet shall serve as proof of contracting. Such evidence of proof of contracting shall be uploaded to the Verra Registry as a private document (for Verra internal auditing purposes) and therefore will not be publicly available.

	Verra Registry Check
Names of the parties to the agreement	The parties are the entity initiating the project registration process (buyer or transferee) and the project proponent (seller or transferor), or where there are one or more intermediaries, the parties shall be the relevant parties in the chain of ownership between the project proponent and the entity initiating the project registration process
Date of the agreement	Appropriate to the project and transaction subject of the legal agreement
Project name	Same as the project that the entity is presenting for registration
Project crediting period	The project crediting period is defined, with a start date and duration (or end date) specified
The clause that transfers the right to GHG emission reductions or removals between the parties to the agreement	The clause transfers the right to the GHG emission reductions or removals generated by the project for the project crediting period
Signature of parties to the legal agreement	The legal agreement is signed by both parties to the agreement

Source: VCS Registration and Issuance Process, v4.3

Projects registered under an approved GHG programme or a non-approved programme are able to register under the VCS Program. All the documentation required for the registration process is the same as that required for projects registered under the VCS Program.

In addition, the VCS Program allows projects registered under an approved GHG programme to cancel GHG credits issued under the approved GHG programme and have them issued as VCUs in the Verra Registry.

The registration fee for the requested project is **USD2,500** for each project registration request, payable at the time of the request.

For more details, please refer to *VCS Registration and Issuance Process, Section 4.2.15*.

Grouped Projects/ AFOLU Projects

Grouped projects and AFOLU projects with geographic areas characterised by one or more geodetic polygons shall provide the geodetic information to the Verra Registry in the format specified in the VCS Standard.

Grouped projects, AFOLU projects and other projects with risk of reversal or loss shall submit monitoring and verification reports in chronological order.

5.2.3.5.3 Step 3: Project Review

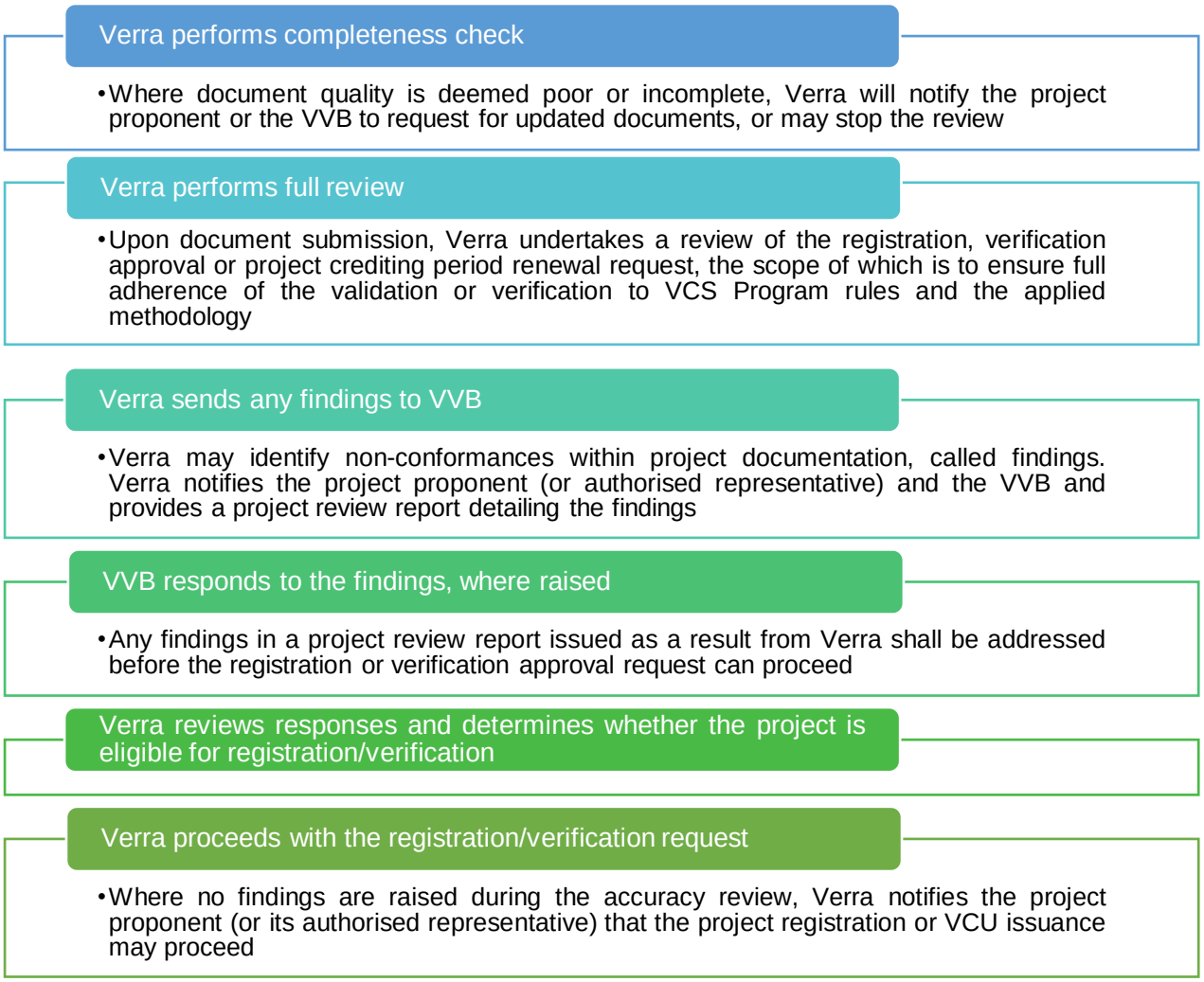
The project review process is a two (2)-part process consisting of a completeness check and an accuracy review of the project registration approval, verification approval or project crediting period renewal request (see Exhibit 71).

Project review is conducted by Verra where it checks that the VVB has appropriately assessed and has fully described how it has assessed the project's conformance with VCS Program rules. Note that the project review process is triggered when the relevant documentation and request for registration, verification approval or project crediting period renewal are submitted

to the Verra Registry. As such, project proponents are encouraged to submit their documentation to the Verra Registry as soon as it is ready so that the project review process may be completed at an early stage.

Note also that when submitting verification approval documentation, it is not necessary to immediately request the issuance of VCUs. Instead, Verra begins the review process following receipt of the relevant documentation. VCUs may then be issued upon request to the Verra Registry at any time following the completion of such reviews.

Exhibit 71: Flow of the project review process.

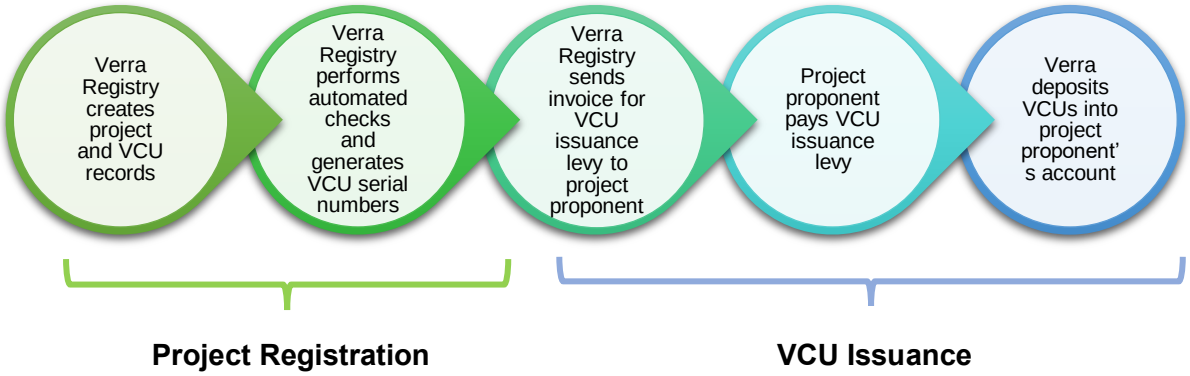


Source: VCS Registration and Issuance Process, v4.3

5.2.3.5.4 Step 4: Project Registration and Issuance of VCU

The overall process of project registration and issuance of VCU (initial issuance) is presented in Exhibit 72.

Exhibit 72: Project registration and issuance of VCU process.



Source: VCS Registration and Issuance Process, v4.3

Project Registration

After the green light at accuracy review, the Verra Registry will use the information submitted by the project proponent to create project and VCU records on the Registry. All the relevant documents, as listed in Exhibit 73, shall be uploaded to the Verra Registry as public documents, except for Proof of right / Proof of contracting.

Documents uploaded on the Verra Registry are based on the scenario when the project proponent requests for project registration, which is registration without verification approval or registration together with verification approval.

Exhibit 73 lists all the documents that need to be uploaded according to each scenario.

In a case where a PD deviation has been applied and a revised PD is issued, such PD shall be uploaded to the Verra Registry as a public document.

Likewise, where a project crediting period has been renewed, the revised PD and new validation report and validation representation shall be uploaded to the Verra Registry as public documents.

Exhibit 73: List of documents to be uploaded by Verra to the Registry for registration.

Scenario 1	Scenario 2
The project proponent requests registration without requesting verification approval	The project proponent requests both registration and verification approval
Relevant documents to be submitted to Verra Registry	
PD and registration representation	PD and registration representation
Validation report and validation representation	Validation report and validation representation
Emission reductions and removals calculation spreadsheets	Emission reductions and removals calculation spreadsheets Monitoring report and issuance representation
Proof of right or proof of contracting, where relevant	Verification report and verification representation
Any annexes or supporting documents referenced in the PD	Proof of right[24] or proof of contracting[25], where relevant
	Any annexes or supporting documents referenced in the PD
	Evidence and representation with respect to the cancellation of GHG credits under another GHG programme

Source: Illustration based on VCS Registration and Issuance Process, v4.3

Proof of right/Proof of contracting is for Verra's internal auditing purposes only.

The registration fee shall be paid to Verra before the project is registered, as mentioned in **Step 2** above.

Fees are not refundable if a project is rejected or a project request is denied. The fee is payable for each request, including a new request made as a follow up to a previously denied request.

[Project proponents with carbon projects that are successfully registered with Verra should notify the national authority of Malaysia. The national authority refers to the ministry that submits the national update report to the UNFCCC, i.e. NRECC. Please refer to Section 3.1.]

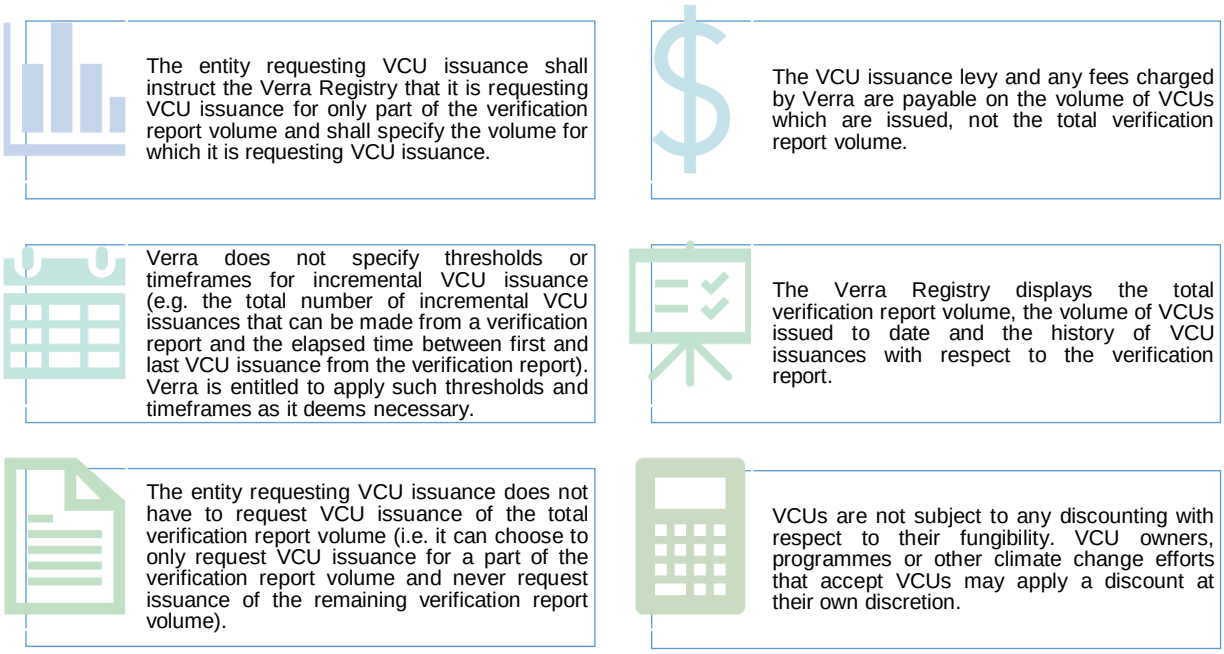
Initial VCU Issuance

[24] Proof of right shall be submitted to the Verra Registry where an entity other than the project proponent or its authorised representative initiates the project registration process.

[25] Proof of contracting shall be provided to the Verra Registry where required. The project proponent or its authorised representative shall provide evidence of the legal agreement between the project proponent (or other entity that has contracted the VVB to undertake validation) and the VVB in relation to the validation of the project. A final legal agreement, letter of intent, memorandum of understanding or term sheet shall serve as proof of contracting. Such evidence of proof of contracting shall be uploaded to the Verra Registry as a private document (for Verra's internal auditing purposes) and therefore will not be publicly available.

VCUs can be issued incrementally from a verification report (i.e. when the project proponent or its authorised representative requests VCU issuance, it can request issuance of part of the verification report volume and request issuance of the remaining volume later). See Exhibit 74 for details.

Exhibit 74: VCU issuance process and initial VCU issuance requirements.



Source: Illustration based on VCS Registration and Issuance Process, v4.3

Where the project has cancelled GHG credits issued under an approved GHG programme and is having them issued as VCUs, the project reference number under the approved GHG programme shall be noted on the project record on the Verra Registry.

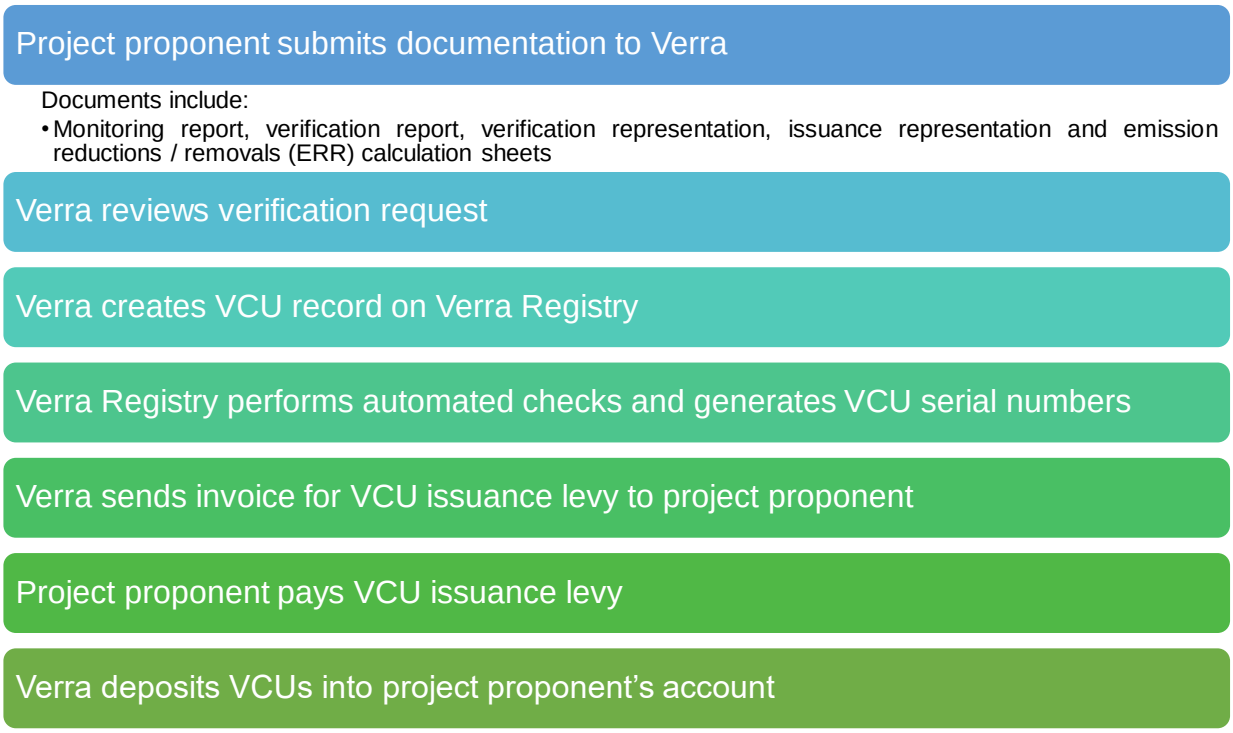
The VCU issuance levy, including conversion of GHG credits from approved GHG programmes, is USD0.20 per VCU.

The detailed process of requesting for VCU issuance can be found in Section 5.2.3.5.5.

5.2.3.5.5 Step 5: Periodic VCU Issuance

All and any periodic VCU issuances shall be initiated by the project proponent stated on the project record in the Verra Registry or its authorised representative. Exhibit 75 presents the flow of the VCU issuance process.

Exhibit 75: VCU issuance process.



Source: VCS Registration and Issuance Process, v4.3

The latest information on Issuance Representation of single and multiple project proponents can be obtained on Verra's website.

5.2.3.5.6 Step 6: VCU Retirement and Cancellation

VCU retirement and cancellation requests can be made through the Verra Registry, where one can see the status of the VCU as "Active", "Retired" or "Cancelled". VCU retirement[26] and VCU cancellation[27] have specific meanings, as set out in the VCS Program document *VCS Program Definitions*.

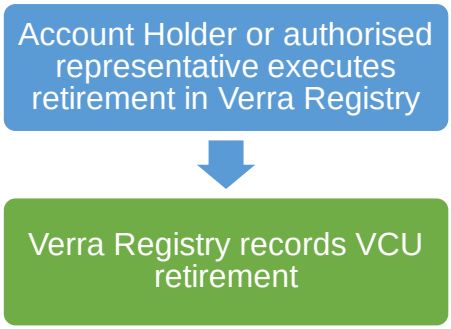
[26] VCU retirement is the permanent removal of a VCU from circulation in the Verra Registry system, which represents an offset of one metric tonne of CO_2 equivalent.

[27] VCU cancellation is the permanent removal of a VCU from circulation in the Verra Registry system for purposes other than retirement (e.g. converting VCUs into another form of GHG credit, compensating for excess VCU issuance).

VCU Retirement

VCUs may be retired as set out in Exhibit 76 below.

Exhibit 76: VCU retirement process.



Source: VCS Registration and Issuance Process, v4.3

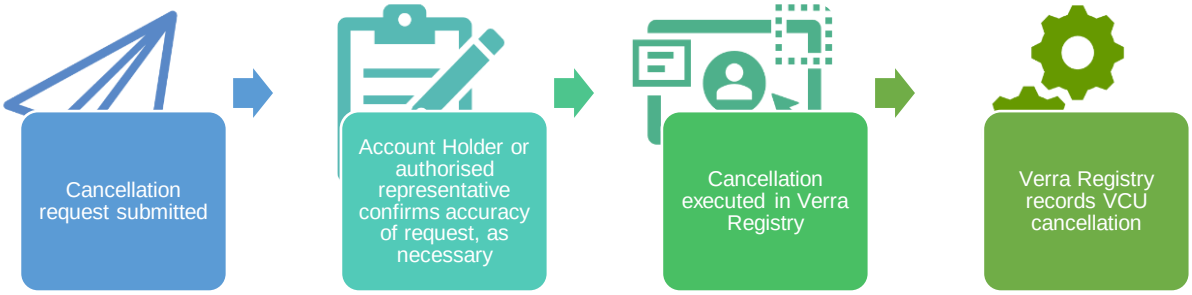
The Registry Account Holder or its authorised representative may execute a VCU retirement through its Verra Registry account. The Verra Registry records the details of all VCU retirements. VCUs can be retired incrementally from a Registry Account Holder's VCU holdings.

Verra does not specify thresholds or timeframes for incremental VCU retirement.

VCU Cancellation

VCUs may be cancelled as set out in Exhibit 77 below.

Exhibit 77: VCU cancellation process.



Source: VCS Registration and Issuance Process, v4.3

The initiator and recipient of a VCU cancellation request depends on the specific circumstances of the cancellation (e.g. where VCUs are being converted into another form of GHG credit, the cancellation request may be submitted to Verra by the other GHG programme in which the Registry Account Holder is participating).

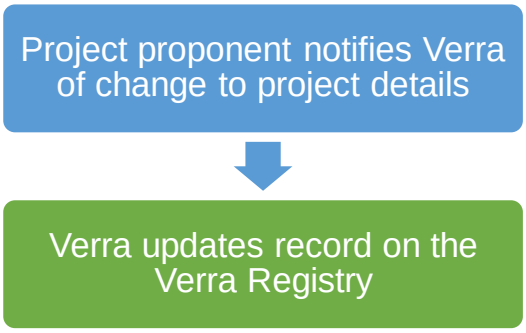
The Registry Account Holder, its authorised representative, the other GHG programme in which the Registry Account Holder is participating or Verra may initiate VCU cancellation.

The Registry Account Holder or its authorised representative may be asked to confirm the details of the VCU cancellation request. VCUs are cancelled in the Verra Registry and the Verra Registry records the details of all VCU cancellations.

5.2.3.5.7 Step 7: Project Maintenance

Project maintenance may be updated as set out in Exhibit 78 below.

Exhibit 78: Project maintenance process.



Source: VCS Registration and Issuance Process, v4.3

Where a project fails to submit a verification report to the Verra Registry within five (5) years of its last verification, the following applies:

1) Verra sends a written communication to the project proponent to request evidence that the project is still active despite not having been verified.
2) The project proponent shall submit such evidence within one (1) year of receiving the written communication from Verra.
3) Where a letter is received, it shall be posted publicly to the Verra Registry and the project status in the Registry shall be changed to "Late to Verify".
4) Where no letter is received, the project status shall still be changed to "Late to Verify", but will not benefit from an explanation being available to potential buyers and other stakeholders. The project proponent is encouraged to submit an updated letter annually.

Where a project has not been verified because it has transitioned to another GHG programme (e.g. integrated into a government programme), its project status shall be changed to "Project Transferred to Other GHG Program" instead of "Late to Verify".

Where an AFOLU project fails to submit a verification report to the Verra Registry within five, 10 and 15 years of its last verification, buffer credits are put on hold or cancelled (and the project status will be changed to "Inactive"), as appropriate.

Where the project proponent wishes to withdraw the project from the VCS Program (e.g. in order to transfer the project to another GHG programme), the following applies:

1) The project proponent shall submit a letter (in English) on its organisation letterhead to the Verra Registry, requesting that the project be withdrawn. Such a letter shall include the project name, project ID, the reason for the withdrawal request and the signatures and contact information of all project proponents.
2) Verra reviews the withdrawal request and may request additional information prior to approving the request.
3) Upon approval, Verra updates the status of the project to "Withdrawn". The project information shall remain publicly available on the Verra Registry but the project will not be able to issue VCUs.
4) In the case of an AFOLU project where VCUs have been previously issued, the following applies:
    a) The project shall not be eligible for any release of buffer credits;
    b) Where Verra confirms that the project has registered with another GHG programme, all buffer credits associated with the project shall be cancelled; and
    c) Where Verra is unable to confirm that the project has registered with another GHG programme, buffer credits shall be cancelled over time.

The account maintenance fee is paid annually to Verra. The amount of the maintenance fee is USD500 per year for each account, payable in full at account approval and subsequently in January of each year.

5.2.3.6 Renewal of Crediting Period

The project crediting period[28] must be renewed periodically throughout the lifetime of the project in order to ensure the changes in the project's baseline scenario and regulatory surplus are taken into consideration.

A full reassessment of additionality is not required when renewing the project crediting period unless otherwise specified in the methodology(ies). However, a PD containing updated information with respect to the baseline, the estimated GHG emission reductions or removals and the monitoring plan shall be submitted for validation based upon the latest approved version of the methodology(ies), or its/their replacement.

The updated PD shall be validated in accordance with VCS Program rules and against the (current) scope of the VCS. Such a validation report shall be issued after the end of the (previous) project crediting period but within two (2) years after the end of the (previous) project crediting period. Where a project crediting period is not renewed within these timelines, the project crediting period shall end and the project shall be ineligible for further crediting. The issuance date of the validation report shall not be more than one (1) year prior to the end of the current crediting period.

For non-AFOLU projects, there are two (2) options for the crediting periods, as follows:

1) Seven (7) years, twice renewable (21 years total); and
2) Ten (10) years, non-renewable (10 years total).

For all AFOLU projects, except for ALM projects, the crediting period shall be a minimum of 20 years and up to a maximum of 100 years. The project is allowed four (4) renewals, with a total crediting period not exceeding 100 years.

[28] The project crediting period is the time period during which GHG emission reductions or removals generated by the project are eligible for issuance as VCUs.

For projects registered under other GHG programmes, VCU issuance beyond the end of the total project crediting period under those programmes is not eligible.

Chapter 6

How to Formulate a VCM Methodology?

Chapter 6: How to Formulate a VCM Methodology

6.1 Chapter Summary

In this chapter, we look at the templates for new methodology development and methodology revision that must be utilised at each step (available on the Verra website), as well as the review fees, as summarised in the table below.

Templates (Available on Verra's website)	Fees
Step 1: Methodology Idea Note Submission	
New Methodologies: *VCS Methodology Idea Note Template* **Major and Minor Revisions:** *VCS Methodology Idea Note for Methodology Revisions*	No fee
Step 2: Methodology Concept Note Development	
New Methodologies and Revisions: *VCS Methodology Concept Note Template*	**New Methodologies and Major Methodology Revisions**: USD2,000 **New Modules and Tools or Major Revisions:** USD1,500
Step 3: Draft Methodology Development	
New Methodologies and Revisions: *VCS Methodology Template* **New Modules and Tools and Revisions**: *VCS Module and Tool Template*	**New Methodologies and Major Methodology Revisions**: USD13,000 **New Modules and Tools or Major Revisions:** USD6,000 **Minor Methodology, Module or Tool Revisions:** USD6,000
Third-Party Developer: *VCS Methodology Submission Form & Agreement*	No fee

Note: The fee schedule is subject to changes by Verra. For more updated information, please visit Verra's fee schedule webpage.

This chapter also includes the methodology compensation rebate for methodology developers who are eligible for compensation mechanisms until 31 December 2025.

Methodology Compensation Rebate	
# of VCUs issued	**USD / VCU**
1 - 1,000,000	USD0.02
1,000,001 - 2,000,000	USD0.018
2,000,001 - 4,000,000	USD0.016
4,000,001 - 6,000,000	USD0.012
6,000,001 - 8,000,000	USD0.008
8,000,001 - 10,000,000	USD0.004
10,000,000 - 60,000,000	USD0.002

6.2 General Process

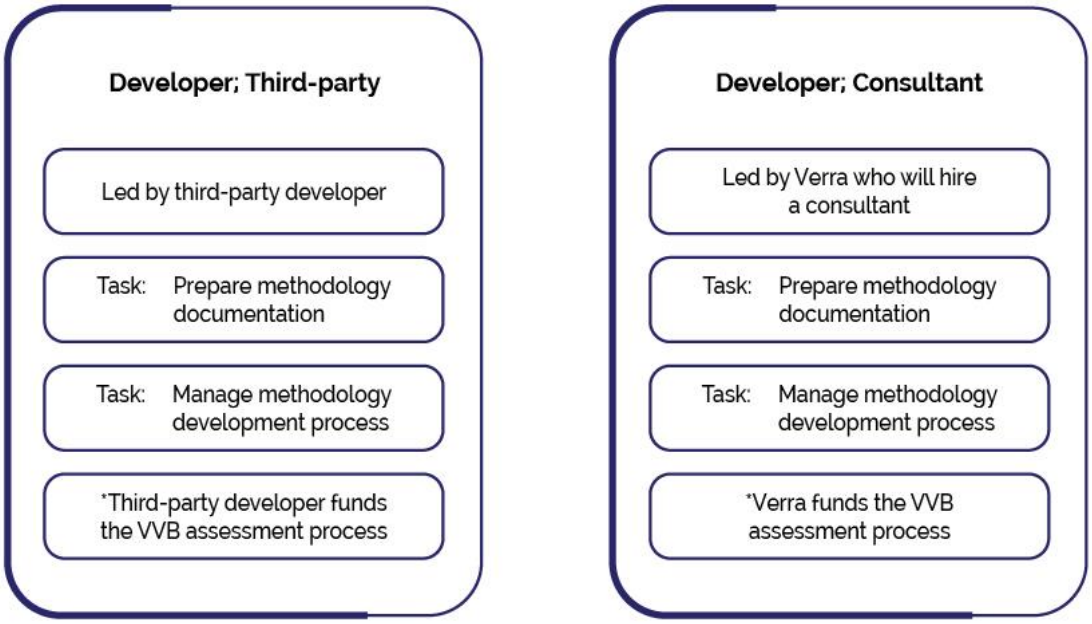
This chapter provides overarching rules and guidance for methodology development and an outline of methodology development costs. It also provides an overview of the potential status of methodologies under development and reviews the processes and previously approved methodologies. For now, it serves as a guide and step-by-step procedure for revising or developing new VCS methodologies, modules and tools. The methodology development procedure for other international standards will be added when apt.

6.3 Overarching Rules and Guidance for Methodology Development

For Verra projects, project developers must use VCS-approved methodology(ies) to quantify a project's GHG emission reductions, avoidance or removals. Project developers may consider developing their own methodology(ies) if there are no existing suitable methodology(ies) available, or revising existing methodology(ies). Experts or project developers can utilise their hands-on experience and skills to build tools that are best suited to the needs of their projects. Once it has been determined that the methodology(ies) may proceed to the development or review process, Verra will determine the most appropriate path for methodology development.

Options for the development of new methodology(ies) are displayed in Exhibit 79.

Exhibit 79: Pathway options for methodology development.



Source: VCS Methodology Development and Review Process, v4.2

After selecting one of the options above, methodology developers may choose to develop methodology(ies) with the engagement options or additional support as shown in Exhibit 80.

Exhibit 80: Engagement options or additional support for methodology development.

Source: VCS Methodology Development and Review Process, v4.2

1. *Verra may put the methodology development process on hold if the documentation does not meet reasonable standards, or if the process does not result in a high-quality methodology.*
2. *Verra may reject the proposed methodology if its review determines that it could sanction or foster politically or ethically contentious project activities, produce a negative result or have an adverse effect on the integrity of the VCS Program or the operation of the larger carbon market.*

Exhibit 81 illustrates three (3) types of status for each methodology in the development stage.

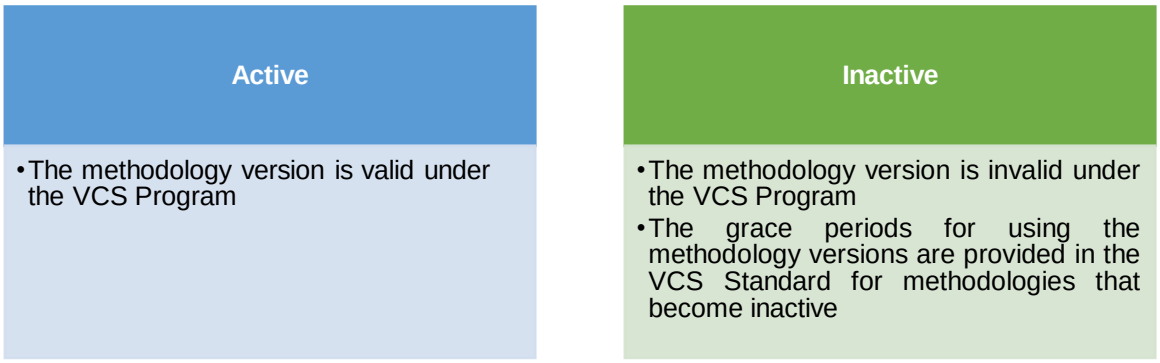
Exhibit 81: Methodology status in development stage.

Source: VCS Methodology Development and Review Process, v4.2

The methodology status might change as the process develops.

Once approved, there will be two (2) methodology versions, as displayed in Exhibit 82.

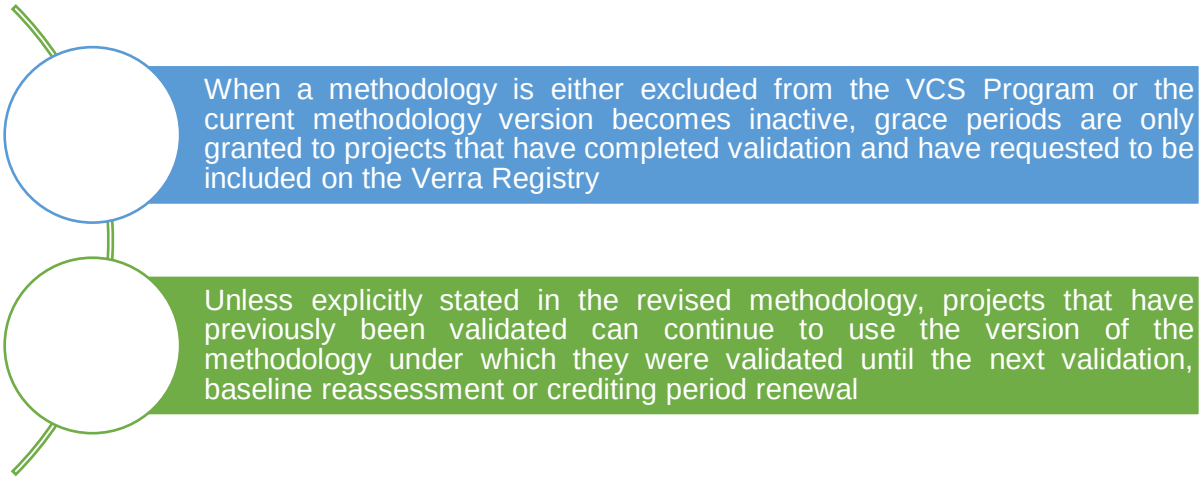
Exhibit 82: Approved methodology(ies) versions.



Source: VCS Methodology Development and Review Process, v4.2

A methodology grace period is the timeframe in which projects may apply a methodology, module or tool that has been revised, lately excluded or become inactive. The grace period deadline is the date of the issuance of the validation report (for the registration and crediting period) or the verification report (for the baseline assessment). The requirements of methodology grace periods are displayed in Exhibit 83.

Exhibit 83: Requirements of methodology grace periods.



Source: VCS Standard, v4.4

The grace periods for completing validation are set as in Exhibit 84.

Exhibit 84: Methodology grace periods.

Methodology is revised	Methodology of an approved GHG programme newly excluded from the VCS Program and replaced with a VCS methodology	Previously approved methodology becomes inactive
• Project proponents may use the current methodology version for up to six (6) months after the approval of the new version • Unless explicitly stated on the Verra website	• Project proponents may continue to apply the prior accepted methodology of the approved GHG programme for up to six (6) months after the approval of the VCS methodology	• Project proponents may apply the methodology version for up to six (6) months after it becomes inactive • Unless explicitly stated on the Verra website

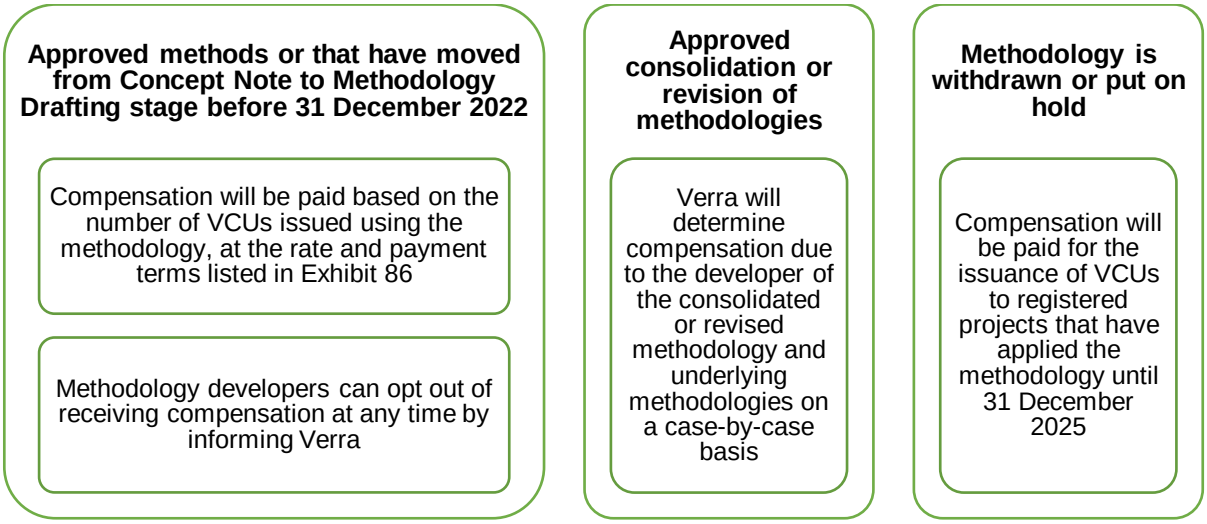
Source: VCS Standard, v4.4

Do note that Verra reserves the right to set different grace periods.

Methodology developers are eligible for compensation until 31 December 2025 for methods approved under the VCS Program or that have progressed from the Concept Note Development stage to the Draft Methodology Development stage before 31 December 2022. Only methodologies developed as part of the VCS Program are eligible for compensation. Developers of methodology revisions, modules and tools are not involved in this compensation mechanism.

The compensation for methodology developers is illustrated in Exhibit 85.

Exhibit 85: Compensation for methodology developers.



Source: VCS Program Guide, v4.3

For cumulative VCU issuances using the applicable methodology from 1 January 2023 to 31 December 2025, the details are listed in Exhibit 86.

Exhibit 86: Methodology compensation rebate.

# of VCUs issued	USD / VCU
1 - 1,000,000	USD0.02
1,000,001 - 2,000,000	USD0.018
2,000,001 - 4,000,000	USD0.016
4,000,001 - 6,000,000	USD0.012
6,000,001 - 8,000,000	USD0.008
8,000,001 - 10,000,000	USD0.004
10,000,000 - 60,000,000	USD0.002

Source: VCS Program Fee Schedule, v4.3

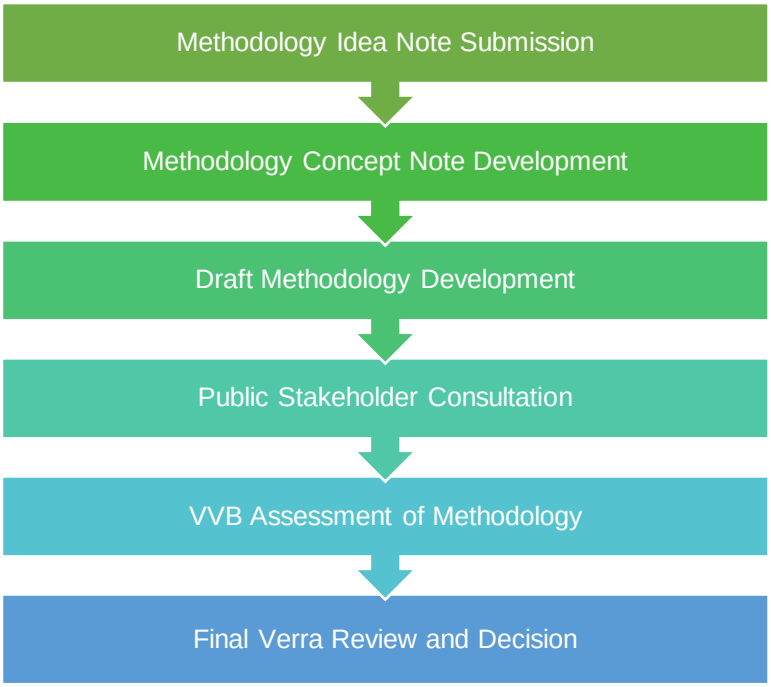
It should be noted that regardless of the methodology used for the project, the project proponents pay the same VCU issuance fee.

Verra pays the methodology developer's compensation to the methodology developer from the VCU issuance levy payments received by Verra.

6.4 Procedures for the Development of New Methodology(ies)

There are six (6) stages involved in the development of new methodology(ies), as shown in Exhibit 87.

Exhibit 87: Stages for new methodology development.



Source: VCS Methodology Development and Review Process, v4.2

6.4.1 Methodology Idea Note Submission

Methodology developers shall use the *VCS Methodology Idea Note Template* to provide a summary of the proposed methodology's scope, without including any technical details, before submitting it for review on Verra's website.

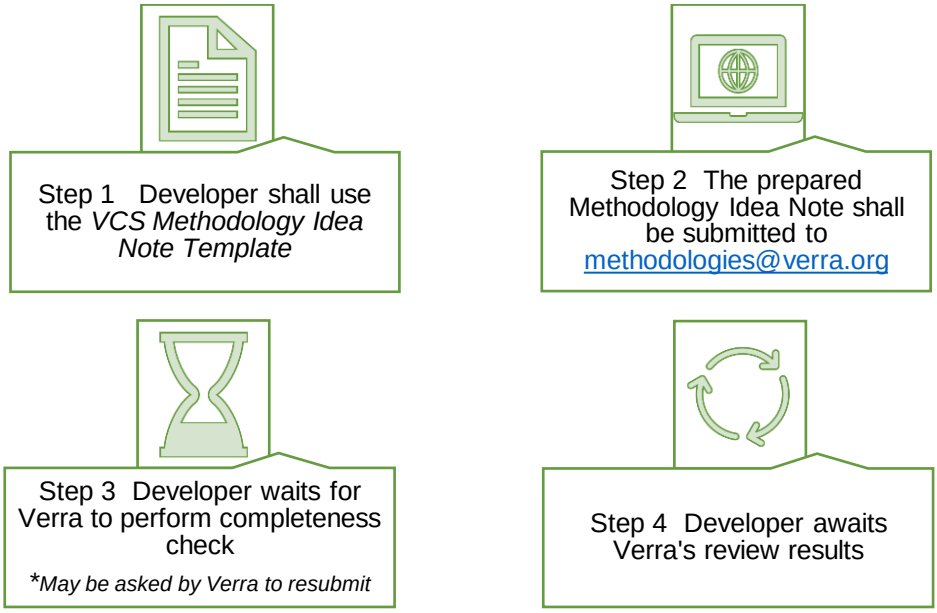
The proposed methodology(ies) listed in Exhibit 88 will be given preference and priority if they meet the following criteria.

Exhibit 88: Criteria of proposed methodologies.

Source: VCS Methodology Development and Review Process, v4.2

Methodology Idea Note Submission involves the following steps, as shown in Exhibit 89.

Exhibit 89: Methodology Idea Note submission process.

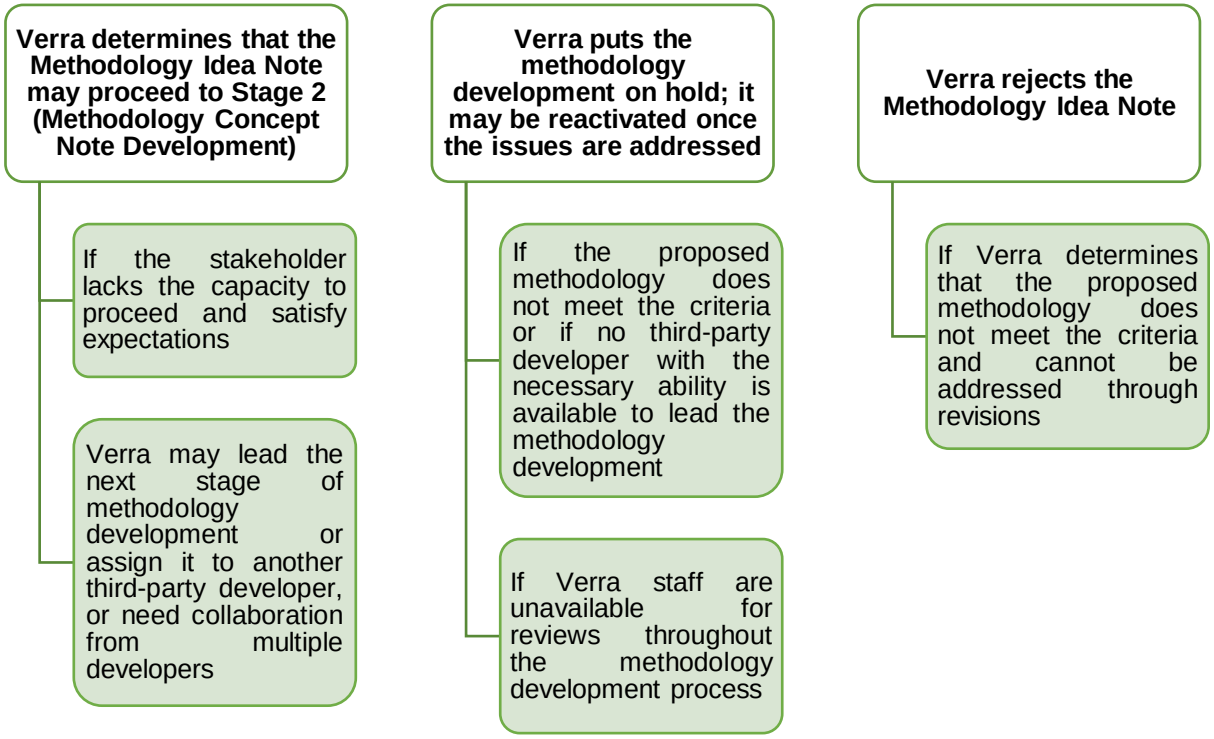


Source: VCS Methodology Development and Review Process, v4.2

Please find the latest version of the VCS Methodology Idea Note Template on Verra's website.

The potential outcomes of Verra's evaluation of the Methodology Idea Note are displayed in Exhibit 90.

Exhibit 90: Potential outcomes of Verra's evaluation of the Methodology Idea Note.

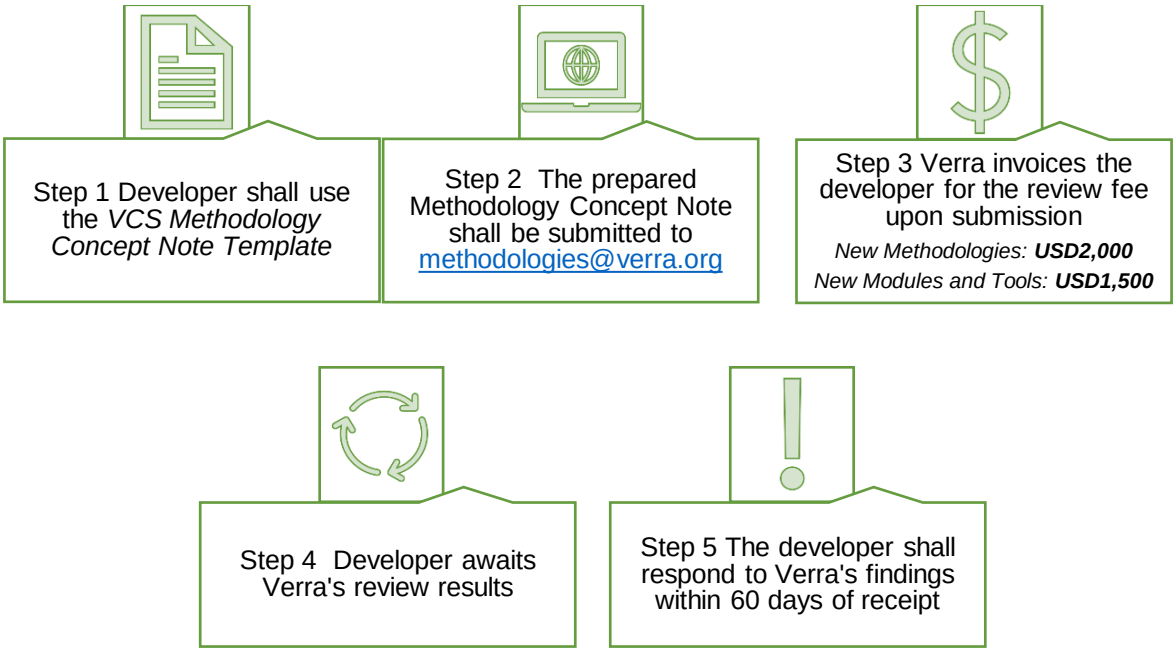


Source: VCS Methodology Development and Review Process, v4.2

6.4.2 Methodology Concept Note Development

The Methodology Concept Note is also referred to as a "proposed methodology" and outlines technical details and key methodological components to ensure compliance with VCS Program rules and requirements. The Methodology Concept Note Submission involves the following steps, as shown in Exhibit 91.

Exhibit 91: Methodology Concept Note submission process.

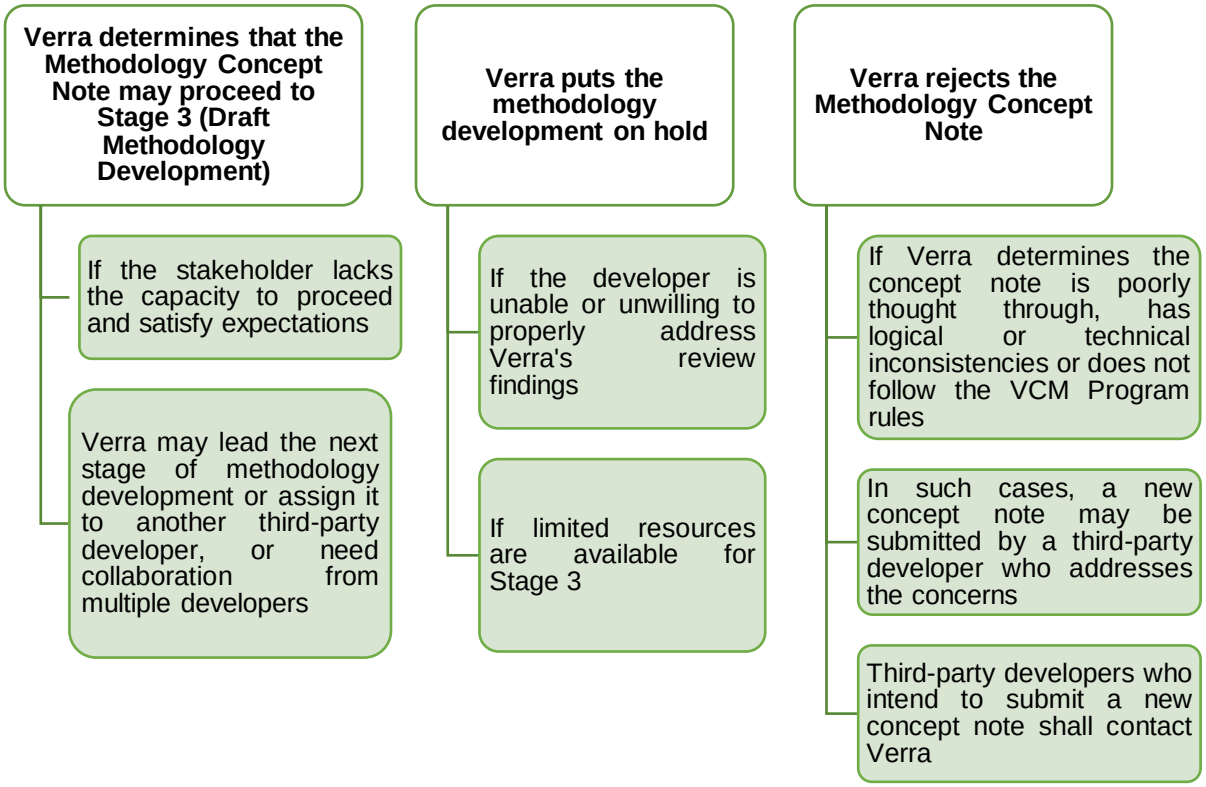


Source: VCS Methodology Development and Review Process, v4.2 & VCS Program Fee Schedule, v4.3

Please find the latest version of the VCS Methodology Concept Note Template on Verra's website.

The potential outcomes of Verra's evaluation of the Methodology Concept Note are displayed in Exhibit 92.

Exhibit 92: Potential outcomes of Verra's evaluation of the Methodology Concept Note.



Source: VCS Methodology Development and Review Process, v4.2

6.4.3 Draft Methodology Development

The methodology developer then prepares the draft methodology, which will be subject to review by Verra, public stakeholder consultation and independent assessment by a VVB. The lists of documents to be prepared and submitted to Verra are tabulated in Exhibit 93.

Exhibit 93: List of documents to be submitted to Verra for Draft Methodology Development process.

New Methodologies	New Tools and Modules
Templates (Available on Verra's website)	
VCS Methodology Template (https://verra.org/documents/vcs-methodology-template-v4-2/)	*VCS Module and Tool Template (https://verra.org/documents/vcs-module-template-v4-1/)*
Documents to be prepared and submitted	
• Draft PD - Describes how the methodological approach may be applied in a project activity - Shall include (at a minimum) the cover page and sections 1.1, 1.2, 1.3, 1.4, 1.5, 1.8, 1.10, 1.11, 1.12, 1.13, 3.1, 3.2, 3.3, 3.4, 3.5, 4.1, 4.2, 4.3, 4.4, 5.1 and 5.2 of the *VCS Project Description Template*	• Verra may request a (partial) drafted project description and additional sections if necessary

Source: VCS Methodology Development and Review Process, v4.2

Please find the latest version of the *VCS Methodology Template* and *VCS Module and Tool Template on Verra's website.*

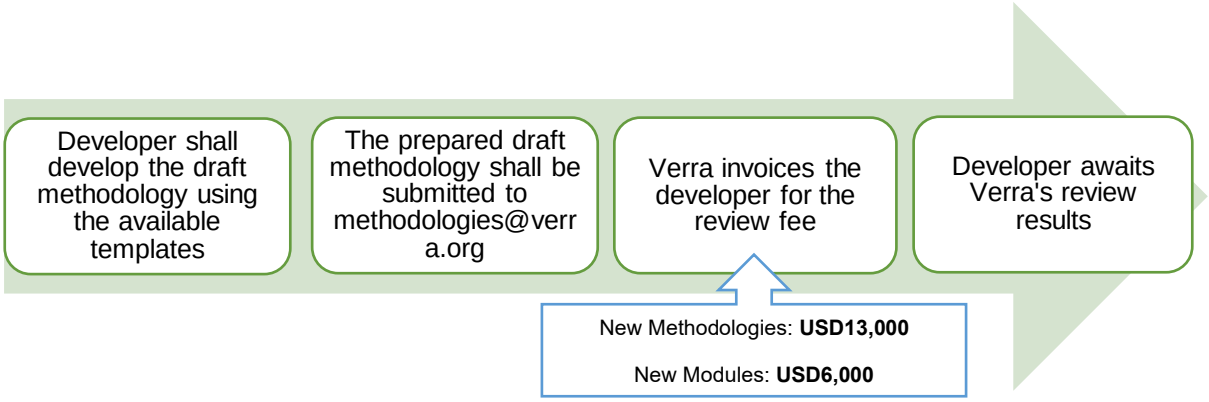
Supporting documentation is unnecessary until specifically requested during the review process.

Developers should use real project data or proxy data but if neither is available, hypothetical data may be used instead.

The third-party developer shall submit to Verra a signed VCS Methodology Submission Form & Agreement, the draft methodology and the draft PD within six (6) months of the completion of the Methodology Concept Note Development process.

Draft Methodology Development involves the following steps, as shown in Exhibit 94.

Exhibit 94: Draft Methodology Development process.



Source: VCS Methodology Development and Review Process, v4.2

The developer shall pay the fees before Verra starts the methodology review.

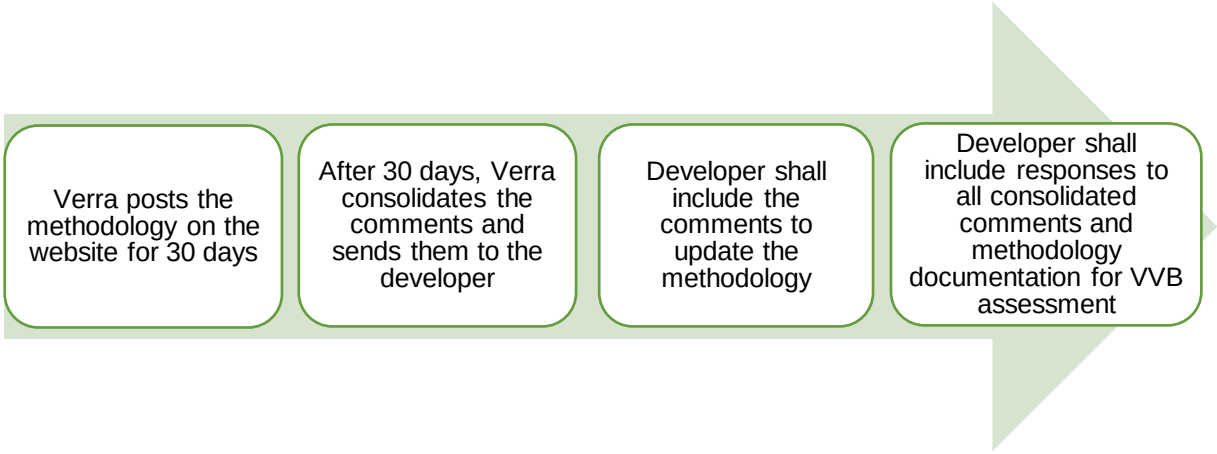
Verra reviews the methodology to ensure that it has been completed in line with the VCS Program rules and requirements and is of sufficient quality to allow its assessment under the VCS methodology development process. The review is focused on ensuring that the methodology is well structured and clearly written, free of logical or technical errors and compliant with VCS Program rules and requirements. If Verra's review of the draft

methodology reveals that it is not yet of the required quality or does not adhere to VCS Program rules and requirements, the developer shall revise the draft methodology until Verra's review has been satisfactorily addressed.

6.4.4 Public Stakeholder Consultation

Verra invites public comment by posting the methodology on its website for 30 days. Comments shall be submitted to Verra using the template provided with the draft methodology. Respondents shall provide their name, organisation, country and email address, as well as indicate whether or not they want to remain anonymous. To provide an overview of the methodology, Verra might host a webinar. The public stakeholder consultation process is illustrated in Exhibit 95.

Exhibit 95: Public stakeholder consultation process.



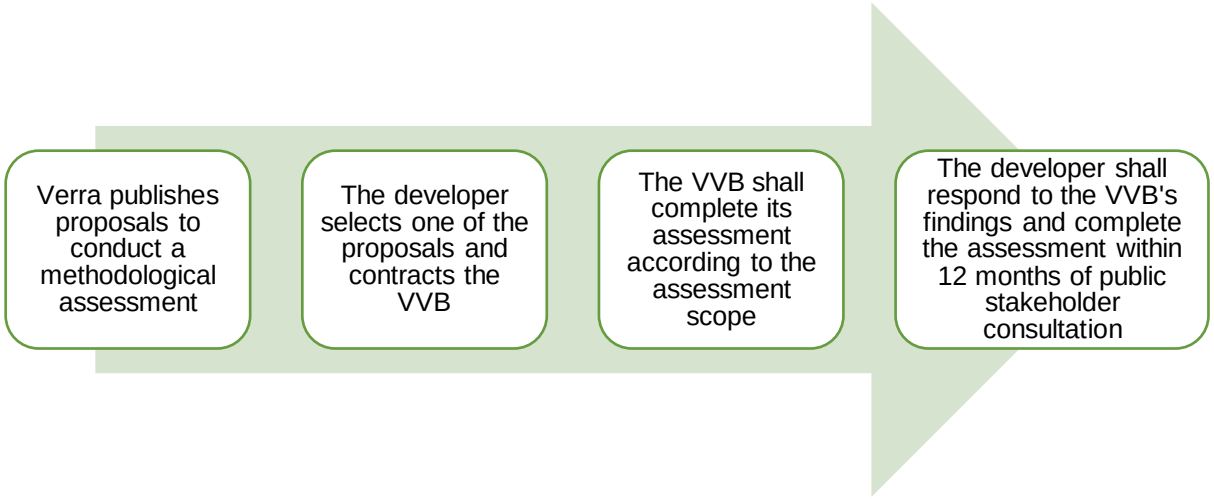
Source: VCS Methodology Development and Review Process, v4.2

If significant changes are made to the methodology after the initial consultation, Verra might organise a second public stakeholder consultation.

6.4.5 VVB Assessment of Methodology

A proposed methodology, tool or module will be assessed by the VVB to determine if it meets the criteria outlined in the VCS Program document, VCS Methodological Requirements and any other criteria that may be relevant. The VVB assessment process is detailed in Exhibit 96.

Exhibit 96: VVB assessment process.



Source: VCS Methodology Development and Review Process, v4.2

The scope of the assessment of new methodology(ies) should be included (at a minimum), as tabulated in Exhibit 97.

Exhibit 97: Scope of assessment.

Scope of Assessment	Description
Relationship to approved or pending methodologies	Assessment of whether any existing methodology may be reasonably revised to fulfil the proposed methodology's objective
Stakeholder consultation	Assessment of whether the developer considered all stakeholder comments, revised the methodology accordingly and gave clear and consistent responses to all stakeholder comments
Structure and clarity of methodology	Assessment of whether the methodology is written clearly, logically, concisely and precisely enough to allow project developers to consistently implement projects and report project results in a transparent manner
Definitions	Assessment of whether the methodology's key concepts are defined clearly and appropriately, and whether they are applied consistently
Applicability conditions	Assessment of whether the applicability conditions of the proposed methodology are appropriate, sufficient and in accordance with VCS Program rules and requirements
Project boundary	Assessment of whether an appropriate and adequate approach is provided for defining the project's physical boundary and sources and types of GHGs included
Baseline scenario	Assessment of whether the approach used to determine the baseline scenario is suitable, adequate and in accordance with VCS Program rules and requirements
Additionality	Assessment of whether the approach/tools used to determine if the project is additional are appropriate, adequate and in accordance with VCS Program rules and requirements

Scope of Assessment	Description
Baseline emissions	Assessment of whether the approach for calculating baseline emissions is appropriate, adequate and in accordance with VCS Program rules and requirements
Project emissions	Assessment of whether the approach used to calculate project emissions is appropriate, adequate and in accordance with VCS Program rules and requirements
Leakage	Assessment of whether the leakage calculation approach is appropriate, adequate and in accordance with VCS Program rules and requirements
Net GHG emission reductions and/or removals	Assessment of whether the approach used to calculate the project's net GHG benefits is appropriate, adequate, conservative and in accordance with VCS Program rules and requirements
Monitoring	Assessment of whether the monitoring approach is appropriate, adequate and in accordance with VCS Program rules and requirements
Data and parameters	Assessment of whether the data and parameter specifications (available at validation and monitored) are appropriate, adequate and in accordance with VCS Program rules and requirements
Uncertainty	Assessment of whether the approach to address uncertainty is appropriate, adequate and in accordance with VCS Program rules and requirements
Verifiable	Whether the methodology is sufficiently stated and specific to enable project developers to report project results in a transparent manner, which can be validated and verified with high confidence

Source: VCS Methodology Development and Review Process, v4.2

6.4.6 Final Verra Review and Decision

The most recent methodology drafts, VVB assessment report and methodology developer's responses to consolidated comments shall all be submitted to Verra to ensure compliance with VCS Program regulations and standards. The decisions made by Verra will be based on the review results, as shown in Exhibit 98.

Exhibit 98: Verra's potential review outcomes.

Decision	Description of Review Results
The methodology is rejected by Verra	• The assessment report does not demonstrate that the methodology is approved
The VVB shall revise the assessment and issue a revised assessment report for further review by Verra	• If Verra determines that the methodology has not been assessed by the VVB per VCS Program rules and requirements
The methodology is rejected if Verra's findings cannot be satisfactorily addressed	• If Verra determines that the quality of the methodology is not sufficient or does not comply with VCS Program rules and requirements, the methodology developer is obliged to revise the methodology until all of Verra's findings have been satisfactorily addressed • Verra may revise the methodology where deemed necessary and the VVB will assess the revised methodology and the methodology developer's responses
The methodology is approved by Verra	• Verra will inform the methodology developer and the VVB • A reference number is assigned to the approved methodology • On Verra's website, the methodology, assessment report and stakeholder comments with responses are posted • The methodology is now active and may be used as part of the VCS Program

Source: VCS Methodology Development and Review Process, v4.2

6.5 Methodology Revisions

This section includes guidance and procedures for proposed revisions to approved VCS methods, modules and tools, as well as methodologies from other approved GHG projects. A revision to an approved methodology is considered an update of the current version of the methodology and the following applies:

1. Methodological revisions are applicable when a proposed activity or measure is generally similar to an existing approved methodology, such as a VCS methodology or GHG programme, and may be incorporated with reasonable modifications to that methodology; and
2. Unless approved by Verra, this shall not narrow the methodology or exclude project activities that are eligible under the current version.

Based on the extent of the revision, the VCS Program identifies two (2) types of methodology revisions, as tabulated in Exhibit 99.

Exhibit 99: Types of methodology revisions.

<table>
<tr><th></th><th>Major Revision</th><th>Minor Revision</th></tr>
<tr><th colspan="3">Impacts</th></tr>
<tr><td>• Structure and content of the methodology</td><td rowspan="7">Significant impact</td><td>Limited impact</td></tr>
<tr><td>• Methodological approach</td><td rowspan="7">Limited or no impact</td></tr>
<tr><td>• Scope of the methodology</td></tr>
<tr><td>• Project boundary</td></tr>
<tr><td>• Applicability conditions</td></tr>
<tr><td>• Baseline scenario</td></tr>
<tr><td>• Additionality approach</td></tr>
<tr><td>• Structure and content of the methodology</td></tr>
<tr><td>Examples</td><td>1. Expansion of the scope to different project activities
2. Adaptation of a standardised method
3. Modifications to the GHG quantification approach</td><td>1. Improvements to language and clarity of the methodology and updates to emission factors
2. Improvements to the procedures
3. Minor expansions of the scope to include similar project activities that are consistent with the existing methodological approach</td></tr>
<tr><th colspan="3">Steps</th></tr>
<tr><td>• Verra review</td><td rowspan="3">Required</td><td rowspan="2">Required</td></tr>
<tr><td>• Public stakeholder consultation</td></tr>
<tr><td>• VVB assessment</td><td>Not Required</td></tr>
<tr><td>• Final Verra review</td><td>Required</td></tr>
</table>

Source: VCS Methodology Development and Review Process, v4.2

6.5.1 Procedure for Methodology Revisions

The steps are similar to those for developing a new methodology, but the templates used and the scheduled fees differ. Verra assesses the Methodological Idea Note (see Section 6.4.1) and decides if the revision is major or minor based on the scope and nature of the changes that are being proposed.

Major Revision

When a major revision may proceed in line with the criteria as set out in Section 6.4.1, the following steps shall be followed, as shown in Exhibit 100.

Exhibit 100: Steps for major revision.

Steps	Description
Step 1 Methodology Idea Note Submission	Please refer to **Section 6.4.1** and follow the steps involved • The *VCS Methodology Idea Note for Methodology Revisions* shall be used to submit the ideas for methodology revisions • Once the methodology has passed Verra's review, the methodology developer may proceed to the next step with reference to **Section 6.4.2**
Step 2 Methodology Concept Note Development	Please refer to **Section 6.4.2** and follow the steps involved • The same document, i.e. the *VCS Methodology Concept Note Template*, shall be used in Step 2 • Methodology Review Fees are as follows: - Major Methodology Revisions: **USD2,000** - Major Modules and Tools Revisions: **USD1,500**
Step 3 Draft Methodology Development	Please refer to **Section 6.4.3** and follow the steps involved • The following supporting documentation shall be prepared: 1) The methodology developer shall transfer the current methodology into the most recent *VCS Methodology Template* and submit the proposed revision as a redlined version of the methodology 2) The methodology developer shall transfer the approved GHG programme methodology into the most recent *VCS Methodology Template* and submit the proposed revision as a redlined version of the methodology ○ The methodology revision document should indicate changes and additions made to the underlying methodology, as well as the parts of the underlying methodology that have not changed 3) A draft PD is only required if Verra requests it during the review process • Methodology Review Fees: - Major Methodology Revisions: **USD13,000** - Major Modules and Tools Revisions: **USD6,000**
Step 4 Public Stakeholder Consultation	Please refer to **Section 6.4.4** and follow the steps involved
Step 5 VVB Assessment of Methodology	Please refer to **Section 6.4.5** and follow the steps involved
Step 6 Final Verra Review and Decision	Please refer to **Section 6.4.6** and follow the steps involved Verra's potential review outcomes are as in **Section 6.4.6**

Source: VCS Methodology Development and Review Process, v4.2 & VCS Program Fee Schedule, v4.3

There are many potential outcomes for developers who complete the six (6) stages of major methodology revision. Following Step 6, Exhibit 101 displays four (4) potential review outcomes.

Exhibit 101: Verra's potential review outcomes for major revision.

Decision	Description of Review Results
The methodology is rejected by Verra	• The assessment report does not demonstrate that the methodology revision is approved
The VVB shall revise the assessment and provide an updated assessment report for Verra to review	• If Verra determines that the methodology revision has not been assessed by the VVB per VCS Program rules and requirements
The methodology is rejected if Verra's findings cannot be satisfactorily addressed	• If Verra determines that the quality of the methodology revision is not sufficient or does not comply with VCS Program rules and requirements, the methodology developer is obliged to revise the methodology until all of Verra's findings have been satisfactorily addressed • Verra may revise the methodology revision where deemed necessary and the VVB will assess the revised methodology and the methodology developer's responses
The methodology revision is approved by Verra	• Verra will inform the methodology developer and the VVB • A reference number is assigned to the approved methodology(ies) • On the Verra website, the methodology(ies), assessment report and stakeholder comments with responses are posted • The revised methodology(ies) is(are) now active and may be used as part of the VCS Program • The methodology(ies)'s previous version(s) is(are) considered inactive and the VCS Standard sets out the grace periods (up to six (6) months) for using the prior version(s) of the methodology(ies)

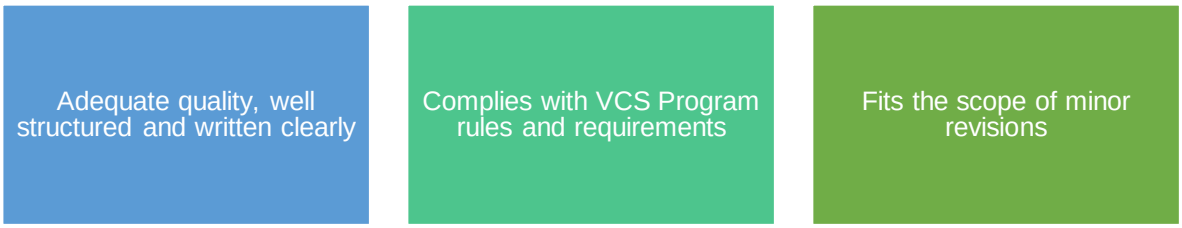
Source: VCS Methodology Development and Review Process, v4.2 & VCS Standard, v4.4

Minor Revision

Where a minor revision may proceed as per Section 3.1.6(1) in the VCS Methodology Development and Review Process, v4.2, the developer submits the proposed revision as a redlined version of the methodology.

Verra conducts a review to assure the proposed revision satisfies the criteria in Exhibit 102.

Exhibit 102: Criteria of proposed minor revision.



Source: VCS Methodology Development and Review Process, v4.2

Verra's potential review outcomes for minor revision are tabulated in Exhibit 103.

Exhibit 103: Verra's potential review outcomes for minor revision.

Decision	Description of Review Results

The methodology revision is rejected if Verra's findings cannot be satisfactorily addressed	If Verra's review reveals that the proposed revision is not yet of sufficient quality or does not comply with VCS Program rules and requirements, the methodology developer shall revise the methodology according to all findings from Verra's review

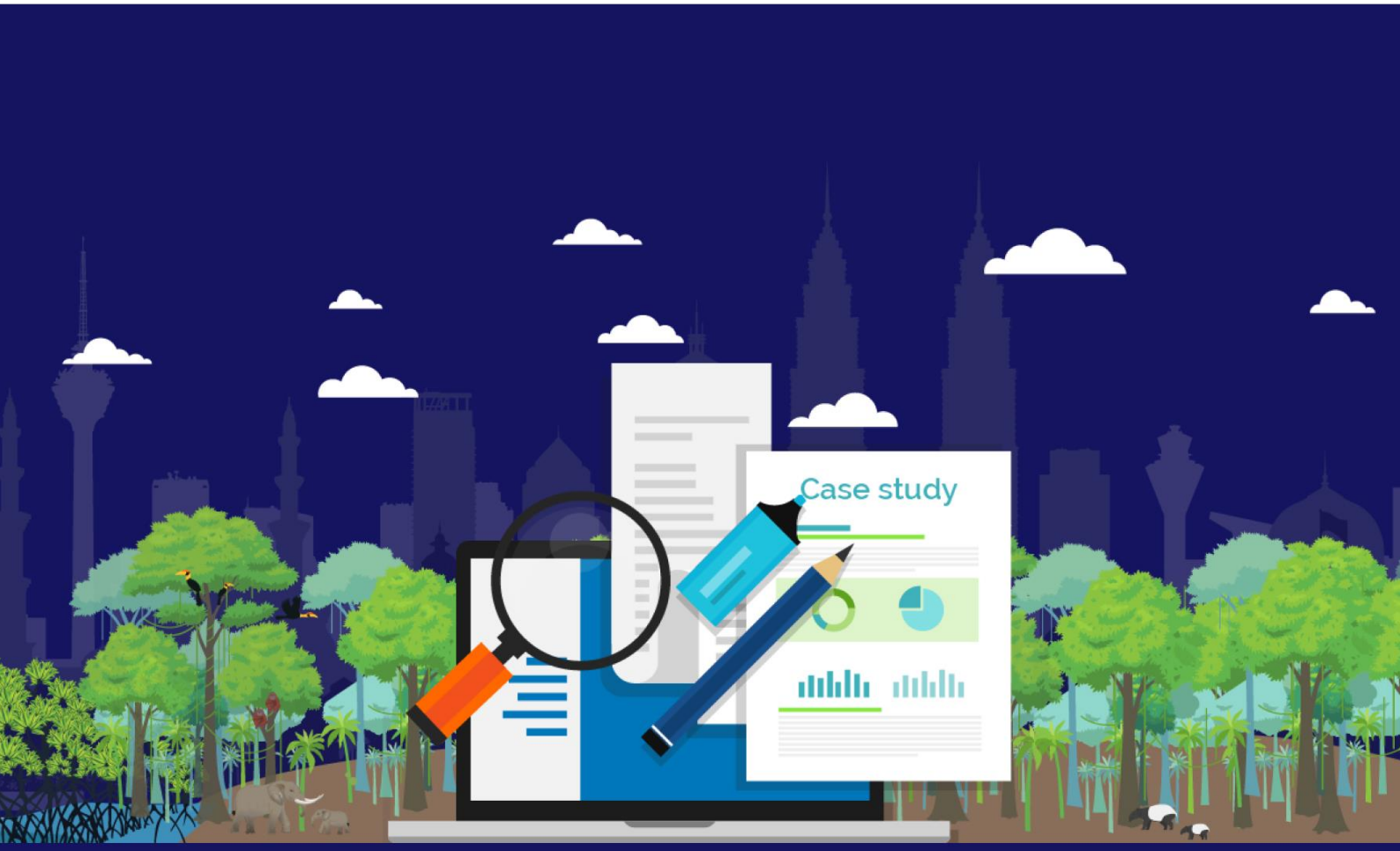
The methodology developer shall either revise the revision and narrow the scope to a minor revision or continue the process for a major revision	If Verra determines the proposed methodology revision is not within the scope of minor revisions

The methodology revision is approved by Verra	• Verra will inform the methodology developer and the VVB of the review results • A reference number is assigned to the approved methodology(ies) • On the Verra website, the methodology(ies), assessment report and stakeholder comments with responses are posted • The revised methodology(ies) is(are) now active and may be used as part of the VCS Program • The previous version of the methodology becomes inactive • The methodology(ies)'s previous version(s) is(are) considered inactive and the VCS Standard sets out the grace periods (up to six (6) months) for using the prior version(s) of the methodology(ies)

Source: VCS Methodology Development and Review Process, v4.2

Chapter 7

Case Studies in Malaysia



Chapter 7: Case Studies in Malaysia

7.1 Chapter Summary

A clear line of communication, especially during the registration, validation and verification processes, is crucial to ensure that there are no unnecessary delays throughout the project implementation. This is applicable to all the parties, e.g. between the project owner and the government or local authorities, the project owner and the validation team, the carbon registry and the validation team, etc.

It is also important to have a competent and strong project team, e.g. a full site operating team dedicated to the carbon project is crucial to ensure all the necessary monitoring is done in accordance with the monitoring plan.

Last but not least, for any type of project, be it nature-based or technology-based, it is advisable to initially run a feasibility study to assess the potential for a project as this study will illustrate the potential for developing a successful and sustainable project. The feasibility study can be done with the help of capable consultants, especially those who are experienced in helping clients to implement carbon projects from pre-registration to successful issuances of carbon credits.

7.2 Introduction

Carbon credit project development is not new in Malaysia. During the CDM, implemented under the Kyoto Protocol, there were already many carbon credit projects developed. More recently, projects have been developed under voluntary carbon schemes such as the VCS by Verra.

This section shares three (3) case studies of projects implemented in Malaysia.

7.3 Nature-Based Solutions Case Study

7.3.1 Kuamut Rainforest Conservation Project in Sabah, Malaysia

Exhibit 104: Kuamut Rainforest Conservation Project logo.

Photo credit: Permian Malaysia Sdn Bhd.

The first project, i.e. the Kuamut Rainforest Conservation Project, was registered on 13 April 2023 under the VCS by Verra (see Exhibit 105).

Exhibit 105: Kuamut Rainforest Conservation Project in Sabah, Malaysia.

Photo credit: Permian Malaysia Sdn Bhd.

The basic details of the project are summarised below:

Verra Registration ID	2609
Location	Kuamut, Sabah
Proponent	Permian Malaysia Sdn Bhd
Estimated Annual Emission Reductions	543,049 tCO_2eq per year
VCS Project Type	14: Agriculture, Forestry and Other Land Use (AFOLU)
AFOLU Activity	Improved Forest Management (IFM)
VCS Methodology	VM0010 Methodology for Improved Forest Management: Conversion from Logged to Protected Forest – Version 1.3
Size of Project Area	83,381 hectares
Project Registration Date	13/04/2023
Crediting Period Term	11/12/2015 – 10/12/2045

Brief Project Description

The Kuamut Rainforest Conservation Project (see Exhibit 106) is a public-private partnership that is working to protect and restore 83,381 hectares of tropical rainforest in Tongod and Kinabatangan districts, Sabah.

Exhibit 106: Location map of the Kuamut Rainforest Conservation Project.

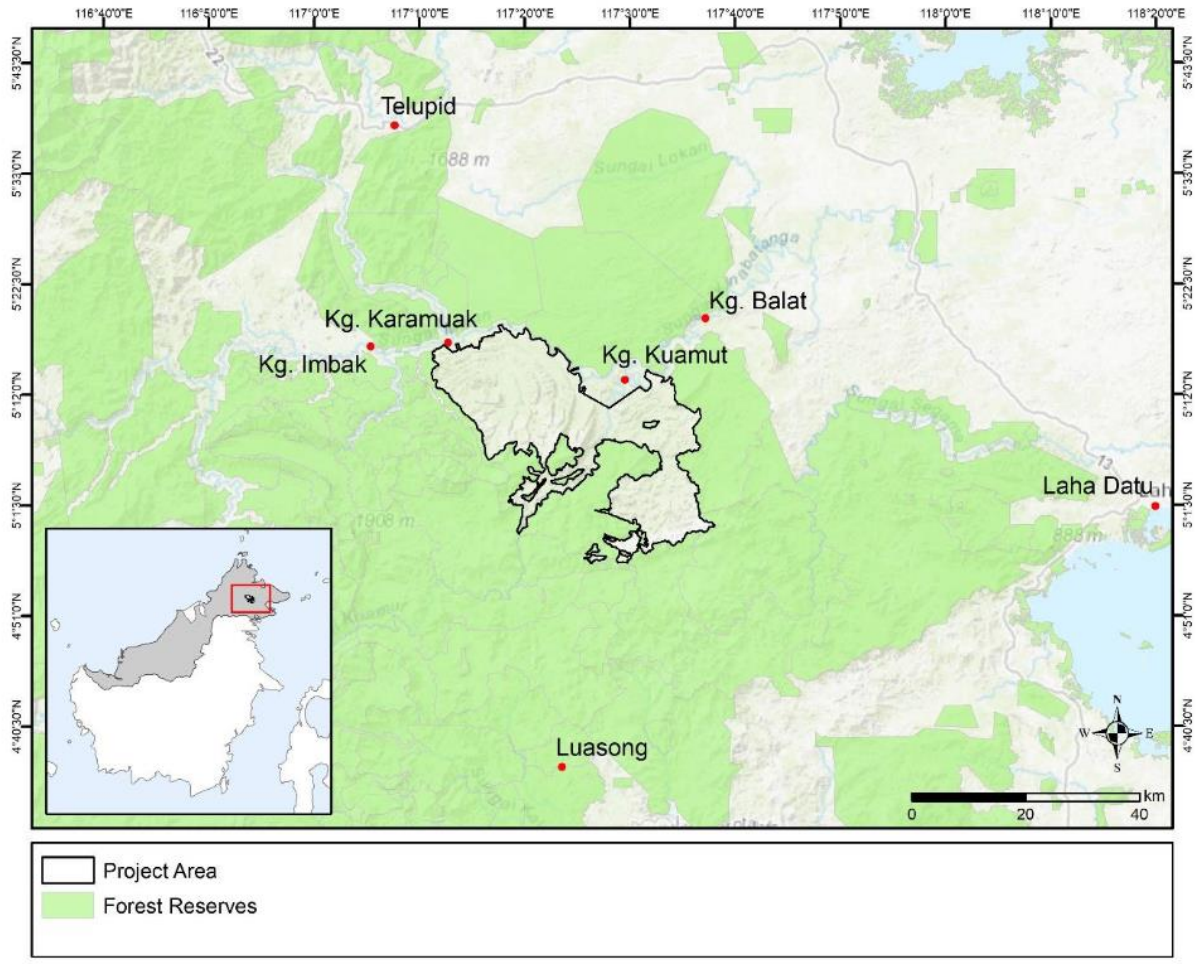


Photo credit: Permian Malaysia Sdn Bhd.

The project is a partnership between the Sabah Forestry Department, Yayasan Sabah, Rakyat Berjaya and tropical forest project developer, Permian Global. The project has operational support from the South-East Asia Rainforest Research Partnership (SEARRP) and the community-based organisation, PACOS Trust.[29]

The project is assessed against the science-based and globally recognised Verra Verified Carbon Standard (VCS) and the Verra Climate, Community and Biodiversity (CCB) standard to both demonstrate the project's scientific rigour and to enable it to generate income from Verified Carbon Units (VCUs), or carbon credits.

The project has three (3) core objectives:

1. To protect and restore the carbon-rich forest to help mitigate the global climate crisis;
2. To improve the lives, well-being and sustainable economic opportunities of the communities living around the forest area; and
3. To increase the chances for tropical forest biodiversity to thrive.

[29] Partners of Community Organisations in Sabah.

The Kuamut Rainforest Conservation Project has been designed to achieve the Triple Gold-level accreditation against the CCB standards.

For validation, the project has been assessed by independent project auditors against the standards. To produce VCUs, or carbon credits, the project will regularly undergo further independent auditing to demonstrate continued compliance with the standards and to measure progress against the project objectives.

All technical documents, including the regular project Monitoring Reports, are publicly available on the Verra Registry (which is the VCS Project Database).

Climate

- Total emission reductions/removals are estimated at about 16.3 million tCO_2e – with an average of more than 500,000 tCO_2e per year over the life of the project;
- Certified in accordance with the VCS and has achieved "Triple Gold" status under the Climate, Community and Biodiversity (CCB) Standards; and
- The project is categorised as an Avoided Planned Deforestation (APD) project. This is because the land was designated for commercial exploitation prior to the project's inception. The land was reclassified as a Class I Protection Forest, contingent on climate finance, by an Act of Parliament.

As a less assumption-based approach, APD projects are one of the least contentious and should provide very accurate assessments of the emissions that are being avoided (see Exhibit 107).

Exhibit 107: APD project in Kuamut Rainforest Conservation Project.

Photo credit: Permian Malaysia Sdn Bhd.

Communities

Surrounding the project are two (2) communities, the Kuamut and the Karamuak, comprising eight (8) villages with around 3,000 people. The support and participation of local communities are key to the success of the project. Local employment for conservation programmes and monitoring of progress will help ensure the long-term delivery of the project's impacts.

Community outreach and engagement must always follow the internationally recognised UN principles of Free, Prior and Informed Consent (FPIC). Consultations have helped to inform about the aspirations and needs of the communities, and to ensure these shape the development programmes.

Permian Global differs from its peers as it believes that engagement and development work with communities is important and therefore, communication had begun long in advance of any generation and sale of carbon credits. During the implementation of this project, Permian Global understands that a project can only be successful with the support of communities who have a clear understanding of the benefits of the project, i.e. they will be better off with the project than if the project does not go ahead (see Exhibits 108 and 109).

The process of consultation and engagement will continue throughout the lifetime of the project.

Exhibit 108: Village of Kuamut, Sabah.

Photo credit: Permian Malaysia Sdn Bhd.

Exhibit 109: FPIC consultation in Kuamut.

Photo credit: Permian Malaysia Sdn Bhd.

Biodiversity

Of the 82 mammal and 245 bird species recorded in the project area, 29 and 12, respectively, are considered as rare, threatened or endangered.

The area supports populations of elephants, *bantengs*, *orangutans* and endangered bird species including the Helmeted Hornbill, Bornean Peacock Pheasant and Storms Stork (see Exhibit 110). Much of the project's work will focus on the conservation of these important species.

Exhibit 110: Biodiversity conservation of rare, threatened or endangered mammals and birds in the Kuamut Project.

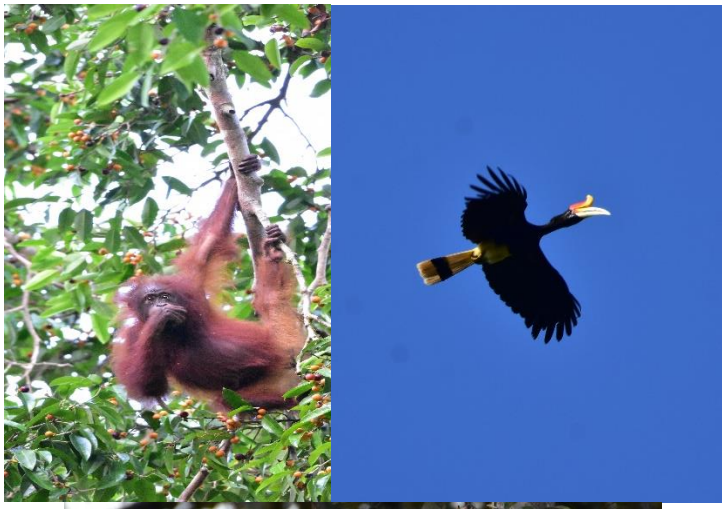


Photo credit: Permian Malaysia Sdn Bhd.

Biggest Challenges in the Project

- Lengthy delays leading to the registration of the project caused by the COVID-19 pandemic and the lengthy approval process of the authorities and Verra. The entire process took about eight (8) years.

Success Factor in Timely Project Implementation

- Clear line of communication – This is crucial to ensure that there are no unnecessary delays throughout the project implementation, i.e. between the project owner and the government or local authorities, the project owner and the validation team, Verra and the validation team, etc.

Success Factor in Monitoring

- Local engagement with stakeholders is important – Working closely with local communities, local authorities and other stakeholders is crucial to ensure the project design is both environmentally robust and developed around an equitable benefit-sharing model.

Other Advice and Recommendations for Future Project Developers in Malaysia

Based on this experience, it is recommended that future developers consider the following:

- High-quality carbon credits represent real and additional GHG emission reductions or removals, which are quantified based on credible and conservative calculations of baselines, additionality, leakage and permanence. For a project where the land will be reclassified, e.g. for this project as Class I Protection Forest, it has to be ensured that this decision to reclassify the land is justifiable and will not impact the value of additionality and permanence in the future.
- Buyers typically expect high-quality credits to also represent activities beyond GHG emission reduction. A forest carbon project will often include well-designed, monitored and inclusive community development programmes as well as science-based biodiversity conservation activities. Projects are also encouraged to be verified against the CCB Standards administered by Verra, which ensures delivery of net positive benefits for climate change mitigation, the local communities and biodiversity, as CCB Standards confer carbon credits of higher quality, which in turn can fetch a better market value.
- It is advisable to initially run a feasibility study to assess the potential for a project. This will include, for example, an assessment of carbon stocks, legal rights of the area, commercial viability and level of threat of emissions, demographic profile, local and national government policy, etc. This study will illustrate the potential for developing a successful and sustainable project.

7.4 Technology-Based Solutions Case Studies

7.4.1 Case 1 - Landfill Gas Recovery and Utilisation at Bukit Tagar Sanitary Landfill, Hulu Selangor, in Malaysia

Exhibit 111: Bukit Tagar Sanitary Landfill, Hulu Selangor.

Photo credit: Berjaya EnviroParks Sdn Bhd.

This project is the largest landfill gas extraction and utilisation project in Malaysia (see Exhibit 111), and is registered under the CDM by the UNFCCC. From this project alone, around **three (3) million certified emission reduction units (CERs)** have been generated to date and counting.

The basic details of the project are summarised below:

CDM Registration ID	2467
Location	Hulu Selangor, Selangor
Proponent	Berjaya EnviroParks Sdn Bhd
Estimated Annual Emission Reductions	283,788 tCO_2eq per year
CDM Project Type	13: Waste handling and disposal
CDM Methodology	ACM0001 Flaring or use of landfill gas – Version 18.0
Size of Project Area	700 acres with 1,000 hectares of buffer areas
Project Registration Date	28/08/2009 (1st CER issuance on 02/05/2011)
Crediting Period Term	Total crediting period of 21 years, renewable (7 years) 1st Crediting Period: 28/08/2009 – 27/08/2016 (Both dates inclusive) 2nd Crediting Period: 28/08/2016 – 27/08/2023 (Both dates inclusive)

Brief Project Description

The Bukit Tagar Sanitary Landfill occupies a 700-acre footprint and is surrounded by a buffer zone of 1,000 hectares of palm oil plantations. The landfill has been in operation since 1 April 2005 and the waste received is expected to increase yearly from 3,000 metric tonnes per day (tpd) up to 6,600 tpd over the 40-year designed lifespan. The landfill is receiving on average of 2,600 tons of municipal solid waste (MSW) per day from Kuala Lumpur City, Selayang District and Hulu Selangor District in the State of Selangor. The landfill site consists of multi-phases or landfill cells for MSW landfilling to cater for the continuous incoming waste received. Development of new phases or cells, up to 17 phases according to landfill design, will be necessary when the current cells have reached their designed capacity. All other phases will be developed when necessary.

Landfill gas consisting of mainly methane (CH_4) is generated due to the anaerobic degradation of solid waste at Bukit Tagar Sanitary Landfill. Previously, landfill gas was passively vented from the Bukit Tagar Sanitary Landfill to the atmosphere. There are no regulations or specific requirements by the Malaysian government requiring the collection, flaring and/or utilisation of landfill gas.

Recognising the potential of capturing and utilising landfill gas, Berjaya EnviroParks Sdn Bhd implemented this project that entails the collection and utilisation of landfill gas for power generation, as well as flaring of the excess gas (as opposed to direct emissions of landfill gas to the atmosphere). The renewable power generated from the landfill gas is sold to the grid, leading to further reduction of GHG emissions in the national energy mix. Up to year 2022, a total of 12 MW of renewable energy capacity has been installed at this site (see Exhibit 112).

Exhibit 112: Gas engines at the Bukit Tagar Sanitary Landfill.

Photo credit: Berjaya EnviroParks Sdn Bhd.

Biggest Challenges in the Project

- Long approval process of the CDM;
- Rigid requirements on design change and monitoring, limiting the flexibility of implementation;
- Leachate management in landfill cells – Proper design of leachate drainage piping is crucial to increase landfill gas extraction efficiency;
- Management of moisture in gas pipes – Excessive moisture needs to be separated;

- Selection and integration of various CDM technologies in line with CDM requirements – Including the SCADA system to integrate data management; and
- Development of infrastructure for grid-connection integration has been challenging due to limited power demand in the area.

Success Factors in Timely Project Implementation

- Setting up a proper project team and engaging a project management consultant to assist if required;
- Always planning ahead before implementation and conducting feasibility studies for expanding to new landfill cells and exploring options to integrate the piping and collection system;
- Good landfill management and practices to ensure effective gas production shall be a constant effort. These include testing out different gas piping designs and configurations, regularly checking and auditing the collection gas pressure and so on; and
- Selection of equipment and components for landfill gas extraction and power generation – Conducted thorough technical and financial comparison of the options and selecting service providers that have local presence and experience where possible.

Success Factors in Monitoring and Issuance of Credits

As of March 2023, approximately 2.97 million CERs (over 16 monitoring periods) have been generated and 247,353 MWh of power injected into the grid (see Exhibit 113).

Exhibit 113: Actual vs. estimated CER issuances for Bukit Tagar Project.

Crediting Period (2009 – 2021)	Actual CERs	Estimated CERs (PDD)	Difference in CERs	% Difference
Overall (1st & 2nd Crediting Periods)	2,971,917	3,125,144	(153,227)	-5%

The project has achieved tremendous success in the overall issuance of credits as compared to what was predicted in the Project Design Document (PDD), which was calculated ex ante before project implementation. The above figures compare the actual CERs achieved with the CERs estimated in the PDD and the difference overall is around 5%.

The success factors for the monitoring, verification and issuance are:

- Ensuring a strong site operating team is in place;
- Regular refresher training on monitoring requirements and conducting internal audits to identify issues of concern regularly (see Exhibit 114);
- Engagement of a competent consultant and experienced verifier is crucial; and
- Ensuring there is spare monitoring equipment, e.g. methane analysers, gas flowmeters, etc., to avoid any gaps in claims.

Exhibit 114: Site operating team (left) and internal auditees (right).

Photo credit: Eco-Ideal Consulting Sdn Bhd.

Other Advice and Recommendations for Future Project Developers in Malaysia

Based on the experience over the years, it is therefore recommended that future project developers consider the following:

- Conducting technical and financial feasibility studies prior to any significant investment;
- Engaging competent technical expertise if required, as landfill gas modelling is quite complex; and
- Starting with a pilot and improving the extraction over time through constant monitoring and review.

7.4.2 Case 2 - Sungei Kahang POME Biogas Recovery for Energy Project in Johor, Malaysia

This project is a large-scale palm oil mill effluent (POME) biogas project (see Exhibit 115) which was registered under the CDM and has successfully issued carbon credits in Malaysia.

Exhibit 115: POME Biogas Recovery for Energy Project in Sungei Kahang.

Photo credit: Eco-Ideal Consulting Sdn Bhd.

The basic details of the project are summarised below:

CDM Registration ID	3686
Location	Sungai Kahang, Johor
Proponent	Sungei Kahang Palm Oil Sdn Bhd
Estimated Annual Emission Reductions	56,000 tCO_2eq per year
CDM Project Type	13: Waste handling and disposal
CDM Methodology	ACM0014 Mitigation of greenhouse gas emissions from treatment of industrial wastewater – Version 03.0
Size of Project Area	About one hectare for the biogas plant area
Project Registration Date	08/10/2010 (1st CER issuance on 28/02/2013)
Crediting Period Term	Total crediting period of 21 years, renewable (7 years) 1st Crediting Period: 08/10/2010 – 07/10/2017 (Renewable – Expired)

Brief Project Description

The mill at Sungei Kahang Palm Oil Sdn Bhd processes fresh fruit bunches (FFB) of oil palm into crude palm oil (CPO) and palm kernel. In the processing of FFB, wastewater, also commonly known as palm oil mill effluent (POME), is generated. POME is well known as high-strength wastewater with very high organic and oil content (see Exhibit 116).

Exhibit 116: Baseline of project – Methane emissions from open lagoons treating POME.

Photo credit: Eco-Ideal Consulting Sdn Bhd.

The project aims to avoid direct emissions of CH_4 from the open anaerobic lagoons into the atmosphere by introducing four (4) units of enclosed anaerobic digester tanks to capture biogas consisting of CH_4. The biogas captured is utilised by directly feeding it into the existing biomass boilers through retrofitting the existing two (2) units of boilers. Initially, a total of three (3) units of biomass boilers were retrofitted, but only two (2) units were used in the project. Any excess biogas is destroyed via a high-temperature, enclosed flaring system. A biogas engine was installed at a later stage of the project to generate renewable electricity which will be injected into the grid.

As of March 2023, 133,958 CERs were issued from this project.

Biggest Challenges in the Project

- The process for design change and revision of the monitoring plan was tedious and time-consuming;
- High maintenance cost of monitoring equipment (see Exhibit 117);
- Corrosive nature of biogas due to high sulphur content;
- Consistency of biogas production due to seasonal cropping period and digestion process;
- Equipment damage due to lightning strike; and
- Lack of carbon credit demand for CDM projects, which resulted in low prices.

Exhibit 117: Monitoring audit (left) and monitoring equipment (right).

Photo credit: Eco-Ideal Consulting Sdn Bhd.

Success Factors in Monitoring and Issuance of Credits

As of March 2023, approximately 133,958 CERs have been generated and the project owner is currently undertaking verification for more CERs to be issued.

The project has so far performed reasonably well in the actual credits issued as compared to what was predicted in the PDD, which was calculated ex ante before project implementation. Exhibit 118 compares the actual CERs achieved with the CERs estimated in the PDD and the difference overall is only around 7%.

Exhibit 118: Comparison of actual vs. estimated CER issuances for Sungei Kahang Project.

Month	Actual CERs	Estimated CERs (PDD)	Difference of CERs	% Difference
1st MR (08/10/10 – 30/06/11)	41,260	49,412	(8,152)	-16%
2nd MR (01/07/11 – 31/12/12)	96,418	99,095	(2,677)	-3%
Total	**137,678**	**148,507**	**(10,829)**	**-7%**

No issuance of carbon credits has been made post-2012 due to the drop in carbon prices of credits from CDM projects.

The success factors for the monitoring, verification and issuance are:

- A full operations team dedicated to the carbon project is crucial to ensure all the necessary monitoring is done in accordance with the monitoring plan (see Exhibit 119);
- Technical assistance from and training by external consultants is important to the success of the monitoring, verification and issuance; and
- The upkeep of key monitoring equipment, such as the flow meters, methane analysers and COD analyser, is pertinent to maximise carbon credit generation.

Exhibit 119: Site operating team (left) and internal auditees (right).

Photo credit: Eco-Ideal Consulting Sdn Bhd.

Other Advice and Recommendations for Future Project Developers in Malaysia

Based on the experience over the years, it is therefore recommended that future project developers consider the following:

- Selecting a local biogas technology provider with experience and which can provide good after-sales service;
- Finding reliable carbon credit buyers who can provide necessary support to the project; and
- Appointing credible external consultants to provide technical support and conducting internal audits to pre-identify potential issues for monitoring and issuance.

Chapter 8

Relevant Government Incentives

Chapter 8: Relevant Government Incentives

8.1 Chapter Summary

There are two (2) types of government incentives available:

1. Incentives for Carbon Credits

Incentive	Organisation	Purpose
Incentives for Carbon Credits	Bursa Malaysia	To assure demand for Malaysian-generated carbon credits and to kick-start the VCM ecosystem in Malaysia. This will encourage project developers to invest in carbon credit projects that can be traded on the Bursa Carbon Exchange.

2. Incentives for Green Investments

Incentive	Organisation	Purpose
General Incentives		
Green Technology Tax Incentive	Malaysian Green Technology and Climate Change Corporation	To encourage the adoption of green technology in Malaysia, including projects that will be eligible for carbon credits. Additionally, to finance investments for the production of green products, to finance the utilisation of green technology and to finance investments or assets related to energy-efficient projects and/or energy performance contracting.
Green Technology Financing Scheme 4.0 (GTFS4.0)	Malaysian Green Technology and Climate Change Corporation	To support the development of green technology in the country.
Low Carbon Transition Facility (LCTF)	Bank Negara Malaysia	To assist small and medium enterprises (SMEs) to adopt sustainable and low-carbon practices, including energy efficiency and renewable energy projects which will be able to generate carbon credits.
Dana Program Pembangunan Teknologi Hijau dan Pemuliharaan Alam Sekitar	Malaysia Forest Fund	Tax deductions for cash contributions to the Forest Conservation Certificate (FCC) Programme. The FCC is implemented by the Malaysia Forest Fund (MFF).
Sector-specific Incentives		

Transport-related Incentives: i. Import duty, excise duty and sales tax exemption	Royal Malaysian Customs Department	To support the development and adoption of electric vehicles (EVs).
ii. Road tax exemption	Road Transport Department	
iii. Tax incentive for companies renting non-commercial EVs	Inland Revenue Board	
iv. Tax incentive for manufacturers of EV charging equipment	Malaysian Investment Development Authority	
Carbon Capture and Storage (CCS) Incentives	Ministry of Finance	To encourage companies to either undertake in-house CCS activities or provide CCS services.
Feed-in Tariff (FiT)	Sustainable Energy Development Authority (SEDA)	To encourage renewable energy (RE) producers to mitigate long-term risks and enable them to earn returns on investments to ensure sustainability.

8.2 Incentives for Carbon Credits

During the 21st instalment of Invest Malaysia 2023, the Malaysian government announced its commitment to a seed funding incentive amounting to RM10 million to assure demand for Malaysian-generated carbon credits and kick-start the VCM ecosystem in Malaysia. The commitment will encourage project developers to invest in carbon credit projects that can be traded on the BCX. The operationalisation of this seed fund has yet to be disclosed at the time this Handbook was being developed.

8.3 Incentives for Green Investment

8.3.1 General Incentives

8.3.1.1 Green Technology Tax Incentive

Green technology tax incentives were first introduced by the Malaysian government in Budget 2014 to propel the growth of the nation's green economy, led by green technology.

The objectives of introducing the tax incentives are:

i. To encourage investment in green technology on a project basis, either for business purposes or own consumption;
ii. To motivate companies to acquire green technology assets; and
iii. To enhance the number of green technology service providers.

There are two (2) types of tax incentives available, which are the **Green Investment Tax Allowance (GITA)** for the purchase of green technology equipment and assets, and the **Green Income Tax Exemption (GITE)** for green technology service providers. Each of these incentives has two (2) groups of eligible activities (see Exhibit 120).

Exhibit 120: Categories of incentives under the Green Technology Tax Incentive.

Incentive	Description
GITA Assets	Applicable to companies that acquire qualifying green technology assets listed under the MyHIJAU Directory for their own use/consumption.
GITA Project	Applicable to companies that undertake qualifying green technology projects for business or own consumption.
GITE Services	Applicable to qualifying green technology service provider companies that are listed under the MyHIJAU Directory.
GITE Leasing	Applicable to qualifying green technology service provider companies that are listed under the registered photovoltaic investor (RPVI) directory.

Source: https://www.mgtc.gov.my/wp-content/uploads/2022/07/REC-GTGT-007-GUIDELINES-FOR-GREEN-TECHNOLOGY-TAX-INCENTIVE-GITAGITE.pdf

To continue encouraging green technology adoption in Malaysia, the government has extended the green tax incentives until 31 December 2025. Tax allowances and exemptions have been extended from three (3) years to five (5) years.

The list of projects qualified for GITA includes projects that could be eligible for carbon credits. Examples of eligible projects are listed in Exhibit 121.

Exhibit 121: Examples of qualifying projects for GITA that could be eligible for carbon credits.[30]

Sector/Area	Activities	Carbon Credit
Renewable energy[31]	Commercial and industrial business entities that undertake the generation of energy in the form of electricity, steam, heat and chilled water using renewable energy resources such as: • Biomass • Biogas • Mini Hydro • Geothermal • Solar power.	Avoidance
Energy efficiency	Companies investing in energy efficiency equipment or technologies and investing in energy-saving equipment.	Reduction

Source: https://www.mgtc.gov.my/wp-content/uploads/2022/07/REC-GTGT-007-GUIDELINES-FOR-GREEN-TECHNOLOGY-TAX-INCENTIVE-GITAGITE.pdf

8.3.1.2 Green Technology Financing Scheme (GTFS)

The Green Technology Financing Scheme (GTFS) is a special financing scheme introduced by the Malaysian government in 2010 to support the development of green technology (GT) in the country. The GTFS is now in its fourth iteration, known as GTFS 4.0, where the guaranteed value has been increased to RM3 billion until 2025 with a guaranteed limit of up to 60%, with the scope of funding widened to cover EVs.

Projects that will be eligible for the GTFS must fall under one of the following sectors:

[30] Readers are encouraged to refer to Verra for the latest exclusion list to ensure eligibility. Refer to the VCS Program Scope, Excluded Project Activities (e.g. https://verra.org/wp-content/uploads/2022/12/VCS-Standard-v4.4-FINAL.pdf).

[31] Projects which have been approved with Feed-in Tariff (FiT) for solar by SEDA are not eligible for the GITA incentive.

i. Energy
ii. Water
iii. Buildings
iv. Transport
v. Waste
vi. Manufacturing.

8.3.1.3 Low Carbon Transition Facility (LCTF)

The Low Carbon Transition Facility (LCTF) was established by Bank Negara Malaysia (BNM) to assist small and medium enterprises (SMEs) in adopting sustainable and low-carbon practices. Each SME is entitled to financing of up to RM10 million, with a maximum financing rate of 5.0% per annum for up to ten (10) years. Potential projects that are eligible for this fund include energy efficiency and renewable energy projects which will be able to generate carbon credits.

8.3.1.4 *Dana Program Pembangunan Teknologi Hijau dan Pemuliharaan Alam Sekitar*

Companies or individuals can apply for tax incentives under *Dana Program Pembangunan Teknologi Hijau dan Pemuliharaan Alam Sekitar.*[32] Under the said provision, companies and individuals that make contributions to forests through the FCC are eligible for tax deductions of up to 10% of aggregate income, valid from 1 January 2023 to 31 December 2027, and are limited to a maximum cumulative amount of RM55 million in allowable tax deductions. Contributions in this context refer solely to cash contributions of RM1,000 and above and are subject to provisions stipulated in subsection 44(11C) of the Income Tax Act 1967.

8.3.2 Sector-specific Incentives

8.3.2.1 Transport-related Incentives

Incentives for the transport sector mostly revolve around EVs, where investments in EVs[33] may generate avoidance carbon credits. The incentives currently available for EVs are as in Exhibit 122.

[32] Malaysia Forest Fund.
[4] It is highly recommended that readers also refer to the *Methodology for Electric Vehicle Charging Systems* for project applicability and additionality conditions. The methodology is currently applicable globally and provides a positive list for determining additionality for regions with less than 5% market penetration of electric vehicles.

Exhibit 122: Incentives available for EVs in Malaysia.

Sector/Area	Activities
Import duty, excise duty and sales tax exemption	1. 100% exemption on import duty on components for local EV assembly 2. 100% exemption on excise duty and sales tax for CKD EVs 3. 100% exemption on import duty and excise duty for imported CBU EVs.
Road tax exemption	100% exemption from road tax – Applicable to batteries and fuel cells (Hydrogen) for EVs but not hybrid vehicles.
Tax incentive for companies renting non-commercial EVs	Companies that rent non-commercial EVs are given a tax deduction on the rental amount up to RM300,000.
Tax incentive for manufacturers of EV charging equipment	1. 100% income tax exemption on statutory income for up to ten (10) years for companies that make early investments from YA2023 to YA2032. If the investments are made by the company after YA2023, the company will be eligible to enjoy the incentive for the remaining period only; or 2. Five-year 100% Investment Tax Allowance set off against 100% of statutory business income for each YA.

Source: Tax-measure.pdf (mof.gov.my)

8.3.2.2 Carbon Capture and Storage (CCS) Incentives

As outlined in the National Energy Policy 2022-2040, Malaysia must guarantee the realisation of the Low Carbon Nation goal by 2040. To accomplish this goal, the government has recognised an approach to limit CO_2 emissions through the utilisation of CCS technology. The oil and gas as well as power generation sectors in Malaysia are the leading industries that have the potential to utilise CCS technology, which consists of three (3) main activities:

i. Carbon capture;
ii. Transportation of captured CO_2; and
iii. Underground or sea bed carbon storage.

Exhibit 123 displays the incentives that can be awarded to companies that either undertake in-house CCS activities or provide CCS services.

Exhibit 123: Incentives for Carbon Capture and Storage.

Category	Incentive
Companies undertaking in-house CCS activities	1. Investment Tax Allowance (ITA) of 100% of qualifying capital expenditure for a period of ten (10) years. The allowance can be set off against up to 100% of business statutory income. 2. Full import duty and sales tax exemption on equipment used for CCS technology, commencing on 1 January 2023, until 31 December 2027. 3. Tax deduction for allowable pre-commencement expenses within five (5) years from the date of commencement of operations.
Companies undertaking CCS services	1. ITA of 100% of qualifying capital expenditure for a period of ten (10) years. The allowance can be set off against up to 100% of statutory income. 2. Tax exemption of 70% on statutory income for a period of ten (10) years. 3. Full import duty and sales tax exemption on equipment used for CCS technology, starting 1 January 2023, until 31 December 2027.

Source: Tax-measure.pdf (mof.gov.my)

8.3.2.3 Feed-in Tariff (FiT)

Malaysia has transitioned to a phase where renewable energy (RE) is being utilised. The Feed-in Tariff (FiT) system has played a significant role in providing the impetus to the RE industry. FiT employs a two-pronged strategy of encouraging RE producers through incentives to mitigate long-term risks and enabling them to earn returns on investments to ensure sustainability. The FiT guarantees Feed-in Approval Holders (FiAHs) have access to the national grid with a contractually fixed rate for the effective period.

FiT covers four (4) types of RE sources, including biogas, biomass, small hydropower and solar photovoltaic (PV). Those who have been approved as FiAHs are ensured of receiving payments for a set period from the RE Fund, which is 21 years for solar PV and small hydropower and 16 years for biogas and biomass. Power utility companies are obligated to enter into a Renewable Energy Power Purchase Agreement (REPPA) with FiT-approved individuals or entities during the effective period.

Chapter 9

Frequently Asked Questions (FAQs)

Chapter 9: Frequently Asked Questions (FAQs)

9.1 General

1. **How can an organisation apply to register for a carbon project to enable carbon credits to be issued for transacting in a voluntary carbon market (VCM)?**
   Any project that involves the capturing or avoidance of GHGs, which can be nature- or technology-based, could potentially be registered to participate in any VCM.

   Project owners, also known as project proponents, have the option of choosing which carbon standard and registry to use (e.g. Verra, Gold Standard, etc.). The choice of registries is open and based on the reputation, service or focus that is provided.

   The common steps are the process and requirements that need to be fulfilled for project registration. Validation and verification by an independent external party is mandatory for all standards/registries.

   Registration is only the first step of carbon credit issuance, as periodical monitoring reports, which summarise the emission reductions achieved throughout certain monitoring periods, have to be submitted and approved prior to carbon credit issuance and subsequent trading of carbon credits.

   For more information, please refer to **Chapter 5** of this Handbook.

2. **Is the VCM the same as carbon footprint?**
   No. The carbon footprint is a (calculated) direct and indirect measure of CO_2 emitted to the atmosphere by an entity/activity/organisation/individual/product, expressed in tonnes of carbon dioxide equivalent (tCO_2e).

   The VCM, on the other hand, is a market for the trading of emission reductions, where the emission reductions are also expressed in tCO_2eq.

   Organisations with environmental/sustainability targets can purchase credits or voluntarily offset their carbon footprint, fulfil their organisations' voluntary environmental/sustainability commitment or create carbon-neutral products for their customers. This is usually mainly motivated by demands from their key stakeholders, e.g. financial institutions, customers, etc.

3. **What is the difference between Carbon Credit and Carbon Offset?**
   Carbon credit and carbon offset are often used interchangeably. In essence, they refer to the same "item" or "product" with the same unit of measurement, i.e. tonnes of carbon emissions (tCO_2e), but each term can be used for different purposes.

   In general, a carbon credit is a verified amount of carbon emission reductions or carbon removals that can be used as a carbon offset, i.e. when it comes to achieving the carbon neutrality or net zero carbon goals of an organisation.

9.2 Carbon Credits

1. **Can carbon credits be issued based on the carbon footprint or GHG inventory reported by a company?**
   Any emission reduction, avoidance or removal achieved by a company and reported in the company's GHG inventory cannot be automatically converted into carbon credits. The decarbonisation activity must be conducted in accordance with an approved methodology and validated and registered under a GHG-crediting programme. The emission reduction, avoidance or removal must also be verified by an independent body before carbon credits can be issued. The decarbonisation activity may take many forms and includes activities such as tree planting campaigns organised by corporates for the purpose of demonstrating corporate responsibility.

   For more information, please refer to **Chapter 5** of this Handbook.

2. **There is a growing demand for carbon removal credits. Are removal credits of higher quality than avoidance carbon credits?**
   The carbon removal analogy is similar to capturing carbon and "locking" it up to prevent its release into the atmosphere. Examples of such actions include planting trees, carbon capture and storage, carbon farming, etc.

   Carbon avoidance is a different concept where the carbon is prevented from being emitted into the atmosphere by measures such as fuel switching, using renewable energy, etc.

   Lately, the credits from carbon removal projects have been given more preference than carbon reduction as they are interpreted as having higher quality. This is so perceived likely due to the notion that carbon removal is essential to reduce the amount of carbon already trapped in the earth's atmosphere. This perception is misleading as at the rate the world is going, capturing carbon in the atmosphere will not be able to catch up with the rate of the release of carbon into the atmosphere. We are no longer in a situation where reducing our emissions through prevention is enough. Therefore, carbon credits from both removal and avoidance projects are of equal importance. To use a metaphor: When the bath is overflowing, mopping the floor isn't enough. We need to turn off the taps.

3. **Does authorisation of carbon credits (under Article 6 of the Paris Agreement) imply that these carbon credits are of higher quality?**
   No. The act of authorisation does not depict quality. Authorisation is only an accounting adjustment needed for the host's and recipient country's national GHG inventory for the purpose of accurately reporting their NDC achievements.

9.3 Crediting Period

1. **What is the Verified Carbon Standard (VCS) crediting period?**
   The crediting period as specified by the VCS is a period when the project's calculated GHG emission reductions are eligible to be issued/claimed as a "voluntary carbon unit (VCU)", i.e. the tradeable unit. This period needs to be decided prior to registration and is not allowed to be revised after registration. Crediting period selection is dependent on the type of project and there is an option to decide on a renewable or fixed crediting period. The definition as per the VCS Program Definitions, version 4.3 (page 7) is as follows:

- "The time period for which GHG emission reductions or removals generated by the project are eligible for issuance as VCUs, not including any potential crediting period renewals. Also referred to as the "Project Crediting Period"; or
- The time period for which GHG emission reductions or removals generated by the jurisdictional Reducing Emissions from Deforestation and Forest Degradation (REDD+) program are eligible for issuance as VCUs, not including any potential crediting period renewals. Also referred to as the "Program Crediting Period"."

2. **What is the VCS Crediting Period Start Date (equivalent to "Project Start Date", "Project Crediting Period Start Date", "Program Start Date" and "Program Crediting Period Start Date")?**
   The definition as per the VCS Program Definitions, version 4.3 (page 7) is as follows:

   "The start date of a non-Agriculture, Forestry, and Other Land Use (AFOLU) project is the date on which the project began generating GHG emission reductions or removals. The start date of an AFOLU project or jurisdictional REDD+ program is the date on which activities that led to the generation of GHG emission reductions or removals are implemented (e.g. planting, changing agricultural or forestry practices, rewetting, restoring hydrological functions, or implementing management or protection plans)."

9.4 Registration

1. **How long will it take for a VCS project to be successfully registered?**
   Depending on the complexity of the project, with the site preparation, documentation and participation of all parties involved in project conceptualisation, the process could take a minimum of one (1) year for the completion of the registration process, i.e. from opening an account to the successful registration of a project.

   Note that the process of registration involves many rounds of clarification of issues and back-and-forth responses required from different parties until all non-conformances/clarifications are fully resolved. Successful generation of carbon credits, however, can only be achieved upon the implementation of projects and proven emission reductions.

   For more information, please refer to **Chapter 5** of this Handbook.

2. **Is there any expiration on carbon credits?**
   Most carbon registries do not have any expiration date for carbon credits issued. Once the carbon credits are used (i.e. retired), for example, to offset a carbon footprint, they can no longer be traded or dealt with.

   CORCs issued by Puro.earth are an exception.

3. **If a carbon credit project is implemented under the GTFS (Green Technology Financing Scheme)[34] or has a Feed-in Tariff[35] for grid interconnection, will it still qualify for carbon credits from the VCS?**
   Yes. The project may still qualify provided that it is able to demonstrate GHG emission reductions, meeting the requirements specified in an approved VCS methodology (for

[34] Malaysian Green Technology and Climate Change Corporation.
[35] Sustainable Energy Development Authority (SEDA).

example, pertaining to principles of additionality, permanence, etc.). A project owner is allowed to use any means of funding to finance a project subject to the requirements of the methodology.

4. **Can a project in Malaysia that is registered with the Verified Carbon Standard (VCS) of Verra be traded on the BCX (Is the VCS the only acceptable standard on the BCX)?**
   Yes. Currently, only the Verified Carbon Unit (VCU) under the VCS can be traded on the BCX under a standardised contract that meets the BCX's contract specifications.

5. **What is a "VCS grouped project"? How does it work?**
   A VCS grouped project is a cluster of individual projects. The individual projects are called "Project Activity Instances" (PAIs), registered within the frame of a grouped project. Grouped projects could be any of the projects in the 16 sectors, such as methane collection or installation of energy-efficient cooking (at farms or in housing), industrial wastewater methane capture from different mills, etc. Only one (1) Project Description (PD) is required for a cluster of PAIs within a group. However, the PAIs shall use the same technologies for emission reductions and the PAIs are located within the pre-defined geographical boundary stated in the PD.

   To start a VCS grouped project, registration of a minimum of one (1) PAI is all that is required. Subsequent addition of new PAIs to a group does not require the usual long process of registration but can be done during verification. The requirement is to fulfil the predetermined eligibilities in the PD.

   The main advantage of having a grouped project is to reduce the registration, validation and verification costs, which would otherwise be too costly if individual projects were to be implemented separately. In other words, individual projects that were previously financially non-viable due to their smaller scale could be made viable if implemented under a VCS grouped project.

6. **What is the difference between the Clean Development Mechanism (CDM) and the VCS?**
   The CDM is one (1) of the mechanisms of emission reduction under the United Nations Framework Convention on Climate Change (UNFCCC). CDM emission reduction was mandatory as it was ratified by developing and developed countries. The CDM came to an end on 31 December 2020, which marked the end of the 3rd Crediting Period under the Kyoto Protocol. A new carbon trading mechanism under Article 6.4 of the Paris Agreement[36] is currently being developed but not in operation yet. Currently, carbon credits from the CDM will only qualify for trading on the BCX if they are converted to VCS carbon credits.

   The VCS on the other hand, is voluntary and has no legally binding targets set by countries. Instead, organisations that are committed to reducing emissions due to individual interests or sustainability efforts can choose to offset their emissions using VCS carbon credits.

   For more information, refer to **Chapter 4** of this Handbook.

[36] The Paris Agreement is the new climate treaty ratified by international communities to address climate change under the United Nations Framework Convention for Climate Change (UNFCCC).

7. **Can a CDM project be transferred to the Verra Registry without undergoing the registration process all over again? Additionally, if my project is registered under the CDM and has carbon credits issued under the CDM, can the project be transferred to the Verra Registry and the carbon credits issued be converted to VCUs?**
   It is possible to convert a CDM project to a VCS project. It is a slightly different process from registering a project from scratch. For more information, please refer to **Chapter 4** of this Handbook.

   It is possible to convert Certified Emission Reductions (CERs) under the CDM to VCUs under the VCS. For more information, refer to **Chapter 4** of this Handbook.

8. **Is there a possibility of a successfully registered VCS project not claiming any carbon credits?**
   Yes. There are many contributing factors to this, in addition to market dynamics. Many owners are of the opinion that once the project is running, the total estimated carbon reductions in the initial registration stage can be claimed. However, the main issues overlooked by developers are the importance of monitoring where proper equipment maintenance and calibration are needed to ensure data accuracy.

   Besides that, emission reduction claims need to be verified by a third party. During this run-through, the absence of calibration records and monitoring data will give rise to data uncertainty. Therefore, in many cases, monitoring data collected needs to be statistically re-calculated for a more conservative reading, which usually results in lower emission reduction claims.

   In addition to the issues highlighted above, the commercial viability depends on the cost of verification and the proceeds from the sales of carbon credits.

   For more information, refer to **Chapter 7** of this Handbook.

9. **Is there any restriction under the VCS on the size of a project when it comes to registration?**
   Projects can be small- or large-scale. The difference is in their annual GHG emission reductions that can be potentially achieved. It needs to be noted that the demonstration of the proposed carbon project being an uncommon practice is also different between these projects, as dictated by the methodologies. Under the VCS Standard, version 4.4 (page 56), the threshold for materiality with respect to the aggregate of errors, omissions and misrepresentations relative to the total reported GHG emission reductions and/or removals shall be five (5) percent for projects and one (1) percent for large projects.

   With reference to VCS Standard, version 4.4 (page 30), project size categorisations are as follows:

   - Projects: Less than or equal to 300,000 tonnes of CO_2e per year
   - Large projects: Greater than 300,000 tonnes of CO_2e per year.

10. **Is it mandatory to use the latest or specific technology to implement a carbon project?**

No. The VCS does not impose any rules on the use of the latest or specific technology. However, the correct technology is crucial in ensuring successful project implementation for efficient emission reductions. Unless the project falls under the CDM's Positive Lists of Technologies (refer to **Chapter 4** of this Handbook for more details), it is a requirement to demonstrate that the carbon project is not a common practice and would not have happened in the absence of income derived from the sales of carbon credits through the carbon market.

11. Is demonstration of "common practice" a prerequisite for a project to be successfully registered?

No. Exception has been given to several technologies (and associated conditions) which are termed the "Positive Lists". Projects under this category are considered as having clear environmental benefits and therefore, will be deemed automatically additional once all the conditions are satisfied. Such carbon projects include certain waste handling and disposal projects, renewable energy projects and several technologies/measures used by households, communities and small and medium enterprises (SMEs).

12. If there is a new policy / regulation / direction introduced after a VCS project has been implemented, what will happen to the project?

Once the project has been implemented, the new policy / regulation / direction will not affect the existing project. However, the existing project would need to follow the latest requirements from the new policy / regulation / direction during the renewal of the next crediting period (if the project has a renewable crediting period option). This is in accordance with Section 3.14.1 of the VCS Standard, version 4.4 as below:

"The project shall demonstrate regulatory surplus at validation and each project crediting period renewal. Regulatory surplus means that project activities are not mandated by any law, statute, or other regulatory framework, or for UNFCCC non-Annex I countries, any systematically enforced law, statute, or other regulatory framework."

For more details, please refer to Section 3.14 of the VCS Standard, version 4.4 on Additionality.

9.5 Project-Specific

1. **What are the common projects in Malaysia that may qualify for carbon credits under the VCS?**
   For more information, refer to **Chapter 4** of this Handbook.

2. **What are the examples of grouped VCS projects that could be considered in Malaysia? (Refer to Q13 on the definition of "grouped VCS projects")**
   Such carbon projects include energy efficiency, biogas recovery from wastewater, small hydropower and cook stoves (more for lower-income developing countries) projects.

   The projects that are grouped usually have at least one (1) interested party in common, depending on the role of the party in the project. However, not many of these registered projects are successfully pursued up to emission reductions due to numerous reasons.

   Information on Verra carbon projects is disclosed on the Verra platform.

3. **How can afforestation and reforestation work be carried out as carbon projects?**
   Afforestation and reforestation projects are those that remove carbon from the atmosphere by way of increasing the vegetation within the same piece of land. This can be done by way of replanting trees in areas that have not recently had any tree cover or conversion of abandoned or degraded agricultural lands into forest. There are methods and ways of calculating the emission reductions for different tree species where emission reductions can be claimed under the VCS and traded accordingly.

4. **How can Reducing Emissions from Deforestation and Forest Degradation (REDD+) activities work as carbon projects?**
   REDD+ projects involve activities that reduce GHG emissions from deforestation and/or degradation by slowing or stopping the conversion of forests to non-forest land and/or reducing the degradation of forest land where forest biomass is lost, and/or activities that enhance carbon stocks through improved forest management and/or afforestation, reforestation or revegetation. For example, projects that focus on reducing planned (APD) and unplanned (AUDD) deforestation, and activities that reduce emissions from forest degradation, are eligible as VCS carbon projects under this category. Currently, Verra is developing a new REDD methodology where the initial version will cover only AUD. This methodology is anticipated to be published in the third quarter of 2023. Modules that establish similar requirements for forest degradation and planned deforestation will be integrated over time. The new consolidated REDD methodology will replace all existing VCS REDD methodologies when this process is complete.

5. **What kind of Improved Forest Management (IFM) activities work as carbon projects?**
   Activities that change forest management practices and increase carbon stocks on forest lands managed for wood products, such as saw timber, pulpwood and fuelwood, are classified as IFM projects. Projects that are eligible under this category pursuant to the VCS are, for example, stopping selective logging, conversion from logged to protected forest (LtPF), protection of logged or degraded forests from further logging or protection of unlogged forests from future logging and implementation of Reduced Impact Logging (RIL) techniques.

6. **How does one generate VCS carbon credits from landfill projects?**

Waste constitutes organic and inorganic materials in its composition. Organic waste matter will emit methane gas during its breakdown. The methane gas emitted can then be captured by using various technologies and diverted for further use.

Emission reductions in such projects can be claimed depending on the end use of the captured gas. The gas can be processed to generate electricity, fuel for transportation, bottled for use or flared. Carbon credits come in the form of the displacement of more intensive fossil fuel with the use of biogas from captured methane.

7. There is a local landfill project which is consistently generating carbon credits. How does this work?

Waste that is dumped in landfills generates methane gas from decomposing organic waste. Methane released from the breakdown of this waste is vented, in the normal scenario, as there is no regulation in Malaysia that warrants the control of methane gas from municipal landfills.

By burning the methane, the gas will break down to CO_2, which is less polluting than methane as methane has a higher global warming potential (GWP of 25) than carbon dioxide (GWP of 1). Therefore, by converting methane to CO_2, the reduction in CO_2 can be claimed for emission reductions.

To cite an example, at the Bukit Tagar Sanitary Landfill, the facility includes converting the methane captured to biogas, which is used to generate electricity for its operations, while the remaining is sold to the national grid (TNB). The project owner benefits from selling electricity to the grid and has been successfully generating carbon credits from 2009 to the present (2023).

For more information, please refer to Section 7.4.1 of this Handbook.

8. How does one generate VCS carbon credits from hydropower projects?

Malaysia, having a tropical climate and generous rain, has many rivers flowing throughout the year. The flow of water, when fast and deep enough, can create sufficient energy to drive turbines and thus, generate electricity. Electricity generated from rivers can be sold to the grid. Energy from this green generation is compared against its equivalent displacement of electricity generation using fossil fuel, which can be converted to credits.

The project size can be categorised as small projects and large projects, where large means a maximum capacity of greater than 15 MW and the maximum capacity is the installed/rated capacity or authorised capacity (as determined in the activity approval from the project regulator, government or similar entity, whichever is lower).

However, according to Table 1 of the VCS Standard, version 4.4, the VCS Program excludes grid-connected[37] electricity generation activities using hydroelectric power plants in non-least developed countries (LDCs),[38] while large projects are excluded in LDCs. Within the context of Malaysia, hydroelectric power plants are no longer eligible for registration as carbon projects under Verra. However, the exclusion does not apply to ocean energy (e.g. wave, tidal, salinity gradient and ocean thermal energy conversion).

[37] Grid-connected means >50% of total generation is exported to a national or regional grid.
[38] As designated by the United Nations.

Refer to **Chapter 4** of this Handbook for more details.

9. **How does one generate VCS carbon credits from solar energy projects?**
   Solar energy from the sun can be harnessed using a range of technologies. For example, solar photovoltaic (PV) cells convert light energy to generate electricity, and solar thermal energy utilises heat energy in applications such as solar water heating. In Malaysia, there are several schemes related to solar PVs such as the Feed-in Tariff (FiT), large-scale solar (LSS), Net Energy Metering (NEM) and Self-Consumption (Selco).

   However, according to Table 1 of the VCS Standard, version 4.4, the VCS Program excludes grid-connected[39] electricity generation activities using wind, geothermal or solar photovoltaic (PV) power plants in non-LDCs. The exclusion does not apply to concentrated solar thermal-to-electricity, floating solar PV or integration of solar PV systems with energy storage systems (e.g. batteries).

   Refer to **Chapter 4** of this Handbook for more details.

10. **How does one generate VCS carbon credits from wastewater treatment in manufacturing industries/animal and poultry farm projects?**
    Industries that generate wastewater are usually required to treat their highly polluting wastewater to a quality that is below the government standard before discharge to the waterway. The treatments include discharging the waste into a few sequential lagoons and treating them via chemical, mechanical or biological means.

    Wastewater in these lagoons releases methane arising from the pollutants that are present in the wastewater. Depending on the use of the captured methane (e.g. flaring, treated for use in stoves, electricity generation, etc.), wastewater treatment has a high potential for use in emission reduction projects.

11. **How does one generate VCS carbon credits from biomass power plant projects?**
    In many mills and industries, fossil fuel is being used to generate the required energy/electricity/steam to support the production process. In many plantations, fossil fuel can be replaced with biomass, which is available in big quantities anyway from by-products, e.g. in palm oil mills, sugar cane industries, etc.

    The difference in CO_2 emissions from utilising biomass to displace fossil fuel is the emission reductions that can be quantified in a carbon project. As a best practice, feasibility studies should be carried out to confirm the viability of the projects to ensure successful project implementation (see **Chapter 7**).

    However, according to Table 1 of the VCS Standard, version 4.4, the VCS Program excludes activities generating electricity and/or thermal energy for industrial use from the combustion of non-renewable biomass, agro-residue biomass or forest residue biomass in non-LDCs. The exclusion does not apply to gasification, pyrolysis, combusting biofuels, biogas, fractions of renewable biomass in refuse-derived fuels, agro/forest biomass residues in waste streams that are sent to landfills or CO_2 capture and storage from renewable biomass combustion or thermal efficiency improvements (e.g. cook stoves).

[39] Grid-connected means >50% of total generation is exported to a national or regional grid.

Refer to **Chapter 4** of this Handbook for more details.

12. How does one generate VCS carbon credits from biomass composting projects?

Another example of gainful use of biomass waste is by converting it to fertiliser by way of biological decomposition. Some biomass waste, depending on how it is dumped, will decompose anaerobically, thereby producing methane.

Some project owners' way of avoiding methane production is by processing the waste instead of dumping it. During composting, processing the biomass waste by means of ensuring decomposition in the presence of oxygen during the process of converting it to fertiliser is required for emission reduction purposes.

13. What should one do if unsure of whether a potential carbon project is feasible?

A key step before any carbon project development is to assess the eligibility and feasibility of the project. The eligibility (refer to **Chapter 4** of this Handbook for information on examples of eligible projects) requires an assessment of additionality, applicable approved methodologies and so on. The feasibility study will typically include a financial analysis of the project, including assessing the estimated project capital and operating cost, as compared to revenue estimation.

If such an assessment cannot be performed within an internal capacity, one may consider engaging a carbon consultant with relevant experience to assist in the assessment.

For more information, refer to Section 9.6.

9.6 The VCM Directory

The Voluntary Carbon Market Directory (VCM Directory) aims to connect users with a wide range of service providers who specialise in various aspects of the VCM. The creation of a directory of carbon industry service providers serves as a valuable resource for individuals and organisations in the VCM industry by listing Consultants, Validation/ Verification Bodies (VVBs), Project Developers and Financial Institutions (FIs), making it easier for interested parties to connect and collaborate. Its goal is to empower users to make informed decisions, promote collaboration and drive positive environmental impact.

Listing in the VCM Directory is **open to local companies** that are registered with the Companies Commission of Malaysia under the Companies Act 2016 [Act 777] which have a registered address and business address in Malaysia, **as well as foreign companies** that are legally registered and have obtained a licence to operate in their respective countries, subject to the prevailing laws and regulations of the Government of Malaysia.

VCM Directory Categories

Here, four (4) categories in the VCM Directory listing are focused on, which are:

Categories	Details
Consultants	1. **Carbon Project Consultant** A Malaysian- or foreign-registered company that makes a formal application for VCM Directory listing based on providing consultancy services in Carbon Project Development according to selected carbon standards requirements and assisting the project owner in the registration and issuance of carbon credits. 2. **Measurement, Reporting and Verification (MRV)** An **expert** Malaysian- or foreign-registered company that makes a formal application for VCM Directory listing based on providing MRV services in Carbon Project Development. The services include scientific research, IoT and technology expertise.
Validation/Verification Bodies (VVBs)	A Malaysian- or foreign-registered company that makes a formal application for VCM Directory listing based on providing independent third-party services on validation and verification in Carbon Project Development.
VCM Project Developers	A Malaysian- or foreign-registered company that undertakes the development and implementation of projects in the VCM.
Financial Institutions (FIs)	A Malaysian licensed institution under Malaysian laws and regulations that makes a formal application for VCM Directory listing based on providing financing services for Carbon Project Development.

The VCM Directory can be assessed here.

Appendices

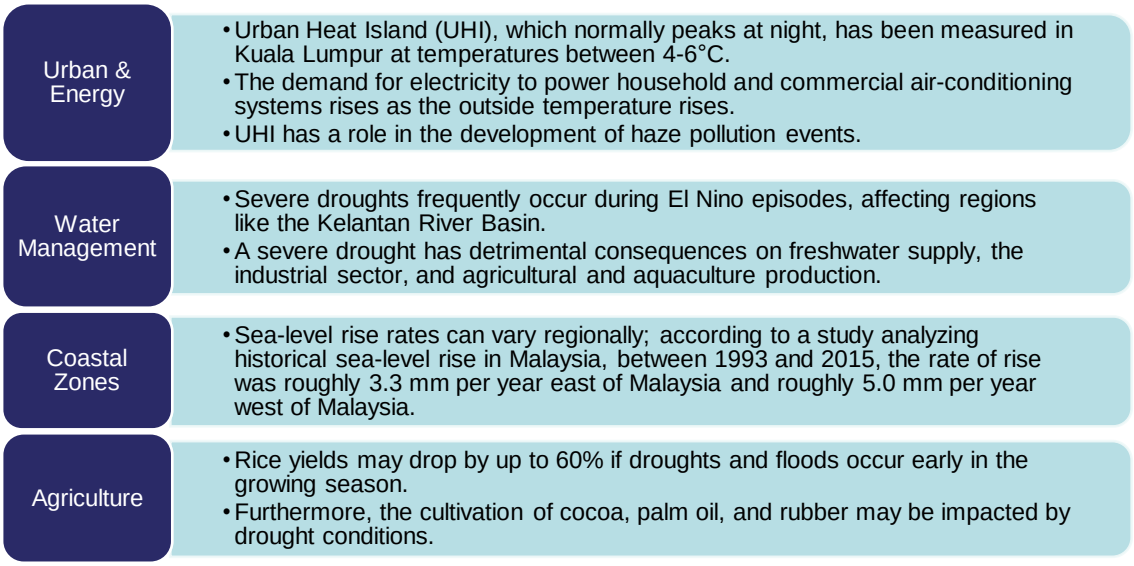
Appendix 1

1. Impacts of Climate Change by Sector

1.1. Environmental Impacts

Climate change can cause irreversible damage to ecosystems, including loss of biodiversity, deforestation, desertification and water scarcity. These impacts can have devastating consequences for human health and well-being. Between 1970 and 2013, Peninsular Malaysia, Sabah and Sarawak experienced surface mean temperature increases of 0.14°C - 0.25°C per decade. The summary of climate impacts for the main economic sectors in Malaysia can be seen in Diagram 1.

Diagram 1: Climate change impacts by economic sectors in Malaysia.

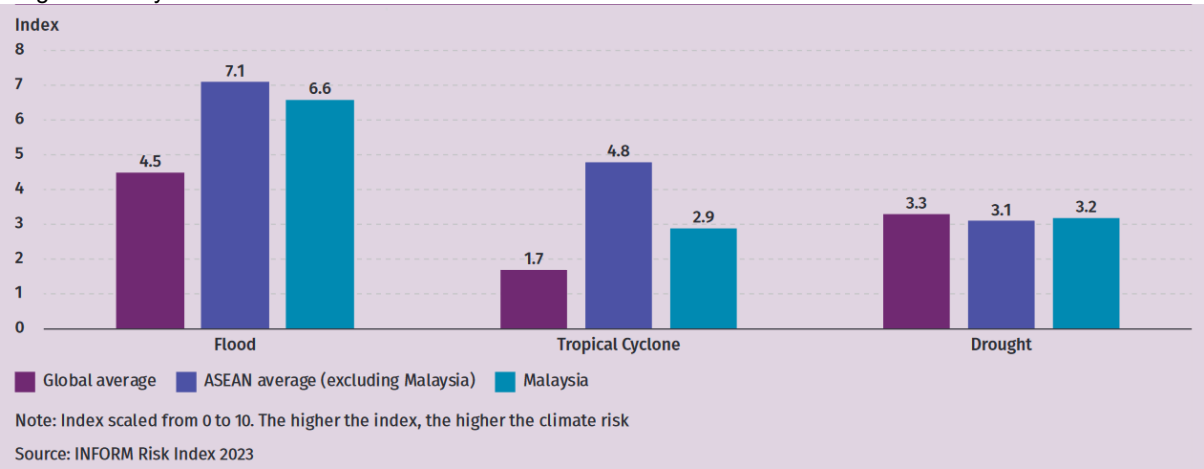


Source: Climate Risk Country Profile – Malaysia and the UN's 2021 publication, Disaster Risk Reduction in Malaysia: 2020 Status Report, World Bank Group and Asian Development Bank

1.2. Economic Impacts

Infrastructure damage, decreased agricultural production and elevated healthcare expenditures as a result of air pollution and other environmental variables are a few of the substantial economic effects that climate change may have. Diagram 2 shows the physical risks of natural disasters in Malaysia and the impacts on monetary value.

Diagram 2: Physical risks of natural disasters.

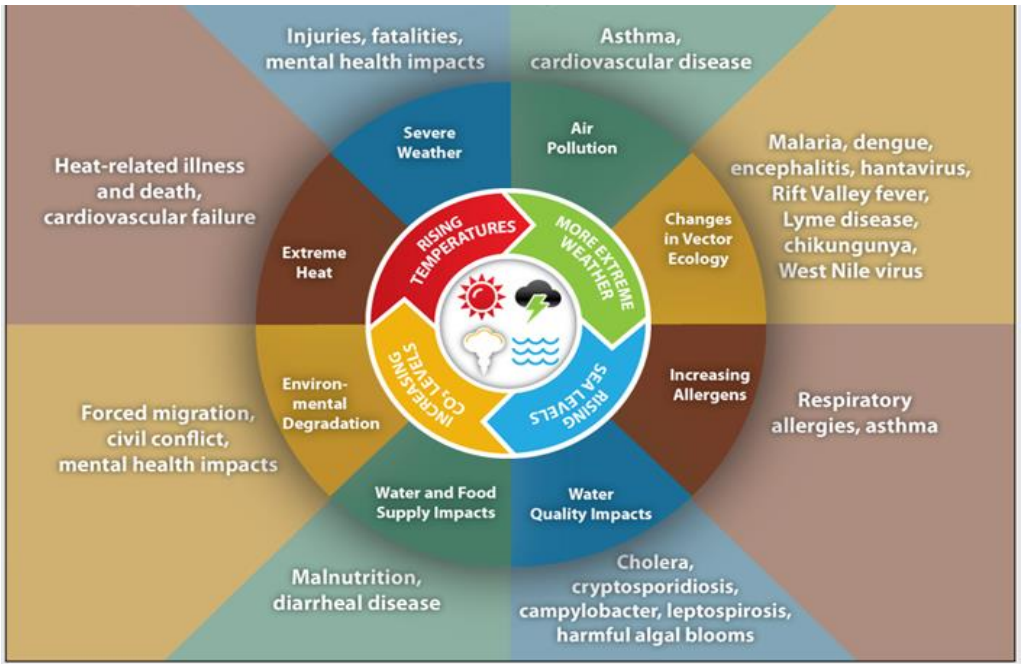


Source: Economic and Monetary Review 2022, Bank Negara Malaysia

1.3. Human Health Impacts

Climate change leads to heat waves, droughts and other extreme weather events, which can cause illness, injury and death. It can also exacerbate air pollution and the spread of infectious diseases. Diagram 3 explains the facts on the health impacts due to extreme temperature changes.

Diagram 3: Impacts of climate change on human health.



Source: Centers for Disease Control and Prevention. "CDC - Climate Change and Public Health - Climate Effects on Health". Cdc.gov, CDC, 2 Mar 2021

1.4. Social Impacts

Climate change can exacerbate social inequalities, such as access to resources and opportunities, which can lead to conflict and displacement. The social dimensions of climate change are summarised in Diagram 4.

Diagram 4: Social dimensions of climate change.

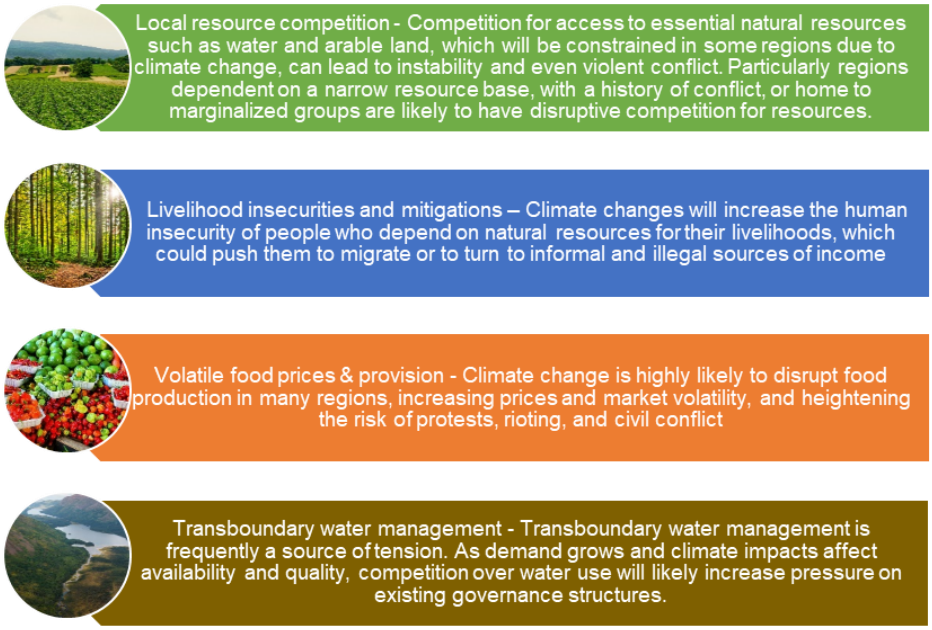
> "Climate change is deeply intertwined with global patterns of inequality. The poorest and most vulnerable people bear the brunt of climate change impacts yet contribute the least to the crisis. As the impacts of climate change mount, millions of vulnerable people face disproportionate challenges in terms of extreme events, health effects, food, water, and livelihood security, migration and forced displacement, loss of cultural identity, and other related risks."

Source: Social Dimensions of Climate Change. World Bank. (n.d.)

1.5. Impacts on Global Stability

Climate change is a global issue that affects all nations and regions, and its impacts can have geopolitical implications. It can lead to increased competition for resources and exacerbate existing conflicts. Diagram 5 summarises the impacts of climate change on global stability.

Diagram 5: Impacts of climate change on global stability.



Source: https://www.worldbank.org/en/topic/social-dimensions-of-climate-change#1

Appendix 2

2. Global Responses & National Commitments

2.1 Global Commitment to Climate Change

To address climate change, several global agreements and initiatives have been formulated or established, as shown in Diagram 6.

Diagram 6: Global agreements and initiatives to address climate change.

Global Agreements or Initiatives	Description
UNFCCC	o In 1992, the UNFCCC, which is a framework for international cooperation to combat climate change by limiting average global temperature increases and the resulting climate change, and to cope with impacts that were by then inevitable, was created. o The UNFCCC came into effect on 21 March 1994. o The 198 countries that have ratified the Convention are called Parties to the Convention. o By 1995, countries launched negotiations to strengthen the global response to climate change.
Kyoto Protocol	o The Kyoto Protocol was adopted on 11 December 1997 and entered into force on 16 February 2005. 192 countries joined the Parties to the Kyoto Protocol. o The Kyoto Protocol operationalised the UNFCCC by committing industrialised countries and economies in transition to limit and reduce GHG emissions in accordance with agreed individual targets. o It only bound developed countries under the principle of “common but different rated responsibility and respective capabilities" (CBDR-RC) because it was recognised that developed countries are largely responsible for the high levels of GHG in the atmosphere. o In its Annex B, the Kyoto Protocol set binding emission reduction targets for 37 industrialised countries and economies in transition and the European Union. o Overall, these targets added up to an average 5% emission reduction compared to 1990 levels over the five-year period from 2008 to 2012 under the first commitment period. o One important element of the Kyoto Protocol was the establishment of flexible market mechanisms, which are based on the trade of emissions permits. Under the Protocol, countries must meet their targets primarily through national measures. However, the Protocol also offers additional means for countries to meet their targets by way of market-based mechanisms:

	i. International Emissions Trading; ii. The Clean Development Mechanism (CDM); and iii. Joint Implementation (JI).
Doha Amendment (under the Kyoto protocol)	o On 8 December 2012, the Doha Amendment to the Kyoto Protocol was adopted for a second commitment period, starting in 2013, until 2020. o As of 28 October 2020, 147 Parties had deposited their instrument of acceptance; therefore, the threshold of 144 instruments of acceptance for entry into force of the Doha Amendment was achieved. The amendment entered into force on 31 December 2020. o The amendment included: i. New commitments for Annex I Parties to the Kyoto Protocol who agreed to take on commitments during the second commitment period from 1 January 2013 to 31 December 2020; ii. A revised list of GHG to be reported by Parties during the second commitment period; and iii. Amendments to several articles of the Kyoto Protocol which specifically referenced issues pertaining to the first commitment period and which needed to be updated for the second commitment period.
The Paris Agreement	o The Paris Agreement is a legally binding international treaty on climate change. o It was adopted by 196 Parties at the UN Climate Change Conference (COP21) in Paris, France on 12 December 2015. o It entered into force on 4 November 2016. The overarching goal is to hold "the increase in the global average temperature to well below 2°C above pre-industrial levels" and pursue efforts "to limit the temperature increase to 1.5°C above pre-industrial levels". o Implementation of the Paris Agreement requires economic and social transformation, based on the best available science. o The Paris Agreement works on a five (5)-year cycle of increasingly ambitious climate action – or ratcheting up – carried out by countries. o Since 2020, countries have been submitting their national climate action plans, known as Nationally Determined Contributions (NDCs). o Each successive NDC is meant to reflect an increasingly higher degree of ambition compared to the previous version. o An important element of the Paris Agreement is Article 6, which aims to establish an international compliance market where a host country can sell Internationally Transferred Mitigation Outcomes (ITMOs) to other countries, and this would be counted towards the purchasing countries' NDC targets.

United Nations Sustainable Development Goals (SDGs)	o The SDGs establish a framework for nations to structure their efforts to achieve sustainable development, with an emphasis on eradicating poverty, preserving the environment and fostering prosperity for all by 2030. Also known as Global Goals, the 17 SDGs were adopted by the United Nations in 2015. o Goal 13: Climate Action (Take immediate action to mitigate the effects of climate change).

2.2 The Malaysian Government's Climate Change Commitment

The Malaysian government has made several commitments in response to the global challenge of climate change. This section provides an overview of the commitments made by the Malaysian government.

2.2.1 Nationally Determined Contribution (NDC) to the United Nations Framework Convention on Climate Change (UNFCCC)

Malaysia is one of the countries that have submitted their NDCs to the UNFCCC as part of the commitment to the Paris Agreement. An NDC outlines a nation's climate change mitigation and adaptation efforts and its intended contributions towards achieving the goals of the Paris Agreement.

In July 2021, Malaysia submitted an updated NDC that intends to reduce its economy-wide carbon intensity (against its gross domestic product) by 45% in 2030, compared to the 2005 level. The updated NDC includes the following increased climate ambitions:

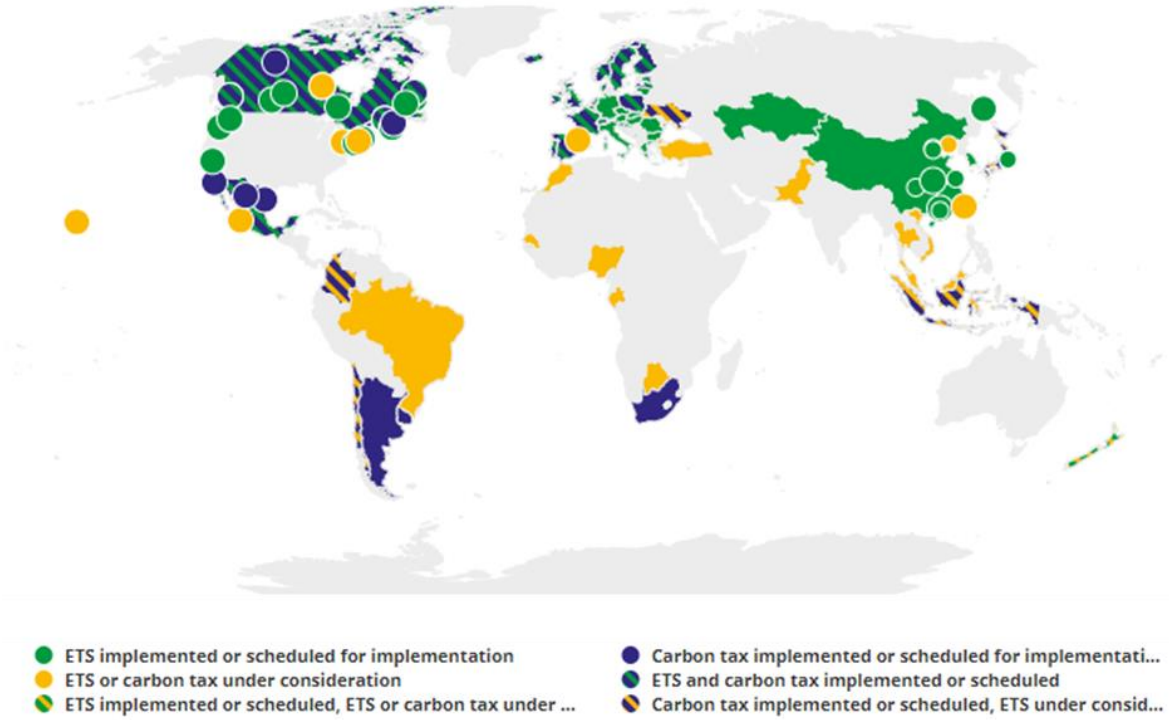
- 45% of the carbon intensity reduction is unconditional;
- The new target is an increase of 10% from the earlier submission;
- GHG coverage is expanded from three (3) to seven (7) gases: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF_6) and nitrogen trifluoride (NF_3);
- The adaptation component was expanded, with a particular focus on protecting biodiversity;
- Climate resilience was mainstreamed into urban planning; and
- A National Adaptation Plan and NDC Roadmap will be developed to help achieve Malaysia's NDC targets.

2.2.2 Compliance Carbon Market

Compliance carbon markets are created because of national, regional and/or international policies or due to regulatory requirements that compel countries to limit or reduce their GHG emissions. Compliance carbon markets can operate at international or domestic levels that function under government-mandated programmes or regulatory frameworks governed by international treaties or agreements such as the Kyoto Protocol and the Paris Agreement.

The Emission Trading Scheme (ETS) has become a crucial marketplace for the trading of carbon allowances that have been incorporated as part of the design of cap-and-trade systems in industrialised countries as a tool to promote accountability. Participation in the carbon markets became mandatory in these jurisdictions. The implementation of the ETS, including cap-and-trade programmes and carbon taxes, is shown in Diagram 7.

Diagram 7: Summary map of ETS and carbon tax implemented and/or scheduled for implementation.



Source: https://carbonpricingdashboard.worldbank.org/map_data

Examples of compliance carbon markets include the European Union Emission Trading System (EU ETS), the Western Climate Initiative (WCI) and the Regional Greenhouse Gas Initiative (RGGI).

Carbon tax, on the other hand, is a tool for policymaking that entails charging a fee for either the carbon content of fossil fuels or GHG emissions. This tax serves as a financial deterrent to entities emitting GHG and promotes the adoption of cleaner and more sustainable alternatives. The decision to implement either an ETS or a carbon tax hinges on a variety of factors, including policy objectives, political considerations and the unique circumstances of the jurisdiction implementing the measure.

The effectiveness of the Kyoto Protocol (an international agreement under the UNFCCC such as the CDM) has been limited due to several factors. The developed countries are legally bound by emission reduction targets. However, some major emitters have never ratified the agreement and several others have withdrawn or did not commit to further emission reduction commitments after the first commitment period. The Kyoto Protocol also did not include major emerging economies which have become significant contributors to global emissions in recent years. The Kyoto Protocol required strong enforcement mechanisms, making it challenging to ensure compliance with emission reduction targets. This weakened its effectiveness in driving substantial global emission reductions.

The NDCs are at the heart of the Paris Agreement and the achievement of its long-term goals. The Paris Agreement requires all Parties to put forward their best efforts through NDCs and to strengthen these efforts in the years ahead. NDCs outline the specific actions, targets and policies that countries will undertake to contribute to the global goal of reducing GHG emissions and adapting to climate change impacts. Parties shall pursue domestic mitigation measures to achieve the objectives of such contributions. NDCs are submitted every five years to the UNFCCC secretariat. To enhance the Parties' ambition over time, the Paris Agreement

provides that successive NDCs will represent a progression compared to the previous NDC and reflect their highest possible ambition.

2.2.3 Sustainable Development Goals (SDGs)

Malaysia has been actively involved in efforts to address these Goals and has undertaken various initiatives to mitigate climate change and promote sustainable practices. In 2010, Malaysia created the New Economic Model (NEM) to further solidify its commitment to pursuing sustainable development. The NEM is based on three (3) pillars: high income, inclusivity and sustainability, which correspond to the three SDG components of economics, social impact and environmental sustainability.

Malaysia has also committed to achieving the United Nations SDGs, including SDG 13 which focuses on climate action, as shown in Diagram 8.

Diagram 8: SDG Goal 13 targets.

"**Goal 13 Targets:**

Major Targets

13.1. Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.

13.2. Integrate climate change measures into national policies, strategies, and planning.

13.3. Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning

Additional Targets

13.a. Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly $100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible.

13.b. Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities."

Source: Goal 13: Climate action. The Global Goals. (2023, April 18)

The SDGs are in line with the national goals, having been incorporated into the Shared Prosperity Vision 2030 (SPV 2030) and the 12th Malaysia Plan 2021-2025 (12th MP), as shown in Diagram 9.

Diagram 9: National goals towards sustainability and climate action.

Source: Google search

Malaysia's commitment to reducing GHG emissions intensity by 45% in 2030, relative to its GDP, as outlined in the NDC under the Paris Agreement, aligns with its efforts towards achieving SDG Goal 13. By working towards this target, Malaysia is actively addressing climate change and its impacts.

The implementation of the SDG Goals in Malaysia will follow a systematic phased approach. The government's concerted efforts are meticulously delineated in the SDG Roadmap document. To effectively realise the SDG Goals, the Malaysian government has adopted a three (3)-phase strategy as illustrated in Diagram 10. This strategy reflects a resolute commitment to transform Malaysia into a nation characterised by sustainable growth and the just and impartial distribution of resources and opportunities across all segments of society.

Diagram 10: Timeline set for SDG 13.

Target	Phase 1 (2016-2020)	Phase 2 (2021-2025)	Phase 3 (2026-2030)
13.1	→	→	→
13.2	→	→	→
13.3	→	→	→
13.a	Not Relevant		
13.b			→

Source: SDG Roadmap for Malaysia developed by Economic Planning Unit, Prime Minister's Department

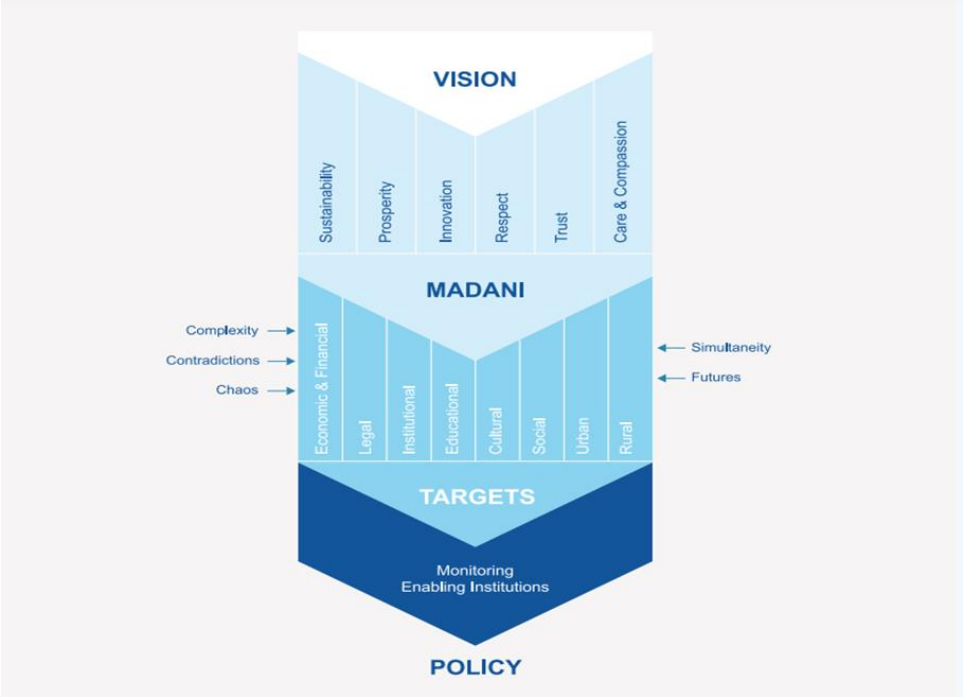
The endeavours towards sustainability and climate action have been seamlessly integrated into the 12th MP as a strategic framework and action plan, facilitated by the Ministry of Economics (formerly known as the Economic Planning Unit). This inclusion demonstrates a concerted effort to incorporate sustainability principles and climate-focused initiatives into the national development agenda. The strategy and priority areas on sustainability in national development, as well as the targets, are explained in Diagram 11.

Diagram 11: 12th Malaysia Plan priority areas & strategies.

Source: 12th Malaysia Plan

The 10th Prime Minister of Malaysia introduced Malaysia MADANI, which includes sustainability as one of the six (6) policy pillars to drive national development, as shown in Diagram 12. The Madani framework in Malaysia encompasses initiatives aligned with UN SDG 13 on climate action. The country faces rising concerns about food security caused by supply chain disruptions, extreme weather events, energy costs and limited access to imported food supplies. The National Food Security Policy (2021-2025) guides efforts to ensure sufficient food resources for every citizen by increasing domestic production, adopting technology and reducing dependency on imports. The government aims to modernise the agriculture sector, provide subsidies and incentives and support MSME agropreneurs to enhance crop production and food processing.

Diagram 12: The six (6) policy pillars of Malaysia Madani.



Source: https://budget.mof.gov.my/pdf/belanjawan2023/economy-fiscal/section4.pdf

To achieve net zero GHG emissions as early as 2050 and become a high-income nation, Malaysia will focus on enhancing natural carbon absorption, promoting renewable energy adoption and improving energy efficiency across sectors. The government will encourage the carbon accounting ecosystem and identify suitable carbon pricing mechanisms. Additionally, efforts to preserve healthy forests, soil and mangroves will reduce the impacts of natural disasters and contribute to food security. Conserving marine ecosystems, including mangroves and coral reefs, will increase fish and seafood stock while reducing risks to food security. Increasing tree cover and preserving natural forests will strengthen carbon absorption capabilities and support the net zero emissions goal. The Budget 2023 will allocate support for a flourishing and resilient natural environment, employing nature-based solutions to address disaster and food security issues while working towards net zero emissions.

Appendix 3

3. National Policy, Action Plans and Financing Support

3.1. The National Policy on Climate Change (NPCC)

The NPCC was first introduced in Malaysia in 2009 as a response to the growing concerns about the impacts of climate change on the country's economy, society and environment. The NPCC outlines Malaysia's overall strategy for addressing climate change and provides a framework for coordinated action across all sectors of the economy. The NPCC is guided by the principle of sustainable development and seeks to balance the needs of economic growth, social development and environmental protection.

The key objectives of the NPCC include:

a. Mitigating GHG emissions: Seeking to reduce Malaysia's GHG emissions by promoting the use of renewable energy, increasing energy efficiency and implementing other measures to reduce emissions across all sectors of the economy.

b. Adapting to the impacts of climate change: Seeking to enhance Malaysia's resilience to the impacts of climate change by promoting adaptive management strategies, enhancing the capacity of vulnerable communities to adapt and improving the management of natural resources.

c. Promoting low-carbon development: Seeking to support the development of a low-carbon economy by promoting the use of green technologies, improving resource efficiency and enhancing the competitiveness of Malaysia's industries in the global market.

d. Strengthening governance and institutional capacity: Seeking to improve the governance of climate change issues by enhancing coordination and collaboration among government agencies, non-governmental organisations and other stakeholders.

The NPCC has been instrumental in guiding Malaysia's climate change policy and has served as a basis for the development of other key policy documents, such as the National Adaptation Plan, Green Technology Master Plan 2017-2030, National Renewable Energy Policy and Action Plan and the Long-Term Low Emission Development Strategy (LT-LEDS). The policy framework outlined in the NPCC represents a critical step forward in Malaysia's efforts to address the challenges posed by climate change and build a more sustainable and resilient future for the country.

3.2. Malaysia Renewable Energy Roadmap (MyRER)

In 2021, the government set a target to reach 31% renewable energy (RE) share in the national installed capacity mix by 2025. This target supports Malaysia’s global climate commitment and the realisation of the government’s vision is crucial in supporting the nation in achieving the NDC targets. The scenarios and impacts are summarised in Diagram 13.

“The Malaysia Renewable Energy Roadmap (MyRER) was commissioned to support further decarbonization of the electricity sector in Malaysia through the 2035 milestone.

This is expected to drive a reduction in GHG emission in the power sector to support Malaysia in meeting its NDC 2030 target of 45% reduction in GHG emission intensity per unit of GDP in 2030 compared to the 2005 level, and further reduction of 60% in 2035."

Diagram 13: Summary of impacts on carbon emissions based on business-as-usual and new capacity target scenarios.

The Malaysia Renewable Energy Roadmap (MyRER) was commissioned to support further decarbonization of the electricity sector in Malaysia through the 2035 milestone. This is expected to drive a reduction in GHG emission in the power sector to support Malaysia in meeting its NDC 2030 target of 45% reduction in GHG emission intensity per unit of GDP in 2030 compared to the 2005 level, and further reduction of 60% in 2035.

Scenario 1

BUSINESS AS USUAL (BAU)

This scenario considers implementing existing policies and programmes without further extension and/or introduction of new programmes. The implementation of approved, committed and announced capacities under existing programmes (i.e., projects under the FiT, LSS and NEM programmes) will lead to 11.7 GW projected RE capacity in 2025. Share of renewables in the installed capacity shall reach 29% in 2025 with minimal future RE growth, resulting in 32% in 2035.

Scenario 2

NEW CAPACITY TARGET (NCT)

This scenario targets a higher RE capacity by 2035, with further decarbonization of the electricity sector in Malaysia. This scenario is aligned with the capacity development plan of Planning and Implementation Committee for Electricity Supply and Tariff (JPPPET 2020) for Peninsular Malaysia, JPPPET 2021 for Sabah and current outlook for Sarawak. This scenario is designed to achieve the national target of 31% RE share with 12.9 GW of RE installed capacity by 2025, while prioritizing system stability in the choice of RE technologies.

Post 2025 foresees greater RE deployment with RE target of 40% by 2035, in which penetration of solar during peak demand reaches 30%. Therefore, implementation of specific measures is required in ensuring system stability, including roll-out of energy storage technologies as well as improving system flexibility post 2025. These measures are expected to enable a shift towards flexible and dispatchable solar generation.

	Scenario BAU		Scenario New Capacity Target		
Impact of carbon emissions in P. Malaysia					
CO_2 emission (millions tonnes)	2025 **94.67**	2035 **88.23**	2025 **94.20**		2035 **78.35**
CO_2 intensity (tonnes/MWh)	**0.71**	**0.56**	**0.70**		**0.50**
CO_2 intensity ($kgCO_2$/GDP)			2025 **0.071**	2030 **0.053**	2035 **0.039**
Impact of carbon emissions in Sabah					
CO_2 emission (millions tonnes)	2025 **3.51**	2035 **3.56**	2025 **3.53**		2035 **3.10**
CO_2 intensity (tonnes/MWh)	**0.43**	**0.36**	**0.43**		**0.31**
CO_2 intensity ($kgCO_2$/GDP)			2025 **0.040**	2030 **0.031**	2035 **0.028**
Impact of carbon emissions in Sarawak					
CO_2 emission (millions tonnes)	2025 **11.38**	2035 **7.76**	2025 **11.38**		2035 **7.76**
CO_2 intensity (tonnes/MWh)	**0.32**	**0.19**	**0.32**		**0.19**
CO_2 intensity ($kgCO_2$/GDP)			2025 **0.062**	2030 **0.028**	2035 **0.028**

Source: MyRER 2020

Financial assistance has also been used to promote RE in addition to the aforementioned strategies. Since solar PV and wind energy technology costs have fallen significantly in recent years, financing support has shifted away from grants and tax breaks and towards expanding access to credit and the capital market, such as through Green Bonds programmes.

3.3. National Low Carbon Cities Masterplan (NLCCM)

The NLCCM was developed to guide state governments and local authorities in Malaysia in implementing low-carbon development and initiatives. Under this Masterplan, a total of 33 cities have been selected as target cities and been divided into three (3) Groups. Group 1 cities are expected to achieve a 33% reduction in absolute GHG emissions by 2030 and be carbon neutral by 2050 and Group 2 cities are expected to achieve a 33% reduction in absolute GHG emissions by 2035 and be carbon neutral by 2055, while Group 3 cities are expected to achieve a 33% reduction in absolute GHG emissions by 2040 and be carbon neutral by 2060. Diagram 14 shows the selected target cities.

Diagram 14: 33 selected target cities under the NLCCM.

Group 1	Group 2	Group 3
1. Hang Tuah Jaya Municipal Council	1. Alor Setar City Council	1. Kota Bharu Municipal Council
2. Iskandar Malaysia	2. Ampang Jaya Municipal Council	2. Kota Kinabalu City Hall
3. Iskandar Puteri City Council	3. Ipoh City Council	3. Kuala Terengganu City Council
4. Johor Bahru City Council	4. Kajang Municipal Council	4. Kuantan City Council
5. Kuala Lumpur City Hall	5. Klang Municipal Council	5. Sandakan Municipal Council
6. Kulai Municipal Council	6. Kuching North City Hall	6. Sungai Petani Municipal Council
7. Melaka Historic City Council	7. Kuching South City Council	7. Tawau Municipal Council
8. Pasir Gudang City Council	8. Miri City Council	
9. Penang Island City Council	9. Selayang Municipal Council	
10. Petaling Jaya City Council	10. Seremban City Council	
11. Pontian District Council	11. Subang Jaya City Council	
12. Putrajaya Corporation		
13. Seberang Perai City Council		
14. Sepang Municipal Council		
15. Shah Alam City Council		

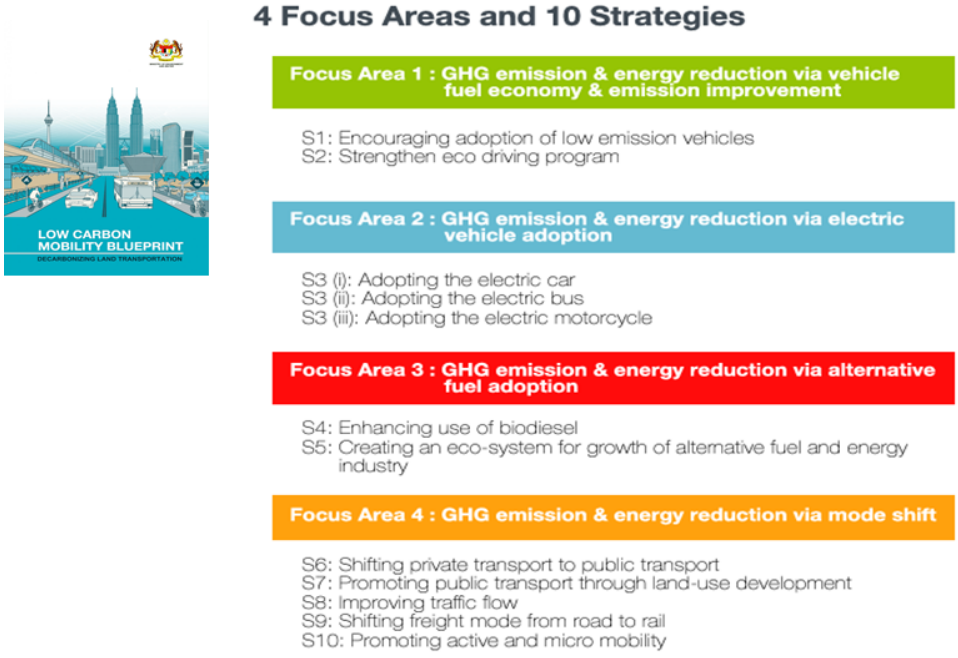
Source: National Low Carbon Cities Masterplan

3.4. Low Carbon Mobility Blueprint (LCMB) 2021-2030

The vision of the LCMB 2021-2030 is to drive emission reductions in the transportation sector, which currently ranks as the second-largest CO_2 emitter in the nation after the energy sector, contributing 25% to 30% of the nation's GHG emissions with predominantly internal combustion engines (ICE) vehicles on the road. The blueprint deploys a policy framework to mainstream the shift towards electrification in the transportation industry as a key strategy to diminish our emissions and contribute towards the achievement of Malaysia's NDC target.

There are four (4) main focus areas and ten (10) strategies in the LCMB, as shown in Diagram 15.

Diagram 15: Focus areas and strategies under the LCMB.



Source: Low Carbon Mobility Blueprint

3.5. Green Technology Financing Scheme (GTFS)

The government introduced the GTFS in 2010 to promote green investments by providing easier access to financing and at a lower financing cost. This scheme has contributed to a total of RM7.76 billion in green investment and 4.99 $MtCO_2eq$ of emission reductions in Malaysia. Details are covered in **Chapter 8**.

3.6. Green Tax Incentives

In tandem with the Malaysian government's agenda to drive the growth of Malaysia's green economy, the Green Technology Tax Incentive was introduced in 2014. The incentives aim to strengthen the development of green technology by providing investment tax allowances for the purchase of green technology equipment and income tax exemptions on the use of green technology services. Details are covered in **Chapter 8**.

List of Acronyms

12th MP	12th Malaysia Plan
ACoGS	Avoided Conversion of Grasslands and Shrublands
AF	Assessment Framework
AFOLU	Agriculture, Forestry and Other Land Use
ALM	Agriculture Land Management
AMS	Approved Methodology for Small-scale CDM project activities
APD	Avoided Plant Deforestation
APWD	Planned Wetland Degradation
ARR	Afforestation, Reforestation and Revegetation
ART TREES	Architecture for REDD+ Transactions, the REDD+ Environmental Excellency Standard
AUDD	Unplanned Deforestation
AUWD	Unplanned Wetland Degradation
AWMS	Animal Waste Management System
BAU	Business As Usual
BCR	BeZero Carbon Ratings
BCX	Bursa Carbon Exchange
BNM	Bank Negara Malaysia
BTR	Biennial Transparency Report
BUR	Biennial Update Report
BUR4	Fourth Biennial Update Report
CA	Corresponding Adjustment
CBDR-RC	Common But Different Rated Responsibility And Respective Capabilities
CBM	Coal Bed Methane
CBU EV	Completely Built-Up Electric Vehicle
CCB	Climate Community Biodiversity
CCPs	Core Carbon Principles
CCQI	Carbon Credit Quality Initiatives
CCS	Carbon Capture and Storage
CDC	Centers for Disease Control and Prevention
CDM	Clean Development Mechanism
CER	Cost-Effectiveness Ratio
CERs	Certified Emission Reductions
CFL	Compact Fluorescent Lamp
CH_4	Methane
CHP	Combined Heat and Power
CKD EV	Completely Knocked Down Electric Vehicle
CO_2	Carbon dioxide
CO_2eq	Carbon dioxide equivalent
COD	Chemical Oxygen Demand
COP21	2015 United Nations Climate Change Conference
COP26	2021 United Nations Climate Change Conference
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
CPO	Crude Palm Oil
CSI	Centralised Sustainability Intelligence
CSP	Carbon Study Permit
CTC	Certified True Copy
CVD	Chemical Vapour Deposition
EFBs	Empty Fruit Bunches

EPU	Economic Planning Unit
ESG	Environmental, Social and Governance
ETS	Emission Trading Systems
EU ETS	European Union Emission Trading System
EVs	Electric vehicles
FBM100LC	FTSE Bursa Malaysia Top 100 ESG Low Carbon Select Index
FBM100LS	FTSE Bursa Malaysia Top 100 ESG Low Carbon Select Syariah Index
FCC	Forest Conservation Certificate
FCL	Carbon Licence
FCO	Forest Carbon Offset
FFB	Fresh Fruit Bunches
FiAHs	Feed-in Approval Holders
FiT	Fit-in Tariff
FPIC	Free, Prior and Informed Consent
FRIM	Forest Research Institute Malaysia
FRL	Forest Reference Level
GCC	Global Carbon Council
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GIS	Geographic Information System
GITA	Green Investment Tax Allowance
GITE	Green Income Tax Exemption
GNC+	Global Nature-Based Plus Carbon Contract
GS	Gold Standard
GS4GG	Global Standard: Global Goals
GTC	Global Technology-Based Carbon Contract
GTFS	Green Technology Financing Scheme
GTFS4.0	Green Technology Financing Scheme 4.0
GWP	Global Warming Potential
HFC 23	Hydrofluorocarbon-23
HPPO	Hydrogen Peroxide-based Propylene Oxide
ICAO	International Civil Aviation Organization
ICE	Internal combustion engines
ICVCM	Integrity Council for the Voluntary Market
IFM	Improved Forest Management
IPCC	Intergovernmental Panel on Climate Change
IPPU	Industrial Processes and Product Use
ISCC	Integrated Solar Combined Cycle
ITA	Investment Tax Allowance
ITMOs	Internationally Transferred Mitigation Outcomes
JI	Joint Implementation
KML	Keyhole Markup Language
KYC	Know-Your-Customer
LCMB	Low Carbon Mobility Blueprint
LCTF	Low Carbon Transition Facility
LDC	Least Developed Countries
LED	Light-emitting diode
LFG	Landfill Gas

LNG	Liquefied Natural Gas
LSS	Large-scale Solar
LT LEDS	Long Term Low Emission Development Strategy
LtHP	Low-productive forest to high-productive forest
LtPF	Logged to Protected Forest
MFF	Malaysia Forest Fund
MGTC	Malaysia Green Technology and Climate Change Corporation
MOL	Methane Oxidation Layer
MPOB	Malaysian Palm Oil Board
MRTS	Mass Rapid Transit System
MRV	Monitoring, Reporting and Verification
MSME	Micro, Small & Medium Enterprises
MSW	Municipal Solid Waste
MW	Megawatt
MyEPI	Environmental Performance Index
MyRER	Malaysia Renewable Energy Roadmap
N_20	Nitrous Oxide
NBS	Nature-Based Solutions
NCS	Nature Climate Solutions
NCS REDD Plus	National Steering Committee on REDD Plus
NDC	Nationally Determined Contribution
NEM	New Economic Model
NETR	National Energy Transition Roadmap
NF_3	Nitrogen Trifluoride
NGOs	Non-Governmental Organisations
NLCCM	National Low Carbon Cities Masterplan
NPCC	National Policy on Climate Change
NRS	National REDD Plus Strategy
NRECC	Ministry of Natural Resources, Environment and Climate Change
NSCCC	National Steering Committee on Climate Change
NTC REDD Plus	National Technical Committee on REDD Plus
ODS	Ozone-Depleting Substances
OIMPs	Other International Mitigation Purposes
OTC	Over-the-counter
PACOS	Partners of Community Organisations in Sabah
PAI	Project Activity Instance
PD	Project Description
PDD	Project Design Document
PFCs	Perfluorocarbons
PoAs	Programmes of Activities
POME	Palm Oil Mill Effluent
PRF	Permanent Reserve Forest
PUF	Poly Urethane Form
PV	Solar Photovoltaic
PVC	Plan Vivo Certificates
RE	Renewable Energy
REDD	Reducing Emissions from Deforestation and Forest Degradation
REDD+	Reducing Emissions from Deforestation and Forest Degradation - plus
REDD+MF	REDD+ Methodology Framework
REPPA	Renewable Energy Power Purchase Agreement

RFF	REDD Plus Finance Framework
RGGI	Regional Greenhouse Gas Initiative
RIL	Reduced Impact Logging
RPVI	Registered Photovoltaic Investor
RWE	Restoring Wetland Ecosystems
SCAC	Sabah Climate Change Action Council
SCADA	Supervisory Control and Data Acquisition
SD VISta	Sustainable Development Verified Impact Standard
SDG	United Nations Sustainable Development Goals
SEARRP	South-East Asia Rainforest Research Partnership
SEDA	Sustainable Energy Development Authority
Selco	Self-Consumption
SF_6	Sulphur Hexafluoride
SGM	Sustainable Grassland Management
SMEs	Small and Medium Enterprises
SPDD	Sarawak Project Design Document
SPV 2030	Shared Prosperity Vision 2030
SUZ	Special Underdeveloped Zone
SWDS	Solid Waste Disposal Site
TBS	Technology-based Solutions
TWGs	Technical Working Groups
UHI	Urban Heat Island
UMT	Universiti Malaysia Terengganu
UNFCCC	United Nations Framework Convention on Climate Change
UniSZA	Universiti Sultan Zainal Abidin
UPEN	The State Economic Planning Unit
VCM	Voluntary Carbon Market
VCS	Verified Carbon Standard
VCU	Voluntary Carbon Unit
VER	Verified Emission Reduction
VVB	Validation/Verification Body
WCI	Western Climate Initiative
WRC	Wetland Restoration and Conservation
WtE	Waste-to-Energy
WWF	World Wide Fund for Nature
WWTS	Wastewater Treatment System