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Unlocking Global Emission Reduction Credit Demand: Guidance for Countries in Assessing ERC Projects






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Chapter I
INTRODUCTION

1.1 Overview of World Bank's Emission Reduction Program

As the world continues to grapple with the impacts of climate change, the urgent need to reduce carbon emissions has driven the use of carbon pricing instruments and trading of emissions reduction to create the incentives needed to meet emissions reduction targets established by Governments (eg Nationally Determines Contributions or NDCs under the Paris Agreement) and by businesses (eg Net Zero commitments). Developing countries, in particular, are wrestling with the creation of domestic systems to meet NDCs while also benefiting from the global emission reduction credit (ERC) markets that can help mobilize critical capital to help fund ER projects.

While some countries have made progress in this area, there is still a significant amount of work to be done to meaningfully reduce emissions and meet the increasingly rigorous standards of buyers seeking high-quality Emission Reduction Credits (ERCs). These Guidelines are focused on countries wishing to access global markets to monetize ERCs. While there are key synergies between efforts to access global ERC markets and domestic systems to meet climate targets, these Guidelines focus on the former. For further guidance on domestic systems and markets, please see www.pmiclimate.org.

Global ERC markets are set to grow in importance in the coming years. According to the Shell-BCG report[1], 'The voluntary carbon market: 2022 insights and trends', global ERC demand is expected to grow by 5-20x by 2030, with voluntary ERC demand volume reaching up to 0.5-1.5 GtC02e and the overall market size projected to reach USD 10-40Bn. The Shell-BCG report also reveals that Monitoring, Reporting, and Verification (MRV) is ranked by 91% of corporates surveyed as one of the top three most important criteria for their ERC purchases, driven by the need to manage risks associated with buying ineffective credits. Furthermore, 52% of corporates surveyed expect removal credits to make up most of their portfolio by 2030 to address quality concerns. It is therefore clear that countries must establish reliable and effective frameworks for ERC trading to ensure that credits traded meet the highest standards of quality and transparency.

Through the establishment of an Emission Reduction Program (ERP), the World Bank aims to help developing countries to engage strategically with evolving global ERC markets, support efforts to generate ERCs to sell into these global markets, and mobilize finance for such transactions. To achieve this objective, the ERP will focus on increasing interest and efforts to develop, implement, and fund ERC-generating projects among countries, businesses, and local communities. By providing support in these areas, the ERP aims to help countries leverage the benefits of ERC markets, including increased revenue streams, reduced emissions, and improved environmental sustainability.

The ERP is starting with countries in East Asia and the Pacific (EAP), as a region with a variety of emission reduction opportunities and well placed to be at the forefront of global ERC development and will be rolled out to other regions globally.

The ERP includes two main workstreams. **Workstream One** is focused on ERC market development, by providing governments with access to knowledge and technical assistance. It incorporates analysis and recommendations around legal and institutional frameworks, governance models, policies, and infrastructural and resource capacity for accessing global ERC markets, as well as ways to synergistically align domestic markets with a global

[1] https://www.shell.com/shellenergy/othersolutions/carbonmarketreports.html

ecosystem. Under this workstream, the Guidelines for Assessing Country Systems for Global Carbon Markets has been developed alongside this paper.

Workstream Two is targeted at supporting ERC generation in participating countries. It is designed to support the creation and generation of ERCs, offering guidance and implementation assistance for project selection and preparation. It is also targeted at mobilizing relevant finance to sustain the generation of ERCs over time, incorporating a wide range of financing mechanisms.

These Project Assessment Guidelines aim to provide a comprehensive and adaptable guide to identify and develop ERC projects and investments in order to generate high-quality ERCs to be sold in global markets, under Workstream Two of the ERP. These can be used in parallel with the Guidelines for Country System Assessments, under Workstream One of the ERP.

1.2 Introduction to Emission Reduction Credits

Emission reduction credits (ERCs) can be a key component of a country's decarbonization strategy, enabling them to avoid/mitigate greenhouse gas emissions, and attract climate finance and capital for the development and protection of communities and ecosystems.

An Emission Reduction Credit (ERC) represents a standard unit to measure an emission reduction equivalent to one metric ton of carbon dioxide (tCO2e). Emission reductions credits can be generated through either avoidance or removal projects. Avoidance involves activities that reduce emissions by preventing the release of carbon dioxide or other greenhouse gases into the atmosphere. Examples include the construction of renewable energy capacity rather than fossil fuel-based infrastructure and avoided deforestation/REDD+ projects. Removals refer to activities that pull carbon dioxide out of the atmosphere such as GHG sequestration via reforestation or climate smart agriculture.

ERCs can be generated via three types of crediting programs:

(1) **Multi-lateral crediting mechanisms** established by multilateral agreements or platforms, such as the Clean Development Mechanism (CDM) set up under the Kyoto Protocol, which will be replaced by a new mechanism under Article 6.4 of the Paris Agreement;

(2) **Domestic crediting mechanisms** established by governments; and

(3) **Independent crediting mechanisms** established by non-state actors such as Verra, Plan Vivo and Gold Standard.

The generation of an ERC requires a **certification standard, a measurement, reporting, and verification mechanism (MRV)** and an authorization entity to approve of its issuance. **Issuance refers to a specified quantity of serialized units of ERCs being deposited into project participants' accounts** under the registry system operated by the certification standard providing its accreditation.

- **Certification Standard** outlines a set of detailed requirements that must be met for a mitigation activity to generate ERCs against that standard. Standards are typically established under a specific crediting program; for example, a few prominent certification standards under independent crediting mechanisms are Gold Standard, Verra, and PlanVivo, to name a few. Domestic or national crediting programs, on the other hand, could set up their own certification standards; for example, Australia's Emissions Reduction Fund (ERF) implemented the Australia Carbon Credit Unit (ACCU) scheme, which governs their own certification mechanism.

- **MRV** is the methodologies and audit processes used to verify that the project is delivering upon its stated benefits, both during and after the implementation of the project.

- **Authorization entity** is the entity responsible for providing the final approval on an ERC project and the issuance of ERCs. The entity can be ministries such as the Ministry of Environment, the entity that manages the certification/MRV standard, the Central Government, and/or others.

The quality and integrity of an ERC is dependent upon the robustness of the certification standard and the MRV mechanism. A high-quality ERC meets the following requirements:

- **Additionality:** Ensuring that the emission reductions achieved by the project are additional to what would have happened if the project had not been carried out (business as usual scenario)

- **Permanence:** Ensuring that the emission reduction outcomes achieved as a result of the ERC project are not reversed in the future. For ex. ensuring that a planted forest is not cleared in the future

- **Avoidance of Double Counting:** Ensuring that only one party uses the ERC towards its decarbonization goals and/or compliance targets (e.g., corresponding adjustments)

- **Measurable and Verifiable:** Ensuring the use of an approved methodology to calculate and monitor the emission reduction

ERCs once issued can be traded through trading platforms and exchanges, or through direct purchases (over the counter). The ERCs can be sold either in the compliance or the voluntary market, depending on the crediting program they are generated by. This is firstly determined by whether the ERC is authorized by the host country to meet its Nationally Determined Contribution (NDC) goals or be sold to other countries to attract climate related investments. The authorization of ERCs to be used by another country to meet their NDCs is governed by Article 6 of the Paris Agreement, which was introduced in 2015. Under the Paris Agreement, Parties set non-binding climate targets through their Nationally Determined Contributions (NDCs). Article 6 of the Paris Agreement recognizes cooperation among countries for achieving their NDCs and raising climate ambition. Article 6.2 lays down guidelines for the trading and accounting of ERCs, to be implemented by individual countries. Article 6.4 will establish a new international crediting mechanism replacing the CDM and Joint Implementation (JI) crediting mechanisms created by the Kyoto Protocol.

The authorization of ERCs under Article 6 enables the trading of ERCs at a government to government level, where such ERCs are called Internationally Transferred Mitigation Outcomes or ITMOs[2]. A host country must first decide whether to retain ERCs generated domestically to use against its own NDC targets or to trade some of these ERCs with a buying country to count towards their NDC goals. **Where the buying country is allowed to use the ERC for their NDCs, a corresponding adjustment (CA) must be made that stipulates that the party selling the ERCs must not count these ERCs towards its own NDC goals and should subtract it from its inventory of ERCs**. This ensures that the emission reductions are not "double counted" towards the NDCs of two countries. ERCs with corresponding adjustments can be traded at a government-to-government level, or to foreign-based corporates for their compliance obligations.

Where ERs are sought to satisfy government obligations to reduce emissions, for example through regulatory obligations, or carbon taxes, this is known as a **Compliance Carbon Markets (CCM)** as the ER obligation is legal. There are two types of CCMs, at a domestic or international level.

Domestic compliance markets refer to regulated systems where national, regional, or provincial authorities mandate emissions sources to comply with GHG emission reduction requirements such as their NDC. For example, national and regional governments may establish emission trading systems (ETS) to ensure compliance with mitigation outcome targets and incorporate mechanisms to facilitate the trading of ERCs. These typically drive the set-up of **domestic crediting mechanisms**. Domestic compliance markets could also be established via carbon taxes, where governments stipulate regulations for the use of ERCs in lieu of taxable emissions. Where ERCs are not transferred to offset emissions outside of its host country, Article 6 authorization and CAs may not be required for compliance by the host country for domestic NDC purposes or by corporates for domestic compliance obligations.

At an international level, compliance markets have been implemented for high-emission sectors where rules are set by global industry associations. For example, the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) was established by the International Civil Aviation Organization to set standards for the use of ERCs to compensate for the aviation sector's emissions above 2020 levels, requiring that airlines based in participating member states monitor, report and compensate for their emissions.

On the other hand, the **Voluntary Carbon Market (VCM)** is primarily driven by demand from non-state actors, such as corporations, institutions, and individuals that wish to offset their greenhouse gas (GHG) emissions or contribute to the reduction of GHGs within their jurisdictions. **Unlike the CCM, activity in the VCM is not currently regulated by a state or supervisory body.** Therefore, demand is driven by voluntary buyers, who may have varied objectives.

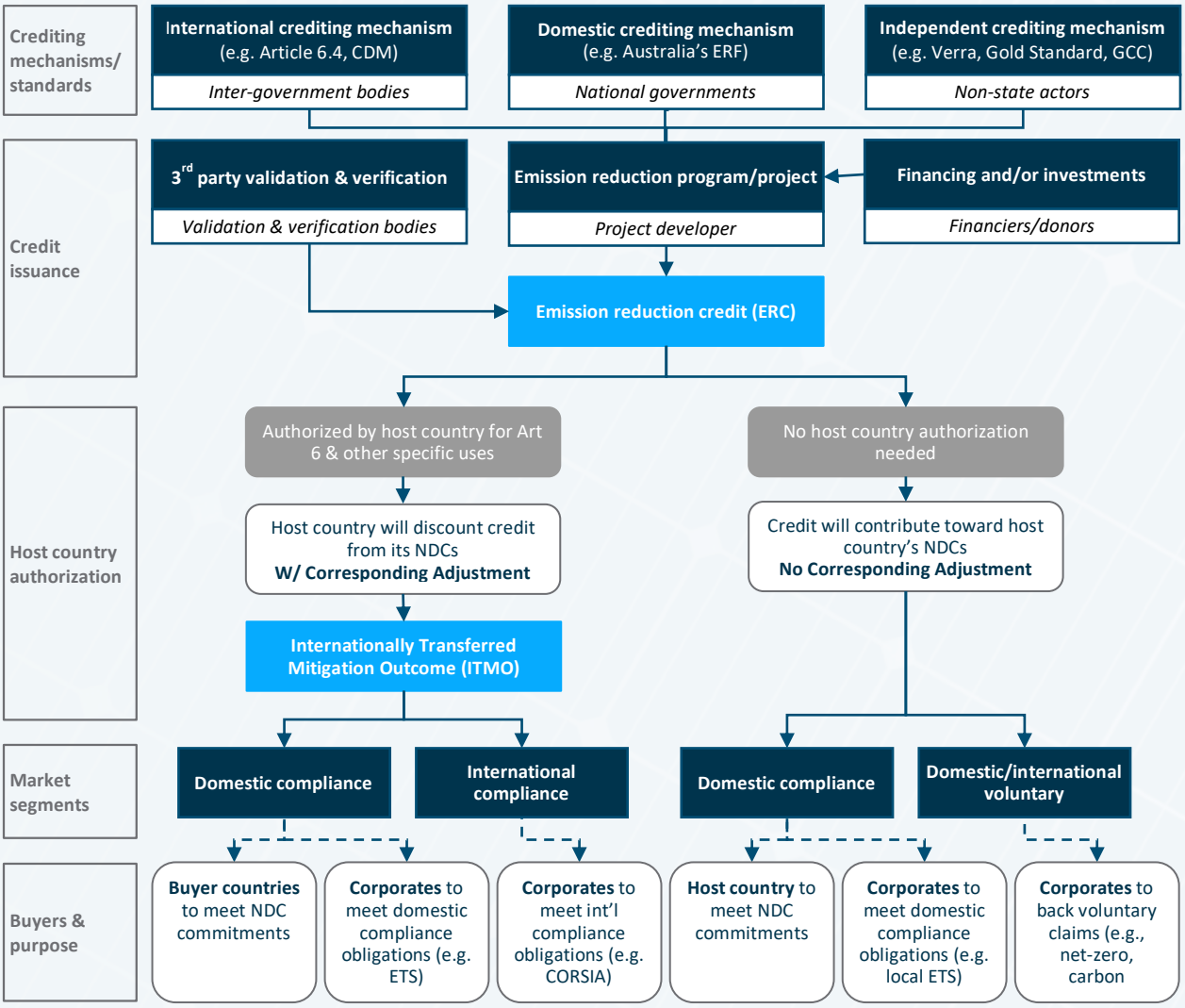
Independent crediting mechanisms are the key platforms for setting standards for the eligibility and MRV requirements for the VCM. As the rules around Article 6 evolve and the interactions between CCMs and the VCM become increasingly intertwined, some of these crediting mechanisms may choose to label units to indicate the eligible uses or claims or highlight other key attributes. For example, ERCs issued under some of these certification

[2] Such bilateral or multilateral trades would also require the trading parties to arrive at a common understanding of key attributes such as permanence, additionality, avoidance of double counting and establish robust MRV systems to ensure that the ERCs are high-quality and accepted under the conditions of Article 6.

standards without CAs are labelled as 'non-authorized', which can help indicate the use of ERCs for compliance obligations where ERCs from independent crediting mechanisms are accepted. Labeling can therefore help distinguish among different use cases by transparently listing the characteristics of units. These labels and use cases are still evolving and are expected to become more well-defined over time.

In essence, ERCs are generated by three types of crediting programs that can be authorized or not authorized for Article 6 transactions, including for CAs, which then determines its eligibility for use under various domestic and voluntary carbon markets. Across these, **the development, issuance, and trading of ERCs involves coordinated action among various stakeholder groups in the ERC ecosystem. (Figure 1.1)**

Figure 1.1: The ERC Ecosystem



The key stakeholder groups are:

- **Governments**: Ministries and Government bodies in country that regulate and enable the market through direct and complementary policies, defining the requirements around the development, issuance and trading of ERCs.
- **Credit Buyers**: companies and organizations that purchase ERCs either directly or through retailers and brokers. Based on their needs, credit buyers can fall into two categories:
    - **Voluntary Buyers**: Purchase ERCs to meet voluntary climate commitments (e.g., carbon-neutral, net-zero commitments)
    - **Compliance Buyers:** Purchase ERCs to meet requirements set by a regulator/government agency to reduce or avoid emissions usually for a set compliance period (e.g., ETS, cap-and-trade, carbon taxes)
- **Market Intermediaries:** organizations, institutions and platforms that facilitate financing against ERC generating projects or initiatives. These include:
    - **Financiers (Lenders, Asset Managers and Social Impact Funds)** that provide financing to a project either in the form of loans or as investments.
    - **Retailers/Brokers** that purchase ERCs on behalf of end buyers based on requirements such as type of project, volume of ERCs, certification standard etc.
    - **Trading Platforms (Carbon Exchanges)** which facilitate the sale of ERCs.
    - **Donors (Countries, Funds, Multilateral Organizations, and Concessional Finance)** that provide funding to projects based on their respective charters, international commitments, and resources.
- **Suppliers:** organizations that can provide, certify and feed ERCs into the market. These are mostly:
    - **Project Developers** that are responsible for identifying, developing, and executing a project end to end to ensure the avoidance and/or removal of carbon resulting in ERC asset generation.
    - **Validation and Verification Bodies (VVBs)** that are independent bodies that assess whether a project meets pre-defined standards and verify the progress over the lifecycle of the project.

1.3 Objective of these Guidelines

The Guidelines are designed to provide practical and implementable guidelines for governments to select ERC projects that are most likely to attract high demand and best-value pricing, and identify key elements related to

the project's governance and sales strategy that will enable the project to achieve its value potential. The Guidelines and Framework draw upon insights from global Voluntary Carbon Market (VCM) standards, industry standard-setting bodies[3], research institutions, and successful case studies, to identify best practices and attributes for high-quality ERCs at an international level. These best practices and attributes reflect the expectations of buyers in the VCM, who would be concerned about the integrity of the offsets they purchase, the impact of the project, and the assurance that potential reputational risks of supporting the project are minimized. The Guidelines can be applied in a manner and to the extent that it meets the objectives of its use case, where the optionality for varied uses has been built into its design. Potential use cases for governments could include identifying projects or programs for support, or to inform policy and implementation decisions related to VCM engagements.

Project or program-level support

The Guidelines can be applied to review a pipeline of projects, assess the potential of an individual project or program in consideration of its eligibility and viability for ERC generation, or select projects with the most likely value-for-money ERC development opportunities. For assessments at a program-level, most criteria can be assessed using an objective-based approach to determine if, and to what extent, the projects under the program as a whole meet the objective of the criteria based on the guideposts provided.

In addition, while it is recommended to follow the 4-step process for conducting the assessments proposed in Section 1.4, the two-levels of assessments can also be taken separately. The shorter analysis – represented by the Project Profile – is meant to provide an early sense of the project's ERC value potential and alignment to the country's priorities, while the more detailed analysis – represented by the Project Assessment – will entail a deeper review into the project's attributes and mechanisms relative to best practices and is expected to require more resource capacity.

In the case that the longer assessment is preferred, bypassing the need for the shorter analysis, the Strategic National Alignment criteria described in Section 1.3 can be extracted to add to the initial profiling. In the same regard, in the case that the shorter analysis is preferred, the Quality Execution criteria can be used to complement the assessment. It should also be noted that Project Assessments are estimated to take 5x longer to complete compared to the Project Profile. Conducting Project Assessments without an early sense of their viability as would be provided by the Project Profile will mean that limited analysis resources may be spent on non-viable Projects.

The outcome of these applications could be, for example, to channel funding or resource support for these projects or programs through capability building, incentives, access to capital, and other ERC-generation support initiatives. Based on the targeted outcome of the exercise and the availability of project information, the importance and consideration of each criterion in the Framework described in Section 1.3 and the data parameters used to assess the project's closeness to best practice for each criterion can be tailored accordingly when assessing projects or programs. The following examples explore how governments may approach the application of these Guidelines based on their targeted outcomes:

[3] These include organizations such as the Integrity Council for the Voluntary Carbon Market (ICVCM) and the International Carbon Reduction and Offsetting Accreditation (ICROA).

- Governments intending to have financial interest in the projects or considering co-financing the project may place look to the project's financial value to decide on the project's prioritization.
- Governments intending to prioritize the potential of the Projects to contribute to the national decarbonization agenda may exclude the analysis of the project's economic value and assess the project's potential against its expected ERC volume instead.
- Governments intending to position themselves as a globally-leading, credible suppliers of VCM projects may decide on the project's prioritization based on its robustness of ensuring core carbon-quality principles.
- Governments concerned with a project's broader contributions to national and sectoral objectives may anchor the exercise on the project's strategic national alignment.

These can also be adjusted dynamically as and when priorities shift or when the level of project information available changes, by selecting a set of criteria for conducting the analysis based on its utility or relevance.

Inform policy and implementation decisions

The Guidelines can also be leveraged to inform governments of important considerations for developing policies and regulations surrounding the development of VCM projects in-country by private sector participants or other organizations. For example, to support the development of a national MRV and crediting system, the government can propose criteria for MRV infrastructure that project developers should have to be approved or registered, using elements of the guideposts proposed where relevant. Other criteria such as environmental and social risk management can also provide a reference point for governments to consider building into their regulations for project implementation approval. In this case, the application of these Guidelines may involve focusing less on the ratings assigned to the project across the different criteria, and may instead be used to understand the common themes and gaps in local ERC projects, to inform the policy and regulation development.

These Guidelines are recommended for use by governments to support climate financing objectives, in relation to the carbon markets. Hence, they are intended to be complementary to the different programs and initiatives offered by the World Bank in relation to climate policy and financing, including:

Fund/Initiative/Program	Fund/Initiative/Program Objective
Climate Support Facility	Integration of long-term climate considerations into the World Bank's advisory services and operations, including support to expedite project preparation and facilitate post-COVID green stimulus projects. https://www.worldbank.org/en/programs/climate-support-facility
Partnership for Market Implementation Facility	Support countries to build capacity and supports scaling up of carbon pricing instruments, including international carbon markets. www.pmiclimate.org
Scaling Climate Action by Lowering Emissions	Aim to be one-stop shop for deploying results-based climate finance to drive transformative climate action at scale for countries' mitigation efforts. www.worldbank.org/en/programs/scale

The Climate Warehouse	Produce analytical and technical outputs to enable participation in Article 6 transactions by the WB's client countries and shape the next generation of climate markets, specifically prototypes, tests, and develops digital infrastructure to foster greater transparency, trust, and integrity in the carbon markets. www.theclimatewarehouse.org
Climate Market Club	A forum for discussion and consensus for a group of national governments and non-sovereign members that agree on common principles on how different elements of Article 6.2 of the Paris Agreement can be piloted. www.theclimatewarehouse.org/work/climate-market-club
Mitigation Action Assessment Protocol (MAAP)	A tool to evaluate the risks and performance of climate actions and policies in relation to their design, capacity, financial sustainability and development benefits across 3 major modules: (1) Programs and projects; (2) Carbon Pricing Instruments; and (3) International Transfer Readiness. https://maap.worldbank.org/
State and Trends of Carbon Pricing	Annual World Bank publication that provides up-to-date overview of existing and emerging carbon pricing instruments around the world, including international, national and subnational initiatives on an annual basis. https://openknowledge.worldbank.org/entities/publication/58f2a409-9bb7-4ee6-899d-be47835c838f

1.4 Introduction to the Project Assessment Framework[4]

Framework for the identification and selection of high-quality ERC projects, most likely to attract high demand and best value pricing

Figure 1.2. Project Assessment Framework

The Project Assessment Framework consists of four overarching objectives that set 11 assessable criteria to evaluate the project's attributes and mechanisms in alignment with global market best practices and national priorities. [Figure 1.2.]

Financial Value: The first objective of the Framework seeks to identify potential high-value projects based on key value drivers for ERCs. This objective considers two components that reflect a project's financial value:

- **Project ERC value:** Project's ERC revenues demonstrate high potential, and value net of costs gives positive net present values (NPV) considering varied scenarios across pricing, volume, and costs.
- **Additional value enabled by project:** Project enables additional value beyond ERC revenue, in either non-ERC revenue generated that is enabled by the project activity, or from cost savings due to the resources saved by the project activity.

[4] This section provides an overview of the criteria used for the two levels of project assessment described in Section 1.4. Users of the guidelines that are familiar with the terms and concepts in the carbon markets may proceed directly to Section 1.4, which focuses on the project assessment process.

Carbon Integrity & Environmental and Social Risk Management: The second objective of the Framework ensures that core principles and risk management measures are in place for the project to generate ERCs above a minimal standard, and that any risk factors that could affect the quality of the ERCs can be addressed. This objective is guided by three fundamental carbon-quality criteria:

- **Carbon integrity:** Project meets core carbon integrity principles for generating ERCs that are additional, measurable, permanent, independently verified, unique, and real.
- **Environmental risk management:** Project identifies and has risk management measures for potential environmental impact to ensure no net harm.
- **Social risk management and benefits:** Project design considers stakeholders and social impact and has legal rights to carry out project activities; Clear mechanisms for engagement and equitable benefits in a transparent and inclusive manner are planned for the project's design and implementation.

Quality Execution: The third objective intends to provide assurance that the potential value of the project can be secured in implementation. This requires the project to generate ERCs that are perceived as high-quality in the VCM and to secure buyers at an optimum target price. This objective therefore first examines the set-up of the project's MRV infrastructure and plans regardless of its project type and activities, and is distinct from the second objective, which looks at the project's carbon integrity risks given the nature of its project activities and the emission reductions or removals it generates. Second, it looks at the potential of the project to secure its value and target demand given its go-to-market strategy. Finally, it considers the governance and track record of the project team to ensure the project's continuity and provide confidence to buyers that the project's impacts will be sustained, and that buying its ERCs will not result in reputational risks. To this end, the analysis examines three key quality execution criteria:

- **MRV infrastructure:** Project's mechanisms for enabling carbon integrity are robust and transparent for the project type.
- **Marketing, sales, and pricing:** Strategy and partners engaged for bringing project to buyers are credible to market project's value and quality.
- **Project governance and structure:** Project team is well resourced and appropriately organized to deliver ERCs and ensure project's success throughout its lifetime.

Strategic National Alignment: The final objective of the Framework aims to confirm the project's alignment to the objectives and priorities of the country. The objective focuses on three criteria that define project attributes that demonstrate strategic national alignment:

- **Green economy priorities:** Project type is likely high on the country's priority list given its alignment with economic sector priorities.
- **Socioeconomic value:** Project contributes more broadly to the economy, environment and/or local community based on its co-benefits.
- **Article 6 readiness and eligibility:** Project type has a clear path to being authorized for Article 6-aligned transactions based on the country framework.

1.5 Process to conducting assessments

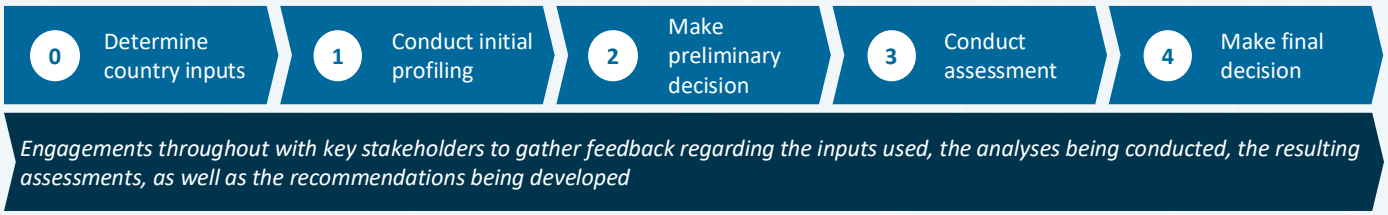


Figure 1.3 Project assessment process

The Framework outlines the key elements and criteria that projects will be evaluated on at each stage of the project assessment. [Figure 1.3.] The assessment process consists of four steps—two where assessments are required and two as a decision-making step from each assessment step—and an initial pre-assessment step to determine the country inputs required for the first objective of the Framework.

Step Zero: Determine country inputs

As a follow-up step to the country assessments conducted as part of the first ERP workstream, this pre-assessment step defines country-specific inputs that will be used as a basis for Step One of the project assessment process. This step first assesses various ERC project types based on their alignment to the country's green economy priorities and potential to contribute to the country's Nationally-Determined Contribution (NDC) sector priorities. Second, it assesses the readiness of the country to facilitate Article 6-aligned transactions under the Paris Agreement, and the potential eligibility of project types that can be authorized for Article 6 transactions, such as for corresponding adjustments (CAs). The establishment of inputs for these parameters should be a reiterative process which can adapt to consider evolving market dynamics and shifting priorities.

During this step, the use of the criteria for decision-making should be decided based on the objectives of the exercise, as described in Section 1.2. Should the exercise prefer to assign an overall score to the project based on its rating for each criterion, the scale and weight of indicators for the initial profiling and/or assessment can be determined. The rating of the project against each assessable criterion can be assigned an equivalent number from 1 to 5 as well[5].

Step One: Conduct initial profiling

Once country inputs are determined, the first step of the assessment is to conduct an initial profiling of the considered project(s). This step seeks to (1) understand the project's context, (2) estimate the project's high-level potential for value maximization, (3) confirm that core carbon-quality principles are in place, and (4) describe the project's alignment to country objectives, based on a first-level set of criteria outlined in the Project Assessment Framework.

The Project Profile Template [Appendix B] serves as a tool to collect and analyze information on the considered project(s), informing decisions to shortlist or identify priority projects that are likely to generate high-value, high-quality, cost-effective ERCs. Step-by-step guidance on how to utilize the template and the fields that require inputs are indicated in the 'Guide' tab.

[5] The option to score projects is further described in Chapter V.

The Project Profile Template includes five main sections:

1. **Project information**: Summary of key information on the project activity, location, sector, status, and project proponents and participants.
2. **Financial value**: Overview of the project's ERC value and the additional value enabled by the project, the components counted towards these two values, and the ratings assigned to these values based on the inputs and assumptions used.
3. **Carbon integrity and environmental and social risk management**: Subcomponents and checklists for the best practice measures or plans in place to demonstrate the project's carbon integrity at a standard and project level, and environmental and social risk management.
4. **Strategic national alignment**: Overview of the project's rating for its alignment to the country's priorities, socioeconomic value, and Article 6 readiness and eligibility potential.
5. **Overall assessment**: Overview of project's performance against all attributes and recommendations for improvement or consideration based on evaluation.

In the carbon integrity and environmental and social risk management sections, subcomponents are check-listed rather than rated. This is intended to provide an initial check of whether the project meets basic compliance to the criteria before further and more in-depth checks are conducted in the Project Assessment exercise. Each subcomponent will have a possible response of 'Yes'—project meets the criteria set out in the guidelines in its entirety—or 'No'—project does not meet the criteria in part of in whole as set out in the guidelines. Similarly, under strategic national alignment, the project's socioeconomic value is also check-listed in the same approach before a further assessment of the credibility of these indicators is conducted in the Project Assessment exercise.

The other criteria under financial value and strategic national alignment are rated based on the guideposts provided in Chapters II and III. In the same vein, the extent to which the project is able to meet the full check-list for the carbon integrity and environmental and social risk management sections will be given a similar rating scale. The rating scale is as follows:

- Most best practice measures in place.
- Some best practice measures in place.
- A few best practice measures in place.
- No measures in place.
- No or insufficient information available to assess.

The initial profiling exercise is expected to require a half-day full-time equivalent (FTE) effort, taking inputs largely from the project documents and targeted desktop research. The sources of reference for all required inputs are indicated in the Project Profile Template.

Scored criteria	Criteria that reflect project's…
F1. Project ERC value	Potential to **fetch high-value pricing**
F2. Additional value enabled by project	
C1. Standard-level carbon integrity	Potential to **attract high demand**
C1. Project-level carbon integrity	
C2&3. Environmental & social risk management	

S1. Green economy priorities	Alignment to **country objectives**
S2. Socioeconomic value	
S3. Article 6 readiness and eligibility	

Figure 1.4. Consideration of criteria for initial profiling evaluation

Each criteria in the initial profiling stage reflects the potential for the project to meet the key objectives of the Guidelines, which can be used to assess the project's overall potential to achieve high-value pricing and attract high demand. [Figure 1.4.]

Step Two: Make preliminary decision

Based on the evaluation of the project's attributes across F1, F2, C1, C2, C3, S1, S2 and S3 against the 4-level rating scale, and the priorities of the exercise, the initial profiling will inform a preliminary decision on whether to shortlist, waitlist, or deprioritize a project, if assessing a pipeline of projects, or for a go/wait/no-go decision if assessing individual projects. It will also recommend high-level opportunities for consideration, focusing on implementable measures to bring the project closer to market best practice.

Step Three: Conduct assessment

Once projects are passed through Step Two, these projects will then undergo a more detailed assessment.
As this process assumes a step-by-step approach to assessing a project, as highlighted in Section 1.2, should the use of this Guidelines prefer to go directly to a more detailed assessment, the analysis conducted for S1 and S3 in Step One can also be added to this step in such a use case. Given that the inputs for S1 and S3 are limited, they have been excluded from the more detailed assessment in Step Three, which focuses more on project-level attributes and mechanisms. Likewise, for use cases that prefer to focus on Step One of the process, the evaluation of the project's execution quality dimensions included in this step can be used separately to complement the assessment. These criteria are only included in the more detailed assessment given that they require projects to have a plan to access ERC generation, such as an MRV plan for data collection and developing the necessary documents for registration and verification, and a marketing plan for securing buyers for the project.

The conduct of assessment step seeks to (1) assess the project's potential for value maximization, (2) evaluate key dimensions relating to the project's execution quality, (3) confirm that carbon integrity and environmental and social risk factors can be addressed, and (4) assess the project's socioeconomic value, based on a second-level set of criteria outlined in the Project Assessment Framework. The Project Assessment Template [Appendix C] serves as a document to collate detailed information on shortlisted projects to assess their alignment with best practices for essential indicators of high-quality and best-value projects in a global market. Examples of inputs required for the assessment are provided in the template.

The Project Assessment includes three main sections:

1. **Summary:** Summary of the project's alignment to best practice across all assessed criteria, observations from assessment, and action points recommended for the project proponents.
2. **Project assessment:** Assessment of project's closeness to best practices of the subcomponents under each criterion.
3. **Project information:** Summary of key information on the project activity, location, sector, status, and project proponents and participants, extracted from Step One for easy reference.

For this exercise, the project's closeness to best practice or alignment with market expectations is rated for each subcomponent, where the overall rating for the criterion will be based on an average of the project's rating across all subcomponents.

Given that there are multiple subcomponents for each criterion, and that compliance for these will likely be in a spectrum, the guideposts provided in Chapter IV will describe the level at which projects are at "best practice" and the level at which they have "some opportunities for improvement", beyond which the user of the Guidelines can use the following approach to assign the other ratings, as follows:

- **Best practice or alignment with the market:** Project's documentation and/or evidence for the specific component points to all the attributes being met in whole to enable achievement of the overall objectives.
- **Good practice or alignment with the market:** One or two key attributes of the best practice guidance may not be met, but the project as a whole has more attributes than in the "some opportunities for improvement" level.
- **Some opportunities for improvement to better align with market expectations:** The project's attributes or measures more closely meets the guidance indicated at this level **OR** a significant proportion of its attributes do not meet the attributes that indicate alignment to best practice.
- **Significant opportunities for improvement to align with market expectations**: Project does not meet the requirements for a few or a significant number of the attributes in the next level.

Where the rating system differs for a specific criterion, this is reflected in the guideposts provided in Chapter IV. Assessments of the project should primarily evaluate if the objective of the particular component is addressed based on the guideposts, instead of whether they are similar to the setup in the case studies or in other projects. This acts to acknowledge the highly contextual nature of ERC projects. Assessments of specific components should also be, to the best extent possible, made based on information recorded in documents or otherwise captured from verbal discussions into formalized records or minutes of meetings to ensure that the decision taken during this process may be later reviewed and proven to be robust. Information gaps may still be acknowledged as opportunities as part of the assessment, and in the recommendations, which can inform the project proponents of possible next-steps or clarifications needed that can help bring the project closer to best practice that would be most aligned with global VCM standards for high-quality ERCs, from a buyer's perspective.

In addition, while guideposts have been provided to demonstrate a best practice for each criterion, there could be a potential for biases depending on the perspective and position of the assessor. Governments should take these potential risks into account when reviewing the assessments.

The assessment is expected to take 15 to 20 FTE days effort, taking inputs largely from a combination of the project documents, desktop research, and project participant interviews. The sources of reference for all required inputs are indicated in the Project Assessment Template.

Scored criteria	Criteria that reflect project's…
F1. Project ERC value	Potential to **fetch high-value pricing**
F2. Additional value enabled by project	
Q1. MRV infrastructure	

Q2. Marketing, sales, & pricing	Potential to **fetch high-value pricing** and **attract high demand**
Q3. Project governance & structure	
C1. Carbon integrity	Potential to **attract high demand**
C2. Environmental risk management	
C3. Social risk management and benefits	
S2. Socioeconomic value	Value to **country objectives**

Figure 1.5. Consideration of criteria for project assessment

Similar to Step One, each criteria in the conduct of assessment step reflects the potential for the project to meet the key objectives of the Guidelines, which can be used to assess the project's overall potential to achieve high-value pricing and attract high demand. [Figure 1.5.]

Step Four: Make final decision

The Summary section of the Project Assessment Template will provide an overview of the project's alignment with best practice and market expectations across each assessed criteria. Based on the priority of each criterion for the exercise, this can be used to inform decisions over whether to approve or deprioritize the project, to do so after key concerns are addressed, or to deprioritize the project until a specific change in circumstances.

Further subsections of the Summary serve to support this decision-making step by providing insights on the assessment, such as areas the project is faring particularly well in, or elements that the project is lacking in, as well as recommended action points for the project proponents that can help bring it closer to best practice that would be most aligned with global market standards for high-quality ERCs. These recommendations are intended for government users of the Template, supporting them to provide next-step actionable items for project proponents to consider aimed at increasing the potential value and demand of their project in the global VCM. It also acts to offer an indication of what areas project proponents might need support in. For example, government bodies could provide capability-building support for indications of projects where MRV capabilities could be strengthened, or monetary incentives and access to capital for projects where financial value is not as attractive due to high costs of development.

Chapter II
DETERMINING COUNTRY INPUTS

This Chapter provides a deep dive on Step Zero of the process, before going into the project-level assessment. This step aims to provide a country-wide view on the alignment of various project types with its strategic objectives, which will be used in the Project Profile Template in Appendix B. The sections in this chapter will describe the analyses required for determining the country inputs for the following criteria:

1. S1: Country priority
2. S3: Article 6 readiness and eligibility

These are also the two criteria that can leverage on the analyses conducted for the country systems assessment, which will be further explained in the deep dive of each criterion.

S1: Green economy priorities

Green economy priorities is the only component assessed under Step Zero of the process, where a set of inputs per country are determined for use across all Project Profile Templates in the initial profiling exercise, and not assessed on a project-by-project basis. This criterion looks at the alignment of various project types with the country's economic priorities, based on its indication of sectors to contribute to its green economy transition and its NDCs. The country-level assessments following the Guidelines for Country Systems developed alongside this paper can also be used in parallel, by taking the analyses for the criteria S2: Efficient permitting and adaptable standards. The analysis for the country assessment will focus on understanding the clarity of project implementation standards provided by host governments for project developers, by reviewing the basis for a country's eligible project list, such as the project type's potential supply, the country's sectoral NDC commitments, and its perceived market demand. These can, therefore, inform the inputs required for the green economy priorities criteria under this guideline to map a list of project types indicated by the country as eligible for global VCMs.

The following input can be used as a reference:

- National green economy document or NDCs with indication of economic sector priorities and level of support/funding from government

Using this input, the following analyses serve as a guide for the assessment:

- Map project type against priority sectors outlined in green economy document or NDCs, such as to identify in the NDC roadmap or plan where the host country has indicated sectoral commitments with potential consideration for carbon market transactions to support its achievement; and
- Evaluate relative level of funding support from government to determine likelihood of financial and policy support for project type.

The guideposts below provide guidance to rank project types from being fully aligned (5) to not aligned (1), thus indicating each project type's alignment to the country's green economy priorities. [Figure 2.1.]

Rating	Guideposts for green economy priorities
5	• The project type is fully aligned with economic sector priorities and/or NDCs, and is a top priority for stakeholders, with significant support and funding from government.

4	• The project type is highly aligned with economic sector priorities and/or NDCs, and is a major focus area for stakeholders with sufficient funding allocation.
3	• The project type has some alignment with economic sector priorities and/or NDCs, but is not a significant focus area and funding allocated is moderate.
2	• The project type has some alignment with economic sector priorities or policies and/or NDCs, but it is not a significant focus area and funding allocated is limited.
1	• The project type is not aligned with green economy priorities and/or NDCs, and no government support or funding is allocated.

Figure 2.1. Guideposts for ranking project types' alignment with green economy priorities

For countries whose green economy priorities are still in development, or where useful to the objectives of the exercise, two other potential factors can be used to assess the alignment of project types to a country's priority:

- **Supply capabilities**: Evaluate current capabilities to effectively develop ERCs across project types.
- **(Optional) Buyer priorities**: Assess alignment of project type with potential buyer countries' priorities; to use for countries that are aiming to engage targeted country partners.

Should these additional factors be used, the project type's rating for the criterion S1 can then take its average rating across these factors. The project's overall rating will correspond to the rating levels used for the Project Profile Template, as indicated in Section 1.4. A rating level of 4 to 5 will correspond to "high potential", 3 to "medium potential" and 1-2 to "low potential".

Supply capabilities

The following inputs can be used as a reference:

- Mitigation potential based on the sector's incremental, conditional NDC mitigation projections; or
- [If credit issuances are available] Historical total credit issuances or experiences in carbon credit project development in the international carbon market.

Using these inputs, the following analyses serves as a guide for the assessment:

- Review NDC mitigation projections (total projected conditional mitigation for sector less total projected unconditional mitigation for sector) to evaluate the sector's mitigation potential; and
- Review relative volume of historical credit issuances for project type across registries.

The guideposts below provide guidance on the project type's rating for this factor, that will contribute towards its average priority rating. [Figure 2.2.]

Rating	Guideposts for supply capabilities
5: Very high mitigation potential	• Mitigation potential from the related sector (based on conditional mitigation projections) is the highest relative to other sectors, indicating the greatest potential for emission reductions, or • Extensive historical credit issuances or experience in carbon credit project development in the international carbon market.

4: High mitigation potential	• Mitigation potential from the related sector (based on conditional mitigation projections) is considerable relative to other sectors, indicating a strong potential for emission reductions, or • Sufficient experience in developing successful projects, with some track record of credit issuances in the international carbon market.
3: Moderate mitigation potential	• Mitigation potential from the related sector (based on conditional mitigation projections) is low to moderate relative to other sectors, indicating a moderate potential for emission reductions, or • Some experience in developing carbon credit projects with a few credit issuances in the international carbon market.
2: Low mitigation potential	• Mitigation potential from the related sector (based on conditional mitigation projections) is very low, indicating some potential for emission reductions, but still limited, or • Very limited experience in developing carbon credit projects, with little to no credit issuances in the international carbon market.
1: No mitigation potential	• Mitigation potential from the related sector (based on conditional mitigation projections) is non-existent, indicating no potential for emission reductions; or • No experience in developing carbon credit projects.

Figure 2.2. Guideposts for rating the country's supply capabilities for each project type

Buyer priorities[6]

The following inputs can be used as a reference:

- Historical ERC memorandum of understanding (MoU) or partnership implementation agreements with buyer countries for indication of preferred type of carbon credits;
- Indications of interest via announcements or informal discussions on partnerships with the host country or countries similar to the host country; or
- [If ERC partnerships are limited or unavailable] Potential buyer countries' NDC for indication of mitigation priorities.

Using these inputs, the following analyses serve as a guide for the assessment:

- Review historical ERC-related MoU agreements, considering project types included, volume of carbon credits committed, and any exclusions or limitations on project types; or
- Identify potential buyer countries based on historical relationships, media announcements or inputs from informal discussions, and analyze potential buyer countries' NDC mitigation priorities; and
- Evaluate project-type alignment with preferred carbon credit types identified in historical ERC MoUs, potential buyer NDC or indicated interest.

The guideposts below provide guidance on the project type's rating for this factor, that will go towards its average priority rating. [Figure 2.3.]

[6] This factor looks only at potential buyer countries at a government-to-government level. This does not include priavte sector buyers, which the rest of the criteria in the Framework are targeted towards by looking at key considerations from international VCM buyers, such as corporates.

Rating	Guideposts for buyer priorities
5	• There is strong and specific alignment with potential buyer countries' MoU or NDC/climate strategies, with clear indications that mitigation activity is a high priority.
4	• There is an alignment with potential buyer countries' MoU or NDC/climate strategies, with some indication that the mitigation activity is a priority.
3	• There is vague mention in potential buyer countries' MoU or NDC/climate strategies about the mitigation activity being considered for credit purchase, but it is not a high priority area.
2	• No clear articulation in potential buyer countries' MoU or NDC/climate strategies about mitigation activity being considered for credit purchase, but some indication of interest for future engagement.
1	• There is no mention in potential buyer countries' MoU or NDC/climate strategies about the mitigation activity being considered for credit purchase

Figure 2.3. Guideposts for rating the project type's potential for alignment with buyer priorities

S3: Article 6 readiness and eligibility

As the mechanisms and rules for Article 6 of the Paris Agreement continue to develop, Article 6 readiness and eligibility is a criterion that recognizes Internationally Transferred Mitigation Outcomes (ITMOs) as one of the end-uses that ERCs generated will need to consider. Although the discussions around the mechanisms for Article 6 transactions under voluntary market standards are still nascent, a crucial piece surrounding these transactions would be the mechanisms and procedures for CAs to ensure that emission reductions or removals are not counted towards multiple NDCs. This is expected to be a critical accounting mechanism under Article 6, to enable the effectiveness of carbon markets in contributing towards climate action.

Host countries of projects under the VCM will therefore also need to consider having frameworks and mechanisms in place to facilitate the authorization and tracking of Article 6-aligned transactions, including that of CAs. Countries with such capabilities will be well placed for selling ERCs that are that are aligned with the principles and goals of the Paris Agreement, which could provide greater confidence for buyers looking to purchase ERCs that ensure that double-counting risks are managed through the host country's NDC calculations and reporting.

Two subcomponents are used to drive the rating for the project type's Article 6 readiness and eligibility:

- **Readiness**: Credibility of the legal frameworks to process and facilitate Article 6-aligned transactions and the CAs resulting from these transactions, and institutions to process such transactions in line with the frameworks, at a country level.
- **Eligibility**: Clarity of the path to the project being authorized for Article 6-aligned transactions and CAs within the country's current framework, for the specific project type.

The guideposts below provide guidance on the project type's rating for each subcomponent, that will contribute towards its average Article 6 readiness and eligibility rating, following the levels indicated in Section 1.4. [Figure 2.4.] The Guidelines for Country Systems developed for the ERP alongside this paper can also be leveraged, where

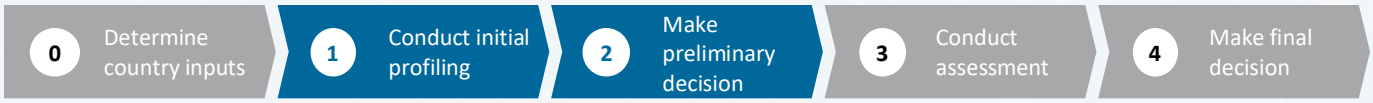
the country-level assessment for the criteria D1: Defined Article 6 transaction mechanisms will provide insights on the closeness to best practice of their frameworks, criteria, processes and mechanisms for Article 6 transactions, and inputs on project types likely eligible for these transactions.

Rating	Rationale for rating
Article 6 readiness	
	There is a comprehensive framework in place for Article 6 transactions aligned with best practice to facilitate such transactions, and there are institutions that have the core capabilities in place to facilitate such transactions, as demonstrated not just by the release of operational tools, but evidenced by a large number of completed CA-labelled transactions.
	There is a general framework in place for Article 6 transactions, and the institutions that are to facilitate such transactions per the framework have published relevant operational tools such as rules, templates, platforms, and processes for potential project proponents to refer to.
	No frameworks and institutions in place to facilitate Article 6 transactions and the related CAs.
Article 6 eligibility	
	The project's parameters and/or specific project type(s) are included in a positive list or a similar listing of prioritized projects that are eligible for Article 6 transactions and CAs (or even not included in a negative list) and there can be a reasonable assumption that the project being assessed may be authorized for Article 6 transactions and CAs if requirements are met and processes are followed.
	General criteria set out for projects that may be approved by the government for Article 6 transactions and CAs in place within the existing frameworks, from which there can be a reasonable assumption that the project being assessed may be authorized for Article 6 transactions and CAs if requirements are met and processes are followed.
	No criteria set out within the existing frameworks to understand which projects can be authorized for Article 6 transactions and CAs.

Figure 2.4. Guideposts for rating Article 6 readiness and eligibility

Chapter III

CONDUCTING THE INITIAL PROFILING AND MAKING A PRELIMINARY DECISION



This Chapter provides a deep dive on Step One and Step Two of the assessment process, covering each of the assessable criterion in the initial profiling step, and how these should be evaluated to inform a preliminary decision and high-level recommendations for improvement. The first step aims to provide a high-level understanding of the project's context, estimate its potential value, and ascertain that its fundamentals for generating ERCs are in accordance with VCM standards. It will also take the inputs from Step Zero to assess the project's alignment with any specific country objectives that may be in place, based on its project type or sector. The Project Profile Template in Appendix B provides a guide to conducting initial profiling as laid out in Step Two. The sections in this chapter will describe each criterion and its method for the evaluation, following either a checklist or rating indicated in Section 1.4, where the list of criteria is as follows:

F1: Project ERC value
F2: Additional value enabled by project
C1, C2, and C3: Carbon integrity and environmental and social risk management
S2: Socioeconomic value

F1: Project ERC value

As the first criterion to assess the project's high-level potential for value maximization, or the potential value that the project could fetch in the global VCM, the project ERC value will estimate the NPV of the project based on the cash inflows driven by the potential price per tonne of the ERCs generated from the project, expected lifetime ERC volume, and the outflows driven by the cost of ERC generation, based on a typical sales contract[7]—i.e., the NPV of the ERC component.

Price per tonne estimations

There are four sources which can be leveraged to estimate an ERC's price per tonne potential:

- **Data aggregators:** Data aggregators such as Allied Offsets and Sylvera provide access to market prices for a large database of projects which can help estimate primary market prices, where primary market refers to the transaction of ERCs for offsetting purposes rather than the trading of ERCs as investments in the secondary market. Where some aggregators reflect both offer prices and retirement prices, offer prices are likely to be more accurate than retired prices due to time-lag of delivery from time of signing contract where prices are locked.
- **Exchanges and market analysis providers:** Analysis by providers such as CBL Markets and S&P Global Platts. These reflect secondary market prices for certain credit types and provide more transparency on price movements.
- **Developers, brokers, and intermediaries:** Developers, brokers, and intermediaries such as South Pole, Salesforce Marketplace, ClimatePartner, and Pachama disclose prices for certain projects that can indicate price differences between different projects. However, prices online are only for individual buyers and are not reflective of most primary market transactions, unless developers or brokers provide a direct quote.

[7] For simplicity, a typical sales contract is assumed. For example, ERC payments are expected to come in only upon issuance, and the model assumes a 5-year monitoring period between each issuance. The assumptions used for assessing the project's NPV is described in the Project Profile Template, and can be adjusted accordingly if needed.

- **Breakeven point**: This indicates the price at which a given project would need to sell at in order to break even, based on the estimated costs and expected volume over its lifetime. While this does not reflect the potential buyer's willingness-to-pay, comparing the breakeven point with other price potential sources could indicate if a project is likely financially viable.

While these four sources are provided in the Project Profile Template to estimate the Project ERC value, the Project Guidelines recommend data aggregators as a primary source of choice. This is likely to provide the most accurate analysis, given that the primary market for ERC transactions is more dominant. When using databases provided by aggregators, there are two calculation methods that can help estimate price per tonne potential:

1. **Using ERC type averages**: Filter the database for the specific certification, subtype, and geography that the project falls under to assess the average offered price of similar projects as an estimate of the price per tonne potential of the project.
2. **Using willingness-to-pay multipliers**: Obtain four average prices: (1) the average price of an ERC in the database to set a base price, (2) the average price of ERCs by certification, (3) by subtype, and (4) by geography. Divide (2), (3), and (4) by (1) to obtain three sets of multipliers. Based on the project's certification, subtype, and geography attributes, by using a combination of these multipliers against the average base price (1), the price per tonne potential of the project can be estimated. For example, from the Allied Offsets database, the average price of an ERC is $4.74 per tonne. On average, a Verified Carbon Standard (VCS) credit is observed to be 1.25 times this average base price, while a Gold Standard (GS) credit is 1.68 times of this base price. Similarly for the project's subtype, a renewable energy project is on average 0.62 of the base price, while avoided deforestation projects are 1.83 times of the same value.

These calculation approaches are based on the six key project attributes that impact buyers' willingness-to-pay [Box 1]:

1 **Certification**: The level or type of verification of the ERC

2 **Subtype**: The technology or project activity and generated ERC type

3 **Co-benefits**: Other benefits enabled by the project

4 **Geography**: The project's location

5 **Vintage**: The year in which the emission reductions occurred

6 **Uniqueness**: The novelty and uniqueness of the project in the market

This exercise focuses on (1), (2), and (4) as the other willingness-to-pay factors are largely dependent on the specific project and market conditions.

Box 1 Willingness-to-Pay Factors

	Examples of consideration factors (non-exhaustive)
Certification	• Issued unit under Standard, e.g. Verified Carbon Standard, Gold Standard • Additional certifications or labels, e.g. Climate, Community and Biodiversity Standard • Eligibility for schemes, e.g. Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)
Subtype	• Technology or project activity type, e.g. renewable energy, forestry, energy efficiency, cookstoves, water filters, carbon capture, utilisation and storage, low-carbon transportation, etc. • Type of credits, e.g. emission reductions, emission removals
Co-benefits	• Environmental benefits, e.g. biodiversity protection, improvement to air, water or soil quality • Community benefits, e.g. employment creation, access to education and health services, enabling opportunities to gender equality
Geography	• Region in which project is located in, e.g. Asia, Africa, Latin America • Country in which project is located in
Vintage	• Year in which emission reductions or removals occurred in, e.g. vintage 2022
Uniqueness	• New or novel technology, e.g. carbon capture, soil carbon • Unique or less common project impact, e.g. mangrove sequestration project, otherwise known as "blue carbon"

Figure 3.1 Examples of willingness-to-pay considerations for each factor

Certification primarily refers to the accrediting standard that the ERC is certified and issued under. In the VCM, the two most prominent standards are the Gold Standard (GS) and the Verified Carbon Standard (VCS). These organizations set the standards for ERC projects to quantify, certify, and verify their emission reductions or removals and impact, and each has their own registry to track, issue, and retire the credits under their respective standard. As these registries have their own unit to label each tonne of emission reductions or removal, the market perception of these units could differ based on its perceived quality or credibility, value, or demand and supply. In addition, certain standards also have additional labels for certifying other non-ERC attributes of the project that could fetch a higher price premium. For example, the VCS developed the Climate, Community, and Biodiversity (CCB) standards to certify projects that address climate change, benefit local communities and smallholders, and conserve biodiversity. Projects registered and verified under the CCB can issue CCB-labelled Verified Carbon Units under the VCS.

Subtype refers to the technology implemented by the project that is reducing or removing emissions to generate ERCs, which also affects the type of credit as an emission reduction or removal. Buyers care about the type of projects they are supporting and the type of credits they are using to offset their emissions. Guidance given to buyers by organizations such as the Science-based Targets Initiative (SBTi) could influence their willingness to pay for certain credit types. For example, the SBTi Net-Zero Standard requires that companies looking to offset their residual emissions to only use emission removal credits.

Box 1 Willingness-to-Pay Factors

Co-benefits refer to the additional benefits resulting from the project activities that go beyond emission reductions or removals, such as contributions to the environment or community. For buyers who are looking to support impactful projects or projects that are in line with their industry and business, they may be willing to pay more for projects with co-benefits that meet these considerations. In addition, certain project types also tend to have more co-benefits than others—for example, forestry projects, or nature-based solutions, tend to be stronger on their co-benefits to the environment through biodiversity conservation, and to the community via education and training programs as part of the project activities. The association of project subtypes with their co-benefits therefore also contribute to the price differences among the various project technologies.

Geography refers to the location of the project, where buyers' considerations could range from having preferences for certain regions to specific countries. Buyers tend to have a strong preference for projects within their business footprint—for example, some U.S. based companies would prefer to purchase credits from projects under the American Carbon Registry (ACR) or Climate Action Reserve (CAR), the two main standards for ERC projects in North America.

Vintage refers to the year in which the emission reductions occurred. While accreditation standards and industry bodies such as the International Carbon Reduction and Offset Alliance (ICROA) have not established a position on vintages and their associated quality or credibility, the market perception of vintages generally favors newer vintages over older ones. This is largely due to the perception that older vintages are lower in quality as standards have gradually strengthened the rigor and criteria for the monitoring and verification of credits, where these older credits could be outdated relative to the current market best practices. Some buyers also prefer offsetting their emissions from emission reductions or removals that have occurred in the same or previous year.

Uniqueness refers to how one-of-a-kind the project is relative to other projects in the market, which could be attributed to a combination of its subtype, co-benefits, geography, and vintage. For example, blue carbon projects—projects that protect or recover coastal and marine ecosystems—are less common in the market and could fetch a higher premium from buyers who are looking for exclusive or experimental projects to support.

NPV of non-ERC component

In addition to the NPV of the project's ERC component, the Project Profile Template also includes the option of calculating the NPV of the project's non-ERC components, which will also be used for assessing F2 in Step Three of the assessment process. This NPV is based on cash inflows driven by the non-ERC revenue and/or cost savings, using the values calculated for F2 in the initial profiling stage, and the outflows driven by the investment and implementation cost of the project. The approach to calculating the cost components included in the NPV of the project's ERC and non-ERC components are described in the next paragraph.

Approach to calculating cost components

While individual projects have varying cost components depending on activities and structure, ERC projects broadly tend to include several key cost factors:

- Investments or capital expenditures, which are typically not required for ERC generation but are attributable to construction or installation of project activity.
- Project implementation or operating costs, such as for training, labor, patrolling, data collection, land leases, levies, and taxes, which are typically not required for ERC generation but are attributable to the operation and maintenance of the project activities.
- ERC generation cost, such as for certification, registration, validation, and verification
- Benefit sharing, such as for contribution to the community via funds or schemes, which are typically solely funded by the ERC revenues.

This list is not exhaustive, but serves to provide a general guide in estimating project costs that should be tailored to a given project. In the Template, cost components that are attributable to non-ERC components and the ERC components of the project are calculated as two distinctive cashflows—following the matching principle in accounting. For example, the capital investments into the construction of a renewable energy plant are not directly attributable to ERC generation and should be accounted for under the non-ERC capital outlays.

Scoring of project ERC value

Once all components for calculating a project's NPVs are in place, project ERC value will be scored based on the NPV of the ERC component of the project, which reflects the financial viability for the project to generate ERCs by considering only the ERC revenues and the costs specific for ERC generation.

Suggested benchmarks are provided to rate the project's ERC value, and can be adjusted as needed. [Figure 3.2.]

Rating	Values and guideposts for rating
	United States Dollars (USD) 1 million (M) and above – ERC generation is very economically viable, it is likely worth considering generating ERCs.
	USD 100,000 to less than USD 1M – ERC generation is moderately economically viable, it may be worth considering generating ERCs.
	0 to less than USD 100,000 – ERC generation may not be worth considering as NPV is small and could be lesser considering risks.

Figure 3.2 Guideposts for rating the project ERC value for the project profile

Should it be valuable for the objectives of the exercise, the ratio of the NPV of the project's ERC component to the NPV of the project's non-ERC component could also be evaluated to assess the significance of ERC generation, where a higher ratio would reflect the extent to which ERC revenues will be valuable to the project relative to its non-ERC financials. This could also reflect the additionality of the project in needing ERC revenues.

F2: Additional value enabled by project

For many projects, beyond the revenues from selling ERCs, the project activities also create products or services that generate additional non-ERC revenue, or enable resource savings with tangible cost reductions. In this regard, two contributions are accounted for:

- **Non-ERC revenue**: Taking the per-unit price of non-carbon resources generated by the project, multiplied by the amount of non-carbon resources generated by the project that would not have been possible without the ERC project.
- **Cost savings:** Taking the per-unit price of resources saved by the project, multiplied by the amount of resources saved by the project that would not have been possible without the ERC project.

These are additional contributions by the project that can be valued in dollars and allocated to the project's stakeholders, which are distinct from the socioeconomic value criterion (S2) which considers the co-benefits of the project to the broader community or economy and that may be more complex to quantify in value dollars.

Rating	Values for rating
	1,000 and above: $1 spent on ERC generation generates at least $1000 of additional value
	100 to below 1,000: $1 spent on ERC generation generates at least $100 to less than $1000 of additional value
	More than 0 to below 100: $1 spent on ERC generation generates more than $0 to less than $100 of additional value
	0: Project does not generate any additional value

Figure 3.3 Guideposts for rating additional value enabled by project

This criterion will be rated based on the proportion of the additional value calculated—contributed by the sum of the project's non-ERC revenue and cost savings—relative to the project's cost of ERC generation, taking into account only the cost attributable to ERC generation. This value will reflect the extent to which a per-dollar investment to generate ERCs from the project will enable other sources of economic benefit. Suggested benchmarks are indicated in the guideposts above to rate this value. These can be adjusted according to the projects in consideration or as appropriate to the purpose of the exercise. [Figure 3.3.]

While the NPV of the project's non-ERC component is provided as an optional measure for reference in the initial profiling stage, given that this value will largely depend on the business model of the project and its project activities, the evaluation of this criterion at this stage focuses on its total absolute value. The NPV of the project's non-ERC component will only be used for the more detailed assessment conducted for Step Three.

C1, C2, and C3: Carbon integrity and environmental and social risk management

As indicated in Section 1.4 of Chapter I, a project's ability to meet carbon integrity, environmental and social risk management standards at this initial profiling stage follows a high-level checklisting process. The checklist statements are provided in the Project Profile Template. The rating for each criterion is determined by the project meeting a number of these checklist statements from the full list, following the rating levels indicated for the initial profiling step in Section 1.4. These criteria serve as a preliminary validation of the project's technical eligibility for generating ERCs that would meet the standard for quality and credibility in the global market.

Two carbon integrity checklists are provided in the Template. The first is established at a standard level to ensure that the accrediting standard the project intends to be registered under has mechanisms in place for ensuring key carbon integrity principles, following the best practices of the International Carbon Reduction Offsetting Alliance (ICROA). [Figure 3.4.] The second checklist is positioned at a project level to ensure that the project has

mechanisms in place for ensuring key carbon integrity principles as fundamental eligibility criteria for ERC generation and to minimize risks of non-integrity. These exclude criteria "independently verified", "unique" and "real", given that these are carbon integrity principles that rely largely on the accrediting standard that the project is registered under. [Figure 3.5.]

Criteria	Checklist
Additional	Standard should have a clear requirements for additionality where eligible projects demonstrate a conservative business as usual scenario and must be surplus to regulatory requirements.
Measurable	Standard should ensure that ERCs are quantifiable and use recognized measurement tools, including adjustments for leakage and uncertainty, against a realistic and credible emissions baseline where a criteria for these adjustments are specified based on a conservative approach.
Permanent	Standard should have a mechanism to address the risk of reversals.
Independently verified	Standard should have a mechanism for independent, third-party validation and verification of mitigation activities.
Unique	Standard should have a registry to uniquely identify, record and track mitigation activities and ERCs issued to ensure that credits can be identified securely and unambiguously.
Real	Standard should ensure that ERCs are measured, monitored and verified before issuance.

Figure 3.4 Checklist for standard-level carbon integrity

Criteria	Checklist
Additional	Project proponent has confirmed that ERC-generation activities are surplus to regulatory requirements, as stated in the project document.
Measurable (Methodology)	Project proponent follows or intends to follow recognized methodologies for measuring and monitoring emission reductions or removals as of now to the next 6 months, as stated in the project document.
Measurable (Leakage)	Project has in place measures to account for potential leakages, where applicable.
Permanent	*[For Agriculture, Forestry and Other Land Uses (AFOLU) projects only]* Project has in place measures to mitigate risk of reversals, based on potential risk identified.

Figure 3.5 Checklist for project-level carbon integrity

The environmental and social risk management checklist ensures that project has in place environmental and social risk management measures aligned with the 'do no harm' principle, beyond what is required by national law and regulations. Otherwise, good practice would be for the project to provide justification for why these risk management measures are not necessary based on the nature of the project—for instance if the environmental or social risk is not material to the project activity. In addition, in this step, this criterion also checks for the project's risk management measures for ensuring land and asset ownership rights for the ERCs generated, and for seeking approvals and confirming legality of the project activities. [Figure 3.6.]

Criteria	Checklist
Impact on natural resources	Project has a plan or procedures in place to identify and assess its potential impact on natural resources and ecosystems, such as on water quality, air quality, soil quality etc., as well as to implement mitigation measures to minimize any potential negative impacts.

Impact on biodiversity	Project has a plan or procedures in place to identify and assess its potential impact on ecosystem habitats and biodiversity, as well as to implement mitigation measures to minimize any potential negative impacts.
Stakeholder consultation	Project has a plan or procedures in place to identify relevant stakeholders, to conduct stakeholder consultations and to enable access to project information for public comments.
Impact on local communities and livelihoods	Project has a plan or procedures in place to identify and assess its potential impact on local communities, such as residents within and around the project area, and livelihoods, as well as to implement mitigation measures to minimize any potential negative impacts.
Land/ownership rights	Project has a plan or procedures in place to identify assets in project boundary area and ensure the undisputed ownership of carbon rights.
Government approvals and legality	Project has a plan or procedures in place to ensure that the necessary approvals will be obtained from the Government to carry out the project activity and that the project is compliant with local laws and regulations.
Grievance mechanism	Project has a plan or procedures in place for receiving, investigating and resolving grievances from stakeholders.

Figure 3.6 Checklist for environmental and social risk management

S2: Socioeconomic value

As indicated in Section 1.4 of Chapter I, a project's socioeconomic value at this initial profiling stage follows a high-level check-listing process. The rating for this criterion is similarly determined by the project meeting a number of these checklist statements from the full list, following the rating levels indicated for the initial profiling step in Section 1.4.

This criterion checks for the presence of co-benefits provided by the project activities to biodiversity and ecosystems, improving water, air, and soil quality, enabling employment opportunities for local communities, improving access to health and education services, and improving gender equality. These metrics indicate the project's wider contributions to the environment and community. [Figure 3.7.]

Checklist
Project has co-benefits contributing to biodiversity and ecosystems, i.e. conserving natural habitats, protecting endangered flora/fauna species, etc.
Project has co-benefits contributing to improving local water, air or soil quality.
Project has co-benefits contributing to creating or improving access to employment opportunities for local communities.
Project has co-benefits contributing to improving the community's access to health and education services.
Project has co-benefits contributing to improving gender equality, such as by improving women's participation in decision-making, reducing the strain of unpaid domestic burden on women, etc.

Figure 3.7 Checklist for socioeconomic value

Chapter IV

CONDUCTING THE PROJECT ASSESSMENT AND MAKING THE FINAL DECISION

This chapter provides a deep dive on Step Three and Step Four of the assessment process, covering the assessable criteria in the Project Assessment step, and how the project's overall alignment to best practice can be used to determine the final project decision or recommendations for action points.

Step Three is a follow-up step to the to the preliminary decision made in Step Two, whereby scores assigned to a given project dictate its continuation in the process towards a more detailed assessment. This step aims to further examine the project's possible value across potential scenarios, evaluate its capabilities, and set up for successful execution. It is also designed to assess a given project's measures for managing risks and analyze its socioeconomic contributions to the wider economy. The Project Assessment Template in Appendix C provides a guide to conducting the Project Assessment to make a final project decision, as laid out in Step Four. The sections in this chapter will describe each criterion, suggested analyses for its assessment, and the guideposts for its rating for alignment to best practice, where the list of criteria is as follows:

1. F1: Project ERC value
2. F2: Additional value enabled by project
3. Q1: MRV infrastructure
4. Q3: Project governance and structure
5. C1: Carbon integrity
6. C2: Environmental risk management
7. C3: Social risk management and benefits
8. S2: Socioeconomic value

F1: Project ERC value and F2: Additional value enabled by project

These two criteria seek to assess the project's financial values in various potential scenarios to determine and stress-test its potential for value maximization. At the initial profiling stage, the NPV of the project's ERC component was rated for F1 while the assessment for F2 was based on the extent to which a per-dollar investment to generate ERCs from the project will enable other sources of economic benefit. At the assessment stage, a more thorough evaluation of these numbers is required, to also consider the business model and stakeholders of the project.

For some projects, in addition to the two NPV components described [F1 section of Chapter III], there could be a third NPV that reflects the net benefit to users of the project. While the NPVs of the project's ERC and non-ERC component take the project developer or proponent's perspective, the NPV for users considers the cashflows from stakeholders that are direct beneficiaries of the project activities. The cash inflows are driven by the additional revenues and cost savings that stakeholders benefit from due to the project, while cash outflows are driven by the costs incurred by these stakeholders to implement the activity. For example, for a project that generates emission reductions through providing subsidies for motorbike owners to switch from combustion vehicles to electric ones, the motorbike owners would benefit from a net value. The cost incurred by the owners would be the cost of buying the electric vehicles post-subsidies, while the inflows come from the cost savings from fuel costs that would have otherwise been incurred. The NPV for users, if applicable, should therefore be evaluated separately, and will be used for rating the project's additional value (F2).

The following sources and analyses can serve as a guide for the assessment:

- Using the provided excel model appended to the Project Assessment Template, fill in base values of price per tonne, total volume, cost factors, non-ERC revenues and cost savings (from both the project proponent's and user's perspective), and adjust the assumptions for the project's cashflows accordingly. This can be taken from the initially assessed NPV values in the Project Profile Template, if available. If there are any updates to the figures provided by the project counterparts during interviews, adjust the figures accordingly.
- Establish three potential NPV scenarios to conduct sensitivity analysis by (1) reviewing market trends (e.g., using Ecosystem Marketplace, a web-based news and market insights platform) or the range of prices indicated in data aggregators for insights on potential price changes for the ERC type, (2) assessing potential ex-ante versus ex-post discrepancy via past project examples, or insights from project counterpart (e.g., applying a 50% deduction for nature-based and 70% for engineered solutions), and (3) reviewing cost factors with high potential for fluctuations via national data, or insights from project counterparts.

Based on the analyses, the project ERC value (F1) is rated based on two subcomponents – its total NPV, and the NPV of its ERC component. This aims to address two key questions – first, whether ERC generation alone will likely help enable the project to be economically viable, withstanding various potential scenarios, and second, whether generating ERCs is economically viable for the project, given its mitigation potential and likely price.. [Figure 4.1.]

Rating	Values for rating total NPV	Values for rating ERC value
	• Total NPV is positive across all scenarios, including base total NPV.	• NPV of ERC component is positive across all scenarios, including the base value.
	• Base total NPV is positive. • Total NPV is negative in more than 1 out of 3 scenarios.	• Base NPV of ERC component is positive. • NPV of ERC component is negative in more than 1 out of 3 scenarios.
	• Total NPV is negative across all scenarios, including base total NPV.	• NPV of ERC component is negative across all scenarios, including the base value.

Figure 4.1. Guideposts for rating project ERC value for the project assessment

The additional value enabled by the project (F2) is then rated based on the NPV of its non-ERC component and its net benefit to users, if applicable. This aims to reflect whether the project has a net financial benefit to the proponent or users, that ERC finance will enable by potentially helping the project become economically viable.

Rating	Values for rating additional value enabled by the project
	• Project has a net financial benefit to users, as demonstrated by the positive NPV for users (i.e. beneficiaries of the project with financial benefits from cost savings or revenue generated by the project activities, who are not involved in the project implementation and do not directly receive ERC revenues)
	• NPV of non-ERC component is positive to the project developer orproponent, but there are no financial benefits to users
	• NPV of non-ERC component is negative and there are no financial benefits to users

Figure 4.2. Guideposts for rating additional value enabled by the project, for the project assessment

Q1: MRV infrastructure

This criterion assesses the project's closeness to best-practice MRV mechanisms for assuring that key carbon integrity principles are achieved and maintained throughout the lifetime of the project. MRV refers to the multi-step process to measure the amount of greenhouse gas (GHG) emissions reduced by a specific mitigation activity over a period of time, and reporting these findings to an accredited third party, where the third party then verifies the report so that the results can be certified and that resultant ERCs issued are real, measurable, and verified. While the project assessment evaluates the project on its carbon integrity principles, during its actual implementation and operations, the continued upholding of these principles requires strong executional capabilities that will ensure the project's long-term success and quality. Having these in place will be important for the project's credibility and to ensure buyer confidence.

The following sources and analyses can serve as a guide for the assessment:

- Review project's monitoring plan and approach for data collection and carbon accounting for the purposes of ERC monitoring, reporting, and verification by referring to the project documents.
- Review the project's validation and verification body (VVB) and their capabilities for the validation and verification of ERCs by conducting desktop research.
- Review the project's use of tools and technology for data collection and the monitoring of carbon stocks by referring to the project documents.

There are five assessable subcomponents to this criterion, where the project's mechanisms for the MRV of its carbon assets to generate ERCs are assessed against the guideposts provided in Figure 4.3:

- **Project management**: Designation and coordination of tasks for the monitoring of carbon assets.
- **Methodologies**: Approaches for referencing secondary data and measuring data.
- **Data availability and data collection systems**: Set up for obtaining and monitoring primary data, quality assurance and control, and storing data.
- **Capacities and technical skills**: Provisions for building and updating capabilities of MRV team and ensuring credible validation and verification process.
- **Tools and instruments:** Use of innovative and effective tools and technology for monitoring and data recording accurately and precisely.

Rating	Rationale for rating
Project management	
	• Clear and well-defined roles and responsibilities assigned for the operational and management plan for monitoring. • Processes for monitoring and coordinating between parties are defined and communicated. • A plan or procedure is in place for conservative treatment and/or deduction of ERCs in case of unexpected interruption or error of planned monitoring activities.
	• Roles and responsibilities assigned for operational and management plan for monitoring are in place but could be more clearly defined. • Elements of the operational process of monitoring and coordinating between parties are in place but need clearer definition and/or could be more clearly communicated.

	• A plan or procedure is in place for conservative treatment and deduction of ERCs in case of unexpected interruption or error of monitoring activities.
Methodologies	
	• Approaches related to the use of measurements, sampling, data from third parties, or default values follows an approved methodology under any of the VCM standards. • Referenced data are clearly cited and justified in a conservative approach, using local, real-time, and verifiable data where available.
	• Approaches related to the use of measurements, sampling, data from third parties, or default values follows an approved methodology, or will likely be eligible for use under an existing or upcoming approved methodology[8], based on its emission reduction or removal activities and the applicability conditions of the methodology. • Referenced data are clearly cited and justified, using global data.
Data availability and data collection systems	
	• Data collection and monitoring approach is specified for all parameters needed for the calculation of GHG emissions. • Appropriate quality assurance and quality control measures are in place and clearly defined in operational process. • Data management system in place for preserving and archiving data.
	• Data collection and monitoring approach is specified for some parameters needed for the calculation of GHG emissions. • Appropriate quality assurance and quality control measures are in place. • Data management system in place for preserving and archiving data.
Capacities and technical skills	
	• Staff and project management team are at least annually (or more frequently) undergoing training related to the methodology being implemented, and mechanisms are in place to ensure the retention and continuous application of capabilities and knowledge. • VVB engaged/to be engaged is accredited in conformance with International Organization for Standardization (ISO) standards, and should demonstrate expertise in verifying such project types.
	• Staff and project management team are provided with training on methodologies with no indication on regularity. • VVB is accredited in conformance with the relevant ISO standards for the specification with guidance for the validation and verification of greenhouse gas assertions and for the general principles and requirements for bodies validating and verifying environmental information[9].
Tools and instruments	
	• Project uses smart technologies such as Internet of Things, distributed ledger technology, and artificial intelligence (or similarly advanced technology) for automated monitoring and data

[8] Should the methodology intended for the project not exist, and the project proponent/developer or government intend to develop a new methodology for estimating the GHG emissions from the project, the score under this subcomponent should be assigned based on the readiness of the new methodology and the likelihood of its approval under a recognized VCM standard.

[9] The existing relevant ISO standards are ISO 14065:2020 – General principles and requirements for bodies validating and verifying environmental information, and ISO 14064-3:2019: Greenhouse gases – Part 3: Specification with guidance for the verification and validation of greenhouse gas statements

	recording to ensure that carbon assets are measured accurately and precisely, and data is recorded transparently and securely.
	• Project uses the necessary tools and instruments to measure carbon assets in a timely manner while ensuring the integrity and security of the data recorded and stored.

Figure 4.3. Guideposts for rating MRV infrastructure

While digital MRV capacities at the project level are currently rare and most projects will likely be rated to have "some opportunities for improvement" for the 'Tools and instruments' subcomponent, digitizing MRV through next-generation technologies is the aspirational best practice for robust data recording and tracking mechanisms that will enable high-quality ERCs. Recognizing that the usefulness of such technologies may differ for project types, this subcomponent can also be assessed based on its relevance to the project activity. For example, this may be more relevant to forestry projects where machine learning models can help analyze remote sensing data to monitor forest carbon assets more precisely. On the other hand, renewable energy projects may have limited opportunities for using smart technologies, as the measuring of electricity output is relatively straightforward. Nevertheless, the use smart technologies to monitor carbon assets could become increasingly common given the growing interest and concerns around the MRV of ERC projects in the market.

Several opportunities for digitizing MRV have been identified by multi-stakeholder initiatives to look at how technology can improve data quality and trust. For example, standard-setting bodies have been taking the lead in such initiatives, given their position as the owners of the current infrastructure. Gold Standard established the Open Collaboration for Digitizing Impact initiative[10], which aims to develop a guidance for methodology developers to incorporate digital requirements to improve data quality and connect an ecosystem of market participants to promote interoperability and access via digital infrastructure and open application programming interface (API), among several objectives. Verra is also partnering with Pachama to identify digital MRV processes, technologies, tools, and innovations, and explore barriers and opportunities associated with the use of digital MRV systems in the VCS program[11].

End-to-end digital infrastructure requires concerted effort at an ecosystem level, but represents a potential gamechanger for data transparency. The World Bank's Climate Warehouse Program simulated a decentralized information platform built on blockchain technology as part of a series of simulations to test various technologies via the Climate Action Data Trust initiative[12], demonstrating possible entry points for each stakeholder to trial similar initiatives. At a project level, using smart technologies that are already available in the market for more precise, accurate, and automated data monitoring will provide the foundation for the digital MRV infrastructure.

[10] Gold Standard Digitising for Impact, https://www.goldstandard.org/our-story/digitising-mrv
[11] Verra (2022), "World's Largest Carbon Program Pilots Digital Measuring of Forest Carbon", https://verra.org/worlds-largest-carbon-program-pilots-digital-measuring-of-forest-carbon/
[12] The World Bank, Climate Warehouse – Climate Action Data (CAD) Trust, https://www.theclimatewarehouse.org/work/climate-action-data-(cad)-trust

Box 2 Case Study: Manoa REDD+ project

The Manoa Reducing Emissions from Deforestation and Forest Degradation (REDD+) project was established in 2013 to implement sustainable forest management practices, satellite, and on-the-ground monitoring and patrolling and environmental education for local communities to preserve the forest in Rondônia, Brazil. The VCS-registered project is well-rated by independent, third-party rating agency, Renoster.

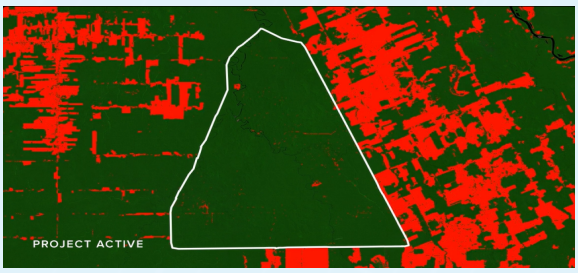


Figure 4.4. Forest loss within and outside of Manoa's project area (Image obtained from Pachama, 2022)

It is verified for quality by the remote sensing and machine learning models of Pachama, a climate-technology company focused on verifying and monitoring nature-based ERC projects. The project is sold by several brokers and intermediaries at more than USD 20 (based on offered price to individuals), slightly above the average offer price of USD 18-19 for REDD projects. As of the first quarter of 2023, 60 per cent of its issued ERCs have been retired.

The Manoa REDD+ project's ability to achieve a positive carbon-integrity rating and relatively strong demand and value is attributed to its robust MRV processes, centered around verifiable and conservative approaches to data referencing, collecting, and monitoring, and reinforced by its well-structured monitoring plan.

Subcomponents	Examples of best practice mechanisms	Rating
Project management	• Defines each task and deliverable to each participant, and describes their competencies to execute responsibilities. • Explains communication between parties as part of action plan for monitoring.	
Methodologies	• Used PRODES, a government-provided local data, for baseline reference and reasonably justified choice of baseline.	
Data availability & data collection systems	• Data collected to monitor changes in carbon stock tabled, with each method, frequency of collection, and parameter described.	
Capacities & technical skills	• Forest management staff provided with annual training at the beginning of each crop. • VVB is ISO accredited and experienced in verifying forestry ERC projects.	
Tools & instruments	• Dinamica-EGO software, a geospatial modelling software, use that is approved by VM0015 methodology.	

Figure 4.5. Examples of best practice MRV mechanisms of the Manoa REDD+ project (Source: VCS, Project 1571)

Q2: Marketing, sales, and pricing

Once the project achieves confidence of delivery, it requires effective marketing, sales, and pricing strategies to ensure that its value is maximized and that the project can secure demand once ERCs are generated. This criterion assesses the robustness of the fundamental elements required for strong marketing, sales, and pricing that enable projects to attract high demand and best-value pricing in a global market. While the marketing, sales, and pricing of ERCs rely largely on the entity with the rights to sell the ERCs generated from the project (the 'seller') and its capabilities, this assessment also considers the inputs required for executing these strategies at a project-level.

The following sources and analyses can serve as a guide for the assessment:

- Review the comprehensiveness and completeness of project information in the project documents, and how information is structured.
- Review the description of the project activity, how ERCs are generated, and how Sustainable Development Goal (SDG) contributions are communicated in the project documents.
- Review the availability of graphics and visual elements in the project documents.
- Review the intended ERC seller of project in terms of their marketing capabilities and sales and pricing strategies.

There are five assessable subcomponents to this criterion, where three subcomponents focused on assessing the project's elements for marketing, and the marketing capabilities and strategy of the seller, against the guideposts provided in Figure 4.6:

- **Completeness and transparency of information**: Clarity and structure of information set up for marketing project.
- **Storytelling and impact**: Framing of project activity and context for communicating its story and impact.
- **Visuals**: Ability of project to illustrate activities and impact visually, and capabilities of the seller to leverage on visuals to complement project information and storytelling.

The other two subcomponents review the sales and pricing strategy of the seller:

- **Sales:** Strategy, presence, and track record of the seller to bring ERCs to global markets and diverse buyers.
- **Pricing:** Strategy of the seller to achieve sales target through competitive and well-informed, benchmarked pricing in line with market rates.

Rating	Rationale for rating
Marketing (Completeness and transparency of information)	
	• Project fully discloses information pertaining to attributes including its location, size, type of ERCs generated, technology and methodology, and project proponents in a clear and organized manner that requires no or little refinement. • Project has an experienced team responsible for documentation in a standardized manner. • If the project does not follow an ICROA-approved standard, the standard that the project is considering registration under transparently and publicly provides information on its program, rules, approach and requirements, and has intentions to seek approval from ICROA or the

	upcoming standard by the Integrity Council for the Integrity of the Voluntary Carbon Market (ICVCM).
	• Project fully discloses information on attributes including its location, size, type of ERCs generated, technology and methodology, and project proponents, where reorganization or refinements are needed to improve accessibility. • Project has a team with reasonable experience responsible for documentation. • If the project does not follow an ICROA-approved standard, the standard that the project is considering registration under transparently and publicly provides information on its program, rules, approach, and requirements.
Marketing (Storytelling and impact)	
	• Project clearly and comprehensively describes its context and need for carbon finance, how ERCs are generated, and its impact on climate, environment, and community. • Project clearly communicates and, to the extent possible, quantifies its SDG contributions.
	• Project briefly describes its context and need for carbon finance, how ERCs are generated, and its impact on climate, environment, and community, where in alignment with similar project types (i.e., may be generic). • Project briefly communicates and, to the extent possible, quantifies its SDG contributions in alignment with similar project types.
Marketing (Visuals)	
	• Project has specific activities directly related to ERC generation that can be captured via photos or videos in an ethical and legal manner. • The seller has an online and public site to share the project profile, and has extensive capabilities in preparing marketing materials for such projects demonstrated by having most marketing elements incorporated.
	• Project has plans to capture activities via photos or videos in an ethical and legal manner, that relate to elements of the ERC project. • The seller has capabilities to enable wider sharing of the project information (e.g., online website/platform). • The seller has moderate capabilities in preparing marketing materials in alignment with similar project types.
Sales	
	• The seller has an international market reach and presence in key regions, and tailors its sales efforts to the local demand. • The seller has multiple sales channels and transaction models, to enable access to wide array of buyers, including individuals, corporates, intermediaries, and exchanges. • The seller has a track record and strong reputation for selling credible ERCs.
	• The seller has international market reach in key regions. • The seller has capabilities to tap multiple sales channels, including for accessing corporate buyers. • The seller has a reputable portfolio of ERC projects that have not been criticized for credibility, and which the project may reasonably expect to be included in.
Pricing	
	• The seller follows best-practice pricing schemes and strategies leveraging on pricing benchmarks to ensure fair pricing based on project type.

	• The seller has multiple transaction models to ensure that best value for any transaction is achieved, including contracting models that allow for forward purchases and options to secure early financing.
	• The seller has a pricing strategy based on at least one credible pricing benchmark to ensure reasonable and fair pricing based on project type. • The seller has a basic transaction model for spot purchases.

Figure 4.6. Guideposts for rating marketing, sales, and pricing

While this assessment takes a holistic approach to assess a given project's capabilities to tailor to any type of buyer, it is important to note that the importance of each subcomponent depends on the buyer archetype and should be targeted accordingly. For example, investors who are looking at ERCs to establish carbon-neutral funds would be more concerned about the seller's market access and track record. On the other hand, corporates considering the purchase of ERCs for offsetting to meet their climate-neutrality or net-zero goals may be more interested in the project's storytelling and impact and visuals. In general, having an ERC seller with well-rounded capabilities to execute the best practices of marketing, sales, and pricing subcomponents will enable a project to attract demand from different buyer archetypes.

In addition, the project's ability to reach out to different buyers also depends on the contracting models offered by its ERC seller. Leading ERC sellers offer multiple contracting models to buyers to balance delivery risks, price fluctuations, and need for early financing, as each contracting model is optimal for specific circumstances but carry consequent risks. [Figure 4.7.] For example, offering spot purchases of existing, issued ERCs can enable risk-free delivery given that the ERCs already exist in the seller's account, and will also not be subject to price fluctuations given that the sold price is the market price at the time of sale. However, such models mean that the seller takes on the financial risk and opportunity cost until the ERCs are issued and sold. This could also risk the depreciation of ERCs over time if sales are not made upon issuance, given that some buyers tend to prefer vintages closer to the year they are compensating their emissions for. A mix of these models would enable the seller to capture interest from different buyer archetypes, achieve sales at multiple points of the project's timeline, and manage potential risks that they take on.

	Ex-post credits (ERCs are verified and issued at time of sale)		Ex-ante credits (ERCs are estimated based on PDD at time of sale)	
	Spot purchase of existing ERCs	**Forward purchase of existing ERCs**	**Forward purchase of future ERCs**	**Investment into future ERCs**
ERC status	Credit in stock	Credit in stock	Future credits via upcoming issuances	Future credits via early-stage projects
Delivery & payment	Delivery & payment within a few days of contract signing	Delivery & payment at pre-defined date and volume, payment upon delivery	Delivery & payment at estimated date and volume, payment upon delivery	Structured long-term deal with pre-defined share of credits or revenue-sharing returns
Pricing	'Market' price at time of purchase	Multiplier for each year, or indexed to standardised contract (e.g., CBL GEO[1])	Multiplier for each year, or indexed to standardised contract	Dependent on project and deal
Optimal for	• No risk of price fluctuations • Risk-free delivery • Immediate cash	• Securing long-term contracts • Risk-free delivery • Guaranteed cash flows for the future	• Charging premiums for unique and highly demanded projects • Guaranteed cash flows for the future	• Securing financing pre-validation – lower opportunity costs and investment risks
Risks to seller	• Prior to sale, opportunity cost and financial risk • Possible depreciation of ERCs as vintages get older	• Subject to price fluctuations • Buyer insolvency	• Subject to price fluctuations • Lower ex-post ERCs • Issuance delays • Buyer insolvency	• Project not getting approval • High risk of lower ex-post ERCs • High risk of issuance delays • Buyer insolvency
Typical ERC use	For immediate offsetting	For near-term future offsetting based on predicted emissions	For near-term future offsetting based on predicted emissions	For future long-term offsetting, often up to 2030/2050

Figure 4.7. Overview of contracting models offered by ERC sellers (non-exhaustive)

Finally, a seller's engagement with the market is crucial for understanding market prices, enabling them to set fair prices that buyers will be willing to pay. Each seller has its own method of setting prices, largely dependent on their scale, set up, and the projects they sell, but it is also important for sellers to track market prices and ensure that they are competitive with market rates. This is especially important given secondary markets are gaining traction and driving greater price transparency among buyers, particularly those who have higher market awareness who tend to be buyers of large volumes of ERCs. Sellers may consider the following sources and analyses when setting benchmark ERC prices:

- Reviewing their internal inventory to set premiums on project types that are less common;

- Accounting for the average cost per tonne of the ERC;
- Monitoring the sales price of their contracted deals and the indicative budget of potential buyers;
- Tracking prices on market exchanges such as AirCarbon and CBL Market, or from other brokers and intermediaries they interact with; and
- Analyzing the total issued and retired volume of various registries to indicate market supply and demand.

These benchmark prices could be set based on willingness-to-pay factors such as the ERC's certification, subtype, geography, and vintage.

Box 3 Case Study: Vietstar Waste Treatment

The Vietstar Waste Treatment project in Vietnam began operations in 2013, with the goal of leveraging composting technology to sort municipal solid waste, recycle plastic wastes, and use thermal aerobic treatment for the remaining organic wastes to produce aerobic compost to be used as fertilizers for local farmers. In doing so, the project avoids methane emissions from anaerobic decay of waste that would otherwise have been released into the atmosphere in the business-as-usual scenario. The project, registered under the Gold Standard, has sold and retired all of its issued credits as of 2023, including its latest issuance in December 2021.

Figure 4.8. Image used by the International Monetary Fund's 2021 Sustainability Report

The ERCs from the project have been sold to corporates such as Ayden and Wavemaker Partners, as well as international organisations such as the International Monetary Fund, who have featured their support for the project on their websites.

The Vietstar project's ability to attract demand from corporate buyers is driven by its best-practice marketing, sales, and pricing strategy, specifically, its impactful story and visuals and reputation as an ERC seller with strong marketing capabilities. In the project's marketing material, the seller informs buyers transparently of the project's activities and context, and illustrates its impact via authentic and relevant visuals and quantifying its SDG contributions.

Subcomponents	Examples of best practice mechanisms	Score
Completeness and transparency of information	• Project fully discloses information on attributes across PDD and monitoring reports, where reorganization is needed.	**3**
Storytelling and impact	• Project documents clearly describe project's context. • SDG contributions are quantified, monitored, and clearly communicated.	**5**
Visuals	• Project has images of waste treatment plant and compost produced. • Seller has an online site to feature project where key marketing elements are incorporated.	**5**
Sales	• Seller has international market reach. • Seller has multiple sales channels and track record of selling to large multinational corporations.	**5**
Pricing	• Seller has multiple transaction models for forward purchases to secure early demand.	**5**

Figure 4.9 Examples of best practice marketing, sales and pricing elements and strategies of the Vietstar Waste Treatment project (Source: Gold Standard, Project 2525; South Pole)

Q3: Project governance and structure

This criterion assesses the capabilities, structure, and counterparty risks of the project team that ensure that they are well resourced and appropriately organized to carry out respective responsibilities throughout the lifetime of the project. This assessment focuses on the project proponent(s) and participant(s) involved in the management and coordination of the project activities, the monitoring and reporting of the ERCs in alignment with the methodology and relevant standard, and the financing of the project.

The following sources and analyses can serve as a guide for the assessment:

- Review the list of project proponent(s) and participant(s), their role(s) in the project and their expertise, experience, and background through gathering information from project documents, conducting desktop research, and interviewing project counterparts.
- Conduct a high-level background check on project proponent(s) for potential counterparty risks through desktop research and interviews with the project counterparts.

There are four assessable subcomponents to this criterion, where the credibility of the project's governance and management are assessed by these qualities, against the guideposts provided in Figure 4.10:

- **MRV capabilities**: In addition to the MRV mechanisms assessed under Q1: MRV infrastructure, the relevance and depth of experience of the party responsible for MRV in generating market standard ERCs.
- **Implementation capabilities**: The experience of the project implementor in carrying out relevant project activities.
- **Local knowledge and engagement**: The understanding of local conditions and ability to engage with local counterparts necessary for carrying out project activities and generating ERCs that are approved by local governments.
- **Counterparty risk**: The track record of the project proponent(s) in ensuring a project's success, preventing legal implications and potential reputational risks.

Rating	Rationale for rating
MRV capabilities	
	• Responsibility for the MRV process is assigned to a project participant that has demonstrable experience with carbon accounting for the project type through at least one verified and issued ERC project approved by the same methodology in the country. • Project participant responsible for the MRV process for the issuance of ERCs has a portfolio of several verified and issued ERC projects of a similar volume.
	• Entity responsible for MRV process has demonstrated experience with carbon accounting for the project type through at least one verified and issued ERC project of approved by the same methodology in the region, who could be an ad-hoc contracted consultancy with the necessary expertise. • Entity responsible for the MRV process for the issuance of ERCs has achieved verification and issuance for one ERC project of a similar volume.
Implementation capabilities	
	• Project participant(s) responsible for the facilitation of project activities have expertise in the relevant field, as proven by past projects, including non-ERC projects of a similar project type.

	• Project appraisal or initial risk assessment expects low institutional risks for its implementation.
	• Project participant(s) responsible for the facilitation of project activities have limited expertise in the relevant field, but will be supported with technical assistance or contract the necessary service providers to support the technical needs for the project implementation. • Project appraisal or initial risk assessment expects high institutional risks for its implementation, and will implement the necessary mitigation measures to manage these risks.
Local knowledge and engagement	
	• At least one project proponent is a local entity with understanding of local relationships, culture, legal frameworks, and governance structures. • At least one project participant has experience engaging with host country national, subnational bodies around Article 6 considerations.
	• Project has access to knowledge of local relationships, culture, legal frameworks, and governance structures, such as through engaging local consultancies.
Counterparty risk	
	• Project proponent(s) have procedures to avoid, identify, and resolve conflicts of interest in its operations, as well as with and within the contracted VVB. • Project proponent(s) do(es) not have any ongoing lawsuits or disputes and have not been involved in litigation. • Project proponent(s) do(es) not have evidence of integrity risks related to corruption, fraud, money laundering, tax evasion, undue political influence, etc. • Project proponent(s) have evidence of legal documents and approvals, including documentation of land rights where applicable, for the lifetime of the project. • Project proponent(s) have not faced or are not otherwise at risk of facing local and/or international media criticism. • Project proponent(s) have evidence of sufficient cash flows to carry out project activities and verification cycle throughout the lifetime of the project. • Project proponent with rights to sell ERCs has a know-your-customer (KYC) process to avoid potential reputational risks associated with buyers, as well as anti-money laundering (AML)/Combating the financing of terrorism (CFT) processes.
	• Project proponent(s) have procedures to avoid, identify, and resolve conflicts of interest in its operations, as well as with and within the contracted VVB. • Project proponent(s) do(es) not have any ongoing lawsuits or disputes and have not been involved in litigation due to an ERC project. • Project proponent(s) do(es) not have evidence of integrity risks related to corruption, fraud, money laundering, tax evasion, undue political influence, etc. • Project proponent(s) have evidence of legal documents and approvals, including documentation of land rights where applicable, for the first crediting period. • Where project proponent(s) have faced local and/or international media criticism, they have responded with substantial evidence to refute allegations. • Project proponent(s) have a credible plan to raise funds that will enable it to carry out project activities and verification cycle throughout the lifetime of the project.

Figure 4.10. Guideposts for rating project governance and structure

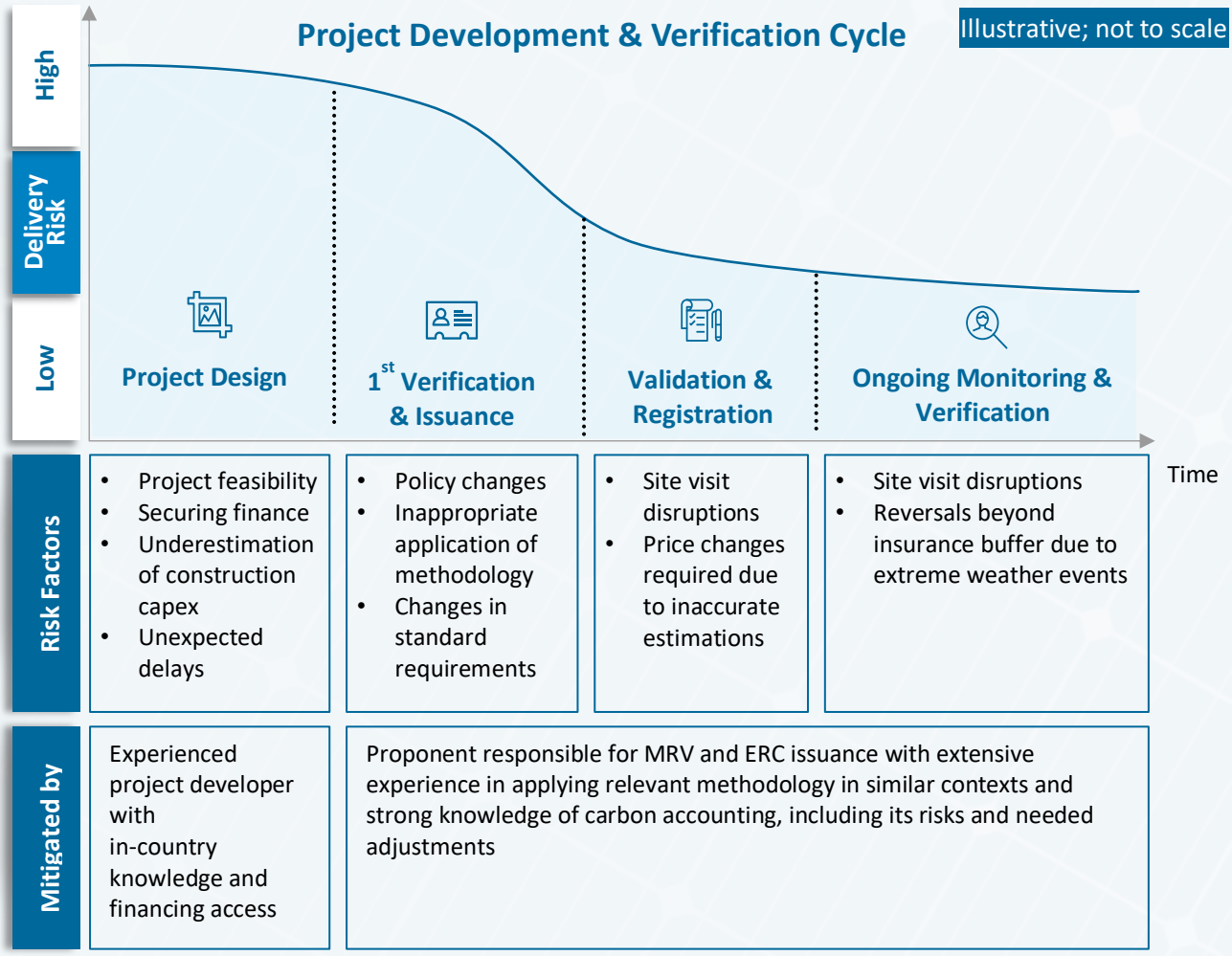


Figure 4.11. ERC project's delivery risk through project development and verification cycle

Good governance and structure reduces the delivery and reputational risks for a given project, which provides confidence in its quality. ERC projects, by their nature, have high delivery risks before validation and registration given the challenges around feasibility, securing finance, and potential for unexpected delays, which can be minimized by a well-equipped team with a track record of delivering ERC projects. Once a project achieves its first verification and issuance, although delivery risks are significantly reduced thereafter, the risk of site-visit disruptions, reversals, policy changes, and other external factors still pose uncertainties for future issuances, where ongoing governance by an experienced team is needed to manage these risks across the project's crediting period. [Figure 4.11.] This is important to ensure that the value of the ERC project is realized and that buyers—especially buyers looking for forward purchasing options—have confidence that their purchased credits will be delivered, and be of the required quality, with assurance as well that their support of the project will not have significant reputational risks.

C1: Carbon integrity

This criterion assesses the inherent carbon-integrity risks of a given project based on its project type, specifically the nature of its project activities and generation of ERCs, and the robustness of project-level mitigation measures

that can lower such risks. This will help Governments and project developers understand the risks of additionality, measurability, and permanence due to the nature of the project activity, and the mitigants to manage these risks. Having mitigation measures in place will be important to give buyers confidence that the project has duly made efforts to manage risks within its control, withstanding the external risks due to the nature and location of the project activity.

This assessment takes a two-step approach to identifying the general risk of each project type and the possible mitigation measures to reduce these risks, as a method to assess the potential technical feasibility of the project at a preliminary level. This approach is taken to overcome time and expertise limitations required for doing a technical review of the project's carbon integrity while providing a sense of a project's ability to meet the carbon integrity expectations of the market.

The following sources and analyses, undertaken in the suggested order, can serve as a guide for the assessment:

1. Identify the inherent risks across additionality, measurability, and permanence at the project-type level using the provided risk matrix as reference. [Figure 4.13.]
2. Review the project documents to understand the mitigation measures in place to address such risks or engage with the project counterpart if needed to complement information.
3. Compare the project's mitigation measures to the suggested best-practice mitigation measures for robustness. [Figure 4.14.]
4. When assessed to be robust, reduce the risk level of the project by one level for the subcomponent, otherwise keep as is, following the guideposts provided for final rating. [Figure 4.12.]
5. Update risk matrix and mitigation measures following checklist questions and suggested sources in Chapter IV.

In this criterion, each subcomponent measures the following risks:

- **Additionality**: Risk of project type not needing carbon finance to occur or not going beyond a business-as-usual scenario, and/or risk of its baseline scenario being disputed.
- **Measurability:** Risk of project type over-crediting due to tendency of leakage, lack of rigorous carbon accounting methodologies, and/or monitoring challenges.
- **Permanence**: Risk of project type incurring reversals due to probability, severity, and impact of natural reversal risks and nature of ERCs.

Rating	Rationale for rating
	• Low inherent risk. • Medium-low inherent risk with robust mitigation measures.
	• Medium-low inherent risk. • Medium-high inherent risk with robust mitigation measures.
	• Medium-high inherent risk. • High inherent risk with robust mitigation measures.
	• High inherent risk. • No or lack of robust mitigation measures.

Figure 4.12. Guideposts for rating carbon integrity

The lowest possible score for any subcomponent is rating of 2, as it is assumed that projects which pass the initial profiling step in Step One would pass a minimum threshold for carbon integrity.

As each project type has inherent carbon-integrity risks due to the nature of its respective project activity and generation of ERCs, the risk matrix provided maps out the risk level of each carbon integrity subcomponent for a specific project type. The risk levels assigned are as follows:

- Low inherent risk
- Medium to low inherent risk
- Medium to high inherent risk
- High inherent risk

Carbon Integrity Principles		Additionality	Measurability	Permanence
Nature-based solutions	Avoided deforestation, or REDD	• High additionality risk due to unclear and changing legal/policy protection for forests. • Methodologies to define baseline deforestation rates (i.e., the counterfactual to the project being implemented) are often disputed.	• High risk of leakage of deforestation outside project boundaries, especially where: drivers of deforestation are highly mobile; there is limited regulation in jurisdiction; there are limited alternative opportunities for rural livelihoods.	• High risk of reversals from illegal logging, land tenure conflicts, natural hazards such as forest fires, and shifts in policy/protection status.
	Afforestation, reforestation, and regeneration (ARR)	• Potential additionality risk in projects where wood harvest is sold, and revenue is more than ERC revenue.	• Moderate risk of leakage of prior land use (e.g., grazing grasslands) outside project boundary. • Monitoring can be challenging due to reliance on self-reporting and limited opportunity for satellite monitoring.	• Moderate risk of reversals from illegal logging (in the case of regeneration), land tenure conflicts, and natural hazards such as forest fires.
	Improved forest management (IFM)	• Additionality is typically easy to demonstrate through economic analysis showing improved forest	• Moderate risk of leakage of higher harvest rates outside project boundary.	• Moderate risk of reversals from illegal logging, land tenure conflicts, and natural

		management would not be attractive without carbon finance. • Methodologies to define baseline scenarios are sometimes disputed.	• Monitoring can be challenging due to reliance on self-reporting and limited opportunity for satellite monitoring.	hazards such as forest fires.
	Agricultural land management (ALM)	• Moderate additionality risk as improved agricultural practices (e.g., regenerative agriculture) become more mainstream and economically attractive without carbon finance.	• Moderate risk of leakage (e.g., if practices cause decreased yields, which is compensated for by converting uncultivated land to agriculture). • Monitoring can be challenging due to high cost of direct measurement and limited opportunity for satellite monitoring; costs may decrease with better technology.	• Moderate short-term risk of reversals from soil carbon release through change in agricultural practices where contracts and land tenure rights are not well defined. • High long-term risk of reversals with shifts in land ownership and practices.
Engineered solutions	Renewable energy	• High additionality risk in markets where renewable energy is quickly becoming more economically viable than fossil fuels, without the need for carbon finance. • Methodologies to determine baseline grid emission factors are sometimes disputed.	• Monitoring of energy generation is straightforward, but is sometimes reliant on self-reporting.	• Low permanence risks given that ERCs are generated by avoided emissions and not by stored carbon.

	Energy efficiency	• Heightened additionality risk in markets where cost savings from energy efficiency may be sufficient to justify interventions without the need for carbon finance.	• Monitoring of energy savings compared to baseline use require measuring equipment-usage and energy-service levels that could be challenging.	• Low permanence risks given that ERCs are generated by avoided emissions and not by stored carbon.
	Wastewater treatment/biogas	• Potential additionality risk in markets where energy from wastewater treatment or biogas capture can be sold.	• Limited approved methodologies to measure methane recovery in wastewater treatment or biogas capture.	• Low permanence risks given that ERCs are generated by avoided emissions and not by stored carbon.
	Landfill gas	• Heightened additionality risk in markets where energy from landfill gas can be sold or jurisdictions where landfill gas capture is regulated.	• Collection efficiency of gas leakage can be variable, but monitoring technology is relatively straightforward.	• Low permanence risks given that ERCs are generated by avoided emissions and not by stored carbon.
	Cookstoves	• Potential additionality risk in markets where efficient cookstoves are cheaper and already being bought by communities.	• Monitoring challenges over time; moderate risk households will revert to or maintain traditional cooking methods.	• Low permanence risks given that ERCs are generated by avoided emissions and not by stored carbon.
	Water filters	• Potential additionality risk where water filters or other low-carbon alternative water purification techniques are cheaper or subsidized.	• Methodologies to quantify emissions reductions from use of water filters in lieu of boiling are novel and contested. • Monitoring water filter use over time is challenging.	• Low permanence risks given that ERCs are generated by avoided emissions and not by stored carbon.

	Carbon capture, utilization and storage (CCUS)/Bioenergy with carbon capture and storage (BECCS)/Direct air capture (DAC)	• Additionality is typically easy to demonstrate through economic analysis that shows project would not be feasible without carbon finance, given high cost to develop.	• Limited monitoring challenges due to controlled environment at collection facilities and high degree of monitoring regulatory requirements.	• Limited permanence risk for leakage from geologic reservoirs; risk variable depending on storage/use technique.

Figure 4.13. Risk matrix for inherent carbon integrity risks of project types

At a project level, project proponents can implement measures to mitigate these risks and therefore lower carbon integrity risk. [Figure 4.14.] The presence of all listed mitigation measures will result in a lowered risk level by one level at the maximum. The adjustment limit to one level is due to the fact that while mitigation measures can reduce such risks, certain project types carry inherent risks that are beyond the control of the project proponents, and which should be taken into account to ensure robustness of this exercise. It is also important to note that the development of new requirements and methodologies by accrediting standards could also affect these mitigation measures and the best practice for ensuring carbon integrity. Chapter V provides guidance on the updating of these mitigation measures.

Carbon Integrity Principles	
Nature-based solutions	
Additionality	• [For avoided deforestation] Project is in a region that has historically experienced forest loss, as proven by satellite imagery sources or national databases where available. • [For projects that produce and sell wood harvests from the project activity] Project's revenue from wood harvest is less than ERC revenue, or otherwise would not be generated at all without the ERC project. • Project uses jurisdictional-scale historical emissions for measuring baseline emissions, conservatively adjusted in the case of high forest, low deforestation countries.
Measurability	• Project identifies potential of activity-shifting leakages and market leakages and implements leakage prevention activities, e.g., supporting local stakeholders affected by the prevention of business-as-usual activities by reskilling them, addressing deforestation drivers, strengthening law enforcement, etc. • Where project has identified potential leakage, project has accounted for leakage compensation in its carbon accounting, specifically based on risk assessment at ex-ante estimations and then based on monitoring at ex-post calculations. • [For avoided deforestation] Project monitors a leakage belt area and tracks deforestation activities in the area.
Permanence	• Project has conducted a non-permanence risk assessment that comprehensively addresses internal, external, and natural risks that are substantially backed by referenced data, and compensates for the risk of reversals via an appropriate mechanism, e.g., a buffer pool enforced by the accrediting standard.

	• For projects with a non-permanence risk rating of above 10%, project has a plan for managing and mitigating the risk of reversals where identified, e.g., enforcing patrols to prevent illegal logging, thinning to reduce risk of forest fires and diseases, etc.
Engineered solutions	
Additionality	• Project's non-ERC revenue or cost savings from project activity is less than ERC revenue, or otherwise would not be generated at all without the ERC project. • [For renewable energy] Project is not connected to a national or regional electricity grid, or, if so, is located in a Least Developed Country (LDC), Small Island Developing State (SIDS), or a Landlocked Developing Country (LLDC), or Low Income and Low Middle-income country where the penetration of renewable energy is less than 5% of the total grid-installed capacity. • [For household devices] Project references credible data sources to demonstrate low use of project activity.
Measurability	• Project affixes data loggers to devices or plant to capture data on usage over time more accurately. **As most risk factors for engineered solutions regarding measurability are associated with methodologies or monitoring challenges, mitigation measures at the project-level are limited or will be assessed within the scope of the MRV executional capabilities.*
Permanence	• [For CCUS/BECCS/DAC] For carbon utilization, use for processes with long sequestration duration proven by research, e.g., concrete, mineral carbonation, lithium hydroxide refinery, or graphene for batteries. • [For CCUS/BECCS/DAC] For carbon storage, storage infrastructure has low risk of leakage, e.g., unmineable coal deposits, basalt formations, oil and gas reservoirs.

Figure 4.14. Mitigation measures for lowering carbon integrity risk levels at project-level

C2: Environmental risk management

This criterion assesses the robustness of a given project's measures and procedures to ensure that it does not have a net negative impact on the environment, biodiversity, ecosystems, and resources in its construction and throughout its lifetime, following the 'do no harm' principle. While projects in jurisdictions that require an environmental impact assessment (EIA) or any other form of biodiversity or ecosystem impact assessment should do so, recognizing that such requirements could differ at a national and subnational level, this assessment is intended for an independent review based on key vulnerable elements that require environmental risk management to avoid and mitigate irreversible harm. Assessing the project's potential environmental impact and implementing strong risk management measures is important to assure buyers that the projects have a net positive impact on the environment and that offsetting their emissions using the ERCs from the project will not result in reputational or institutional risks that go against their environmental policies.

For this assessment, using the project documents to review the project's measures and risk management measures for identifying, avoiding, and minimizing potential negative impact on the environment is suggested. For projects that follow a broader company- or organization-level policy, the assessment can be done based on the elements of the policy, withstanding that the elements of the policy applies wholly to the project, or if otherwise, the scores should be adjusted in a conservative approach. The same approach can be used for assessing C3: Social risk management and benefits.

There are three assessable subcomponents to this criterion, where the project's potential impact on each subcomponent, and risk management measures to address such impacts, are assessed against the guideposts provided in Figure 4.15:

- **Air, water, and land quality**: Impact on air, water, and soil due to the release of pollutants, wastes, or other harmful and/or hazardous materials and chemicals.
- **Biodiversity and ecosystems**: Impact on biodiversity and ecosystems due to effects on natural habitat or native species.
- **Use of resources**: Impact on natural resources due to excessive resource use.

Rating	Rationale for rating
Air, water, and land quality	
	• [For non-AFOLU] Project assesses its near- and long-term potential impact on air, water, and land and describes clear procedures to avoid the release of such pollutants, including in the case of accidents. • Project does not release or use any hazardous materials and chemicals, including the use of chemical pesticides and fertilizers. • Where project activities produce waste, project has a waste management system in place to reduce the generation of waste, and recover and reuse waste safely. • Where project involves the use of landscape, it ensures that there is no net degradation in existing landscape function and services by identifying potential impact on soil and putting in place measures to minimize soil degradation and reduce soil erosion.
	• [For non-AFOLU] Project assesses its near- and long-term potential impact on air, water, and land from the release of pollutants and has procedures to minimize the release of such pollutants. • Project avoids or minimizes, when not feasible, the release or use of hazardous materials and chemicals, where the use of chemical pesticides and fertilizers is justified with appropriate controls. • Where project activities produce waste, project ensures that waste is treated or disposed of in an environmentally sound manner. • Where project involves the use of landscape, project ensures that there is no net degradation in existing landscape function and services by identifying potential impact on soil and putting in place measures to minimize soil degradation and reduce soil erosion.
Biodiversity and ecosystems	
	• Project assesses its near- and long-term impact on terrestrial and marine biodiversity and ecosystems, including identifying its proximity to areas of importance to biodiversity and HCV, and describes clear procedures to ensure that there will be no net negative impact. • Project does not convert or degrade natural habitats. • Project does not introduce any new non-native species or use genetically modified organisms (GMOs).
	• Project assesses its impact on terrestrial and marine biodiversity and ecosystems, including identifying its proximity to areas of importance to biodiversity and high conservation value (HCV) areas, and has procedures to ensure that there will be no net negative impact.

	• Project does not significantly convert or degrade natural habitats and has designed mitigation measures to achieve no net loss of biodiversity if such implications are imposed. • Project does not use GMOs and if introduces non-native species, conducts an environmental and biodiversity assessment to ensure no net negative impact.
Use of resources	
	• Project identifies and assesses its use of energy, water, and other resources and material inputs and describes clear procedures to ensure the efficient use of these resources. • Where project takes place in a water-scarce or water-stressed area, the opinions and recommendations of an expert stakeholder are sought and demonstrated as being considered and incorporated into the project design.
	• Project has procedures to prevent the excessive use of energy, water, and other resources and material inputs. • Where project takes place in a water-scarce or water-stressed area, the opinions and recommendations of an expert stakeholder are sought and demonstrated as being considered and incorporated into the project design.

Figure 4.15. Guideposts for rating environmental risk management

Box 3 Case Study: Vietnam Renewable Energy Development Project

The Vietnam Renewable Energy Development Project (REDP), registered under a Programme of Activities (PoA) on the Clean Development Mechanism (CDM), is a World Bank-supported project that aims to develop hydropower projects in Vietnam by focusing on carbon finance to overcome investment barriers faced by the renewable energy sector. The project is in its second crediting period and has been ongoing since its registration in 2012.

Figure 4.16. Image of one of the REDP's powerplants in Vietnam (Image obtained from World Bank)

The hydropower plants constructed under REDP were designed with best-practice environmental and social framework requirements, where its environmental safeguards framework set strong precautionary measures for managing and minimizing potential negative environmental impact and risks, which are especially crucial for hydropower projects where such risks are high. The projects were constructed in rural and remote areas following its risk management measures and procedures, which enabled it to bring significant positive impact to the local people. The projects increased access to electricity for the communities and created jobs both during the construction and continued operation of the power plants.

Subcomponents	Examples of best practice mechanisms	Rating
Air, water, and land quality	• Projects conducted an EIA to assess potential impact during the plant's construction and operations and assessed extent and duration of potential impact. • Projects also conducted and documented an environmental management plan to propose mitigation measures to be implemented during the construction and operation phases of the projects to minimize potential negative impacts. • Any waste produced by the projects will be properly treated; e.g., waste rock will be used for upgrading roads. • After the completion of the project, the site will be recovered and planted with trees to prevent soil erosion.	
Biodiversity and ecosystems	• EIA includes an analysis of the projects' downstream impacts on aquatic biodiversity and identifying mitigation measures. • Projects follow the REDP's environmental framework requirements that prohibits projects from converting or degrading natural habitats.	
Use of resources	• Projects implement environmentally friendly practices such as the maintenance of a minimum ecological flow and monitors water supply and potential changes in local water resources.	

Figure 4.17. Examples of best practice environmental risk management measures of the REDP (Source: Clean Development Mechanism, Programme of Activities 6810)

C3: Social risk management and benefits

This criterion assesses the comprehensiveness of a given project's stakeholder engagement and benefit-sharing procedures that ensure that it has strong social risk management measures for achieving fair engagement and equitable benefits, following best practices to do no harm. This criterion is the second quality-execution criteria as projects that have strong stakeholder engagement and benefit-sharing mechanisms tend to be set up for long-term success, given support from local communities and awareness and consideration of local conditions. Similar to C2, this criterion is also important to assure buyers that the project is supported by local stakeholders and will not result in potential reputational risks. In addition, projects that have a benefit-sharing plan will attract buyers who are keen to support projects where part of the ERC payment paid goes directly to the community. This assessment thus examines the social integrity of a project in its design and implementation, specifically to review its consideration for social impact and benefit to local communities.

By referring to project documents, and conducting interviews with project counterparts where project documents lack the required information, the following analyses can serve as a guide for the assessment:

- Review project's procedures and assurances for obtaining land and/or asset rights to carry out the project activity in the area, and its risk management measures for potential land tenure conflicts, where relevant.
- Review the project's approach to and procedures for stakeholder engagement.
- Review the project's benefit-sharing mechanisms, if any, and plan for how benefits are distributed.
- Review the project's risk management measures for identifying, avoiding, and minimizing potential negative impact on local communities.
- Review the project's approach to disclosing information and ensuring accountability to stakeholders.
- Review the project's procedures and mechanisms for continuous engagement and grievances.

There are six assessable subcomponents to this criterion, where the project's social risk management measures and sharing of benefits to stakeholders and local communities are assessed against the guideposts provided in Figure 4.18:

- **Respect for human rights**: Adherence to internationally established standards and procedures for the respect of human rights and land or asset rights, especially with regards to indigenous peoples and local communities (IPLCs).
- **Inclusiveness and equality**: Approach to engaging stakeholders ensures that all relevant parties are included and appropriately consulted, and procedures to avoid unequal and inequitable design of project activities.
- **Benefits sharing**: Local communities benefit from the project activities, and the provision of benefits to stakeholders is fair.
- **Do no harm**: Design and implementation of project activities ensures no net negative impact to local communities, and protects the safety of the people involved in the project activities.
- **Transparency and accountability**: Communication of the project ensures that stakeholders are well informed and aware of the project activities and its potential impact.
- **Continuous engagement and redress mechanism**: Opportunities for raising feedback, with confidence that the feedback will be addressed, are open and made aware to stakeholders throughout the project's lifetime.

Rating	Rationale for rating
Respect for human rights	
	• Project activities are consistent with national and international human rights laws ratified by the host country. • Project comprehensively describes and implements free, prior, and informed consent (FPIC) processes following the principles laid out by the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) where there are IPLCs involved in the project. • Project proponent has obtained the rights to the land and/or assets covered by the project area and activity in an appropriate and legal manner, where the project proponent confirms and justifies that there is no risk of potential land tenure conflict.
	• Project activities are consistent with national and international human rights laws ratified by the host country. • Project ensures that FPIC processes following the principles laid out by UNDRIP are in place where there are IPLCs impacted by or involved in the project. • Project proponent has plans to obtain the rights to the land and/or assets covered by the project area and activity in an appropriate and legal manner, where if risk of potential land tenure conflict is identified by the proponent or common in the location, the project has measures to manage such risks while respecting the rights of local communities.
Inclusiveness and equality	
	• Project's approach to identifying stakeholders is explained and reasonably captures their relevance to the project activity, as well as reflects how considerations for ensuring that stakeholder consultations are inclusive, culturally appropriate, respectful of indigenous and local knowledge, and effective for local communities are embedded, including having project documents in the local language and disseminated according to local norms. • Project identifies where there are existing inequities and discriminatory practices within the project boundary area and designs project activities to address rather than further exacerbate them, before activities are implemented. • Project ensures that local stakeholders' views are sought out and sufficiently considered, with details on how comments and feedback are addressed, before activities are implemented.
	• Project's approach to identifying stakeholders is explained and reasonably captures their relevance to the project activity, but does not reflect how considerations for ensuring that stakeholder consultations are inclusive, culturally appropriate, respectful of indigenous and local knowledge, and effective for local communities are embedded. • Project activities do not apparently exacerbate existing inequities and discriminatory practices within the project boundary area, such as activities that could disproportionately benefit certain groups over disadvantaged or vulnerable groups. • Project ensures that local stakeholders' views are sought out and considered before activities are implemented, with some information on how comments and feedback are addressed.
Benefit sharing	
	• Where applicable, project activities prioritize and utilize indigenous and local knowledge in their design, and describes how this is incorporated. • Benefit sharing (BS) plan is negotiated during the initial consultation, where the party responsible for implementing BS agreements is defined and communicated. • Project distributes monetary and non-monetary benefits to actors:

	a) who take verified actions to achieve emission reductions; b) with legal rights (statutory and customary) to resources used by the project activity; and/or c) who have proved effective facilitators and essential in facilitating emission reduction activities. where proportion of benefits allocated to local people—especially affected IPLCs—represent the most significant share of benefits.
	• Project provides benefits to the local community that are described and considered in the project design, such as through capacity building, infrastructure support, employment opportunities, etc., and monitored and reported on quantitatively in its SDG contributions, such as through SDGs 1, 2, 3, 4, 5, 6, 8 and 10.
Do no harm	
	• Project does not result in any adverse social or economic impacts from land acquisition or restrictions on land use, actively avoids displacement through alternative project designs, and does not result in forced eviction. • Where applicable, such as in renewable energy projects, project has measures that follow international and/or local environmental, health, and safety guidelines.
	• Project avoids and minimizes adverse social and economic impacts from land acquisition or restrictions on land use, avoiding or minimizing displacement and forced eviction through alternative project designs; where necessary to do so, project has measures to improve or restore livelihoods and standards of living and the living conditions among displaced persons through the provision of adequate housing with security of tenure at resettlement sites. • Where applicable, such as in renewable energy projects, project has measures to promote safe and healthy working conditions.
Transparency and accountability	
	• Project ensures that stakeholders are informed of the potential impacts of the project activities and that project information and updates are readily accessible to stakeholders through verbal communication, websites, or newsletters. • Project should have documentary evidence of stakeholder consultations, the BS plan, including BS agreements, that is made public and readily accessible to involved stakeholders.
	• Project ensures that stakeholders are informed of the potential impacts of project activities and that project information and updates are readily accessible to stakeholders through verbal communication, websites, or newsletters. • Project should have documentary evidence of stakeholder consultations that is not yet made publicly accessible, but is available to the involved stakeholders.
Continuous engagement and redress mechanism	
	• Project implements effective opportunities for stakeholders to participate in decisions on how project activities are carried out throughout the lifetime of the project, where potential barriers to engagement are identified and removed. • Project has readily accessible dispute settlement and/or grievance resolution mechanisms with clearly delineated methods for reaching agreement and settling disputes, as well as the project participant(s) responsible for addressing these grievances. • The dispute settlement and/or grievance mechanism includes a process for how potential complaints arising from the implementation of the benefit sharing plan would be addressed.

	• Project has readily accessible dispute settlement and/or grievance resolution mechanisms with information on the project participant(s) responsible for addressing these grievances.

Figure 4.18. Guideposts for rating social risk management and benefits

Box 4 Case Study: Vietnam Renewable Energy Development Project

The Social Safeguards Framework established by the Vietnam REDP underpinned its success in garnering community support and ensuring that projects generated net benefits to the local community. The project applied best practices for ensuring inclusiveness and equality, transparency and accountability, and continuous engagement. These actions were exemplified by its clearly communicated mechanisms and procedures such as its Ethnic Minority Plan to ensure that minorities' rights are protected and that appropriate and accessible platforms for raising feedback and complaints to a designated entity are in place.

Subcomponents	Examples of best practice mechanisms	Score
Respect for human rights	• Projects follow World Bank's safeguard policies, including its policy for projects in which indigenous peoples are present.	
Inclusiveness and equality	• Consultation on the projects' design was conducted with stakeholders to consider their comments as part of the EIA, where measures to address these comments are detailed. • Projects have an Ethnic Minority Plan to ensure that minorities' rights are protected.	
Benefit sharing	• Projects contribute to sustainable development through employment creation, improving local infrastructure and improving water regulation.	
Do no harm	• Projects follow World Bank's Involuntary Settlement policy and Resettlement Policy Framework where appropriate compensation is provided for affected communities. • Projects comply with Dam Safety Framework.	
Transparency and accountability	• Project's safeguard documents and comments from stakeholder consultations are publicly disclosed.	
Continuous engagement and redress mechanism	• Grievance redress mechanism was designed and adopted for communities as part of the Ethnic Minority Plan, where the procedure for dispute settlement is clearly described.	

Figure 4.19. Examples of best practice social risk management measures of the REDP (Source: Clean Development Mechanism, Programme of Activities 6810)

S2: Socioeconomic value

This criterion assesses the broader value of the project to the environment, community, and to sectoral and national development, based on SDG indicators that are: (1) most relevant for demonstrating value to the wider economy; and (2) easiest to quantify for ERC projects. While certain carbon standards might require projects to monitor and verify their SDG contributions, which can be used as a reference, this assessment requires a further analysis to map SDG contributions that would be most relevant to governments for assessing a project's wider contributions to the economy. This is also withstanding that projects could be contributing to SDGs that are not yet indicated at the stage of assessment.

The following sources and analyses can serve as a guide for the assessment:

- Review the project's identified SDG contributions, if any, or otherwise benefits to the environment, community, and economy via project documents and/or interviews with the project counterpart.
- Identify indicators provided that match the project's contributions and assess if they meet the indicated threshold. [Figure 4.20]

The guidepost for the 'Overall socioeconomic value' subcomponent is based on both the number of SDG contributions, and whether the SDG contributions will be monitored and certified should be considered, as the latter suggests a higher quality of indicators given the assurance that they will be carried out throughout the project's verification cycles.

Rating	Rationale for rating
Overall socioeconomic value	
	Project has 3 or more SDG contributions that will be monitored and certified.
	Project has 3 SDG contributions.
	Project has 0 or 1 SDG contribution that relate to its wider economy value.
Socioeconomic value relative to similar projects	
	Project contributes to 100% of the possible SDG contributions specifically for its project type.
	Project contributes to at least 50% of the possible SDG contributions specifically for its project type.
	Project contributes to less than 25% of the possible SDG contributions specifically for its project type.

Figure 4.20. Guideposts for rating socioeconomic value

SDG	Impact area	Example indicators	Threshold	Relevant for project type
	Increased productivity	• Crop yield in kilograms per hectare and year as a result of the project's intervention.	Increase in yield	• Agriculture

SDG	Impact area	Example indicators	Threshold	Relevant for project type
		• Yield per livestock unit and year as a result of the project.		
	Air quality improvement	• Area under reduced/avoided open burning of biomass, crop residue. • Number of farmers reduced/avoided open burning of biomass, crop residue.	Positive number	• Forestry • Agriculture
	Capacity building	• Number of employees provided with skill development training.	Positive number	• All
	Gender	• Proportion of women in managerial positions in project.	Proportion more than men	• All
	Access to basic services	• Proportion of population using safely managed drinking water services (access to improved source of water).	Increase in proportion	• Water filters
	Access to basic services	• Proportion of wastewater safely treated.	Increase in proportion	• Wastewater treatment
	Energy generation, efficiency & access	• Total renewable energy produced by project. • Number of beneficiaries of electricity powered by renewable energy: households & individuals. • Proportion of population with increased access to electricity.	Positive number	• Renewable energy
	Access to basic services	• Proportion of population with primary reliance on clean fuels and technology, attributed by project.	Increase in proportion	• Cookstoves
	Employment	• Total number of jobs generated from project activity. • Value paid towards local employment.	Positive number	• All
	Infrastructure development	• Total official international inflows for infrastructure development support.	Positive number	• All

SDG	Impact area	Example indicators	Threshold	Relevant for project type
	Access to basic services	• Average household savings due to adoption of project technology.	Positive number	• Household projects
	Waste management	• Proportion of urban solid waste regularly collected and managed out of total urban solid waste generated as a result of project.	Increase in proportion	• Waste disposal
	Sustainable forest management	• Reduction in synthetic fertilizer or pesticides consumption on land area under project.	Positive number	• IFM • REDD • Agriculture
	Sustainable forest management	• Coverage of protected areas in relation to marine areas.	Positive number	• REDD
	Sustainable forest management	• Increased total above and below ground biomass stock in forest. • Total area of native trees planted. • Number of protected threatened species in the project area and conservation status of species.	Positive number	• IFM • REDD • ARR

Figure 4.21. Indicators for project's SDG contributions

These indicators provide examples of how SDGs can be quantified, taking reference from Gold Standard's SDG Impact Tool[13], and may not be exhaustive. The list of indicators can evolve and be added to, based on relevancy to the project activity and its contributions to the overall objective of the SDG. The threshold for each SDG indicator represents the minimum quantum or change in quantum to ascertain if a given project's SDG contribution can be counted. [Figure 4.21.]

[13] https://globalgoals.goldstandard.org/430-iq-sdg-impact-tool/

Chapter V
FURTHER GUIDANCE FOR APPLICATION

The carbon market landscape is in a state of rapid and continuous evolution, and it is crucial that countries embrace the ability to adapt and reflect the latest market developments. At the same time, alongside global market shifts, the interactions and implications at a local level also differ from country to country. While the Guidelines was developed based on insights from various sources that reflect the market standards and expectations for high-quality ERCs, it is important to note that these perspectives are dynamic.

This chapter highlights the scope for further work needed to keep this document aligned with evolving global standards and ensure that it remains relevant to a dynamic and fast-changing carbon market landscape, as well as the aspects of the guidelines where contextual adjustments at a national level are needed. It also provides nuances to the Guidelines that may need to consider the country's context and the objectives of the exercise and use case, which could affect how the Guidelines and the process are applied. By staying abreast of the latest progressions in the market, and tailoring the use of this document to its audience and purpose, we can ensure that the document provides the most accurate, comprehensive, and relevant information to users.

Market-driven factors

Price per tonne as input to project ERC value estimations

It is important to keep abreast of pricing factors that could significantly affect a given project's financial value, and adjust the price per tonne potential of various ERC types to reflect these changes. According to the Shell-BCG report, 92% of buyers expect their average portfolio credit price to increase, with a median projected increase of 60%. In 2021, the VCM experienced an unprecedented increase in prices, rising almost 60% compared to average ERC prices in 2020[14]. While market players expect the VCM to continue to track steady growth, the decline of prices and transaction volumes observed in 2022[15] demonstrates the volatility of the market and potential headwinds as buyers grapple with evolving standards and principles around offsetting claims, uncertainty around ERCs in relation to Article 6 of the Paris Agreement, and skepticism surrounding the quality and integrity of ERCs and their effectiveness as a mechanism towards net-zero emissions.

In addition, the interactions of the primary and secondary market also play a role in price as new secondary products are defined and transacted in exchanges and marketplaces where price is less opaque. For example, CBL launched the Sustainable Development-Global Emissions Offset (SD-GEO) contract in 2022[16], the fourth standardized contract traded on the CBL exchange as a spot contract and on CME Group as a futures product. Such products define specific project attributes that are eligible for standardized contracts, creating a secondary market where projects that meet these set of attributes are bought, traded, and sold as a fungible product rather than for its impact, marketing, location, and other project-level qualities. For projects that fulfil this eligibility criteria, transactions in the secondary market can impact supply and the expected price for buyers with higher market awareness or who transact in these markets.

Similarly, schemes that set eligibility criteria for project attributes can also create separate submarkets for eligible ERC projects where supply and demand factors are specific and potentially independent of wider market movements. For example, the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)

[14] Ecosystem Marketplace Insights (2021), "Voluntary Carbon Markets Rocket in 2021, On Track to Break $1B for First Time".
[15] The Xpansiv's marketplace for trading ERC standardised contracts observed a 32% decline in trading volume in the second half of 2022, where overall volume traded in 2022 fell by 6% compared to 2021 levels. Xpansiv (2022), "Xpansiv's Carbon Market Review: Trading Insights from 2022".
[16] Xpansiv SD-GEO, https://xpansiv.com/cbl-sd-geo/

established by the International Civil Aviation Organization (ICAO) set its own eligibility criteria for CORSIA emission units that can be used by participating airlines looking to offset their residual emissions[17]. Since its establishment, CORSIA eligibility has been used as a mechanism for standardized contracts that also subjects CORSIA-eligible ERCs to secondary market price factors.

It is therefore recommended that stakeholders review the prices transacting in VCM on a quarter to biannual basis, consider the sources of prices available based on the ERC project, and update the price per tonne potential used for estimating the project's Project ERC value (F1) at both Step One (Initial profiling) and Step Three (Conduct assessment).

Carbon integrity risks and mitigation measures as inputs to project assessment

As the risk matrix and mitigation measures provided for the Carbon integrity (C1) assessment for Step Three (Conduct assessment) of the Project Assessment process are based on current market conditions, these should be updated following developments in carbon integrity principles, new knowledge on the carbon integrity risks material to each project type, and where there are new technologies and methodologies to be added to the matrix. As these constantly evolve, staying updated on these developments will help project developers and stakeholders understand the market view on carbon integrity and implement necessary measures in a proactive and timely manner. As a general guidance, it is recommended that stakeholders review the matrix and mitigation measures under this criterion biannually or annually, depending on the frequency and use of the project assessment exercise and resource availability and capacity.

For the mapping of inherent risk per project type, the following checklist questions serve as a guidance for assigning each risk level for each carbon integrity principle, as exemplified in the risk matrix provided:

Additionality

- What is the risk of the project activity being required by law or becoming more economically viable or affordable?
- If the project generates non-ERC revenue, what is the risk that such revenues could suggest economic viability for the project activity without the need for ERC revenues?
- Are the methodologies to define baseline scenarios for that project activity disputed? If so, to what extent (i.e., some dispute, widely disputed, etc.)?

Measurability

- What is the risk of the project activity resulting in leakage (i.e., as a result of the project activity, there is an increase in emissions outside the project boundary due to the displacement of activities), and due to what factors?
- Are the carbon accounting methodologies for this project activity limited and/or contested? If so, to what extent?
- Are there challenges to monitoring the emission reductions or removals from the project over time? What factors are these due to?

[17] International Civil Aviation Organisation, CORSIA Eligible Emissions Units, https://www.icao.int/environmental-protection/CORSIA/Pages/CORSIA-Emissions-Units.aspx

Permanence

- What is the risk of the emission reductions or removals generated by the project activity being released back to the atmosphere in the future? What internal and external factors (within and outside the project's control) are these due to?

Following the inherent risks of each project type, identifying mitigation measures that could reduce these risks can be guided by the following checklist questions:

Additionality

- Even if the project activity could be required by law, what evidence could reflect that, in reality, the project activity would not have occurred without the ERC project?
- If the project generates non-ERC revenue, in what scenario would it not be economically viable as a single source of revenue, without ERC revenues?
- At the project level, what market best practices are there for projects to define baseline scenarios that would strengthen its credibility?

Measurability

- Based on the factors that could result in leakage, what measures could a project implement to reduce likelihood of these factors causing leakage?
- In the case of potential leakages caused by external factors, what measures could projects implement to account for these?
- What measures could a project implement to increase the data quality of monitoring and overcome identified monitoring challenges for its project type?

Permanence

- What market best practices are there for projects to evaluate the risk of its emission reductions or removals being released back to the atmosphere in the future and reduce such risk of reversals?

For both analyses, desktop research from credible sources such as market intelligence or research organizations, ERC project rating agencies, or peer-reviewed journal articles and academia can provide sufficient high-level information required for this review. Otherwise, interviews with experts such as project developers and ERC sellers and buyers can also be an effective way of understanding risks in practice.

Environmental and social risk management

The guideposts for Environmental risk management (C2) and Social risk management and benefits (C3) under Step Three (Conduct assessment) should also continuously be updated following global standards on environmental and social risks and safeguards. For example, the evolving European Union regulations such as the Corporate Sustainability Reporting Directive, the European Sustainability Reporting Standards and the European Union taxonomy for sustainable activities can inform the best practices for projects' environmental risk management that will enable their compliance to corporate buyers' regulatory requirements and procurement policies.

Country context-driven factors

Country inputs for strategic national alignment criteria

The ongoing development of Article 6.2 and 6.4 mechanisms related to corresponding adjustments warrants close attention as the carbon market continues to evolve. The initial decisions regarding cooperative approaches referred to in Article 6 have been adopted by the United Nations Framework Convention on Climate Change (UNFCCC), as outlined in the 'Report of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement on its fourth session, held in Sharm el-Sheikh from 6 to 20 November 2022' released on 17 March 2023. These outcomes provide initial guidance on Article 6 transactions, reporting, review, infrastructure, and capacity building.

It is important to note, however, that the UNFCCC Supervisory Body is currently working towards building a more robust mechanism for the operationalization of Article 6, as established in the Paris Agreement. Recent strategic meetings, held on 5 and 6 March 2023, were conducted to discuss and develop further guidance towards this objective. As such, a limited number of countries have so far implemented such practices within their frameworks. As rules become clearer and more countries develop the necessary infrastructure to support the transfer of mitigation outcomes, it is crucial to remain up to date with guiding regulations and market best practices, which will impact the inputs for the Country inputs (S1) and Article 6 readiness and eligibility (S3) and their usefulness for decision-making based on the outcomes of Step 1 (Initial profiling) of the assessment process.

Option to score project(s)

As mentioned in Section 1.4, for the use of the Guidelines where assigning scores to the project would be useful, the ratings used for the initial profiling and conduct of assessment steps can be mapped to scores of 1 to 5, where having significant opportunities for improvement, or needing clarity would correspond to a score of "1" and being most aligned with best practice would correspond to a score of "5". If applicable, the weights of the scored criteria can be assigned based on the priorities of the Government and the objectives of the exercise, as described in Section 1.2. However, it is important to note that while it is possible to assign scores and derive an overall score for the project, using these scores to select projects or determine the overall potential of projects could be challenging. This is as assigning an overall score could lead to certain critical criteria being overlooked if the project scores well on other criteria, hence these nuances should be taken into account if using the scoring option.

Considerations for future scope

Further due diligence and technical review

As this Guideline is intended as a preliminary exercise to assess the value and preliminary viability of ERC projects with strong potential of fetching high value and attracting high demand, the assessment process does not include a full due diligence that covers transaction and business activity legality. The assessment also does not involve undertaking a technical review of a given project's carbon integrity. In future, a more in-depth review can be built into this Guideline to expand the scope of the assessment to include these analyses, where more resources and expertise will be required. Conducting due diligence on the project's transaction and business activity legality, for example, could involve the use of third-party services. The inclusion of this scope could be important in scenarios where countries are looking to invest into ERC projects or create financing instruments for ERC projects where counterparty risks should be more thoroughly assessed. On the other hand, conducting a technical review of a given project's carbon integrity will require carbon accounting and methodology expertise with experience in the MRV of ERC projects, in addition to the review by VVBs, that might be more impactful for countries looking to support the development of high-quality ERC projects to build capability and increase knowledge and expertise in-country.

Based on new or updated requirements and criteria stemming from Article 6

Similar to the considerations around Article 6 developments for rating strategic national alignment inputs, the scope of the project assessment process may also need to evolve alongside such policy changes. For example, additional factors may be important for Country inputs (S1) used for Step One (Initial profiling). ERC projects with CA eligibility may also fetch a higher price or set a market standard for credit quality that should be reflected in the Project ERC value (F1) and Carbon integrity (C1) criteria.

APPENDICES

Appendix A: Introduction to the PPP Models

Appendix B: Project Profile Template

Appendix C: Project Assessment Template

Abbreviations

ACR	American Carbon Registry
AFOLU	Agriculture, Forestry and Other Land Uses
ALM	Agricultural land management
AML	Anti-money laundering
ARR	Afforestation, reforestation, and regeneration
API	Open application programming interface
BECCS	Bioenergy with carbon capture and storage
BS	Benefits sharing
CA	Corresponding adjustments
CAR	Climate Action Reserve
CCB	Climate, Community, and Biodiversity
CCUS	Carbon capture, utilization and storage
CAR	Climate Action Reserve
CDM	Clean Development Mechanism
CFT	Combating the financing of terrorism
DAC	Direct air capture
EAP	East Asia Pacific
EIA	Environmental impact assessment
ERC	Emissions reduction credits
ERF	Emission Reduction Fund [Australia]
ERP	Emission reduction program
FPIC	Free, Prior and Informed Consent
GHG	Greenhouse gas emissions
GMO	Genetically modified organisms
GS	Gold Standard
GtC02e	Gigatonnes of CO2 equivalent
HCV	High conservation value
ICOA	International Civic Aviation Organization
ICROA	International Carbon Offsetting Alliance
ICVCM	Integrity Council for the Integrity of the Voluntary Carbon Market
ITMO	Internationally Transferred Mitigation Outcomes
IFM	Improved forest management
ISO	International Organization for Standardization

IPLC	Indigenous peoples and local communities
KYC	Know-your-customer
LLDC	Landlocked Developing Country
LDC	Least Developed Country
M	Million
MRV	Monitoring, reporting, verification
NDC	Nationally determined contributions
NPV	Net present value
POA	Programme of Activities
REDD+	Reducing Emissions from Deforestation and Forest Degradation
REDP	Vietnam Renewable Energy Development Project
SBTi	Science-based Targets Initiative
SDG	Sustainable Development Goal
SD-GEO	Sustainable Development-Global Emissions Offset
SIDS	Small Island Developing State
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollar
VCM	Voluntary Carbon Market
VCS	Verified Carbon Standard
VVB	Validation and verification bodies