ANALYSIS

A comparison of carbon market standards for REDD+ projects

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GERMANWATCH

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Abbreviations

ACR	American Carbon Registry
AFOLU	Agriculture, Forestry and Other Land Use
A/R	Afforestation / Reforestation
BMUB	German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety
CCBS	Climate, Community and Biodiversity Standards
CDM	Clean Development Mechanism
FPIC	Free, Prior and Informed Consent
GHG	Greenhouse Gas
IFM	Improved Forest Management
IKI	International Climate Initiative
REDD+	Reducing emissions from deforestation and forest degradation; and the sustainable management of forests, conservation of forest carbon stocks and enhancement of forest carbon stocks
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Verified Carbon Standard
VCS JNR	Verified Carbon Standard Jurisdictional and Nested REDD+ requirements

Standards analyzed

ACR	The American Carbon Registry Forest Carbon Project Standard including the ACR Nested REDD+ Standard
GSF	Gold Standard Foundation Land Use and Forests Framework & AR Requirements
NFS	Natural Forest Standard
Plan Vivo	Plan Vivo Standard
RS	Rainforest Standard
VCS	Verified Carbon Standard and its AFOLU requirements, including the VCS Jurisdictional and Nested REDD+ requirements
CCBS	Climate, Community & Biodiversity Standards
SCS	Social Carbon Standard

Summary

This report provides an analysis of REDD+ project standards against expectations and principles set by the BMUB/IKI and Germanwatch. atmosfair contributed to this report with its experience in the field of MRV and climate integrity of offset projects. The goal of the report is to provide a clear underlying guidance for the use of one or several REDD+ standards for use by the International Climate Initiative (IKI) of the BMUB and beyond.

Whereas REDD+ standards consist generally i.a. of principles, processes and rules for the projects, the actual implementation of REDD+ projects may differ from these. The implementation of projects is however beyond the scope and thus not part of the study at hand[1].

We set out by describing the expectations and principles of BMUB/IKI and Germanwatch with regard to REDD+ projects/REDD+ standards. Based on these, criteria and indicators for the following analysis are developed. We differentiate between four broad criteria, namely:

1. Climate Integrity
2. Biodiversity Conservation
3. Human and community rights, stakeholder participation and sustainable community development
4. Long-term project viability and compatibility with UNFCCC and jurisdictional approaches

Each criterion may include several categories, which in turn include indicators. We develop a total of 32 indicators.

We attribute varying scores to indicators based on subjectively perceived importance. Indicator scores range from 1 (positive aspect) to 10 (aspect of outstanding importance).

We then provide an overview of available REDD+ standards and select a subset of standards for the following analysis, based on the standard's suitability for application in IKI projects. The following eight standards are pre-selected and then analyzed in detail:

1. The American Carbon Registry Forest Carbon Project Standard including the ACR Nested REDD+ Standard
2. Gold Standard Foundation Land Use and Forests Framework & AR Requirements
3. The Natural Forest Standard
4. The Plan Vivo Standard
5. The Rainforest Standard
6. The Verified Carbon Standard and its AFOLU requirements, including the VCS Jurisdictional and Nested REDD+ requirements
7. The Climate Community and Biodiversity Standards
8. The Social Carbon Standard

[11] Examples for critics on allegedly controversially implemented REDD+ projects in the context of carbon standards can be found at e.g. http://www.redd-monitor.org, http://wrm.org.uy/books-and-briefings/redd-a-collection-of-conflicts-contradictions-and-lies, https://en.wikipedia.org/wiki/Reducing_emissions_from_deforestation_and_forest_degradation, http://www.cifor.org/redd-case-book

Results

Under the criterion 'climate integrity', both VCS and ACR score highest with approximately 85%, while the next in line do only reach slightly above 50% or less.

With regard to the criterion 'biodiversity conservation' the Plan Vivo Standard, Natural Forest Standard, CCBS and Gold Standard achieve full points, followed by the Rainforest Standard and the Social Carbon Standard with approx. 75%.

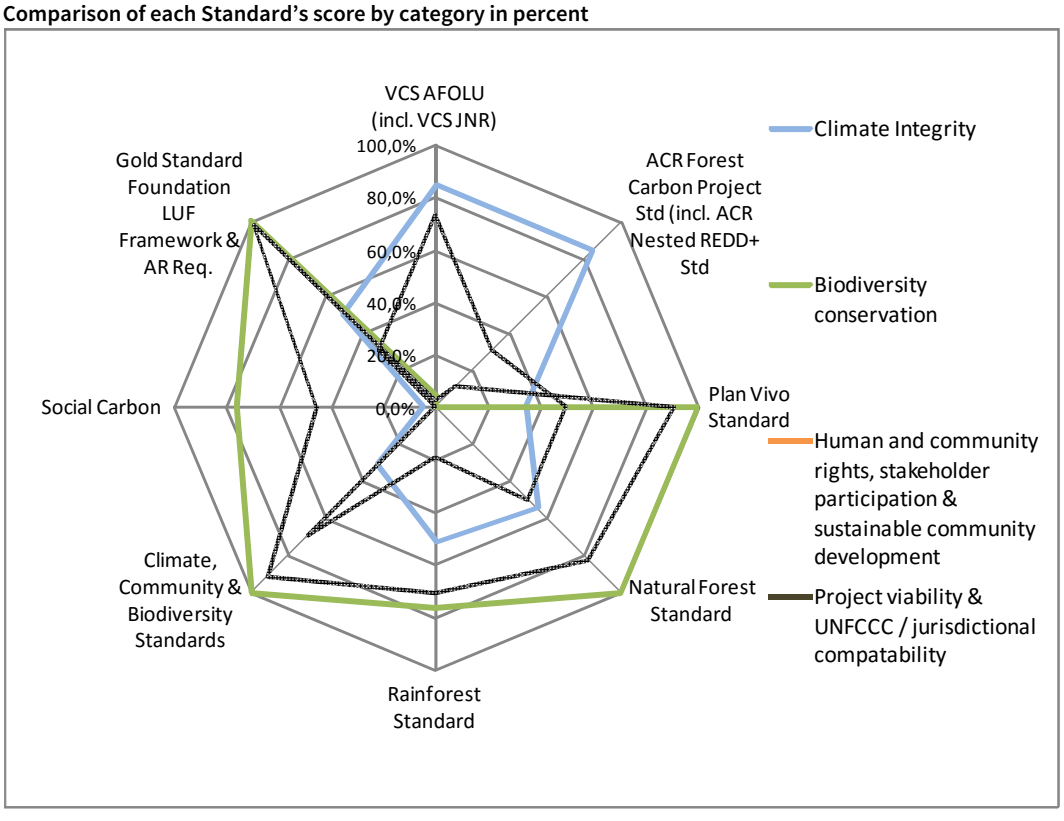
Under the criterion 'human and community rights, stakeholder participation & sustainable community development', the Gold Standard scores top with almost 100%, closely followed by the CCBS and Plan Vivo Standard with approx. 91% and the Natural Forest Standard with approx. 81%.

Under the criterion 'project viability and UNFCCC/jurisdictional compatibility', the differences among standards are not as high. The VCS reaches the highest score with approx. 72%, closely followed by the CCBS with almost 70%. Next are the Plan Vivo Standard and the Natural Forest Standard.

By comparison, when combining different 'pure' carbon standards (VCS, ACR) with pure co-benefit standards (CCBS, Social Carbon), a much higher total score is achieved. Here, VCS + CCBS scores highest with 94%, followed closely by ACR+CCBS with 88%. VCS + Social Carbon reach 70%, ACR + Social Carbon 63%.

The Figure below provides an overview of the strength and weaknesses of each standard across the four criteria.

Comparison of each Standard's score by category in percent



Source: Authors' illustration

No standard reaches more than 80% across all criteria

Based on the above results, we conclude that **no standard alone fulfils the expectations of BMUB/IKI and Germanwatch** i.e. no standard reaches more than 80% across all criteria.

The **VCS and ACR are the only standards that achieve >80% in the category climate integrity**. Consequently, these two standards are the only two that are acceptable to BMUB/IKI and Germanwatch with regard to the criteria for carbon accounting.

However, the absence of strong provisions for biodiversity conservation, human and community rights, stakeholder participation and community development and other aspects that aim to guarantee long-term project viability do not make them a good choice if one is looking at benefits beyond carbon, at least not as standalone standards.

Both in the categories 'biodiversity conservation' and 'human and community rights, stakeholder participation and sustainable community development', only the Plan Vivo Standard, the Natural Forest Standard, the CCBS and the Gold Standard reach the level of ambition set by BMUB/IKI and Germanwatch.

Combination of existing standards proves better, but still not sufficient

When combined with the CCBS, the VCS and ACR provide the relative best results in our analysis (VCS + CCBS is only marginally better than ACR + CCBS). As a result, we suggest the use of either VCS + CCBS or ACR + CCBS for use by the IKI of the BMUB or any other party financing REDD+ projects.

However, based on our experience, VCS + CCBS validation requires projects of scale. Consequently, it is suggested that for smaller projects, IKI could allow the use of Plan Vivo with additional carbon accounting requirements to ensure climate integrity.

Additional provisions for integration into jurisdictional approaches and consideration of human rights needed

Recommendations that emerge from the analysis for the application of standards for projects under the International Climate Initiative are provided in a separate document. These recommendations were jointly developed by BMUB and Germanwatch.

They also address two remaining major issues, where expectations by BMUB/IKI and Germanwatch are not met by any of the considered standard. These are the mandatory integration of projects into jurisdictional or national REDD+ programmes; and the consideration of human rights in project planning and implementation.

1 Background and rationale

The International Climate Initiative (IKI) of the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) is a significant donor of forest mitigation projects. Annually, approx. 60 Million Euros are spent on REDD+ projects.

The IKI acknowledges the need of REDD+ projects to produce and sell emission reductions – limited to the voluntary carbon market only – as a means to ensure the projects continuity beyond the IKI support phase. As such, IKI-funded projects may generate (verified) emissions reductions only for non-compliance markets under any REDD+ standard that they deem appropriate, the only condition being that such verified emission reductions (carbon credits) can only be issued once the IKI support phase had ended.

At the same time, it must be mentioned that BMUB/IKI and Germanwatch see the sale of non-compliance carbon credits (even at the highest standards, which are not yet ready available) only as a transitional means to an end, which is to establish lasting, sustainable and low-emission livelihoods in the land-use sector. As such, the sale of non-compliance carbon credits could potentially provide the necessary short to medium-term investment to address the drivers of deforestation and forest degradation and transition from originally destructive to such lasting, more sustainable and low emission livelihoods.

Up to date, the IKI does require high quality REDD+ activities but not the use of any particular REDD+ standard. Considering the significant differences in quality among REDD+ standards, this represents a gap in light of BMUB position e.g. on the use of forest-sector emission reductions for compliance under the UNFCCC or REDD+ safeguards.

1.1 Goal and structure

The goal of this concept paper is to fill this gap, by providing clear analysis and guidance on the use of a particular set of forest carbon standards to be used by REDD+ projects/programs in general and IKI projects/programs in particular. These analysis and guidance are the basis for recommendations (provided in a separate document) that should culminate into a directive proposed jointly by BMUB and Germanwatch.

The structure of the paper is as follows:

1. We set out by describing the expectations and principles of BMUB/IKI and Germanwatch with regard to REDD+ projects/REDD+ standards. Based on these, criteria and indicators for the following analysis are developed.

2. We then provide an overview of available REDD+ standards and select a subset of standards for analysis.

3. We analyze REDD+ standards with regard to the criteria and indicators listed under step 1 above. Here, we also draw on available literature, as there are a number of publications, which have compared REDD+ standards in particular with regard to their social and environmental benefits.

4. Based on the analysis, BMUB and Germanwatch draw recommendations for the use of these forest carbon standards (in a separate paper).

1.2 Definitions

In the following, we provide definitions for two terms that are often not well defined but key to the understanding of this report. The definitions are made for the purpose of this report only. By defining them here (and not other terms as well), no particular importance is attributed to these terms.

REDD+ Standard

The term 'REDD+ Standard' here is used in a very wide sense, including rules and procedures for GHG programs and mechanisms such as e.g. the CDM. The term standards is thus defined as 'any regulatory document, which sets out rules and procedures for accounting of GHG emissions and removals (and co-benefits) from any kind of REDD+ activities, and which can lead to a validation/certification of these activities'.[2]

We deliberately use the term 'REDD+ standard' instead of 'forest carbon standard' to demonstrate the link to REDD+ under the UNFCCC.

Climate integrity

For the purpose of this report, climate integrity is defined as follows: Emission reductions generated by projects must be additional, real, measurable, verifiable and permanent. Calculation of net GHG emission reductions must be conservative, account for all relevant carbon pools and GHGs and use independently validated methodologies, account for non-permanence risk, leakage and uncertainty. Standards must ensure permanence of emission reductions during the crediting period or at least 50 years and – to the extent possible – beyond. Credits issued must not be used for compliance under the UNFCCC nor any regional or (sub-) national GHG program.

(For other criteria we use the definitions used by the different standards).

[2] The analysis of REDD+ standards excludes those that would allow the use of forest carbon credits in the compliance market.

2 Principles and expectations towards REDD+ standards

If a standard is to be recommended by the BMUB/IKI and Germanwatch, it should meet the highest demands in terms of carbon accounting and thus climate integrity, but also with regard to recognition of human and community rights, stakeholder participation and community development as well as environmental safeguards. All of the three players have in common that they see forests as complex ecosystems with various functions and services to support society. For that reason, they see the necessity that REDD+ standards ensure that benefits for biodiversity conservation and social wellbeing are addressed equally with CO_2 emission reductions. None of the three actors supports a REDD+ standard that would allow the use of forest carbon credits in the compliance market.

The following section summarizes on top of those superior criteria further expectations and principles of the three players with regard to REDD+ projects/programs that are of particular interest to the individual actor and its scope of work.

All expectations/principles are provided 'as is'[3].

2.1 BMUB/IKI

As described above BMUB/IKI supports only standards with the highest quality possible. While the IKI is willing to open the door for more private sector involvement in REDD+ projects and in this context also for the generation of non-compliance REDD+ credits after the IKI support phase has ended, it is neither the aim to open the door to all kinds of private sector cooperation nor to do this at the expense of ecological and social aspects. More private sector participation in REDD+ projects is welcome, but only if it meets the high standards as set out by BMUB/IKI.

Particular issues of importance to BMUB/IKI are the application of Free Prior and Informed Consent (FPIC) and in general the consideration of the Cancún Safeguards for REDD+ as well as the Warsaw REDD+ Framework. At present, BMUB/IKI sees the *Verified Carbon Standard* (VCS) in combination with the *Climate, Community & Biodiversity Standard* (CCBS) as a good option for REDD+ projects. However, BMUB/IKI is open for updated options or additional criteria on top of VCS and CCBS, should these not meet the highest requirements.

2.2 Germanwatch

Based on the superior criteria described above, Germanwatch supports the REDD+ approach for two major reasons, which are of vital importance for Germanwatch as an organization:

- REDD+ is currently the most promising approach to significantly reduce GHG emissions in the AFOLU sector if the drivers of deforestation are addressed as well; and
- REDD+ provides the opportunity for an alternative development pathway in the land use sector to developing countries and countries in transition.

[3] They were provided to the author in writing or verbally.

Based on these two perspectives on REDD+, quality assurance criteria can be determined for REDD+ projects. For Germanwatch, these two perspectives and consequently the criteria for a REDD+ standard as well are of equal importance.

Principles and expectations towards REDD+ projects in terms of climate protection are:

- Measurable and verifiable emission reductions and removals,
- Steady and stepwise REDD+ implementation towards national REDD+ implementation and accounting,
- Long-term GHG reductions,
- No ecological leakage, i.e. displacement of deforestation and forest degradation to forests or other ecosystems with less carbon stocks and
- Adherence to at least the no-harm principle, i.e. REDD+ projects must not have negative social and environmental impacts and must always follow a human-rights based approach.

Principles and expectations towards REDD+ projects in terms of alternative development perspectives are:

- Long-term change of land-use activities, which leads to a transformation of the relevant sectors causing deforestation and forest degradation, i.e. a permanent reduction of the drivers of deforestation and forest degradation,
- In conjunction with the above, support to the building of alternative sustainable low-emission livelihoods and
- No displacement of environmental problems to another level. To give an example: Intensification of agriculture could reduce deforestation, but intensive use of energy intensive fertilizers could have serious impacts on aquatic ecosystems and drinking water quality.

2.3 The private sector perspective – evolution of REDD+ standard use

This section provides a brief overview on the evolution of REDD+ standard use. This is to reflect the preference of the private sector with regard to REDD+ standards over time. The analysis focuses on those standards, which are subsequently analyzed in depth (though for some recent standards no market information was available).

Figure 1 shows the evolution of individual REDD+ standards use over 7 points in time, while Figure 2 shows the evolution of combined REDD+ standards use (carbon + co-benefit standard) over the same time period. We chose the series 'state of the forest carbon market' from 2009 to 2014 as the database for this analysis. It needs to be noted, that the reporting on standards has not been entirely consistent in terms of categories over time, and thus the results may not be fully accurate. Further, 'state of the forest carbon market' relies on results from a survey with varying levels of participation. In consequence, a variation in annual figures may also be the result of varying levels of survey participation.

The analysis clearly shows the following:

1. Until 2010, the use of individual standards was more balanced. Notably, the CCBS played a major role as a standalone standard, and Plan Vivo – today a niche standard – was still

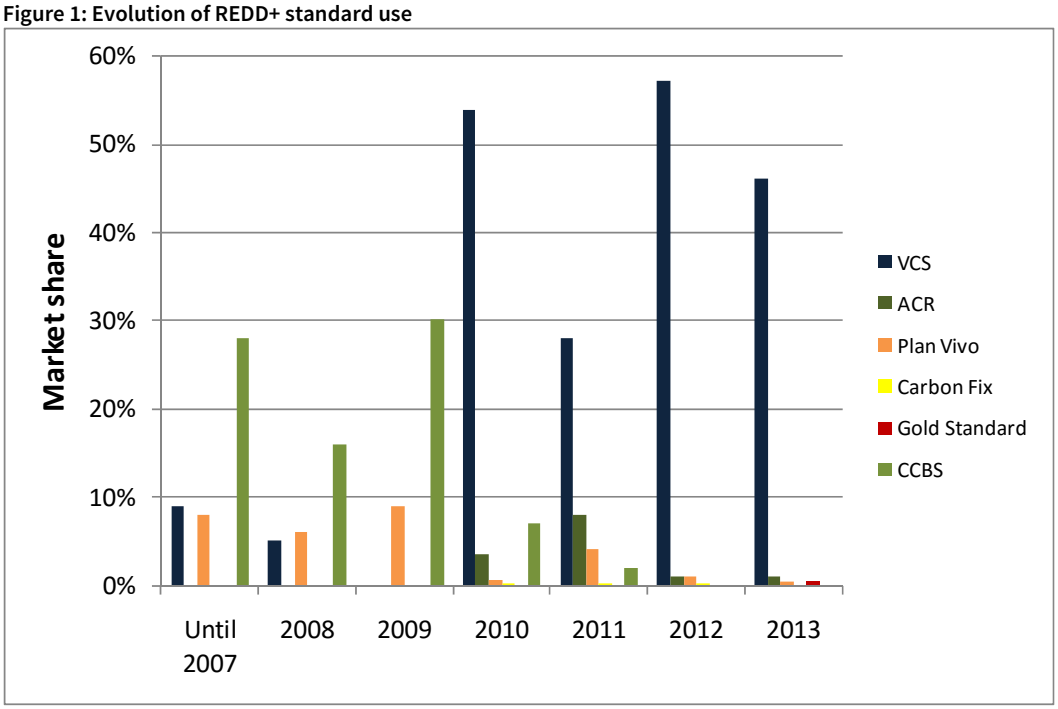
at eye level with the VCS. In terms of combined standard use (carbon + co-benefit standard), until 2010, many projects undertook triple validation, using VCS, ACR and the CCBS.

2. From 2010 onwards, the picture changes significantly and the VCS, both as an individual standard (+/- 50% individual market share) as well as in combination with CCBS (+/- 70% market share for combined standard use), starts to dominate the standard landscape. Plan Vivo and Carbon Fix (today part of the Gold Standard) as well as the ACR play only a niche role, while the CCBS as a standalone standard disappears completely.

3. As a co-benefit standard, the social carbon standard only plays a negligible role throughout the entire analysis period.

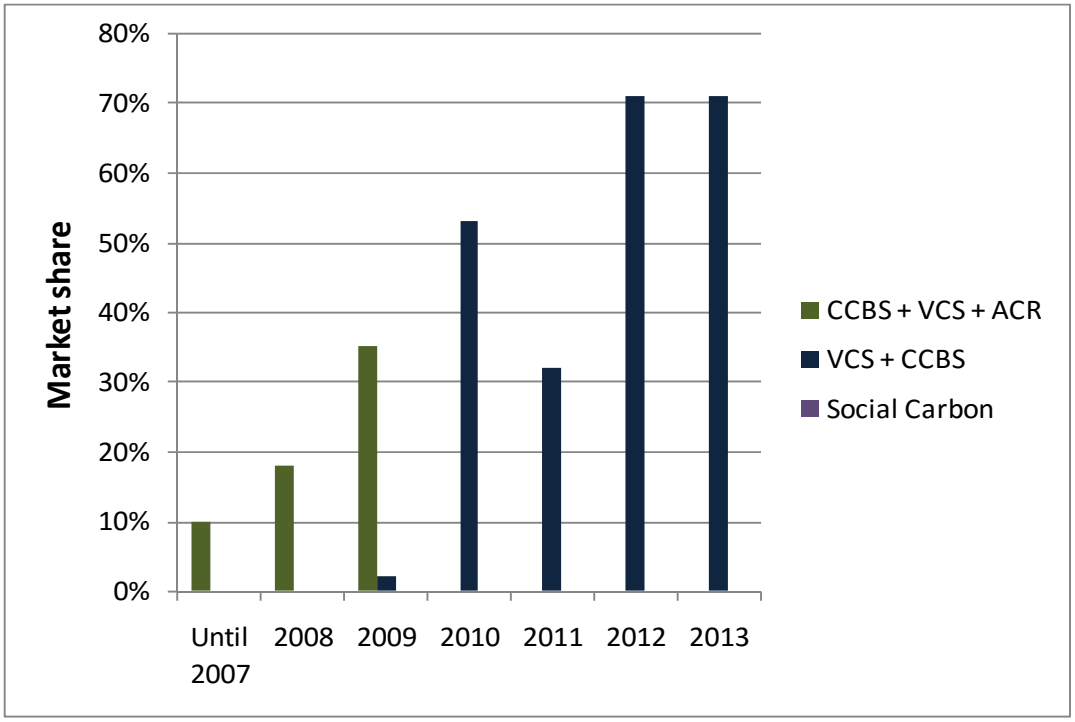
From our perspective, this analysis clearly underlines today's general preference of the private sector for using the VCS – and in case of additional co-benefit certification – the VCS in combination with CCBS.

Figure 1: Evolution of REDD+ standard use



Sources: Authors' illustration based on the reports 'state of the forest carbon markets' for the years until 2007, 2008, 2009, 2010, 2011, 2012, 2013. The non-visibility of some standards (during one or several years) means that either the Standard was not recorded or that it had zero or close to zero market share.

Figure 2: Evolution of combined REDD+ standards use



Sources: Authors' illustration based on the reports 'state of the forest carbon markets' for the years until 2007, 2008, 2009, 2010, 2011, 2012, 2013. The non-visibility of the Social Carbon standard (during one or several years) means that either the Standard was not recorded or that it had zero or close to zero market share.

3 Parameterization of expectations and principles towards REDD+ projects

This section attempts to parameterize the principles and expectations voiced by BMUB/IKI and Germanwatch. This is done by defining criteria and indicators against which standards can be assessed relatively objectively. We define the following four broad criteria:

1. Climate integrity,
2. Biodiversity conservation,
3. Human and community rights, stakeholder participation and sustainable community development as well as
4. Long-term project viability and compatibility with UNFCCC and jurisdictional approaches.

The first three criteria are based on the general expectations towards REDD+ projects, i.e. that they general reduce emissions while contributing to biodiversity conservation and community wellbeing, while ensuring broad stakeholder participation and recognition of both community and human rights. The latter criterion includes the necessity of a social impact assessment on social, cultural and economic aspects as well as to human rights and rights to lands territories and resources.

We add a fourth 'mixed' criterion, which covers issues of long-term project viability and compatibility with UNFCCC and/or jurisdictional approaches.

For each of these criteria, a varying number of indicators are defined (see Table 1 below). These are to some extent based on previous comparisons of standards (Merger and Williams 2008, Held et al. 2011, Merger and Pistorius 2011, Roe et al. 2013). However, in comparison to some of these studies, we have reduced the number of indicators as we believe that many aspects – such as e.g. baselines, use of methodologies, registries – are common practice today across most if not all REDD+ standards.

Even though selected issues maybe of different importance to BMUB/IKI and Germanwatch, overall they seek the highest standards possible for REDD+ projects. Overall, the expectation of all three actors is that a standard fulfils at least 80% in the first three categories 'climate integrity', 'biodiversity conservation' and 'human and community rights, stakeholder participation and sustainable community development'.

In consequence, we set a score for each fulfilled indicator to mirror its **subjective relative importance** and to arrive at an **indicative ranking** as a result of the analysis. Overall, we attempt to balance the maximum possible score for each criterion, in order to underline that REDD+ projects should not only generate emission reductions but equally contribute to biodiversity conservation and social wellbeing, respect human and community rights while meeting some further overarching goals.

The following points are given:

- 10 points for aspects of outstanding importance,
- points for very important aspects,

- points for important aspects,
- 1 point for positive aspects,
- 0 points if an indicator is not fulfilled.

A maximum score of 155 points can be achieved, of which 64 can be achieved under the criterion 'climate integrity', 21 points under 'biodiversity conservation', 44 points under 'human and community rights, stakeholder participation and sustainable community development' and 26 points under 'Long-term project viability and compatibility with UNFCCC and jurisdictional approaches'.

Table 1: Criteria & indicators for analyzing REDD+ standards

Criteria	Category	Indicators	Score	
			No	Yes
Climate Integrity	Additionality	The standard demands an 'additionality' test using an investment analysis method	0	5
	Permanence	The standard demands a non-permanence risk analysis and consequent deductions for non-permanence risk when calculating net GHG emission reductions	0	5
		Projects with a high non-permanence risk cannot undergo validation	0	3
		Upfront crediting is strictly limited or not allowed	0	5
		The standard operates a (pooled) buffer account or uses other safeguards, meant to provide permanence during the crediting period.	0	5
		The standard undertakes measures to reduce the risk of non-permanence beyond the crediting period	0	3
		The standard ensures permanence beyond the project crediting period	0	10
	Leakage	The standard demands accountability of activity leakage and consequent deductions for activity leakage when calculating net GHG emission reductions	0	5
		The standard demands accountability of market leakage and consequent deductions for market leakage when calculating net GHG emission reductions	0	5
	General carbon accounting quality assurance	The standard demands independently validated methodologies for GHG accounting	0	3
		The standard demands independent third party validation and verification of monitoring results		3
		The standard demands the application of the principle of conservativeness (for baseline establishment, etc.)	0	3
		The standard demands an uncertainty assessment and consequent deductions for uncertainty when calculating net GHG emission reductions	0	3
		The standard demands the inclusion of all relevant carbon pools and GHGs, unless they are deemed 'de minimis'	0	3
		The standard demands that double counting is not allowed	0	3

Criteria	Category	Indicators	Score	
			No	Yes
Biodiversity conservation	Biodiversity impacts	The standard demands at least a 'no harm' approach to biodiversity conservation	0	1
		The standard demands a biodiversity or environmental impact assessment and in consequence the development and implementation of a plan to mitigate these impacts	0	5
		The standard demands the generation of additional measureable benefits for biodiversity conservation (includes the development of a biodiversity baseline and project scenario)	0	10
		The standard demands the measuring, reporting and verification of biodiversity benefits	0	5
Human and community rights, stakeholder participation and sustainable community development	Community impacts & recognition of human rights	The standard demands a 'no harm' approach to community development	0	1
		The standard explicitly demands the recognition of human rights	0	3
		The standard demands a social impact assessment which should include the identification of vulnerable groups and the potential for human rights violations and in consequence the development and implementation of a plan to mitigate these impacts	0	5
		The standard demands the generation of additional measureable benefits for community development (includes the development of a community baseline and project scenario)	0	10
		The standard demands the measuring, reporting and verification of community benefits	0	5
	Stakeholder & community process	The standard demands the application of free, prior and informed consent during REDD+ project development and implementation	0	10
		The standard demands a public, inclusive and transparent process for project development and implementation	0	5
		The standard demands the establishment of a grievance redress & feedback mechanism to solve disputes, including the option to bring forward any infringements and violations of human rights for legal prosecution.	0	5
Project viability & UNFCCC/jurisdictional compatibility	Other	The standard demands a detailed management plan to show how the drivers of deforestation and forest degradation are credibly addressed.	0	5
		The standard demands proof of clear carbon ownership (land registry, lease contract, etc.)	0	5
		The standard demands a risk analysis and risk management plan	0	3
	Jurisdictional & UNFCCC	The standard (association) offers a jurisdictional framework for nesting projects or any other framework that allows for integration of projects into larger scale REDD+ programmes	0	3
		The standard demands adherence to and covers the Cancún safeguards on REDD+	0	5
		For Jurisdictional frameworks: The standard supports integration with UNFCCC COP decisions on REDD+ (e.g. Warsaw Framework for REDD-plus)	0	5

4 Overview of standards for REDD+ projects and selection for analysis

This section provides an overview of standards available for REDD+ projects. Based on their geographic and project type coverage, standards are then selected for further analysis in section 5.

IKI supports projects and programs across a wide range of developing countries and countries in transition and – in terms of REDD+ projects – supports various types of activities that lead to reduced emissions from deforestation and forest degradation as well as removals from increases in forest carbon stocks. As such, standards are selected on the basis of the following criteria:

- Broad geographic coverage: Standards should be globally applicable
- Broad project type coverage: Standards should cover several project types (e.g. afforestation/reforestation, forest management, avoided deforestation and forest degradation, agroforestry, etc.)
- Functional/Operational: Standards must be functional/operational. This criterion is introduced in light of the fact that several GHG programs have ceased operations, while some standards have not yet seen wide applicability since their founding.
- The standard does not allow for the generation of compliance offsets from AFOLU projects. Compliance offsets are defined as any offsets/credits/emission reduction certificates which may be used under the UNFCCC, Kyoto Protocol or any regional, nation or sub-national GHG programme or emission trading scheme (e.g. EU-ETS, California Cap & Trade system, etc.).[4]

In consequence, carbon standards or rather GHG programs, as e.g. the Australian 'Carbon Farming Initiative' or the US-based ‚Climate Action Reserve' and its Forest Protocol are excluded here, as they have been developed towards an application in industrialized countries only. It is assumed that such standards – with respect to applicability criteria and/or data demand – make their use in developing countries or countries in transition difficult if not impossible. Further, emission reduction certificates from these standards can be used for compliance under national or regional GHG programmes.

Table 2 below provides an overview of the standards to be selected for further analysis.

[4] This may be subject to change and is not entirely dependent on the Standard, as GHG programs and emission trading schemes may allow for the use of offsets from certain standards.

Table 2: Overview and selection of REDD+ standards

Standard	Broad geographic coverage	Broad project type coverage	Functional/ Operational	Generation of compliance offsets	Included or Excluded
American Carbon Registry (ACR) Forest Carbon Project Standard & ACR Nested REDD+ Standard	Yes	Yes	Yes	No	Included
Brasil Mata Viva	No (only Brazilian Amazon)	Yes	Yes	No	Excluded
Carbon Farming Initiative	No (only Australia)	Yes	Yes	Yes	Excluded
Clean Development Mechanism (CDM)	Yes	No (only A/R)	Future of the CDM unclear; Methodologies accepted under other standards	Yes	Excluded
Climate Action Reserve Forest Protocol	No (only USA)	Yes	Yes	Yes	Excluded
Global Conservation Standard	Yes	No, only conservation	Questionable, no project registry	No	Excluded
Gold Standard Framework for Land Use and Forests	Yes	Yes, but to date only A/R methodologies	To date only for A/R	No	Included
Natural Forest Standard	Yes	Yes, though it excludes plantations and forest mgmt projects	Yes	No	Included
Pacific Carbon Standard	No (only British Columbia, Canada)	No (only IFM projects)	Operation ceased	Yes	Excluded
Panda Standard	No (only China)	No (to date only A/R methodologies)	Questionable, only one project since 2010	Could not be determined	Excluded

Standard	Broad geographic coverage	Broad project type coverage	Functional/ Operational	Generation of compliance offsets	Included or Excluded
Peru Carbon Fund Forestry Standard	No (Peruvian Amazon only)	No, A/R only	No (no standard document available to data)	Could not be determined	Excluded
Permanent Forest Sink Initiative	No (only New Zealand)	No (only A/R)	Yes	Yes	Excluded
Plan Vivo Standard	Yes	Yes	Yes	No	Included
Rainforest Standard	Focus on 5 Amazon countries	Yes	Yes	No	Included
Verified Carbon Standard (VCS), AFOLU Requirements & VCS Jurisdictional and Nested REDD+ Requirements	Yes	Yes	Yes	No	Included
Woodland Carbon Code	No (only UK)	No (only A/R)	Yes	Could not be determined	Excluded
Co-benefit standards					
Climate, Community & Biodiversity Standards	Yes	Yes	Yes	No	Included
Social Carbon	Yes	Yes	Yes	No	Included

As a result, the following standards are analyzed in detail:

1. The American Carbon Registry Forest Carbon Project Standard including the ACR Nested REDD+ Standard
2. Gold Standard Foundation Land Use and Forests Framework & AR Requirements
3. The Natural Forest Standard
4. The Plan Vivo Standard
5. The Rainforest Standard
6. The Verified Carbon Standard and its AFOLU requirements, including the VCS Jurisdictional and Nested REDD+ requirements
7. The Climate, Community & Biodiversity Standards
8. The Social Carbon Standard

5 Analysis results – performance of REDD+ standards

The following figures 3-7 show the results of our analysis. We compare the score of each standard by criteria, i.e. by climate integrity, biodiversity conservation, human and community rights, stakeholder participation & sustainable community development and project viability & UNFCCC/jurisdictional compatibility.

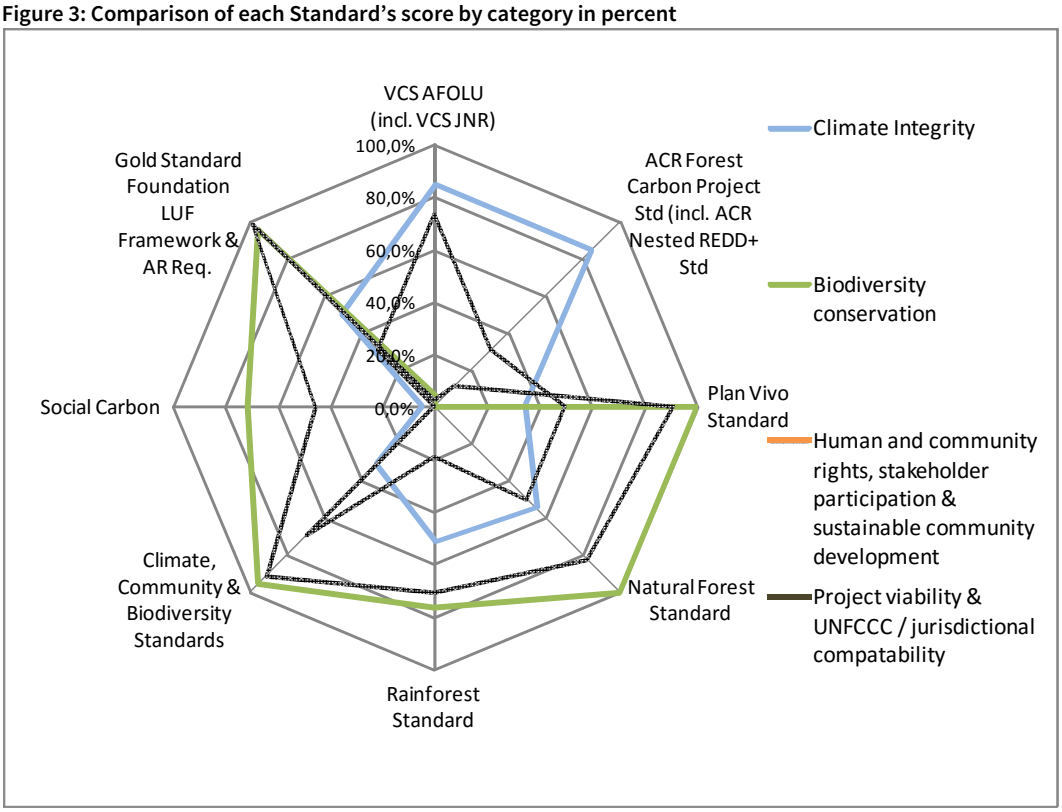
The result of has to be read with caution, as no distinction is made between pure carbon standards, full standards (covering both carbon accounting and co-benefits) and pure co-benefit standards. To account for this, we do also provide a score for the combination of VCS + CCBS, VCS + Social Carbon, ACR + CCBS and ACR + Social Carbon. See the discussion section on how to interpret the results.

Figure 3 provides an overview of how well the analyzed REDD+ standards match the four criteria established in section 3 above.

Figures 4, 5, 6 and 7 provide a ranked comparison of the standards by each of the four criteria.

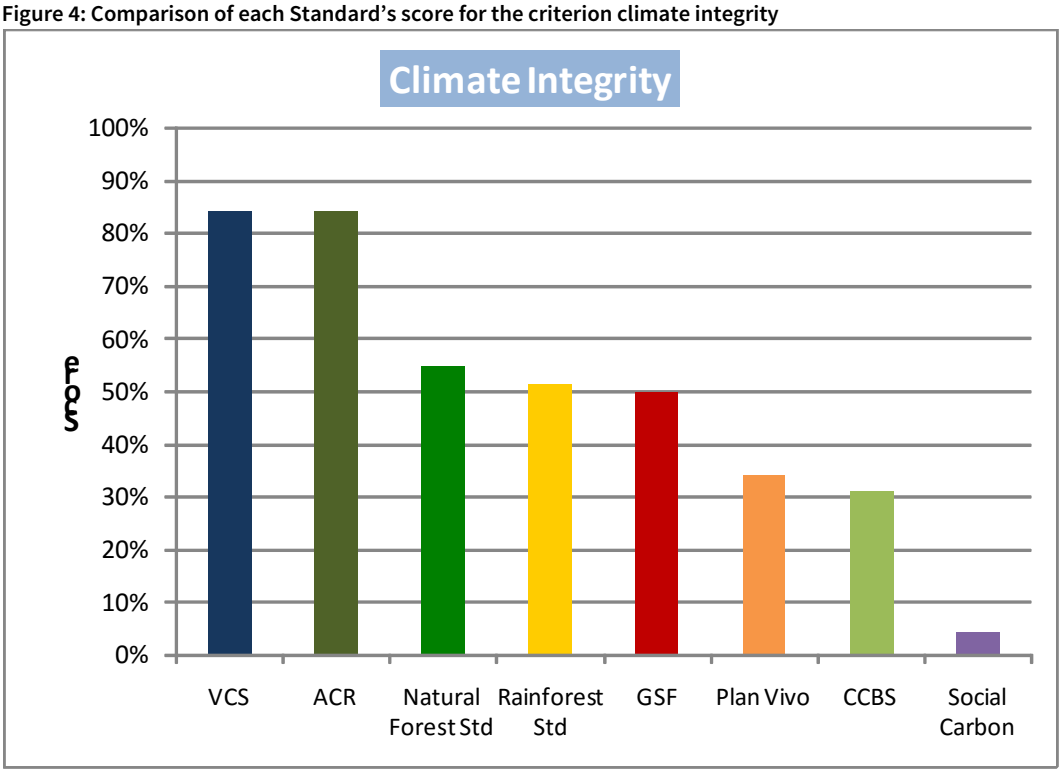
Figure 8 shows the ranking for different combinations of carbon & co-benefits standards respectively.

Figure 3: Comparison of each Standard's score by category in percent



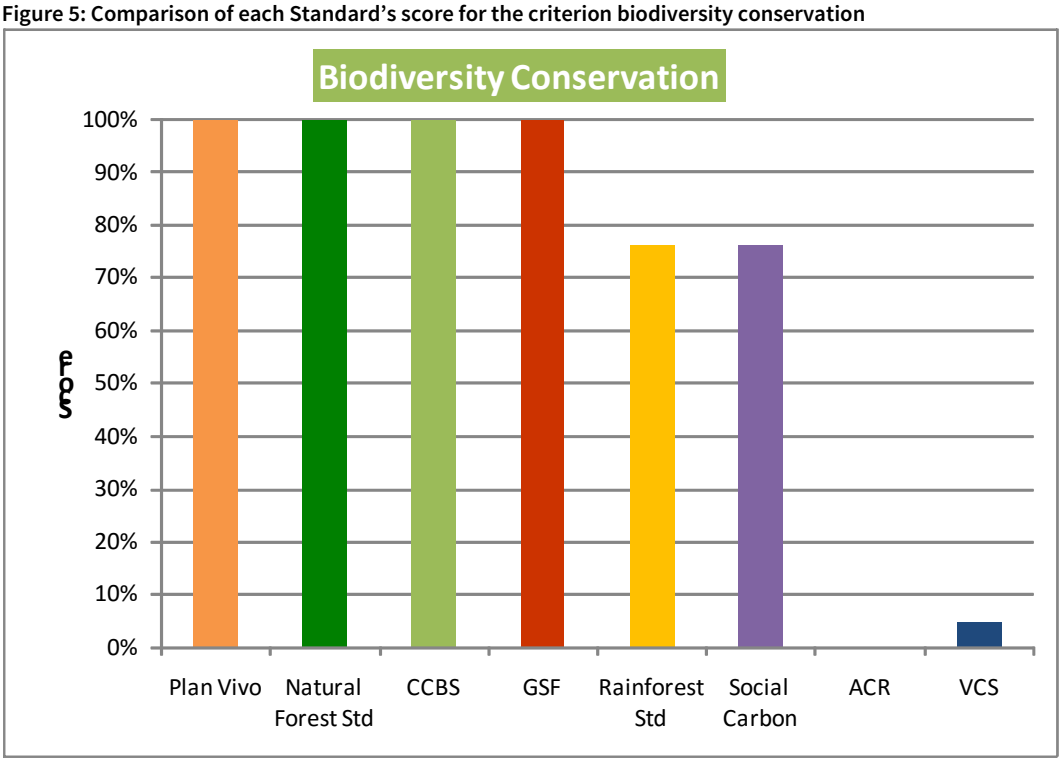
Source: Authors' illustration

Figure 4: Comparison of each Standard's score for the criterion climate integrity



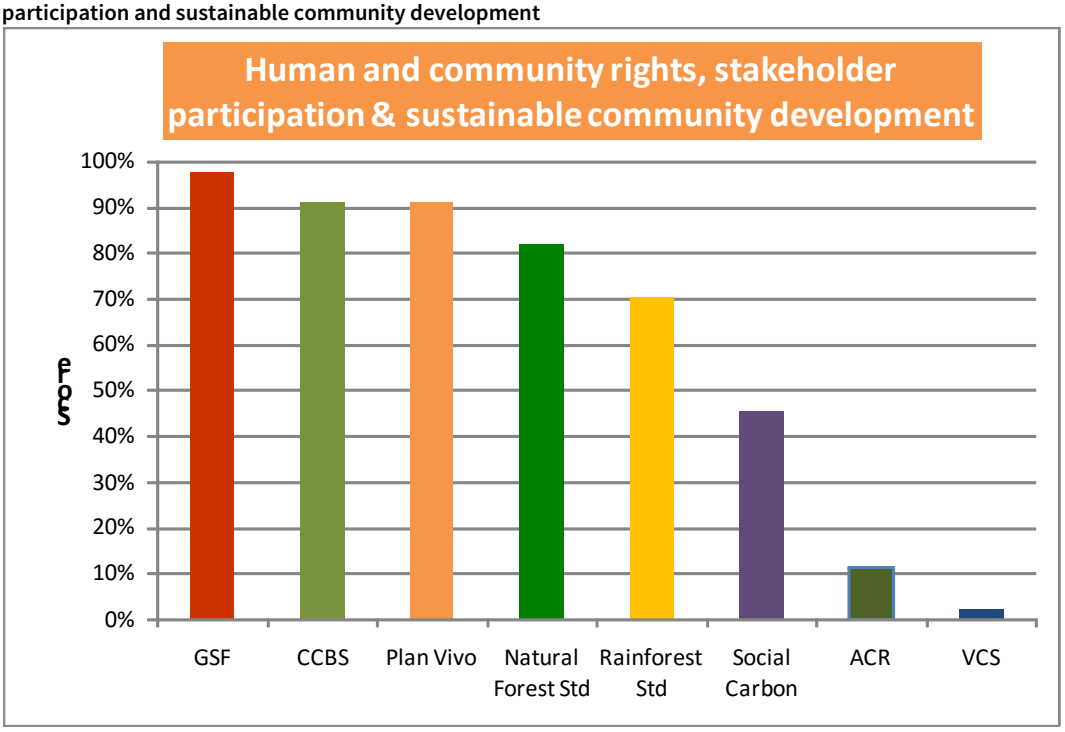
Source: Authors' illustration

Figure 5: Comparison of each Standard's score for the criterion biodiversity conservation



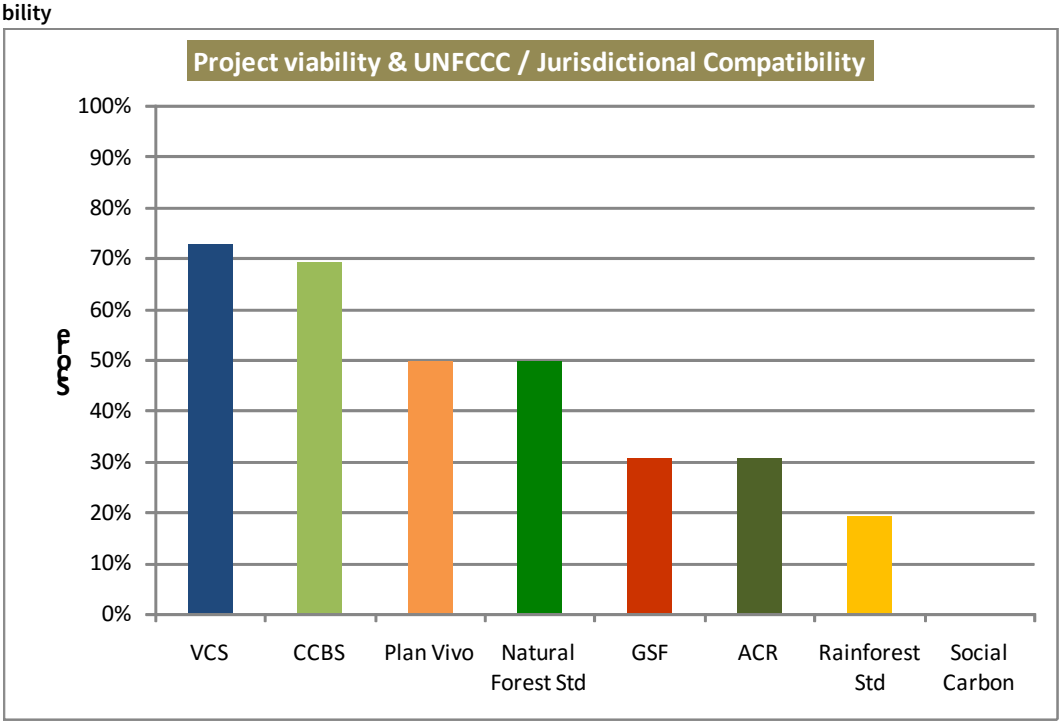
Source: Authors' illustration

Figure 6: Comparison of each Standard's score for the criterion human and community rights, stakeholder participation and sustainable community development



Source: Authors' illustration

Figure 7: Comparison of each Standard's score for the criterion project viability and jurisdictional compatibility



Source: Authors' illustration

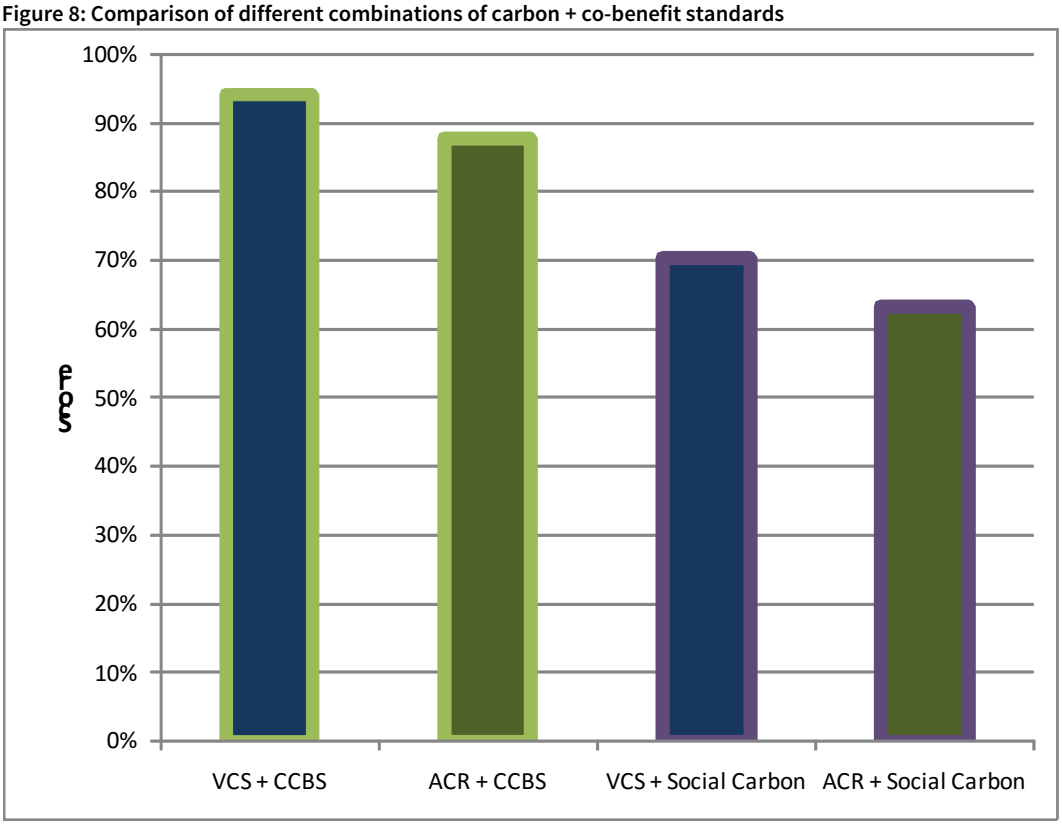
Under the criterion 'climate integrity', both VCS and ACR score highest with approx. 85%. The Natural Forest Standard, Rainforest Standard and Gold Standard and rank in the middle, with approx. 55%, 52% and 50% respectively. The CCBS and Plan Vivo Standard reach above 30%, with the Social Carbon Standard being at the very end with approx. 5%. With regard to the criterion 'biodiversity conservation' the picture – not surprisingly – looks quite the reverse. Here, the Plan Vivo, Natural Forest Standard, CCBS and Gold Standard reach full points, followed by the Rainforest Standard and Social Carbon Standard with approx. 75%. VCS reaches 5%, ACR cannot claim any points at all.

Under the criterion 'human and community rights, stakeholder participation & sustainable community development', the Gold Standard scores top with almost 100%, closely followed by the CCBS and Plan Vivo with approx. 91%. Then come the Natural Forest Standard (81%) and the Rainforest Standard (approx. 70%), and the Social Carbon Standard (approx. 45%). At the bottom end, ACR reaches approx. 11%, VCS 2%.

Under the criterion 'project viability and UNFCCC/jurisdictional compatibility', the differences among standards are high as well. No standard scores 100% here. The VCS reaches the highest score with approx. 72%, closely followed by the CCBS with almost 70%. Next are the Plan Vivo and Natural Forest Standard (50%); followed by the Gold Standard and ACR (both 30%), the Rainforest Standard (20%) and the Social Carbon Standard (0%).

By comparison, when combining different 'pure' carbon standards (VCS, ACR) with pure co-benefit standards (CCBS, Social Carbon), a much higher total score is achieved (see Figure 8 below). Here, VCS + CCBS scores highest with 94%, followed closely by ACR+CCBS with 88%. VCS + Social Carbon reach 70%, ACR + Social Carbon 63%.

Figure 8: Comparison of different combinations of carbon + co-benefit standards



Source: Authors' illustration

6 Discussion & conclusion

The above analysis is considered as a comparison of different REDD+ standards which are assessed against a set of principles and criteria voiced by BMUB/IKI and Germanwatch. Some of our findings are supported by previous comparisons of REDD+ standards (see e.g. Merger 2008, Merger and Williams 2008; Held et al. 2011; Merger and Pistorius, 2011; Fraisse and Germanis 2012; Roe et al. 2013). Merger (2008) and Merger and Williams (2008) found that e.g. VCS provides the best results with regard to permanence, while the CCBS provides the highest and Carbon Fix and Plan Vivo basic co-benefits (The Carbon Fix Standard has been acquired by the Gold Standard in 2012, and the Gold Standard AR requirements have been built on the Carbon Fix Standard).

Nevertheless, the above results should be interpreted with the following in mind:

1. Though the selection of criteria & indicators has been informed by previous literature on standards (Merger and Williams 2008; Merger and Pistorius 2011; Roes et al. 2013) and care was given to formulate them relatively broadly, it was also based on experience with certain well-known standards such as e.g. the VCS and the CCBS. This may have biased results towards favouring these rather well-known standards. This is confirmed insofar, as these standards score well in their respective focus areas (e.g. VCS under the 'climate integrity' criterion). However, less known standards such as e.g. the ACR, Plan Vivo, the Natural Forest Standard and the Gold Standard Land Use and Forests Framework score equally well in their respective focus areas. Further, one could have added further criteria and indicators. In comparison to previous studies we reduced the amount of indicators, as many of these indicators are nowadays common practices across all standards (e.g. baseline scenarios, use of methodologies).

2. The formulated indicators or the standard documents provide in some cases room for interpretation. Other experts may thus come to a different conclusion whether an indicator was fulfilled or not. In some cases, it was also difficult for the authors to decide whether or not an indicator was fulfilled or not. Since the assessment differentiates only between 'fulfilled' and 'not fulfilled', partial fulfillment of an indicator was not captured. Other experts may thus come to a different conclusion whether an indicator was fulfilled or not.

3. The score attributed to the different indicators is based on subjectively felt relative importance. Different experts / organizations may – or probably would – attribute differ-ent scores.

4. Further, the scoring is based on the analysis of standard documents. In order to conclude that the scoring truly reflects the quality of the standards, one would have to assume that the standard documents are rigorously put into practice and validation and verification is equally rigorous. In the authors' opinion this is unlikely to be the case though, even across one standards' project portfolio, as the validation and verification bodies and their experts will differ from project to project.

   Finally, the quality of some standards may be under- or overestimated in our results. A generic analysis such as this does favour standards with generic approaches, such as the VCS, ACR or CCBS. Standards like Plan Vivo, the Natural Forest Standard or Social Carbon, which are more or even highly project specific, are possibly underestimated, as we mostly considered the general standard documents. In case of the Gold Standard, we could only evaluate the relative general Land Use and Forests framework document and the A/R requirements, as there are so far no documents available for REDD or IFM project types. Further, some indicators (e.g. market leakage) are not applicable to A/R projects.

Based on the results in section 5, we can conclude that no standard alone reaches a level of performance (i.e. no standard reaches more than 80% across all criteria) that would satisfy the principles and expectations of BMUB/IKI and Germanwatch.

For this reason, BMUB/IKI and Germanwatch are of the opinion that there is no 'best in class' standard and the analysis results have to be seen as a ranking of second best standards only. A sound standard with regard to the criteria 'climate integrity´, 'biodiversity conservation´, 'human and community rights, stakeholder participation & sustainable community development' and 'project viability and UNFCCC/jurisdictional compatibility' can only be obtained by adding further criteria to the existing standards, such as nesting in jurisdictional programs and guidelines on human rights.

The VCS and ACR are the only standards that achieve >80% in the category climate integrity. Consequently, these two standards are the only two that are acceptable to BMUB/IKI and Germanwatch with regard to their criteria for carbon accounting.

However, the absence of strong provisions for biodiversity conservation, human and community rights, stakeholder participation and community development and other aspects that aim to guarantee long-term project viability do not make them a good choice if one is looking at benefits beyond carbon, at least not as standalone standards.

In the category 'biodiversity conservation', the Plan Vivo, Natural Forest Standard, CCBS and the Gold Standard reach the level of ambition set by BMUB/IKI and Germanwatch. In the category 'human and community rights, stakeholder participation and sustainable community development', the same four standards reach the 80% threshold.

When combined with the CCBS, the VCS and ACR provide the best possible results in our analysis (VCS + CCBS is marginally better than ACR + CCBS), as Plan Vivo and the Gold Standard are standalone standards.

The VCS however does provide a streamlined process for joint validation and verification with the CCBS, which is a further advantage and has very recently taken over the management of the CCBS. Further, as laid out in section 2.3, VCS and the combination of **VCS + CCBS certification are dominating the voluntary over-the-counter market** and thus seem to be the preference of forest carbon project developers and carbon credit buyers.

However, when set against the expectations and principles of BMUB and Germanwatch, the combination of standards still leaves drawbacks that need to be addressed by additional guidelines.

A major **drawback of both the VCS and the ACR** in terms of climate integrity is the **non-permanence issue beyond the crediting period**. Both the VCS and the ACR (which uses the VCS non-permanence risk tool) attempt to include this risk by demanding that the non-permanence risk analysis is done for a time horizon of 100 years. Thereby, the risk of reversals over a 100 year period is accounted for through the buffer reserve. While this is a pragmatic approach, it is from the authors' perspective highly doubtful that the project developer can and will be able to accurately estimate the project risk over a 100 year time horizon (neither will the validation and verification body be able to do so). As such, this approach is inferior to non-permanence risk approach that request accountability for reversals beyond the crediting period over e.g. a period of 100 years. However, the only standard that requires accountability beyond the crediting period is the Rainforest Standard, which allows for different approaches such as insurance, buyer liability or the ton-year approach. The Rainforest Standard is rather new standard (2012) with no validated projects yet. As such, none of these non-permanence concepts has been tested, also with regard to their practicability and acceptance by project developers and carbon credit buyers. Moreover,

buyer liability seems to be limited for carbon credits on the voluntary market given the relative volatility of market actors. Finally, in case of small project portfolios, even buffer reserves may fail if several projects are subject to larger reversals. To build confidence in standards ability to ensure climate integrity, standards would be well advised to report on the status of their buffer reserves.

Another possible **drawback of VCS+CCBS or ACR+CCBS certification is that** – by experience – **it will require projects of scale** (in terms of emission reductions). For projects that generate comparatively few emission reductions, the project development and validation and verification costs may result in the project becoming financially unfeasible (e.g. high project development and monitoring costs). Consequently, for such projects, BMUB/IKI could allow standards such as e.g. the Plan Vivo Standard or for A/R projects the Gold Standard (if certification costs here are less than for VCS + CCBS) and demand that a certain set essential additional climate integrity indicators must be met to cover (current) perceived insufficiencies in the standards' design (both standards score good to very good under the biodiversity and human rights, stakeholder participation and sustainable community development criterion). In principal, such an approach is comparable to some extent to the CDM, where simplified small-scale methodologies were developed that enabled smaller projects to achieve CDM certification.

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VCS Agriculture, Forestry and Other Land Use (AFOLU) Requirements. Version 3.4, October 2013

VCS Jurisdictional and Nested REDD+ (JNR) Requirements. Version 3.2, October 2014.

8 Annex

8.1 Analysis table

Criteria	Category	Indicators	Score		Standards							
			No	Yes	VCS	ACR	Plan Vivo	Natural Forest Std	Rainforest Std	CCBS	Social Carbon	Gold Std
Climate integrity	Additionality	The standard demands an 'additionality' test using an investment analysis method	0	5	5	5	0	0	0	0	0	5
	Permanence	The standard demands a non-permanence risk analysis and consequent deductions for non-permanence risk when calculating net GHG emission reductions	0	5	5	5	5	5	0	0	0	5
		Projects with a high non-permanence risk cannot undergo validation	0	3	3	3	0	0	0	0	0	0
		Upfront crediting is strictly limited or not allowed	0	5	5	5	0	5	5	n.a.	n.a.	0
		The standard operates a (pooled) buffer account or uses other safeguards, meant to provide permanence during the crediting period.	0	5	5	5	5	5	5	n.a.	n.a.	5
		The standard undertakes measures to reduce the risk of non-permanence beyond the crediting period	0	3	3	3	0	3	0	3	0	0
		The standard ensures permanence beyond the project crediting period	0	10	0	0	0	0	10	0	0	0
	Leakage	The standard demands accountability of activity leakage and consequent deductions for activity leakage when calculating net GHG emission reductions	0	5	5	5	0	5	5	5	0	5
		The standard demands accountability of market leakage and consequent deductions for market leakage when calculating net GHG emission reductions	0	5	5	5	0	0	5	0	0	n.a.
	General carbon accounting quality assurance	The standard demands independently validated methodologies for GHG accounting	0	3	3	3	0	0	0	0	0	0
		The standard demands independent third party validation and verification of monitoring results		3	3	3	3	3	3	3	3	3
		The standard demands the application of the principle of conservativeness (for baseline establishment, etc.)	0	3	3	3	3	3	0	3	0	3
		The standard demands an uncertainty assessment and consequent deductions for uncertainty when calculating net GHG emission reductions	0	3	3	3	0	0	0	0	0	0
		The standard demands the inclusion of all relevant carbon pools and GHGs, unless they are deemed 'de minimis'	0	3	3	3	3	3	0	3	0	3
		The standard demands that double counting is not allowed	0	3	3	3	3	3	0	3	0	3
Biodiversity conservation	Biodiversity impacts	The standard demands at least a 'no harm' approach to biodiversity conservation	0	1	1	0	1	1	1	1	1	1
		The standard demands a biodiversity or environmental impact assessment and in consequence the development and implementation of a plan to mitigate these impacts	0	5	0	0	5	5	0	5	0	5
		The standard demands the generation of additional measureable benefits for biodiversity conservation (includes the development of a biodiversity baseline and project scenario)	0	10	0	0	10	10	10	10	10	10
		The standard demands the measuring, reporting and verification of biodiversity benefits	0	5	0	0	5	5	5	5	5	5
Human and community rights, stakeholder participation and sustainable community development	Community impacts & recognition of human rights	The standard demands a 'no harm' approach to community development	0	1	1	0	0	1	1	0	0	0
		The standard explicitly demands the recognition of human rights	0	3	0	0	0	0	0	0	0	3
		The standard demands a social impact assessment which should include the identification of vulnerable groups and the potential for human rights violations and in consequence the development and implementation of a plan to mitigate these impacts	0	5	0	0	5	0	0	5	0	5
		The standard demands the generation of additional measureable benefits for community development (includes the development of a community baseline and project scenario)	0	10	0	0	10	10	10	10	10	10
		The standard demands the measuring, reporting and verification of community benefits	0	5	0	0	5	5	5	5	5	5
		The standard demands the application of free, prior and informed consent during REDD+ project development and implementation	0	10	0	0	10	10	10	10	0	10
	Stakeholder & community process	The standard demands a public, inclusive and transparent process for project development and implementation	0	5	0	5	5	5	5	5	5	5
		The standard demands the establishment of a grievance redress & feedback mechanism to solve disputes, including the option to bring forward any infringments and violations of human rights for legal prosecution.	0	5	0	0	5	5	0	5	0	5
Project viability & UNFCCC / jurisdictional compatibility	Other	The standard demands a detailed management plan to show how the drivers of deforestation and forest degradation are credibly addressed.	0	5	0	0	5	5	0	5	0	0
		The standard demands proof of clear carbon ownership (land registry, lease contract, etc.)	0	5	5	5	5	5	5	5	0	5
		The standard demands a risk analysis and risk management plan	0	3	1	0	3	3	0	3	0	3
	Jurisdictional & UNFCCC	The standard (association) offers a jurisdictional framework for nesting projects or any other framework that allows for integration of projects into larger scale REDD+ programmes	0	3	3	3	0	0	0	0	0	0
		The standard demands adherence to and covers the Cancún safeguards on REDD+	0	5	5	0	0	0	0	5	0	0
		For Jurisdictional frameworks: The standard supports integration with UNFCCC COP decisions on REDD+ (e.g. Warsaw Framework for REDD-plus)	0	5	5	0	0	0	0	0	0	0

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