

Study commissioned by the Federal Office of Environment FOEN

Market Mechanisms: Incentives and Integration in the Post-2020 World

Final Report
Zurich, 20 November 2015

Juerg Fuessler, Martin Herren, Alexander Wunderlich (INFRAS)
Axel Michaelowa, Tyeler Matsuo, Matthias Honegger, Stephan Hoch (Perspectives)
with support from Charlotte Streck (Climate Focus) for section 7.1 on REDD+

Imprint

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3003 Berne

Project management

Jürg Fuessler (INFRAS)

Authors

Juerg Fuessler, Martin Herren, Alexander Wunderlich (INFRAS)

Axel Michaelowa, Tyeler Matsuo, Matthias Honegger, Stephan Hoch (Perspectives)

with support from Charlotte Streck (Climate Focus) for section 7.1 on REDD+

INFRAS, Binzstrasse 23, 8045 Zurich

Tel. +41 44 205 95 95

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Executive Summary

Market mechanisms are important instruments to achieve cost-effective mitigation and thus a key topic of international negotiations on a new international agreement under the United Nations Framework Convention on Climate Change (UNFCCC). Implemented correctly, they can increase flexibility and thus remove barriers to scaling up mitigation ambition.

The present study explores how existing mechanisms can be reformed and new mechanisms be designed with the dual objectives of achieving and increasing mitigation ambition while safeguarding environmental integrity both with a view on pre-2020 action and post-2020 schemes.

Well-designed market mechanisms can play an important role in achieving rapid decarbonisation over the next decades. However, increasing mitigation ambition with market mechanisms works only if sufficient trust regarding their integrity, long-term existence, and user-friendliness can be built. To assure transparency and environmental integrity market mechanisms require robust institutional and regulatory systems – otherwise, they offer loopholes weakening overall ambition.

Two primary storylines for transition towards scaled-up market mechanisms are considered: the first one being to build a comprehensive new aggregated (i.e. sector- or sub-sector-) level centrally governed mechanism, the second being an expansion of the CDM towards aggregated level mechanisms, through strengthening of programmatic approaches.

Also, different levels of mechanisms have to be considered: Aggregated (i.e. sector-, sub-sector-) level mechanisms are key for scaling up of mitigation action, but require a number of preconditions such as robust institutional and regulatory settings in host countries, appropriate baseline methodologies and data as well as adequate channels for carbon incentives to actually reach actors implementing mitigation action, in particular in the private sector. Project level CDM (or similar instruments) should focus on sectors where it can best complement other instruments and allow for robust additionality and baseline setting.

This can be achieved by either (i) an “open” approach, reforming the existing CDM with more stringent additionality and baseline determination procedures or (ii) a “filter” approach selecting those project types where CDM incentives have the highest impact and efficiency and where project types with lower likelihood of additionality are filtered out and supported by other more suitable instruments (such as e.g. feed in tariffs, investment guarantees, fuel efficiency standards etc.).

“Borrowing” well-tested elements from market mechanisms for climate finance will be crucial to ensure fast, efficient and effective financing for mitigation action. The key elements that lend themselves to such borrowing include baseline and monitoring methodologies.

REDD+ may play an important role in taking developing countries on board and tapping into the significant forestry related mitigation potential, but some stakeholders fear that its huge, seemingly low-cost potential will crowd out other mitigation options. Therefore fungibility between REDD+ and carbon markets may be preferred only at a later point in time when the systems are more mature. Supporting REDD+ before 2020 may include increasing readiness and supporting REDD+ initiatives in early trial stages in particular in testing of procedures and quality criteria. Post 2020 a focus may shift towards creating demand for high quality REDD+ units.

Given that market mechanisms can only function if the underlying emissions mitigation ambition is sufficiently strong and given the possibility of insufficient clarity on a possible centrally governed mechanism post Paris, clubs of like-minded countries and jurisdictions willing to build on market mechanisms for mitigation could serve as a “plan B” in case that no robust international climate regime emerges.

1. Introduction and objectives

Market mechanisms are an important topic of the negotiations of a new international agreement under the United Nations Framework Convention on Climate Change (UNFCCC), which is scheduled to be finalized at the Conference of Parties in Paris in late 2015 and generate emissions contributions from all countries from 2020 onwards. Designed in the right way, market mechanisms can be a crucial instrument for harnessing low-cost mitigation globally. This study is assessing ways how existing mechanisms can be reformed and new mechanisms be designed in a way to achieve and increase mitigation ambition and at the same time uphold environmental integrity. It asks how the various mechanisms can be integrated with each other and how existing units from the Kyoto Mechanisms should be treated in a post-2020 regime. Please note that running-up to the COP negotiations in Paris, many issues are in flux and the information presented in this study has a cut-off date of End September 2015. *On the basis of our assessments, the authors provide recommendations for the Swiss government regarding key issues in the negotiations on the market mechanisms.*

2. The big picture: Market mechanisms, REDD+ and climate finance

Provisions for internationally transferrable mitigation outcomes enable the emergence of an international market for trading and transfer of quantified emission reduction credits and/or emissions allowances¹. Under the Kyoto Protocol (KP) of the UNFCCC a variety of such international market mechanisms were established: the Clean Development Mechanism (CDM) and Joint Implementation (JI) and International Emissions Trading (IET). The Kyoto Protocol also created an accounting framework that allowed Parties to meet part of their commitments with internationally traded Kyoto units, including (but not limited to) CDM and JI credits. Although the performance of these Kyoto Mechanisms is considered quite successful, they have lost momentum towards the end of the first KP commitment period due to unit prices for international credits and lack of demand for market units from governments and private sector entities. Both the CDM and JI are currently undergoing reviews which aim to incorporate the experience gained since the elaboration of their original modalities and procedures in the Marrakech Accords of 2001 and potentially also to reform them to be relevant for the post-2020 context.

¹ Both categories are henceforth called "units" when a generic discussion of market mechanisms occurs in this study.

Furthermore, a framework has been created under the UNFCCC that could enable crediting of activities for reducing emissions from deforestation and degradation (REDD+). Crediting of nationally appropriate mitigation actions (NAMAs) is currently piloted in some projects and programs. Both approaches could be a potential further development to upscale the project-based approach of the Kyoto Mechanisms JI and CDM.

Finally, in the negotiations towards a new global framework agreement on climate change the ideas of a framework for various approaches (FVA) under which both market and non-market based approaches are discussed, and a new market mechanism (NMM) have evolved (see also FOEN/I&M, 2014). However, a common vision for the purpose, broad outline, and the elaboration of modalities and procedures to govern these two concepts has not progressed significantly. Negotiations on the FVA and NMM have stalled as some Parties are of the view that negotiations on international mechanisms for the post-2020 context require a mandate from the Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP) and should be discussed after the upcoming COP 21 in Paris. Under the ADP, draft Agreement and Decision texts have been developed as the basis for negotiations in Paris. These texts include provisions for cooperative approaches, including accounting for internationally transferred mitigation outcomes and a centralised mechanism to help parties fulfil their mitigation commitments under the Paris Agreement. Although these provisions have strong substantive parallels with FVA and NMM and thereby could potentially be merged, they are currently under separate negotiation tracks and thereby considered separate from FVA and NMM.

Accordingly, several groups of global flexibility mechanisms currently exist or might come into existence in parallel: the Kyoto Mechanisms, the NMM, a potentially diverse range of mechanisms under the FVA and potential provisions for “internationally transferrable mitigation outcomes” under the ADP. They could interact with each other, be merged or disappear under a post 2020 agreement. It is also possible that a new centrally defined market mechanism building on the CDM could displace the CDM and integrate the NMM in the Paris agreement. International mechanisms will also interact with regional, national and subnational market mechanisms and emissions taxes, which in the past have been central for generating demand for international credits.

At least until 2020, the Kyoto Mechanisms will continue to exist and thus new mechanisms may overlap with them in terms of emission sources, sectors and project types covered. If this is not carefully addressed, this could lead to double counting of emission reductions, thereby eroding the environmental integrity of the mitigation efforts that these mechanisms are designed to facilitate. To avoid this, there are several options: new mechanisms could be restricted to projects not covered by CDM and JI; or crediting of CDM projects in a sector or under coverage of a policy instrument receiving credits from a new crediting mechanism should be

phased out; or credits that fall within the scope of the new crediting mechanism should be cancelled. Another option would be the transitioning of remaining “eligible” projects and programmes into a new mechanism.

This challenge leads to some uncertainty about the transition and continuity of current and future market mechanisms and activities registered under current mechanisms.

Another potential challenge could arise from bringing REDD+ crediting units to the market. The MRV and accounting of REDD+ units poses a challenge (e.g. regarding the issue of permanence). This had led to REDD+ types of activities playing only a marginal role in the CDM. However, in the last the concept of setting up a buffer account or credit reserve to deal with the permanence issue has increasingly been used in the context of sub-national emissions trading schemes and the voluntary market. Credits in the buffer will be cancelled in the case of loss of forest. Reserve ratios vary significantly between programmes. The Californian ETS requires to submit a project-specific share of units into a reserve (Forest Buffer Account) calculated according to a risk profile of the project. Buffers applied range from 14% (Carbon Pulse 2015) to 26% (Argus Media 2015). Australian CFI credits need to provide 5%. Gold Standard REDD+ rules require a reserve of 20%. Under the VCS, a 10–60% buffer is required. (The REDD Desk, 2015). Moreover, market participants fear that the potentially low price of REDD+ credits and the large volumes created might crowd out other marked mechanisms by flooding the international carbon market if full fungibility² of units is permitted. On the other hand, REDD+ might provide opportunities to use the significant, low cost potential for mitigating land based emissions and to bring key developing countries on board that have not benefitted from the CDM. Of course sizeable supply of credits from REDD+ would generate pressure on market prices if units are fungible.

Can and should financing sourced through international market mechanisms be completely separate from climate finance or may they overlap? The term “*climate finance*” lacks a clear definition as of yet. The Standing Committee on Finance (SCF) has addressed this issue in its biennial assessment report 2014, indicating that “no institution [of those assessed] defines climate finance, but all provide a definition of mitigation and adaptation finance.” Core to these definitions is that “climate finance aims at reducing emissions, and enhancing sinks of GHG and aims at reducing vulnerability of, and maintaining and increasing the resilience of, human and ecological systems to negative climate change impacts” (SCF, 2014, 19). With the emergence of climate finance as a key issue in climate negotiations, controversy has arisen regarding which forms of finance will be eligible to be counted towards climate finance pledges

² See section 4.2.

to reach the 100 billion USD/year target defined in the Copenhagen Accord (2009) and confirmed by the Cancun COP (2010). In negotiations on climate finance there is a clear understanding that only climate relevant financial flows from developed to developing countries should be counted towards the USD 100 billion goal, but it is also understood that the definition of climate finance in general should be much broader than that. For instance, China's pledge in September 2015 to provide around USD 3 billion in climate finance to developing countries indicates that also advanced developing countries will play the role as a donor. All developed country Parties want both public and private finance to be included in the definition of "climate finance" whereas many developing country Parties argue that all or at least the dominant share should come from public sources, which they believe would come with greater long-term certainty. The Cancun decision clearly states that the USD 100 billion per year should be mobilized from a variety of sources by 2020 ("public and private, bilateral and multilateral, including alternative sources") for climate action in developing countries. The precise meaning of the term "mobilized" has not yet been defined³, but the recently published report of the OECD and CPI on the progress towards the USD 100 billion (2015) and the joint donor statement⁴ on tracking progress towards the USD 100 billion give a first indication. The precise meaning of "mobilized" will play an important role for the overall tracking of climate finance.

The discourse on possible linkages between international climate finance and international market-based/compliance-driven finance would benefit from a clear and consistent definition of terms that allows differentiating financial flows between those included in "market mechanisms" and other financial flows that could then be termed "climate finance." Box 1 therefore presents our suggestion for a consistent definition of both terms for the period to 2020.

³ On this, see for instance Caruso/Ellis, 2013; Swiss government, 2014.

⁴ Joint statement by Australia, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Poland, Sweden, Switzerland, United Kingdom, United States, and the European Commission on 6 September 2015: <http://www.news.admin.ch/NSBSubscriber/message/attachments/40866.pdf>.

Box 1: Climate finance and carbon market related finance

Climate finance is understood as investments, donations or other financial means from public or private sources, which support climate change mitigation and adaptation that do not create a greenhouse gas unit that can be traded and transferred for compliance use by a non-host party. Thus, financial flows that are generated by market mechanisms are not included in climate finance flows. Climate finance can occur within countries or flow across borders. The latter would be called “international climate finance”.

International carbon market related finance is understood as the financial flows generated through purchases of securities related to the reductions of greenhouse gas emissions abroad (carbon credits) that may be used by other countries towards meeting their mitigation commitment under the UNFCCC. It does not include capacity building support, which to date has been accounted for as climate finance.

A distinction of climate finance and carbon markets can best be achieved by focussing on their respective objective. In case of climate finance the objective is to enable by means of financial support climate change mitigation and adaptation projects or programmes. The objective of the carbon market is the generation of emissions reductions, which serve as a commodity that can be counted towards meeting emissions reduction obligations or pledges of another country than the host country. Subsequent sections will explore to which extent and under which conditions there may be synergies and conflicts between utilizing markets and other financing streams for climate mitigation purposes.

3. Generic scenarios for future regulatory and market pathways

As highlighted in chapter 0 there is substantial uncertainty about the continuation of reformed current market mechanisms and the design and scope of future new market-based mechanisms. The main driver for future developments in the carbon market is the demand for units. This is steering the price of units and depends mainly on the political will of countries to commit to ambitious emission reductions, and provide for the use of internationally transferred mitigation outcomes to achieve and/or enhance these commitments. Furthermore trust of market actors in a new, robust and sustained mechanism that is embedded in a functioning regulatory framework will be essential. A variety of storylines for the market development and a regulatory framework could be envisaged until and after 2020. In the following, two such scenarios are sketched and subsequent chapter will draw on them in order to analyse various options and storylines for market mechanisms.

Scenarios for discussion of role of market mechanisms

From the perspective of the role of market mechanisms, we distinguish for the following discussion two ways that INDCs can take regarding (i) their level of ambition and (ii) their level of reliance on market mechanisms. Demand and prices of units from carbon markets will depend on the number of countries selecting either direction:

- **High demand – strong governance:** In this scenario, ambitious INDCs rely heavily on international market mechanisms and generate high demand for credits. This may include carbon pricing systems (such as ETS and carbon taxes, or hybrid versions) which provide for credits to allow for flexibility in compliance, also in developing countries (e.g. as it is already the case of South Korea). Along with other trends, such as potential demand from the international air and maritime transport sector, these new sources of demand can help strengthen prices slightly from their current low. Now that a substantial number of INDCs (56) indicates that the countries will at least to some extent utilize international carbon markets for their mitigation efforts, it appears more likely that several Parties will push for rapidly developing common accounting standards and modalities and procedures for the market mechanisms. This could be done partially on the basis of the CDM – in order to provide robust standards and governance and early certainty for market stakeholders. A more detailed analysis will be required to assess the effect of INDCs on the supply as well as the demand side in particular with regard to their level of ambition and the portion of their targets that they intend to achieve through the sale or purchase of international credits. Robust standards would also aim to exclude activities that are business as usual and contribute to the transparency of mitigation efforts.
- **Low demand – weak governance:** In this scenario, INDCs of most countries focus on domestic mitigation actions and explicitly exclude internationally tradable units. As some big emitter countries such as the EU and Japan have chosen to communicate a "domestic-only" INDC, demand could remain low in the carbon markets and the prices will not substantially recover. In a scenario of low reliance on international market mechanisms, fragmented regulations, standards and weak governance for market mechanisms are also more likely to prevail. This includes also a sub-scenario where parties cannot agree on the definition of an internationally recognized compliance unit, which could seriously undermine global mitigation action and international mechanisms. Under such a scenario there may be no overarching interest to eliminate activities that are business as usual from being credited. In addition, transparency and credibility of mitigation impacts, as well as fungibility of units, would be severely undermined due to a lack of comparability and harmonized quantification, verification and accounting standards and procedures.

At the time of writing, Switzerland remains one of the few countries specifically mentioning UNFCCC-backed carbon markets in its INDC. Others are New Zealand and Canada. The US INDC interestingly states that the US "at this time" does not intend to use international market mechanisms for reaching its 2025 target. For an overview on the role of market mechanisms in current INDCs see section 5.2.

A dominance of INDCs of potential buyer countries with low levels of support for international market mechanisms would perpetuate the current demand crisis plaguing market mechanisms and put Switzerland in an isolated position with its support for market mechanisms. On the other hand it could – assuming to the continuously very low prices of credits and continued supply – allow great freedom to select high-quality credits to meet the Swiss mitigation target. In this case, it would also be likely that INDCs do not lead to a significant emission reduction compared to business as usual as the mitigation incentive would essentially be limited to the no-regret options within each country's domestic mitigation potential.

In the opposite case – high reliance on market mechanisms in several large-emitters' INDCs – prices would probably exhibit greater fluctuations. Initially prices would go up due to the increased demand, though it is likely that supply would follow with little delay as there are large volumes of emissions reductions that could be reaped in projects that are currently on "stand-by" but ready to be reactivated once the financial incentive to produce CERs (or other units) is somewhat higher than at current prices (it is however not clear how long such projects can stay on "stand-by"). Compared to the scenario of low reliance on market mechanisms, the level of emissions reductions compared to business as usual would be higher.

In a scenario with weaker accounting rules and de-centralized governance of market instruments, like-minded countries and/or jurisdictions may join in so-called "clubs" of carbon markets: sub-group(s) of parties (or jurisdictions) agree on a quantification and accounting framework as well as on rules that allow for (restricted) trading and/or soft-linking among club members (section 6.6). This may either imply the use of common rules among club members or include the introduction of "rating" that would allow for the exchange of carbon assets at a specific "exchange rate" between carbon markets within a club⁵. In the first case, the rules of the club could be adjusted according to the development of international rules, e.g. they could be made more stringent if the international rules increase their level of stringency. Alternatively, they could remain unchanged to increase trust of entities that their mitigation achievements will actually be rewarded in a consistent way.

⁵ The World Bank, through its initiative, has coined the term networked carbon markets, provides an overview of the current state of globally networked carbon markets: <http://www.worldbank.org/en/topic/climatechange/brief/globally-networked-carbon-markets>

In the second case where different “currencies” emerge, it is likely that fungibility of units between parties might be restricted. Besides rating and discounting, filters for exchangeability for specific units (e.g. project types, vintages, etc.) could apply. This then may lead to price differentiation of units like in a system of various “currencies”. Multiple clubs may co-exist and include clubs with stringent regulatory frameworks and others with less stringent frameworks. The stronger the UNFCCC accounting framework is the less are such heterogeneous markets with a multitude of “currencies” needed.

4. The role of a common accounting framework

4.1. Accounting

In the context of this study the term accounting refers to rules for comparing the mitigation progress toward or achievement of a country with its mitigation commitment/contribution. Robust rules for accounting of crediting units are key to ensure the integrity of any market based mechanism. Robust accounting can prevent double counting of units and will be essential if linking of various market mechanisms is envisaged in a post-2020 world. Addressing double counting can be particularly challenging in a fragmented carbon market with multiple mechanisms under different governance. The options and elements for accounting in a post-2020 common accounting framework are discussed in detail in reports commissioned by FOEN (Moarif 2014 and Schneider, Fuessler and Herren (2014) as well as Schneider, Kollmuss, Lazarus (2014)). In a storyline for a robust framework for post-2020 stringent, explicit and transparent common accounting procedures will be a pre-requisite for functioning carbon markets and should therefore be an essential ingredient of any Paris deal.

Accounting is relevant on various levels where mechanism units are issued in, transferred between registries and balanced or cleared in respective accounts. Accounting rules and the related quantification framework including baseline setting ideally should follow a set of common principles such as environmental integrity, consistency and comparability of the units accounted for. Accounting on national level requires a clear differentiation between credits created for the international carbon market and domestic mitigation activities (e.g. establishment of a national ETS) that create credits but are not traded in international markets. In this context maintaining a comprehensive national greenhouse gas inventory is crucial where the mitigation impact of all domestic activities are reflected and tracked with sufficient accuracy. Going forward, a large focus will likely lie in mitigation strategies spanning entire sectors or being related to the effect of specific policy instruments (e.g. supported and credited NAMAs); as such, units created on a project-level or program-level within this sector need to be robustly quantified and accounted to avoid double counting. For example, the project boundaries need to be clearly defined and excluded from the sectoral emissions reductions, or projects can be integrated into the broader sectoral mitigation strategy with emissions reductions accruing to a single owner. The accounting of units created by policy instruments would have to address indirect effects of the policy instrument beyond the sector which is targeted by the policy instrument.

Another important aspect of accounting rules is the need to address emissions that are of temporary rather than permanent nature, such as emissions or removals from forestry or emission reductions from CCS projects. In addition, there is need to set rules how the timing

and validity of units is addressed when accounting mitigation efforts for e.g. single year pledges and it might be necessary to account for mitigation efforts continuously (i.e. each year during the period of time) and not only at the end of the pledge period.

Depending on the storylines of a post-2020 setting outlined in chapter 3 additional provisions would be required for accounting. In the case of different clubs of carbon markets or where carry-over between compliance periods is an issue, rules and principles for linking various levels and mechanisms would be required. Also to avoid double-counting in such scenario national registries and international transaction tracking systems become a very important backbone of the accounting framework.

4.2. Fungibility of units

Fungibility of units describes the ability to exchange units originating from different schemes and mechanisms and their eligibility for compliance in other schemes and towards various commitments. (Partial) linking of carbon markets, in which trading is bilaterally or multilaterally allowed between schemes, may foster liquidity – making the overall market scheme more efficient and reduce costs. In the case where several markets develop in parallel, increasing fungibility between schemes is probably a prerequisite for a sustained market, i.e. a market where there is sufficient trust by entities that revenues from sale of units can accrue over a long period and that market prices do not collapse for long periods e.g. based on a set of sufficiently diverse and/or robust sources of demand. However the (partial) linking of schemes with different levels of ambition as well as accounting standards comes at the expense that market risks such as e.g. very high prices (a problem for installations) or very low prices (a problem for regulators that the scheme does not provide incentives for development of low carbon production infrastructure) may “contaminate” the linked systems, depending on the characteristics of the schemes. On the other hand, (limited) linking – i.e. linking of markets by allowing certain types or quantities of credits to be traded or depending on other conditions such as price levels – may also help to reduce market risks and stabilize systems.

Linking of markets is also a political question, since it would affect national climate legislations and strategies. In this respect discussion on exchange of units are held between the poles of having full fungibility through issuance of one single unit type (or full eligibility of all units for compliance in both systems) and limited fungibility due to multiple unit types in fragmented markets.

Overall comparability of units depends on policy and regulatory harmonization of relevant carbon standards, metrics, and procedures. However, full linking is also possible between

schemes that differ in their characteristics e.g. that cover different sectors. Again a set of principles should guide this process. Environmental integrity of the units for example should not be compromised; they should represent real, permanent, additional and verified emission reductions relative to a robust baseline. Furthermore fungibility is facilitated by similar methodological approaches in quantifying mitigation outcomes.

From a design point of view the following two approaches could foster fungibility. First the setting of filters that would include or exclude types of units according to criteria based on above principles or second, a discounting for units generated with lower standards could be applied (e.g. 20%). However, the concept of discounting units of lower environmental integrity may be problematic for instance in cases where units that are non-additional or with weak baselines are still used for compliance at a discounted value.

From the perspective of the Paris negotiations, linking requires a certain level of standardization of rules and standards in a common accounting framework as well as the acknowledgment that the transfer of units from one party to another is allowed.

From a developing country perspective, the (partial) linking and fungibility of units is essential to be able to participate in carbon markets and to use carbon revenues to support the low carbon development of the country.

From the perspective of Switzerland, being a small country with a very small ETS (about 50 installations), the ability to linking is essential for a liquid carbon market. Also, the part of its INDC that Switzerland seeks to fulfil abroad (-20% or more compared to 1990 emissions in 2030) requires robust rules for the fungibility of units. If fungibility of units is not possible, then at least a cancellation of units that stem from Swiss financed mitigation action as well as a “double entry bookkeeping” (i.e. in both Switzerland and the host country) is required, in order to make sure units from Swiss financed actions to achieve the -20% target are not counted towards other (e.g. host country INDCs) and to rule out double claiming.

4.3. Seller beware principle

The Kyoto Mechanisms IET, JI and CDM all follow the “seller beware” principle. This means that the traded units remain valid for the buyer country even if the host Party subsequently defaults on its KP emissions target (Prag, Briner, Hood 2012, Grubb et al., 1999). In CDM the units, once issued, may be considered as “guaranteed” by the issuer – the UNFCCC.

This principle has facilitated the functioning of markets, because the production of the mitigation outcome is under the control of the seller, who has therefore to take the liability. However, this principle also requires strong enforcement and incentives for meeting commitments/contributions. Otherwise, a selling Party may have the incentive to exaggerate emis-

sions reductions or simply sell excessive amounts of credits without regards to meeting its own commitment/contribution. The alternative, a buyer-beware principle, in which a buyer assumes liability in case issued units certified under a market mechanism turn out to be ineligible for compliance at the time of their use due to e.g. host country default, may hinder liquidity in carbon markets. This effect is shown in California, where units can be cancelled by the regulator after issuance, which actually has happened already for close to 0.1 million offsets from an ODS destruction site (Gonzalez 2014). Any common accounting framework for new market mechanisms should consider the trade-offs between these principles in the interest of functioning markets.

4.4. Carry-over of units

Carry-over concerns the validity of units associated with one commitment period or market instrument during/for a subsequent one. Generally units can be defined to either be valid indefinitely (in which case they can be “carried over” from one commitment/contribution date/period to the next), or their validity could be limited temporally or linked to the existence of the mechanism through which they were created. A form of temporal limitation that is defined ex ante would require a “tagging” of units with a time marker that indicates their expiration date. This is for example done for temporary reductions from afforestation and reforestation activities under the CDM as well as in cases where KP units are to be cancelled if they are not carried over from one commitment period into the next according to the procedures of the KP. A more ad-hoc form would be through a political decision that units of a certain type lose their validity on a certain date. This date could be absolute, or conditional on a specific event, e.g. the conclusion of an agreement. Mechanism-specific invalidation means that once a mechanism expires, all units created by that mechanism that have not yet been used would be cancelled. With the more recent developments of regional or national schemes or market mechanisms outside the UNFCCC, there may also be the possibility of carry over between market mechanisms, either if a future climate agreement includes provisions for a centralized market mechanism or if market mechanisms eventually merge, e.g. through soft-linking. Here, units from an “old” mechanism would then formally be allowed to be transferred/re-issued into the registry of the new mechanism, where they could continue to use their identifier from the old mechanism or be allocated a new identifier. As environmental integrity of the old and new mechanism could differ, carry over of units may require discounting or revaluation or re-assessment. However, setting the “exchange rate” will likely be politically and technically challenging.

Under the KP, some units were initially valid indefinitely. However, after an excessive surplus of AAUs accumulated from countries in transition – whose large decrease in emissions

relative to the base year was largely due to economic factors rather than climate policy, the validity of AAUs for future use was restricted. Unrestricted carry over was meant to reward Parties for “overachievement” during a specific commitment period but inadvertently also rewards Parties for unambitious mitigation targets. In order to differentiate between the two, carry over can be conditional on ambition of national contributions. The Doha decisions on the carry-over of surplus AAUs might in this context been seen as a precedent. Additionally, carry over could be subject to filters based on mechanism type or project type/technology. For example units from projects with higher marginal abatement costs but greater “transformational change” or co-benefits could be carried over. Units from other project types e.g. with very low marginal abatement costs or very low impact of carbon market revenues on profitability, on the other hand, may be prevented from carry-over, in particular if a sector or technology may be phased out from a reformed CDM. Such criteria could be implemented (i) on a UNFCCC level and/or (ii) on the level of individual parties or clubs of likeminded parties that formulate domestic eligibility criteria for compliance of international units. For example, this could happen if HFCs would be transitioned to a sector-specific mechanism.

Restrictions in carry-over in market mechanisms might be “sweetened” by complementary contributions from climate finance by using a possible variation of results-based financing to offer to owners of such units a certain price for units that may not be carried over (and be cancelled) at a price that offers a reasonable margin above abatement costs, avoiding windfall profits, against their cancellation. This would provide a reward for units that met the criteria relevant upon issuance but that do not meet future criteria.

Clear and stringent rules for carry-over could send important signals to countries not to create large surpluses through “commitments” that are less stringent than business-as-usual.

Carry-over is an important principle to generate trust in the long term nature of a mitigation policy regime. As shown in the case of the EU ETS, carry over has limited price fluctuations of units within and across periods and kept the price at a positive level when the demand-supply balance would have normally led to a price of zero. As long as in each period/point in time scarcity of unit grows, carry over allows a smoothening of the price path of units, maintaining the incentive to mitigate even in periods where it implies overachievement.

The drawback of carry-over is that environmental integrity of mitigation cannot be reinstated for a long time if it has been violated at a certain point in time. If a surplus of units is generated due to a lenient allocation or unexpected shocks that reduce emissions regardless of dedicated mitigation policy instruments, this surplus will dilute future ambition unless it is removed.

The following options exist to deal with systematic surplus problems:

1. Permanent elimination (cancellation) of surplus by taking away units that are deemed to represent surplus;
2. Conditional carry-over based on ambition of national commitments or mitigation contributions. This could take the form that unit use would be linked to the differential between business-as-usual emissions and the commitment/contribution;
3. Devaluing carried over units by a discounting factor or restricting carry-over of units from certain mitigation activities (this would then lead to a price differentiation of units);
4. allowing the use of units for domestic targets but not for selling on international markets; and
5. deduction of surplus equivalent from next period issuance.

Table 1: Options to prevent carry over of surplus

Option	Advantages	Disadvantages
1. Cancellation of surplus	<ul style="list-style-type: none"> - High environmental integrity - Leads to price increase for other units due to significant shift in supply-demand balance - Current levels of surplus are such that consistent cancellation of surplus seem to be a necessary pre-condition for any foreseeable new demand (from INDCs, from international flight and marine) to have a meaningful impact on actual project implementation (and not just reduction in surplus) - Market value of surplus units is often already very low and therefore there is limited (but existing) loss potential for owners of units from current price levels 	<ul style="list-style-type: none"> - Requires agreement on level of surplus - Potential to destabilize markets due to increased price volatility - Discourages mitigation beyond target within each commitment period; could lead to carbon lock-in - Undermines investor confidence given significant out lays for generation of the credits in the first place
2. Conditional carry over based on ambition of commitment ⁶	<ul style="list-style-type: none"> - Compromise between the extreme of full carry over and full cancellation - Partially filters out “overachievement” from “hot air” - Helps stabilize prices 	<ul style="list-style-type: none"> - Still does not prevent generation of hot air which may immediately neutralize any new demand without additional mitigation action being triggered - May require a standardization of commitment parameters or

⁶ Ambition levels should be based on scientific data but are ultimately a political issue. The operationalization of a metric of ambition levels is feasible but requires a political agreement on the approach.

Option	Advantages	Disadvantages
		"ambition metric" between Parties which is difficult to achieve
3. Discounting or filtering units ⁷	<ul style="list-style-type: none"> - Compromise between the extreme of 100% carry over and cancellation - Encourage use of certain mechanisms or underrepresented countries or technologies - Incentive for generating units with "high value", in terms of co-benefits or environmental integrity - Transparent approach to establish net mitigation impact 	<ul style="list-style-type: none"> - Higher transaction costs - Politically difficult to establish discount factors among countries at various stages of development - Decreased market fungibility
4. Allow units for domestic use only	<ul style="list-style-type: none"> - Compromise between the extreme of 100% carry over and cancellation - Incentivize the adoption of market mechanisms domestically - Avoid spill-over of surplus to dilute collective ambition 	<ul style="list-style-type: none"> - Discourage innovation since surplus gives no incentive to further invest in domestic emissions reductions projects - No domestic mitigation until surplus is used up - May simply free up more eligible units for international transfer
5. Deduction of surplus equivalent from next period issuance	<ul style="list-style-type: none"> - Nobodies existing property rights are affected - May be more acceptable to cancellation 	<ul style="list-style-type: none"> - Is in fact very close to no carry over

4.5. Accounting for carbon market finance vs accounting for climate finance

Carbon markets and climate finance have different objectives and measure a different outcome: carbon markets have the objective of mobilising financial flows in return for measurable emissions reductions, whereas climate finance can generate a broader range of outcomes (also incl. GHG emissions reductions through results-based financing, but also adaptation or hard-to-measure outcomes toward a transformation to low-carbon economies). Nevertheless there are possibilities to link/blend the two categories of funding that could benefit both objectives. On one hand linking the two could stabilize carbon markets and foster the development of new market and finance mechanisms and promote comparability of measurement of mitigation results across various sources of funding. Options could be that means from climate financing

⁷ Discounting could also take place in incremental steps, e.g. year 1: 90%, year 2: 80%, year 60% etc.

are earmarked to invest in the development of institutions that oversee and administer market mechanisms or used to buy and e.g. cancel the first units to build experience and trust and thus to overcome initial hurdles, or to launch pilot projects. For example, climate finance could pilot high-quality market mechanisms as a means of showcasing and building private sector confidence in the mechanism. In doing so, it would ideally promote favourable policies and leverage private sector involvement to allow for self-sustaining activities in the future. Yet, if such climate finance were to come from multilateral climate funds, i.e. the GCF, any projects funded under such market mechanism and the implementing entities would also need to fulfil the requirements and expectations of the respective fund, i.e. country ownership, environmental and social safeguards and fiduciary standards (Trunk, 2014) or transformational potential/effects, innovation potential and many more. The formal requirements might not be problematic to achieve in case of well-organized pilot projects, however the additional effort required to present a project in a way that is appealing to various potential donors should not be underestimated.

Also credits could be bought and cancelled directly by means of climate finance to achieve and enhance mitigation in the host country. After retiring these credits and hence not accounting them towards any buyers' mitigation commitments, these investments could then be counted toward the climate finance pledges. In this way, climate finance takes advantage of market mechanisms' ability to quantify additional emission reductions and/or identify cost-effective mitigation opportunities. The ability of carbon standards to certify real emission reductions provide a mature toolkit to transparently measure mitigation results. As long as the credits are not used for mitigation target compliance but cancelled, one would be able to clearly distinguish between carbon markets and climate finance flows – even if the latter utilized certificates for results-based financing of mitigation. Overall the risk remains that double counting occurs – at least in the way such financial flows are presented to the public: once on the donor side claiming to have financed the emission reductions and once on the seller side claiming to have reduced emissions by the same amount. Hence it clearly needs to be avoided that contributor countries account the same activity for the mitigation contributions of donor countries and at the same time report it as part of their separately pledged climate finance. Ensuring transparency and integrity on a technical as well as a political level and ruling out double counting is thus the key challenge in the context of linking market mechanisms and climate finance, particularly in the context of potentially weak international accounting standards.

Following our suggested differentiation of "climate finance" and "carbon market finance" (see box 1) an important step to prevent double counting of mitigation commitments and climate finance can be taken. A straightforward scenario for their interaction would be if the infrastructure for a market mechanism (e.g. a crediting framework) was utilized as the MRV

structure for a results-based financing scheme. There are a few precedents for such a scheme, such as the Pilot Auction Facility that will initially target stranded methane reducing projects under the CDM or the BioCarbon Fund that supports afforestation and reforestation CDM projects. The benefit for climate finance would be that market mechanisms should theoretically find the most cost effective mitigation actions and quantify their additional mitigation outcomes, and as such they could help identify areas and projects that would utilize scarce public climate finance most effectively. Mechanisms themselves would also benefit from these schemes as they offer an additional and reliable source of demand that could help rejuvenate current markets and sustain higher carbon prices going forward. However, a crucial requirement of such an interaction is that market mechanisms deliver real emissions reductions and fulfil the requirements (i.e. environmental and social safeguards) of the institution providing climate finance – be this a multilateral fund or a single contributor government. On the other hand, public support could also bring legitimacy to market instruments in general which, in the past, have been criticized for failing to ensure high environmental integrity of emission reductions.

Climate finance could also be used ex-ante to support market readiness and capacity building activities that do not directly result in emissions reductions. This type of support could help ensure inclusion of a wider range of developing countries in markets. In addition climate finance could focus on financing non-credited (elements of) climate policies (NAMAs) including the reform of fossil fuel subsidies or for covering initial costs of setting up the MRV systems of credited NAMAs. It should however be noted that this crowds out other types of activities looking for climate finance.

From the above some recommendations can be drawn as to a possible strategy for Switzerland in Paris regarding negotiations on the accounting framework of the new market mechanism:

Minimum recommendations:

As a minimum, Switzerland could seek to reach clarity on the definitions and distinction between climate finance and market mechanisms as proposed in the following table:

Table 2: Clarification of terms carbon market finance and climate finance

Term	Objective of finance	Includes
International climate finance	Meeting the climate finance pledges (e.g. USD 100 billion target) and thereby supporting GHG mitigation and climate change adaptation in other countries	Financing of all activities related to climate change mitigation and adaptation (includes also capacity building)
Carbon market related finance	Compliance with INDC/pledge/emission target under an international agreement using internationally transferred mitigation outcomes	Mitigation outcome must be real and measurable, additional, verified and permanent, and internationally transferred. E.g. capacity building is not eligible.

It is also important to clarify that instruments that derived from carbon market related finance may also at the same time be used in efficient climate finance under the term “results-based finance”.

The minimum requirement would be to assure that a specific mitigation outcome is only counted towards one of the above objectives at the time. Double claiming should be prevented.

Recommendations by authors:

A preferred outcome would be to develop mandatory international quality standards for quantification and accounting of internationally transferred units eligible for use under the Paris Agreement to achieve and/or enhance mitigation contributions and delivery of climate finance. If/where this is not possible, voluntary quality standards could be defined which would allow countries filtering out low-quality units from counting towards achievement of their NDC. Such a proposition would send a clear signal to the carbon market that high-quality projects are more competitive and can reach higher demand and consequently higher prices and might as a consequence enable an improvement of the quality of new projects.

The preferred outcome for carry-over would be limiting carry-over of units through international rules. If this is not possible, Switzerland could suggest setting up a club of countries that does not accept units from countries with lacking ambition of INDCs toward its own mitigation commitment and/or toward its climate finance pledge, or from countries that are linked to those countries. Defining thresholds for stringency of developing country INDCs would require an assessment including e.g. the robustness/validity/quality of the baseline including its reliance on international data for projections and the use of conservative estimates of drivers of baseline emissions as well as a combination of the level of per-capita and per-GDP reductions under its INDC reduction from this baseline which is significant and going beyond “no regret”/BAU measures. E.g. such a club might evolve around the Environmental Integrity Group.

Switzerland could call for a definition of climate finance being separate from carbon market finance, while allowing utilization of the mechanism as a tool for delivery of climate finance, and the utilisation of climate finance as an enabling resource for carbon markets.

Another approach to strengthen the standing of accounting beyond project-based activities, could be to select a policy initiative e.g. a NAMA with potential for crediting and to support the host country to fully develop a functional MRV system that would allow said initiative to be included in a future market mechanism.

One particular lesson learnt from the CDM concerns a general trade-off between the environmental integrity of MRV procedures and the volumes of emissions reductions that can be mobilized. For environmental integrity in particular the choice of the level of detail of data gathering and emissions calculation methodologies proved to be tricky – greater levels of detail risk to eliminate smaller projects and projects in countries and industries where the GHG monitoring capacities are limited. In the past years, this could again be observed in the development of NAMA MRV systems, where the cost of MRV is mainly to be carried by the host country government. By making climate finance payments to projects conditional on certain MRV quality standards that are compatible with other standards from the CDM or from high-quality NAMA MRV systems, transparency is improved, quality can be measured and improved on, and transaction costs can in the long run be reduced as the technical know-how can be utilized across various projects.

5. Market mechanisms pre 2020

5.1. Objectives of market mechanisms pre 2020

Except for the small group of countries that have agreed to KP2 period commitments, in the current UNFCCC system nothing provides a robust incentive for emissions mitigation between 2012 and 2020. However early mitigation is important to increase the probability to remain on a 2°C path. Therefore it is important to mobilize mitigation in this period, and market mechanisms can play an important role in that. Given the market collapse the main objective of activities concerning market mechanisms pre-2020 should be to maintain an incentive for continuation of mitigation activities and to avoid lock-in of high-emission investments to counteract the absence of a more robust demand side and a lack of certainty on the overall role of market instruments in the post-2020 world e.g. through the provision of a minimum price. As discussions on the role of markets in UNFCCC negotiations have stagnated, with increasing focus on the post-2020 agreement, there is currently a lack of clarity on the role of markets pre-2020.

However, continued use and functioning of markets pre-2020 also has large implications for any post-2020 agreement and should therefore receive more attention in order to work towards a robust market instrument that would be fully operational from 2020 onwards. The objectives of the market mechanisms in the pre-2020 world are mainly twofold. First, in the coming five years they may generate credits with regards to pre-2020 mitigation pledges as well as 2020 targets. Secondly, and maybe even more important there is need for strengthening existing market mechanism systems and building up new market mechanisms that will sustain in a post-2020 world. This is to ensure the continuation of institutions that have proven to foster the functionality of carbon markets (e.g. the methodology panel of the CDM) and to maintain or increase the level of practice from project developers and to sustain the knowhow of experts. Even more important may be the aspect of trust of the private sector in market mechanisms established under the UNFCCC. This trust has severely be hampered in the past five years, as can be seen from decreased investments, pull-back of many financial institutions and generally a sizeable reduction of active market actors. However, private sector engagement is fundamental to reach the ultimate objective of the Convention as public sector finance alone will not be able to meet investment needs.

5.2. Tendencies/trends pre 2020

The starting point is that the demand side for CDM is insufficient to drive further mitigation activities or maintain existing ones. Given the current stagnation of ambition, a lot of attention is given to additional sources of demand and whether such renewed demand will be sufficient to rejuvenate carbon prices and preserve these mechanisms for use in the post-2020 regime. As mentioned, one possibility to support the market is by utilizing market mechanisms to meet climate finance pledges. Already it has been proposed that buying and cancelling CERs could be counted towards Parties' finance pledges. While some emerging economies have introduced domestic market mechanisms, most limit demand for credits to those projects that are located within their own borders. A number of subnational market mechanisms have emerged in industrialized and emerging economies, but none of those programs to date allows the import of CERs. Other sources of demand include governmental acquisition programs such as Sweden's aspiration to buy up to 40 million CERs above secondary market rates or support for stranded CDM projects from various countries and stakeholders through institutions including the World Bank, KfW Development Bank and possibly the Green Climate Fund. Furthermore CERs and voluntary credits from CDM projects have been acquired by companies for marketing purposes as well as individuals to offset their own emissions; however these sources are much smaller than government based demand. Though a few such initiatives have emerged, which provide

an improvement of the situation for high quality projects, their scale to date is not substantial enough to change the bigger picture.

Table 3: Pre-2020 Market Support

Institution	Public Source	Private Source
NEFCO Carbon Fund: 165.3 million €	Danish Energy Agency, the Finnish government, Industrialisation Fund for Developing Countries (IFU), the Norwegian government; NEFCO	Dong Energy (Dk), EPV Energy (Fi), Kymppivoima (Fi), Vapo (Fi), GDF Suez, Eesti Energia
Carbon Initiative for Development (Ci-Dev); USD 120 million	World Bank, Great Britain, Sweden, Switzerland	Not foreseen
Pilot Action Facility for Methane (PAF): USD 100 million	Germany, Sweden, Switzerland, United States.	Not foreseen
International Climate Initiative (IKI)	German Environment Ministry	Not foreseen, within funded projects co-financing is expected
CAF. € 10 million	KfW, Latin America Investment Facility	Not foreseen
Governmental CER Acquisition Programmes (Sweden) : up to 40 Mio tCO₂e	Sweden	Not foreseen
Voluntary Carbon Market	Not involved	The voluntary market is largely driven by private sector demand for CSR

As discussed in section 3, INDCs' reliance on market mechanisms is likely to play out as a major driver for demand and supply in carbon markets and might ultimately be decisive for the future role of market mechanisms in the climate regime. If many countries announce to make use of markets in meeting part of their objectives, the incentive for preserving and improving the institutional capacity and quality control of existing mechanisms will be higher and most probably political will and efforts would grow. Even with low initial reliance of countries on markets in their INDCs, there could at a later point in time be a reinforcement of the role of markets if countries choose to upscale their mitigation ambition due to reinforced national or international pressure in the review process of the overall ambition after the Paris COP and anyway over time. But even such countries might need to ramp up the INDC target and as a possible

consequence might need market mechanisms for enhancing ambition. Such an approach has informally been discussed within the EU and is supported by those EU governments that do not want a demise of market mechanisms such as Germany and the UK. Both these countries actively support the development of markets in the context of various initiatives, e.g. Germany is piloting a credited NAMA in the Tunisian cement sector (through GIZ). Beyond these efforts positions toward use of market mechanisms toward INDCs is mixed: the US, the EU on the one hand indicate not to utilize international market mechanisms (at the moment), while on the other hand all members of the Environmental Integrity Group state a clear need for well-functioning international market mechanisms to enable committing to and achieving an ambitious INDC (see Table 4). A detailed analysis will be required to address the possible influence of these announced objectives on the supply and demand balance.

Table 4: The current state of references made to the potential use of market mechanisms for meeting mitigation contributions (IETA INDC tracker as of 21.10.2015⁸).

N° of Parties	Reference to market instruments in parties' INDC
56	Yes
7	Not in INDC but in the longer term
13	Use will be considered
37	Not specified
12	No

A third driver for a potential improvement of the situation could be the use of credits in governmental or multilateral bank acquisition programs. A yet small fraction of the market consists of voluntary demand for credits from the private sector for corporate sustainability purposes. Demand for credits from the private sector could grow due to an increasing public awareness of the climate change issue. Such a trend could be reinforced by industry-initiatives with a high visibility, but it is questionable whether the voluntary market could ever drive demand to the extent that it will incentivise mitigation at the scale needed.

Pre-2020 demand should address primarily the CDM, as well as those pilot activities aiming to demonstrate how the NMM could be designed such as the Climate Investment Funds (CIFs),

⁸ The IETA INDC tracker can be found on <https://docs.google.com/spreadsheets/d/1YgIQiucWW9vuDUAMeRstzzLxTXi6zFWtFVClqtRTe4/edit?usp=sharing>

PoA-NAMA hybrids and NAMAs with potential for crediting (e.g. the above-mentioned NAMA in Tunisia's cement sector).

The following enabling measures for achieving the high-market use scenario might be considered:

- Ensure that all Parties that want to use units from market mechanisms can do so, even if they have not defined emissions commitments under the 2nd Commitment Period of the KP
- Ensure that the accumulated budget surplus coming from the share of proceeds on the issuance of CERs at the disposal of the UNFCCC Secretariat is used wisely, i.e. allowing the functioning of the CDM at least up to the end of the true-up period of the second commitment period of the KP in order to allow a preservation of a critical mass of competence with regards to defining baseline and monitoring methodologies as well as verifying emissions reductions
- Ensure that regulations that have shown robustness in safeguarding environmental integrity while not generating overly high transaction costs are applied to all market mechanisms
- Increase willingness of parties to import units from mechanisms for use in domestic contexts and to refrain from sudden and unannounced changes of import regulations that lead to high volatility of unit prices. An unfortunate example for such a sudden change was the EU's limitation of CER imports to certain project types and host country groups, which immediately led to a differentiation in CER prices.
- On the other hand, the introduction of such restrictions or filters can improve/drive environmental integrity and reduce oversupply of units with lower environmental integrity on the markets.
- Ensure innovative cost-efficient use of large-scale CER acquisitions as piloted through the World Bank's PAF, while ensuring enabling that particularly robust additionality of projects, high SD impacts and regional balance (e.g. circumstance of LDCs) can be priced in.
- The beginning operationalization of the GCF presents a window of opportunity to advocate for a role of the CDM (as already proposed by the GCF Private Sector Facility Business Model Framework (Gcf 2013)). As the name indicates, the PAF perceives itself explicitly as pilot for the GCF. This is a particular instance of climate finance where results-measurement for mitigation impacts is based on carbon standards for a selected range of technologies and potentially host country categories (LDCs).

While the fluctuating political support for market mechanisms (see Figure 1) is hard to measure, most observers to the negotiation process would agree to such a trend in the past as it also corresponds to some extent to the market dynamics (notably the price developments) and the corresponding level of attractiveness for both private sector participants in the market as

well as the governmental institutions facilitating access to the CDM in the past. The key regarding acceptance of market mechanisms as an appropriate solution for climate change mitigation is trust that mechanisms can achieve environmentally credible mitigation while not jeopardizing interests of domestic industries that provide mitigation technologies. The uptick of support towards 2020 corresponds to the scenario in which several countries indicate to rely on a market instrument for meeting their national mitigation contribution – a development in which demand is growing and the prices are recovering to attractive levels again. The consequence of such a recovery from 2015 onwards would be that other governments, who were rather on the fences regarding the use of markets in recent years, might again advocate market instruments as key tools to achieve the increasingly difficult downward slopes of emissions reductions needed to meet the 2°C target.

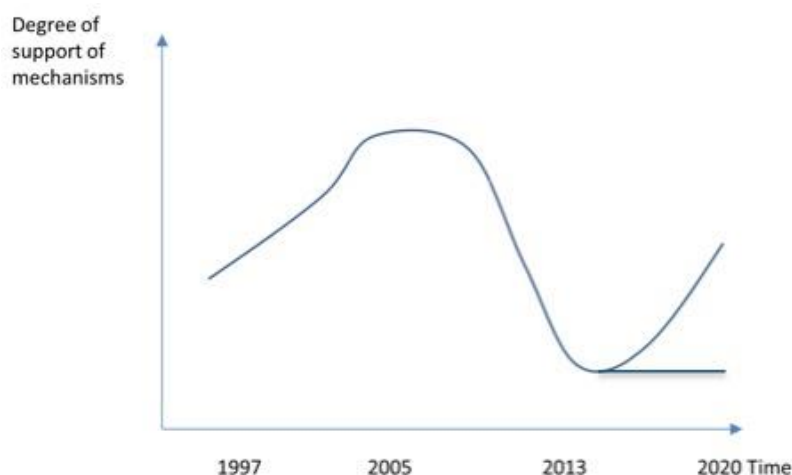


Figure 1: Fluctuating degree of political support for market mechanisms

There are reasons to believe, however, that even with a scenario of low initial reliance of parties' INDCs on international market mechanisms, political support for flexibility mechanisms would grow eventually as governments start to trust that INDCs from other countries really go beyond business as usual and therefore they can further strengthen their contribution as the INDC is developed towards an NDC. This would then require the mobilization of low cost mitigation potential, which would be proportional to the stringency of the NDC. Under a less positive scenario, evaluation of the aggregated mitigation ambition via e.g. efforts by the secretariat over time would indicate currently insufficient mitigation contributions and as a consequence countries would need to find additional potential for mitigating without alienating domestic industry interests through imposing unrealistic domestic mitigation targets.

5.3. Integration of current initiatives into UNFCCC context

Currently numerous initiatives exist that foster greenhouse gas mitigation efforts taking place outside of the UNFCCC process. They are triggered by a number of institutions on the international, national or subnational level. These non-UNFCCC initiatives can contribute to closing the ambition gap and might be more flexible than UNFCCC-related action and provide strategic benefits for nations that choose to scale up climate finance outside of the UNFCCC (Fuessler et al. 2013, 2014). They are alternative approaches that do not replace the UNFCCC but complement and support its efforts. The advantage of such initiatives is that they are not directly depending on the progress of international negotiations and are more flexible for targeted activities. On the other hand, the impact from such individual activities could be a drop in the bucket and might miss synergies with other mitigation efforts. Thus integration or convergence and comparability of the mitigation achievements across different initiatives to be accessible for carbon markets could be important to allow for a scaling up of action after some time. This would require some degree of compatibility to ensure full or limited fungibility as discussed in 4.2.

Depending on the storyline of how the framework for market mechanisms will develop, these initiatives could be linked or integrated to the UNFCCC up to 2020. Table 5 presents a selection of initiatives that are currently implemented.

Table 5: Initiatives outside of the UNFCCC with relevance for market mechanisms

Main Initiatives outside UNFCCC	Potential market mechanism	Enabling market mechanisms
Montreal Protocol: HFC Phase out		
Climate and Clean Air Coalition (CCAC)		
EU: Ecolabel		
Pilot Action Facility for Methane (PAF)		
ICAO: Committee on Aviation Environmental Protection (CAEP)		
IMO: Marine Environment Protection Committee (MEPC)		
LEDS (Low Emissions Development Strategies) Global Partnership		
Mountain Partnership: Strategic initiative on mountains and climate change		
NEFCO: Nordic Partnership Initiative on up-scaled mitigation action		
World Bank: Partnership for Market Readiness (PMR)		
World Business Council for Sustainable Development (WBCSD)		
Global Methane Initiative (GMI)		
UNEP-DTU (formerly Risoe Center)		
Asian Development Bank: Clean Energy Financing Partnership Facility (CEFPF)		
C40 Cities, all "cities initiatives"		
EMBARQ and Bridging the Gap		
European Energy Network (EnR)		
Friends of Fossil Fuel Subsidy Reform (FFFSR)		
Global Research Alliance on agricultural greenhouse gases		

Source: INFRAS + Perspectives 2015: Alternatives 1+2.

A significant share of the initiatives – shaded in grey - either directly includes a market mechanism and the overwhelming majority includes activities that enable markets such as spreading of information and capacity building. However, direct acquisition of credits is currently only done under the PAF and foreseen by ICAO.

The question how mitigation achieved by such initiatives will be accounted under a new climate policy regime remains open. Currently any mitigation that leads to a change in national emissions inventories will automatically be accounted for. Whether the government is then willing to allocate a specified amount of emissions mitigation to an initiative, is a separate question and out of scope of our analysis.

5.4. Options to strengthen the role of market mechanisms before 2020

There are multi- and bilateral components of a pre-2020 strategy: Multilaterally, the Paris Agreement should contain a general clause that market mechanisms are key policy instruments to mobilize the ambition required to reach the long term goal of the UNFCCC, and that units created by such mechanisms pre-2020 could be eligible to count towards commitments/contributions under the Agreement post-2020, provided they fulfil pre-defined requirements regarding environmental integrity especially with regard to avoidance of double counting. For example, a COP decision should ideally state that the CDM is a mechanism recognized by the Paris Agreement and that CERs are valid units for mitigation contributions to the Paris Agreement. The decision should also encourage parties to accept the use of CERs in the context of domestic mitigation policy instruments. Another multilateral decision should launch a pilot phase for the NMM and FVA until 2020 and refer to the principles of the CDM as well as the Doha decision on NMM /FVA. Units from the pilot phase could be used for contributions throughout the validity period of the INDC. A two-year work programme to develop modalities and procedures should be launched. This could be enhanced by activities that conceptually and in the form of pilot projects develop approaches that prevent double counting. Finally, the COP decision on the GCF should state that GCF can disburse climate finance against CERs of projects which fulfil GCF requirements (incl. environmental and social safeguards, country ownership) that are then cancelled. This could build on the approach piloted by the PAF or variations thereof.

Bilaterally, all Parties willing to buy CERs could coordinate their acquisition programmes in order to increase liquidity in the CDM market, e.g. by joint submission rounds. ICAO and IMO or companies under a possible scheme of these organizations should be invited to join such a programme. Pilot activities for NMM / FVA could also be initiated bilaterally: parties willing to support such pilot activities could form a group of “Friends of new market mechanisms” in order to develop a joint programme. Such a group could then develop over time into a club as discussed above.

5.5. Recommendations for Paris by authors to strengthen the role of MM pre 2020

- *The key objective of any action to strengthen market mechanisms pre-2020 should be to create demand and revive the trust and interest of the private sector: Capacity building can only lead to effective mechanisms if the market is underpinned by some demand – otherwise any capacity gains will quickly erode due to inaction. Therefore integrated unit buying programmes with capacity building actions could be envisaged.*

Such programmes should focus on the projects most vulnerable to be “switched off”, i.e. those whose operational costs need to be covered by credit sales revenues and for new projects. Capacity building could focus on helping developers of mitigation projects access various niches of carbon markets, e.g. the voluntary market, or climate finance donors seeking to provide results-based financing through acquisition and cancellation of credits.

- *If no critical mass of demand emerges pre-2020, then climate finance can be used in a highly effective manner by utilising mechanisms for designing and implementing results based finance programmes where climate finance institutions disburse finance against credits, which are then cancelled. For a period of three to five years this would allow to sustain the elements that are necessary to revive markets if demand comes again in the future. However, it cannot be sustained indefinitely as market players will eventually re-orient themselves towards directly accessing climate finance.*
- *If there is a critical mass of long-term demand in units e.g. from INDCs, then the governments could join forces to increase their effectiveness. Capacity building efforts can then become the key to accelerate an already increasing interest and engagement of the private sector. In order to credibly bolster trust early action already in 2016 can be decisive. Developing programs – analogous to AIJ or the WB buyer guarantee PCF – can then help to sustain momentum both by enhancing the reputation of market mechanisms, as well as facilitate a “learning-by-doing” regarding the development of new mechanisms.*

6. Market mechanisms post 2020

6.1. Objectives of market mechanisms post 2020

The concrete objectives of market mechanisms post 2020 depends on the storyline that evolves in the post-2020 world. Overall the following objectives may crystallize:

- Allow for scaling up of cost effective mitigation actions leading to permanent, additional, real, verified emission reductions
- Help raising mitigation ambitions of developed and emerging economies and
- Provide developing countries with additional capacity and jump-start support (finance, technology, institutions) to follow sustainable low emissions development pathways.

From a Swiss perspective the overall objectives of market mechanisms post-2020 would be to support Switzerland in reaching its 2030 INDC in an efficient and effective way. Furthermore they could aim to strengthen the market position of Swiss exporters in clean technologies and services. Finally, the cooperative dimension of using international market mechanisms is an important element of convincing (developing) countries to engage in multilateral mechanisms and actions that contribute to global mitigation efforts and promoting confidence in enhancing ambition.

6.2. Generic scenarios for future regulatory and market pathways

As highlighted in chapter 0 there is substantial uncertainty about the continuation of current market mechanisms and the design and scope of future new market based mechanisms. The main driver for future developments in the carbon market is the demand for units. This is steering the price of units and depends mainly on the political will of countries to pledge ambitious emission reductions targets as well as their willingness to draw on market mechanisms for reaching them. Furthermore trust of market actors in a new, robust and sustained mechanism that is embedded in a functioning regulatory framework will be essential for markets to develop. A variety of storylines for the market development and a regulatory framework could be envisaged until and after 2020. In chapter 3 two lead scenarios have been developed:

- Scenario 1: High demand – strong governance
- Scenario 2: Low demand – weak governance

In the following we will draw on them in order to analyse various options for market mechanisms.

6.3. Design options for market mechanisms

In the following, we describe main features as well as pros and cons of project level market mechanisms and aggregated level market mechanisms. Please note that these terms only rep-

resent two ends of a range of different approaches which combine elements of project based and aggregated level approaches. Finally the chapter considers different storylines on how existing and future market mechanisms could develop over time, taking into account the two lead scenarios for the market development.

6.3.1. Project level market mechanism

To date, market mechanisms have largely focused on the project-level, with the CDM being the most prominent international mechanism available. The CDM is a centrally governed baseline and crediting offset mechanism that has globally mobilized USD 130 billion investments in low-carbon activities and generated more than 1.5 Gt CO₂ eq. in emissions reductions (World Bank, 2014). Historically, the CDM has been criticized for high transaction costs, limiting both upscaling as well as participation from certain countries that lacked the capacity to overcome these. Through a learning-by-doing process, the CDM has evolved and has built a rich arsenal of standards (tools and methodologies) for additionality, baselines and MRV for project-level approaches. More recently, Programmes of Activities (PoAs) were developed under the CDM in order to facilitate inclusion of small activities, upscaling of projects, decrease transaction costs and increase participation from countries historically left out of the CDM market. PoAs could increasingly gain importance due to their ability to aggregate large numbers of replicable emission reduction activities.

Pros of project level market mechanisms

Given the dominance of project-level mechanisms to date, they offer the incumbent advantage of already existing methodologies, institutions, know-how, and MRV structures. This characteristic makes project-level mechanisms essentially a ready-to-use tool. Additionally, in project-level mechanisms, the responsibility to achieve emissions reductions was generally with the (private sector) project developer or project owner. This direct responsibility provides a clearer incentive to find cost-effective mitigation activities. Project level market mechanisms require also much less institutional and technical capacity than aggregated level mechanisms (see Section 6.3.2). Also project or even programme level mechanisms produce units which in most cases can be tracked to mitigation activities. This is not always the case with aggregated level approaches.

Cons of project level market mechanisms

With discussions shifting to increased mitigation ambition, some of the disadvantages of project level market mechanisms have also been exposed. Generally, project mechanisms have

limited upscaling due both to their transaction costs (registration, tracking outcomes) as well as their limited portfolio of options. For example, projects with pre-defined methodologies are more likely to be implemented which could limit incentives for piloting other mitigation activities – due also in part to the transaction costs required for establishing a new methodology. Additionally, project level mechanisms pose a greater risk for carbon leakage: the stricter the project boundary is set, the more likely that carbon leakage will be a problem.

In order to overcome some of these recognized disadvantages and to incorporate experience and evolution achieved over time, the CDM is currently undergoing a reform process. Despite relatively slow progress on this front, the CDM or some form of project-level mechanism would likely continue to exist and may be valuable also in the future. Key requirements for project level mechanisms going forward include:

- Ensuring quality of emission reduction, i.e. robust baselines and additionality. This is key to the environmental integrity.
- Ensuring net environmental benefits, particularly in order to sustain the credibility of project-level mechanisms. While this could be accomplished by shortening crediting periods, periodically reassessing additionality, and improving MRV structures, there is also a trade-off between such measures and transaction costs and incentives for project development.
- Facilitate access to carbon markets through:
 - Standardization of methodologies
 - Standardized baselines
 - Expansion of scope into sectors currently not active under the CDM
- Streamline procedures for determining additionality. This could entail exclusion of projects with low likelihood of additionality or in which additionality will be difficult to establish, while at the same time establishing criteria for automatic additionality (e.g. positive lists, common practice analysis).
- Build on existing methodologies and MRV structures of CDM rather than a “blank slate” approach

The focus of CDM or similar mechanisms is shifting towards enhanced mitigation ambition (net mitigation and scaled-up mitigation action) as opposed to a mere offsetting use of the project-based mechanism. Enhanced mitigation ambition could be achieved by various means such as discounting of issued CERs, re-investment of CER-revenues, cancellation of CERs (Moarif 2014). Given that host countries will now define mitigation contributions in their INDCs, they might be interested to use part of the mitigation generated by CDM for that purpose.

There are effectively two general scenarios for coexistence of new market mechanisms and the established Kyoto Mechanisms: In the first scenario NMM and CDM coexist, as the CDM continues to focus on project-based activities and programmes, while the NMM focuses on sector and policy-based approaches only. In the second scenario NMM and CDM are consolidated by the integration of activities and infrastructure from the CDM into the NMM, which then would encompass project-based as well as scaled sector wide and policy-based activities. If countries are able to agree to generally apply the approach of emissions budgets to their INDCs, they could integrate JI-like approaches into this system.

Though it has recently received more attention again, the CDM development/reform through yearly CMP decisions and the current revision of the CDM modalities and procedures has advanced only slowly. Substantial decisions have been deferred to CMP 11 in December 2015. A few advances on technical items were achieved, for example on the revision of methodologies without project documentation, on the flexible verification of forest projects within each commitment period, on a simplified proof of admissibility of forestry projects in particular locations and a simplified validation procedure of monitoring plans. The possibility to allow voluntary deregistering of projects that are no longer viable has been discussed. Leaving out validation in case of projects with automatic additionality (i.e. positive lists for validation) was another recent issue. It is also being discussed whether the same validator and verifier can be tasked for all project scales.

Although there has been progress in the negotiations on JI, in these recent meetings the role of JI and IET had been addressed only marginally is still not very clear and mostly many discussions focus on limited to the issue of trading hot air. The current negotiations on markets under the Agreement focus on one part on accounting rules for countries with absolute economy-wide commitments (i.e. basically "IET without AA". The other part is about crediting mechanisms/approaches. In a scenario where ambitious economy-wide emissions reductions targets become more important under INDCs, JI and direct emissions trading could regain importance, which would necessitate a revision of their rule-set.

Various design options could be envisaged to build on the CDM and PoA toward a scale-up of mitigation ambition. One is the possibility of public sector operated PoAs or public-private partnerships, in which e.g. governments provide funding for project level MM. The adequacy of such hybrid design options will strongly depend on the respective sector and country type. In particular for public-private partnership approaches there is a need for additional provisions aiming to prevent double counting of emissions reductions between the partners as both would have an interest to claim ownership of emissions reductions.

6.3.2. Aggregated level market mechanism

Aggregated level market mechanisms entail mitigation actions that do not encompass single interventions but a group of activities covering a specific sector, type of technology or geographic area, including economy wide interventions. These activities would go beyond project and programme level market mechanism in terms of scope and volume of emission reductions. The design of such aggregated mechanism could be one of the following:

- **Policy instrument based crediting**

Example: a host country implements an efficiency standard e.g. for buildings. The additional mitigation impact of the policy is credited to a buyer country. The revenues are used to subsidize efficient building components.

- **Sector target crediting and trading schemes**

Example: a host country defines a crediting threshold (mitigation going beyond what is needed to achieve domestic target may be credited) in part of the economy (e.g. covering energy intensive industries) and implements an ETS (with any overachievement beyond domestic cap credited).

- **Upscaling of CDM, PoA and standardized baselines**

Building on the existing standards and institutions of the CDM, this approach aims at up-scaling the scope and volumes of mitigation activities to e.g. large programmes triggered by public intervention. It also applies further simplified methodological procedures such as standardized baselines that could be used for broad varieties of project types (e.g. with a less restrictive positive list for eligible project types).

Aggregated level market mechanisms require additional preconditions concerning the institutional setting, data availability, transparency and benchmarking. Compared to project-level crediting mechanisms such as the CDM this means also that more resources from the government are required. In order to facilitate aggregate level market mechanisms, host governments need to provide:

- Sufficient data on domestic emissions, such as a comprehensive and thorough national inventory. Robust sector level activity and emissions data (e.g. tonnes of product and CO₂ for iron & steel) is an important pre-requisite for (performance based) baseline setting or ETS permit allocation.
- Capacities within government but also with actors/installations to MRV and measure mitigation impact. Experience shows that MRV skills and procedures need to be built up both with private sector as in the government.

- Capacities within government or in research agencies to model the host country's own contribution (in the framework of an INDC) and to define a crediting baseline. Emission reductions below crediting baseline can then be credited (see Fuessler, Herren and Kollmuss 2014).
- A robust national accounting framework that allows to transparently track emission reductions in the national bookkeeping in accordance with international guidelines.
- A robust legal framework including instruments to pass crediting incentives from national level to level of individual (private sector) actors/installations (which may require activity-level data).
- A robust and detailed national GHG inventory and a clear, quantifiable NDC to inform additionality and baselines (aligned with crediting mechanisms' standards).

A key requirement for aggregate level market mechanisms is the passing on of incentives (e.g. revenues from international crediting) to the (private sector) actors and installations such that e.g. installations may sell their unused ETS allowances to others.

6.3.3. Discussion: project level vs. aggregated level market mechanisms

Pros of aggregated level market mechanisms

Aggregated level market mechanisms allow for the necessary scaling up of mitigation action covering entire sectors or group of emitters. This allows the tapping of a much larger potential of emissions reductions and for the use of market mechanisms to support sustainable low carbon development on a level covering entire sectors.

While project level market mechanisms such as the CDM have been criticized for non-additional projects and over crediting (e.g. Schneider 2007), aggregated level market mechanisms may allow for more consistent bookkeeping: host countries may define their own emission reduction/limitation targets on sector level, and crediting of units would only be allowed once sector emissions fall below this target, in essence the crediting baseline. Assuming the sector targets of the host country's own contribution is sufficiently ambitious and a level playing field (comparable levels of ambitions and accounting standards)) exists between countries, a sector level approach may be more and eventually also more ambitious and with higher environmental integrity *if implemented in a robust and stringent way* than the project level baseline approach.

Cons of aggregated level market mechanisms

For functioning aggregate level market mechanisms, host countries need a strong legal and institutional basis and provide much more “services” (see above) than e.g. in the CDM, where a Designated National Authority providing a Letter of Approval for each CDM project suffices (which turned out to be difficult for some countries to provide).

Aggregated level market mechanisms may not work for all types of activities. Standardisation may require a certain level of homogeneity in size, technology, mitigation opportunities, etc. of actions to be covered.

An important drawback compared to project level is that with aggregated level mechanisms it may be challenging to transfer the (financial) incentive from the aggregated level to the individual installation/household. This requires a careful design of the instruments and is an essential pre-requisite for the success of such mechanisms.

Aggregated level market mechanisms without the necessary governmental support system or in countries with very weak NDCs (that are e.g. higher than BAU emissions) can challenge the environmental integrity of aggregated level market mechanisms and thus international level safeguards for baseline setting and additionality are required. Given the larger scope of aggregated level mechanisms, gaming of the crediting baseline will have a similar or even higher impact than the additionality issues for project-based mechanisms.

A lead time of several years should be foreseen from starting the design process until aggregated level mechanisms can effectively start generating emission reductions and even more for these activities to reach a certain scale. The CDM needed four years from its establishment to the first issuance of CERs.

From a **developing country perspective**, the continuation of project based mechanisms helps particularly countries with low institutional and technical capacities. If project based mechanisms benefit from centralized governance (such as the CDM from the UNFCCC) this helps also developing countries with less developed legal systems and weaker governmental institutions or less comprehensive inventories to access carbon market finance. If accompanied by considerable capacity and institution building e.g. in the context of readiness programs such as the World Bank’s PMR or the UK German NAMA facility, aggregated level mechanisms may be a very efficient option for all (including poorer) countries. A nationwide waste sector program could for instance provide a transformational change that may not be achievable with project-by-project approaches.

From a **Swiss perspective**, project-based mechanisms are an important tool to support low carbon development in least developed countries. However, for more advanced developing countries and in order to ensure scaling-up and effectiveness, it may be more beneficial to

cooperate with countries that are willing to implement transparent and stringent aggregated level mechanisms to achieve transformational changes in entire sectors of the economy rather than piecemeal interventions. In addition, well-designed aggregated level mechanisms may be more transparent in ensuring additionality.

The perspective of **private sector actors** in carbon markets has been shaped by experiences in the CDM markets over the last decade: Although ownership by the host country government of the mechanism has proved essential for the success of CDM, the less intervention from the host country government, the lower the country risks for private sector project developers and investors. The DNAs played an important role to assure the quality of CDM projects in many countries, but the experience shows that too many CDM projects have stalled because the governmental DNA was simply not in a position to provide the necessary Letter of Approval (LoA) for reasons of limited capacity or other factors, regardless of the benefits to its country context. Once the LoA has been issued, it has been the strength of the CDM that registration, verification and issuance was in the hand of an internationally trusted and highly specialized organization (CDM EB, expert panels, DOEs, UNFCCC). From this experience, it is difficult to see for private sectors players how in many developing countries due to the limited resources a national government could successfully manage an aggregated level mechanism of comparable quality across activities and other countries and make sure the carbon market incentive is passed to the investing private sector. Therefore, in many countries, private sector has a preference towards project based (and internationally governed) market mechanisms. This is not to say that in some countries also an aggregated level mechanism, e.g. implemented through an emissions trading scheme, could not be successfully implemented in such a way that private sector could get involved and trust in carbon related revenue streams from their governments.

6.4. Transition of market mechanisms

6.4.1. Drivers for market mechanisms post 2020

In the following we identify several underlying drivers that could advance the use of market mechanisms in the post-2020 climate regime in the long term as laid out in the scenarios introduced in chapter 3. This section also aims to establish how these drivers could potentially be utilized and influenced.

On the one hand one can discern certain trends that would provide a driver towards market mechanisms in direct context with UNFCCC negotiations and decisions or in Parties' domestic activities directly tied to the UNFCCC – in particular with a focus on necessary elements of the Paris Agreement. Among these, the setting of ambitious mitigation targets in INDCs and

their later finalisation as NDCs may be seen as the most important driver for potential use of market mechanisms. A second driver in context of the UNFCCC is the level of trust and elaboration of “lighthouse” activities that could serve as templates for new market mechanisms: Pilot activities by pioneering countries can effectively showcase and advance the notion of cost-effective market instruments of high environmental integrity that could go beyond the project-focus of CDM.

The current uncertainty of the architecture of the post-2020 agreement makes predictions about the chances of linking between different carbon markets difficult and there is some concern that inconsistencies of mechanisms developing outside of UNFCCC will remain un-addressed. For example, questions on the environmental integrity of bilateral mechanisms such as the JCM have emerged.

A successful reform of the CDM would help to promote the maximal use of its essential elements and lessons from the CDM when designing market mechanisms in the post-2020 regime as described in section 6.3.1.

Whether or not greater clarity on the quality control standards, processes and institutions of credits from various projects can be gained, could be an important question with regard to the use of credits under INDCs. Constructive quality assessments such as through additional filters, requirements for regulations and institutional settings could help improve the credibility of market mechanisms as contributors to emissions reductions contributions.

As mentioned, there is a possibility that – as in the example of the Mexican and Moroccan INDC – contributions in INDCs include more ambitious reduction targets under the condition that market mechanisms can be used to achieve those additional targets.

Drivers outside the UNFCCC

Outside the developments directly associated with the UNFCCC processes, a growing perception that markets offer cost-effective achievement of climate change mitigation could enhance the role of market mechanisms. Efforts to rehabilitate the somewhat damaged public perception of markets, a rebranding could help overcoming the current political morosity. Such a rebranding could use the currently more fashionable term “results-based finance” to achieve part of mitigation contributions laid out in INDCs. In order to pursue such efforts some level of coordination and organization among parties that are in support of market mechanisms would probably enhance their impact. Currently it seems market mechanisms in- and outside the UNFCCC are again gaining momentum: the Korean ETS will allow international offsets from 2020 onwards and there is a rising consideration of offsetting with domestic CERs in carbon tax regimes, e.g. in South Africa. Another push could come from increased use of markets by multilateral development banks.

Such a push for market mechanisms could in the long run allow for a strong use of market mechanisms for reaching Nationally Determined Contributions (NDCs) with putting in place of the necessary operating entities and implementing agencies in a organic stepwise development of the system.

Other possible developments post 2020

A number of developments could be imagined with relevance for the post-2020 regime. Market instruments could possibly be used for mobilizing and effective allocation of investments for adaptation to climate change (for an approach how this could be done see Michaelowa et al. 2012).

Various combinations of NMM and FVA could be imagined – based either on a centralized governance structure under the aegis of the UNFCCC or a non-centralized structure. Currently many expect a centrally governed mechanism will evolve with host country governments being responsible for guiding and implementing activities. Only few submissions are currently suggesting the contrary bottom-up approach. Many view the new market mechanism as a baseline and crediting approach that would have multiple windows for crediting at different levels of activity.

Despite the current fragmentation of markets there is a good possibility that this trend could be reversed due to an increasing understanding that there are advantages of having consistent rules. In particular toward the assessment of mitigation outcomes and their comparison to the emissions reductions track required for reaching the 2°C target, robust accounting standards will be required in order to track mitigation outcomes at the international level.

Nevertheless, there is also a scenario in which UN-sanctioned market mechanisms are not provided for under the UNFCCC. This could be due to a complete lack of movement due to parties blocking negotiations on market mechanisms such as parties that had historically been opposed to market mechanisms. In such a case it would however still be possible that market mechanisms would re-emerge in a different format or setting including outside of the UNFCCC. Such emergence of market mechanisms independently of the UNFCCC could happen if a coalition of countries supportive of market mechanisms was not sufficiently strong to advance the matter within the UNFCCC but would be able to agree on rules among themselves. This would then lead to a formation of a “club” as discussed above.

6.4.2. Approaches for transition to market mechanisms post 2020

In the following, we distinguish four generic approaches for the development of new market mechanisms (adapted from Prag et al. 2012, Fuessler 2012; Fuessler, Herren and Kollmuss 2014). Please note that real developments will probably build on combinations of these approaches.

Approach 1: *New market based mechanisms under the UNFCCC*

In this approach, the COP would decide to develop new standards under the Subsidiary Bodies, similarly to the development of the Kyoto mechanisms. Although the purpose of the framework is not yet fully clear, the long discussed concept of NMM and FVA implemented in institutional setting, which includes centrally governed elements could provide a reasonable level of assurance of the quality and environmental integrity of units from market mechanisms used to meet mitigation targets/commitments under the UNFCCC. Building up the new market based mechanisms under UNFCCC rules includes developing common quantification and accounting standards, modalities and procedures, overseeing institutions and governance bodies as well as validation/verification bodies. As mentioned above, aggregated level market mechanisms may need even more governmental infrastructure to work. This build up will require substantial time. E.g. it took about 5 years to get the CDM to full speed. Technically, the existing experience might allow for faster implementation, but this may be neutralized by uncertainties on an international level (e.g. regarding eligibility and accounting of units) that may require even more time. Some sectoral NMM-like approaches may emerge faster in sectors with good data availability and existing knowledge, than in others due to existing foundations⁹.

Approach 2: *Scaling up from a reformed CDM*

The CDM provides a complete, functioning and operational market mechanism including working institutional, regulatory, technical and governmental framework building on 15+ years of experience. Given the complexity of international negotiations, it may be more efficient to address existing shortcomings in the CDM and develop it further to cover also aggregated level interventions than to build new market mechanisms from scratch (as in scenario 1). The points of departure for developing new market-based mechanisms based on the CDM are programmatic approaches and the work on standardizing baselines and other methodological elements. The present approach taken toward standardized baselines, however, has proven less successful than expected and might require a re-design (see Schneider et al. 2012). However, the lack

⁹ This may also apply to REDD+ due to a combination of UNFCCC decisions and existing elements from voluntary standards. This approach also assumes that there is multilateral agreement on how to strengthen the net mitigation impact of market mechanisms, e.g. by considering own contributions by developing countries in their NDCs.

of large-scale success from SBs also needs to be seen on the backdrop of the oversupply of credits, and its focus on LDCs.

We identify the following two prerequisites that would be necessary to morph the CDM into a true up-scalable market mechanism:

- The international crediting of units has to be made consistent with the host country's own INDC commitment. Mitigation outcomes that are financed and claimed for compliance by the investor country may not be claimed at the same time for fulfilling the own contribution to the country's pledge/INDC (see INFRAS 2014 Part II).
- A COP/MOP decision (7/CMP.1, para 20) requires that for the present CDM, "a local/regional/national policy or standard cannot be considered as a clean development mechanism project activity"; only PoAs driven by such policy instruments are allowed as the programmatic approach allows for upscaling. If parties consider the further development of the CDM rather than building new market mechanisms for aggregated level mechanisms, this decision requires re-evaluation and modification. In a first step, the concept of PoA could be revisited and made more appropriate for the crediting of aggregated level mitigation actions. Eventually, in cases where host countries as part of their INDC commit to a quantified sector target for their own contribution and this quantitative contribution is subject to sufficient international consultation and analysis (and is acceptable for the buyer country), then emission reductions that go beyond the contribution and result from local/regional/national policy or standards should generate units .

Approach 3: *Recognizing other existing standards*

Parties might agree to recognize under the UNFCCC certain existing international standards, or elements thereof, e.g. crediting schemes (including CDM, VCS, GS, CCER, CAR, JCM, etc.) or technical standards (such as those of certain ETS with accepted modalities and procedures as well as governance systems). These would need to fulfil certain requirements in terms of the quantification and accounting standards, modalities and procedures, overseeing institutions and governance bodies as well as validation/verification bodies in order to achieve such recognition.

Some countries or jurisdictions may want to work with their own standards and programmes. This would be feasible, as the general approaches of offsetting standards and programmes are rather similar and most build in one form or another on elements from the CDM (INFRAS 2015). The California ETS provides a potential model for the inclusion of third party standards: Units from other standards (such as the CAR) are, under certain circumstances (e.g. a re-validation is necessary and not all project types are eligible) eligible under the California

ETS. The crucial point is that parties need to agree on eligibility criteria and oversight/governance for this inclusion process.

Approach 4: *Anything goes – seek transparency*

In the absence of agreed standards under the UNFCCC, as a minimum solution parties might agree only on transparency and disclosure requirements e.g. through publishing of all relevant documents related to internationally traded units.

6.4.3. Discussion of approaches

In a **high demand – strong governance scenario**, approaches (1), (2) and (3) would be possible. The high demand would ask for efficient market mechanism with a high share of aggregated level mechanisms which would probably be best supported by mechanisms along approach (1) that are built from scratch on an aggregated level such as NMM. Given the long lead times, it may be assumed that approaches (2) or even (3) may play an intermediary role but fade out towards 2030. Importantly, tested regulatory and technical elements from CDM (e.g. methodological or project cycle elements) as well as innovative features of other standards would be gradually integrated into the new generation of multilateral mechanisms.

In a **low demand – weak governance scenario**, the entire spectrum from approaches (1) to (4) is possible. (1) would build on a loose concept of FVA with dispersed and heterogeneous set of numerous market instruments with very limited comparability.

The most challenging approach for achieving real, additional, measurable and verifiable emissions reductions through market mechanisms would in a case of approach (4) which would only provide a limited level of transparency, and no comparability of standards. Approach (1) would also challenge the core objectives of a market mechanism if provisions for FVA were weak or unclear. The corresponding risks for environmental integrity, insufficient liquidity, among others, could result in an additional risk – namely that market approaches in general would lose their legitimacy and public acceptance.

In such a situation, it would become very important to build on a “coalition of the willing” that develops and applies quality standards to increase the level of comparability and even enable (soft-) linking between different carbon market instruments; working towards clubs of countries/jurisdictions that are willing to use market mechanisms with a comparable and sufficient level of efficiency and stringency in environmental integrity (see section 6.6).

Also, in a situation of high uncertainty regarding standards and governance, the existing CDM (approach 2) becomes an important and tested institutional workhorse that may lay the

foundation of the common standard in such a club. Also other established standards (3) may play an important role.

An analysis of the main offsetting program standards inside and outside the UNFCCC indicated that many of the voluntary or domestic (non-UNFCCC) standards have been more or less adapted from the CDM corpus of methodologies and validation and verification processes follow rather closely the CDM procedures, though there are some simplifications in some of the programs such as the merging of validation and verification (Kollmuss and Fuessler 2015). The recognition of other existing standards therefore might provide only very little new elements to the standards beyond the CDM. However, the mere existence of other standards has been very fruitful for challenging the sometimes rigid rules of the CDM in the sense of healthy competition between standards and a testing ground for new approaches. The CDM operating under the authority and guidance of the CMP with its risks of stalling, it might be good to have other programs that can be recognized as alternatives or complements in case the international negotiation process on CDM reform and further development is stalling.

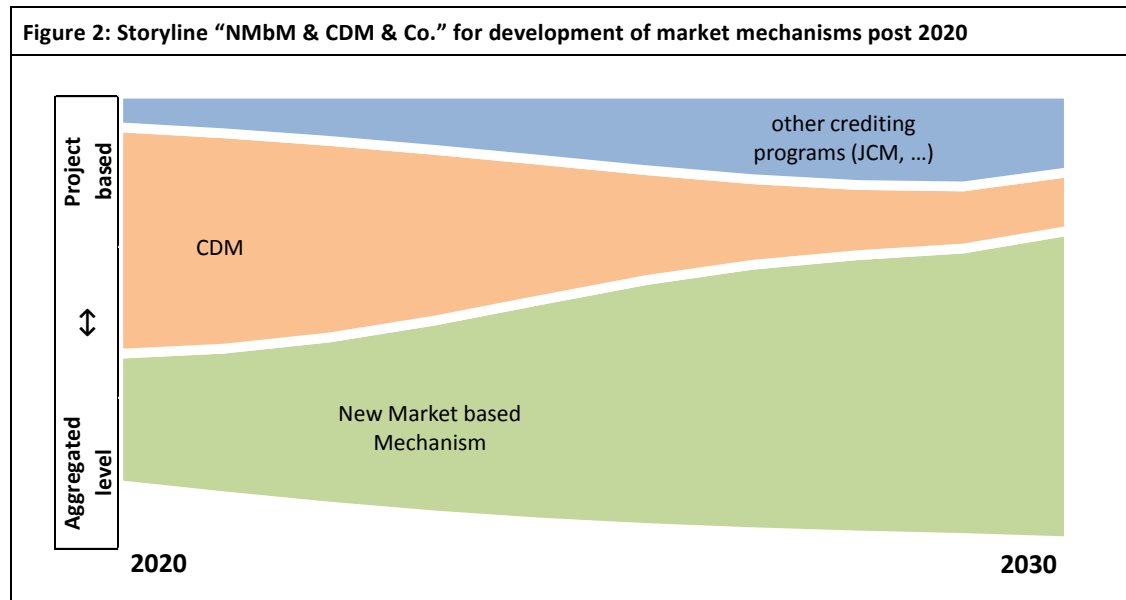
The point of departure in forming clubs will be which international units buyer countries accept for compliance in their own domestic systems (governmental purchase programs, domestic ETS, carbon tax, transport fuel levy, etc.). Any standards applied on national levels can then form the basis of “club standards” that are accepted throughout a specific club (see also options for continuation of CDM in section 6.5 and clubs in section 6.6).

In any case it appears to be very important that an agreement on a common accounting framework can be found on centralized (UNFCCC) level, on which approaches (1) to (3) can build. It seems difficult to think of a system with a mere transparency approach (4) that would provide any meaningful or transparent contribution to scaled-up mitigation action.

6.4.4. Potential storylines for dynamic transitions towards “new market based mechanism” and/or “expanded CDM” post 2020

Based on various combinations of the above-mentioned approaches, we sketch in the following potential storylines in which these instruments can evolve in co-existence. For this, we assume a general context of “cooperative approaches”, “internationally transferrable mitigation outcomes” and “central mechanism” or an (open) Framework for Various Approaches (FVA) that allows for different carbon instruments including CDM, new market based mechanisms such as NMM and other (party-driven) instruments and programs as e.g. the JCM:

Storyline “NMbM & CDM & Co.”



Source: Adapted and extended from Fuessler 2012.

The first potential storyline for market mechanism development builds on approach 1 of a robust New Market-based Mechanism (or similar international instrument) that includes robust centrally governed elements but leaves also room for the development and use of other party-driven market mechanisms and offsetting programs such as the Japanese JCM etc. Figure 2 sketches the evolving role that different instruments may play on the timescale 2020 – 2030 considering mitigation actions that are more project-based (towards top of figure) versus actions that are implemented on a more aggregated level (towards bottom).

In this storyline, the CDM with its established regulatory, institutional and governance setting such as governmental offsetting standards such as the Chinese CER or the Japanese JCM or private sector initiatives such as VCS etc. would lose relevance over time as the new market mechanisms (or similar aggregated level initiatives) become established.

New Market-based Mechanism (NMbM) will need more time to develop and probably start on intermediate levels of aggregation, such as e.g. city level or interventions at company levels, which could include subsets of a sector on a sub-national, national or international level. Over time and in some countries, New Market-based Mechanism can be expanded to cover also highly aggregated level actions (e.g. entire sectors of an economy) but also mitigation actions in individual facilities or entities that have formerly been covered by project based instruments (such as the CDM), e.g. including in the power, transport and building sector.

NMbM-type of approaches may include sector-wide compulsory participation which requires regulatory measures not needed in a classical CDM approach.

Discussion: The storyline “NMbM & CDM & Co.” with a large role of NMbM (or similar instrument that is built with a focus on larger scale interventions on an aggregated level may be an important pre-requisite of any scaling up of the use of market mechanisms.

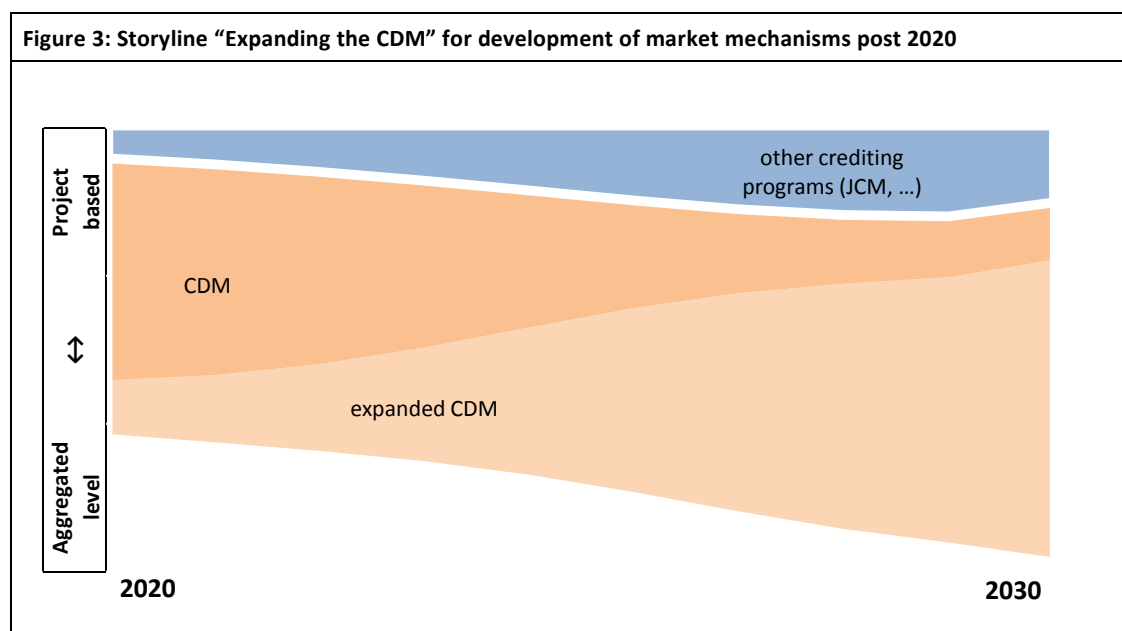
On the other hand, the development of NMbM so far has been very slow over the last years and it is not obvious that parties can agree on detailed rules and regulations on how to use NMbM in the near future. In addition, a credible political signal that the value of the corresponding certificates will have a reliable value over the long-term is imperative, as neither private investors nor developing country governments would be willing to take the risk of shouldering the large investments that are needed for measures that cover large parts of entire economic sectors.

Given the time that is needed to develop an NMbM from scratch (and the need to achieve ambitious mitigation reductions in the period 2020 - 2030), it might be good to consider also other storylines, including one that builds on the existing CDM with its regulatory and institutional setting and extends this towards a broader range of levels of aggregation.

Storyline “Expanding the CDM”

This storyline starts again with CDM as a main block of carbon instruments covering project level interventions to somewhat aggregated interventions such as PoAs. Party driven instruments and offsetting programs are again thought to play a certain role for other Party driven market mechanisms and offsetting programs (see Figure 3).

In this storyline, the parties cannot agree on a robust regulatory and institutional setting for NMM. However, the existing setting of the CDM is scaled up (following approach 2 above) to cover a broad range of aggregation levels and methodological standardization in an “expanded CDM”.



Source: Adapted and extended from Fuessler 2012.

Discussion: The storyline of a development towards an “expanded CDM” does not start from scratch which may be more appropriate for a new aggregated level mechanism¹⁰, and may provide a pragmatic way forward in the development and scaling up of market mechanisms (including adequate provisions for accounting to avoid double-counting).

It should be noted however, that so far the process of scaling up the CDM (which was a process mostly driven by the UNFCCC secretariat based on CMP decisions e.g. through the introduction of simplifying methodologies such as standardized baselines) has provided mixed results so far at best (see e.g. the issues in the development of standardized sector level baselines in Schneider et al. 2012). Still, in particular elements of PoAs offer important lessons for aggregated mitigation activities. However, given the stronger involvement of government and potentially regulatory measures, some roles need to be adapted, e.g. CME-like role would most likely need to be adopted by the public sector or in public-private-partnerships.

A key obstacle that needs to be resolved – for market instruments in general, but for this storyline in particular – is the generation of substantial and reliable demand levels, which is prerequisite to triggering new investments, including from innovative sources of demand such as the international transport sector (aviation, maritime transport) or developing countries’ own compliance instruments. Another option could be linkages between certain CDM sectors and

¹⁰ Please note that also such a „starting from scratch“ would build on the large experience gained in the CDM for aggregated level approaches, e.g. in the PoA.

climate finance. In this context, maintaining the option to accept also party driven offsetting programs etc. may provide a further way out in case that the upscaling of CDM gets stuck in the negotiations.

6.4.5. Role of private sector

It is widely recognized that engagement of the private sector is a fundamental prerequisite for scaling up emissions reductions – both for the financial- as well as the knowledge component of implementing low-carbon technologies and practices. The private sector needs some level of certainty as to future demand and price trends and fluctuations, stability of modalities and procedures and a robust estimation of the corresponding transaction costs as well as certainty concerning the ownership and validity of credits generated.

The history of the CDM exemplifies the importance of some level of certainty for the private sector: It was initially seen as the least attractive instrument among the Kyoto Mechanisms, due to the substantial risk of investing in developing countries and the bureaucracy of checking projects' additionality and the accrual of emissions reductions. In retrospect it is clear that the CDM was the most successful mechanism of the three, which has been explained by the fact that emissions credits are granted by an international institution without interference of the host country government (Dransfeld et al. 2011), which allowed providing certainty about the rules and circumventing corruption. As a consequence it appears that what has really fuelled the success of the CDM was the fact that companies in developing countries discovered CERs as a valuable export commodity. Besides the absence of government interference, international recognition of CERs thanks to the robust project cycle and governance arrangements has helped build the necessary trust for the private sector to exploit emissions reductions projects. Trust in CERs, however has weakened, coinciding with systemic under-demand and crumbling prices as well as a ban on imports of certain credit types into the EU. Given that cause and effect of these recent developments cannot clearly be discerned, it seems that efforts to strengthen demand as well as transparency and long-term certainty of current and future market instruments will pay off by growing private sector engagement.

Scaling up mitigation will likely involve sectoral or aggregate level approaches. A key difference of such approaches from the traditional project-based approaches is that the ownership and responsibility of emissions reductions will now lie with the host country implementing the strategy, rather than individual project developers. This shift in responsibility poses certain challenges regarding incentivizing private sector investment in mitigation activities since the host government has the responsibility to put in place the right incentives for the private sector to reduce its emissions. With public funding likely to be limited, private sector engagement will be crucial in achieving climate goals.

With boundaries set at the sectoral level, only aggregate sector emissions reductions will be looked at on the international level. In this “black box” approach in which individual actors are not accountable for specific emissions reductions and there is a danger of no individual reward in case the sector target is not achieved, there may be incentives for free-riding. It is thus the responsibility of the host country to provide the right incentives to the private sector. This could entail instruments such as a revenue sharing scheme (i.e. an agreed splitting of carbon revenues between the public and private sector), implementation of a domestic ETS whose cap is set at the sectoral target level, direct subsidies or feed-in-tariffs, or a system of guaranteed revenues for emitters that mitigate under a sectoral mechanism – even in the case when the overall sectoral target is not achieved and thus the implementing country does not receive any revenues from unit sales.

Another challenge for private sector involvement is regulatory risk. Strong governance and trust that the host country will maintain their domestic policies will be key in engaging the private sector. As such, it may be most effective in piloting aggregate-level mechanisms in already advanced developing countries in order not to “taint” the image of such mechanisms as a result of poor execution. This can be complemented by expanding CDM PoAs in lesser developed regions, by focusing on high quality activities with large sustainable development benefits.

6.5. Options for continuation and reform of the CDM

Two options to strengthen the role of flexible mechanisms building on the CDM can be distinguished:

- “NMM & CDM & Co.” – CDM as a pure project-based mechanism
- “Expanding the CDM” – CDM becomes the workhorse of aggregated level mechanism

In the following sections we sketch and analyse transition strategies for the CDM under these storylines.

6.5.1. Transition strategies for CDM as a pure project-based mechanism

Here we discuss how to best develop the CDM further as a pure project based mechanism without expanding it to aggregated level mitigation actions, as the latter would be covered by NMM in a “NMM & CDM & Co.” storyline (section 6.5.2 will provide then a further discussion of an extension of CDM towards aggregated levels).

Three broad scenarios for inclusiveness of the CDM and for stringency of additionality determination may be distinguished in relation to the “High demand – strong governance” vs. “Low demand – weak governance” scenarios in section 3:

1. **“Open gate – weak additionality” approach** to CDM. Here, emphasis is given to open the CDM for all mitigation action types¹¹, using the entire mitigation potential in all sectors and thus maximising the number of CDM projects registered and CERs issued. Reform of CDM would remove most requirements to demonstrate additionality so that e.g. projects that reduce emissions below a simple (historic) baseline scenario are deemed additional. This open approach also builds on the hypothesis that CDM should be applicable to all project types independent of the measurability of their mitigation outcomes and that non-additional projects and over-crediting are outweighed by the higher potential of projects the CDM can tap into and that under-crediting of long-lived projects after the end of the crediting period compensates for the over-crediting.
2. **“Open gate – stringent additionality” approach** to CDM. This combines the open approach to CDM project types of (1.) with a comprehensive reform of CDM rules to reduce the risk of non-additional projects and over-crediting. For example, this would require an investment analysis that is done in the same way as a bank checking the viability of a project that wants to get a loan or the full inclusion of local policies and measures in the baseline scenario. An increased level of conservativeness in default parameters might lead to lower crediting that might compensate for potential non-additionality and over-crediting which can never be fully avoided.
3. **“Filter”¹² approach** to CDM. This approach acknowledges that CDM or crediting mechanisms in general may not work equally well for all project types and that the CDM is only one of several instruments available to foster mitigation action in developing countries and that for many project types, it may not be the most efficient (see e.g. Lütke 2012). Therefore, the project types which are eligible under the CDM are restricted to mitigation actions, where the CER revenues are substantial compared to other financial parameters and it can be shown with high likelihood that their impact makes the decisive difference that triggers the implementation of the project. An analysis of CER revenues on project profitability (IRR) by e.g. Spalding et al. (2012) indicates that this includes primarily “non-CO₂” projects, such as avoidance of methane and F-gas emissions. In addition to a clear demonstration of CER impact, it has to be demonstrated that the project is not common practice.

¹¹ With the exception of certain technologies where there is no agreement on their sustainability such as nuclear.

¹² Please note this filter approach considers only the risk of non-additionality and over-crediting. Other filters that have been suggested relate to the sustainability co-benefits that a CDM project needs to demonstrate or the ruling out of adverse impacts. This is also an important part of filtering projects, but is not further discussed in this report.

Discussion of transition strategies

Open gate approaches

Although the CDM Executive Board and its panels have over the years significantly improved the CDM and its methodologies and standards to prevent non-additional projects and reduce over-crediting, serious doubts about the additionality of large portions of the existing CDM project portfolio remain (see e.g. summary of discussion in Spalding-Fecher 2012).

On the level of the UNFCCC, the CDM's main focus was on an open gate approach¹³. This was instrumental for rolling out the CDM and the necessary institutional infrastructure in some countries very quickly, once the main incentive for CER acquisition was in place: the EU-ETS eligibility of CERs for compliance. The open approach allowed to mobilize projects across all technologies in all sectors of an economy. In this sense, the CDM (and open gate offsetting mechanisms in general) have also been called a "search engine" because of its strength of activating private sector to search profitable mitigation potentials in all sectors: While at the time of designing the Kyoto protocol most policy makers assumed that the CDM would focus on the energy sector, CDM project developers built business models in very diverse mitigation actions, including the destruction or substitution of high GWP F-gases, the reduction of methane emissions from manure management in agriculture and from MSW landfills, coal mining, etc.

A continuation of the open gate approach with a further weakening of the additionality rules (1.) could enable to considerably increase the number and volume of registered mitigation actions in the CDM at (very) low cost (assuming a scenario with at least a certain compliance demand for CERs). However, an even higher share of these projects would be non-additional, and the cost-effectiveness of mitigation action would be very low (defined as the amount of CO₂ actually reduced per EUR invested in the CDM).

In order to increase the cost-effectiveness of the CDM for incentivising additional and real mitigation, maintaining the open approach would need to be combined with a further improvement of the CDM rules on additionality testing (2.). These improvements would focus on the investment analysis including the demonstration of the impact from CER revenues and fully taking into account host country policies in the baseline. Also this may leave the transaction costs at today's level; the overall efficiency of the mechanisms may improve because the CDM finance focusses on projects where it actually makes a difference.

¹³ Though some parties such as the EU and Switzerland chose to implement filters to rule out the eligibility e.g. of HFC-23 projects on the level of their national compliance systems.

Filter approach on UNFCCC level

A filter approach (implemented on a UNFCCC level) would restrict the eligibility of CDM for projects that fulfil certain (dynamic) criteria. The filter may be based on characteristics such as:

- Project type¹⁴ (e.g. CDM is restricted to methane avoidance in agriculture and waste treatment, ...)
- Vintage of units (e.g. only the first commitment period credits may be sold as CERs)
- Geographic area (e.g. a stronger filter on project types for non-LDCs, ...)
- Aggregation level of mitigation action (e.g. CDM is restricted to project level interventions)

The filter approach restricts CDM to a certain sub-set of mitigation actions where a clear demonstration of additionality is possible and where the impact of mitigation is clearly measurable (cf. e.g. issue of “signal-to-noise ratio” in baselines in Schneider et al. 2012). This may be differentiated by certain host country parameters such as economic development etc.

Compared to an open gate approach, the filter approach might provide more certainty for project developers and reduce transaction costs on a project level (but not on the regulatory level) and lead to higher efficiency of the instrument at the price of a reduced mitigation potential. It is important to not completely neglect sectors that are less suitable for CDM due to e.g. difficulties in proving additionality, but that other instruments that may be more suitable are put in place to tap the mitigation potential of these sectors. This could include feed-in tariffs or trading of renewable certificates for supporting power generation with hydro, wind and biomass, or using climate finance resources.

This filter approach could also be seen as a system of positive (and negative) lists that is regularly updated and that depends also on circumstances in the host country. Its implementation would reduce transaction costs on a project level, but in turn would require resources at the centralized level (UNFCCC, governments) to maintain the filters up to date.

The institutional and governance setting required for a definition of such filters is also one of the largest challenges of the approach: Defining filters requires a lot of methodological expertise and market data. The recent experience e.g. with the definition of automatic additionality in the context of micro-scale projects indicates that currently decisions on positive lists are taken without being informed on actual current practice e.g. in market penetration of technologies.

¹⁴ Please note that the project type includes also size of a project. However, size alone is generally a weak indicator of additionality.

Filters on buyer's country level

Filters have historically been applied by buyer countries on the level of countries and jurisdictions restricting the eligibility of CERs for compliance to certain project types (e.g. restrictions on large scale hydro or ban on HFC-23 projects in the EU-ETS). Such party-level filters lead to the informal formation of “clubs” of like-minded countries adopting similar filters and thus strengthening its impact. E.g. the EU-ETS decision was followed by the implementation of similar filters by Switzerland, Australia, and New Zealand etc.

This example demonstrates that even if filters cannot be implemented on a UNFCCC level for political reasons, country-level filters can also have an impact and even lead to the formation of “clubs”.

In order to increase efficiency, a filter approach would allow to restrict the CDM to those project types, where additionality can robustly be demonstrated. Assuming a higher price in the range of 10-15 EUR/CER, this would include mostly non-CO₂ projects where higher GWP lead to higher CER benefits and include project types such as methane capture and utilization and avoidance of emissions of N₂O and F-gases. On the other hand e.g. conventional renewable energy projects such as wind and hydro, where CER benefits are a mere “icing on the cake” would be excluded from a project-based approach like in the CDM and would need to build on different instruments, such as for instance renewable feed-in tariffs supported by a policy crediting mechanism or by international climate finance.

Obviously, filter approaches can also be justified on grounds other than safeguarding additionality, e.g. by aiming to switch from offsetting to host country contributions. This could for example be achieved by filtering units according to their vintages or according to their country of origin.

6.5.2. Transition strategies for “expanded CDM”

In a storyline where parties fail to agree on a robust NMM in international negotiations, the extension of the CDM towards aggregated level instruments could be an approach that could at least partially provide the necessary methodological and institutional foundation for the implementation of aggregated level mechanisms.

So far, the work on standardized baselines on a sector/technology level by the UNFCCC secretariat (Schneider et al. 2012) suffered from four main shortcomings:

- The methodological challenges from working on aggregated level instruments
- The difficulty to agree on objective and ambitious benchmarks and the prevention of a race to the bottom
- Requirements for national level institutional setting, operation and governance

- The lack of adequate data on key parameters required for designing aggregated level baseline scenarios and performance benchmarks, including level and dynamics of market penetration of technologies and practices, emission factors and mitigation costs.

These challenges are compounded by the lack of incentives for investment into new CDM activities due to the absence of demand. Therefore, standardized baselines have mainly focused on technologies relevant for LDCs.

While some work on methodological challenges is conducted, the definition of adequate benchmarks remains a contentious issue which is becoming more important in the discussions. Also initiatives such as the PMR or the UK-German NAMA Facility invest considerable resources in the strengthening of national level oversight setting. However, the need for collection of data to form a basis for aggregated level CDM has so far been neglected with some exceptions. The Cement Sustainability Initiative is a good example of a sector, in which a strong concentration of market powers has led to a good contribution from the private sector. The capacity building initiatives from the PMR do not consider data for aggregated level baseline setting as a priority and although some resources are spent by donors to improve the scope and quality of host country GHG inventories, key data on economic activities and markets is missing. A stronger focus on data collection in potential host countries would be a mandatory requirement for an extension of the CDM towards aggregated levels.

Besides the expanded CDM (on an aggregated level), there might still be a need for a conventional project level CDM. For this, the same options regarding open gate vs. filter approach need to be considered as in section 6.5.1. However, the CDM already offers methodological and regulatory tools that allow to operate project and programmatic activities in parallel, even across multiple countries.

Remark: A key factor in building certainty on return for investment could be greater linkages between (results-based) international climate finance and the CDM. In particular in the absence of serious demand pre-2020, targeted interventions may prepare rolling up-scaled mechanisms in priority sectors after 2020.

Please note that in case parties could agree on details of an NMM (storyline “NMM & CDM & Co.”), the same issues would need to be solved as for the extension of the CDM.

6.6. Excursus: the role of “carbon clubs”

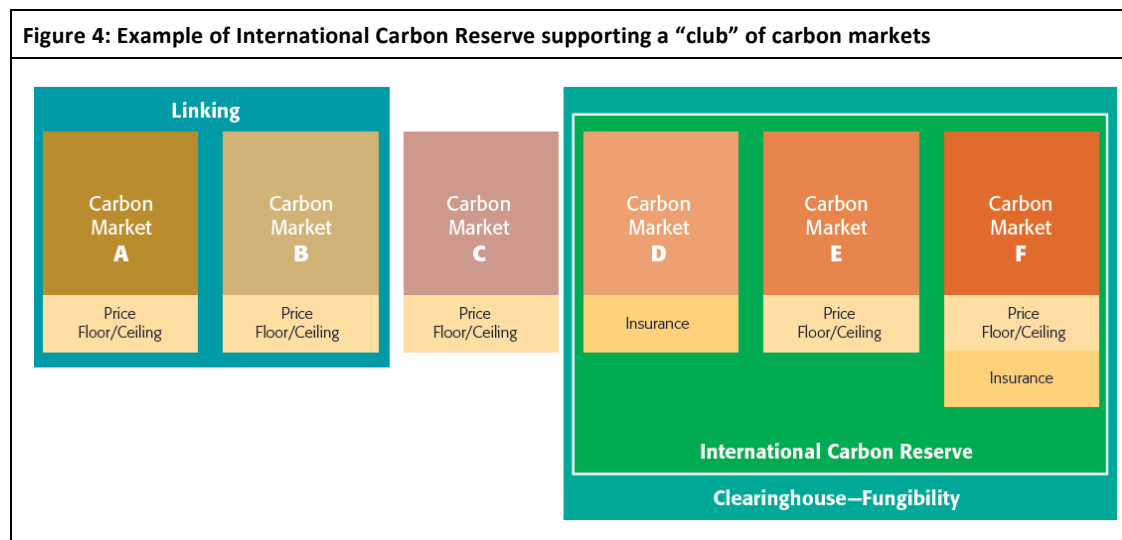
Over the last years, the idea of “carbon clubs” has emerged as a coalition of the willing that cooperates to make up for the potential weaknesses of the multilateral framework or even as alternative to centrally governed international climate schemes. While historical and current

developments already indicate the emergence of such carbon clubs e.g. through linking of ETS in Europe and North America, the Japanese JCM and other regional instruments, this may be seen as a “plan B” for a situation in which international negotiations on a post 2020 agreement fail in the sense that there is no agreement on a robust future climate regime, while on the other hand a multitude of different heterogeneous carbon markets is emerging, that operate to a large extent independently.

Different objectives and designs have been proposed for carbon clubs. One of the defining elements is that the participation in clubs is voluntary, and that they are driven by common agreement of like-minded member countries or jurisdictions to engage in ambitious and robust carbon mitigation action that may include carbon markets.

Some proponents have proposed measures such as carbon tax border adjustments as an integral element of such clubs, which from the perspective of Switzerland’s international economic interlinkage may not seem adequate in particular for unilateral introduction. We see the club approach more as a voluntary collaboration of countries/jurisdictions that share a common understanding of adequate and comparable ambition levels and quantification and tracking frameworks and that may share also certain instruments to facilitate the implementation of their respective carbon markets. This may include (soft-) linking structures and an international carbon asset reserve (ICAR) providing pooled risk mitigation instruments for several carbon markets while refraining from entering into formal linking (Fuessler and Herren 2015 – see example Figure 4).

Joining such climate clubs may allow to soft-link a multitude of fragmented markets by providing liquidity to markets (particularly important for small countries/jurisdictions). Participants’ carbon markets may be similar in terms of rules or sectors covered, but this is not in any case necessary. The clubs are formed in a process where participants negotiate agreements on soft linking options and the potential pooling of risk mitigation instruments.



In a fragmented global landscape with a multitude of heterogeneous carbon markets and carbon instruments, an International Carbon Reserve (ICAR) could serve as a joint risk mitigation tool for a club of “likeminded” countries/jurisdictions. Such an ICAR can also serve as a form of (soft-) linking.

Source: Fuessler and Herren 2015.

These clubs may offer the flexibility to agree on a higher degree of transparency, integrity, and harmonization of rules and approaches than in the UNFCCC COP/MOP context, in which a broad range of diverging interests operate by the consensus principle. Climate clubs offer more homogenous interest structures, and may thus enable member countries to find agreement on technical issues (base years, methodologies to calculate and trade emission reductions) to generate and exchange practical experience beyond what would be possible in the UNFCCC context. This could be implemented in order to demonstrate in practice the benefits of such approaches, with the ambition to integrate these lessons in the globally applicable framework at a later stage, when more information and experience has been generated. Also, parties are free to set additional requirements for the domestic eligibility of international units.

One might see early (pre-ratification of Kyoto) buyers of CERs as a historic example of such a club aiming at turning the CDM in a functioning UN-governed mechanism.

On the other hand, unless all major emitters would be participating (highly unlikely), a globally applicable set of multilateral rules would still be preferable in order to allow for transparency and comparability of efforts. In this perspective, climate clubs would attempt to address gaps and undesirable aspects of the multilateral framework, rather than aiming at developing genuine alternatives that may eventually replace the UNFCCC.

6.7. Options for using CDM for contributing to the Swiss foreign INDC

In its INDC, the Swiss Federal Council intends to achieve in 2030 emission reductions of a total of -50% compared to 1990. In the context of the national discussion, the Federal Council made a proposal that of these 50 percentage points abroad of up to 20 percentage points would be achieved with mitigation action abroad of 1990 GHG emissions, translating to up to 10.6 million t CO₂eq/a. This proposal is still to be approved by the national parliament. In case domestic emission reductions go beyond -30% in 2030, this amount would be reduced.

It is obvious that, compared to the global carbon market, any portion of the Swiss mitigation contribution which could be achieved abroad is a rather small amount, and many options would exist on how to comply with the Swiss proposal of the Federal Council. However, a potential purchase strategy based on high quality units from abroad contributing to its INDC may be noticed by some partners and may serve – if confirmed by the Swiss Parliament – as an example for the Swiss position on how to implement market mechanisms post 2020 in an efficient way and with high environmental integrity.

Table 6 lists the advantages and disadvantages of four options on how to use the existing units from market mechanisms as a basis for discussion.

Table 6: CDM options in the context of an international component of the Swiss INDC

Option	Pros	Cons
Open gate CDM with weak rules: Financially most viable Option for a potential contribution with the cheapest units from abroad in line with UNFCCC and some quality requirements set at the national level	Low cost for Switzerland	Less efficient use of funds, as impact on GHG emissions may be negligible because of large scale non-additionality of projects Credibility concerns
Open gate CDM with stringent rules:	Reasonable costs that reflect the cost of achieving real mitigation across different sectors and countries Environmental integrity ensured	Higher compliance costs than with cheapest solution It is not obvious that stringent rules can be developed for all project types, e.g. where uncertainties are very high
Filter approach: A filter is applied assuring high likelihood that emission reductions are actually real, verified, additional and measureable.	Reasonable costs that reflect the cost of achieving real mitigation across different sectors and countries Environmental integrity ensured	Higher compliance costs than with cheapest solution (and open gate-high stringency) Missed opportunities
“Swiss cleantech” Similar to open gate CDM option, but with the additional objective to maximise benefits for Swiss industries and services e.g. by preference for projects with Swiss industry involvement ¹⁵	Brings benefits to Swiss industry and helps to convince decision makers Technology transfer	The offering of Swiss cleantech is limited in terms of scope, this reduces further the potential for project types and increases compliance costs Criticism on level playing field
“Partner country” Similar to open gate CDM option, but with focus on one or a few partner country/countries.	Limited funds are spent in one country and have a focussed and visible impact. Transaction costs may be lower.	Choice of partner could be contested Opportunities in other countries left out

¹⁵ Similar to the Japanese JCM

6.8. Interactions between market mechanisms

From a methodological point of view, it is possible that different (domestic and international) market mechanisms and instruments can co-exist in parallel within the same country. However, with each additional policy, instrument or market mechanism that is added to a sector, the complexity of handling overlaps and ruling out double counting etc. grows exponentially.

The following table summarizes key areas of overlap that need to be considered when combining different market mechanisms (including project level and aggregated level measures) within one sector:

Table 7: Overview on issues when combining different market mechanisms within one sector

Issue	Example
Baseline	Baselines not taking into account other policies and mechanisms may lead to inflation of baselines and double counting This is particularly important if e.g. a project based approach is mixed with a sector level performance benchmark.
Additionality	With several market mechanisms active in one sector, an alternative to be considered in the additionality determination would be that the project is implemented under a different market mechanism (which for instance may have lower stringency in baseline setting)
Pick and choose	Project participants may tend to pick and choose the market mechanism with the most favourable conditions for their specific project type.
Consistency	Instruments should use a consistent set of emission factors, assumptions etc. also for INDC and inventory
Beneficiary from revenues	E.g. in biofuel production, (i) the fuel producer, (ii) fuel distributor as well as (iii) fuel consumer could benefit from the activity.
MRV	Different parameters may need to be monitored or yield different results based on different methodologies under various mechanisms.

In theory, many of these issues can be solved on a methodological and institutional level. Basically, the baseline and additionality determination has to be modified taking into consideration other parallel policies and instruments and market mechanisms. This tends to make methodologies and rules very complex. It is very difficult to maintain consistency between many parallel mechanisms. Therefore it may be concluded that in general the parallel existence of different

market mechanisms within the same sectors should where ever possible be avoided, as it leads to complex oversight systems and related high transaction costs. A potential approach might be e.g. by the national government to define sector by sector if and which domestic instruments or which international market mechanism is eligible in a specific sector. This would simplify baseline setting and reduce the risk of double counting (see also Fuessler et al. (2014)). Regarding the different roles of (project based) crediting versus aggregated/sectoral instruments the following views may be differentiated:

- Acknowledging the significant role that the CDM played under Kyoto 1, the strong institutional and regulatory framework und the high level of know-how on project based mechanisms that exists in many host countries, an efficient approach might be seen in focussing on project-based (CDM type) approaches in those sectors that are already well-known under the CDM and yield large volumes of crediting units at low abatement costs, while aggregated/sectoral level approaches would be confined to residual areas where project-based crediting approaches are less suitable.
- On the other hand, acknowledging the significant additionality problems of at least certain types of projects under the CDM and the issues with the interaction with (domestic) policies and measures, one might propose to limit the role of project based (CDM type) instruments to certain project types (i.e. in particular non-CO2 measures – see section 6.5.1) and focus for the main part of mitigation action for carbon markets on aggregated/sectoral level approaches that allow for various instruments of financial incentives (such as feed in tariffs) but also risk mitigation measures (such as guarantees) to achieve scaled-up mitigation impact. However, also with those approaches additionality challenges will emerge so regulators will have to carefully determine rules for baseline setting and assessment of policy benefits.

7. REDD+, synergies and other issues

7.1. Excursus: the role of REDD+

Background

Over the last decade Parties to the UNFCCC have negotiated a mechanism that seeks to create incentives for the reduction of deforestation and forest degradation, conservation of forests,

sustainable management of forests, and enhancement of forest carbon stocks in developing countries (REDD+).¹⁶

REDD+ is essential as reducing tropical forest emissions will have to be a critical part of any effective global effort to reduce climate risks. Land use contributes between 20-25% of global GHG emissions today. In many developing countries land use is the largest source of emissions. The reduction of deforestation goes also along with significant biodiversity and sustainable development benefits, including for local communities. It is expected that forests will continue to play a role in global climate action, and that incentives should be provided to countries for reducing emissions (or sequestering carbon) from forests now, as well as beyond 2020.

Since the Bali Action Plan (COP-13, 2007) first recognized the importance of reducing forest-related emissions, there have been 13 COP decisions related to REDD+.¹⁷ These decisions have covered everything from creating a broad framework for undertaking REDD+ actions (e.g., creation of a national strategy, acknowledgement of a stepwise approach, need for a robust forest monitoring system, guidance on safeguards, etc.¹⁸) to technical guidance for measuring results (e.g., modalities for forest reference emission levels, their technical assessment, and provisions to submit data and information used to determine results in a technical annex to countries' biennial update reports—including in the context of receiving results-based finance¹⁹). With such a comprehensive mitigation mechanism formulated, the forest sector is the first sector where an internationally negotiated implementation-ready framework exists, even if the actual crediting is not tested. This is the more remarkable as the Kyoto Protocol did not manage to provide any significant incentives for the reduction of land-based emissions in developing countries – not least because of issues of MRV and permanence of units from the forestry sector.²⁰

7.1.1. The provision of finance

The initial proposal for a REDD+ mechanism was proposing it eventually as a market-based approach to forest conservation in order for it to achieve large-scale mitigation, over time however a more complex and varied set of finance strategies has been developed.

¹⁶ UNFCCC, Decision 1/CP.16, paragraph 70

¹⁷ The 13 decisions can be found at: http://unfccc.int/land_use_and_climate_change/lulucf/items/6917.php

¹⁸ See the REDD+ decisions in the Cancun Agreements, UNFCCC, Decision 1/CP.16 paras. 68-79.

¹⁹ See the Warsaw Framework on results based REDD+, UNFCCC, Decisions 9/CP.19 to 15/CP.19.

²⁰ Parties to the Kyoto Protocol severely limited the eligibility of forest projects under the CDM. Eligible projects are limited to afforestation/reforestation projects for which only temporary credits can be issued, a credit class that is complicated and burdened by an inherent liability that makes it unattractive for acquisition and unsuitable for trading.

From its inception in 2005 developing countries have made international financial support a necessary condition for REDD+. The submission by Costa Rica and Papua New Guinea that initiated the discussions on REDD+ asked parties to consider ‘how the UNFCCC can be used better to draw developing nations toward emissions reductions by functioning as a mechanism to finance environmental sustainability – while completely fulfilling its climatic objectives.’²¹ The submission continues with a more explicit statement in favour of carbon markets as a source of potential funds: ‘Properly harnessed, the carbon emissions markets can monetise environmental resources and capitalise sustainable development.’

In the course of the negotiations of an operational framework for REDD+, it has become clear that both market and non-market approaches can play key roles in REDD+ (para. 67 of decision 2/CP.17 and para. 39 of decision 1/CP.18)

Various options for providing financial support for REDD+ have been discussed within and outside of the UNFCCC.

Financing approaches include the financing of “REDD+ readiness” -that is capacity building and policy development, mostly through grants- (Phase 1), the support for the implementation of policies through a variety of financial instruments (Phase 2), and the support for results-based actions through payments for verified emission reductions (Phase 3). Existing decisions on REDD+ encourage making available additional financial resources for REDD+, and request the Green Climate Fund to apply the methodological guidance of past REDD+ decisions²². REDD+ decisions also reaffirm that results-based finance may come from a wide variety of sources, public and private, bilateral and multilateral, including alternative sources.²³ The measurement of REDD+ results in verified emission reductions against an approved reference levels facilitates the link of REDD+ to markets. Finance can however come from non-market-based as well as market-base sources.

Implementation and Support for REDD+ before 2020

REDD+ is the beneficiary of significant amounts of international finance. In the 12 years from 2002 to 2013, though varying significantly from year to year, bilateral ODA for reducing forest emissions in developing countries increased from an annual average of US\$365 million during 2002-07 to US\$744 million in 2008-13.²⁴ A number of programs and initiatives pilot results-based finance

²¹ UNFCCC, ‘Reducing emissions from deforestation in developing countries: approaches to stimulate action’, Submission by the Governments of Papua New Guinea and Costa Rica, UN Doc. FCCC/CP/2005/MISC.1 (11 November 2005) p 9.

²² UNFCCC, Decision 9/CP.19, paragraphs 6 and 7.

²³ Ibid.

²⁴ OECD DAC. Organisation of Economic Cooperation and Development’s Development Assistance Committee dataset.

that is conditional upon the generation of verified emission reduction (e.g. Norway’s NICFI program, the German REM program, and the World Bank FCPF, Forest Investment Program and BioCarbon Fund, see Table 8). Between 2008 and 2014, a number of bilateral and multilateral results-based programs for reducing forest emissions were established, with over US\$3 billion committed.²⁵ Donors have also expressed interest in supporting sustainable supply chains.

Table 8: Bilateral and Multilateral Funds to Support REDD+ and Sustainable Landscapes²⁶

Program/Administrator	Financing Instruments	Amount and Description (amounts according to publicly available sources)
Forest Carbon Partnership Facility – World Bank ²⁷ : Carbon Fund and Readiness Fund	<ul style="list-style-type: none"> • Grants • Results-based payments 	The Forest Carbon Partnership Facility (FCPF) consists of a Readiness Fund and a Carbon Fund. It was launched in 2007 to assist developing countries to reduce emissions from deforestation and forest degradation, enhance and conserve forest carbon stocks, and sustainably manage forests (REDD+). Approx. USD 465 million for results-based payments for emission reductions from REDD+. Grant support for the FCPF defined REDD+ readiness process. ²⁸
BioCarbon Fund Initiative for Sustainable Forest Landscapes (ISFL) – World Bank	<ul style="list-style-type: none"> • Grants • Results-based payments 	The ISFL window of the BioCarbon Fund makes payment for verified emission reductions from REDD+ landscape level jurisdictional programs. According to publicly available numbers, at USD 331 million.

²⁵ Climate Focus data based on the following data sources: ICFI commitments taken from Memorandi of Understanding with Brazil, Indonesia, Guyana, Peru and Liberia. Commitments to FCPF Carbon Fund, BioCarbon Fund and REM programs were retrieved from respective fund websites. NICFI disbursements available from Amazon Fund website and Real-Time Evaluation of Norway’s International Climate and Forest Initiative. No disbursements recorded from FCPF Carbon Fund and BioCarbon Fund to date. REM disbursement data have been received from Forest Trends.

²⁶ Source: Financing Land Use Mitigation: A Practical Guide for Decision-Makers Streck, C., Murray, B., Aquino, A., Durschinger, L., Estrada, M., Parker C., and Zeleke, A. 2015. “Financing Land Use Mitigation: A Practical Guide for Decision-Makers.”

²⁷ Note that the Carbon Fund and ISFL are public funds, but there are some private investments

²⁸ Stated publicly stated by the Carbon Fund in a presentation at COP 20

Program/Administrator	Financing Instruments	Amount and Description (amounts according to publicly available sources)
Norway's International Climate and Forest Initiative (NICFI)	<ul style="list-style-type: none"> • Grants • Results based payments 	In addition to funding of multilateral programs (described below) NICFI has made bilateral commitments including USD 1 billion to Brazil, USD 1 billion to Indonesia, USD 250 million to Guyana, USD 120 million to Peru and USD 150 million to Liberia.
REDD Early Movers (REM) of the German Government and administered by the Kreditanstalt für Wiederaufbau	<ul style="list-style-type: none"> • Grants • Results-based payments 	Results-based payments for REDD+ emission reductions at the jurisdictional level. The REM program has received an initial capitalization of approximately USD 45 million, with significant additional co-financing from Norway. Agreements have been signed with the Brazilian State of Acre and Ecuador.
UN-REDD	<ul style="list-style-type: none"> • Grants 	As of June 2014, UN-REDD had total funding of USD 195.7 million. ²⁹ Seven donors have supported UN-REDD Programme, which supports countries by providing: (i) direct finance for the design and implementation of UN-REDD National Programmes; and (ii) complementary support for national REDD+ action through common approaches, analyses, methodologies, tools, data and best practices.
Forest Investment Program (FIP) as part of the Strategic Climate Funds administered by the World Bank	<ul style="list-style-type: none"> • Grants • Private sector concessional set aside 	The FIP is active in 8 countries and has a pipeline of 38 projects and programs; total pledges as of December 31, 2014 are USD 785 million, of which USD 501.3 million have been committed. The FIP mandate includes providing support to private sector activities that reduce forest related emissions or enhance forest carbon stocks. ³⁰
Global Environment Facility (GEF)	<ul style="list-style-type: none"> • Grants with co-financing • Non-grants to private sector 	The GEF Trust Fund is supporting the implementation of international conventions, including the UNFCCC. It is replenished every 4 years based on donor pledges. GEF-6 has USD 4.43 billion pledged. It supports, among others biodiversity conservation and REDD+ activities.

²⁹ <http://www.un-redd.org/aboutun-reddprogramme/tabid/102613/default.aspx>

³⁰ <https://www.climateinvestmentfunds.org/cif/node/5>

7.1.2. Supporting REDD+: Options for Switzerland

A. Options for Switzerland before 2020 – trial phase

The time up until 2020 can be considered as a trial phase to test and pilot REDD+. Switzerland could support REDD+ through a number of complementary measures:

- Readiness resources are being disbursed in many countries toward establishment of REDD+ strategies, environmental and social safeguards, monitoring and safeguard information systems, etc. Now until 2020 is a crucial time to support countries to implement REDD+ actions, classified as Phase 2, with priority on establishing sustainable forest management and conservation areas. Switzerland could develop synergies in its climate and development aid by supporting actions that ensure mitigation and adaptation in forests.
- Switzerland has already contributed to the FCPF. Current developments under the FCPF Carbon Fund in the area of payments for REDD+ results should be closely followed, as these will provide lessons for future engagement. Switzerland could join other initiatives, such as, for example, support the German REM program. It could directly finance the program, or purchase verified emission reductions from REDD+ alongside REM, as already done by Norway. Funding of such trials could come from auction revenues generated under the Swiss ETS, from SECO or the Climate Cent Foundation.
- The Swiss government could commit to purchasing a set number of international REDD+ VERs through reverse auctions from voluntary REDD+ projects developed internationally or within identified partner countries, to stimulate voluntary/compliance REDD+ markets internationally. An allocation of finance from the Climate Cent Foundation could be a preliminary step towards integrating REDD+ into Swiss mitigation strategies.
- Switzerland could form technical partnerships with developing countries facing similar upland forestry management issues as those addressed in Switzerland's National Forest Program (e.g., along the lines of the Nepal-Swiss forestry project). Such partnerships would build relationships and political good will, and be a precursor to any results-based arrangements.
- Switzerland could support REDD+ through demand side measures, engaging with Swiss private sector investors interested in the forest sector, as well as regulatory actions (e.g. do more to tackle the trade in illegally logged timber, and adopt greener public procurement policies).

The trial period before 2020 allows also the testing of procedures and quality criteria for REDD+ credits.

B. Options for Switzerland after 2020 – creating demand with safeguards

Switzerland has a number of medium-term options to support REDD+ by creating demand for REDD+ emission reductions that meet safeguards defined under the UNFCCC, the forest country and Switzerland.

Such options may include allowing the use of REDD+ units in the Swiss Emission Trading system, link the demand for VERs to the import, production or trade of highly polluting commodities (similar to the Climate Cent), or to use public climate finance to support REDD+. The link to sustainable development and the ability of REDD+ to trigger transformational change make the forest sector a good candidate for additional international mitigation action and the acquisition of REDD+ credits. Programs such as the FCPF with their strong methodological frameworks show how verification of REDD+ benefits can be ensured and risks of displacement (leakage) and reversals (non-permanence) can be managed.

The FCPF Methodological Framework aims at minimizing and mitigating REDD+-related risks as an integral part of the program design combined with effective monitoring and reporting. For displacement of emissions, this risk mitigation strategy must be implemented by the time emission reductions can be verified, and changes in drivers of deforestation are monitored and analysed. To effectively deal with any reversals the criteria and indicators allow for different approaches including use of buffers (the default mechanism), insurance, host country guarantees, etc.

In the following we will present these options and discuss their pros and cons.

Integration of REDD+ into the Swiss Carbon Market

In the past, REDD+ crediting has been discussed extensively in the context of emission trading schemes. In theory, such an approach could also be contemplated for the Swiss ETS. Switzerland has long experience in generating demand for certified emission reductions from the CDM as offset credits complying with the Swiss eligibility rules and in limited volumes may be used for compliance. The concerns that led to an exclusion of forestry credits from the Swiss ETS might eventually be managed through strict eligibility rules related to which credits are allowed to be used for meeting commitments under the Swiss CO₂ legislation and through requiring comprehensive risk mitigation instruments as mentioned above.

In practice however, such an approach may be less suitable for the Swiss ETS. Given its small size (only about 50 installations) the Swiss ETS does not represent a liquid market and at present, it is deemed already over-allocated and low and not well defined prices. Including REDD+ credits as fungible offsets into the Swiss ETS is therefore not a realistic near-term option.

It is planned to link the Swiss ETS with the EU ETS before 2020. If such a linking materializes and the EU ETS would allow for the use of (limited volumes) of REDD+ units, Switzerland would probably need to adjust its practice to keep a level playing field.

International REDD+ Targets

The part of Switzerland's INDC to be attained through international mitigation action could be achieved partially by supporting REDD+, pending a decision to this extent in the markets negotiations (decision 2/CP.17 paragraph 66 specifically mentions the possibility of development of market-based approaches to support results-based actions). Pledging support for REDD+, given the nature of the Swiss INDC or at least clarifying that Switzerland would be ready to accept REDD+ units that are environmentally integer and risks are mitigated, would have to be done after Paris but would send a powerful political signal. The Swiss commitment to REDD+ could be supported through a mix of private and public financing instruments. The international commitments could be formulated as:³¹

- Committing politically to REDD+ support within the context of its INDC. Switzerland could pledge to meet a specified or unspecified part of its international mitigation effort through verified emission reductions from REDD+ (REDD+ credits). REDD+ support could be coordinated with other European nations including Norway.
- Plurilateral market activities involving clubs or coalitions of the willing composed of developed and developing countries may be an option post-2020 (see section 6.6). In addition to clubs in non-forest sectors, coalitions for REDD+-clubs already exist and are growing, including donor countries such as Norway, Germany, the UK and USA and developing countries such as Brazil, Mexico, Indonesia, Guyana, Ghana, and many others. Also, such REDD+-clubs could be developed in the general context of pooling and mitigating risks in clubs (as mentioned in section 6.6 e.g. covering forest reversal risks). Criteria that guarantee a high standard of emission reductions and at the same time ensure efficiency and expediency would have to be developed in Switzerland and later agreed within alliances. These criteria would be based on increasing climate ambition, include agreement on environmental integrity and methodologies, including comprehensive mitigation instruments for displacement and reversal risks, avoidance of double-counting, and use of multilaterally agreed rules (for which REDD+ has an agreed

³¹ Adapted from: Charlotte Streck and Paul Keenlyside, with contributions by Moritz Von Unger, *Stimulating Demand for REDD+: Additional Mitigation Targets and EU Effort Sharing*, http://merid.org/en/EUreddfinancing/Paper_2_Additional_Mitigation_Targets_and_EU_Effort_Sharing.aspx.

framework). Ownership and eligibility of the credits would have to be decided by the countries involved.

See Table 9 for options on how international action could be formulated.

Table 9: International Mitigation Action

	Nature of Commitment
General Mitigation Target	CH emission reduction target (- + x%) that may be partially achieved with international REDD+ credits. Includes offsetting. The use of international REDD+ credits / offsets needs to be limited to the increase in overall ambition.
International REDD+ Mitigation Target (as part of a Dual Target)	Target for international mitigation, separate and in addition to the existing mitigation target. The international mitigation may include a quota for REDD+. No offsetting. It may be combined with a financial ceiling (fixing a maximum price to be paid per emission reduction). It could also be expressed in tCO ₂ e. Alternative: Plurilateral market activities involving coalitions of willing countries. Development and agreement on criteria for supporting REDD+ countries would have to be carried out pre-2020.

International REDD+ Mitigation Targets could also be formulated as a joint-responsibility target. A future agreement could allow developed and developing countries to formulate joint targets. As with the EU Bubble in the context of the Kyoto Protocol, in case of failure by the Parties to such an agreement to achieve their total combined level of emission reductions jointly, each would remain responsible for their own targets.³² This would create a formal incentive for developed and developing countries to cooperate on emissions reductions, and enable both to commit to more ambitious targets. Joint targeting by developed countries and tropical forest countries could create a powerful new basis on which to finance forest conservation.

³² Id. at Article 4.5.

Support of REDD+ through Public Private Partnerships (PPPs).

Switzerland can support REDD+ and leverage private investment through the targeted support of PPPs. Such PPPs could, for example, support the pledges made by Swiss companies under the New York Declaration on Forests³³ (Nestlé, Cargill International SA, etc.). The contribution of the Swiss government to the PPP could consist of the provision of finance and training to national governments and public institutions, while private partners invest in deforestation free supply chains. It could also provide export credits for investments in sustainable supply chain operations. The government could also engage more directly by setting up funds within national agencies, or co-invest in private funds that support sustainable land use projects (e.g. the Althelia Ecosphere Fund³⁴ or the Finance in Motion Fund³⁵ supported by KfW and Conservation International).

The Swiss government could also provide purchase guarantees for emission reductions from REDD+ activities that address deforestation drivers. Payment would follow a payment-for-performance approach, which rewards emission reductions without necessarily requiring the issuance of certificates. If there are certificates, these could be retired (as in the case of the German REM program). This type of program could follow the Dutch government's ERUPT/CERUPT programs launched in 2000/2001. At that time, the Dutch Government purchased emission reduction units via project-based mechanisms under the Kyoto Protocol. The programs targeted companies wishing to engage in GHG emission reducing projects. The projects were often embedded in bilateral cooperation agreements between the Dutch government and the government of the partner country.

Support of REDD+ through public climate finance

Switzerland may decide to make REDD+ specific budgetary commitments pursuant to its Paris commitments. While international legal agreements have consistently failed to impose or even define international taxes (e.g. on bunker fuels), governments have scaled up climate finance from public budgets in recent years pursuant to finance commitments under the Copenhagen Accord and other public pledges. Public "fast start finance" for 2010-12, the commitment to jointly mobilize USD 100 billion from public and private sources by 2020, and the establishment of the Green Climate Fund have created momentum and encouraged pledges by individual member states. REDD+ has been part of this momentum, including USD 4 billion worth of REDD+ financing pledges by donors during and after Copenhagen.

³³ <http://www.un.org/climatechange/summit/wp-content/uploads/sites/2/2014/07/New-York-Declaration-on-Forest—Action-Statement-and-Action-Plan.pdf>

³⁴ <https://althelia.com>

³⁵ <http://www.finance-in-motion.com>

Table 10: Options for support of REDD+ through public climate finance

Option	Pros	Cons
<i>Option 1 Name: Full inclusion in carbon markets</i>	Mobilizes private sector demand for REDD+ credits Could mobilize long-term finance	Swiss ETS already over-allocated The high number of REDD+ credits may decrease mitigation incentives in other sectors Permanence concerns need to be managed
<i>Option 2 Name: REDD+ specified in mitigation target</i>	Strong political signal before the UNFCCC meeting Paris Creation of predictable demand for developing country mitigation Can eventually be linked to carbon markets, can also be linked to existing programs (e.g. FCPF, REM)	Additional budgetary resources needed
<i>Option 3 Name: PPPs</i>	Allows a flexible approach towards supporting REDD+ Encourages private sector engagement, link to supply chain commitments	High transaction costs through tailor-made approaches
<i>Option 4 Name: Public climate finance</i>	Can be implemented in combination with Option 2 and 3	Additional budgetary resources needed

7.2. Share of proceeds for adaptation financing

Parts of the Adaptation Fund (AF) resources are currently generated through a 2% percent levy on issued CERs under the CDM (i.e. 2% of issued CERs are kept for the AF), except on projects in LDCs (called “share of proceeds”, SOP). This constitutes an innovative way of generating financial support for adaptation. However, while according to the AF website, “Financing for the Adaptation Fund comes mainly from sales of certified emission reductions” (AF 2014a) the low carbon prices under the CDM have led to a different situation than envisaged and to the need for the AF to set itself fundraising goals to overcome these challenges (AF 2014b). As of February 2015, almost 60% (USD 277 million) of AF cash receipts were contributions from donor countries and other sources, and only 40% (USD 191 million) came from CER proceeds (World Bank, 2015a). While it had been criticized that the levy is imposed only on the CDM and not on the other Kyoto Mechanisms, only at COP 18 in Doha 2012 a decision was taken to expand the levy to JI and IET from the second KP commitment period onwards. Given the lack of demand from KP parties and the dormancy of JI and IET, this will not have any real effect but might be an important precedent for an expansion of the levy to new market mechanisms. However its effect on limiting attractiveness of mitigation action is to be kept in mind as it effectively represents a tax on emissions reductions.

The AF Board considered different options for increasing the sources of funding for the AF, including tradable adaptation certificates (UNFCCC 2014, para 36). Proposals for further funding streams of the AF in relation to carbon markets were included in the technical paper on the second review of the AF and in submissions by countries (UNFCCC 2014, SBI 2014):

- 1) Strengthening the carbon market by increasing ambition including through ratification of commitments under the second commitment period
- 2) 10% of carry over units should be allocated to the AF
- 3) Levies on national or regional emission trading schemes, with the African group proposing a levy of 2% (SBI, 2014)

Option 1) is not really relevant given the low coverage of KP in the 2nd commitment period. The “carry over tax” suggested in option 2) needs to be discussed in the context of the arguments brought out in section 4.4. above. Contributions as indicated in option 3) could further enhance available resources, yet since they are voluntary they do not – unless put into legislation in the respective countries – provide for a predictable funding stream. Some countries are already using their auctioning revenues for climate finance (see Esch 2013).

For future mechanisms, there might be space for differentiation of the percentage of the SOP to be used for adaptation funding. Options for such differentiation are discussed below and in Table 11.

Table 11: Potential differentiation criteria for the share of proceeds used for adaptation funding

Differentiation according to	Description of option	Advantages	Disadvantages and requirements
Mitigation cost	Higher levy rate for projects with low mitigation costs	Incentive to address also more expensive/difficult emission reductions.	<ul style="list-style-type: none"> • Stands to some extent in contrast to one of the aims of carbon markets, namely to reduce emissions where reductions are the cheapest. • Clear criteria needed regarding what constitutes low mitigation costs. • Assessment might lead to high transaction costs.
Innovative technology	Higher levy rate for projects with less innovative technologies.	Incentive to address emission reductions through innovative technology.	<ul style="list-style-type: none"> • Risk to disincentivize investments in proven technologies. Might overlap with criterion on mitigation costs, since innovative technologies might have higher costs. • Clear criteria needed regarding what constitutes innovative technology in the respective country. • Assessment might lead to high transaction costs.
Contribution of mitigation project to adaptation	Higher levy rate for projects with low adaptation benefits	Incentive to consider adaptation benefits in mitigation projects.	<ul style="list-style-type: none"> • Risk to disincentivize investments in important mitigation projects lacking adaptation benefits. • Clear criteria needed regarding what constitutes adaptation benefits and how direct they need to be. • Assessment might lead to high transaction costs.
Type of baseline setting	Higher levy rate for projects with less ambitious baseline setting	Incentive for ambitious baseline setting.	<ul style="list-style-type: none"> • Clear criteria needed regarding which methodologies are considered as leading to ambitious baselines. • Assessment might lead to moderate transaction costs.
Host country	Higher levy rate for projects from certain types of host countries	Consistent with "ability to pay" if linked to economic status of host country	<ul style="list-style-type: none"> • Highly contentious in the negotiations • Leads to inefficient mitigation outcome as same project type is subject to different levy rates according to location

Certain overall requirements are relevant regarding any potential differentiation. In order to ensure a stable funding flow, a bottom line for the percentage of Shares of Proceeds would be needed. Further, a cap would also be required in order to provide predictability and sufficient incentives for project developers. As indicated in the table, any differentiation would generate transaction costs due to the required assessment. One means to keep the transaction costs as

low as possible would be to define only a few levy rates to avoid lengthy discussions on specific rates for highly disaggregated project types. A decision would be required on whether or not several differentiation criteria could be applied to the same project (e.g. this could lead to increasing a levy several times). And finally it would need to be decided which institution would conduct the assessment.

7.3. Synergies between market mechanisms and climate finance

Synergies between financial flows generated through carbon markets and climate finance exist already, which could be further explored in the future.

7.3.1. Institutional synergies

While institutional synergies could exist between various climate funds and market mechanism, this section addresses only potential synergies between the GCF and market mechanisms since the GCF is expected to become the main climate fund. GCF funded projects can be implemented through national, regional or international implementing entities (IE). While there are currently no such implementing entities for carbon markets, synergies could nevertheless arise, since countries might seek to centralize tasks for both market mechanisms (Designated National Authority) and climate funds (implementing entities) in one institution. E.g. Market mechanisms could serve as MRV tools for climate finance and climate funds could serve to increase readiness for markets or as a funding base for mitigation identified via market mechanisms.

An interesting example in this regard is the National Environment Management Authority in Kenya. It currently serves as IE to the AF, as DNA for the CDM and has recently applied (but is not yet approved) as IE of the GCF (NEMA 2015a, NEMA 2015b, NEMA 2015c). Such centralization of tasks within one institution facilitates coordination of climate projects and finance flows within one country and allows to build on previous experiences. Further institutional streamlining could be sought between DNAs of carbon markets and National Designated Authorities (NDA) under the GCF – as done by Ecuador (UNFCCC no date, GCF 2015) – since both of them play a central role in ensuring that proposed projects are in line with the host country's sustainable development goals and climate strategy. Finally the experience of the local private sector involved in the CDM can be relevant for the Private Sector Facility of the GCF which shall promote the participation of the local private sector.

7.3.2. Synergies regarding result measurement

In the CDM, extensive knowledge has been generated for measuring emission reductions, with the CDM being according to Hoehne et al. (2015, 2) “the only internationally agreed standard, which allows for rigorous and transparent tracking of emission reductions”. This experience can also be used by other institutions. One example for this is the newly set up Pilot Auction Facility for Methane and Climate Change Mitigation (PAF) established by the World Bank. The PAF guarantees a floor price for carbon credits from methane reducing projects, with the floor price being achieved by means of auctioning so called “put options” (World Bank 2015b). Yet, the finances will only be disbursed once the emission reduction is proven, which in turn can be verified amongst others by applying the CDM methodologies (World Bank 2015b). As the name indicated, the PAF shall serve as a pilot whose approach could in the future be used also by other institutions or funds (BMUB 2014). The PAF is financially supported by Germany, Sweden, Switzerland and the US, who may account their support to their provided climate finance and to cancel the CERs. Hence this can be seen as an example where carbon markets and climate finance are being interlinked (as discussed in section 4.5). If such approaches were to be applied at a greater scale, aspects such as geographical distribution would also need to be considered, since currently the CDM has geographical imbalances (Spors 2015).

Within the climate finance debate, the concept of “results based finance” (RBF), where (parts of) the financial means are only provided upon proof of the achievement of agreed results, is more and more evolving. It provides a mean for ensuring and measuring impact of finance provided which can also help contributor governments prove to their tax payers that their taxes are spent in an effective way³⁶. For REDD+ projects/programmes a phased approach leading to results based finance has been decided upon in the Cancún decision (decision 1./CP.16 para 73)³⁷. Also for the GCF it has been decided that “The Fund may employ results-based financing approaches, including, in particular for incentivizing mitigation actions, payment for verified results, where appropriate” and further decided that “A results-based approach will be an important criterion for allocating resources” (Governing Instrument, para 55 and 51). To date (July 2015) the GCF Board has decided on a results management framework (GCF 2014) which shall be used as basis for results-based payment where appropriate. The methodologies for measuring the results are still under preparation. While the precise func-

³⁶ Yet there is also criticism on the approach of results based financing, see Institute for Policy Studies, no date and Ward 2013, p. 13.

³⁷ Para 73: „Decides that the activities undertaken by Parties referred to in paragraph 70 above should be implemented in phases, beginning with the development of national strategies or action plans, policies and measures, and capacity-building, followed by the implementation of national policies and measures and national strategies or action plans that could involve further capacity-building, technology development and transfer and results-based demonstration activities, and evolving into results-based actions that should be fully measured, reported and verified”.

tioning of RBF for climate finance has not been defined, similarities can be assumed. In both cases (parts) of finance are only released once results have been achieved (Ward 2013, 8). All results need to be verified in the CDM, under the GCF a “payment for verified results [occurs] where appropriate” (Governing Instrument para 55). For climate finance a measurable and verified outcome could suffice and issuance of CERs might not be required (CFAS 2013), yet this could also be an option (Spors 2015, p. 7). The debate on methodologies for RBF could hence profit from the experience of the CDM in measuring results or directly from applying CDM methodologies when measuring climate finance results (see Hoehne et al. 2015).

7.4. Discussion of further issues regarding market mechanisms post 2020

Table 12: Discussion of further issues concerning market mechanisms post 2020			
<i>Issue</i>	<i>Solution</i>	<i>Pros</i>	<i>Cons</i>
Use for results based climate finance	Credits from market mechanisms could be financed directly from climate finance (e.g. from GCF) if they fulfil the requirements of the respective fund. Credits would need to be cancelled from the market without using for the international mitigation commitment of buyer country to avoid double claiming.	Investment in credits is well documented, tangible and is suitable for communication purposes and accounting	Danger of double claiming must be ruled out from the onset. Difficulties might arise regarding compliance with institutional aspects and project cycles of the respective fund.
	Credits could be bought to support pilot project types. Again, cancellation of units is necessary.	May be an essential element of prompt starting mitigation action and to quickly respond to developing country requirements.	Danger of double claiming has to be ruled out.
Net mitigation through market instruments	Discounting: multiplication of estimated emission reductions by a factor <1 (Butzengeiger-Geyer et al., 2010; Kollmuss and Lazarus, 2011; Michaelowa, 2008; Schneider, 2009b; UNFCCC, 2008a, 2008b). This approach could be particularly effective for increasing the mitigation benefits of project types where additionality is clearly demonstrated and abatement costs are low – such as in case of industrial gases (Kollmuss and Lazarus, 2011).	With net mitigation, market instruments do not only help to lower global mitigation costs, but themselves also contribute to net emissions.	Discounting reduces the number of CERs generated by a specific activity and therefore tends to increase costs per CER. This is only feasible in project types with very low cost mitigation potential, e.g. in industrial gases. In a healthy market, such an increase in costs would be transferred to the buyers side. However, in the scenario of a low price buyer's market, discounting would further reduce the CER revenues that actually trigger the CDM project, thus aggravating further existing additionality issues.
	Conservative baselines and parameters, which are already established and available within the CDM. While there may be scope to improve upon the use of conservativeness parameters	There may be some net mitigation in conservative default factors (e.g. HFC23 waste production rate in AM001)	Conservative default factors are there to compensate to a certain extend for information asymmetries between regulator and project proponent. In most project types,

Table 12: Discussion of further issues concerning market mechanisms post 2020			
<i>Issue</i>	<i>Solution</i>	<i>Pros</i>	<i>Cons</i>
			related net mitigation impact may be rather small.
	Shorter crediting periods could be effective in case of project types with higher initial capital costs	See discussion on temporal filters.	Shorter crediting periods reduce CER benefit for project proponents.
Allocation of emission credits to investors and/or host countries	<p>Given that INDCs are likely to be elaborated by an overwhelming majority of countries, the question of allocation of emission credits to the “investor” and “host” needs to be resolved. Principally, countries should be free to negotiate this allocation. Host countries may have to decide, which part of mitigation outcomes is to be used for their own contribution and strike a balance between role for national contribution and participation in international carbon markets:</p> <p>If the share that is transferred internationally is too low, then the cost per ton transferred is very high and not attractive to the market. If the share is too high, then the country may have difficulties meeting its own contribution.</p> <p>The principles to guide this allocation should include the marginal abatement cost to generate credits, as well as the stringency of the two parties’ INDCs.</p> <p>Negotiations on another level are taking place between host country governments and private sector actors achieving the mitigation outcome.</p>	Allocation can be negotiated. Important is the ruling out of double claiming by defining a crediting baseline (see e.g. Fuessler et al. 2014) and following robust accounting.	<p>Host countries with “inflated” baseline emissions may grant the investor country a very high share of credits. This is against a level playing field for different host countries and punishes ambitious baseline setting and creates “false” credits that do not represent real mitigation.</p> <p>This may require to restrict selling to host countries with adequate ambition levels in their NDCs or mechanisms that check validity of baselines (though definition of a metric of ambition levels may be challenging).</p>

7.5. Recommendations by authors to strengthen market mechanisms post 2020

- *Well-designed market mechanisms can play an important role in achieving rapid decarbonisation over the next decades at relatively low cost, if there is sufficient ambition with regards to emissions commitments and willingness to spend mitigation funding abroad. Market mechanisms can play a key role in increasing mitigation ambition if sufficient trust regarding their integrity, long-term persistence, and user-friendliness can be built.*
- *Any policy on market mechanisms cannot ignore the current situation of high uncertainty regarding credit demand and long-term future of existing market mechanisms. It does not make sense to create new mechanisms without addressing these two issues.*
- *Market mechanisms require institutional and regulatory systems assuring transparency, environmental integrity and robust accounting of units. Otherwise, they become loopholes and weaken overall ambition.*
- *Several storylines for transition towards scaled-up market mechanisms may be pursued:*
 - 1) *Build a comprehensive new aggregated level centrally governed mechanism, or*
 - 2) *Expand CDM towards aggregated level mechanisms, especially by strengthening programmatic approaches.*
- *Aggregated level mechanisms are key for scaling up of mitigation action, but require a number of preconditions:*
 - *Host countries may need to be supported in implementation of institutional and regulatory settings that are required to govern, manage and operate such mechanisms.*
 - *Appropriate baseline methodologies have to be available, given that determination of environmental integrity may be more difficult on an aggregated level than on a project level. A necessary condition for application of adequate baseline parameters (technology penetration thresholds, benchmarks etc.) is the availability of public funds for data collection.*
 - *Revenues from the sale of credits on a national (governmental) level need to reach the actors implementing mitigation action, in particular in the private sector.*
- *Project level CDM (or similar) should focus on sectors where it can best complement other instruments and allow for robust additionality and baseline setting. Recognizing political pressure to go beyond a project-based mechanism and move towards scaled up approaches we suggest further elaboration of two options:*
 - *Open approach with stringent additionality. Here the challenge is to operationalize the additionality determination in a way that keeps transaction costs manageable*

and manages to keep wrong decisions below an acceptable threshold. Also some project types may have systematic issues with objective baseline setting and additionality.

- *Filter approach selecting those project types where CDM has the highest impact and efficiency. The challenge here is to choose the right parameters defining the filter in order to select project types with high probability of additionality and robust baseline setting while not restricting the range of potential project types too much.*
- *While many advocate for limiting project-based mechanisms to poorer countries (LDCs), experience shows that even in countries with a high level of development the potential for project-based approaches remains significant (see JI).*
- *Elements from market mechanisms such as baseline and monitoring methodologies will be crucial to ensure the efficiency of climate finance. Rapid disbursement of climate finance will only be possible through direct use of carbon markets, e.g. acquisition of CERs and their cancellation.*
- *REDD+ may play an important role in taking developing countries on board and tapping into the significant forestry related mitigation potential, but some stakeholders fear that its huge, seemingly low-cost potential will crowd out other mitigation options. Therefore fungibility between REDD+ and carbon markets would require a high level of ambition that generates significant demand and may be preferred only at a later point in time, once both systems work stably. Supporting REDD+ before 2020 may include increasing readiness and supporting REDD+ initiatives in early trial stages in particular in testing of procedures and quality criteria. Post 2020 a focus may shift towards creating demand for high quality REDD+ units.*
- *Clubs of like-minded countries and jurisdictions may serve as a plan B in case that no robust international climate regime emerges after Paris. These clubs need to agree on a set of rules regarding their commitments as well as units that can be imported for use towards their commitments. The efficiency of clubs depends on their coverage, the degree of their ambition and the willingness of member states to acquire emission credits abroad.*
- *Market mechanisms can only function if the underlying emissions mitigation ambition is sufficiently strong. Unnecessary limitation of their scope will reduce their contribution to reach the long-term goal of climate stabilization.*

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