THE GEB FOUNDATION

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Premium Emission Reduction (PER) Standard

Draft for public consultancy

2022/11

CONTENTS

Acknowledgement

ER standard would like to acknowledge the continuous contribution and support of the China Resource Environmental Protection Applied Technology Research (Shenzhen) Co., Ltd, and the Research Institute of Tsinghua University in Shenzhen, who both have taken an active role in the project development process, offering their expertise in the areas in which they have the most expertise and lending further credibility and robustness to the PER standard.

The team responsible for this report was composed of D'Maris Coffman, Xi Liang, Baihua Dong, Ying Ding, Yidan Zhu, Jiarui Wu, Xiaodong Fu, Chen Chen, Yi Wu.

PER standard would also like to express sincere gratitude to the academic institutions consulted as part of the development process including the University College London, Tsinghua University, Xiamen University, and the academic and industry experts Dabo Guan, Dewen Mei, Hongxia Du, Jun Gu, Maosheng Duan, Qian Xiao, Tim Yeo, Xuelan Zeng, Yi Zou . The academic institutions who were consulted provided important guidance to the PER research teams, delivered insight to help solve persistent problems with global carbon markets, and to promote the integrity of the PER Standard.

Executive Summary

Decarbonizing the global economy and mitigating climate change represents one of the most pressing priorities of our time. To limit global warming to around 1.5 ℃ , the IPCC report insisted that global greenhouse gas emissions (GHG) would have to peak "before 2025 at the latest, and be reduced by 43 percent by 2030"[1]. There is also a growing need for voluntary carbon credits as more companies commit to achieving net zero by 2050 or earlier.

The GEB foundation is an independent charitable body working to support and improve the voluntary carbon market (VCM), thereby supporting climate action and sustainable development activity through the development and management of the Premium Emission Reduction Standard (PER).

The Premium Emissions Reduction (PER) Standard, also known as the Chinese Certified Emission Reduction Plus (CCER+) Standard in China, is committed to building a future-proof international voluntary emission reduction standard for users to ensure additionality, transparency, reliability, and simplified operation, thereby enhancing trust in the integrity of the carbon offset market.

The purpose of the PER Standard is to provide a guideline for users to recognize high-quality carbon credits (credible, accurate, additional, permanent and with strong evidence for positive environmental and social impacts) by promulgating a rigorous voluntary emission reduction standard and robust procedures, thereby allowing project sponsors to attract more funding by scaling up their impacts. The PER Standard aims to ensure the environmental integrity of the voluntary carbon market, enhance the credibility of voluntary and certified carbon markets, and ultimately accelerate the transition to meeting the 1.5 ºC targets.

The Premium Emission Reduction Standard (PER) document for consultation describes the PER Standard framework, including the proposed rules and requirements for a high-quality carbon emission reduction or removal project's development and certification, as well as the proposed requirements for validation, monitoring and verification of projects, and further describes the program registration and certification process, methodology approval process and the accreditation requirements for validation/verification bodies. This document will be updated from time-to-time and readers should ensure that they are using the most current version of the document.

1 UN. 2022. UN climate report: It's 'now or never' to limit global warming to 1.5 degrees

Chapter 1:
Introduction of PER Standard

1.1 Background

Carbon markets play an important role in addressing climate change, promoting carbon emission mitigation and achieving effective implementation of net-zero emission targets by providing an environmental and economic policy tool that uses market mechanisms to control and reduce GHG emissions. As one of the two main types of trading instruments in the carbon market[2], carbon credits, also known as carbon "offsets", is a generic term used to assign a value to a reduction, avoidance or capture of GHG emissions achieved by a certified project. A credit is equivalent to one metric tonne of CO_2 (CO_2e)[3]. For the first time, the annual total value of the voluntary carbon market exceeded more than USD 1 billion in November 2021 on the eve of COP26[4].

A carbon credit can be used by a business, organization or individual to compensate for their carbon footprint by financially rewarding an activity that has reduced or sequestered GHGs. Many such projects can also bring other sustainable development benefits. Only certified carbon credits can be traded in the compliance market, while voluntary carbon credits are often used for carbon emission offsets by individuals or organizations in the voluntary emissions reduction market[5]. Carbon credits can be used to offset emissions that have not been eliminated, i.e., they can neutralise residual emissions that cannot be further reduced due to prohibitive costs or technological limitations, especially for hard-to-abate sectors and scenarios.

Conventionally carbon credits are classified into three categories according to the sources of supply: international mechanisms, independent mechanisms, and national and local regulatory mechanisms. International mechanisms refer to those mechanisms subject to international climate conventions and are usually administered by multilateral institutions, e.g. airlines purchasing credits eligible for meeting their obligations established under the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). The Clean Development Mechanism (CDM), which has operated since 2006, is the earliest and most important carbon offset mechanism. Over the past fifteen years, a variety of carbon offset mechanisms emerged, devoted to overcoming the deficiencies of CDM and making them applicable to different

2 There are two types of carbon markets, i.e. the allowance-based and credit-based markets. Emission trading scheme trades allowances while carbon offset mechanism trades carbon credits.
3 UNFCCC. 2021. Climate Neutral Now Guidelines for Participation
4 The World Bank. 2022. "State and Trends of Carbon Pricing 2022" (May), World Bank, Washington, DC. Doi: 10.1596/978-1-4648-1895-0.
5 Xu S.J. 2021. Trend of carbon credits[J]. China Monetary Market, (11): 78: 82.

geographical regions and project categories. This, in turn, has led to a variety of carbon credit standards and products. Independent mechanisms refer to carbon credit mechanisms certified by independent third parties and exist mainly in voluntary emission reduction markets, including the Verified Carbon Standard (VCS), the Gold Standard (GS), and the Community & Biodiversity Standards (CCBS), among others. National and local carbon credit mechanisms are applicable to a country, province or several countries, with national and local and regional carbon credit mechanisms, which are bounded by their own national, provincial or bilateral national regimes, such as China Certified Voluntary Emission Reduction (CCER), Chicago Climate Exchange (CCX), California Climate Action Registry (CCAR), American Carbon Registry Standards (ACRS), Climate Action Reserve Standards (CARS), etc.

Article 6 of the Paris Agreement introduced provisions for voluntary international cooperation between participating countries, aiming to help countries achieve their Nationally Determined Contributions (NDCs) and allowing for the development of cooperative approaches that involve the use of International Transfer Mitigation Outcomes (ITMO). As of July 2021, the share of parties indicating planned or possible use of voluntary cooperation mechanisms under Article 6 has nearly doubled, from 44% to 87% in the new or updated NDC submissions[6]. ITMO use a carbon dioxide equivalent metric for a new set of market provisions or other GHG mitigation outcomes defined under Article 6 of the Paris Agreement. Article 6.2 of the Paris Agreement determines the scope of the ITMO mechanism and establishes the general procedures to carry out the transfer of ITMO between countries. After the Kyoto Protocol, the CDM was transferred to the proposed Sustainable Development Mechanism (SDM) program under the Paris Agreement, which might lead to the development and implementation of innovative approaches to expand participation in and the effectiveness of climate change mitigation and sustainable development initiatives and to strengthen the governance mechanism for integrity and additionality. With the full implementation of the Paris Agreement, the SDM could offer universal carbon allowances or carbon credits, facilitate trading activities between NDCs (i.e., ITMO), and provide registry facilities with the prospect of carbon pricing in many economies[7]. Carbon credit programs that embrace the principles of the ITMO and SDM can enhance the credibility of carbon credit trading schemes, helping to develop higher-quality carbon emission reduction or removal projects and to boost demand for the corresponding credits.

Academic researchers, climate change activists, and NGOs have all raised concerns about the environmental integrity of the carbon offset mechanism. Carbon Market Watch reported that the CDM has fundamental flaws with respect to ensuring environmental integrity: 85% of the projects registered and 73% of the CER issued during 2013-2020 did not provide real, measurable, and additional emission reductions[8]. The overall assessment of additionality, the introduction of positive lists and the setting of standardized baselines are questionable under the CDM, which often fails to address the problem of false positives in registered projects[9]. The establishment of high-quality carbon credit markets plays an essential role in promoting climate action and narrowing the gap between current climate commitments and decarbonization activities in the global economy. A set of evaluation mechanisms (or a Carbon Credits Standard Program)

6 UNFCCC, Nationally determined contributions under the Paris Agreement: Synthesis report by the secretariat. Conference of the Parties serving as the meeting of the Parties to the Paris Agreement. Third session Glasgow, 31 October to 12 November 2021 (Bonn, Germany: UNFCCC, 2021).

7 International Emission Trading Association. 2016. A Vision for the Market Provisions of the Paris Agreement

8 Carbon Market Watch. 2020. Above and Beyond Carbon Offsetting. Alternatives to Compensation for Climate Action and Sustainable Development. Policy Briefing.

9 Cames, M., Harthan, R. O., Füssler, J., Lazarus, M., Lee, C. M., Erickson, P., & Spalding-Fecher, R. (2016). How additional is the clean development mechanism. Analysis of the application of current tools and proposed alternatives.

is required to ensure the integrity of offset activities by firms or individuals, thereby overcoming the deficiencies of the CDM and generating tradable credits from voluntarily implemented emission reduction or removal activities[10].

Despite enormous growth in the number and variety of these schemes over the past decade, global carbon markets suffer fundamentally from unsustainable low prices of carbon credits and significant liquidity problems[11]. In economic terms, this is partly the result of excessive supply but is mainly the result of information transparency problems, or what is often called a 'lemons problem' where buyers have trouble distinguishing high-quality carbon credits from low-quality carbon credits, thereby underpaying for high-quality carbon credits and overpaying for low-quality ones. Under such circumstances, estimating the supply and demand equilibrium in the market is challenging and both buyers and sellers experience significant transaction costs and high reputation risk. Although there is ample evidence of a tremendous amount of unmet demand for high-quality carbon credits, there remains frustrating opacity and lack of credibility around the claims made for climate impact by project sponsors, and generally speaking, the carbon offset markets have failed to develop at the required rates.

Corporate demand for carbon credits is growing as more businesses commit to achieving net zero by 2050, and thus seek to address residual and unavoidable emissions. To support rapid decarbonization, voluntary actions taken through the carbon market need to be increased by 15 times by 2030 and 100 times by 2050, compared with 2020[12]. In the Ecosystem Marketplace research, the total value of the carbon credit market tracked in 2020 was $473 million, which was the highest annual value since 2012. As of 2021, the total market value for voluntary carbon markets transactions 2021 was nearly $2 billion[13]. Also, from the supply point of view, voluntary carbon credits are not always fungible as buyers have preferences for specific project types. These markets do not always clear, as limited supply compared with the demand and the uneven supply are concerns. For example, increasing interest in removal credits has not yet translated into high transaction volumes, because the supply of removal-based credits is currently limited due to the long lead times for these projects to produce credits. On the other hand, the supply of corresponding emission reductions from renewable energy, such as wind power and photovoltaic renewable energy, has far exceeded the demand as many corporate buyers have come to suspect these projects lack financial additionality. Therefore, it is a challenge for policymakers to make reasonable trade-offs.

Carbon credit quality is a serious credibility issue for carbon markets. As more and more companies voluntarily commit to zero carbon targets, there is a growing demand for carbon credits, both by corporates themselves and by their customers. Nevertheless, assessing and ensuring the quality of carbon credits is challenging in practice. The quality of carbon credit projects is frequently questioned, including issues such as weak additionality, risk of double-counting, lack of technology innovation, the complexity of the certification process, and perceived lack of transparency.

Indeed, one of the key challenges for carbon credits is in assessing the underlying projects' additionality and vulnerability and in setting baseline scenarios. Additionality is the prerequisite for ensuring the envi-

10 World Bank (2021). State and Trends of Carbon Pricing 2021. https://openknowledge.worldbank.org/handle/10986/35620
11 From 2019 to 2020, the global average price of voluntary credits dropped sharply, with a weighted average price of $6 per tonnes, from $3.07 in 2019 to $2.51 in 2020, and then rebounded to $3.13 in 2021.
12 Mckinsey. 2021. A blueprint for scaling voluntary carbon markets to meet the climate challenge
13 Ecosystem Marketplace. 2022. The Art of Integrity Ecosystem Marketplace's State of the Voluntary Carbon Markets 2022 Q3

ronmental integrity of any carbon credit program[14]. Although clear and scientific argumentation processes and methods have been developed, it is controversial for standard setters to set scientific credit baseline and assess project additionality, as it involves establishing unobserved scenarios based on subjective assumptions. Simply assuming a specific increase in penetration in a business-as-usual scenario may significantly underestimate the actual diffusion of the technology in question, leading to systematic 'misinformation'.

On the other hand, the obstacles in terms of finance, technology, etc. are far beyond the capacity of the personnel involved. For standards users, existing standards require expertise in policies, markets, and technological developments related to regions, industries, and projects, and require an entire ecosystem of credible laws, regulations, industry norms, industry research reports, official statistics, market information, bank certificates, and independent expert evaluation reports as supporting documents to justify the possible financial, financing, and technical aspects of the project.

The development process for any carbon program is time-consuming and costly. A typical development process involves the development of project design documents (PDD), validation and verification, review, filing, monitoring report preparation, public announcement period, certification, design review, issuance of carbon credits, etc., which takes at least 10 months and costs at least $200,000 to complete[15], not to mention the risk behinds which constitute the main obstacles for carbon project development and carbon finance.

We initiate the PER standard to ensure the integrity of the carbon offset market and serve the needs of project sponsors, buyers of carbon credits, investors, state actors, and multilateral organizations and NGOs. The PER Standard is developed with all stakeholders in mind. The PER standard is more suitable for the market demand for voluntary emission reduction after COP26, is more compliant with Article 6 of the Paris Agreement, and better serves the current situation of emission reduction technology development. The standard also encourages the introduction of smart and innovative technologies to reduce the development cost of emission reduction project. The PER standard will guide investors to invest in technologies that have good emission reduction potential but face barriers to implementation at this stage.

1.2 About PER Standard

The Premium Emissions Reduction (PER) Standard is a global standard for carbon emission reduction or removal projects and is committed to building a future-proof international voluntary emission reduction standard for users to ensure additionality, transparency, reliability, and simplified operation, thereby enhancing trust in the integrity of the carbon offset market. The PER Standard tries to accelerate voluntary carbon markets to align with the Paris Agreement and Sustainable Development Goals, promoting the use of the ITMO mechanism and the transfer from CDM to proposed SDM, through robust framework of standards and principles.

14 Richards, K. R., & Huebner, G. E. (2012). Evaluating protocols and standards for forest carbon-offset programs, part A: additionality, baselines and permanence. Carbon Management, 3(4), 393-410.
15 UNDP. 2004. The Clean Development Mechanism: A User's Guide. UNDP. https://www.undp.org/sites/g/files/zskgke326/files/publications/cdmchapter5.pdf

An analogue of the PER Standard is also promoted in China, known as the CCER+ (Chinese Certified Emission Reduction Plus) Standard. CCER+ Standard maintains the same standard principles and framework as PER standard but is geographically limited to China with potential connection with Chinese CCER (Chinese Certified Emission Reduction) scheme.

The PER Standard offers a set of global criteria for common use. It provides the rules and requirements for developing or rating carbon emission reduction or removal projects to show PER compliance, as well as the requirements for validation, monitoring and verification of projects. Its core requirements are set out in ISO 14064-2:2006, ISO 14064-3:2006 and ISO 14065:2020[16,17].

Key metrics of PER

The hallmark of PER Standard is enhanced additionality assessment, but we also make efforts to improve the evaluation of claims made for Sustainable Development Goals (SDGs) in addition to SDG 13 goals[18] by conducting the quantitative SDG assessment, enhancing permanence through rigorous validation and monitoring procedure, avoiding carbon leakage through revision of methodology and digitalised Monitoring, Reporting and Verification (MRV) procedure, avoid double-counting through digital tracking.

1. Enhanced additionality assessment

The Standard strengthens and simplifies the additionality assessment. The additionality is divided into climate additionality and financial additionality, and thereby restoring the additionality assessment process. The quantification of GHG emission reductions and/or removals is established to illustrate climate additionality, the importance of investment analysis is highlighted to demonstrate financial additionality. To simplify the assessment procedure and address the fact that technological innovation is often accompanied by cost reductions, projects with innovative technologies on the PER priority list would be recognized additional automatically, and are allowed to skip the traditional additionality assessment procedure.

2. Improved safeguards and SDG assessment

PER Standard aims to enhance the project's safeguards and SDG achievement assessment and better align the project's contributions with article 6 of the Paris agreement by improving the monitoring, reporting and verification procedure. All projects shall ensure no harm to the PER safeguards requirement, which set out the minimum principles for project proponents to comply with. To encourage projects better contributing to sustainable development, PER builds up a SDG impacts assessment framework in the following manners: a) contribute to at least two SDG targets in addition to SDG 13; b) use publicly available and internationally recognized tools or methodologies to assess the relevant sustainable development impacts of the mitigation activity; c) use relevant and robust national or internationally adopted SDG indicators; d) justify the relevance or irrelevance of each SDG target with respect to the project activities; e) collect expert stakeholder opinions and address public comments, and f) quantify the SDG impacts claimed and obtain SDG assessment report verification from trusted independent Verification and Validation body (VVB).

3. Enhanced permanence

A project's emission reductions or removals are considered permanent if the project's carbon dioxide

16 ISO 14065:2020 General principles and requirements for bodies validating and verifying environmental information
17 ISO 14064-2:2006 Greenhouse gases — Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements
18 UNDP. 2022. THE SDGS IN ACTION. https://www.undp.org/sustainable-development-goals#climate-action

reduction or removal effect is of unlimited duration and will not cause climate damage through cross-sectoral leakage. The PER standard requires that certified GHG reductions or removals projects shall be permanent and represent long-term mitigation benefits. For instance, to enhance the permanence of the projects, the PER standard requires Agriculture, Forestry, and Other Land Use (AFOLU) projects to undertake baseline reassessment and re-verification every ten years or when baseline reassessment is considered necessary by the PER committee, whichever is earlier. The re-assessment and re-verification procedure involve self-assessment of the project's non-permanence risks and require demonstration that no significant carbon reversal risks exist. The project activities must update the latest project information during each verification period.

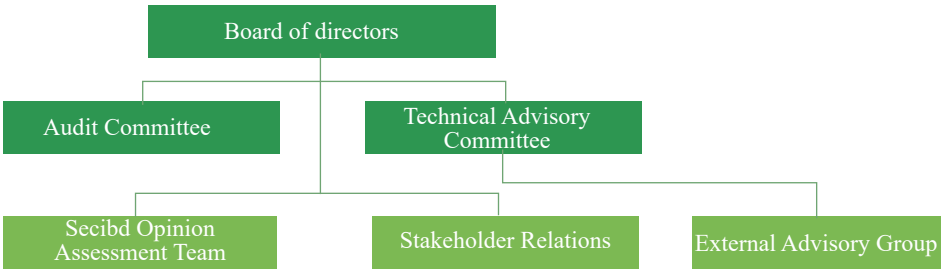
4. Avoiding carbon leakage

Leakage is defined as the net increase of GHG anthropogenic emissions that occurs outside the project boundary, which can be measured and is directly attributable to project activities. Ensuring the reliability and irreversibility of a project's GHG emission reductions and removals are the basis of the issuance of GHG credits certification. The PER standard addresses carbon leakage issues via methodology revisions (such as adjustment of project boundary and leakage emissions quantification), different requirements for each of the AFOLU project categories.

1.3 About GEB Foundation

The PER Standard is developed by the GEB Foundation. GEB stands for Global Emissions Blueprint but is also the name of the Egyptian god of the world. Like Gaia, Geb was the custodian of the entire planet, representing all stakeholders. The GEB Foundation's mission is to ensure that PER Standard balances the needs of all stakeholders by advocating for high-level standards for climate and financial additionality, and by promoting cost-effective procedures for reporting, verification and compliance[19]. The quality and integrity of the PER standard are guaranteed by the following administrative bodies in the GEB foundation, the Board, the Audit Committee, the Technical Standard Committee, the External Advisory Group, the Stakeholder Relations, and the Second Opinion Assessment Team.

Figure 1: GEB Foundation Structure



19 Information of GEB foundation could be found at https://gebf.org.uk/.

The Board guides the direction and formulation of PER standards and provides financial oversight and strategic governance of the GEB Foundation. The board directly oversees the audit committee and the Technical Standard Committee,

The Audit Committee is responsible for conducting on-site validation and verification of project activities, as well as off-site completeness and truthfulness checks of documentation submitted to the PER Standard. The Audit Committee have the right to raise questions about any deficiency identified in the project documentation, oversee the validation and verification reports and make the final decision on whether the project is eligible for the PER Standard.

The Technical Standard Committee is responsible for compiling, maintenance and updating the PER Standard document, and guiding the methodology development. The Committee aims to ensure a high-quality voluntary emission reduction standard that credibly mitigates global climate change, and meets the needs of the future voluntary credit market. The Technical Standard Committee also oversees and works with the External Advisory Group. The External Advisory Group is comprised of market specialists from different sectors, and is responsible for providing expert advice and strategic input to the PER Standard.

Stakeholder Relations is responsible for the daily administrative activities of the GEB foundation, implementation of Board resolutions, internal and external communication, and other key stakeholders.

The Second Opinion Assessment team is dedicated to providing a second opinion for the projects that already have existing credit issuance or in the issuance process to show PER compliance. The team will offer a PER certificate for the projects that meet the PER requirements.

Chapter 2:
PER Standard Requirements

2.1 Principles

The fundamental principles are defined to assure that the GHG-related information is a true and fair method for identifying high-quality carbon credits. The principles below provide the basic requirements for PER Standard, and shall guide the development and secondary certification of carbon emission reduction or removal projects.

Accuracy. Reduce bias and uncertainties as far as it is practical. Accuracy should be pursued as far as possible.

Additionality. All projects must represent additionality. The mitigation activity would not have occurred in the absence of the carbon credit benefit.

Avoidance of double counting. Double counting includes double-claiming, double issuance and double-use. The GHG emission reductions or removals shall not be double-counted. Only one entity (country, company or person) can use the GHG reductions or removals for the achievement of mitigation targets or goals[20] at any level.

Avoidance of leakage. The mitigation activity within the boundary of the credited activity does not result in increases in emissions elsewhere.

Avoidance of unintended negative externalities for social and the environment. The mitigation activity shall do no harm to social and environmental development.

Completeness. Include all relevant GHG sources and sinks, and information to support compliance with all requirements and procedures.

20 GGGI.2021. Summary Report: Designing Governance Structures and Transactional Documentation for Mitigation Outcome Transactions under Article 6 of the Paris Agreement. Global Green Growth Institute. https://gggi.org/report/summary-report-designing-governance-structures-and-transactional-documentation-for-mitigation-outcome-transactions-under-article-6-of-the-paris-agreement/]. Double use and double issuance can be managed by establishing registries and transaction logs based on blockchain technology in all market-based systems that involve the meeting of NDCs, setting clear rules to entitle the issuance and limiting the use of emission reductions or removals by one or both Parties that cooperate in mitigation actions[Climate Focus. 2016. Double Counting in the Paris Agreement. https://climatefocus.com/sites/default/files/20160105%20-v.2.0%20Double%20Counting%20and%20Paris%20Agreement%20FIN.pdf.

Conservativeness. Use conservative assumptions, values and procedures to ensure that GHG emission reductions or net anthropogenic GHG removals are not overestimated.

Consistency. Enable meaningful comparisons in GHG-related information.

Openness. The standard allows GHG emission reductions and removals projects in any part of the world. The standard continuously develops advanced and innovative carbon emission reduction technologies based on the principle of openness.

Permanence. Reductions or removals must be maintained over time, contractually guaranteed, and prevent carbon reversal. If there are risks of reversal, any reversals must be fully compensated.

Quantification. The GHG emission reductions or removals from the mitigation activity shall be robustly quantified, based on conservative and sound scientific methodology.

Realness. All projects will only be issued to the project party after the actual emission reduction happened.

Relevance. Select the GHG sources, GHG sinks, GHG reservoirs, data, methodologies and all other information that are appropriate to the needs of the intended user.

Transparency. The sufficient and comprehensive GHG-related information on the projects shall be clearly stated and publicly accessible to allow intended users to make decisions with reasonable confidence.

Validation and Verification. All projects shall be validated and verified by a certified independent validation and verification body (VVB).

Vulnerability. Whether the project can continue reducing emissions without continuous support from carbon credits is essential in assessing the quality of carbon credit projects. The key to evaluating vulnerability is that the project must ensure that carbon emissions reductions still occur throughout the project life cycle.

2.2 Scope

The projects can be located in any country. PER aims to support the implementation of the cooperative approach introduced in Article 6 of the Paris Agreement and supports broader efforts to involve non-party stakeholders in climate action.

The project's scope covers those activities related to generating GHG emission reductions and removals and includes the six Kyoto Protocol greenhouse gases as well as Ozone-depleting substances. The PER will incorporate more greenhouse gases, paying special attention to methane emissions.

The scope of the PER standard does not include projects that can be assumed to have generated GHG emissions primarily for their subsequent reduction, removal or destruction. The PER Standard also set an

Exclusion List of projects type (Table 1), the type of project activities in the following Table 1 is automatically excluded in the PER standard. The Exclusion List would be updated regularly with the development of technological innovation.

Table 1: Exclusion List

Activity	Non-LDC		LDC	
	Large scale	Small scale	Large scale	Small scale
Activities that reduce hydrofluorocarbons (HFCs), Perfluorochemicals (PFCs) and Sulfur hexafluoride(SF6) emissions	Excluded	Excluded	Excluded	Excluded
Generation of electricity and/or thermal energy using fossil fuels (including Natural gas), including activities that involve switching from a higher carbon content fuel to a lower carbon content fuel	Excluded	Excluded	Excluded	Excluded
Grid-connected electricity generation using hydro power plants/units	Excluded	Excluded	Excluded	
Grid-connected electricity generation, using wind, geothermal, or solar power plants/units	Excluded	Excluded		
Utilization of recovered waste heat for, inter alia, combined cycle electricity generation and the provision of heat for residential, commercial or industrial use	Excluded	Excluded		
Energy efficiency improvement on the energy demand side, such as the replacement of incandescent electrical bulbs with CFLs or LEDs, energy efficiency improvement in building	Excluded	Excluded		
Installation and/or replacement of electricity transmission lines and/or energy-efficient transformers	Excluded	Excluded		

2.3 Categories

Following the definition of carbon emission reduction and carbon removal in *The Oxford Principles for Net Zero Aligned Carbon Offsetting* proposed by the University of Oxford [21] [22], the PER Standard divides mitigation activity into emission reduction and emission removal, to help buyers choose the type of projects that meet their needs when purchasing credits. Emission reduction projects are further divided into eight industries, and emission removal projects are divided into two categories: Natural-based solutions (AFOLU) and Technology-based solutions (as shown in Table 2).

Most carbon credits available today are emission reductions, which are necessary and remain important for decades but not sufficient to achieve net zero in the long run. If the emission reduction project is robust and high-quality, it would have almost the same effect on the atmosphere as a carbon removal project in the near term. Thus, the PER standard aims to identify and create high-quality carbon credits and encourages users to increase the proportion of their carbon credits from carbon removals gradually, rather than from emission reductions, ultimately reaching 100% carbon removals by mid-century to ensure compatibility with the Paris Agreement goals[23].

Table 2: Project Category of PER mitigation activities

Emission Reduction	Energy	
	Industrial manufacturing (Steel, Cement)	
	Abatement and utilisation of methane	
	Metals	
	Petrochemicals/Chemicals	
	Construction	
	Transportation (incl. aviation)	
	Waste disposal	
Emission Removal	AFOLU	Afforestation and reforestation
		Avoided Conservation or Deforestation
		Improved /Sustainable Forest and grassland management
		Reduced emissions from deforestation and degradation
		Wetland restoration
	Technology-based removal of carbon dioxide (Mineralisation, Direct Air Capture, etc.)	

21 Allen, M., Axelsson, K., Caldecott, B., Hale, T., Hepburn, C., Hickey, C., & Smith, S. (2020). The Oxford principles for net zero aligned carbon offsetting. The University of Oxford.
22 Carbon removal is defined as the act of taking CO_2 out of the air and permanently storing it. For all forms of carbon removal, whether nature-based solutions or technologically mediated processes, carbon must be stored.
23 Allen, M., Axelsson, K., Caldecott, B., Hale, T., Hepburn, C., Hickey, C., & Smith, S. (2020). The Oxford principles for net zero aligned carbon offsetting. The University of Oxford.

2.4 Project Design Requirements

Project Development Date

The project development date is the day when the project proponents commit to investing in the implementation or construction of the project[24].

Application Date

PER Application Date for a project is the date when the project submitted the Project Design Document to the PER Board in writing of the commencement of the project activity, the project information and their intention to seek PER status[25].

Application Date

PER Application Date for a project is the date when the project submitted the Project Design Document in writing of the commencement of the project activity, the project information and their intention to seek carbon credit supports .

Prior consideration

Project proponents shall provide evidence to demonstrate that the generation of carbon credits was considered prior to the development date of the project activity, and the carbon credit scheme was seriously considered in the decision to implement the project activity.

Project proponents shall indicate their consideration of carbon credits before the Project Development Date and the benefits of the PER were a decisive factor in the decision to proceed with the project. The project party shall provide minutes or instructions related to the decision of the board of directors or equivalent institutions of the project proponents to consider carbon credit scheme.

Start Date

The start date of a non-AFOLU project refers to the time when the project starts to generate GHG emission reductions or removals. The start date of the AFOLU project refers to the date and time when the activities to reduce or eliminate the greenhouse effect begin.

Crediting Period

The project crediting period is of two types, including the renewable crediting period and the fixed crediting period. The credit period of non-AFOLU projects can be renewed twice, 5 years each time, 15 years in total, or 10 years for a fixed period. The credit period of the AFOLU project shall be at least 20 years, and at most 100 years, with a maximum of four renewals. The total crediting period of the project shall not exceed 100 years.

Project Scale

Project size categorizations are as follows:

Small-scale projects: 1) Renewable energy project activities with a maximum output capacity of 15 MW (or an appropriate equivalent). 2) Energy efficiency project activities that aim to achieve energy savings at a

24 Guidelines on the Demonstration and Assessment of Prior Consideration of the CDM
25 Ditto

scale of no more than 60 GWh per year. 3) The activities of other projects are GHG emissions reductions at a scale of no more than 60 $ktCO_2e$ per year.

large-scale projects: 1) The output capacity of Renewable energy project activities shall be larger than 15 MW (or an appropriate equivalent). 2)Energy efficiency project activities that aim to achieve energy savings at a scale of larger than 60 GWh per year. 3)The activities of other projects are GHG emissions reductions at a scale of larger than 60 $ktCO_2e$ per year.

Project Location

The Project shall identify the project's physical/geographical location to describe the project accurately. The project proponents must clearly define the project boundaries and provide a detailed accounting report for carbon reduction projects. The project boundary is determined by sources, sinks, and baseline scenarios for GHG emissions. The relevant GHG sources, sinks and reservoirs that shall be included or excluded, or are optional, are set out in the methodology(ies) applied by the project.

Baseline Scenario

The baseline scenario represents the activities and GHGs emissions that would occur in the absence of project activities. The baseline scenario shall be accurately determined to compare the GHG emissions that will occur under the baseline scenario with the GHG reductions and/or removals achieved by the project activity.

2.5 Climate and Financial Additionality

Concept

Additionality indicates that the project achieves a net environmental benefit, which is the prerequisite for ensuring the environmental integrity of any carbon credit program[26]. The PER standard defines additionality as two sub-concepts, climate additionality and financial additionality.

Climate additionality of a project refers to the emissions reduction project activity that provides additional anthropogenic GHG emissions reduction compared to the level that would have occurred in the absence of the project activity, or a removal project activity provides additional actual net GHG removals by sinks compared to the sum of the changes in carbon stocks in the carbon pools within the project boundary that would have occurred in the absence of the PER removal project activity. The financial additionality of a project refers to the emission reduction or removal project activity that would not have occurred in the absence of the financial support offered by the sales of the credit.

Requirements

The project is proved to be additional only when it has both climate additionality and financial additionality. Additionality shall be rigorously demonstrated, assessed and proved in the project design document. The scenario set shall be in accordance with the requirements set out in the methodology applied to the project. The additionality needs to be assessed by the following step:

26 Richards, K. R., & Huebner, G. E. (2012). Evaluating protocols and standards for forest carbon-offset programs, part A: additionality, baselines and permanence. Carbon Management, 3(4), 393-410.

Step 1 Laws and regulations identification

Sub-Step 1a. Identify realistic and credible alternatives to the project activity

Identify realistic and credible alternative(s) available to the project participants or similar project developers that provide the same outputs (service or product) as the proposed project. This shall be in accordance with the methodology applied. These alternatives are to include:

The baseline scenario. The project activity was undertaken in the absence of the GHG program and carbon credit revenue. The baseline scenario is used for the quantification of emission reductions and removals (climate additionality assessment)

Other realistic and credible alternative scenarios (s). The alternative(s) to the project participants or similar project developers that provide the same outputs (service or product) as the proposed project. The project proponent shall ensure the other realistic and credible alternative scenarios could happen without other barriers. Another realistic and credible alternative scenario(s) is used for the investment comparison method in investment analysis (financial additionality assessment).

If applicable, the continuation of the current situation (no project activity or other alternatives undertaken).

Sub-Step 1b. Compliance with mandatory laws and regulations

The proposed project and the alternative(s) shall be in compliance with all mandatory applicable legal and regulatory requirements. If the proposed project activity is the only alternative amongst the ones considered by the project proponents that comply with mandatory regulations with which there is general compliance, then the proposed PER project activity is not additional.

Sub-Step 1c. The proposed project is not mandatory by any local laws and regulations

The proposed project shall not be required by any law, statute or other regulatory frameworks. If the proposed project activities are mandated by local laws and regulations, the project is not additional, since it will still have occurred in the absence of the GHG program.

Step 2 Climate additionality (Emission quantification)

Climate additionality shall be proved by robust quantification of emissions reductions or removals. Baseline emissions, and project emissions and/or removals shall be accurately and systematically quantified to determine the net GHG reductions and/or removals achieved by the project in accordance with the applied methodology.

The evaluation shall include the following step: a) Determination of the baseline scenario and quantification of baseline emissions; b) Quantification of emissions from the project activity; c) Quantification of leakage emissions; and d) Quantification of emission reductions/removals of the project activity[27].

a) Determination of the baseline scenario and quantification of baseline emission

Scientific baseline scenario setting is an important step to ensure environmental integrity. The baseline shall be accurately determined to ensure that the baseline scenario is objective, realistic, scien-

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tific and effective. The project proponents shall provide information about the proposed projects and the facilities, systems and equipment to be operated under the baseline scenario, and clearly explain how to demonstrate the same type and level of services provided by the projects under the baseline scenario.

The baseline scenario for the proposed project shall be determined according to the requirements in the methodology applied, and the choice of baseline scenario shall be proved to be in line with the level of actual technological development in the region, ensuring that the emission reductions and removals are not overestimated. Moreover, the baseline scenario setting in methodologies shall be updated regularly and the baseline will be made more ambitious in line with the development of technology.

b) Quantification of emissions from the project activity
GHG emission reductions and removals from the project activity are the basis for the volume of carbon credits issuance. The net GHG emission reductions and/or removals of the proposed project shall be estimated and quantified according to the methodology applied.
The calculations of project emissions shall quantify the GHG emissions and/or removals of all selected GHG sources, sinks and/or reservoirs determined within the project boundary. The unit of measure shall be metric tonnes, and the quantity of all GHG emission reductions and removals shall be converted to tonnes of CO_2 equivalent (CO_2e).

c) Quantification of leakage emissions
Leakage referring to the net change of anthropogenic GHG emissions outside the project boundary shall be considered and quantified. The project shall identify the potential for leakage, and monitor and calculate the leakage of the project based on the applied methodology, because the project may overestimate its net emission reduction and/or removal.

d) Quantification of Emission reduction/removal of the project activity
Emission Reduction = Baseline Emission - Project Emission - Leakage
The net GHG reductions and/or removals achieved by the project are the basis for judging whether the project is climate additional. Standards and procedures for quantifying net GHG emission reduction and elimination shall be established.

The standard and process of the net GHG emissi
on reductions and/or removals of projects is to determine the quantified GHG emission reductions and/or removals of selected GHG sources, sinks and/or reservoirs respectively according to the project (including leakage) and the baseline scenario.

Step 3 Financial additionality assessment
Financial additionality is an important indicator to ensure environmental integrity. The project proponent shall prove that the proposed project faces capital or investment return barriers that could be overcome by the additional revenues from the sale of carbon credits.

Project proponents shall provide the detailed calculation process and evidence according to the following steps to prove whether the project has financial additionality. The project proponents shall present the in-

vestment analysis procedure and all relevant assumptions so that readers can reproduce the analyze procedure and obtain the same results.

Method 1: Priority list

The project activity shall establish additionality using a priority list. The priority list contains lists of technologies and associated conditions, which established by PER Technical Standard Committee with external experts opinion. The project that implements activities on the priority list is automatically deemed as additional and does not otherwise need to demonstrate financial additionality assessment (Method 2).

The priority list, including any eligibility criteria or performance benchmarks, shall be defined at an appropriate level of aggregation of technologies/activities and stringency to ensure that only mitigation activities with the additionality qualify.

The priority lists shall be updated at least every three years to ensure that any changing circumstances are appropriately reflected (e.g., reduced costs for the relevant technology).

Method 2: Investment analysis

Sub-step 3a: Financial attractiveness without carbon credit revenue-investment comparison analysis

The project proponents shall assess the financial attractiveness without carbon credit revenue, and prove that the proposed project faces capital and investment return barriers without carbon credit revenue.

An investment comparison analysis is the comparison of the economic performance of the proposed activity with other alternatives (s). The project proponents shall first identify the most appropriate financial indicator, such as IRR, NPV, cost-benefit ratio, or unit cost of service (e.g. levelized cost of electricity production in $/kWh or levelized cost of delivered heat in $/GJ). The calculation of the financial indicator shall include all relevant costs (e.g., including investment costs, operation, and maintenance costs) and all revenues without carbon credit revenue, including subsidies or official development aid, where applicable.

The chosen financial indicator of the proposed project shall be less attractive than that of one of the alternatives. If one of the other alternatives has the best indicator (e.g. highest IRR), then the proposed project cannot be considered the most financially attractive.

Sub-step 3b: Financial attractiveness without carbon credit revenue-Benchmark analysis

The financial additionality depends on the financial attractiveness of mitigation activities without carbon credit revenue. The most commonly used indicator for assessing the financial attractiveness of project activity is its internal rate of return (IRR) related to the benchmark required for investment. The IRR of the mitigation activity without carbon credits, concerning the required benchmark is used to assess financial attractiveness. The difference rate (ΔI_1) of IRR without carbon credit revenue (IRR_1) and IRR of the benchmark (IRR_0) are used to rate the level of financial additionality for the proposed project:

$$\text{The different rate} \Delta I_1 = (IRR_1 - IRR_0)/IRR_0$$

The difference rate (ΔI_1) of IRR without carbon credit revenue (IRR_1) must be less than 0%, which means the financial attractiveness of the proposed project is less than that of the benchmark. The smaller the ΔI_1,

the higher the investment return barrier. Mitigation activities with typically high IRRs (without carbon credit revenues) have a lower likelihood of delivering additional emission reductions than mitigation activities with negative or low IRRs (with carbon credit revenues).

NOTES: The investment analysis shall be based on parameters that are standard in the market. The discount rate and benchmarks for sub-step 3a and sub-step 3b shall be derived from (the following options are in order of priority):

① Government/official approved benchmark of the sector or type of project activity, where such benchmarks are used for investment decisions;

② Estimates of the cost of financing and required return on capital (e.g. commercial lending rates and guarantees required for the country and the type of project activity concerned), based on bankers' views and private equity investors/funds' required return on comparable projects;

③ Government bond rates, increased by a suitable risk premium to reflect the private investment and/or the project type, as substantiated by an independent (financial) expert or documented by official publicly available financial data;

④ Any other indicators, if the project proponents can demonstrate that the above options are not applicable, and with their indicator is appropriately justified.

Step 3c: Sensitivity analysis (required for both step 3a and step 3b)

Sensitivity analysis is supplementary proof for financial additionality, aiming to test whether the conclusion regarding the financial attractiveness is robust in a realistic range of assumptions). The result of sensitivity analysis must consistently support the conclusion of investment analysis.

Project proponents shall prove the variables including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues shall be subjected to reasonable variation (all parameters varied need not necessarily be subjected to both negative and positive variations of the same magnitude), and the results of this variation shall be presented in the PDD and be reproducible in the associated spreadsheets.

As a general point of departure variations in the sensitivity analysis shall at least cover a range of +10% and-10%, unless this is not deemed appropriate in the context of the specific project circumstances.

Step 3d: Financial attractiveness with carbon credit revenue.

Financial additionality also depends on the enhanced financial attractiveness of projects with carbon credit revenue. The IRR of the mitigation activity with carbon credit revenues concerning the required benchmark is used to assess financial attractiveness.The project proponents shall assess the financial attractiveness of carbon credit revenue, and prove that the carbon credit revenue can help to overcome the capital and investment return barriers.

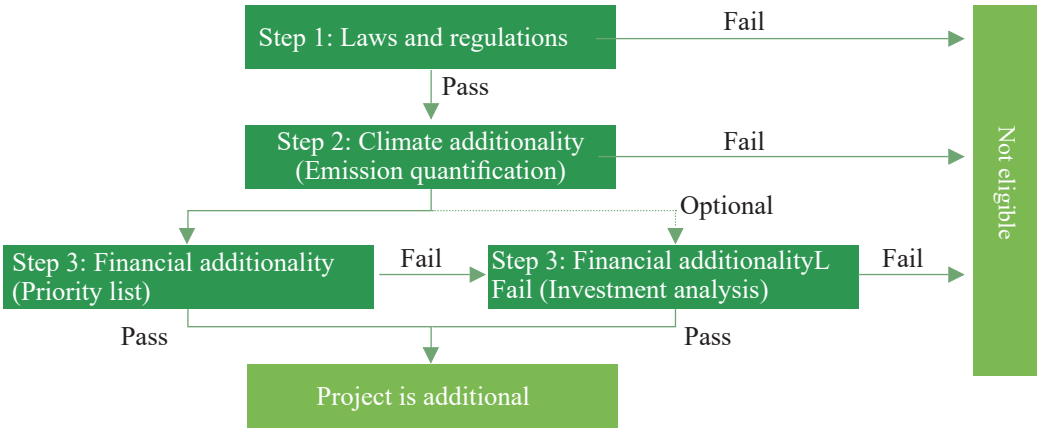
The difference rate (ΔI_2) of IRR with carbon credit revenue (IRR_2) and IRR of the benchmark (IRR_0)

and the change in financial attractiveness due to carbon credit revenue (ΔI_3) are used to rate the level of financial additionality for the proposed project:

$$\text{The different rate} \Delta I_2 = (IRR_2 - IRR_0)/IRR_0$$
$$\text{The change rate} \Delta I_3 = |(IRR_2 - IRR_1)/IRR_1|$$

The difference rate (ΔI_2) of IRR with carbon credit revenue (IRR_2) must be higher than 0%, demonstrating that the financial attractiveness of proposed projects after carbon credit support exceeds the benchmark. The higher the ΔI_2, the more significant the impacts of carbon credit revenue. Also, the change rate ΔI_3 demonstrates how significant the impact of carbon credit is on the proposed project. If the expected proceeds from carbon credits have a significant impact on the financial attractiveness of mitigation activity, the carbon credit revenues are likely to make the type of activity financially viable.

Figure 2: Additionality Assessment Process



2.6 Leakage

Concept

Leakage is the net increase of GHG anthropogenic emissions of GHGs which occurs outside the project boundary, which can be measured and is directly attributable to project activities[28]. Ensuring the reliability and irreversibility of a project's GHG emission reductions and removals are the basis for the issuance of GHG credits, and the key principles of the PER Standard. There are three types of leakage, 1) market leakage, when projects affect the market supply and demand equilibrium of a commodity; 2) activity-shifting leakage, in which the actual agent of deforestation or forest or wetland degradation moves outside of the project boundary and continues its deforestation or degradation and ecological leakage and 3) Ecological leakage, where a project activity causes changes in GHG emissions or fluxes of GHG emissions from ecosystems that are hydrologically connected to the project area[29]. PER aims to develop rigorous method-

28 Estrada, M. 2011 Standards and methods available for estimating project-level REDD+ carbon benefits: reference guide for project developers. Working Paper 52. CIFOR, Bogor, Indonesia.
29 Verra. 2019. VCS Methodology Requirements

ologies to quantify and identify leakage to avoid overestimating the project's net emission reductions and/or removals.

Requirements

PER standard addresses leakage emissions by doing revisions to all methodologies under the PER methodology scope, which aims to enhance and tighten the leakage emissions quantification. In specific, PER Standard requires project proponents to establish the following criteria and procedures to quantify carbon leakage.

All PER methodologies shall properly identify and account for the leakage activity, recognise the leakage risks where necessary, and reflect it in the project design documentation and the monitoring report. Activity-shifting leakage beyond the project boundary shall be quantified in climate additionality assessment. Market and ecological leakage shall be assessed based on the applied methodology(s) at the validation and verification procedure.

A project shall not account for any positive leakage occurring outside of the project boundary. Leakage outside the host country (International leakage) needs to be taken into account and shall be evaluated by the GEB technical committee.

Requirements for AFOLU projects

The AFOLU methodologies shall establish procedures to account for all significant sources of leakage. The significance of leakage could be determined by using the CDM *Tool for testing significance of GHG Emissions in A/R CDM Project Activities*. Carbon leakage from project activities may be determined either from direct monitoring or from indirect estimates of likely leakage impacts based on scientific grounds. Projects shall account for market leakage if the projects significantly impact the production of a commodity, such as timber production. Market leakage shall be reasonably estimated, quantified and reflected in the project's design and monitoring reports based on scientific peer-reviewed source. Once carbon leakage has been identified, the project proponents shall reflect the leakage activity on the project monitoring reports and update the emission reduction with leakage emissions deducted from the previous estimation.

PER set up different leakage assessment requirements for each of the five AFOLU project categories, which correspond to 16 AFOLU methodologies as defined in appendix 1. In terms of Afforestation and reforestation projects, activity-shifting leakage emissions from the shifting of grazing animals, households, or communities, aquacultural or agricultural activities, and emissions from transportation and machinery use shall be accounted for. In addition, the A/R project shall follow practice under CDM *Tool for the calculation of GHG emissions due to leakage from increased use of non-renewable woody biomass attributable to an A/R CDM project activity*.

In terms of activity shifting leakage results from activity shifting in Avoided conservation or deforestation, Reduced Emissions from Deforestation and Degradation (REDD) project categories, project proponents shall demonstrate that no leakage occurs outside the project area but within the project proponents' operations, including areas the project developer has ownership of or legal rights to use the land within the country. The project proponent shall also demonstrate that project activities have no material impacts on the management plans or land-use, and on other lands managed or owned by the project proponents. Project proponents shall set out monitoring procedures to assess and manage carbon leakage, by directly

monitoring the activities of the conversion agent[30].

For the improved/sustainable forest and grassland management project category, project proponents shall demonstrate that there is no leakage occurring outside the project area but within the project developer's operations. Sufficient evidence shall be provided, such as the statement that it is against the policy of the organization to change the land use, etc.

Projects under the Wetland restoration category shall account for both activity-shifting and market leakage, by following the applicable requirements for leakage quantification in the improved/sustainable forest and grassland management project category or REDD.

2.7 Permanence

Concept

Permanence requires that the issued carbon credits represent long-term reductions or removals and that measures are in place to mitigate the risk that the reduction or removal is reversed[31]. The PER standard requires that a credited GHG reduction or carbon removal be permanent and represent a long-term mitigation benefit. Carbon reversal risks (non-permanence risk) frequently occur in Afforestation and Reforestation (A/R) activities, where carbon stored in terrestrial sinks, such as forests and soils, are re-emitted when disturbed by natural phenomena or human intervention[32].

Requirement

PER standard recommends undertaking relevant mitigation measures from both the supply and demand sides to ensure the avoidance of potential carbon reversal from carbon removal projects. Depending on the project types, locations, and periods, PER standard suggests project proponents contribute certain shares of carbon credits to insurance companies as reservation values to secure the permanence of issued carbon credits. The project developers shall pay the annual premium to the insurance company and receive the agreed amount of repayment once carbon leakage occurs. Such a mechanism enhances the economic viability of carbon projects and helps transfer the carbon reversal risk to the market. Also, the insurance mechanism shall cover the climate transition risk from short-term technology development (carbon reduction projects) to long-term technology development (carbon removal projects). The PER standard recommends the aggregation and pooling methods to diversify the project's reversal risks, including the use of the following ways: Credit buffers, insurance and futures/options/contract rollovers.

From the demand side, the recommended approach under PER standard is to introduce carbon futures or options to hedge against the risk of reversal for carbon credits underwriters or buyers. Market proponents have been permitted to develop carbon futures based on CERs by incorporating specific liability provi-

30 The conversion agent is an entity that has ownership of, management of, or legal rights to use multiple parcels of land within the country or can be the most-likely-class of conversion agent.

31 Oldfield, E.E., A.J. Eagle, R.L Rubin, J. Rudek, J. Sanderman, D.R. Gordon. 2021. Agricultural soil carbon credits: Making sense of protocols for carbon sequestration and net greenhouse gas removals. Environmental Defense Fund, New York, New York. edf.org/sites/default/files/content/agricultural-soil-carbon-credits-protocolsynthesis.pdf.

32 World Bank Carbon Finance. 2012. Addressing Non-Permanence and Reversal Risks of Afforestation and Reforestation (A/R) Activities under the Clean Development Mechanism (CDM)

sions that consider the risk of reversal. Alternatively, CDR options, such as tradable put options (TPOs) could be operated at scale if priced correctly and supervised by the global governance body. The buyers of the TPOs must pay the premium upon purchase to reward the sellers for bearing the risk of CDR price fall in the future.

2.8 Double Counting

Concept

Double-counting includes double-issuance, double-use and double-claiming, among which double-claiming shall be addressed by applying corresponding adjustments. While double-counting can be avoided at the country level by making related adjustments to their NDCs, it is challenging to eliminate double-counting in the voluntary carbon markets. Projects shall not double-issue GHG credits under multiple GHG standards and shall not double-account for their climate benefits across different regions or areas. PER standard reserves the right to not provide rating certification for projects susceptible to double counting issues.

Requirements

PER standard requires that all projects shall not double account for their climate benefits across different regions or areas (including double issuance, double use and double claiming). PER standard will not provide carbon rating certification to projects with double counting issues to enhance the integrity of voluntary carbon markets.PER standard recommends project shall meet all relevant principles and requirements on double counting and corresponding adjustments established under Article 6 of the Paris Agreement, ITMO or other GHG programs.

Furthermore, PER standard recommends project proponents establish a direct commitment mechanism in which the national authorities can provide independent assurance and verification in terms of the integrity of PER credit trading in the local area, where the cancellation or purchase of GHG units is accurately recorded and adjusted in the national carbon accounts to ensure no existence of double counting. Meanwhile, the no double-counting statement shall be provided by the local authorities and assessable for all credit buyers. Such a mechanism requires establishing partnerships among PER standards, local authorities, and the third-party verification body in the future.

2.9 Safeguards

Concept

The PER Safeguard principles are meant for use by all Projects, irrespective of their scope, type and scale. Project activities shall not negatively impact the social, economic and environmental development of local communities. Project proponents shall identify and address any negative environmental and socio-economic impacts of project activities. The PER Safeguards Principles consist of social safeguarding principles, economic safeguards principles and environmental safeguarding principles. The following issues were considered for which a safeguarding principles assessment must be carried out to ensure no harm to sustainable development.

Requirements

a) The project proponent shall demonstrate how the project activities, or additional activities implemented by the project proponents, fulfil the PER Safeguarding principles.

b) All projects shall comply with the PER safeguarding principles, which set out as the minimum requirements for a voluntary emission reduction project. To further assist the assessment of each of the safeguarding principles, the project shall assess the relevance of each principle by the following procedures:

   i. If the given principle is relevant to the project, evidence shall be provided to demonstrate compliance with the Requirements;

   ii. If the given principle is potentially relevant or not relevant to the project, it shall be justified as not requiring a demonstration of conformance to the Requirements or a demonstration of irrelevancy in a brief sentence.

c) Any potential negative impacts or assessment outcomes shall be presented to key local stakeholders. Project developers shall seek appropriate stakeholder engagement and demonstrate that a stakeholder review of the project's conformance with the safeguarding principles has been conducted.

d) The safeguarding principles assessment report shall reflect the outcome of key stakeholder comments and incorporate their recommendations into the report.

The table below is the PER safeguards, please see the details requirements in Appendix 2.

Table 3: PER Safeguards

Social safeguarding principles	Principle 1: Human Rights and Gender Equality Principle 2: Community Health and Safety Principle 3: Cultural, Historical Heritage and Indigenous Peoples Principle 4: Forced Displacement, Resettlement and Land Tenure
Economic safeguarding principles	Principle 5 - Corruption and Labour rights Principle 6 - Negative Economic Consequences
Environmental Safeguarding principles	Principle 7 Emissions Reduction Principle 8 Energy Supply Principle 9 Water Flows and Stability Principle 10 Land and Forestry Principle 11 Natural disasters Principle 12 Release of pollutants, waste and use of pesticides Principle 13 Animal welfare, Biodiversity, Ecosystems and Endangered Species

2.10 SDG Assessment

Concept

The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity. The first sustainable development reporting tool is launched by CDM in 2013, which enables project proponents to voluntarily disclose sustainable development co-benefits of the project activities using the structured and comparable SD report template. The SD tool enables users to demonstrate the extent of sustainable development co-benefits in the environmental, social and economic dimension, and allow users to provide indicators and detailed specification related to each claimed benefit. However, the disclosure of SD repot under CDM is voluntary and does not require monitoring or third-party verification or audit.

To better align with Article 6 of the Paris Agreement, PER mandate all projects to provide an SDG assessment report and requires all project to have their SDG assessment report audited by trusted VVB, which could further enhance the transparency and validity of the achievement of the sustainable goals. SDG impacts shall be a primary or direct effect of the project, which can sustain in a long-lasting manner during the project life cycle.

Requirements

a) compare the project scenario to the baseline scenarios by using appropriate SDG indicators when reviewing the positive impacts of relevant SDGs

b) provide quantified evidence of a substantive net positive contribution to at least two SDG targets in addition to SDG 13: Climate actions;

c) use of publicly available and internationally recognised tools or methodologies to assess the relevant sustainable development impacts of the mitigation activity;

d) use of relevant and robust national or internationally adopted SDG indicators to assess the SDGs contribution, with the relevant monitoring activities, source of data, monitoring frequency and calculation methodology provided;

e) justify the relevance or irrelevance of each SDG target with respect to the project activities, including narratives about how an SDG does not apply to the project activities, and what actions are about to be taken to realize each SDG in the future, if applicable;

f) seek expert stakeholder opinions and address public comments from expert stakeholders for the claimed SDG impacts, and summaries the key stakeholder comments in the SDG assessment report;

g) complete the SDGs assessment report using the PER SDG Assessment templates

h) obtain verification or assurance of the claimed SDG impacts from certified independent VVB;

To enhance the transparency and integrity of the SDG assessment reports, project proponents shall seek expert stakeholder opinions and address public comments from expert stakeholders for the claimed SDG

impacts, and summaries the key stakeholder comments in the SDG assessment report. Project developers shall properly address or resolve the issues or questions raised by the stakeholders during the public comment period and reflect that relevant recommendations have been incorporated into the SDG assessment report. PER may require comments or opinions of an independent expert stakeholder or an adjustment to the claimed SDG impact to enhance credibility, where necessary.

2.11 Monitoring

Concept
The actual emission reductions and removals of the proposed project shall be monitored accurately in accordance with the applied methodology(s). The real emission reductions and removals of the proposed project quantified in the monitoring report are an important basis for certifying and issuing carbon credits.

Requirements
The project proponent shall establish a GHG measurement and monitoring system as well as relevant digital/smart equipment to obtain, record and analyze the data and parameters used for the quantification of GHG emission reductions and removals in accordance with the applied methodology(s). The PER Standard encourages the application of digitalised MRV procedure to strengthen the accuracy, transparancy and efficiency on the process of MRV.

A monitoring plan for the proposed project shall be established in the project design document (PDD), including the monitored data and parameters, monitoring procedures, operation requirements, monitoring equipment, etc.

2.12 AFOLU Specific Matters

Concept
AFOLU projects may face unique circumstances related to project design, implementation, monitoring and other matters. The key challenge encountered by AFOLU projects is the assessment of carbon reversal risks and carbon leakage caused by natural phenomena or human intervention, such as fires, harvests, land-use changes, and other disturbances. This section sets out requirements and proposed innovative solutions related to such AFOLU-specific matters.

Requirements
There are five AFOLU project categories eligible under the PER Program: afforestation and reforestation (A/R), avoided conversion or deforestation, improved/sustainable forest or grassland management, reduced emissions from deforestation and degradation (REDD), and wetland and seagrass restoration.

The AFOLU projects shall comply with the following criteria and principles, in addition to the principles stated in section 2.1.

a) Projects can be located or implemented in any country.

b) The eligible project types are Agriculture Forestry and Other Land Use projects.

c) The eligible area shall not have been deforested 10 years before the project start date and at the project start date. In the case where deforestation activity has happened 10 years before the project start date, the project applicants shall prove that the deforestation activity has not occurred intending to generate GHG credits.

d) Project activities shall not alter ecosystems or drain ecosystems or degrade hydrological functions to generate GHG credits

e) The crediting period for A/R activities shall be a minimum of 20 years and a maximum of 100 years, renewable at most four times with a total project crediting period not to exceed 100 years. The crediting period for agricultural and other land used shall be ten years fixed, or twice renewable for a total of 21 years.

f) Project applicants shall demonstrate that project activities have been implemented during each verification period to achieve the intended GHG benefit with sufficient evidence to submit to the PER group, and the GHG benefit is real and measurable.

Baseline reassessment. AFOLU projects shall reassess the baseline emissions every ten years during the project lifecycle and redo verification and validation at the same time. At each of the baseline reassessment periods, the reassessment shall capture changes in the drivers behind the change in project activities and change in carbon stocks; update the project description and compare the historical baseline with the updated baseline scenario if there is a significant discrepancy between them.

Non-permanence risks. Non-permanence risks refer to the situation where carbon stored in terrestrial sinks, such as forests and soils, is re-emitted when disturbed by natural phenomena or human intervention[33]. PER requires the AFOLU project to assess the carbon reversal risks every ten years at the same time as the baseline reassessment. In the case of unexpected circumstances, the loss or leakage of the project's carbon stocks shall be buffered through the carbon credits buffer zone or buffer zones to ensure the quality and integrity of the emissions reduction projects. PER reserves the right to not provide PER certificates or suspend the PER certificates issued to the AFOLU projects if the project developer fails to demonstrate that the project does not have significant exposure to non-permanence risks.

33 World Bank Carbon Finance. 2012. Addressing Non-Permanence and Reversal Risks of Afforestation and Reforestation (A/R) Activities under the Clean Development Mechanism (CDM)

Chapter 3:
Validation and Verification requirements

Concept
Validation is the assurance that the project design complies with the PER rules and requirements conducted by an independent validation and verification body (VVB). Verification is the periodic ex-post independent evaluation by an independent VVB of whether the project impacts that have occurred or are on track to occur during the project activity monitoring period, comply with PER standard requirements.

General Requirements
The validation and verification procedure are based on a project documentation review provided by the project proponent and the on-site verification by the validation or verification body. The validation and verification body are expected to exert professional judgment and form an independent opinion on whether a project has met each of the PER Standards requirements and any other PER rules.

Validation may be conducted before the first verification or at the same time as the first verification. The validation and verification of a project can be undertaken by the same independent VVB for the first verification procedure. However, the subsequent verification shall be undertaken by a different VVB.

Project proponents shall provide assurances that the project documentation is reasonable, and completed, with no material errors, omissions or false misrepresentation for both validation and verification. A completeness check and review of the project documentation shall be conducted by a second opinion assessment team before the validation and verification process. The project proponents shall submit additional evidence as needed and requested, respond to questions or requests from the VVB, and assist in arranging meetings with communities and other stakeholders as requested and required in a timely manner. The onus of proof in the validation/verification procedure ultimately rests with the project proponent.

3.1 Validation and Verification Procedure

The draft project documentation for a given project shall go through a 30-day public comment period, where any comments from the public comment period shall be properly addressed, resolved or explained if the given comments are not relevant or appropriate. The GEB audit committee shall conduct a validity check of whether all identified issues or conformity requests pointed out has been resolved. The project may be requested to take further action in response to findings or issues raised by the GEB audit team, if applicable.

After the 30-day public comment period, the verification or validation body shall assess whether any of the projects conform with relevant rules and requirements of PER and existing GHG standards, and determine whether the project shall be approved by conducting a validity check over the project documentation and monitoring reports.

Where the project does not meet the criteria for validation or verification, the VVB shall produce a negative validation opinion and provide the validation or verification report and project description, or monitoring report, to PER.

3.2 Validation and Verification Reporting

The validation report illustrates the validation procedure, and any findings and conclusions raised or drawn by the VVB during the validation process. The verification report illustrates the verification procedure, and any findings and conclusions raised or drawn by the VVB during the verification process.

The validation and verification reports and statements shall be submitted within the first year of the initiation of the public comment period. The one-year deadline can be extended by another six months at any time before the initial deadline date (since the start date of the verification procedure) by providing the most recent versions of the relevant validation/verification documents to PER.

Chapter 4: Usage of Brand

Figure 3: PER Logo

Premium Emissions Reduction

The Premium Emissions Reduction (PER) logo signifies the credibility and additionality of a project's emissions reduction. The PER standard is committed to providing innovative solutions to environmental and social problems that work for people and the planet. This logo may be used to refer to projects certified under the PER standard.

Premium Emission Reduction (PER) Standard

Draft for public consultancy

2022/11