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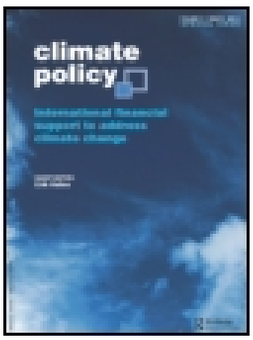

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RESEARCH ARTICLE

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Learning from CDM SD tool experience for Article 6.4 of the Paris Agreement

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ABSTRACT

The Paris Agreement (PA) emphasizes the intrinsic relationship between climate change and sustainable development (SD) and welcomes the 2030 agenda for the global Sustainable Development Goals (SDGs). Yet, there is a lack of assessment approaches to ensure that climate and development goals are achieved in an integrated fashion and trade-offs avoided. Article 6.4 of the PA introduces a new Sustainable Mitigation Mechanism (SMM) with the dual aim to contribute to the mitigation of greenhouse gas emissions and foster SD. The Kyoto Protocol's Clean Development Mechanism (CDM) has a similar objective and in 2014, the CDM SD tool was launched by the Executive Board of the CDM to highlight the SD benefits of CDM activities. This article analyses the usefulness of the CDM SD tool for stakeholders and compares the SD tool's SD reporting requirements against other flexible mechanisms and multilateral standards to provide recommendations for improvement. A key conclusion is that the Paris Agreement's SMM has a stronger political mandate than the CDM to measure that SD impacts are 'real, measurable and long-term'. Recommendations for an improved CDM SD tool are a relevant starting point to develop rules, modalities, and procedures for SD assessment in Article 6.4 as well as for other cooperative mitigation approaches.

POLICY RELEVANCE

Research findings are relevant for developing the rulebook of modalities and procedures for Article 6.4 of the Paris Agreement, which introduces a new mechanism for mitigation of greenhouse gas emissions and sustainable development. Lessons learnt from the CDM SD tool and recommendations for enhanced SD assessment are discussed in context of Article 6 cooperative approaches, and make a timely contribution to inform negotiations on the rulebook agreed by the Conference of the Parties serving as the Meeting of the Parties to the Paris Agreement.

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1. Introduction

Increasingly, a transformation to sustainable development (SD) is being recognized as a framing agenda for the global response to climate change and development. Transition to sustainability is high on the international agenda in development policy (UN, 2015), academia (Turnheim et al., 2015), and the implementation of climate policy (Mersmann, Olsen, Wehnert, & Boodoo, 2014). The Paris Decision (1/CP.21) to give effect to the Paris Agreement (PA) welcomes the United Nations 2030 Agenda for global Sustainable Development Goals (SDGs) (UN, 2015), and Article 2 (objectives), Article 4 (mitigation), and Article 6 (cooperative approaches)

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stress that climate actions should not be seen in isolation but in the context of SD and poverty alleviation. Yet, there are no formal and institutional links between the two international processes, which have run in parallel but largely separately and in 2015 culminated in two historical agreements. The absence of any internationally agreed definition of SD, the existence of multiple scientific definitions ranging from weak to strong notions of sustainability and Parties' sovereign rights to define SD nationally have meant that there has never been a strong political mandate or common methods of SD assessment of climate actions internationally. This has changed with the global SDGs and the PA, as both provide a new political mandate for internationally harmonized SD assessment to be implemented nationally.

In the Paris Agreement, the mandate for SD assessment is made explicit in Article 6, paragraph 4, which establishes a new mechanism with the dual aim of contributing to the mitigation of greenhouse gas emissions and supporting SD. In the negotiations leading up to the PA, the mechanism was called the 'Sustainable Development Mechanism' (Marcu, 2016a), but in the final text this is changed to the cumbersome 'A mechanism to contribute to the mitigation of greenhouse gas emissions and support sustainable development'. A new name has been proposed post-Paris, reflecting the ethos of the dual aim of the mechanism, namely the 'Sustainable Mitigation Mechanism' (SMM) (Marcu, 2016b). The Paris Decision, paragraph 37f, specifies that the mechanism should be based, among other things on 'Experience gained with and lessons learned from existing mechanisms and approaches under the Convention and its related legal instruments'. In other words, the Kyoto Protocol (KP)'s flexible mechanisms, such as the Clean Development Mechanism (CDM), are to serve as the foundation for the new SMM. In particular, the governance framework of the CDM can also serve as the architecture for the SMM (Michaelowa & Hoch, 2016).

A rich literature on the CDM's contribution to SD and poverty alleviation locally and nationally exists (Dirix, Peeters, & Sterckx, 2016; He, Huang, & Tarp, 2014), while the need for sustainability assessment internationally is still an emerging and controversial issue (Olsen & Soezer, 2016; Verles, 2016). The voluntary CDM SD tool is new and represents the only approach to SD assessments of mitigation actions internationally. It was launched by the CDM Executive Board (EB) in 2012 following criticism that the CDM has not contributed significantly to SD (Olsen & Fenhann, 2008; Sterk et al., 2009; TERI, 2012). The SD tool was only made available online in April 2014, and as yet there no reflections have emerged on its pros and cons in the research literature. Experience with how the tool performs is therefore highly relevant as a way of informing the design of SD provisions in new Article 6 cooperative mechanisms.

This article will discuss solutions to the challenge of designing a robust SD assessment system for the new SMM based on lessons learned from the CDM SD tool. The argument is that recommendations for a reformed CDM SD tool can have a lighthouse-effect on the development of provisions for SD assessment in the SMM. The article will first describe the background to the CDM SD tool. Next, we explain the methods and data used then present research findings with regard to two issues: (1) experience of the usefulness of the tool for stakeholders; and (2) comparison of the SD tool's requirements with other mechanisms. Recommendations to improve the CDM SD tool are based on a synthesis of the research findings and are discussed in the context of Article 6 issues and concerns. Finally, conclusions are drawn for how to design a robust SD assessment system for the new SMM and beyond in order to facilitate synergies across global climate and SD goals.

2. Background to the CDM SD tool

The CDM was created under Article 12 of the KP in 1997 with the double aim of achieving cost-effective mitigations of GHG emissions and assisting developing countries in achieving SD. Likewise, in 2015 the SMM was established under Article 6.4 of the PA under the authority and guidance of the Conference of the Parties serving as the meeting of the Parties to the Agreement (CMA) with a similar double aim.

Over the years, criticism of the CDM has been raised that the Designated National Authorities' (DNA) assessment of SD is weak (Figueres, 2004; Rindefjall et al., 2011) due to the lack of clear and transparent SD criteria held by many host countries (TERI, 2012), cases of registered projects with negative impacts (Schade & Obergassel, 2014) and the lack of requirements and procedures to monitor, report and verify that the intended SD benefits are actually being achieved (Olsen & Fenhann, 2008). Responding to the criticism, in 2011 the Conference of the Parties, serving as the Meeting of the Parties to the KP (CMP), mandated the CDM EB to develop voluntary measures to highlight the co-benefits of CDM projects. Based on

calls for inputs by stakeholders, the United Nations Framework Convention on Climate Change (UNFCCC) Secretariat in 2012 cooperated with the UNEP DTU Partnership (formerly the UNEP Risø Centre) to develop a draft CDM SD tool that consisted of three elements: an SD taxonomy of indicators to identify and describe the co-benefits of CDM projects, safeguards to mitigate the risks of negative impacts, and enhanced requirements for stakeholder consultation. The final CDM SD tool was approved by the CDM EB in Doha in 2012. However, it was reduced to only one element, namely voluntary declaration of SD co-benefits, as members of the Board argued that there was only a CMP mandate to highlight the co-benefits, not any negative impacts.

2.1. Description of the CDM SD tool

Primary users of the tool are project participants and coordinating or managing entities, which may request access to the tool from the CDM tool's webpage or download a Word version as an alternative from the same page. The SD tool can be used at any time in the lifetime of a CDM project or Programme of Activities (PoA) and may include an update in case the co-benefits change. There are no requirements to monitor or verify declared co-benefits, but voluntary options exist (UNFCCC, 2015). The declaration of co-benefits uses the three basic dimensions of SD, namely the environmental, social, and economic dimensions. Based on these, the tool uses a taxonomy of 12 SD criteria and 70 indicators. From the data input to the tool, a Sustainable Development Co-benefit (SDC) report is generated and made public on the CDM website. As of November 2016, there are 37 SDC reports on the UNFCCC website.

3. Methodology

The methodology of the research followed a two-pronged approach, with the aim of acquiring knowledge of (1) practical experience with the current approach to SD assessment within the CDM, and (2) existing approaches to SD assessment in a selection of other, market-based mechanisms.

3.1. Semi-structured expert interviews

To satisfy the first aim, the research team conducted semi-structured interviews with selected host-country DNAs and project proponents (PPs) in order to obtain on-the-ground information on their respective views regarding the assessment of SD impacts in practice. The research team opted for a small-n approach to capture in-depth information from personal interviews. The research team chose three main criteria to select countries: (1) experience with CDM, (2) experience with the SD tool, and (3) experience with domestic SD/co-benefit assessments. The team identified countries that scored either high or low on these criteria in order to capture a broad range of countries and viewpoints. Furthermore, the team endeavored to select countries with different sizes and geographical locations. The screening led to the selection of 12 interviewees, of whom eight responded positively to the interview request.

The semi-structured interviews followed the logic of the selection criteria, with a view to capturing information on the current situation as regards the different countries, as well as opinions on how to improve SD assessment in general and the SD tool specifically. For details of the selection process and the questionnaire, see Olsen et al., 2015.

3.2. Comparative analysis

To satisfy the second aim, the team conducted a comparative analysis of literature on existing approaches to SD assessment. The CDM SD tool was included to serve as a benchmark against which to compare the various approaches, which were then reviewed and analysed following a number of criteria that would enable comparison and contrast with the CDM SD tool. These were, *inter alia*, the presence and absence of certification, the assessment of the negative impacts on SD, and stakeholder processes. For a full list of criteria, see Arens et al. (2014).

3.3. Analytical matrix

The results of the two steps were merged into a matrix frame in order to establish fits between observed shortcomings and demands for SD assessment in practice, and theoretical inroads synthesized from the desktop research. The aim of this exercise was to find viable ways of improving the CDM's current SD tool and to point to possibilities and opportunities for going beyond the CDM's practice for application in a future market-based mechanism under the UNFCCC.

4. Experience with the usefulness of the EB SD tool for stakeholders

To assess the appropriateness of the EB's SD tool for stakeholders, in depth interviews were held with three groups of users: (1) host-country DNAs from Brazil, China, Cambodia and Uganda, (2) private project developers from Norway, Switzerland, and Chile, and (3) a buyer's perspective from Sweden. Analysis of the interviews reveals insights into the usefulness and shortcomings of the tool and serves to identify what is required for improved SD assessment (Olsen et al., 2015). Based on a synthesis of the diverse stakeholder perspectives, we identify seven needs for SD assessment as described in the following.

4.1. Indicators for SD co-benefits

The CDM SD tool provides a taxonomy of SD indicators similar to the checklist approach applied by most host countries. In Uganda and Cambodia, the DNAs see an opportunity for the tool to support domestic SD assessment, for example, with SDC reports being used as the basis for local stakeholder consultations and by making it mandatory to use the tool for the Letter of Approval to be issued. In China and Brazil, the DNAs do not find the tool directly useful for governments, as it is meant for project participants to use. Project developers and the interviewed buyer all find the tool very useful as a simple, standardized approach for qualitative declaration of the SD co-benefits. In a larger-scale evaluation of the EB SD tool in 2014, the tool was found to meet its objectives by facilitating a harmonization of information in a structured, consistent, and comparable manner that respects Parties' prerogatives to decide on national priorities and to assist investors to factor in the SD co-benefits in decision-making (UNFCCC, 2014).

4.2. Quantification

The tool does not provide a method for quantifying the co-benefits. DNAs consider this to be a difficult job that would require a lot of extra effort collecting data by both project participants and DNAs. The DNAs in Brazil and Uganda do find the extra effort worthwhile as a way of explaining the impacts and value of mitigation actions, particularly to Ministries of Finance, so as to leverage domestic finance for mitigation actions with SD benefits. In Cambodia and China, the DNAs are mostly concerned with the extra costs required for quantification and do not see a need for it. Among some project developers, a method of quantifying SD impacts was mentioned as highly desirable. Quantification is needed to know the scope and significance of SD impacts and it is necessary to monetize the value of co-benefits in order to leverage additional climate and development finance.

4.3. Assessment of negative SD impacts

The tool does not contain safeguards against negative impacts. The DNAs of Uganda and Cambodia would welcome guidance on avoiding negative impacts, whereas the bigger countries refer to national institutions and procedures that are already in place and the DNAs of China and Brazil do not see the need for additional international guidance. Project developers are mostly concerned about the costs and extra responsibilities involved and do not see the added value of the project. However, from a buyer's perspective, the avoidance of negative impacts is a key priority in mitigating financial and reputational risks. In its draft form, the tool did contain safeguard provisions, but the CDM's EB left it out of the final tool.

4.4. Monitoring and reporting

The SD tool does not require the monitoring of the co-benefits. DNAs are divided on the issue, with Uganda and Brazil expressing an interest in monitoring SD claims, while China sees no need to add extra procedures. Interviewed project developers all agree that monitoring and reporting are desirable, provided that the client demands it and will pay for it. At the 82nd meeting of the CDM EB in February 2015, the Board discussed a concept note on the 'Voluntary monitoring of Sustainable Development co-benefits' (UNFCCC, 2015). No decision was made to change the status quo, namely that the SDC report may be submitted at any time without any requirements for the monitoring of SD claims.

4.5. Independent third-party validation and verification

In its current form, the SD tool does not contain any requirements for verification. The need for validation and verification by a third party is most clearly expressed by project developers, who see it as a prerequisite for pricing co-benefits in the carbon market and as a means to attract results-based climate or development finance.

4.6. Certification

At the moment, certification is not envisaged in the SD tool. In Uganda and Cambodia, certification is considered of interest, provided certificates are issued by the host-country DNA in accordance with national standards, possibly informed by international guidance regarding best practice. The Chinese DNA is not interested in SD certification but considers the SD tool of interest in the context of an emerging national carbon trading system. All project developers and the buyer are interested in the certification of SD co-benefits, on the condition, in the opinion of some, that the tool also addresses negative impacts.

4.7. Guidelines for stakeholder consultation

The CDM SD tool does not mention local stakeholder consultations (LSC), though provisions exist elsewhere in the CDM modalities and procedures, and enhanced requirements for LSCs were included in the draft SD tool. In Uganda, the DNA welcomes additional guidance on how to address community concerns, and in Cambodia the DNA has requested technical assistance from the UNFCCC Secretariat to assist with country-specific guidelines. In China, the Environmental Impact Assessment constitutes the national requirements for LSC. However, it is unclear, how the CDM requirements relate to national requirements (Dong & Olsen, 2015). One project developer is very critical of existing LSC requirements, arguing that the process does not add much value, as it can easily be manipulated by the project developer responsible for conducting LSC. Conversely, the Swedish buyer sees procedural aspects as crucial for delivering high-quality SD benefits. Guidance for LSC is a core element to ensure that a project activity is beneficial to SD priorities and does not have negative impacts. Another important aspect is the establishment of a grievance mechanism to address and solve complaints about the project activity by local stakeholders.

5. How shortcomings are handled in other mechanisms

The preceding section identified the views of stakeholders regarding the usefulness of the CDM EB's SD tool. This analysis laid bare the shortcomings of the current SD tool, as well as the needs for improved SD assessment from the point of view of a diverse selection of stakeholders. In the following, the SD requirements of selected carbon-finance instruments and multilateral standards are analysed with regard to five aspects: (1) scope, (2) assessment types, (3) review and evaluation, (4) stakeholder consultation, and (5) comparison with the SD tool. The selection of schemes covers (Arens et al., 2014):

- The CDM Gold Standard
- Thailand's Crown Standard
- the Social Carbon Methodology (SCM)
- the Climate, Community and Biodiversity Standards (CCB)
- the UN-REDD Programme on Social and Environmental Principles and Criteria
- the UNDP NAMA SD Tool
- the Asian Development Bank's (ADB) Safeguard Policy
- the International Finance Corporation's (IFC) Sustainability Framework

5.1. Scope

Regarding scope of the SD assessment, a variety of approaches can be observed that can mainly be attributed to the overall focus of the different approaches analysed. The four certification standards (the Social Carbon Methodology, the CCB Standards, the CDM Gold Standard, and the Thai domestic Crown Standard) are designed for the logic of carbon market projects, with relatively narrow assessment boundaries and a strong project focus.

The approaches taken by the IFC and ADB serve as examples of detailed safeguard policies in a very wide portfolio of activities. By contrast, the UNDP's NAMA SD tool shows the difficulty of defining the scope if activity types and specifics vary to a great extent.

5.2. Assessment types

Concerning the way SD is assessed, a wealth of different approaches can be observed regarding how to assess the impacts an intervention may have. Many schemes use exclusion criteria to define eligibility, as well as scoring systems for SD benefits and/or costs (negative impacts). The Gold Standard, for example, makes use of positive lists that exclusively make energy efficiency and renewable energy projects eligible for the standard. The ADB and IFC use negative lists that explicitly exclude certain activities from eligibility for funding.

All the standards we assessed check upon positive and negative impacts. The strongest and most detailed requirements for the assessment of negative impacts are reflected in the safeguard requirements of the multilateral development banks (MDBs), as they are specifically designed for this type of assessment.

All the reviewed SD requirements are part of a mandatory system for SD assessment of the respective mechanisms. However, the stringency of assessment varies. The certification schemes (CDM Gold Standard, Crown Standard, Social Carbon, CCB) require sustainability assessments for all their projects, whereas the MDB standards, by contrast, comprise initial risk assessments. These assign risk categories to the assessed intervention with the aim of ensuring that projects have the least possible negative impact on sustainable development.

5.3. Review and evaluation

Concerning review and evaluation, the majority of the tools and approaches studied have put in place systems that monitor the possible impacts identified in the ex-ante assessments. The Gold Standard, for example, requires a sustainability monitoring plan giving positive or negative scores to all indicators.

The MDBs demand continuous risk monitoring, as well as specific social and environmental management systems for high-risk category interventions. Monitoring is reviewed by MDB representatives. Monitoring is also needed with the UNDP NAMA tool, which requires NAMA implementers to establish monitoring procedures for each intervention the NAMA covers. The UN REDD guidelines foresee monitoring and reporting frameworks as well.

A follow-up step to monitoring is to have the SD effects included in the monitoring plan verified by an independent auditor. This ensures compliance and therefore adds to the reliability and credibility of the SD assessment. The Gold Standard has provisions in this regard, as do the CCB and SCM.

5.4. Stakeholder consultation

The majority of SD assessment approaches have included mandatory stakeholder consultation processes into their project design. While provisions for the involvement of global stakeholders vary, all approaches except the NAMA SD tool require local stakeholder consultations. This covers structured processes to identify stakeholders, hold stakeholder meetings and project reference material in local languages (provisions are unclear for the Crown Standard).

The majority of the standards analysed have procedures or at least encourage dealing with grievances or complaints raised by stakeholders. The ADB, for example, allows for grievances to be addressed to its accountability mechanism as well if a problem cannot be resolved. The CCB standards and the Gold Standard encourage independent mediation processes in order to resolve issues brought up by stakeholders.

5.5. Comparison with the SD tool

The analysis shows that most mechanisms covered in the study use an integrated approach to SD assessment. Typically, an *ex-ante* assessment of both the positive and negative impacts of the respective interventions is required as a first step. Alternatively, some schemes use safeguard and / or risk assessment systems. Another important feature is that most schemes subsequently follow up on the claims made in the initial SD assessment. Some systems additionally require an obligatory verification of SD benefits. Finally, a vital part of an integrated approach to SD assessment is a meaningful procedure for stakeholder interaction that enables those affected by interventions to voice any concerns.

The CDM SD tool does not fully exploit the potential of an integrated approach to SD assessment. Although it does assess positive SD impacts in a structured way, the claimed benefits are neither monitored nor verified. Negative impacts or possible risks are not assessed. Despite the global and local stakeholder procedures in the CDM in general, these do not cover SD aspects specifically, as they are not included in the CDM SD tool. Last not least, the tool is voluntary and can only be used by project proponents and coordinating or managing entities (CMEs), that is, it is not directly useful to DNAs that have the mandate to approve the contributions of CDM projects to national priorities for SD.

6. Recommendations for improving the tool

The two preceding sections surveyed stakeholder perspectives on the usefulness of the CDM SD tool (Section 4) and analysed the status of SD assessment approaches both within and outside the CDM context (Section 5). With the aim of suggesting and discussing politically feasible options for further development of the tool, insights from the two sections have been synthesized in a matrix. See Table 1.

The left column of Table 1 reflects the needs of practitioners and the top row presents what each of the flexible mechanisms offers in terms of SD assessment. Comparing these two perspectives provides insights into the shortfalls between the offers and the needs for SD assessment. From the matrix, we derive information on, where the SD tool is already well established and which areas need improvement. In the following, we offer recommendations on how to overcome the shortfalls, divided into two consecutive levels (Arens et al., 2015):

- Level one: *Incremental improvements* to the SD tool, regarded as relatively easy to install in the sense that they fall within the CMP/EB mandate to decide.
- Level two: *Institutional enhancement* on a deeper level, adding a different quality that would require more fundamental changes that would enhance the voluntary SD tool so that in complies with a global assessment standard.

6.1. Incremental improvements

6.1.1. Introducing no-harm safeguards

The introduction of reporting on no-harm safeguards in the voluntary SD tool is considered a first step in order to arrive at a holistic SD assessment of CDM projects and programmes. As such a step was already proposed for

Table 1. Matrix comparing the 'needs' for CDM SD assessment against 'offers' by different flexible mechanisms.

Criteria/Needs	CDM SD Tool	Social carbon methodology	CCB standards	CDM gold standard	Crown standard	UN REDD programme	UNDP NAMA SD Tool	ADB safeguard policy	IFC sustainability policy
Indicators for SD co-benefits	✓	✓	✓	✓	✓	Criteria but no indicators	✓	Safeguards	Safeguards
Quantification	✗	✗	Partly quantitative	✗	✗	✗	✓	✗	✗
Assessment of negative SD impacts	✗	✓	✓	✓	✗	✓	✓	✓	✓
Monitoring and reporting	(✓)	✓	✓	✓	✗	✓	✓	✓	✓
Independent 3rd party validation and verification	(✓)	✓	✓	✓	✗	n/a	n/a	✗	✗
Certification	✗	✓	✓	✓	✓	n/a	n/a	n/a	n/a
Guidelines for Stakeholder consultation	✗	✓	✓	✓	✓	✓	✗	✓	✓

Legend:
A 'tick' ✓ signifies that a given mechanism features that criterion.
Bracketed 'ticks' (✓) signify that a feature is possible, but not explicitly included.
A 'cross' ✗ signifies that a given mechanism does not exhibit this feature.
For some mechanisms, certain indicators are not applicable (n/a).
In some cases, the information needed could not be simplified, and a minimal amount of text is provided.

the first draft of the SD tool, taking up the original proposal again could be a starting point. The analysis in Section 5 suggests that a mandatory inclusion of safeguards would be feasible, as this requirement is included in all mechanisms except one (Arens et al., 2014). Moreover, the COP decision 1/CP.16, which states that human rights must be respected in all climate-related actions, provides a mandate and an entry point for considering a rights-based approach to the CDM (Filzmoser, Voigt, Trunk, Olsen, & Jegede, 2015).

6.1.2. Developing monitoring and reporting guidelines

Currently, under the CDM SD tool, the assumed SD co-benefits of CDM projects are simply notified in a single report (the so-called SDC report): there is no provision to monitor the co-benefits identified over the project's lifetime. At its 82nd session, the CDM EB decided to make the monitoring and reporting of SD impacts an option. However, in the absence of related guidance, standardized and credible follow-up of the SD benefits claimed in the SDC reports is impossible. Existing guidelines developed by other mechanisms could be taken as blueprints for voluntary application of the SD tool. The Board could adjust them to fit the SD tool's specifics and publish them as guidance for users.

6.1.3. Setting up modalities and procedures to assist third-party validation and verification of SD claims

In the absence of any third-party validation or verification, the SDC reports give only limited credibility to SD claims made in them. Also, external auditing is a prerequisite for SD benefits to be priced in the carbon market, mainly in the premium segment (Olsen et al., 2015). At its 82nd session, the CDM EB allowed for the optional monitoring and reporting of SD co-benefits. Building on this, Designated Operational Entities (DOEs) could be authorized to validate and verify SD claims made in the SDC reports. Any procedures concerning SD claims should be clearly separated from GHG accounting to keep the tool voluntary and flexible to use.

6.1.4. Linking enhanced stakeholder requirements to the CDM SD tool

There are no requirements for stakeholder involvement in the current SD tool. Assessment of the SD provisions of other mechanisms (Arens et al., 2014) shows that stakeholder involvement complements other risk-minimizing strategies like no-harm safeguards. Enhanced stakeholder consultation requirements should comprise holding an initial local stakeholder meeting before the PDD is submitted to UNFCCC, using the extended SDC reports featuring the 'do-no-harm' section, as well as an outline of how to monitor SD benefits and to follow-up on the safeguards (cf. above, also Olsen et al., 2015). A second stakeholder meeting should be made obligatory and the project participants' follow-up to the stakeholders' comments should be assessed (Sterk et al., 2009). Moreover, introducing a grievance mechanism for CDM projects to address the potential negative impacts of projects and programmes would be advisable in order to be prepared for the transparent resolution of conflicts (Filzmoser et al., 2015; Schade & Obergassel, 2014).

6.2. Institutional enhancement

6.2.1. Create an SMM approval standard for the quantification of SD benefits and their contribution to SDGs

The need for methods and data to quantify SD co-benefits is an emerging trend driven by interests in tracking progress towards quantified SDGs (SDSN 2015) and to monetize and value the co-benefits to attract additional development finance (Gold Standard 2014; IMF 2014; Santucci et al. 2015). Concerns voiced in stakeholder interviews are that the extra costs to develop methods and data collection would be too high and complex to make it worthwhile. To address the needs as well as the concerns, we recommend the development of a global approval standard for SD quantification methods, which gives developers as well as other institutions the opportunity to develop methods as needed. An institution similar to the CDM Meth Panel could be tasked with approving such methods.

6.2.2. A certification framework for SD co-benefits

This could be implemented at the UNFCCC level based on the EB's SD tool, while nationally countries could draw up their own SD standards based on international best practice. In their current form the CDM SDC reports can already be considered as a means to increase the value of a project by documenting the SD co-benefits. However, to ensure the integrity of certification, all improvements to the tool as proposed above should be met: (1) introduction of no-harm safeguards, (2) development of monitoring and reporting guidelines, (3) the use of independent auditors to verify the effects monitored, and (4) strengthening stakeholder participation rules and guidelines.

7. Discussion

Building on the recommendations for improvements to the CDM SD tool, this section discusses the pros and cons of SD assessment to inform the design of the new SMM. Although the objectives of supporting SD in the CDM and the SMM are similar, the SD provisions in the SMM provide a stronger mandate for SD assessment compared to the CDM.

The Paris Decision (§37b) states that rules, modalities and procedures for the mechanism are to be adopted by the CMA on the basis of 'real, measurable, and long-term benefits related to the mitigation of climate change'. This is the exact same wording as that used in the KP Article 12 (§5b), which defines the CDM. However, the framing is different. In the CDM (Art. 12 §5b of the KP), the requirement to measure the benefits of mitigation actions refers to the emission reductions resulting from each project activity. In the SMM, the requirement to measure the benefits refers to the mechanism established by Article 6, §4, which has the dual objective of contributing to the mitigation of greenhouse gas emissions and supporting SD. The benefits of mitigation actions therefore refer to both GHG emission reductions and SD benefits. Unlike in the CDM, which had a climate-centric focus, the new SMM has a more balanced focus on both the climate and development objectives.

The requirement that SD benefits should be assessed in the same way as GHG emission reductions potentially has quite far-reaching implications. Guidance will be needed internationally to enable host countries to demonstrate how the SMM contributes to SD goals. To demonstrate that the SD benefits are 'real, measurable, and long-term' implies that recommendations for improving the CDM SD tool, such as monitoring and reporting guidelines, modalities, and procedures for third-party validation and verification of SD claims, linking of enhanced stakeholder requirements and no-harm safeguards, are highly relevant to enhancing the SD requirements in the SMM.

To design SD provisions in the SMM based on recommendations for improving the CDM SD tool, broader issues and concerns have emerged in Article 6 discussions on SD assessment as follows:

- the host-country prerogative to define SD
- international guidelines and contributions to the global SDGs
- one aim per mechanism

7.1. The host-country prerogative to define SD

A weakness of the host-country prerogative to define SD is that different national definitions of SD lead to different and at times arbitrary views on the acceptance of the transferred units and represent a reputational risk to the mechanism. Claims can be made based on any definition of SD that the SMM is not fulfilling its objective. On the other hand, it is highly unlikely that countries' sovereign rights to define national SD goals will be challenged in the negotiations. In discussions on options to operationalize SD provisions in the SMM, two possible outcomes are identified (Forth, 2016; Marcu 2016b): (1) the definition of SD remains a national prerogative similar to the CDM provisions; or (2) an international definition is introduced. The CDM SD tool in practice represents such a flexible international definition of SD and is evaluated as meeting its objective in a way that respects the prerogative of the Parties to define their own national SD criteria (UNFCCC, 2014). Furthermore, 92% of DNAs have indicated that they plan to use the tool when approving CDM projects nationally.

7.2. International guidelines and contribution to the global SDGs

One option is for the SMM to adopt international guidelines similar to or based on the recommendations for an improved CDM SD tool. Concerns with international guidelines or voluntary tools for SD assessment are the risk of these being perceived as a means to impose certain standards on Parties' development pathways. Yet, with the global SDGs agreed in 2015, a new situation has developed, in which many people want to see how climate actions contribute to global and national goals for SD using the global framework for assessment, with its 17 goals, 169 targets, and more than 300 indicators. The CDM SD tool would have to be expanded to translate how the SD co-benefits contribute to SDGs, and new methods would be needed to quantify the impacts. This work can build, first, on the work of the Gold Standard version 3.0, a framework for measuring and certifying impacts on all the SDGs. Secondly, the recent literature on the quantification of SD benefits can also contribute to this endeavour (Section 6.2).

7.3. One aim per mechanism

Joint assessment of climate and development outcomes is contested by some, who argue that the efficiency and inner functionality of the carbon market works on the basis of one aim only, namely to maximize GHG reductions (Forth, 2016). Requirements to assess SD impacts also are perceived as unwanted transaction costs, a negative conditionality, and a market constraint that weaken the functionality of the carbon market (Marcu, 2013). To avoid trade-offs between the dual objectives of the CDM at the expense of the SD objective, which has resulted in weak national SD criteria (Parnphumeesup & Kerr, 2011; Sutter & Parreño, 2007), a two-track approach to SD and GHG assessment has been proposed (Torvanger, Shrivastava, Pandey, & Tornblad,

2013). A two-track approach is also relevant for the SMM to enable assessment of the dual objectives separately. Voluntary sustainability standards such as the Gold Standard show that co-benefits can be assessed and internalized in the price of certified carbon credits. The assumption is that there is also a willingness to pay for certified SD benefits, though this is an emerging market yet to be developed.

8. Conclusion and outlook

Research findings on the usefulness of the CDM SD tool for stakeholders and how shortcomings are handled in other mechanisms have shown that the CDM SD tool can be significantly improved. Recommendations to improve the tool and lessons learned from SD assessment in the CDM are directly relevant to the task of informing the design of the new SMM under Art. 6.4 of the Paris Agreement, as well as beyond, to other cooperative approaches established under Article 6.

Compared to the CDM, the SMM has a stronger political mandate to measure SD impacts using rules developed internationally and to verify that the impacts are 'real, measurable, and long-term', similar to the requirements for measuring GHG emission reductions. First, the Paris Agreement mentions the intrinsic relationship between sustainable development and climate change actions such as the links between SDGs and Nationally Determined Contributions (NDCs) prominently in the preamble and in Article 2. Secondly, the promotion of SD is described as one of the core elements of all cooperative activities in the chapeau of Article 6. Thirdly, SD is defined as one of the aims of the SMM in Art. 6.4, and in the Paris Decision (§37f) it is stated that the mechanism should build on experience gained and lessons learned from existing mechanisms and approaches.

Introducing SD assessment for Article 6.4 activities by building on an improved CDM SD tool would be a relevant first step. The CDM SD tool offers an international and flexible definition of SD criteria and indicators that enables a uniform SDC report to be drawn up in a transparent, structured, and objective manner that respects the prerogative of the Parties to define national SD priorities (UNFCCC, 2014). It can help guide national authorities such as DNAs to develop their own SD assessments or to adopt a global SDG tool in whole or in part as they find appropriate. Moreover, a harmonization of SD assessment methods across cooperative approaches is advisable. Cooperative approaches under Articles 6.2 and 6.3 of the PA will generate 'internationally transferred mitigation outcomes' (ITMOs) based on Parties' bilateral market mechanisms with much less international oversight. Although the PA states that Parties should promote SD and that ITMOs should be consistent with CMA guidance, there is a great risk of repeating the 'race to the bottom' known from the CDM, where the prerogative for host countries to approve SD has resulted in weak national SD criteria. An enhanced SD(G) tool in the SMM that builds on the CDM SD tool could lay down common international best practice that CMA guidance for cooperative approaches can build upon.

Demonstrating the SD impacts of climate instruments is highly relevant for development pathways beyond the area of climate change. Joint mitigation and SD market mechanisms can contribute to transformational change for low carbon and SDGs, provided that robust and credible tools are developed internationally to maximize the benefits and avoid negative impacts.

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